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: **JR043**

DATE VERIFIED: **June 15, 2012**

QUALITY ASSURANCE TECHNICIAN: **Leah Hardenbergh**

Leah Hardenbergh

LOCATION: WILLIAMSBURG, VIRGINIA

Stormwater Division

MEMORANDUM

DATE: March 12, 2010

TO: Michael J. Gillis, Virginia Correctional Enterprises Document Management Services

FROM: Tina Cantwell, Stormwater

PO: 270712

RE: Files Approved for Scanning

General File ID or BMP ID: JR043

PIN: 4510100008

Subdivision, Tract, Business or Owner Name (if known): Avalon Limited

Property Description: A Center for Women and Children

Site Address: 2968 John Tyler Highway

(For internal use only) **Box** 13 **Drawer:** 7

Agreements: (in file as of scan date) **Y** **Book or Doc#:** 970018250 **Page:**

980006534

Comments
Colonial National Park on Jamestown Island

JR-043

Contents for Stormwater Management Facilities As-built Files

Each file is to contain:

1. As-built plan
2. Completed construction certification
3. Construction Plan
4. Design Calculations
5. Watershed Map
6. Maintenance Agreement
7. Correspondence with owners
8. Inspection Records
9. Enforcement Actions

COPY

DECLARATION OF COVENANTS

INSPECTION/MAINTENANCE OF DRAINAGE SYSTEM

THIS DECLARATION, made this 7th day of April, 1998, between Avalon Limited Partnership, and all successors in interest, hereinafter referred to as the "COVENANTOR(S)," owner(s) of the following property: 2968 John Tyler Highway, Williamsburg VA, Deed Book *, Page No. *, or Instrument No. _____, and James City County, Virginia, hereinafter referred to as the "COUNTY."
* Document Number 970018250

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 # 980006534
Recorded on April 10, 1998
Pages 266 + 267

JR043_AVALON_STATE_ROUTE_5 - 004

IN WITNESS WHEREOF, the COVENANTOR(S) have executed this DECLARATION OF COVENANTS as of this 7th day of April, 19 98.

COVENANTOR(S)

John P. Lowenhaupt CPA

John P. Lowenhaupt, CPA

ATTEST:

_____

COVENANTOR(S)

_____

ATTEST:

_____

COMMONWEALTH OF VIRGINIA
CITY/COUNTY OF Williamsburg

I hereby certify that on this 7th day of April, 1998, before the subscribed, a Notary Public of the State of Virginia, and for the ~~County~~ City of Williamsburg, aforesaid personally appeared John P. Lowenhaupt, CPA and did acknowledge the aforegoing instrument to be their Act.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal this 7th day of April, 19 98.

Diane L. Marcotte
Notary Public

My Commission expires: 10/31/01

Approved as to form:

Leo P. Rogers
Deputy County Attorney

This Declaration of Covenants prepared by:

Michael A. Matthews, P.E.
(Print Name)

President, The Structures Group, Inc (Title)

212 N. Henry Street
(Address)

Williamsburg, VA 23185
(City) (State) (Zip)

drainage.pre
Revised 2/97

Section 4 - Professional Certifications:

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

Record Drawing and Construction Certifications for Stormwater Management / BMP Facilities

Record Drawing Certification

Firm Name: VANASSE HANGEN BRUSTLIN, INC
Mailing Address: 477 McLAWS CIR, SUITE 1
WILLIAMSBURG, VA 23185
Business Phone: (757) 220-0500
Fax: (757) 220-8544

Name: FRANK G MUNDY, II
Title: SURVEY MANAGER

Signature: Frank G Mundy II
Date: 2-1-01

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

COMMONWEALTH OF VIRGINIA
FRANK G. MUNDY, II
No. 002382
2-1-01
LAND SURVEYOR

_____ (Seal)

Virginia Registered Professional Engineer or Certified Land Surveyor

Construction Certification

Firm Name: The Structures Group, Inc.
Mailing Address: 212 N. Henry Street
Williamsburg, VA 23185
Business Phone: (757) 220-0465
Fax: (757) 220-1546

Name: Michael A. Matthews, P.E.
Title: Principal

Signature: Michael A. Matthews
Date: 2-7-01

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.

COMMONWEALTH OF VIRGINIA
MICHAEL A. MATTHEWS
017653
2-7-01
PROFESSIONAL ENGINEER

_____ (Seal)

Virginia Registered Professional Engineer

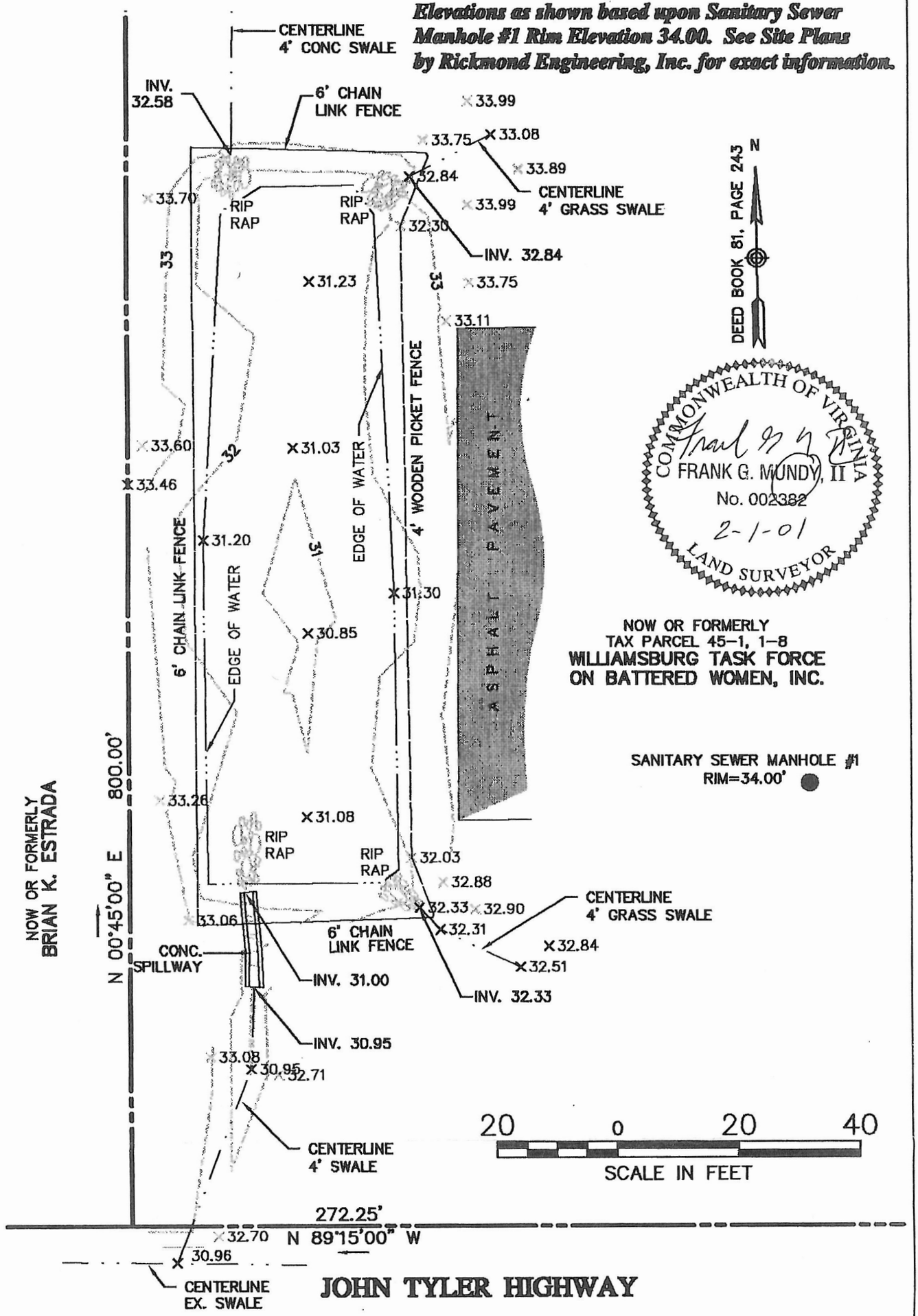
RECEIVED
O.K. James Construction

AVALON LIMITED PARTNERSHIP

BMP AS-BUILT 2/1/01

APPROVED MAR 0 5 2001

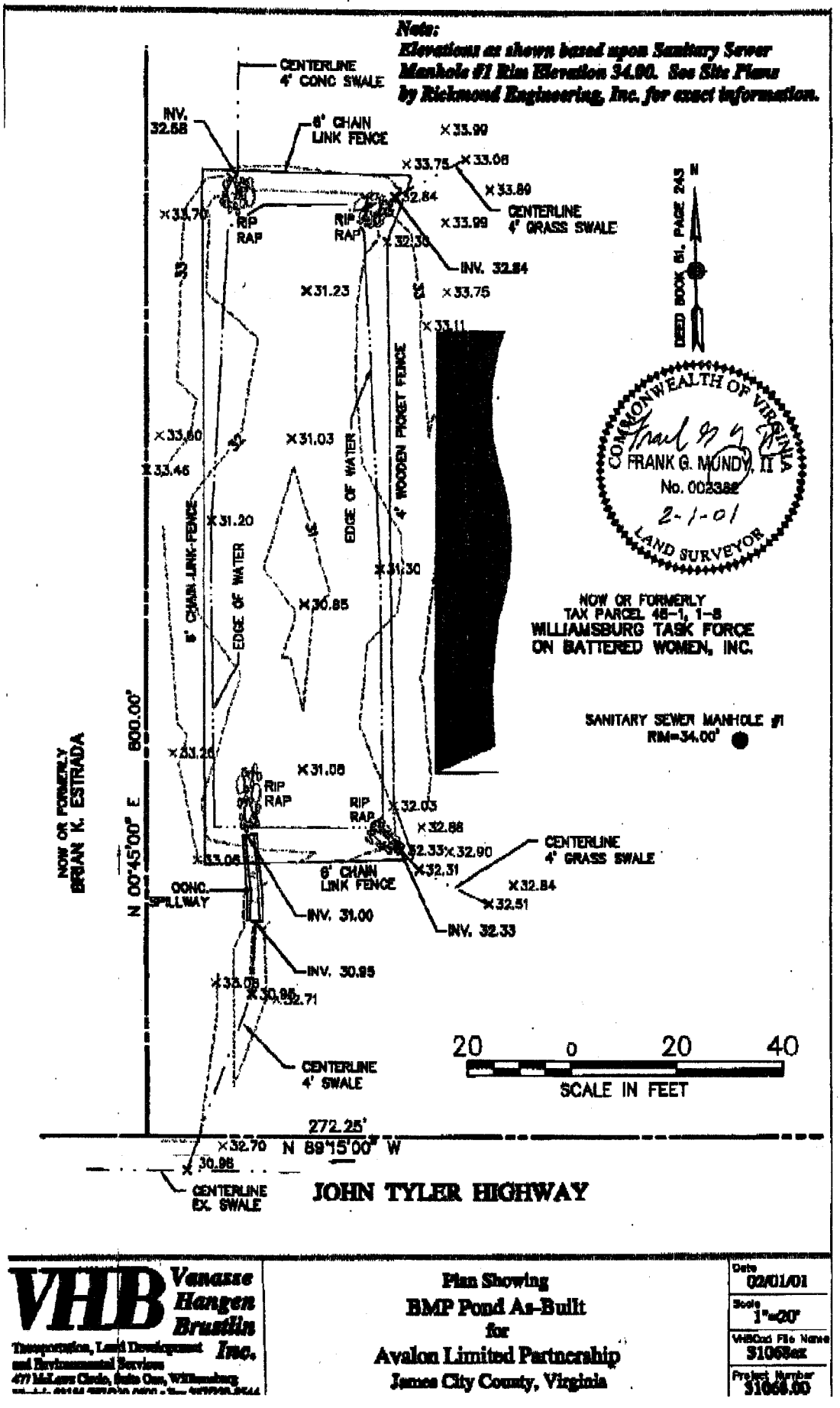
Note:
Elevations as shown based upon Sanitary Sewer Manhole #1 Rim Elevation 34.00. See Site Plans by Rickmond Engineering, Inc. for exact information.



VHB *Vanasse Hangen Brustlin Inc.*
Transportation, Land Development and Environmental Services
477 McLaws Circle, Suite One, Williamsburg
Virginia 23185 757/220-0500 • Fax 757/220-8544

Plan Showing
BMP Pond As-Built
for
Avalon Limited Partnership
James City County, Virginia

Date	02/01/01
Scale	1"=20'
VHBCad File Name	31068ex
Project Number	31068.00



VHB Vanasse Hangen Brustlin Inc.
Transportation, Land Development and Environmental Services
477 McLaws Circle, Suite One, Williamsburg

Plan Showing
BMP Pond As-Built
for
Avalon Limited Partnership
James City County, Virginia

Date 02/01/01
Scale 1"=20'
VHBCad File Name 31068ex
Project Number 31068.00

O.K. James Construction, Inc.
General Contractors
1643B Merrimac Trail
Williamsburg, VA 23185

(757) 253-0445 • (757) 875-0440
(757) 640-8481 Fax (757) 220-9370

LETTER OF TRANSMITTAL

DATE	JOB NO.
3-01-01	OK59801

ATTENTION: Scott Thomas

RE: Avalon

TO JCC Environmental
P.O. Box 8784
Williamsburg, VA 23187

WE ARE SENDING YOU ☑ Attached ☑ ~~Under separate cover~~ via U.S. Mail the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications

☐ Copy of letter ☐ Change order ☑ "as-builts"

COPIES	DATE	NO.	DESCRIPTION
1ea.	2-01-01		BMP Pond As-Built

MAR 2001
RECEIVED
ENVIRONMENTAL DIVISION

THESE ARE TRANSMITTED as checked below:

☐ For approval ☐ Approved as submitted ☐ Resubmit ____ copies for approval

☑ For your use ☐ Approved as noted ☐ Submit ____ copies for distribution

☑ As requested ☐ Returned for corrections ☐ Return ____ corrected prints

☐ Sign & return all copies ☐ Executed copy

☐ For review and comment ☐ _____

☐ Other _____

☐ FOR BIDS DUE _____ 20 ____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS _____

COPY TO File SIGNED: Pattie Williams, PMA

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

TO: Scott Thomas
ICC- Environmental
FAX #: 259-4032

FROM: O. K. JAMES CONSTRUCTION, INC.
1643B Merrimac Trail
WILLIAMSBURG, VIRGINIA 23185
FAX #: 220-9370 PHONE #: 253-0445

DATE: 3/1/01
PAGES INCLUDING THIS PAGE: 2

TOPS 14850

The Structures Group, Inc.

Consulting Engineers

LETTER OF TRANSMITTAL

To: O.K. James Construction, Inc.
1643 B Merrimac Trail
Williamsburg, VA 23185

Date: February 28, 2001
TSG No.: 94017
Re: Avalon

WE ARE SENDING YOU ☑ ATTACHED ☐ UNDER SEPARATE COVER VIA:

☑ Hand Delivered ☐ U.S. Mail ☐ Federal Express ☐ Picked Up

THE FOLLOWING ITEMS:

☐ Report ☐ Letter & Contract ☑ As-Built ☐ Samples

☐ Specifications ☐ Copy of Letter ☐ Change Order ☐ _____

COPIES	DATE	DESCRIPTION
1	2/1/01	Vanasse Hangen Brustlin, Inc As Built Drawing

THESE ARE TRANSMITTED AS CHECKED BELOW:

☐ For Approval ☐ Approved as Submitted ☐ Resubmit ___ Copies for Approval

☑ For Your Use ☐ Approved as Noted ☐ Submit ___ Copies for Distribution

☑ As Requested ☐ Returned for Corrections ☐ Return ___ Corrected Prints

☐ For Comment ☐ For Bids Due ____ 200_ ☐ Returned after loan to us

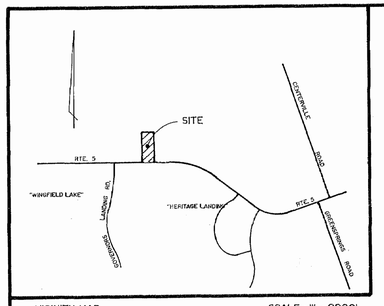
REMARKS:

SIGNED: Michelle Hoar for
Michael A. Matthews, P.E.
Principal

FEB 2001
RECEIVED
O.K. James Construction

212 North Henry Street
Williamsburg, VA 23185
(757) 220-0465 ■ Fax (757)220-1546

18449 Old Statesville Road
Cornelius, NC 28031
(704) 892-1488 ■ Fax (704) 892-1484

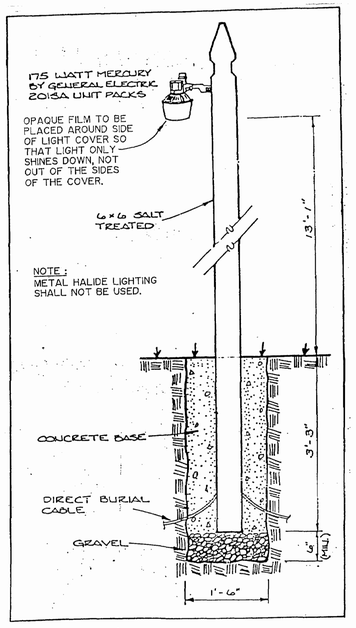


VICINITY MAP SCALE : 1" = 2000'

ENVIRONMENTAL INVENTORY

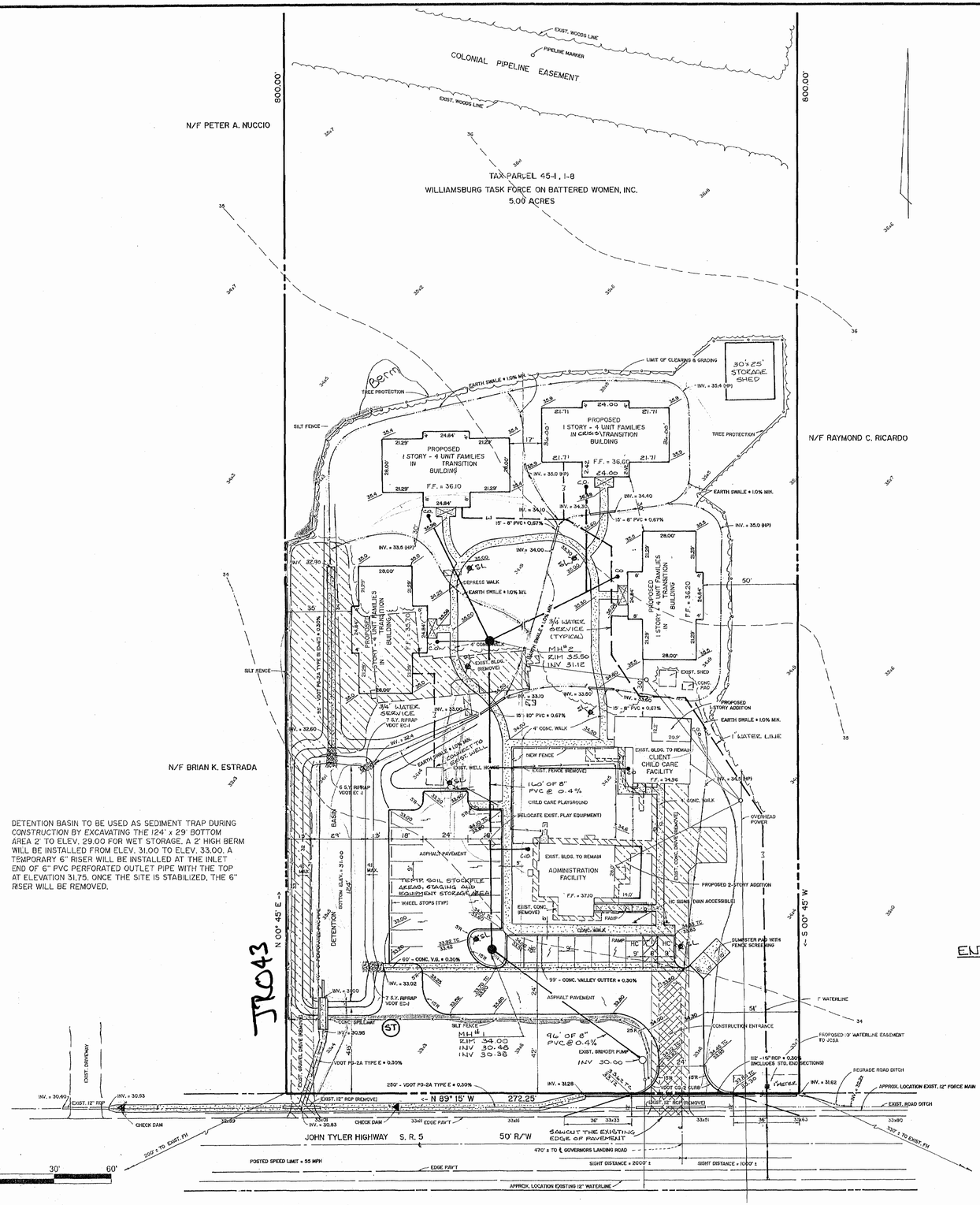
PER TOPOGRAPHIC SURVEY AND JAMES CITY COUNTY TAX MAP 45-1. THE FOLLOWING ITEMS ARE NOT PRESENT ON PARCEL 1-8:

A. TIDAL WETLANDS;
B. TIDAL SHORES;
C. NONTIDAL WETLANDS IN RPA;
D. A 100-FOOT BUFFER AREA LOCATED ADJACENT TO AND LANDWARD OF THE COMPONENTS LISTED IN SUBSECTIONS A. THROUGH C. ABOVE, AND ALONG BOTH SIDES OF ANY TRIBUTARY STREAM;
E. NONTIDAL WETLANDS IN RMA;
F. HYDRIC SOILS;
G. SLOPES 25% OR GREATER



LIGHT POLE DETAIL

1. FDC REV. PER COUNTY COMMENTS LTR. DTD. 11/6/97 KMJ 11/19/97



DETENTION BASIN TO BE USED AS SEDIMENT TRAP DURING CONSTRUCTION BY EXCAVATING THE 124' x 29' BOTTOM AREA 2' TO ELEV. 29.00 FOR WET STORAGE. A 2' HIGH BERM WILL BE INSTALLED FROM ELEV. 31.00 TO ELEV. 33.00. A TEMPORARY 6" RISER WILL BE INSTALLED AT THE INLET END OF 6" PVC PERFORATED OUTLET PIPE WITH THE TOP AT ELEVATION 31.75. ONCE THE SITE IS STABILIZED, THE 6" RISER WILL BE REMOVED.

30' 0 30' 60'
SCALE: 1"=30'

COUNTY OF JAMES CITY
FINAL SITE PLAN

Received .....

APPROVALS	DATE
Fire Dept.	3/12/97 GP
Health Dept.	3/24/97 GP
Highway Dept.	11/14/97 GP
Plan Comm.	11/18/97
Pub Wks. Dept.	11/19/97 GP
Zoning Adm.	11/18/97
JCSA	11/19/97 GP
Other	3/7/97 GP
Other	4/2/97 GP

NOV 1997
RECEIVED
PLANNING DEPARTMENT

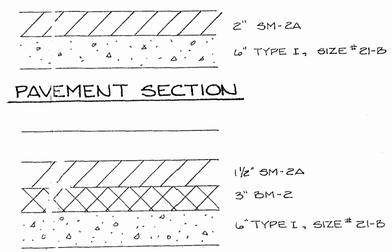
LAND USE SUMMARY

1. ZONING OF SITE: A-1
2. TAX MAP 45-1 1-8
3. AREA TABULATIONS
   TOTAL AREA OF SITE: 217,800 SF = (100.0%)
   NEW BUILDINGS : 8,900 SF
   NEW BUILDING ADDITIONS : 647 SF
   EXISTING BUILDINGS TO REMAIN : 2,425 SF
   TOTAL BUILDINGS : 11,972 SF = (5.5%)
   PARKING, DRIVES, ETC: 14,060 SF = (6.5%)
   NET OPEN SPACE : 191,768 SF = (88.0%)
4. BUILDING CONSTRUCTION: FRAME & MASONRY (BOCA USE GROUP STITUTIONAL)
5. MAXIMUM BUILDING HEIGHT: 28 FEET
6. THE PROJECTED OVERALL IMPERVIOUS AREA OF SITE 12.0%
7. PARKING PROVIDED:
   (23) - 9'x18' STANDARD SPACES
   (2) - HANDICAP SPACES (1 VAN ACCESSIBLE)

SP-22-97

GENERAL NOTES

1. ALL SITE CONSTRUCTION SHALL BE IN ACCORDANCE WITH JAMES CITY COUNTY STANDARDS AND SPECIFICATIONS, AND VDOT STANDARDS AND SPECIFICATIONS.
2. CONTRACTOR TO VERIFY THE EXISTENCE AND LOCATION OF ALL UTILITIES WITHIN PROXIMITY OF ALL PROJECT CONSTRUCTION.
3. ANY UTILITY REQUIRED TO BE RELOCATED DUE TO ANY CONSTRUCTION COINCIDENT WITH THIS PROJECT SHALL BE RELOCATED AT THE OWNER/DEVELOPER'S EXPENSE.
4. REGULAR PARKING SPACES WITHIN PAVED PARKING SHALL BE MARKED WITH 4" WHITE PAINTED LINES. HANDICAP SPACES SHALL BE MARKED WITH 4" BLUE PAINTED LINES.
5. EACH HANDICAP SPACE SHALL HAVE AN ABOVE GROUND HANDICAP PARKING SIGN. SIGNS SHALL BE POLE MOUNTED 4' MIN. HEIGHT TO 7' MAX. HEIGHT. SIGNS SHALL CONFORM TO SPECIFICATION R7-8 (12" x 18") PER "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
6. DUMPSTER PAD SHALL BE 7" THICK CONCRETE. DUMPSTER TO BE SCREENED ON THREE SIDES BY EITHER MASONRY OR WOOD FENCE (6' HEIGHT).
7. THE WATERLINES FROM THE 12" MAIN TO THE METERS SHALL BE INSTALLED BY JCSA.
8. ALL NEW UTILITY SERVICE LINES SHALL BE PLACED UNDERGROUND. ALL EXISTING AND PROPOSED BUILDINGS TO BE SERVED BY THE EXISTING ONSITE SANITARY GRINDER PUMP SYSTEM. THE EXISTING ONSITE WELL FACILITY SHALL SERVE THE EXISTING BUILDINGS AND ONE PROPOSED BUILDING. THE REMAINING THREE PROPOSED BUILDINGS SHALL BE SERVED BY THE THREE PROPOSED SERVICE CONNECTIONS TO J.C.S.A. SHOWN ON THE SITE PLAN.
9. UPON COMPLETION, THE CONSTRUCTION OF THE DAM WILL BE CERTIFIED BY A PROFESSIONAL ENGINEER WHO HAS INSPECTED THE STRUCTURE DURING CONSTRUCTION.
10. CONTRACTOR TO VERIFY INVERT INTO EXISTING GRINDER PUMP AND REPORT ANY DISCREPANCIES TO ENGINEER BEFORE COMMENCING WORK.
11. BOUNDARY AND PHYSICAL SURVEY FROM PLAT ENTITLED "AVALON: A CENTER FOR WOMEN AND CHILDREN", PREPARED BY THE DEYOUNG-JOHNSON GROUP, INC. DATED 10/24/96.
12. SEE ARCHITECTURAL PLANS FOR BUILDING DIMENSIONS.



REI No. 97188

C-1
1 OF 5

Site Plan

AVALON

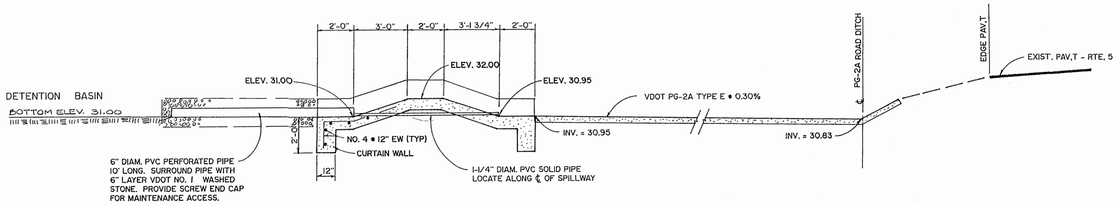
JAMES CITY COUNTY, VIRGINIA

COMMONWEALTH OF VIRGINIA
K.M. JENKINS II
No. 022872
11/19/97
PROFESSIONAL ENGINEER

Rickmond Engineering, Inc.

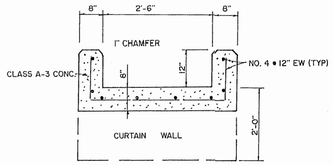
1643-C Merrimac Trail
Williamsburg VA 23185
(757)229-1776
Fax No. (757) 229-4683

Civil Engineering
Environmental Engineering
Land Surveying
internet: rickmond@tri.net



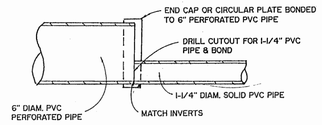
SPILLWAY LONGITUDINAL SECTION / PROFILE

SCALE : 1/4" = 1'-0"



SPILLWAY CROSS SECTION

SCALE : 1/2" = 1'-0"

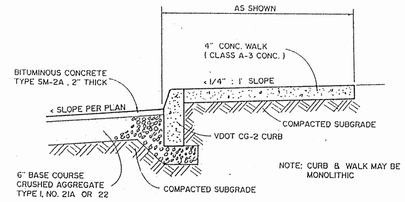


BASIN OUTLET PIPE CONNECTION DETAIL

SCALE : 1-1/2" = 1'-0"

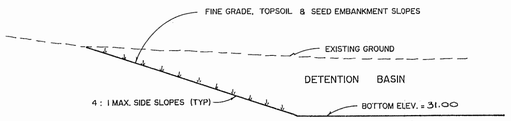
TYPICAL EARTH SWALE

N.T.S.



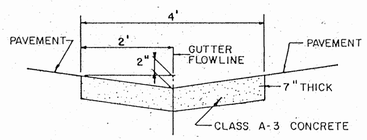
SIDEWALK / PAVEMENT SECTION

N. T. S.



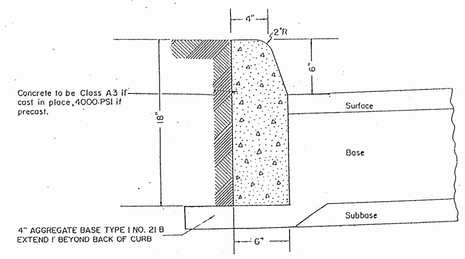
DETENTION BASIN SECTION DETAIL

N.T.S.



CONCRETE VALLEY GUTTER

N.T.S.



VDOT CG-2 CURB

N. T. S.

VDOT NOTES

1. ALL MATERIALS AND CONSTRUCTION WITHIN THE PUBLIC RIGHT OF WAY SHALL BE IN ACCORDANCE WITH CURRENT VIRGINIA DEPARTMENT OF TRANSPORTATION'S SPECIFICATIONS AND STANDARDS.
2. PERMITS MUST BE OBTAINED FROM THE VIRGINIA DEPARTMENT OF TRANSPORTATION BEFORE CONSTRUCTION IS STARTED WITHIN THE EXISTING RIGHT OF WAY.
3. PRIOR TO ANY CONSTRUCTION, THE CONTRACTOR SHALL CONSULT THE ENGINEER AND VERIFY THE APPROVAL OF THE PLANS BY THE VARIOUS AGENCIES.
4. 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.
5. 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.
6. 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.
7. TEMPORARY DRAINAGE DURING CONSTRUCTION IS TO BE PROVIDED BY THE CONTRACTOR TO RELIEVE AREAS THAT MAY CAUSE DAMAGE TO ROADWAYS OR ADJACENT PROPERTY.
8. ALL CONCRETE SHALL BE CLASS A3-AE(AIR ENTRAINED 3,000 PSI).
9. CURB AND GUTTER SHALL HAVE 4" OF AGGREGATE BASE 21B UNDER THE CURB AND GUTTER AND AGGREGATE SHALL EXTEND 1' BEYOND THE BACK OF THE CURB.
10. ALL ENTRANCES ARE TO BE BUILT IN ACCORDANCE WITH VDOT STANDARDS.
11. DESIGN OR SPECIFIED MATERIALS CHANGES FROM THE APPROVED PLANS NEED TO BE RE-SUBMITTED TO VDOT. A LETTER NEEDS TO ACCOMPANY THE REVISED PLANS AND/OR DRAINAGE CALCULATIONS WHICH SHALL BE SUBMITTED TO VDOT FOR REVIEW AND APPROVAL BY THE RESIDENT ENGINEER.
12. VDOT IS TO RECEIVE WRITTEN NOTIFICATION 48 HOURS PRIOR TO THE START OF ANY WORK.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND PROTECTING ALL UTILITIES, WHETHER OR NOT SHOWN ON THE PLANS, AND SHALL REPAIR AT HIS OWN EXPENSE ALL UTILITIES DAMAGED BY CONSTRUCTION. MISS UTILITY MUST BE CONTACTED AT 1-800-552-7001 72 HOURS PRIOR TO THE BEGINNING OF CONSTRUCTION.
14. ALL STORM SEWER PIPES, DROP INLETS, AND CURB INLETS SHALL BE CLEANED OF DEBRIS AND ERODED MATERIAL DURING THE LAST STAGES OF CONSTRUCTION.
15. 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.
16. ANY ERRORS, CONFLICTS, OR DISCREPANCIES IN THIS PLAN SHALL BE REPORTED TO THE ENGINEER FOR RESOLUTION BEFORE PROCEEDING WITH THE WORK.
17. COMPACTION REPORTS, WITH PROCTOR, ARE REQUIRED FOR SUBGRADE, SUBBASE, BASE, SURFACE COURSES, CULVERTS, DRAINAGE STRUCTURES, AND UTILITIES WITHIN THE RIGHT OF WAY BY A CERTIFIED MATERIALS TEST LAB IN ACCORDANCE WITH VDOT SPECIFICATIONS AND STANDARDS.
18. 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 COMPACTED.
19. VDOT APPROVAL OF THESE PLANS WILL EXPIRE THREE YEARS FROM THE DATE OF APPROVAL.
20. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
21. WATERLINE SHALL BE BORED UNDER ROUTE 5 PER SECTION 2.3B OF SUBDIVISION STREET REQUIREMENTS.
22. THE PREPARER OF THESE PLANS CERTIFY THAT TO THE BEST OF THEIR KNOWLEDGE AND BELIEF THESE PLANS CONFORM TO ALL VDOT STANDARDS AND COUNTY ORDINANCES, COMPREHENSIVE PLANS AND REGULATIONS.

DETENTION BASIN MAINTENANCE PLAN

THE PROPERTY OWNER SHALL BE RESPONSIBLE FOR DIRECTING AND OVERSEEING THE SCHEDULED MAINTENANCE OF THE ON-SITE DETENTION BASIN FACILITY. THE MAINTENANCE REQUIREMENTS ARE OUTLINED AS FOLLOWS:

ROUTINE MAINTENANCE:

A. MOWING - THE UPPER STAGE SIDE SLOPES SHALL BE MOWED TO DISCOURAGE WOODY GROWTH AND TO CONTROL WEEDS. THE FREQUENCY OF MOWING SHALL DEPEND ON VISUAL INSPECTIONS PERFORMED AT LEAST FOUR TIMES A YEAR.

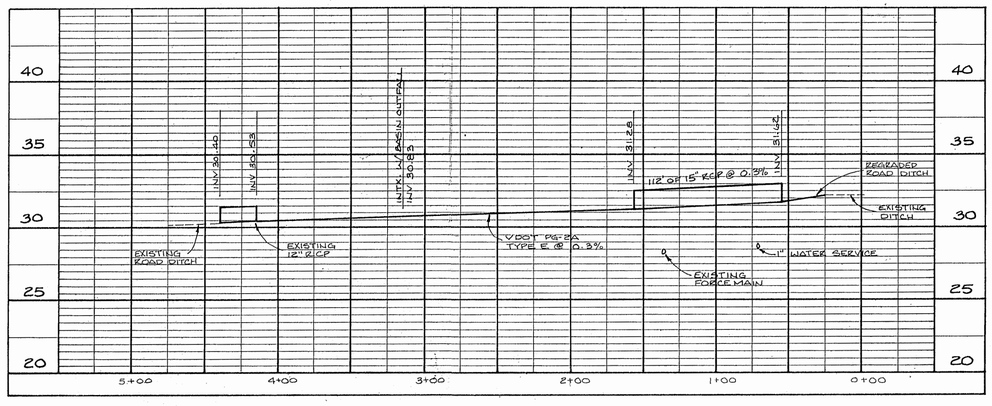
B. INSPECTIONS - THE ENTIRE DETENTION BASIN AREA AND OUTLET CONTROL STRUCTURE SHALL BE INSPECTED ON AN ANNUAL BASIS. INSPECTION PRIORITIES SHALL INCLUDE CHECKING FOR SIDE SLOPE OR EMBANKMENT EROSION; TREE GROWTH; CONDITION OF THE OUTLET CONTROL STRUCTURE, AND THE ACCUMULATION OF SEDIMENT OR CLOGGING OF THE OUTLET CONTROL STRUCTURE.

C. DEBRIS AND LITTER REMOVAL - ANY ACCUMULATION OF DEBRIS AND LITTER NEAR THE OUTLET CONTROL STRUCTURE, PARTICULARLY FLOATABLE DEBRIS, SHALL BE REMOVED DURING SCHEDULED MOWING OPERATIONS OR AS NEEDED.

NON-ROUTINE MAINTENANCE:

A. STRUCTURAL REPAIRS AND REPLACEMENT - REPAIRS OR REPLACEMENT OF THE OUTLET CONTROL STRUCTURE SHALL BE PERFORMED ON AN AS-NEEDED BASIS TO INSURE PROPER OPERATION.

B. SEDIMENT REMOVAL - AFTER EACH SIGNIFICANT RAINFALL, THE BASIN AREA SHALL BE INSPECTED FOR ACCUMULATION OF SEDIMENT OR DEBRIS WHICH MAY HINDER THE PERFORMANCE OF THE OUTLET CONTROL STRUCTURE.



ROAD DITCH

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

1 CAN REV PER COUNTY COMMENTS LTR DTD 7/18/97 KMJ 10.7.97

REI No. 97188

C-2

2 OF 5

VDOT Details & Notes

AVALON

JAMES CITY COUNTY, VIRGINIA

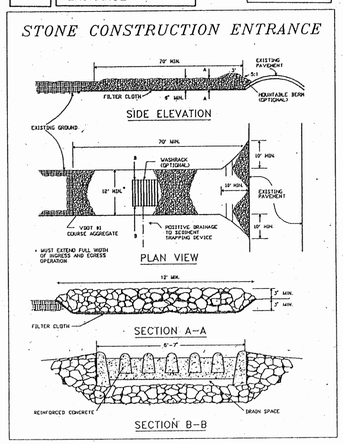
COMMONWEALTH OF VIRGINIA
K.M. JENKINS II
No. 022872
10/9/97
PROFESSIONAL ENGINEER

Rickmond Engineering, Inc.

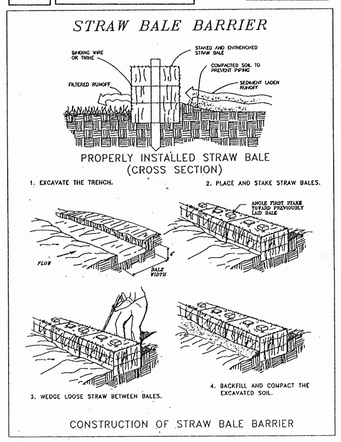
1643-C Merrimac Trail
Williamsburg VA 23185
(757)229-1776
Fax No. (757) 229-4683

Civil Engineering
Environmental Engineering
Land Surveying
internet: rickmond@ri.net

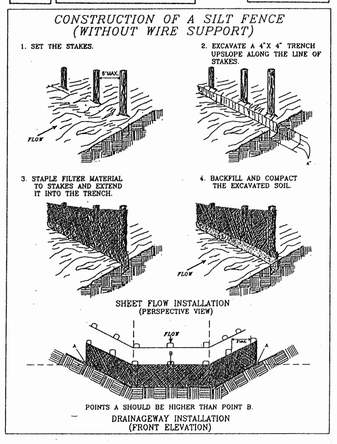
3.02 TEMPORARY STONE CONSTRUCTION ENTRANCE (CE)



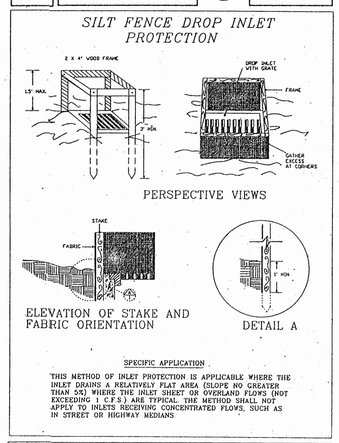
3.04 STRAW BALE BARRIER (STB)

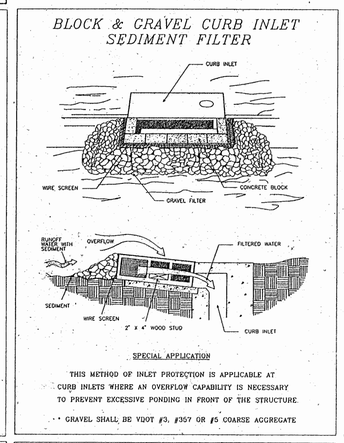


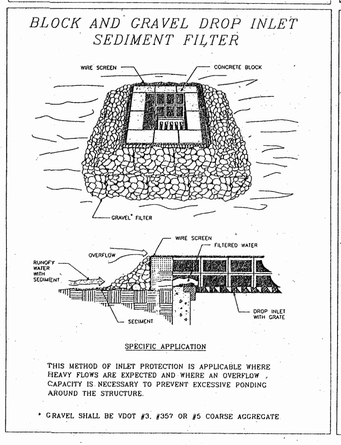
3.05 SILT FENCE (SF)

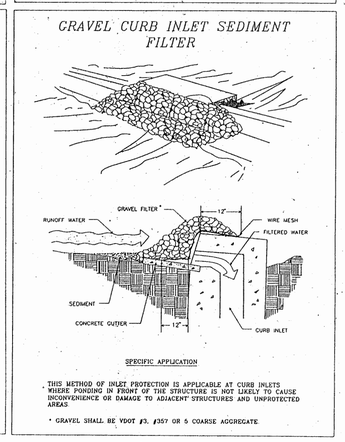


3.07 STORM DRAIN INLET PROTECTION (IP)

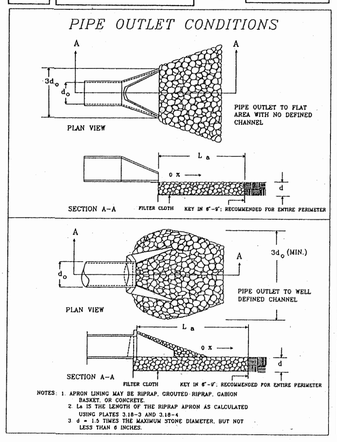


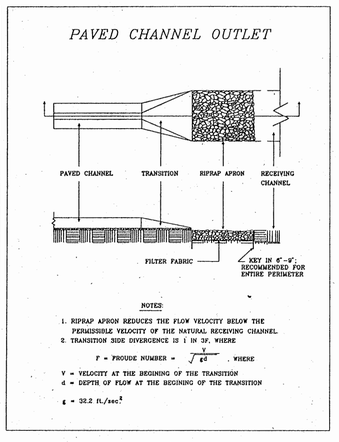




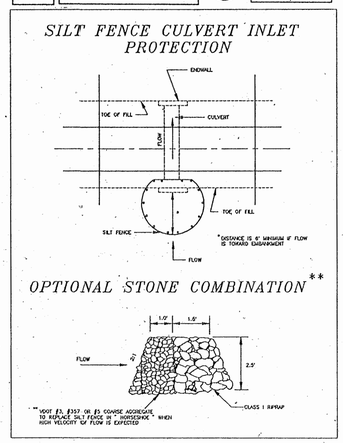


3.18 OUTLET PROTECTION (OP)

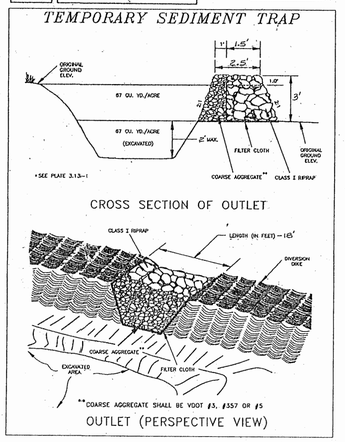




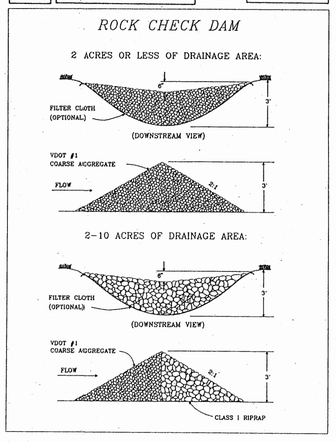
3.08 CULVERT INLET PROTECTION (CIP)



3.13 TEMPORARY SEDIMENT TRAP (ST)



3.20 ROCK CHECK DAMS (CD)



EROSION AND SEDIMENT CONTROL NOTES

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 a 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 ENVIRONMENTAL DIV. 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 after 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' 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 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.

Revised February 3, 1995

1 CAN REV PER COUNTY COMMENTS LTR. DTD 7/18/97 KMJ 10.7.97

REI No. 97188

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3 OF 5

Erosion & Sediment Control Details

AVALON

JAMES CITY COUNTY, VIRGINIA

COMMONWEALTH OF VIRGINIA
K.M. JENKINS II
No. 022872
10/9/97
PROFESSIONAL ENGINEER

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(757)229-1776
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Civil Engineering
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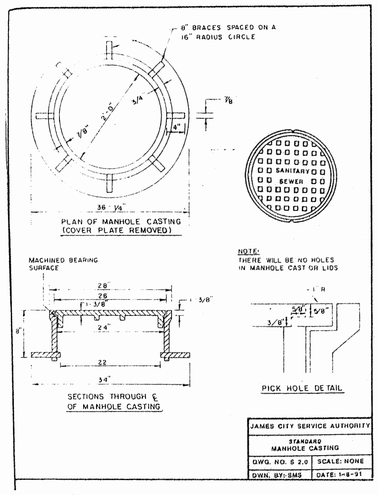
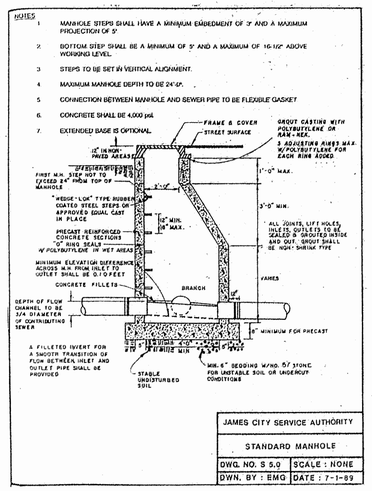
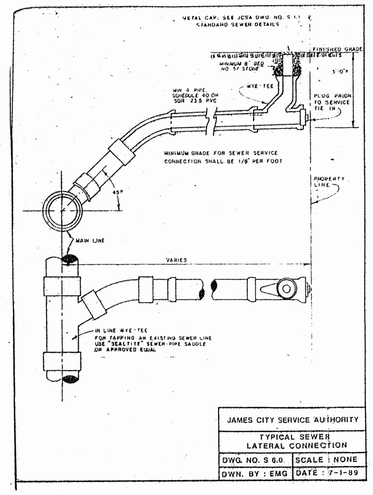
Internet: rickmond@vi.net



JAMES CITY SERVICE AUTHORITY	
STANDARD MANHOLE CASTING	
DWG. NO. S 2.0	SCALE: NONE
DWN. BY: BMS	DATE: 1-8-91



JAMES CITY SERVICE AUTHORITY	
STANDARD MANHOLE	
DWG. NO. S 5.0	SCALE : NONE
DWN. BY : EMG	DATE : 7-1-89



JAMES CITY SERVICE AUTHORITY	
TYPICAL SEWER LATERAL CONNECTION	
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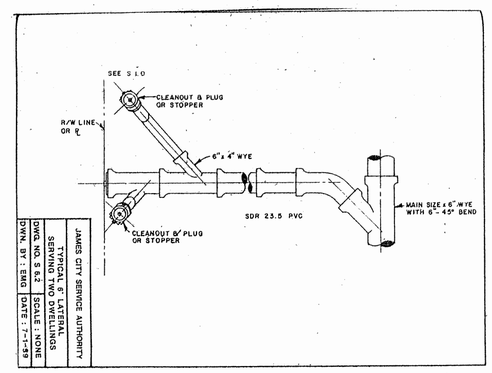
DWN. BY : EMG	DATE : 7-1-89



JAMES CITY SERVICE AUTHORITY	
TYPICAL 6" LATERAL SERVING TWO DWELLINGS	
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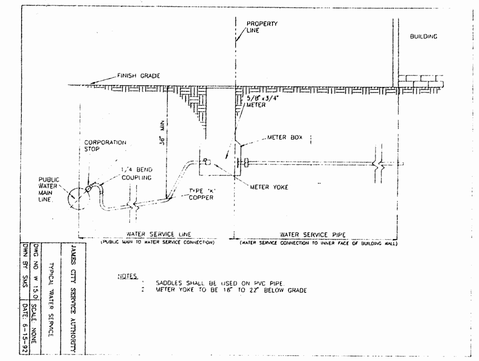
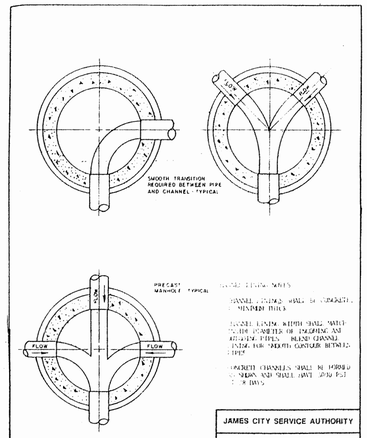
DWN. BY : EMG	DATE : 7-1-89

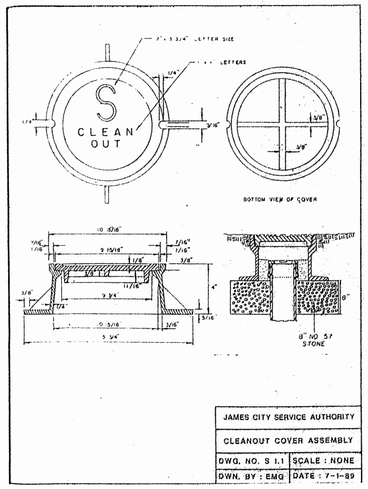


JAMES CITY SERVICE AUTHORITY	
TYPICAL WATER SERVICE	
DWG. NO. W 1.0	SCALE : NONE
DATE : 9-15-92	

JAMES CITY COUNTY SEWER & WATER UTILITY	
DWN. BY: BMS	DATE: 1-8-91



JAMES CITY SERVICE AUTHORITY	
PLANS FOR MANHOLES	
DWG. NO. S 3.0	SCALE : NONE
DWN. BY : EMG	DATE : 7-1-89



JAMES CITY SERVICE AUTHORITY	
CLEANOUT COVER ASSEMBLY	
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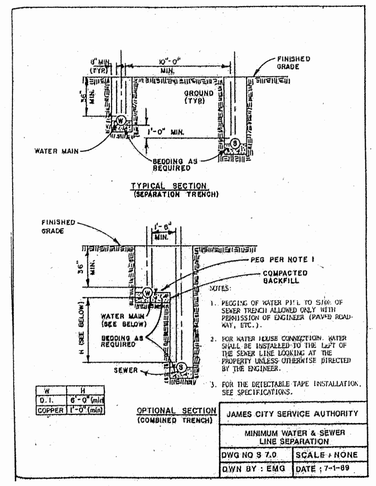
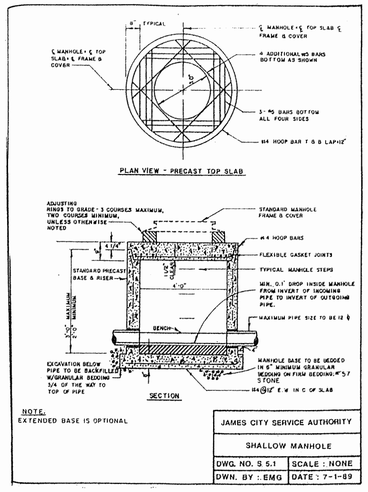


W	H
D.I.	6'-0" (min)
COPPER	1'-0" (min)

JAMES CITY SERVICE AUTHORITY	
MINIMUM WATER & SEWER LINE SEPARATION	
DWG NO S 7.0	SCALE : NONE
DWN BY : EMG	DATE : 7-1-89



JAMES CITY SERVICE AUTHORITY	
SHALLOW MANHOLE	
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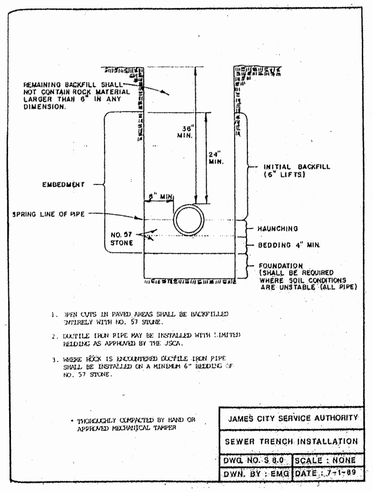

JAMES CITY SERVICE AUTHORITY	
SEWER TRENCH INSTALLATION	
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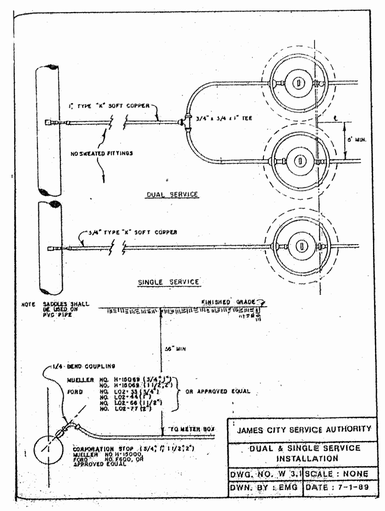
DWN. BY : EMG	DATE : 7-1-89



JAMES CITY SERVICE AUTHORITY	
DUAL & SINGLE SERVICE INSTALLATION	
DWG. NO. W 3.1	SCALE : NONE
DWN. BY : EMG	DATE : 7-1-89

Rickmond Engineering, Inc.
1637-C Merrimac Trail
Williamsburg, VA 23185
804-229-7176 or 898-4149
Civil Engineering
Environmental Engineering
Land Surveying

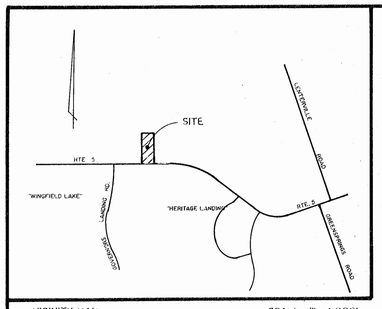
Designed By	Drawn By	Scale	Date	Job No.	File Name
KMJ	KMJ	1"=50'	10/7/97	97188	97188DS

COMMONWEALTH OF VIRGINIA
KEVIN M. JENKINS
No. 022612
10/9/97
PROFESSIONAL ENGINEER

No.	By	Revision	Date

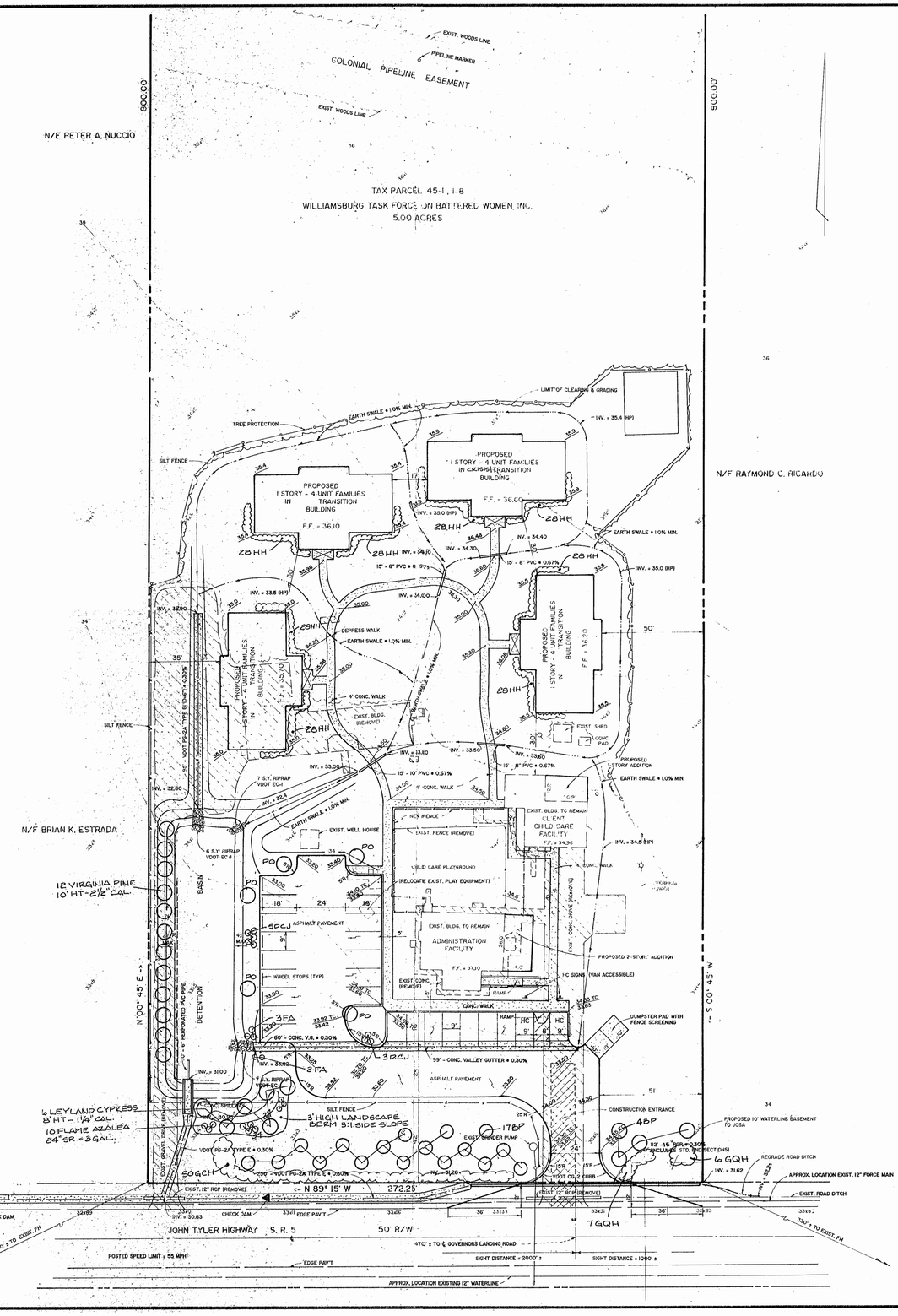
AVALON
UTILITY DETAILS
JAMES CITY COUNTY VIRGINIA

Job Number	Sheet No.
97188	C4



VICINITY MAP

SCALE : 1" = 2000'



BUILDING PLANT LIST

TYPICAL BUILDING LANDSCAPE TOTAL SQUARE FOOTAGE = 2200 S.F.

KEY	QTY	BOTANICAL NAME	COMMON NAME	SIZE
HH	224	ILEX CRENATA HELLERI	HELLERI HOLLY	18" SPREAD - 3GAL.

TREES REQUIRED PER BUILDING 0
TREES PROVIDED PER BUILDING 0
SHRUBS REQUIRED PER BUILDING 55
SHRUBS PROVIDED PER BUILDING 56

PARKING LOT PLANT LIST

KEY	QTY	BOTANICAL NAME	COMMON NAME	SIZE
PO	5	QUERCUS PALUSTRIS	PIN OAK	10' HT. - 2½" CAL.
FA	5	AZALEA CALENDULACEAE	FLAME AZALEA	24" SP. - 3GAL.
DCJ	8	JUNIPERUS PROCUMBENS NANA	DWARF COMMON JUNIPER	18" SP. - 3GAL.

TREES REQUIRED 5
TREES PROVIDED 5
SHRUBS REQUIRED 10
SHRUBS PROVIDED 13

RIGHT-OF-WAY PLANT LIST

LANDSCAPE SQUARE FOOTAGE = 8200 S.F.

KEY	QTY	BOTANICAL NAME	COMMON NAME	SIZE
BP	21	PINUS WALLICHIANA	BHUTAN PINE	8' HT. - 2½" CAL.
GQH	63	AQUIFOLIUM "GOLDEN QUEEN	GOLDEN QUEEN	18" SP. - 3 GAL.

TREES REQUIRED 21
TREES PROVIDED 21
S REQUIRED 63
S PROVIDED 63

REI No. 97188

C-5
5 OF 5

LANDSCAPE PLAN

AVALON

JAMES CITY COUNTY, VIRGINIA

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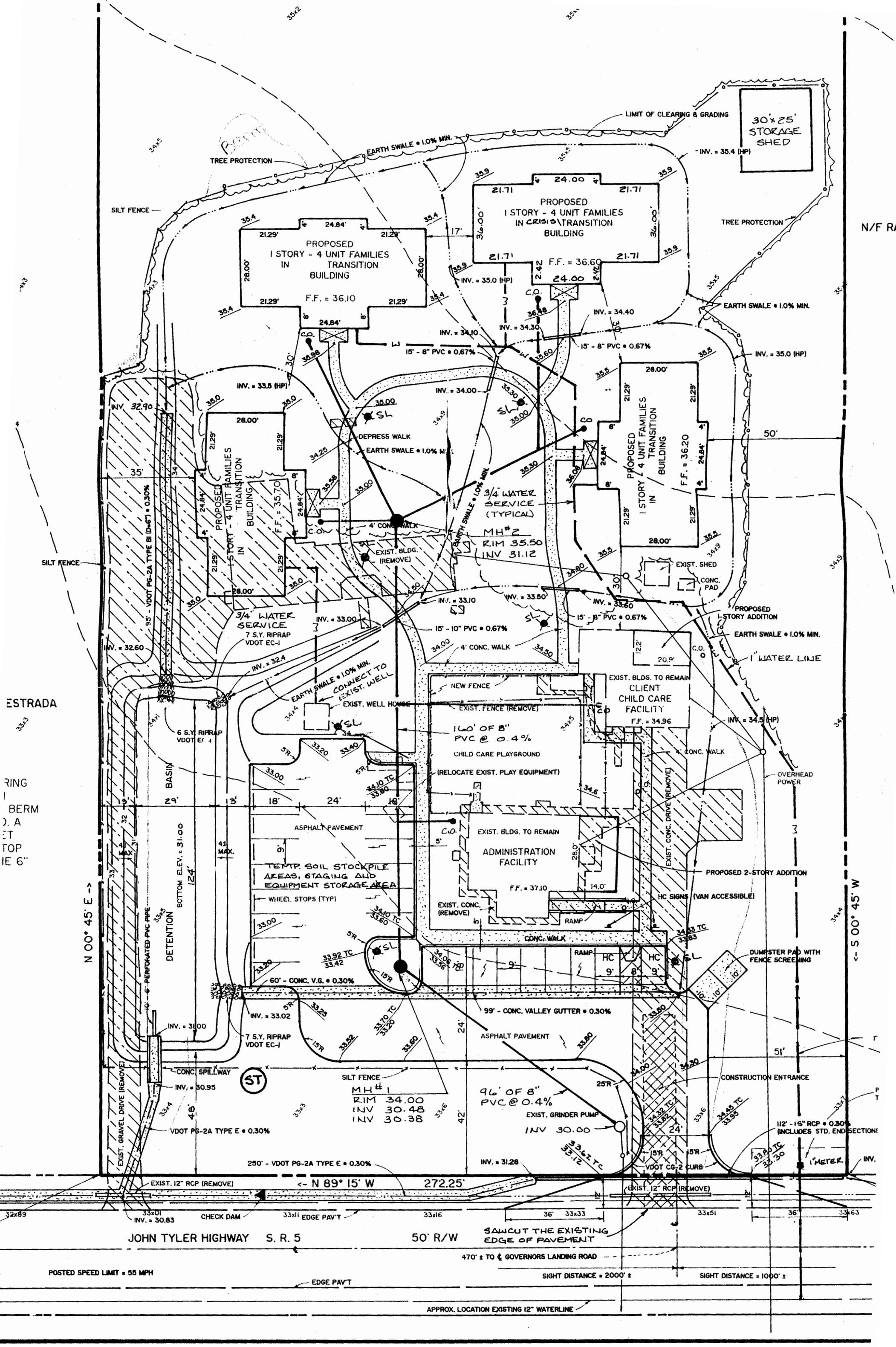

LIMIT OF CLEARING & GRADING
30'x25' STORAGE SHED
EARTH SWALE • 1.0% MIN.
TREE PROTECTION
SILT FENCE
PROPOSED 1 STORY - 4 UNIT FAMILIES IN TRANSITION BUILDING
F.F. = 36.10
PROPOSED 1 STORY - 4 UNIT FAMILIES IN CRISIS\TRANSITION BUILDING
F.F. = 36.60
PROPOSED 1 STORY - 4 UNIT FAMILIES IN TRANSITION BUILDING
F.F. = 35.70
PROPOSED 1 STORY - 4 UNIT FAMILIES IN TRANSITION BUILDING
F.F. = 36.20
15' - 8" PVC • 0.67%
DEPRESS WALK
4' CONC. WALK
3/4" WATER SERVICE (TYPICAL)
MH#2 RIM 35.50 INV 31.12
EXIST. BLDG. (REMOVE)
EXIST. SHED
CONC. PAD
PROPOSED 1-STORY ADDITION
1" WATER LINE
95' - VDOT PG-2A TYPE B1 (D=6") • 0.30%
3/4" WATER SERVICE
7 S.Y. RIPRAP VDOT EC-I
15' - 10" PVC • 0.67%
EARTH SWALE • 1.0% MIN. CONNECT TO EXIST. WELL
EXIST. WELL HOUSE
NEW FENCE
EXIST. FENCE (REMOVE)
EXIST. BLDG. TO REMAIN
CLIENT CHILD CARE FACILITY
F.F. = 34.96
160' OF 8" PVC @ 0.4%
CHILD CARE PLAYGROUND
(RELOCATE EXIST. PLAY EQUIPMENT)
6 S.Y. RIPRAP VDOT EC-I
BASIN
DETENTION
BOTTOM ELEV. = 31.00
ASPHALT PAVEMENT
TEMP. SOIL STOCKPILE AREAS, STAGING AND EQUIPMENT STORAGE AREA
WHEEL STOPS (TYP)
EXIST. BLDG. TO REMAIN
ADMINISTRATION FACILITY
F.F. = 37.10
EXIST. CONC. (REMOVE)
RAMP
CONC. WALK
HC SIGNS (VAN ACCESSIBLE)
EXIST. CONC. DRIVE (REMOVE)
PROPOSED 2-STORY ADDITION
OVERHEAD POWER
DUMPSTER PAD WITH FENCE SCREENING
60' - CONC. V.G. • 0.30%
99' - CONC. VALLEY GUTTER • 0.30%
ASPHALT PAVEMENT
CONC. SPILLWAY
EXIST. GRAVEL DRIVE (REMOVE)
VDOT PG-2A TYPE E • 0.30%
MH#1 RIM 34.00 INV 30.48 INV 30.38
96' OF 8" PVC @ 0.4%
EXIST. GRINDER PUMP INV 30.00
CONSTRUCTION ENTRANCE
112' - 15" RCP • 0.30% (INCLUDES STD. END SECTIONS)
VDOT CG-2 CURB
250' - VDOT PG-2A TYPE E • 0.30%
EXIST. 12" RCP (REMOVE)
<- N 89° 15' W 272.25'
CHECK DAM
EDGE PAV'T
JOHN TYLER HIGHWAY S. R. 5 50' R/W
SAWCUT THE EXISTING EDGE OF PAVEMENT
470' ± TO ℄ GOVERNORS LANDING ROAD
POSTED SPEED LIMIT = 55 MPH
SIGHT DISTANCE = 2000' ±
SIGHT DISTANCE = 1000' ±
APPROX. LOCATION EXISTING 12" WATERLINE
N 00° 45' E ->
<- S 00° 45' W
N/F RA
ESTRADA

AVALON
A Center for Women & Children

JAMES CITY COUNTY, VIRGINIA

STORMWATER RUNOFF ANALYSIS & DETENTION BASIN DESIGN

AUGUST 1996

JR 043; SP-22-97

22-141 50 SHEETS
22-142 100 SHEETS
22-144 200 SHEETS
AMPAD

DETENTION BASIN DESIGN CRITERIA

USE EXTENDED DRY DETENTION DESIGN & (SHALLOW MARSH)
USE SCS MODIFIED RATIONAL METHOD
- CRITICAL STORM DURATION
- ALLOWABLE RELEASE RATE
- MIN. STORAGE VOLUME REQUIRED

POST DEVELOPMENT 2YR & 10YR RELEASE RATES NOT TO EXCEED PRE-DEVELOPMENT
USE STORAGE INDICATION METHOD FOR BASIN ROUTING

PRE-DEVELOPMENT CONDITIONS

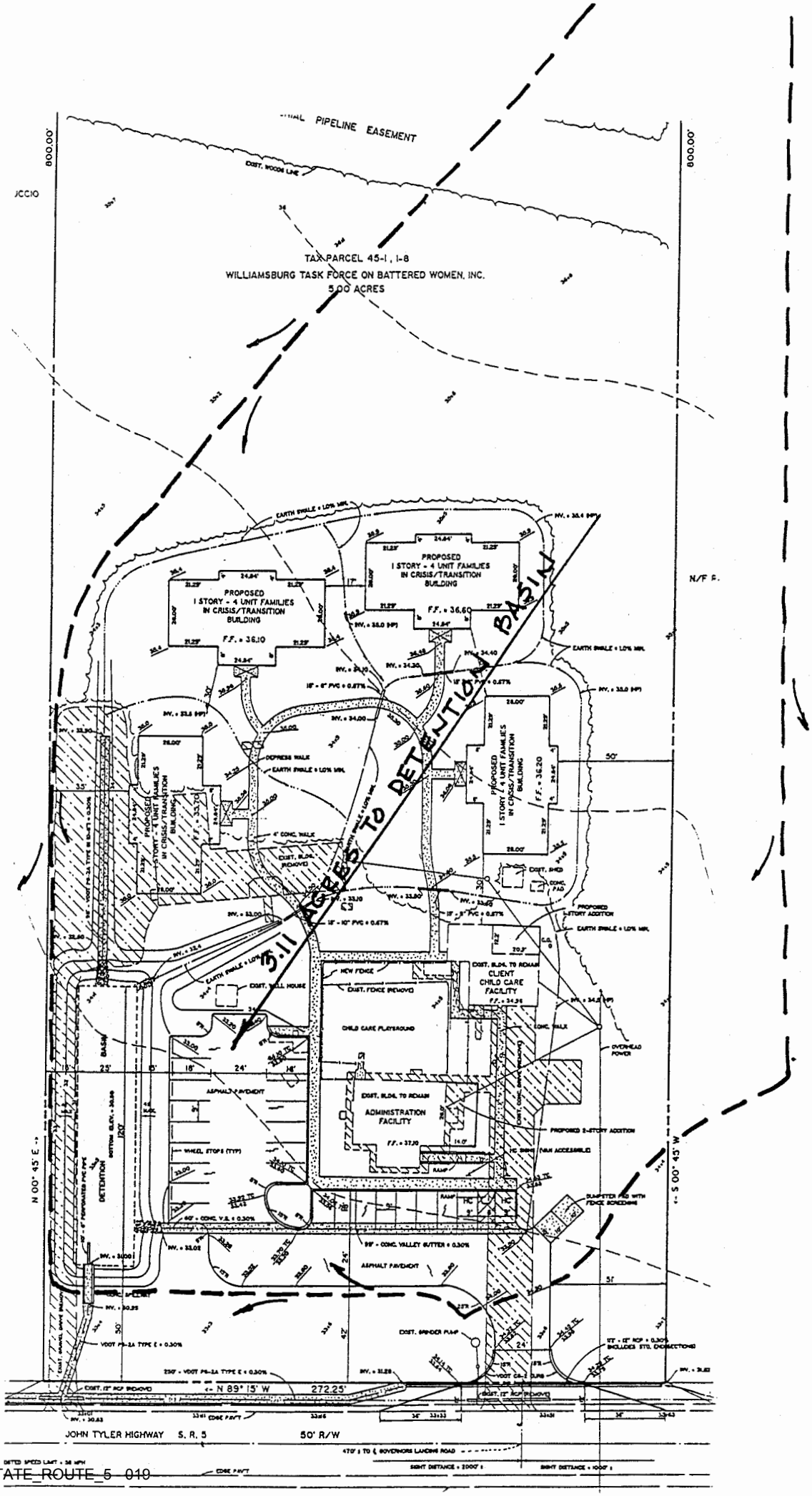
D.A. = 135,600 SF (3.11 Ac.)
EXIST. BLDGS: 4700 SF
EXIST. DRIVES, etc. : 8600 SF
EXIST. WALKS, etc : 875 SF
TOTAL IMPERVIOUS = 14,175 SF @ C=0.9
TOTAL PERVIOUS = 121,425 SF @ C=0.2
AVG. 'C' = 0.27
T_c = 35 min. estimated

POST DEVELOPMENT CONDITION

inc of 11,500 ft² imp.

D.A. = 135,600 SF (3.11 Ac.)
EXIST. BLDGS TO REMAIN : 2425 SF
NEW BLDGS & ADDITIONS : 647 SF + 8900 SF
PARKING, DRIVE, etc. : 10,275 SF
WALKS, etc. : 3430 SF
TOTAL IMPERVIOUS = 25,677 SF @ 0.9
TOTAL PERVIOUS = 109,923 SF @ 0.2
AVG. 'C' = 0.33
T_c = 25 min. estimated

Redevelopment - 10% reduction of Post Development
New Imp area = 6000 SF - 3 new bldg in rear
- 6000SF x 1" volume = 500 ft³
Would accept a Design 2 - 20% reduction for the site
for 3.11 @ 19% imp = 1265 ft³ volume
Then run 2-yr storm for discharge


PIPELINE EASEMENT
800.00'
800.00'
TAX PARCEL 45-1, 1-8
WILLIAMSBURG TASK FORCE ON BATTERED WOMEN, INC.
5.00 ACRES
PROPOSED
1 STORY - 4 UNIT FAMILIES
IN CRISIS/TRANSITION
BUILDING
F.F. = 36.10
F.F. = 36.60
F.F. = 36.20
F.F. = 33.70
5.11 ACRES TO DETENTION BASIN
CLIENT
CHILD CARE
FACILITY
ADMINISTRATION
FACILITY
F.F. = 37.10
CHILD CARE PLAYGROUND
ASPHALT PAVEMENT
N/F F.
N 00° 45' E
S 00° 45' W
<- N 89° 15' W
272.25'
JOHN TYLER HIGHWAY S. R. 5
50' R/W

22-141 50 SHEETS
22-142 100 SHEETS
22-144 200 SHEETS
AMPAD

DESIGN 4 (SHALLOW MARSH)

REQUIRED VOLUME : 1" STORM * R_V * A A = 135,600 SF

$R_V = 0.05 + 0.009(I)$ I = IMPEVIOUS RATIO = 19%

$= 0.05 + 0.009(19)$ ✓

$= 0.22$

VOLUME = $(0.083')(0.22)(135{,}600) = \underline{2477\ CF}$ ✓ (ELEV. = 31.62)

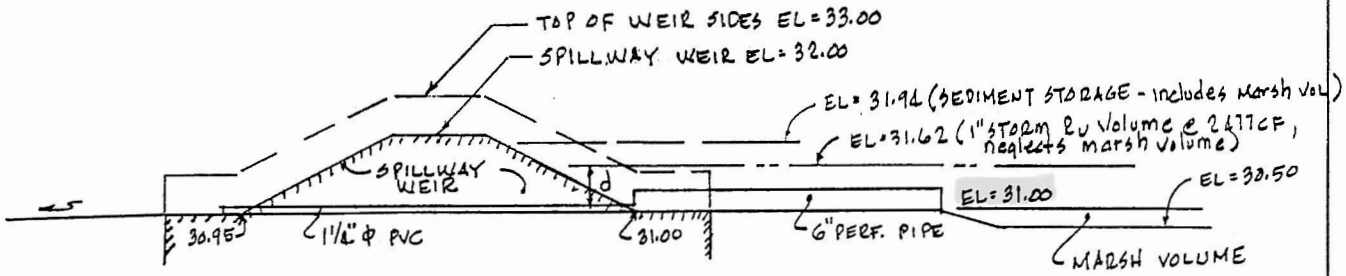
REQUIRED MARSH VOLUME : 0.45" * R_V * A

VOL = $(0.037')(0.22)(135{,}600) = \underline{1104\ CF}$ ✓ (1649 CF PROVIDED)

Area = 2200 SF @ 6" deep

BASIN STORAGE VOLUME

ELEV.	AREA (SF)	$\Sigma A_i + A_i/2$	VOLUME (CF)	TOTAL VOLUME (CF)
30.5	3000	0	0	0
31.0	3596	(3298)	(1649) ←	MARSH VOLUME ONLY - DOES NOT REFLECT IN TOTAL VOLUME FOR DETENTION ROUTING
31.5	4224	3910	1955	1955
32.0	4884	4554	2277	4232
32.5	5576	5230	2615	6847
33.0	6300	5938	2969	9816



SEDIMENT STORAGE REQ'D = 67 CY * 3.11 Ac. = 208.4 CY = $\underline{5626\ CF}$ (ELEV = 31.94)

CALC. INCREMENTAL Q THROUGH 1 1/4" Φ ORIFICE

$Q = C_o A (2gd)^{0.5}$

$C_o = 0.61$

$A = 0.008522$

$1/2 d = 0.052'$

INCREMENTAL DRAWDOWN TIME = $\dfrac{\text{DIFF. STORAGE VOLUME}}{Q}$

(SEE NEXT SHEET FOR BASIN DRAWDOWN SUMMARY)

BASIN DRAWDOWN SUMMARY FOR 1" STORM Rv VOLUME

RISE	VOL(CF)	D	Q(OUT)	TIME(HR)	SUM(HR)
0.620	2477.00	0.568	0.0314	2.3059	2.3059
0.558	2216.00	0.506	0.0297	2.4431	4.7491
0.496	1955.00	0.444	0.0278	2.4383	7.1874
0.434	1711.00	0.382	0.0258	2.6287	9.8161
0.372	1467.00	0.320	0.0236	2.8721	12.6881
0.310	1223.00	0.258	0.0212	3.1986	15.8868
0.248	979.00	0.196	0.0185	3.6698	19.5566
0.186	735.00	0.134	0.0153	4.4383	23.9949
0.124	491.00	0.072	0.0112	6.0549	30.0498
0.062	247.00	0.010	0.0060	0.0000	30.0498
0	0.00	0.000	0.0000		

*Weir Flow Neglected

SUMMARY OF RUNOFF ANALYSIS AND DETENTION BASIN PERFORMANCE

2 YR	PRE-DEVELOPMENT PEAK DISCHARGE	= 2.16 CFS
2 YR	POST DEVELOPMENT PEAK DISCHARGE	= 3.34 CFS
2 YR	POST DEVELOPMENT ROUTING DISCHARGE	= 0.67 CFS @ Elevation 32.21
10 YR	PRE-DEVELOPMENT PEAK DISCHARGE	= 2.90 CFS
10 YR	POST DEVELOPMENT PEAK DISCHARGE	= 4.18 CFS
10 YR	POST DEVELOPMENT ROUTING DISCHARGE	= 1.57 CFS @ Elevation 32.37
100 YR	POST DEVELOPMENT ROUTING DISCHARGE	= 3.02 CFS @ Elevation 32.58

22-141 50 SHEETS
22-142 100 SHEETS
22-144 200 SHEETS
AMPAD

DETERMINE ANNUAL WETLAND LOADING

- LOWER STAGE (SHALLOW MARSH) VOLUME = 1649 CF/43560 = 0.04 AC·FT
- NUTRIENT LOAD $[(P)(P_i)(R_v)/12](C)(A)(2.72)$

$N = [(44)(0.9)(0.22)/12](2.00)(3.11)(2.72) = 12.28\#/yr.$

$P = [(44)(0.9)(0.22)/12](0.26)(3.11)(2.72) = 1.60\#/yr.$

- AVERAGE ANNUAL LOADING PER WETLAND ACRE
  LOWER STAGE AREA (6" DEPTH) = 0.04 AC·FT/0.5FT = 0.08 Ac.

  N = 12.28/0.08 = 154 lbs/acre/yr. ✓ (less than 225)

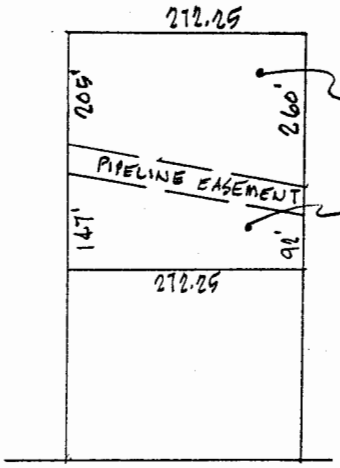
  P = 1.60/0.08 = 20 lbs/acre/yr. ✓ (less than 45)

BMP POINTS

AREA TO DETENTION BASIN = 3.11 Acres
REPRESENTS 62% OF TOTAL SITE AREA
= 9 pts × 62% = 5.6 pts

10 pts required less 5.6 pts = 4.4 pts

CONSERVATION EASEMENT:



$\frac{205+260}{2} \times 272.25 = 1.45$ Ac.

$\frac{147+92}{2} \times 272.25 = 0.75$ Ac

2.20 Ac = 44% of site

TABLE 3

WORKSHEET FOR BMP POINT SYSTEM

A. STRUCTURAL BMP POINT ALLOCATION

BMP	BMP Points		Fraction of Site Served by BMP		Weighted BMP Points
EXTENDED DET. DESIGN 4	9	x	62%	=	5.6
		x		=	
		x		=	
		x		=	

TOTAL WEIGHTED STRUCTURAL BMP POINTS: 5.6

B. NATURAL OPEN SPACE CREDIT

Fraction of Site		Natural Open Space Credit		Points for Natural Open Space
44%	x	0.1 (0.1 per 1%)	=	4.4

C. TOTAL WEIGHTED POINTS

5.6	+	4.4	=	10.0
Structural BMP Points		Natural Open Space Points		TOTAL

DETENTION BASIN DESIGN
SCS MODIFIED RATIONAL METHOD

DESIGN DATA:

Drainage Area (Acres)	=	3.11 Acres
Runoff Coeff. (Pre)	=	0.27
Runoff Coeff. (Post)	=	0.33
Pre-Development TC (Min)	=	35 Min.
Post Development TC (Min)	=	25 Min.

RESULTS:

2 Year Design Storm

Pre-Development Runoff (CFS)	=	2.16 C.F.S.
Critcial Storm Duration (Min)	=	23.30 Min.
Peak Critical Storm Basin Inflow (CFS)	=	3.34 C.F.S.
Allowable Post Development Basin Discharge (CFS)	=	2.16 C.F.S.
Required Storage Volume for Detention Basin (CF)	=	1992.13 C.F.

10 Year Design Storm

Pre-Development Runoff (CFS)	=	2.90 C.F.S.
Critcial Storm Duration (Min)	=	26.06 Min.
Peak Critical Storm Basin Inflow (CFS)	=	4.18 C.F.S.
Allowable Post Development Basin Discharge (CFS)	=	2.90 C.F.S.
Required Storage Volume for Detention Basin (CF)	=	2582.73 C.F.

100 Year Design Storm

Pre-Development Runoff (CFS)	=	4.10 C.F.S.
Critcial Storm Duration (Min)	=	28.71 Min.
Peak Critical Storm Basin Inflow (CFS)	=	5.58 C.F.S.
Allowable Post Development Basin Discharge (CFS)	=	4.10 C.F.S.
Required Storage Volume for Detention Basin (CF)	=	3565.80 C.F.

HYDROGRAPH REPORT

RECORD NUMBER : 1
TYPE : MANUAL
DESCRIPTION : 2yr Post Development

[HYDROGRAPH INFORMATION]

Peak Discharge.....	=	3.30	(cfs)
Volume.....	=	0.14	(acft)
Time Interval.....	=	1	(min)
Time to Peak.....	=	23.00	(min)
Time of Base.....	=	60.00	(min)
Multiplication factor.....	=	1.00	

[MANUAL HYDROGRAPH INPUT]

Time (min)	Flow (cfs)
23.30	3.34
60.80	0.00

HYDROGRAPH REPORT

RECORD NUMBER : 1
TYPE : MANUAL
DESCRIPTION : 2yr Post Development

[Hydrograph Flow Values Time vs. Flow]
(The time interval is 5 min)

TIME INTV	TIME (min)	OUTFLOW (cfs)
5	5	0.72
10	10	1.43
15	15	2.15
20	20	2.87
25	25	3.12
30	30	2.67
35	35	2.23
40	40	1.78
45	45	1.34
50	50	0.89
55	55	0.45
60	60	0.00

HYDROGRAPH REPORT

RECORD NUMBER : 5
TYPE : MANUAL
DESCRIPTION : 10yr Post Development

[HYDROGRAPH INFORMATION]

Peak Discharge.....	=	4.18	(cfs)
Volume.....	=	0.18	(acft)
Time Interval.....	=	1	(min)
Time to Peak.....	=	25.00	(min)
Time of Base.....	=	62.00	(min)
Multiplication factor.....	=	1.00	

[MANUAL HYDROGRAPH INPUT]

Time (min)	Flow (cfs)
25.00	4.18
26.00	4.18
62.50	0.00

HYDROGRAPH REPORT

RECORD NUMBER : 5
TYPE : MANUAL
DESCRIPTION : 10yr Post Development

[Hydrograph Flow Values Time vs. Flow]
(The time interval is 5 min)

TIME INTV	TIME (min)	OUTFLOW (cfs)
5	5	0.84
10	10	1.67
15	15	2.51
20	20	3.34
25	25	4.18
30	30	3.72
35	35	3.15
40	40	2.58
45	45	2.00
50	50	1.43
55	55	0.86
60	60	0.29

HYDROGRAPH REPORT

RECORD NUMBER : 6
TYPE : MANUAL
DESCRIPTION : 100yr Post Development

[HYDROGRAPH INFORMATION]

Peak Discharge.....	=	5.58	(cfs)
Volume.....	=	0.26	(acft)
Time Interval.....	=	1	(min)
Time to Peak.....	=	25.00	(min)
Time of Base.....	=	65.00	(min)
Multiplication factor.....	=	1.00	

[MANUAL HYDROGRAPH INPUT]

Time (min)	Flow (cfs)
25.00	5.58
28.70	5.58
66.20	0.00

HYDROGRAPH REPORT

RECORD NUMBER : 6
TYPE : MANUAL
DESCRIPTION : 100yr Post Development

[Hydrograph Flow Values Time vs. Flow]
(The time interval is 5 min)

TIME INTV	TIME (min)	OUTFLOW (cfs)
5	5	1.12
10	10	2.23
15	15	3.35
20	20	4.46
25	25	5.58
30	30	5.28
35	35	4.54
40	40	3.79
45	45	3.05
50	50	2.31
55	55	1.56
60	60	0.82
65	65	0.07

RESERVOIR REPORT

RECORD NUMBER : 1
STORAGE TYPE : MAN STAGE/STOR
DISCHARGE TYPE : COMP STAGE/DISC
DESCRIPTION : Extended Detention Basin

[RATING CURVE LIMIT]

Minimum Elevation..... = 31.00 (ft)
Maximum Elevation..... = 33.00 (ft)
Elevation Increment..... = 0.10 (ft)

[STAGE STORAGE INFORMATION]

Input file = NULL
Output file = NULL

[Manual Storage vs. Elevation]

ELEVATION (ft)	STORAGE (cf)
31.50	1955.00
32.00	4232.00
32.50	6847.00
33.00	9816.00

[STAGE DISCHARGE INFORMATION]

OUTLET STRUCTURE:
STR # : 1
TYPE : RECTANGULAR WEIR SUPPRESSED
DESCRIPTION : Basin Outlet Weir

[Reservoir Discharge Value vs. Stage]
(the elevation increment is 0.1)

STAGE (ft)	ELEVATION (ft)	CONTOUR AREA (sqft)	STORAGE (cuft)	DISCHARGE (cfs)
0.00	31.00	0.00	0.00	0.00
0.10	31.10	11730.00	391.00	0.00
0.20	31.20	11730.00	782.00	0.00
0.30	31.30	11730.00	1173.00	0.00
0.40	31.40	11730.00	1564.00	0.00
0.50	31.50	11730.00	1955.00	0.00

RESERVOIR REPORT

RECORD NUMBER : 1
STORAGE TYPE : MAN STAGE/STOR

DISCHARGE TYPE : COMP STAGE/DISC
DESCRIPTION : Extended Detention Basin

[Reservoir Discharge Value vs. Stage]
(the elevation increment is 0.1)

STAGE (ft)	ELEVATION (ft)	CONTOUR AREA (sqft)	STORAGE (cuft)	DISCHARGE (cfs)
0.60	31.60	12052.00	2410.40	0.00
0.70	31.70	12282.00	2865.80	0.00
0.80	31.80	12454.50	3321.20	0.00
0.90	31.90	12588.67	3776.60	0.00
1.00	32.00	12696.00	4232.00	0.00
1.10	32.10	12968.18	4755.00	0.22
1.20	32.20	13195.00	5278.00	0.61
1.30	32.30	13386.92	5801.00	1.13
1.40	32.40	13551.43	6324.00	1.74
1.50	32.50	13694.00	6847.00	2.43
1.60	32.60	13951.50	7440.80	3.20
1.70	32.70	14178.71	8034.60	4.03
1.80	32.80	14380.67	8628.40	4.92
1.90	32.90	14561.37	9222.20	5.87

HYDROGRAPH REPORT

RECORD NUMBER : 7
TYPE : RESER STOR. IND
DESCRIPTION : 2yr post development routing

[HYDROGRAPH INFORMATION]

Peak Discharge..... = 0.67 (cfs)
Volume..... = 0.04 (acft)
Time Interval..... = 1 (min)
Time to Peak..... = 52.00 (min)
Time of Base..... = 296.00 (min)
Peak Elevation..... = 32.21 (ft)

[INFLOW HYDROGRAPH INFORMATION]

Hydrograph #..... = 1
Hydrograph Description..... = 2yr Post Development

[Computation of Reservoir Outflow Table of Storage Indication Method]
(The time interval is 5 min)

INTV#	TIME (min)	INFLOW (cfs)	EQUATION 0.5(I1+I2)dt	+	S1-0.5(O1)dt	=	S2+0.5(O2)dt	OUTFLOW O2(cfs)	STORAGE (cuft)	ELEVATION (ft)
35	35.0	2.23	136.36	+	4127.63	=	4264.00	0.01	4263.60	32.01
36	36.0	2.14	131.02	+	4263.21	=	4394.23	0.07	4392.23	32.03
41	41.0	1.69	104.30	+	4815.54	=	4919.84	0.34	4909.79	32.13
46	46.0	1.25	77.58	+	5151.79	=	5229.37	0.57	5212.41	32.19
51	51.0	0.80	50.86	+	5301.78	=	5352.64	0.67	5332.58	32.21
56	56.0	0.36	24.14	+	5302.10	=	5326.24	0.64	5306.94	32.21
61	61.0	0.00	0.05	+	5188.43	=	5188.47	0.53	5172.43	32.18
66	66.0	0.00	0.00	+	5041.75	=	5041.75	0.43	5028.98	32.15
71	71.0	0.00	0.00	+	4924.94	=	4924.94	0.34	4914.78	32.13
76	76.0	0.00	0.00	+	4831.96	=	4831.96	0.27	4823.87	32.11
81	81.0	0.00	0.00	+	4757.94	=	4757.94	0.22	4751.46	32.10
86	86.0	0.00	0.00	+	4696.27	=	4696.27	0.19	4690.56	32.09
91	91.0	0.00	0.00	+	4641.84	=	4641.84	0.17	4636.79	32.08
96	96.0	0.00	0.00	+	4593.79	=	4593.79	0.15	4589.33	32.07
101	101.0	0.00	0.00	+	4551.37	=	4551.37	0.13	4547.43	32.06
106	106.0	0.00	0.00	+	4513.92	=	4513.92	0.12	4510.45	32.05
111	111.0	0.00	0.00	+	4480.87	=	4480.87	0.10	4477.80	32.05
116	116.0	0.00	0.00	+	4451.69	=	4451.69	0.09	4448.98	32.04
121	121.0	0.00	0.00	+	4425.93	=	4425.93	0.08	4423.54	32.04
126	126.0	0.00	0.00	+	4403.19	=	4403.19	0.07	4401.08	32.03
131	131.0	0.00	0.00	+	4383.12	=	4383.12	0.06	4381.26	32.03
136	136.0	0.00	0.00	+	4365.40	=	4365.40	0.05	4363.76	32.03

HYDROGRAPH REPORT

RECORD NUMBER : 7
TYPE : RESER STOR. IND
DESCRIPTION : 2yr post development routing

[Computation of Reservoir Outflow Table of Storage Indication Method]
(The time interval is 5 min)

INTV#	TIME (min)	INFLOW (cfs)	EQUATION 0.5(I1+I2)dt	+	S1-0.5(O1)dt	=	S2+0.5(O2)dt	OUTFLOW O2(cfs)	STORAGE (cuft)	ELEVATION (ft)
141	141.0	0.00	0.00	+	4349.76	=	4349.76	0.05	4348.31	32.02
146	146.0	0.00	0.00	+	4335.95	=	4335.95	0.04	4334.67	32.02
151	151.0	0.00	0.00	+	4323.76	=	4323.76	0.04	4322.63	32.02
156	156.0	0.00	0.00	+	4313.00	=	4313.00	0.03	4312.01	32.02
161	161.0	0.00	0.00	+	4303.51	=	4303.51	0.03	4302.63	32.01
166	166.0	0.00	0.00	+	4295.12	=	4295.12	0.03	4294.35	32.01
171	171.0	0.00	0.00	+	4287.72	=	4287.72	0.02	4287.04	32.01
176	176.0	0.00	0.00	+	4281.19	=	4281.19	0.02	4280.58	32.01
181	181.0	0.00	0.00	+	4275.42	=	4275.42	0.02	4274.89	32.01
186	186.0	0.00	0.00	+	4270.33	=	4270.33	0.02	4269.86	32.01
191	191.0	0.00	0.00	+	4265.84	=	4265.84	0.01	4265.42	32.01
196	196.0	0.00	0.00	+	4261.87	=	4261.87	0.01	4261.50	32.01
201	201.0	0.00	0.00	+	4258.37	=	4258.37	0.01	4258.04	32.00
206	206.0	0.00	0.00	+	4255.28	=	4255.28	0.01	4254.99	32.00
211	211.0	0.00	0.00	+	4252.55	=	4252.55	0.01	4252.29	32.00
216	216.0	0.00	0.00	+	4250.14	=	4250.14	0.01	4249.91	32.00
221	221.0	0.00	0.00	+	4248.01	=	4248.01	0.01	4247.81	32.00
226	226.0	0.00	0.00	+	4246.13	=	4246.13	0.01	4245.96	32.00
231	231.0	0.00	0.00	+	4244.48	=	4244.48	0.01	4244.32	32.00
236	236.0	0.00	0.00	+	4243.01	=	4243.01	0.00	4242.88	32.00
241	241.0	0.00	0.00	+	4241.72	=	4241.72	0.00	4241.60	32.00
246	246.0	0.00	0.00	+	4240.58	=	4240.58	0.00	4240.48	32.00
251	251.0	0.00	0.00	+	4239.58	=	4239.58	0.00	4239.48	32.00
256	256.0	0.00	0.00	+	4238.69	=	4238.69	0.00	4238.60	32.00
261	261.0	0.00	0.00	+	4237.90	=	4237.90	0.00	4237.83	32.00
266	266.0	0.00	0.00	+	4237.21	=	4237.21	0.00	4237.15	32.00
271	271.0	0.00	0.00	+	4236.60	=	4236.60	0.00	4236.54	32.00
276	276.0	0.00	0.00	+	4236.06	=	4236.06	0.00	4236.01	32.00
281	281.0	0.00	0.00	+	4235.59	=	4235.59	0.00	4235.54	32.00
286	286.0	0.00	0.00	+	4235.17	=	4235.16	0.00	4235.13	32.00
291	291.0	0.00	0.00	+	4234.79	=	4234.79	0.00	4234.76	32.00
296	296.0	0.00	0.00	+	4234.47	=	4234.47	0.00	4234.44	32.00

HYDROGRAPH REPORT

RECORD NUMBER : 2
TYPE : RESER STOR. IND
DESCRIPTION : 10yr post development routing

[HYDROGRAPH INFORMATION]

Peak Discharge..... = 1.57 (cfs)
Volume..... = 0.09 (acft)
Time Interval..... = 1 (min)
Time to Peak..... = 49.00 (min)
Time of Base..... = 309.00 (min)
Peak Elevation..... = 32.37 (ft)

[INFLOW HYDROGRAPH INFORMATION]

Hydrograph #..... = 5
puationfResirHydrograpbDescrion(The.time.interval is 50min)ost Devopment

INTV	TIME (min)	INFLOW (cfs)	EQUATION 0.5(I1+I2)dt	+	S1-0.5(O1)dt	=	S2+0.5(O2)dt	OUTFLOW O2(cfs)	STORAGE (cuft)	ELEVATION (ft)
30	30.0	3.72	226.75	+	4107.28	=	4334.03	0.04	4332.77	32.02
31	31.0	3.61	219.88	+	4331.52	=	4551.40	0.13	4547.46	32.06
36	36.0	3.03	185.52	+	5253.98	=	5439.50	0.75	5416.95	32.23
41	41.0	2.46	151.17	+	5818.31	=	5969.48	1.28	5931.04	32.32
46	46.0	1.89	116.81	+	6082.97	=	6199.78	1.54	6153.56	32.37
51	51.0	1.32	82.45	+	6129.56	=	6212.02	1.55	6165.39	32.37
56	56.0	0.74	48.10	+	6022.46	=	6070.56	1.40	6028.71	32.34
61	61.0	0.17	13.74	+	5807.04	=	5820.78	1.12	5787.29	32.30
66	66.0	0.00	0.00	+	5529.06	=	5529.06	0.84	5503.94	32.24
71	71.0	0.00	0.00	+	5305.08	=	5305.08	0.62	5286.39	32.20
76	76.0	0.00	0.00	+	5134.49	=	5134.49	0.49	5119.65	32.17
81	81.0	0.00	0.00	+	4998.77	=	4998.77	0.39	4986.96	32.14
86	86.0	0.00	0.00	+	4890.73	=	4890.73	0.31	4881.33	32.12
91	91.0	0.00	0.00	+	4804.73	=	4804.73	0.25	4797.24	32.11
96	96.0	0.00	0.00	+	4736.00	=	4736.00	0.21	4729.79	32.10
101	101.0	0.00	0.00	+	4676.91	=	4676.91	0.18	4671.43	32.08
106	106.0	0.00	0.00	+	4624.74	=	4624.74	0.16	4619.91	32.07
111	111.0	0.00	0.00	+	4578.70	=	4578.70	0.14	4574.43	32.07
116	116.0	0.00	0.00	+	4538.05	=	4538.05	0.13	4534.28	32.06
121	121.0	0.00	0.00	+	4502.16	=	4502.16	0.11	4498.83	32.05
126	126.0	0.00	0.00	+	4470.49	=	4470.49	0.10	4467.55	32.05
131	131.0	0.00	0.00	+	4442.52	=	4442.52	0.09	4439.93	32.04

HYDROGRAPH REPORT

RECORD NUMBER : 2
TYPE : RESER STOR. IND
DESCRIPTION : 10yr post development routing

[Computation of Reservoir Outflow Table of Storage Indication Method]
(The time interval is 5 min)

INTV#	TIME (min)	INFLOW (cfs)	EQUATION 0.5(I1+I2)dt	+	S1-0.5(O1)dt	=	S2+0.5(O2)dt	OUTFLOW O2(cfs)	STORAGE (cuft)	ELEVATION (ft)
136	136.0	0.00	0.00	+	4417.84	=	4417.84	0.08	4415.55	32.04
141	141.0	0.00	0.00	+	4396.05	=	4396.05	0.07	4394.03	32.03
146	146.0	0.00	0.00	+	4376.82	=	4376.82	0.06	4375.03	32.03
151	151.0	0.00	0.00	+	4359.84	=	4359.84	0.05	4358.26	32.02
156	156.0	0.00	0.00	+	4344.85	=	4344.85	0.05	4343.46	32.02
161	161.0	0.00	0.00	+	4331.62	=	4331.62	0.04	4330.39	32.02
166	166.0	0.00	0.00	+	4319.94	=	4319.94	0.04	4318.85	32.02
171	171.0	0.00	0.00	+	4309.63	=	4309.63	0.03	4308.67	32.01
176	176.0	0.00	0.00	+	4300.52	=	4300.52	0.03	4299.68	32.01
181	181.0	0.00	0.00	+	4292.49	=	4292.49	0.02	4291.75	32.01
186	186.0	0.00	0.00	+	4285.40	=	4285.40	0.02	4284.74	32.01
191	191.0	0.00	0.00	+	4279.14	=	4279.14	0.02	4278.56	32.01
196	196.0	0.00	0.00	+	4273.61	=	4273.61	0.02	4273.10	32.01
201	201.0	0.00	0.00	+	4268.73	=	4268.73	0.02	4268.28	32.01
206	206.0	0.00	0.00	+	4264.42	=	4264.42	0.01	4264.03	32.01
211	211.0	0.00	0.00	+	4260.62	=	4260.62	0.01	4260.27	32.01
216	216.0	0.00	0.00	+	4257.27	=	4257.27	0.01	4256.96	32.00
221	221.0	0.00	0.00	+	4254.30	=	4254.30	0.01	4254.03	32.00
226	226.0	0.00	0.00	+	4251.69	=	4251.69	0.01	4251.45	32.00
231	231.0	0.00	0.00	+	4249.38	=	4249.38	0.01	4249.17	32.00
236	236.0	0.00	0.00	+	4247.34	=	4247.34	0.01	4247.15	32.00
241	241.0	0.00	0.00	+	4245.54	=	4245.54	0.01	4245.38	32.00
246	246.0	0.00	0.00	+	4243.95	=	4243.96	0.00	4243.81	32.00
251	251.0	0.00	0.00	+	4242.55	=	4242.55	0.00	4242.42	32.00
256	256.0	0.00	0.00	+	4241.32	=	4241.32	0.00	4241.20	32.00
261	261.0	0.00	0.00	+	4240.22	=	4240.22	0.00	4240.12	32.00
266	266.0	0.00	0.00	+	4239.26	=	4239.26	0.00	4239.17	32.00
271	271.0	0.00	0.00	+	4238.41	=	4238.41	0.00	4238.33	32.00
276	276.0	0.00	0.00	+	4237.66	=	4237.66	0.00	4237.59	32.00
281	281.0	0.00	0.00	+	4236.99	=	4236.99	0.00	4236.93	32.00
286	286.0	0.00	0.00	+	4236.41	=	4236.41	0.00	4236.35	32.00
291	291.0	0.00	0.00	+	4235.89	=	4235.89	0.00	4235.84	32.00
296	296.0	0.00	0.00	+	4235.44	=	4235.44	0.00	4235.39	32.00
301	301.0	0.00	0.00	+	4235.03	=	4235.03	0.00	4235.00	32.00
306	306.0	0.00	0.00	+	4234.68	=	4234.68	0.00	4234.64	32.00

HYDROGRAPH REPORT

RECORD NUMBER : 8
TYPE : RESER STOR. IND
DESCRIPTION : 100yr post development routing

[HYDROGRAPH INFORMATION]

Peak Discharge..... = 3.02 (cfs)
Volume..... = 0.17 (acft)
Time Interval..... = 1 (min)
Time to Peak..... = 45.00 (min)
Time of Base..... = 318.00 (min)
Peak Elevation..... = 32.58 (ft)

[INFLOW HYDROGRAPH INFORMATION]

Hydrograph #..... = 6
Hydrograph Description..... = 100yr Post Development

[Computation of Reservoir Outflow Table of Storage Indication Method]
(The time interval is 5 min)

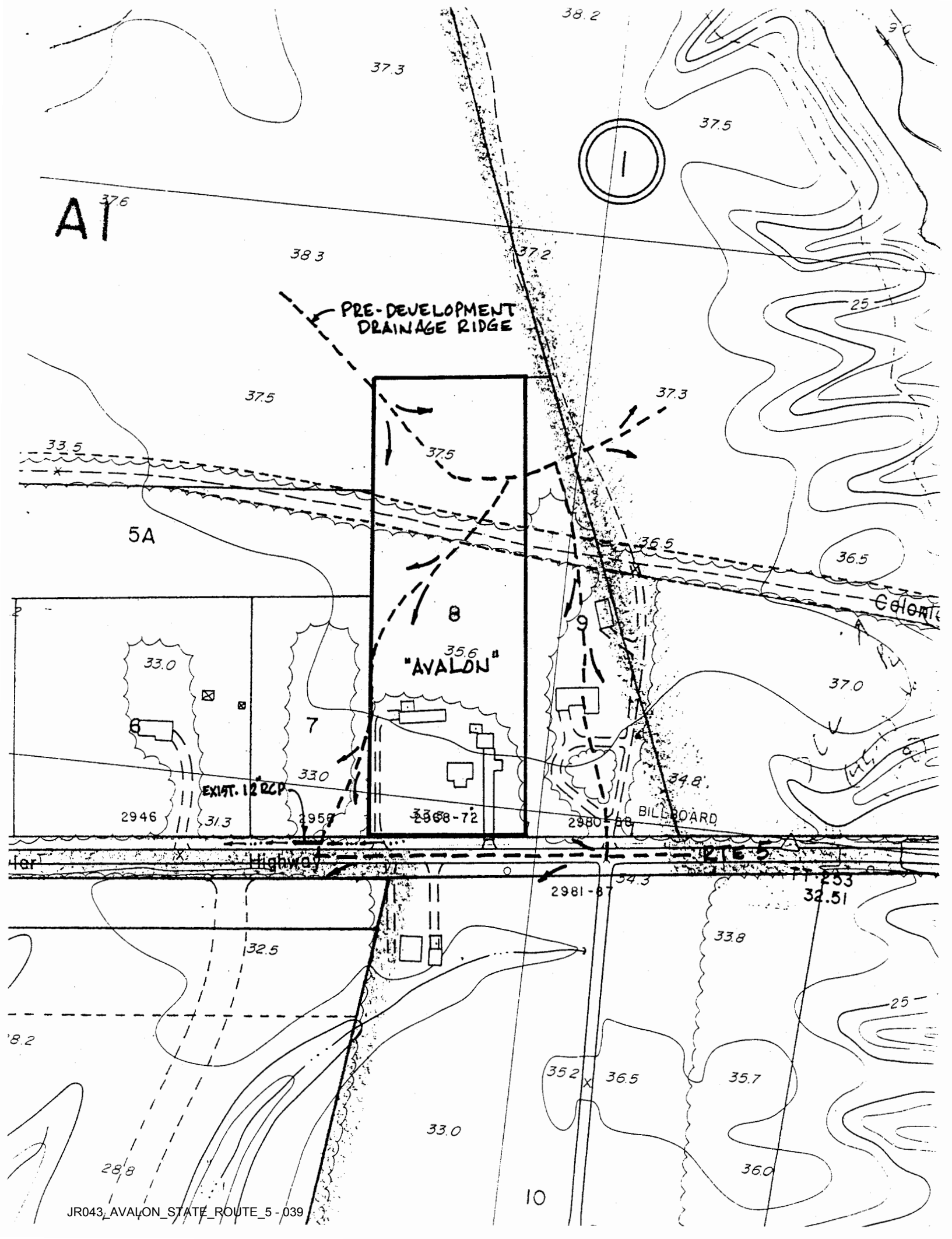
INTV#	TIME (min)	INFLOW (cfs)	EQUATION 0.5(I1+I2)dt	+	S1-0.5(O1)dt	=	S2+0.5(O2)dt	OUTFLOW O2(cfs)	STORAGE (cuft)	ELEVATION (ft)
26	26.0	5.58	334.80	+	4185.00	=	4519.80	0.12	4516.25	32.05
27	27.0	5.58	334.80	+	4512.71	=	4847.51	0.28	4839.07	32.12
32	32.0	4.98	303.55	+	5911.50	=	6215.05	1.56	6168.32	32.37
37	37.0	4.24	258.91	+	6742.00	=	7000.91	2.53	6924.98	32.51
42	42.0	3.50	214.27	+	7126.60	=	7340.88	2.95	7252.30	32.57
47	47.0	2.75	169.63	+	7209.86	=	7379.49	3.00	7289.48	32.57
52	52.0	2.01	124.99	+	7088.36	=	7213.35	2.79	7129.52	32.55
57	57.0	1.26	80.35	+	6827.74	=	6908.09	2.42	6835.62	32.50
62	62.0	0.52	35.71	+	6474.05	=	6509.77	1.91	6452.49	32.42
67	67.0	0.00	0.00	+	6057.82	=	6057.82	1.38	6016.40	32.34
72	72.0	0.00	0.00	+	5695.06	=	5695.06	1.00	5665.18	32.27
77	77.0	0.00	0.00	+	5428.63	=	5428.63	0.74	5406.39	32.22
82	82.0	0.00	0.00	+	5229.93	=	5229.93	0.57	5212.97	32.19
87	87.0	0.00	0.00	+	5074.76	=	5074.76	0.45	5061.25	32.16
92	92.0	0.00	0.00	+	4951.22	=	4951.22	0.36	4940.47	32.14
97	97.0	0.00	0.00	+	4852.88	=	4852.88	0.29	4844.32	32.12
102	102.0	0.00	0.00	+	4774.59	=	4774.59	0.23	4767.78	32.10
107	107.0	0.00	0.00	+	4710.74	=	4710.74	0.20	4704.84	32.09
112	112.0	0.00	0.00	+	4654.61	=	4654.61	0.17	4649.40	32.08
117	117.0	0.00	0.00	+	4605.06	=	4605.06	0.15	4600.46	32.07
122	122.0	0.00	0.00	+	4561.32	=	4561.32	0.14	4557.26	32.06
127	127.0	0.00	0.00	+	4522.70	=	4522.70	0.12	4519.12	32.05

HYDROGRAPH REPORT

RECORD NUMBER : 8
TYPE : RESER STOR. IND
DESCRIPTION : 100yr post development routing

[Computation of Reservoir Outflow Table of Storage Indication Method]
(The time interval is 5 min)

INTV#	TIME (min)	INFLOW (cfs)	EQUATION 0.5(I1+I2)dt	+	S1-0.5(O1)dt	=	S2+0.5(O2)dt	OUTFLOW O2(cfs)	STORAGE (cuft)	ELEVATION (ft)
132	132.0	0.00	0.00	+	4488.62	=	4488.62	0.11	4485.46	32.05
137	137.0	0.00	0.00	+	4458.53	=	4458.53	0.09	4455.74	32.04
142	142.0	0.00	0.00	+	4431.97	=	4431.97	0.08	4429.51	32.04
147	147.0	0.00	0.00	+	4408.52	=	4408.52	0.07	4406.35	32.03
152	152.0	0.00	0.00	+	4387.83	=	4387.83	0.06	4385.91	32.03
157	157.0	0.00	0.00	+	4369.56	=	4369.56	0.06	4367.86	32.03
162	162.0	0.00	0.00	+	4353.43	=	4353.43	0.05	4351.93	32.02
167	167.0	0.00	0.00	+	4339.19	=	4339.19	0.04	4337.87	32.02
172	172.0	0.00	0.00	+	4326.62	=	4326.62	0.04	4325.46	32.02
177	177.0	0.00	0.00	+	4315.53	=	4315.53	0.03	4314.50	32.02
182	182.0	0.00	0.00	+	4305.73	=	4305.73	0.03	4304.83	32.01
187	187.0	0.00	0.00	+	4297.09	=	4297.09	0.03	4296.29	32.01
192	192.0	0.00	0.00	+	4289.46	=	4289.46	0.02	4288.75	32.01
197	197.0	0.00	0.00	+	4282.72	=	4282.72	0.02	4282.10	32.01
202	202.0	0.00	0.00	+	4276.77	=	4276.77	0.02	4276.22	32.01
207	207.0	0.00	0.00	+	4271.53	=	4271.52	0.02	4271.04	32.01
212	212.0	0.00	0.00	+	4266.89	=	4266.89	0.01	4266.46	32.01
217	217.0	0.00	0.00	+	4262.80	=	4262.80	0.01	4262.42	32.01
222	222.0	0.00	0.00	+	4259.19	=	4259.19	0.01	4258.85	32.01
227	227.0	0.00	0.00	+	4256.00	=	4256.00	0.01	4255.71	32.00
232	232.0	0.00	0.00	+	4253.19	=	4253.19	0.01	4252.93	32.00
237	237.0	0.00	0.00	+	4250.70	=	4250.70	0.01	4250.47	32.00
242	242.0	0.00	0.00	+	4248.51	=	4248.51	0.01	4248.31	32.00
247	247.0	0.00	0.00	+	4246.57	=	4246.57	0.01	4246.39	32.00
252	252.0	0.00	0.00	+	4244.86	=	4244.87	0.01	4244.71	32.00
257	257.0	0.00	0.00	+	4243.36	=	4243.36	0.00	4243.22	32.00
262	262.0	0.00	0.00	+	4242.03	=	4242.03	0.00	4241.90	32.00
267	267.0	0.00	0.00	+	4240.85	=	4240.85	0.00	4240.74	32.00
272	272.0	0.00	0.00	+	4239.81	=	4239.81	0.00	4239.72	32.00
277	277.0	0.00	0.00	+	4238.90	=	4238.90	0.00	4238.81	32.00
282	282.0	0.00	0.00	+	4238.09	=	4238.09	0.00	4238.01	32.00
287	287.0	0.00	0.00	+	4237.37	=	4237.38	0.00	4237.31	32.00
292	292.0	0.00	0.00	+	4236.75	=	4236.74	0.00	4236.69	32.00
297	297.0	0.00	0.00	+	4236.19	=	4236.19	0.00	4236.14	32.00
302	302.0	0.00	0.00	+	4235.70	=	4235.70	0.00	4235.65	32.00
307	307.0	0.00	0.00	+	4235.26	=	4235.26	0.00	4235.22	32.00
312	312.0	0.00	0.00	+	4234.88	=	4234.88	0.00	4234.85	32.00
317	317.0	0.00	0.00	+	4234.54	=	4234.54	0.00	4234.51	32.00


A1
PRE-DEVELOPMENT DRAINAGE RIDGE
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"AVALON"
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EXIST. 12" RCP
BILLBOARD
RTE 5
Highway
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2981-87
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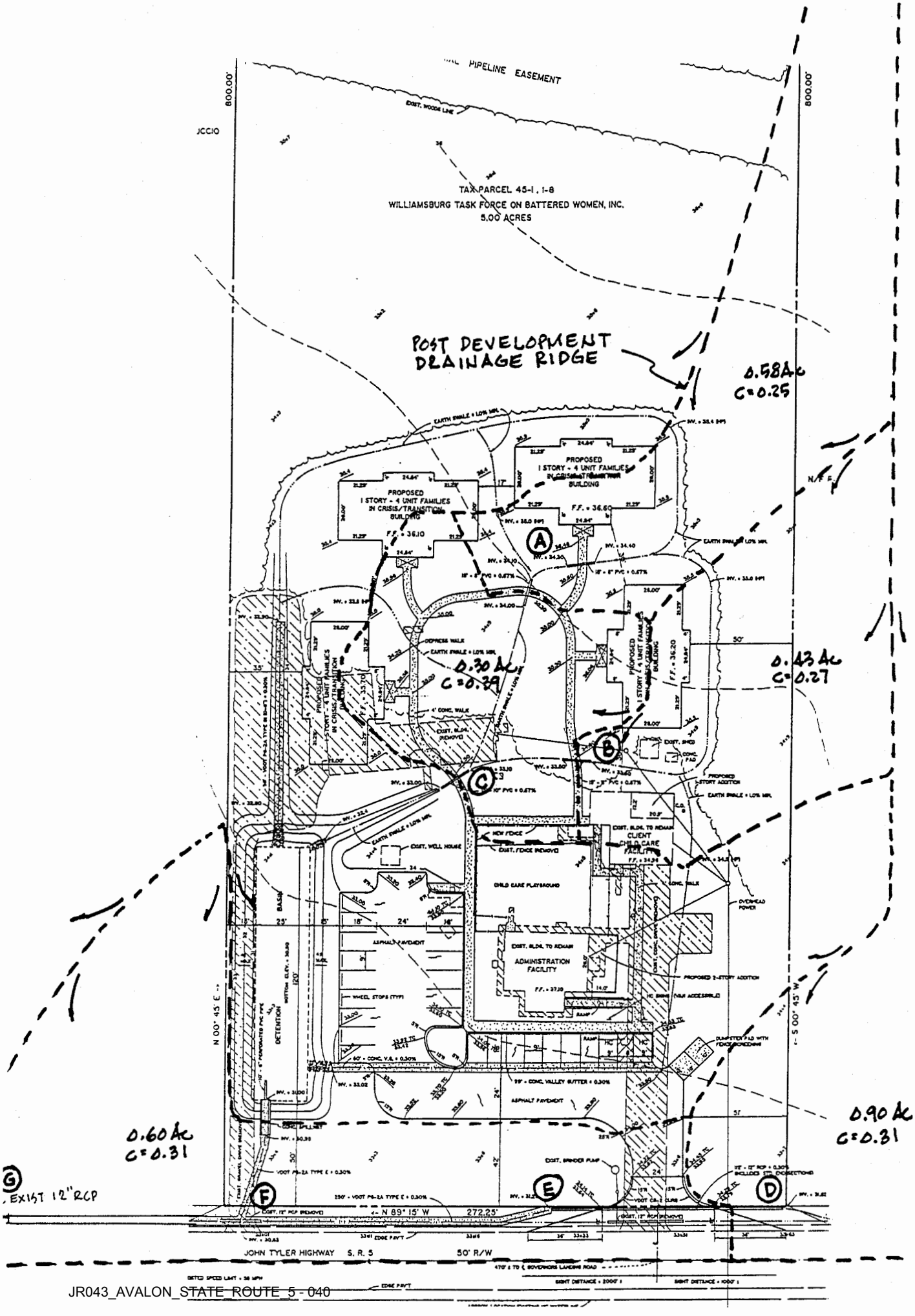

JR043_AVALON_STATE_ROUTE_5 - 040

22-141 50 SHEETS
22-142 100 SHEETS
22-144 200 SHEETS
AMPAD

ONSITE & ROAD DRAINAGE CALCULATIONS

WALK PIPES (A) :
A = 0.58 Ac.
C = 0.25
T_c = 15 min. I_{10} = 5.25
Q_{10} = 0.76 CFS 8" PVC @ 0.23% min. n=0.010 USE 8" @ 0.67%

WALK PIPE (B) :
A = 0.43 Ac
C = 0.27
T_c = 12 min I_{10} = 5.70
Q_{10} = 0.66 CFS 8" PVC @ 0.18% min. n=0.010 USE 8" @ 0.67%

WALK PIPE (C) :
A = 1.31 Ac.
C = 0.29
T_c = 17 min. I_{10} = 5.03
Q_{10} = 1.91 CFS 10" PVC @ 0.45% min. n=0.010 USE 10" @ 0.67%

ENTRANCE CULVERT (D) - (E)
12"Φ RCP @ 0.30%
HW (INLET CONTROL) = 0.7'±
HW (OUTLET CONTROL) = 0.5'±

A = 0.90 Ac.
C = 0.31
T_c = 20 min I_{10} = 4.70
Q_{10} = 1.31 CFS 12" RCP @ 0.14% min.

ROAD DITCH (E) - (F)
PG-2A TYPE E
d = 0.65' V = 2.37 FPS

A = 1.25 Ac. C = 0.35 T_c = 21.5 I_{10} = 4.54
Q_{10} = 1.99 CFS

DETENTION BASIN OUTFALL DITCH
PG-2A TYPE E
d = 0.59' V = 2.24 FPS

Q_{10} = 1.57 CFS (PER ROUTING CALC'S)

ROAD DITCH (F) - (G)
PG-2A TYPE E
d = 0.81' V = 2.76 FPS

A = 1.50 Ac. C = 0.31 T_c = 22 min. I_{10} = 4.48
Q_{10} = 2.08 + BASIN OUTFLOW (Q_{10} = 1.57)
Q_{10} = 3.65 CFS TOTAL

PRE DEVELOPMENT FLOW (F) - (G)
A = 4.61 Ac.
C = 0.28
T_c = 35 min. I_{10} = 3.45
Q_{10} = 4.45 CFS

POST DEVELOPMENT CONDITIONS WITH DETENTION BASIN REDUCES FLOW FROM 4.45 CFS TO 3.65 CFS

Triangular Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name:

Comment: Road Ditch E-F

Solve For Depth

Given Input Data:

Left Side Slope..	2.00:1 (H:V)
Right Side Slope.	2.00:1 (H:V)
Manning's n.....	0.015
Channel Slope....	0.0030 ft/ft
Discharge.....	1.99 cfs

Computed Results:

Depth.....	0.65 ft
Velocity.....	2.37 fps
Flow Area.....	0.84 sf
Flow Top Width...	2.59 ft
Wetted Perimeter.	2.89 ft
Critical Depth...	0.57 ft
Critical Slope...	0.0058 ft/ft
Froude Number....	0.74 (flow is Subcritical)

Open Channel Flow Module, Version 3.3 (c) 1991
Haestad Methods, Inc. * 37 Brookside Rd * Waterbury, Ct 06708

Triangular Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name:

Comment: Detention Basin Outfall Ditch

Solve For Depth

Given Input Data:

Left Side Slope..	2.00:1 (H:V)
Right Side Slope.	2.00:1 (H:V)
Manning's n.....	0.015
Channel Slope....	0.0030 ft/ft
Discharge.....	1.57 cfs

Computed Results:

Depth.....	0.59 ft
Velocity.....	2.24 fps
Flow Area.....	0.70 sf
Flow Top Width...	2.37 ft
Wetted Perimeter.	2.65 ft
Critical Depth...	0.52 ft
Critical Slope...	0.0060 ft/ft
Froude Number....	0.72 (flow is Subcritical)

Open Channel Flow Module, Version 3.3 (c) 1991
Haestad Methods, Inc. * 37 Brookside Rd * Waterbury, Ct 06708

Triangular Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name:

Comment: Road Ditch F-G

Solve For Depth

Given Input Data:

Left Side Slope..	2.00:1 (H:V)
Right Side Slope.	2.00:1 (H:V)
Manning's n.....	0.015
Channel Slope....	0.0030 ft/ft
Discharge.....	3.65 cfs

Computed Results:

Depth.....	0.81 ft
Velocity.....	2.76 fps
Flow Area.....	1.32 sf
Flow Top Width...	3.25 ft
Wetted Perimeter.	3.63 ft
Critical Depth...	0.73 ft
Critical Slope...	0.0053 ft/ft
Froude Number....	0.76 (flow is Subcritical)

Open Channel Flow Module, Version 3.3 (c) 1991
Haestad Methods, Inc. * 37 Brookside Rd * Waterbury, Ct 06708

RICKMOND ENGINEERING, INC.
1643 A Merrimac Trail
Williamsburg, Virginia 23185-5624
(757) 229-1776 or (757) 898-4149
Fax Number (757) 229-4683

JOB 97188
SHEET NO. ____ OF ____
CALCULATED BY KMJ DATE 10/7/97
CHECKED BY ____ DATE ____
SCALE ____

AVALON
DESIGN SEDIMENT TRAP

Area = 3.00 ac

Initial Storage = 3.00 ac x 134 cyd/ac = 402 cyd

Dry Storage = 201 cyd

Wet Storage = 201 cyd

Calculate Wet Storage:

V_1 = 201 cyd = 5,427 cf
D_1 = 2'

$V_1 = .85 \times A_1 \times D_1$

$5427 = .85 \times A_1 \times 2$

A_1 = 3,192 sf = 124' x 29' (Bottom area of basin)

Calculate Dry Storage:

V_2 = 201 cyd = 5427 cf
D_2 = 2'
A_1 = 3,192 sf

$V_2 = \frac{A_1 + A_2}{2} \times D_2 \Rightarrow 5427\text{ cf} = \frac{3192 + A_2}{2} \times 2'$

A_2 = 2,235 sf

L = 6 x 3 = 18'

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

CODE COMPLIANCE
(757) 253-6626
codecomp@james-city.va.us

ENVIRONMENTAL DIVISION
(757) 253-6670
environ@james-city.va.us

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

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

November 6, 2000

Avalon Limited Partnership
2968 John Tyler Highway
Williamsburg, Virginia 23185

Re: Avalon Expansion

To Whom It May Concern:

An inspection of the above referenced project on November 1, 2000 revealed that the following deficiencies are present and will need to be corrected before release of surety on this project.

Please refer to note number 18 under the Erosion and Sediment Control Notes on sheet C-3 of the approved plan:

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.

You are welcome to schedule an appointment with an Engineering Inspector to discuss this matter further. Please contact our office if you have any questions or comments at (757) 253-6670.

Sincerely,

Darryl E Cook

Darryl Cook
Environmental Division Director

O.K. James Construction, Inc.
General Contractors

O. KENT JAMES, *President*

Contractor's Class A License
#2701-019072A

FEB 2001
RECEIVED
ENVIRONMENTAL DIVISION

February 18, 2001

James City County
Post Office Box 8784
Williamsburg, VA 23187
Phone: 757/253-6673

Attn: Mr. Darryl Cook – Environmental Dept.

Ref.: Avalon; Job No: OKJ98001
Subj.: BMP Certification

Dear Darryl:

Please find attached, finally and I apologize for the slow service, the certification for the BMP facility at Avalon. I have been trying for a year to have this certified by the architect/engineer.

Thank you for your patience.

Yours truly,
O. K. JAMES CONSTRUCTION, INC.

O. Kent James
President

OKJ:pahw

CC: File

1643B Merrimac Trail • Williamsburg, VA 23185 • Office (757) 253-0445 • Fax (757) 220-9370
Southside: (757) 640-8481• (757) 875-0440 • Fax (757) 877-9933

"MEMBER OF THE ASSOCIATED GENERAL CONTRACTORS OF AMERICA"

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March 6, 2001

O.K. James Construction, Inc.
General Contractors
1643B Merrimac Trail
Williamsburg, Va. 23185
Attn: Ms. Pattie Williams, PMA.

Re: Avalon (County Plan SP-22-97)
Stormwater Management Facility (County ID # JR 043)

Dear Ms. Williams:

The Environmental Division has reviewed a record drawing and construction certification as submitted to our office for the above referenced project. The record drawing provides as-built information for a dry detention shallow marsh facility located in the southwest corner of the site along John Tyler Highway.

Based on our review of the information as submitted and a concurrent field observation as performed on March 2nd 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. Based on our review, the construction certification is **satisfactory** for the facility.

Record Drawing:

2. Based on our review, the record drawing is **satisfactory** for the facility.

Construction-Related Items:

3. Clean and remove all trash, debris, leaves and sediment from the paved channel on the downstream side of the pond overflow. This is the channel segment on the south side of the pond between the pond's concrete overflow and VDOT Right-of-Way along Route 5. These obstructions are prohibiting positive drainage and creating standing water in the channel 2-4 inch in depth. It appears this work can be easily performed with limited personnel and hand equipment.

Once this work is satisfactorily completed, contact our office appropriately. We can then proceed with final release of the surety on the project. Please contact me at 757-253-6639 if you have any further comments or questions.

Sincerely,

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

cc: Frank Mundy, L.S.(VHB) - fax
Michael A. Matthews, PE (The Structures Group, Inc.) - fax

G:\SWMProg\AsBuilts\SP-22-97jr043

DEVELOPMENT MANAGEMENT

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1643B Merrimac Trail
Williamsburg, Va. 23185
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PERFORMED 03/08/01. CONFIRMED WITH TED, OK JAMES 03/09/01 SA

Once this work is satisfactorily completed, contact our office appropriately. We can then proceed with final release of the surety on the project. Please contact me at 757-253-6639 if you have any further comments or questions.

Sincerely,

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

cc: Frank Mundy, L.S.(VHB) - fax
Michael A. Matthews, PE (The Structures Group, Inc.) - fax

G:\SWMProg\AsBuilts\SP-22-97jr043

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

FINAL CONSTRUCTION INSPECTION

Database Inventory No. (if known): JR 043

Name of Facility: AVALON (STATE ROUTE 5) BMP No.: 1 of 1 Date: 03/02/01

Location: SE CORNER OF SITE

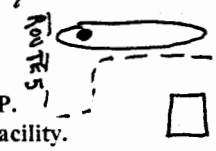
Name of Owner:

Inspector: SJ Thomas

Type of Facility: Dry Detention w/ Shallow Marsh

Weather Conditions: Cloudy, mid 60's

SP-22-97 → N



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.
Routine - The item checked requires attention, but does not present an immediate threat to the function of the BMP.
Urgent - The item checked requires immediate attention to keep the BMP operational and prevent damage to the facility.

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

Facility Item	O.K.	Routine	Urgent	Comments
Embankments and Side Slopes:	EXCAVATED POND; RECTANGULAR SHAPED			
Grass Height	X			GRASSED.
Vegetation Condition	X			
Tree Growth	X			NONE. ADJACENT PINES TO WEST.
Erosion	X			None.
Trash & Debris	X	X		Some near Parking Lot-Minor.
Seepage	X			None Observed.
Fencing or Benches	X			CHAIN LINK FENCE AROUND PERIM.
Interior Landscaping/Planted Areas:	☐ None ☒ Constructed Wetland/Shallow Marsh ☐ Naturally Established Vegetation			
Vegetated Conditions	X			Highly Vegetated inside w/ CATTAIL
Trash & Debris	X			AND POND GRASSES. CATTAIL
Floating Material	X			60% interior bottom.
Erosion	X			
Sediment	X	X		4" deep @ RISER. 4" deep in back.
Dead Plant	X			
Aesthetics	X			
Other				

Services 6 BUILDINGS + PARKING Area. 4' BERM in Front Along SR5.

Facility Item	O.K.	Routine	Urgent	Comments
Water Pools ☐ Permanent Pool (Retention Basin) ☒ Shallow Marsh (Detention Basin) ☐ None (Detention Basin)				
Shoreline Erosion	X			None.
Algae	X			Minor in Pool.
Trash & Debris	X			None.
Sediment	X			2"-4" MUCK IN MARSH.
Aesthetics	X			
Other				
Inflow Stuctures (Describe Locations): 2 channels in back; 1 PAVED & 1 grass w/ OP's. OP IN Front.				
Condition of Structure	X			
Erosion	X			
Trash and Debris	X	X		Minor in riprap. Litter & Toys.
Sediment	X			None.
Aesthetics	X			
Other				
Principal Flow Control Structure - Intake, Riser, etc. (Describe Location): SMALL DIA Perf PVC in 1-2" stone.				
Condition of Structure	X			
Corrosion	X			
Trash and Debris	X			Stone is clean.
Sediment	X			
Aesthetics	X			
Other				
Principal Outlet Structure - Barrel, Conduit, etc. : SMALL ϕ PVC (UNDERDRAIN) TO PAVED CHANNEL				
Condition of Structure	X			
Settlement	X			
Trash & Debris	X	X		Bottles, Bags & Leaves.
Sediment	X			Clean
Erosion	X			None.
Other				SEE PVC-2", END IS OPEN.
Emergency Spillway (Overflow): Rect. Shaped 32" W x 10" DEEP CHANNEL				
Vegetation				
Lining	X			OK
Erosion				
Trash & Debris		X	X	Standing water 2-4" deep due to debris & leaves
Other				

PAVED CHANNEL OUTLET TO SR 5 CHANNEL. THEN FLOWS WEST ALONG ROUTE 5.

Facility Item	O.K.	Routine	Urgent	Comments
Nuisance Type Conditions:				
Mosquito Breeding	X			None.
Animal Burrows	X			None.
Graffiti	X			None.
Other				
Surrounding Perimeter Conditions:	Buildings, Parking & Grassed Areas.			
Land Uses	X			Wooded to west.
Vegetation	X			Site well Maintained.
Trash & Debris	X			Minor @ Parking Lot.
Aesthetics	X			
Access /Maintenance Roads or Paths				Enter off US 5 to parking area. Unlocked Gate in fence, rear of facility.
Other				

Remarks:

- Paved Outlet Channel, Rect 32" WIDE x 10" DEEP
- Completely clean & remove all trash, leaves & debris in outlet channel. Obstructing Flow. Standing water in channel 2-4" deep.

Overall Environmental Division Internal Rating: 3 (Due to outlet channel; otherwise 4)

Signature: Scott Thomas, P.E.

Date: 03/02/01

Title: Civil Engineer, JCC Env. Div.

SWMProg\BMP\CoInspProg\DetRet.wpd

WATERSHED	JR	MAINTENANCE PLAN	No	CTRL STRUC DESC	Perf PVC
BMP ID NO	043	SITE AREA acre	5	CTRL STRUC SIZE inches	6
PLAN NO	SP-22-97	LAND USE	Transition Center	OTLT BARRL DESC	Solid Wall P
TAX PARCEL	(45-1)(01-08)	old BMP TYP	Dry Shallow Marsh	OTLT BARRL SIZE inch	1.25
PIN NO	4510100008	JCC BMP CODE			
CONSTRUCTION DATE	6/1/1998	POINT VALUE	4	EMERG SPILLWAY	Yes
PROJECT NAME	Avalon - Dry Pond			DESIGN HW ELEV	32.58
FACILITY LOCATION	2968 John Tyler Highway			PERM POOL ELEV	31.00
CITY-STATE	Williamsburg, Va. 23185	SVC DRAIN AREA acres	3.11	2-YR OUTFLOW cfs	0.67
CURRENT OWNER	Avalon Limited Partnership			10-YR OUTFLOW cfs	1.57
OWNER ADDRESS	P.O. Box 1073			REC DRAWING	No
OWNER ADDRESS 2		SERVICE AREA DESCRI	5 Buildings & Parking Area		
CITY-STATE-ZIP CODE	Williamsburg, Va. 23187	IMPERV AREA acres	1	CONSTR CERTI	Yes
OWNER PHONE		RECV STREAM	UT of Shellbank Creek		
MAINT AGREEMENT	Yes	EXT DET-WQ-CTRL	Yes	LAST INSP DATE	3/2/2001
EMERG ACTION PLAN	No	WTR QUAL VOL acre-ft	0.056	INTERNAL RATING	4
		CHAN PROT CTRL	No	MISC/COMMENTS	
		CHAN PROT VOL acre-ft		Redeveloped for 20% reduction. Shallow Marsh dry detention basin.	
		SW/FLOOD CONTROL	Yes		
		GEOTECH REPORT	No		

Get Last BMP No

Return to Menu

HighMark™

Patty -

OK James -

253-0445

Wythe + Avalon

FAX 220-9370

Avalon - Work

CONFIRMED 03/09/01 SAT.

Done per Ted,

O.K James, 503 5995

592- 5448-m

888- 9130 pager

Land Disturbing Permit Application

James City County
Environmental Division
P.O. Box 8784
Williamsburg, VA 23187-8784
Telephone: (757) 253-6670

Landowner

Name: Avalon Limited Partnership Date: _____

Mailing Address: 2968 John Tyler Highway Williamsburg, Va. 23185

Phone: (757) 258-5022

Project: Avalon - A Center for Women & Children

Project Street Address: 2968 John Tyler Highway Williamsburg, Va. 23185

Total Size of Tract or Lot: 5.00 Acres

Total Area to Be Disturbed: 3.5 Acres

Description of Land Disturbing Activity: The Project consists of new site improvements including clearing, grading, utilities, storm water management, parking area, walks and landscaping, remodeling and additions to (2) two existing brick veneered wood framed structures, new construction of (3) three 2,487 square foot one story slab on grade timber framed structures, (1) one 2,562 square foot one story slab on grade timber framed structure and (1) one 840 square foot storage shed.

Right of Entry

I, John P. Lowenhaupt CPA, (Signature) hereby grant designated officials of James City County,
John P. Lowenhaupt, CPA (Print Name and Title))
Virginia, the right to enter my property for the purpose of inspection or monitoring for compliance with the approved erosion and sediment plan on the above-referenced project.

Released 3/11/99 per DEC

Land Disturbing Permit Application

I, John P. Lowenhaupt, (Signature) certify that I fully understand the provisions
John P. Lowenhaupt, CPA
of the James City County, Virginia, Erosion and Sediment Control Ordinance and agree to carry out the approved erosion and sedimentation control plan on the above-referenced project. I also understand that the approved erosion and sedimentation control plan becomes null and void on 10/13/98 and no further work subject to Chapter 5A of the County code shall be allowed unless and until an additional or updated erosion and sedimentation control plan has been submitted and approved in accordance with Chapter 5A or unless all requirements of the approved control plan have been completed by 10/13/98 in accord with such plan and verified by the on-site inspection by the Administrator or his designee.

(For Office Use Only)

Permit No.: 98-74

Bond Amount: $ 28,500

Reviewed by: Joan Williamson

Date: 4/8/98

Specific Requirements:

Approved by: Darryl E Cook

Administrator - Erosion and Sediment Control Ordinance

Date: 4/13/98

Renewal of E&S plan requested by:

Renewal Reviewed By:

Joan Williamson

Renewal Date:

10/8/98

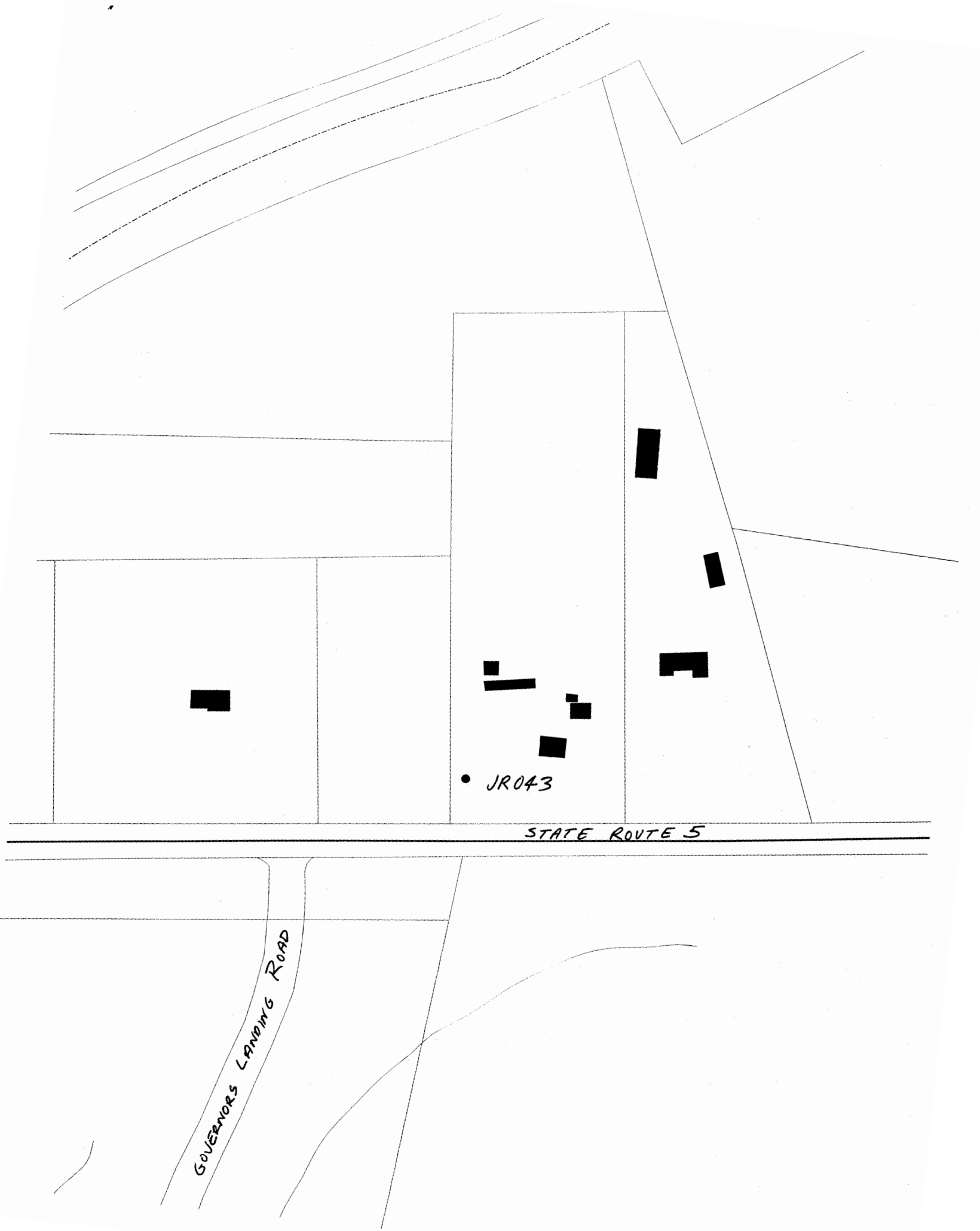
Renewal Approved By:

Darryl E Cook

Undated Erosion and Sedimentation Control Plan becomes null and void on:

4/13/99

JR043_AVALON_STATE_ROUTE_5 - 059



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