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: **PC128**

DATE VERIFIED: **October 31, 2012**

QUALITY ASSURANCE TECHNICIAN: **Leah Hardenbergh**

Leah Hardenbergh

LOCATION: WILLIAMSBURG, VIRGINIA

Stormwater Division

MEMORANDUM

DATE: March 13, 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: PC128

PIN: 3830100033A

Subdivision, Tract, Business or Owner Name (if known): Monticello at Powhatan Apartments

Property Description: Parcel A1 Monticello at Powhatan Apartments

Site Address: 4409 Powhatan Parkway

(For internal use only) **Box** 3 **Drawer:** 2

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

Comments

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James City County, Virginia
Environmental Division

Stormwater Management / BMP Facilities
Record Drawing and Construction Certification Forms

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

Section 1 - Site Information:

Project Name: Monticello at Powhatan Apartments
Structure/BMP Name: Retention Pond
Project Location: James City County
BMP Location: Middle Of Complex Phase 1
County Plan No.: _____ - _____ - _____

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

Tax Map/Parcel No.: 3830100033
BMP ID Code (if known): PC 128
Zoning District:: R4
Land Use: RES PLANNED COMM.
Site Area (sf or acres): _____

Brief Description of Stormwater Management/BMP Facility: Wet retention basin designed to meet county quality and quantity requirements

Nearest Visible Landmark to SWM/BMP Facility: Office/Clubhouse for Monticello at Powhatan Apartments

Nearest Vertical Ground Control (if known):
☒ JCC Geodetic Ground Control ☐ USGS ☐ Temporary ☐ Arbitrary ☐ Other
Station Number or Name: STATION NUMBER 322
Datum or Reference Elevation: 65.61
Control Description: DISK
Control Location from Subject Facility: 1200'± SOUTH OF SITE

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: MARCH 2000
Facility Monitored by County Representative during Construction: ☒ Yes ☐ No ☐ Unknown
Name of Site Work Contractor Who Constructed Facility: JACK L. MASSIE
Name of Professional Firm Who Routinely Monitored Construction: PROFESSIONAL SERVICES, INC
Date of Completion for SWM/BMP Facility: AUGUST 2000
Date of Record Drawing/Construction Certification Submittal: 27 MARCH 2001

(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.)

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Section 3 - Owner / Designer / Contractor Information:

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

Name: Brad Waitzer
Mailing Address: 244 Mustang Tr. Suite 6 Virginia Beach, VA 23452

Business Phone: 757-422-6030 Fax: 757-422-6670
Contact Person: Brad Waitzer Title:

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

Firm Name: W.P. Large Inc.
Mailing Address: 242 Mustang Tr. Virginia Beach, VA 23452

Business Phone: 757-431-1041
Fax: 757-463-1412
Responsible Plan Preparer: Lance Large
Title: Engineer
Plan Name: Monticello at Powhatan
Firm's Project No. C99-2475
Plan Date: April 8, 2000
Sheet No.'s Applicable to SWM/BMP Facility: C5.0 / C5.1 / C5.2 / C5.3 /

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

Name: JACK L. MASSIE
Mailing Address: 3900 COKES LANE
WILLIAMSBURG, VIRGINIA 23188-7010
Business Phone: 757-566-8643
Fax: 757-566-8566
Contact Person: BOB BEAN
Site Foreman/Supervisor: SCOTT MASSIE
Specialty Subcontractors & Purpose (for BMP Construction Only):
SAME

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: W.P. Large Inc.
Mailing Address: 242 Mustang Tr. Virginia Beach, VA 23452
Business Phone: 757-431-1041
Fax: 757-463-1412

Name: Lance Large
Title: Engineer
Signature:
Date: Mar 27 2001

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.

Construction Certification

Firm Name: W. P. LARGE
Mailing Address: 242 MUSTANG TRAIL SUITE B VIRGINIA BEACH, VIRGINIA 23452
Business Phone: 757-431-1041
Fax: 757-463-1412

Name: LANCE C. LARGE
Title: ENGINEER
Signature:
Date: Mar 27 2001

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
LANCE C. LARGE
No. 7
(Seal)
Virginia Registered Professional Engineer or Certified Land Surveyor
PROFESSIONAL ENGINEER

COMMONWEALTH OF VIRGINIA
LANCE C. LARGE
No. 15317
(Seal)
Virginia Registered Professional Engineer
PROFESSIONAL ENGINEER

James City County, Virginia
Environmental Division

Erosion and Sediment Control and Stormwater Management Design Plan Checklists

Table of Contents

Contents		Page
Erosion and Sediment Control Plan		
I.	General	1
II.	Site Plan	1
III.	Narrative	3
IV.	Calculations	4
Stormwater Management Design Plan		
I.	General	5
II.	Stormwater Conveyance Systems	7
III.	Stormwater Management / BMP Facilities	8
IV.	Outlet Protections	14
V.	Additional Comments and Information	14

GENERAL INFORMATION

Project Name: _____

Owner / Applicant: _____

Plan Preparer: _____ Email: _____

Project Location: _____

Tax Map / Parcel: _____

County Plan No. (if known): _____

County BMP Type: _____ (-)

Other information submitted in addition to this checklist (Check all that apply):

- ☐ Design or Construction Drawings (Plans, Profiles, Details, etc.).
- ☐ Erosion & Sediment Control Plan (Plans, Details, etc.).
- ☐ Erosion & Sediment Control Plan Design Report.
- ☐ Stormwater Management Design Plan (Plans, Profiles, Details, etc.).
- ☐ Stormwater Management Design Report.
- ☐ Other, List: _____

Issue Date
March 1, 2001

Yes No N/A

❒ ❒ ❒ *STORMWATER CONVEYANCE SYSTEM COMPUTATIONS*

- ❒ ❒ ❒ Storm Sewer Design computations based on 10-year design event.
- ❒ ❒ ❒ Hydraulic Grade Line computations based on 10-year design event.
- ❒ ❒ ❒ Inlet computations based on current VDOT procedure for spread, ponding depth and grate size required.
- ❒ ❒ ❒ Culvert Headwater computations. Design based on 10-year design storm event and check only for 100-year storm event.
- ❒ ❒ ❒ Open Channel computations based on 2-year design event for velocity and 10-year design event for capacity.
- ❒ ❒ ❒ Standard outlet protection or special energy dissipators.
- ❒ ❒ ❒ Pipe thickness design computations, as required, for selected pipe type (live load, minimum cover, maximum height of cover, etc.).
- ❒ ❒ ❒ Adequate channel computations for receiving channels (based on field measured channel section data).

III. ***STORMWATER MANAGEMENT / BMP FACILITIES***:

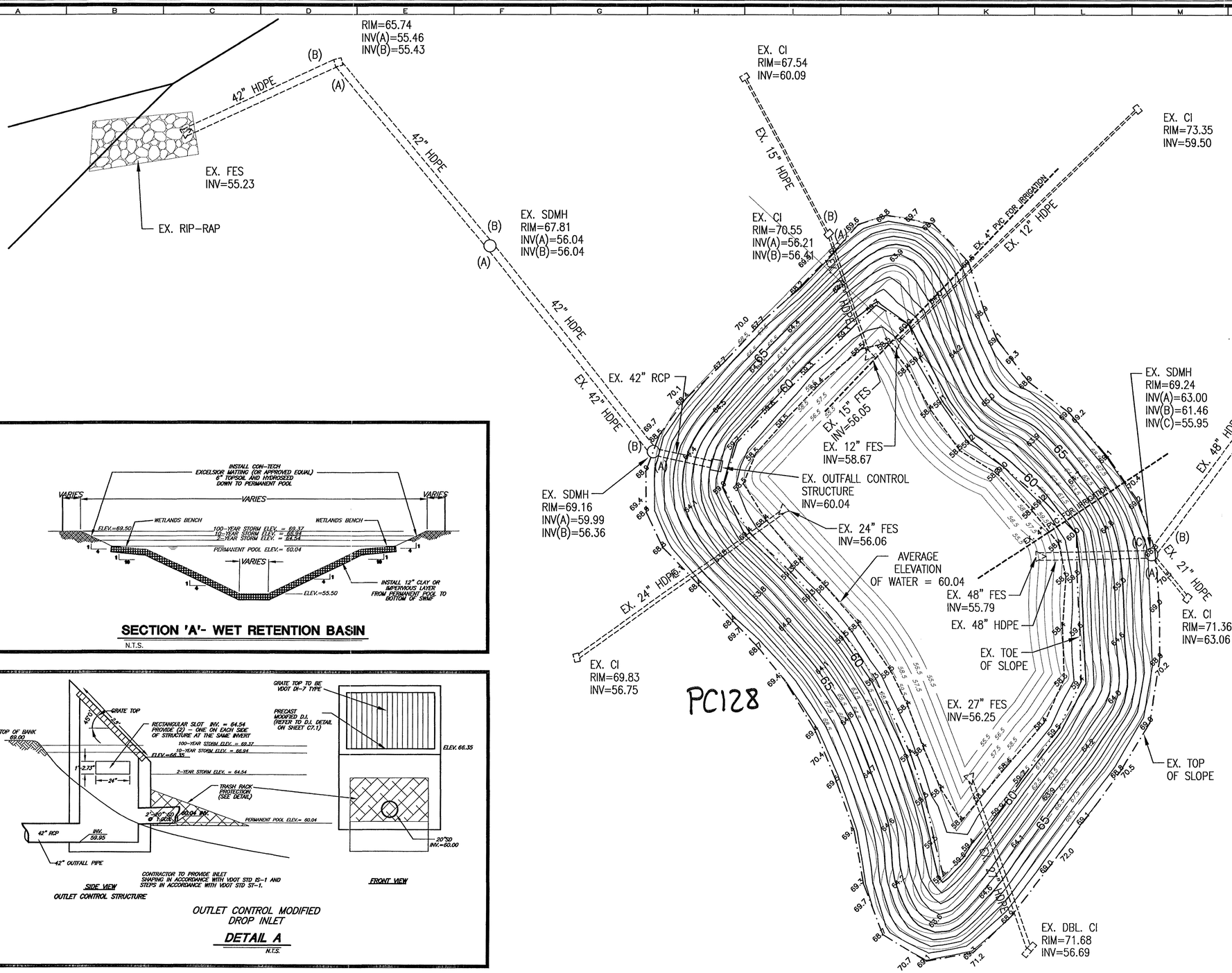
Yes No N/A

❒ ❒ ❒ *HYDROLOGY* - An SCS based methodology is required for the design of stormwater management/BMP facilities with watersheds exceeding 20 acres. Under 20 acres, other generally accepted methodologies such as the modified rational, critical storm are allowable. Refer to Chapter 5 of the VESCH or Chapter 5 of the VSMH.

- ❒ ❒ ❒ Runoff Curve Number or Coefficient determinations: predeveloped and ultimate development land use scenarios.
- ❒ ❒ ❒ Time of concentration: predeveloped and ultimate development indicating overland, shallow concentrated, and channel flow components (200 ft. maximum length for overland flow).
- ❒ ❒ ❒ Hydrograph generation (tabular or graphical): pre- and postdevelopment conditions for the 1-, 2-, 10-, and 100-year design storm events.

❒ ❒ ❒ *FACILITY CONFIGURATION and MINIMUM SEPARATIONS*

- ❒ ❒ ❒ Screening and layout consistent with Section 24-98(d) of the Chapter 24 Zoning ordinance (landscaping, screening, visibility, etc.).
- ❒ ❒ ❒ Basic considerations for safety and unauthorized entry.
- ❒ ❒ ❒ Proper length to width ratio (Typically 2H:1V).
- ❒ ❒ ❒ Facilities with deep pools (4 feet or more in depth) provided with two benches. Fifteen (15) ft. safety bench outward from normal pool at maximum 6 percent slope and aquatic bench inward from normal shoreline below normal pool. Narrower widths may be considered on a case-by-case basis.
- ❒ ❒ ❒ Pond buffer minimum 25 feet outward from maximum design WSEL. Additional setbacks may be required to permanent structures.
- ❒ ❒ ❒ No trees, shrubs or woody plants within 15 feet of embankment toe or 25 feet from principal spillway structure.



LEGEND

DENOTES PROPOSED CONTOURS AND ELEVATIONS

58.5

DENOTES EXISTING CONTOURS AND ELEVATIONS

58.5

SECTION 'A'- WET RETENTION BASIN

N.T.S.

OUTLET CONTROL MODIFIED
DROP INLET

DETAIL A

N.T.S.

I HEREBY CERTIFY TO THE BEST OF MY KNOWLEDGE AND BELIEF THAT THIS RECORD DRAWING REPRESENTS THE ACTUAL CONDITION OF THE STORMWATER MANAGEMENT/BMP FACILITY. THE FACILITY APPEARS TO CONFORM WITH THE PROVISIONS OF THE APPROVED DESIGN PLAN, SPECIFICATIONS AND STORMWATER MANAGEMENT PLAN, EXCEPT AS SPECIFICALLY NOTED.

SIGNED: _____
PRINTED NAME: LANCE C. LARGE
DATE: OCT 8, 2001

COUNTY PLAN # SP-78-99
BMP ID CODE NO. PC 128

RECORD DRAWING

tech.: RER
jn: C99-2475 dwg: BMP-AB
ref.:
fb/p: 787/23 & 24

mark	date	by	description
revisions			

date	2 OCT. 01
job #	C99-2475
designed	N/A
drawn	RER
checked	MHR

W.P. LARGE, Inc.
ENGINEERING • SURVEYING • PLANNING • LANDSCAPE ARCHITECTURE
242 MUSTANG TRAIL - SUITE 8
VIRGINIA BEACH, VIRGINIA 23462
PH. (757) 499-1412
FAX. (757) 499-1412

COMMONWEALTH OF VIRGINIA
LANCE C. LARGE
No. 15317
OCT 8, 2001
PROFESSIONAL ENGINEER

project: MONTICELLO AT POWHATAN
BMP AS-BUILT
PARCEL A
JAMES CITY COUNTY, VIRGINIA

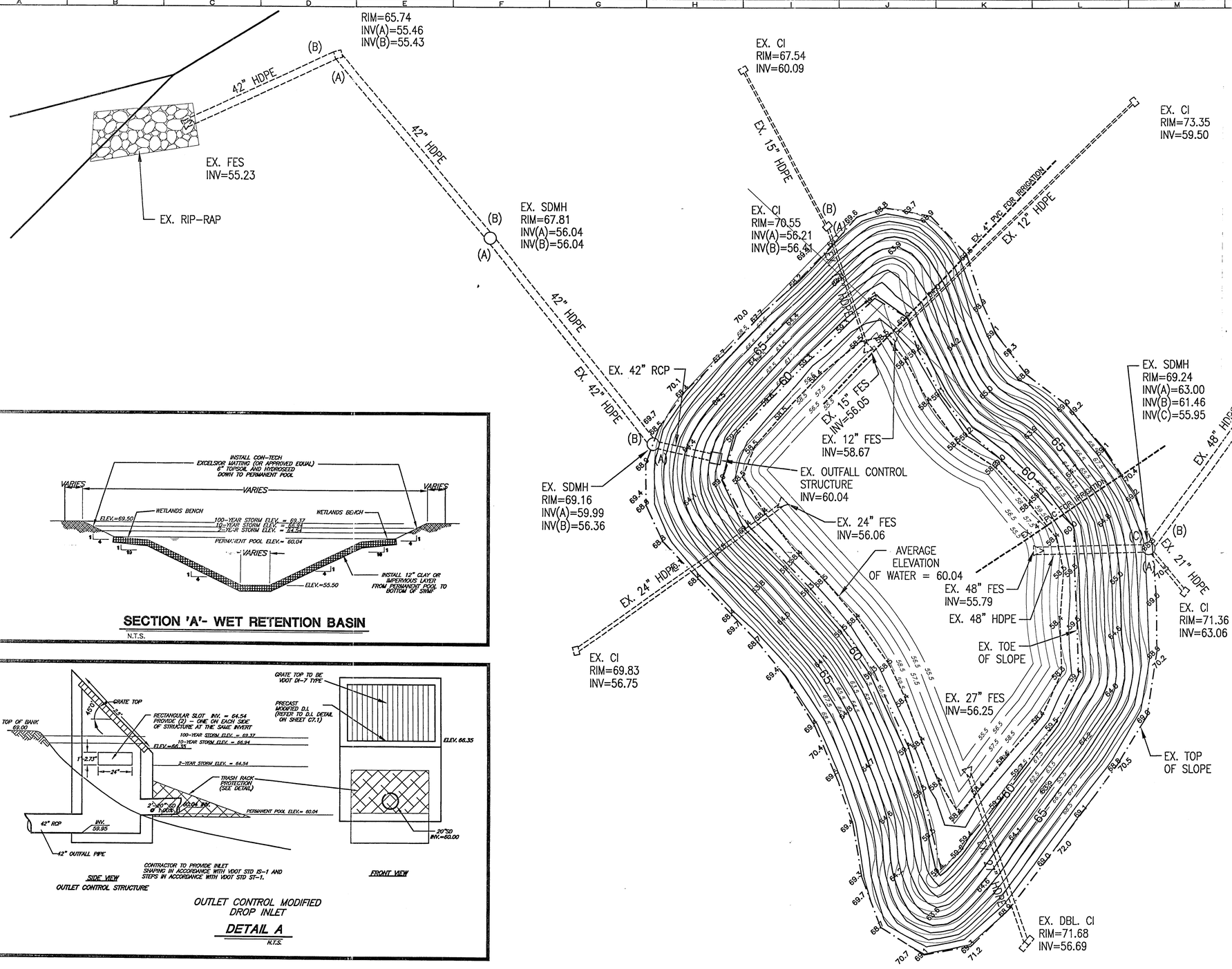
drawing: AS-BUILT

C-1
sheet 1 of 2

JOB NO. C99-2475

APPROVED OCT 2 6 2001

PC 128; SP-78-99



LEGEND

DENOTES PROPOSED CONTOURS AND ELEVATIONS

58.5

DENOTES EXISTING CONTOURS AND ELEVATIONS

58.5

SECTION 'A'- WET RETENTION BASIN

N.T.S.

OUTLET CONTROL STRUCTURE

OUTLET CONTROL MODIFIED
DROP INLET

DETAIL A

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revisions			

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checked	MHR

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LANDSCAPE ARCHITECTURE
242 MUSTANG TRAIL - SUITE 6
VIRGINIA BEACH, VIRGINIA 23462
FAX: (757) 455-1418

COMMONWEALTH OF VIRGINIA
LANCE C. LARGE
No. 15317
Oct 8, 2001
PROFESSIONAL ENGINEER

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PARCEL A
JAMES CITY COUNTY, VIRGINIA

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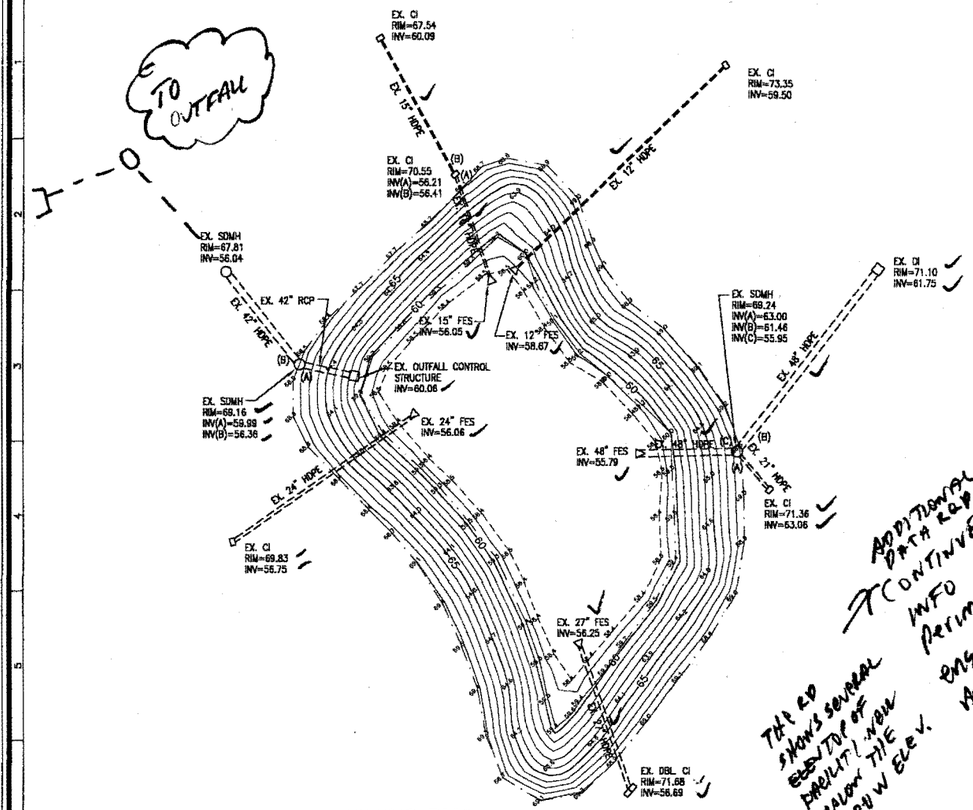
sheet 1 of 2

JOB NO. C99-2475

tech.: RER
jn: C99-2475 dwg: BMP-AB
ref.:
fb/p: 787/23 & 24



EXISTING BMP

SCALE: 1"=40'

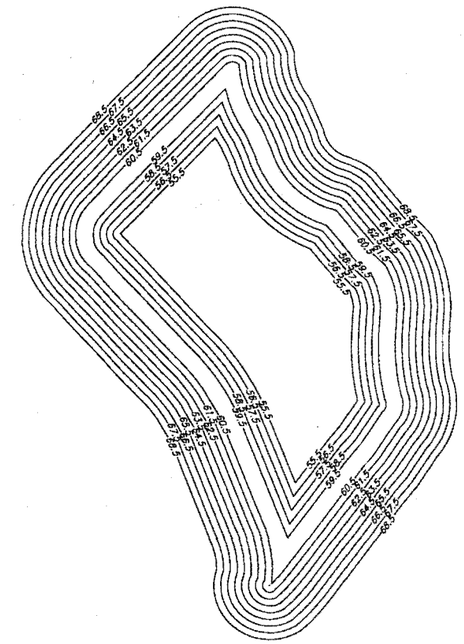
THE RD SHOWS SEVERAL FEET OF PARKING NOW BELOW THE DHW ELEV.

ADDITIONAL GRADING/SPOT ELEV DATA REQ. AROUND THE ENTIRE FAC.

CONTINUE AS INFO AROUND PERIMETER TO ENSURE FINGERS ARE ABOVE DHW EL 69.37

ORIGINAL DESIGN PLAN INTENT WAS 2' OF FREEBOARD FROM DHW (OF EL. 69.37).

Ensure no buildings encroach within the freeboard and appurtenance overhang zone pathways etc.



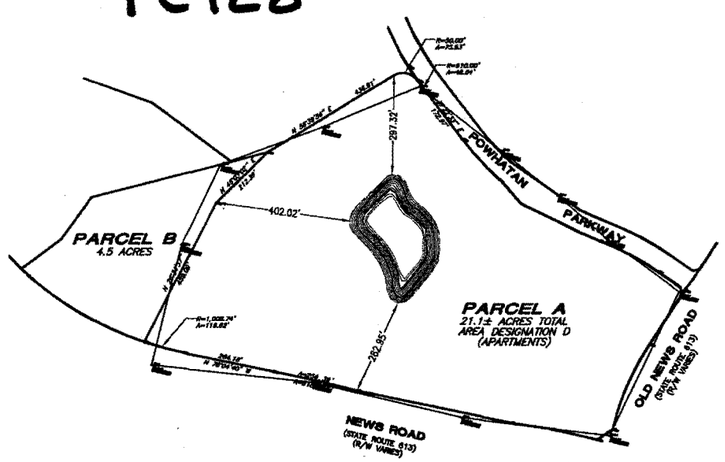
DHW 69.37
+2
71.37

N

PROPOSED BMP

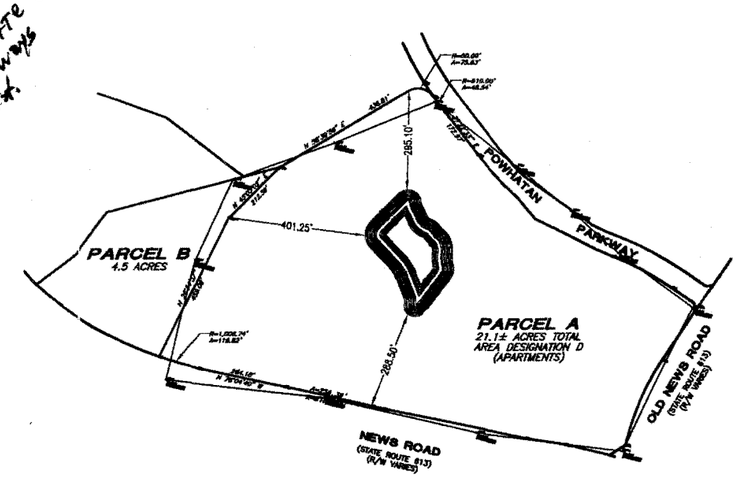
SCALE: 1"=40'

PC128



EXISTING BMP

SCALE: 1"=40'



PROPOSED BMP

SCALE: 1"=40'

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job #	C99-2475
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checked	MHR

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PLANNING
LANDSCAPE ARCHITECTURE
848 MOUNTAIN TRAIL - SUITE 6
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23462-3000
FAX (757) 485-1441

COMMONWEALTH OF VIRGINIA
PROFESSIONAL ENGINEER

project: MONTICELLO AT POWHATAN
BMP AS-BUILT
PARCEL A
JAMES CITY COUNTY, VIRGINIA

drawing: AS-BUILT

C-1

sheet 1 of 2

JOB NO. C99-2475

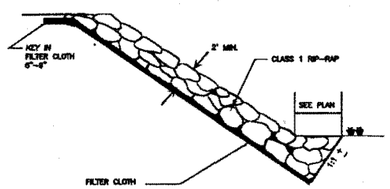
tech.: RER
jn: C99-2475.dwg: BMP-AB
ref.:
fb/p:

SJT REVIEW SET
SP-78-99; PC128

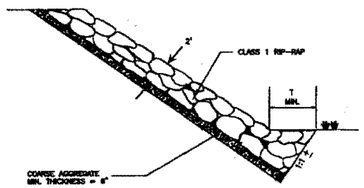
PC128_MONTICELLO_POWHATAN_APTS_PHASE_ HALF_WET_ POND_SP78-99 - 010

TOE REQUIREMENTS FOR BANK STABILIZATION

FILTER CLOTH UNDERLINER (PREFERRED)



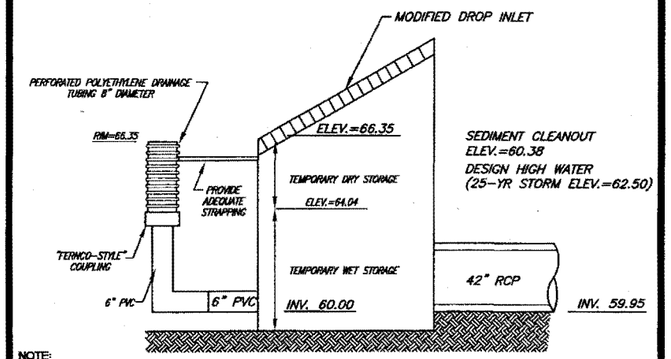
GRANULAR FILTER



SOURCE: Adapted from VDOT Drainage Manual

PLATE. 3.19-1

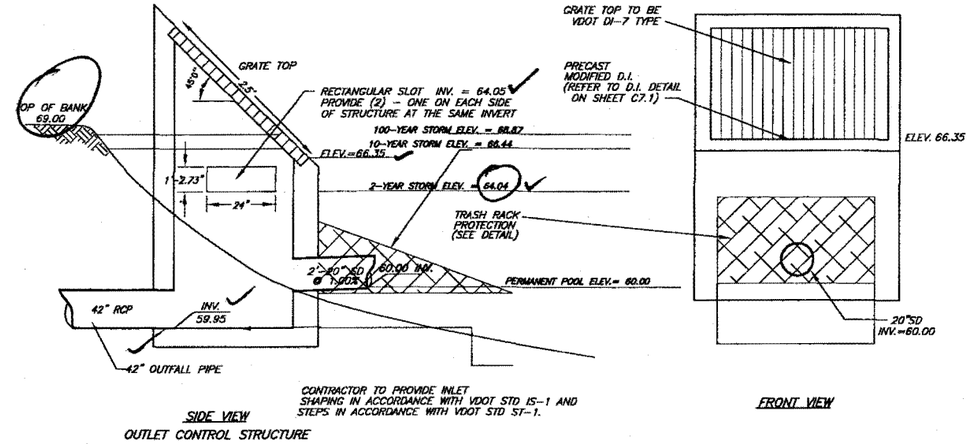
TEMPORARY OUTLET CONTROL STRUCTURE DETAIL



NOTE:
FOR USE DURING CONSTRUCTION PHASE

NTS

OUTLET CONTROL MODIFIED DROP INLET

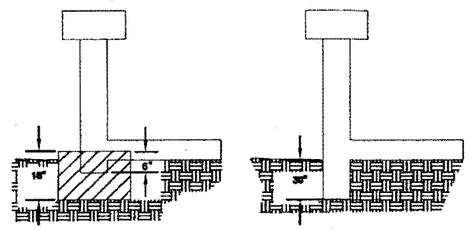


OUTLET CONTROL STRUCTURE

DETAIL A

N.T.S.

RISER PIPE BASE CONDITIONS



TYPICAL CONCRETE BASE

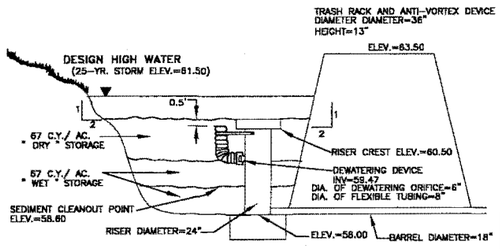
TYPICAL STEEL BASE

SOURCE: VA. DSWC

PLATE. 3.14-3

PC128

SEDIMENT BASIN #2 SCHEMATIC ELEVATIONS

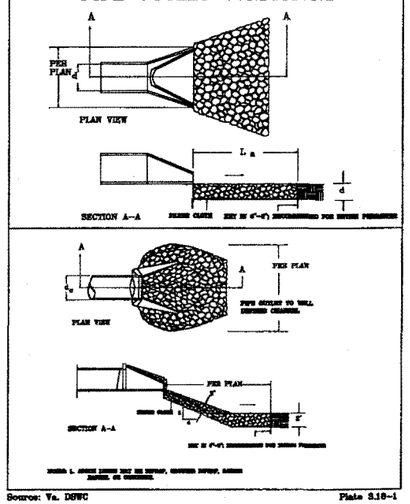


DESIGN ELEVATIONS WITHOUT EMERGENCY SPILLWAY
(RISER PASSES 25-YR. EVENT)

SOURCE: VA. DSWC

PLATE. 3.14-2

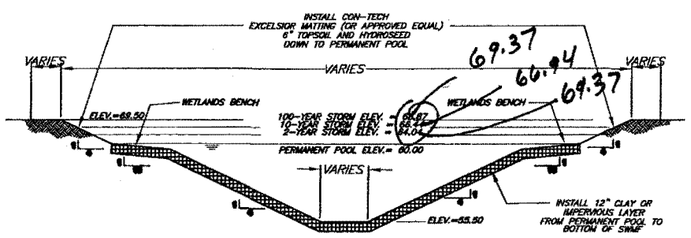
PIPE OUTLET CONDITIONS



Source: Va. DSWC

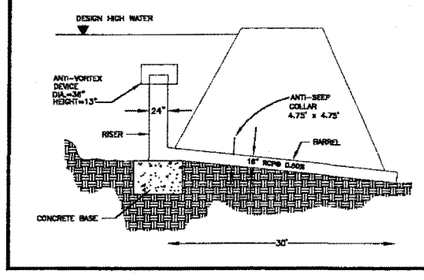
Plate 3.19-1

SECTION 'A'- WET RETENTION BASIN



N.T.S.

PRINCIPAL SPILLWAY DESIGN FOR SEDIMENT BASIN #2



SOURCE: VA. DSWC

PLATE. 3.14-7

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date	7/13/00
job #	C99-2475
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drawn	RER
checked	MHR

W.P. LARGE, Inc.
ENGINEERING • SURVEYING
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848 MOSMANS TRAIL - SUITE 6
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TEL. (757) 463-1411
FAX. (757) 463-1412

COMMONWEALTH OF VIRGINIA
WILLIAM P. LARGE
No. 13317
PROFESSIONAL ENGINEER

project: MONTICELLO AT POWHATAN
BMP AS-BUILT
PARCEL A
JAMES CITY COUNTY, VIRGINIA

drawing: AS-BUILT

C-2
sheet 2 of 2

JOB NO. C99-2475

tech.: RER
jn: C99-2475dwg:BMP-A2
ref.:
fb/p:

DEVELOPED DRAINAGE AREA MAP

1" = 50' SCALE APPROX.

PC128_MONTICELLO_POWHATAN_APTS_PHASE_ HALF_WET_ POND_SP78-99 - 012

OTHERS
19.44 AC.

ZONED: R4

ZONED: R-4

PROPOSED SSMH (BY OTHERS) RIM=55.0± INV.(A)=51.61 INV.(B)=51.51

PROPOSED SSMH (BY OTHERS) RIM=56.00± INV.=52.60

EX. LIMITS OF WETLANDS

PROPOSED SWALE (BY OTHERS)

PROPOSED TREE LINE (BY OTHERS)

PROPOSED 16"W (BY OTHERS)

POWHATAN PARKWAY (BY OTHERS)

PROPOSED VDOT EW-6S(30") (BY OTHERS)

VAR. LANDSCAPE BUFFER

PROPOSED SWALE (BY OTHERS)

PROPOSED TREE LINE (BY OTHERS)

PROPOSED 16"W (BY OTHERS)

BYPASS
4.29 AC.

DEVELOPED
17.53 AC.

PHASE 1

PHASE 2

PARCEL A
21.78 ACRES TOTAL
AREA DESIGNATION D
(AFFORDABLE)

PARCEL B
4.5 ACRES

GARBAGE HOUSE WAY

SUMMIT LOOP

25' LANDSCAPE PROTECTION ZONE

VAR. LANDSCAPE BUFFER

T.B.M.
SQUARE IN CORNER OF CONCRETE PAD
ELEV.= 61.000

NEWS (STATE ROUTE 613) ROAD
(R/W VARIES)

OLD NEWS (STATE ROUTE 613) ROAD
(R/W VARIES)

60 0 60 120 180 Feet
GRAPHIC SCALE

tech.: WTL
jn: C09-1670 dwg: C-OMP.DWG
ref.:
fb/pc

mark	date	by	description

date	10/01/99
job #	C09-1670
designed	E A E
drawn	W T L
checked	C J B

W.P. LARGE, Inc.
SURVEYING • ENGINEERING
PLANNING • ENVIRONMENTAL
444 MORGANTOWN ROAD - BUILD 5
WILLIAMSBURG, VIRGINIA 23185
PH. (757) 565-1441
FAX (757) 565-1448

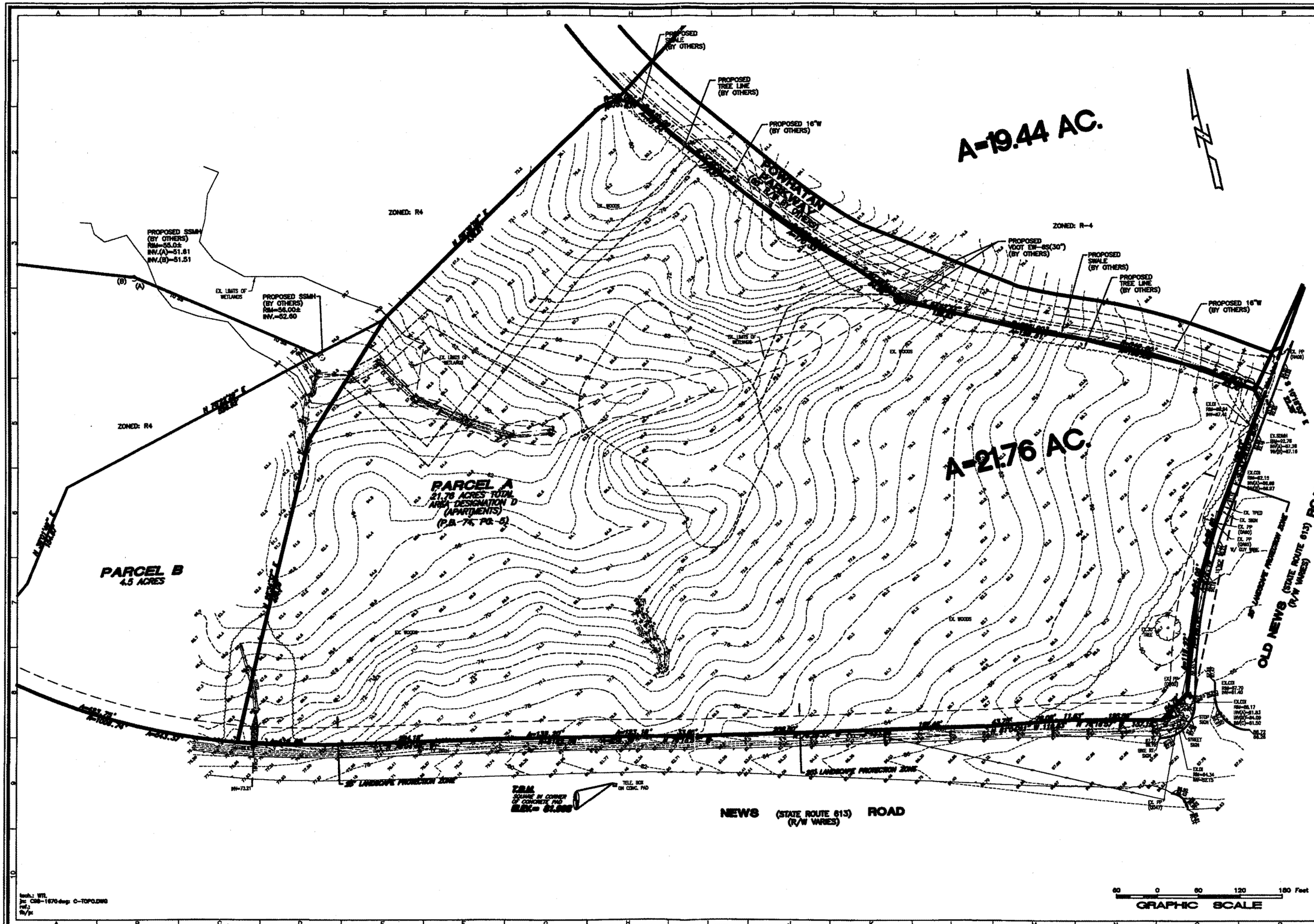
COMMONWEALTH OF VIRGINIA
CHARLES J. BERGER
No. 028501
PROFESSIONAL ENGINEER

project MONTICELLO AT POWHATAN
CONSTRUCTION PLANS
PARCEL A
JAMES CITY COUNTY, VIRGINIA
drawing OVERALL IMPROVEMENT PLAN

sheet
C4.0
of

C09-1670

PC128_MONTICELLO_POWHATAN_APTS_PHASE_ HALF_WET_ POND_SP78-99 - 013



mark	date	by	description

revisions

date 10/01/99
job # C98-1670
designed EAE
drawn WTL
checked CJB

W.P. LARGE, Inc.
SURVEYING • ENGINEERING
PLANNING • ENVIRONMENTAL
444 MOORING TRAIL - SUITE 6
VIRGINIA BEACH, VIRGINIA
PH. (757) 425-1433
FAX. (757) 425-1433

COMMONWEALTH OF VIRGINIA
CHARLES J. BUNNER
No. 022501
PROFESSIONAL ENGINEER

project MONTICELLO AT POWHATAN
CONSTRUCTION PLANS
PARCEL A
JAMES CITY COUNTY, VIRGINIA

drawing EXISTING SITE SURVEY

sheet C2.0
of

C98-1670

Mach.: WTL
W: C98-1670.dwg: C-TOPO.DWG
XW:
XB:
Rf/pc

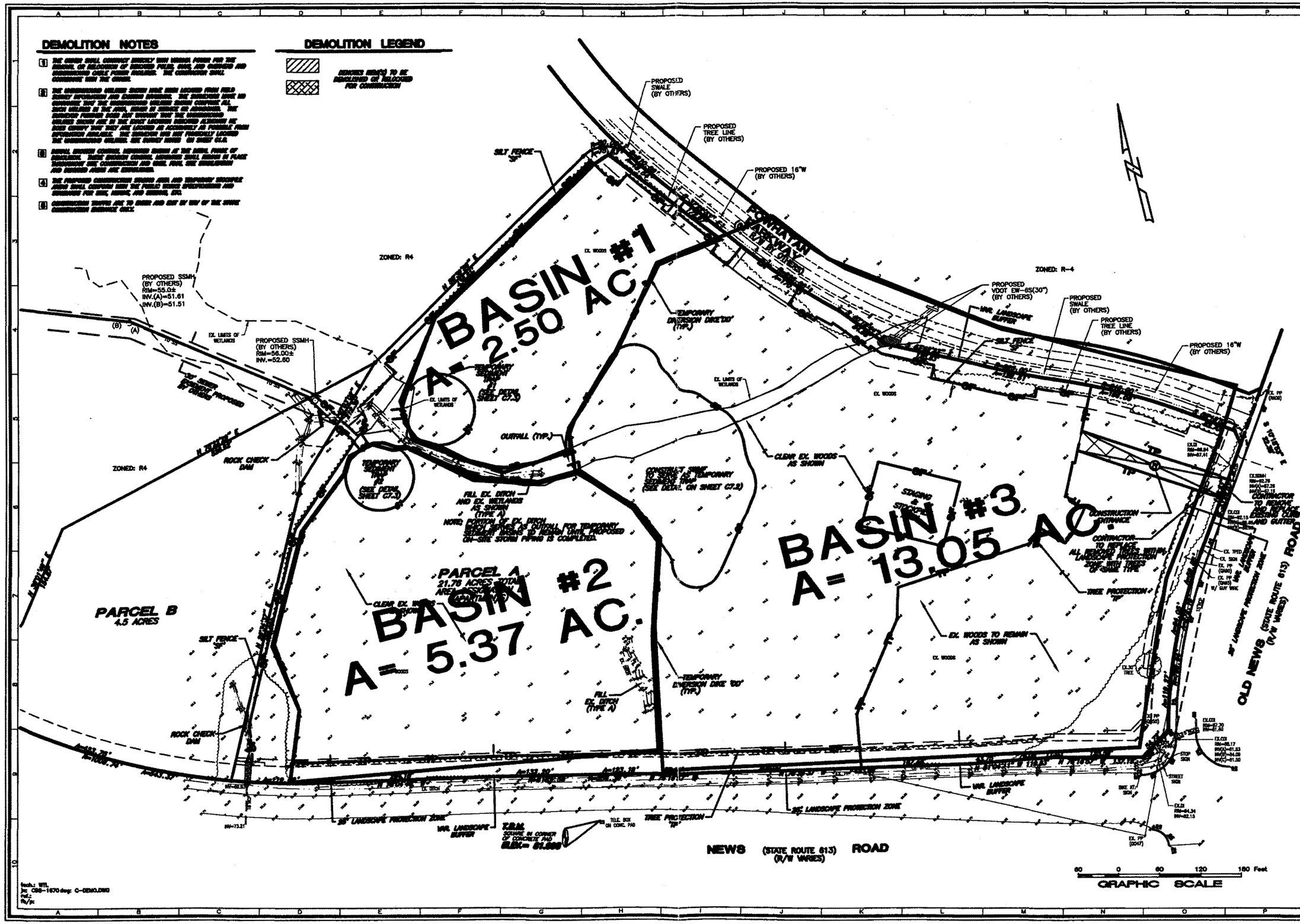
PC128_MONTICELLO_POWHATAN_APTS_PHASE_ HALF_WET_ POND_SP78-99 - 014

DEMOLITION NOTES

1. THE CONTRACTOR SHALL CONTACT VIRGINIA POWER FOR THE REMOVAL OR RELOCATION OF EXISTING POLES, GUYS, AND OVERHEAD AND UNDERGROUND CABLE POWER INCLUDING. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER.
2. THE UNDERGROUND UTILITIES SHOWN WERE WERE LOCATED FROM FIELD SURVEY INFORMATION AND PLANNING DRAWINGS. THE DIRECTIONS HAVE NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN CONTAIN ALL SUCH UTILITIES AS THE APPLY, EXISTS IN PRESENCE OR ABANDONED. THE CONTRACTOR FURTHER AGREES AND ACKNOWLEDGES THAT THE UNDERGROUND UTILITIES SHOWN ARE TO THE EXTENT LOCATED REASONABLY ACCURATE BUT THAT THE OWNER MAY NOT BE LIABLE FOR ACCURACY AS POSSIBLE FROM INFORMATION AVAILABLE. THE CONTRACTOR HAS NOT PERSONALLY LOCATED THE UNDERGROUND UTILITIES. SEE SURVEY NOTES ON SHEET C1.0.
3. ALL EXISTING CONTROL MONUMENTS SHOWN AT THE INITIAL POINT OF CONSTRUCTION. ANY EXISTING CONTROL MONUMENTS SHALL BEGIN TO PLACE IMPROVED SITE CONSTRUCTION AND WORK POINT, SITE ENGINEERING AND SURVEYING PLANS ARE CONTINUED.
4. THE PROPOSED CONSTRUCTION STAKES, LINES AND TEMPORARY STOCKPILE AREAS SHALL CONFORM WITH THE PLANS WHICH SUPERVISION AND COORDINATE FOR WORK, MARKING, AND SURVEYING, ETC.
5. CONSTRUCTION TRAFFIC ARE TO ENTER AND EXIT BY WAY OF THE STATE CONSTRUCTION ENTRANCE ONLY.

DEMOLITION LEGEND

- DENOTES AREAS TO BE DEMOLISHED OR TRIMMED FOR CONSTRUCTION



mark	date	by	description
revisions			

date 10/01/98
job # C08-1670
designed E A E
drawn W T L
checked C J B

W.P. LARGE, Inc.
SURVEYING • ENGINEERING
PLANNING • ENVIRONMENTAL
MAIN OFFICE: 5 FINAL STREET
WILLIAMSBURG, VIRGINIA 23185
PH. (757) 565-1677
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COMMONWEALTH OF VIRGINIA
CHARLES J. BONNER
No. 029501
PROFESSIONAL ENGINEER

project MONTICELLO AT POWHATAN
CONSTRUCTION PLANS
PARCEL A
JAMES CITY COUNTY, VIRGINIA
drawing SITE DEMOLITION PLAN

sheet C3.0
of

C08-1670

PC128_MONTICELLO_POWHATAN_APTS_PHASE_ HALF_WET_ POND_SP78-99 - 015

ABBREVIATIONS

@	AT	FES	FLARED END SECTION
&	AND	F.F.	FINISHED FLOOR
AC.	ACRE	F.H.	FIRE HYDRANT
A/C	AIR CONDITIONER	FL	FLOOD LIGHT
ADD'L.	ADDITIONAL	FLN.	FLANGED
AGGR.	AGGREGATE	FM	FORCE MAIN
ALUM.	ALUMINUM	FT.	FOOT/FEET
ARC/A	ARC LENGTH		
ARCH.	ARCHITECTURAL	GALV.	GALVANIZED
		GEN.	GENERAL
℄	BASELINE	GPM	GALLONS PER MINUTE
B.G.	BELOW GRADE	GV	GATE VALVE
BIT.	BITUMINOUS		
BLDG.	BUILDING	H/C / HC	HANDICAP
BLK.	BLOCK	HCG-1	HAMPT. STD. CURB & GUTTER
BLVD.	BOULEVARD	HCS-1	HANDICAP SIGN
BM	BENCH MARK	HDW.	HARDWARE
BOT	BOTTOM	HORZ./H	HORIZONTAL
BRG.	BEARING	HP	HIGH POINT
		HYD.	HYDRANT
℄	CENTERLINE		
CTV	CABLE TELEVISION	I.D.	INSIDE DIAMETER
CB	CATCH BASIN	I.F.	INNER FACE
CE	CONSTRUCTION ENTRANCE	IN.	INCH
CFS	CUBIC FEET PER SECOND	INV.	INVERT
CG	CHANGE OF GRADE	IP	INLET PROTECTION
-1/CG-1A	CONC. CURB & GUTTER	IV	INDICATOR VALVE
CH.	CHORD		
CI	CURB INLET	JT.	JOINT
C.I.	CAST IRON		
CIR.	CIRCLE	LP	LIGHT POLE
CJ	CONTRACTION JOINT	LA.	LANE
CLF	CHAIN LINK FENCE	LAT.	LATERAL
CLR.	CLEARANCE	LBS.	POUNDS
CMU	CONC. MASONRY UNIT	LEN.	LENGTH
CMP	CORRUGATED METAL PIPE	L.F.	LINEAR FEET
CO	CLEAN-OUT	L.O.C.	LIMITS OF CONSTRUCTION
CONC.	CONCRETE	LP	LOW POINT
CONN.	CONNECTION	L.R.	LONG RADIUS
CONT.	CONTINUOUS		
CONTR.	CONTRACTOR	M	METER
CT.	COURT	MANUF.	MANUFACTURERS
CTE	CONNECT TO EXISTING	MAT.	MATERIAL
CU	COPPER	MAX.	MAXIMUM
CU.	CUBIC	M.B.	MAP BOOK
C.Y.	CUBIC YARD	MECH.	MECHANICAL
		MH	MANHOLE
D.B.	DEED BOOK	MIN.	MINIMUM
DBL.	DOUBLE	MJ	MECH. JOINT PIPE
DCJ	DOWELED CJ	MOG	MATCH ORIGINAL GRADE
DEJ	DOWELED EJ	M.R.	MEDIUM RADIUS
DI	DROP INLET		
D.I.	DUCTILE IRON	#/No.	NUMBER
DIA.	DIAMETER	N/F	NOW OR FORMERLY
DR.	DRIVE	N.I.C.	NOT IN CONTRACT
		NP-FL	NO PARKING - FIRE LANE
EAF	EXPOSED AGGREGATE FINISH	NTS	NOT TO SCALE
EC	EROSION CONTROL		
EJ	EXPANSION JOINT	O.A.	OVERALL
EL	ELBOW	O.C.	ON CENTER
ELEC.	ELECTRIC	O.D.	OUTSIDE DIAMETER
ELEV.	ELEVATION	O.F.	OUTER FACE
EQ.	EQUAL	O/H	OVERHEAD
E.W.	EACH WAY	Opp.	OPPOSITE
X./EXIST.	EXISTING	ORIG.	ORIGINAL

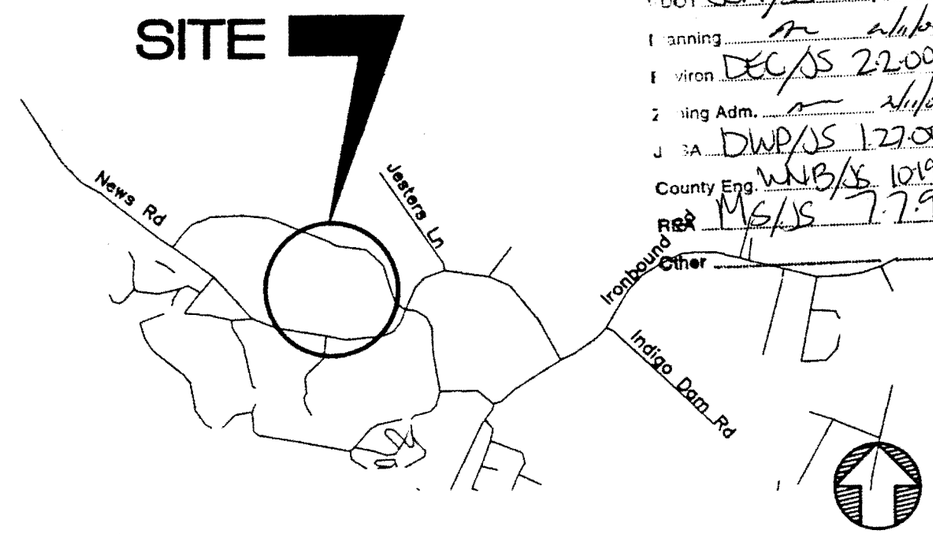
PL	PROPERTY LINE
PAR.	PARCEL
PE	POLYETHYLENE
PED.	PEDESTAL
PG.	PAGE
PIV	POST INDICATOR VALVE
PP	POWER POLE
PROP.	PROPERTY
PSI/P.S.I.	POUNDS PER SQUARE INCH
PVC	POLYVINYL CHLORIDE PIPE
R	RADIUS
RCP	REINFORCED CONC. PIPE
RD.	ROAD
RD	ROOF DRAIN
RED.	REDUCER
REINF.	REINFORCING
REQ'D.	REQUIRED
RL	RAIN LEADER
ROW/R/W	RIGHT-OF-WAY
SAN.	SANITARY
SB	STRAW BALES
SC	SAW-CUT
SCO	SANITARY SEWER CLEAN OUT
SD	STORM DRAIN
SDMH	STORM DRAIN MANHOLE
SED.	SEDIMENT
SER.	SERIAL
SEW.	SEWER
SF/SF-1	SILT FENCE
S.F.	SQUARE FEET
SIM.	SIMILAR
SMH	SAN. SEWER MANHOLE
SQ.	SQUARE
S.R.	SHORT RADIUS
S.S.	STAINLESS STEEL
ST.	STREET
STD.	STANDARD
STY.	STORY
SW-1/SW-2	SIDEWALK (CONCRETE)
S.Y.	SQUARE YARD
T	TANGENT
TBM	TEMPORARY BENCHMARK
TEL	TELEPHONE
TN.	TON
TP	TREE PROTECTION
TRANS.	TRANSFORMER
TV	TELEVISION
TYP.	TYPICAL
U/G	UNDERGROUND
U.O.N.	UNLESS OTHERWISE NOTED
VA.	VIRGINIA
VERT./V	VERTICAL
VDOT	VIRGINIA DEPARTMENT OF TRANSPORTATION
VG-1	CONC. VALLEY GUTTER
W	WATER
w/	WITH
WM	WATER MAIN
WV	WATER VALVE
WWM	WELDED WIRE MESH
YB	YARD BASIN
YD.	YARD

COMMONWEALTH OF VIRGINIA
LANCE G. LARGE
No. 15317
PROFESSIONAL ENGINEER

SP-78-99

COUNTY OF JAMES CITY
FINAL SITE PLAN

APPROVALS	DATE
Fire Dept PP/JS	10-13-99
Health Dept CLL/JS	10-12-99
VDOT JM/JS	1-11-00
Planning	2/1/00
Environ DEC/JS	2-2-00
Zoning Adm.	2/1/00
JCSA DWP/JS	1-27-00
County Eng. WNB/JS	10-19-99
RPA MG/JS	7-7-99
Other	



LOCATION MAP

SCALE: 1"=2000'

SHEET INDEX

C1.0 CIVIL DIVISION COVER SHEET
C2.0 EXISTING SITE SURVEY
C3.0 SITE DEMOLITION & EROSION CONTROL PLAN
C4.0 OVERALL IMPROVEMENT PLAN
C4.1 DIMENSIONAL & IMPROVEMENT PLAN
C4.2 DIMENSIONAL & IMPROVEMENT PLAN
C4.3 DIMENSIONAL & IMPROVEMENT PLAN
C4.4 DIMENSIONAL & IMPROVEMENT PLAN
C5.0 GRADING & DRAINAGE PLAN
C5.1 GRADING & DRAINAGE PLAN
C5.2 GRADING & DRAINAGE PLAN
C5.3 GRADING & DRAINAGE PLAN
C6.0 UTILITY PLAN
C6.1 UTILITY PLAN
C6.2 UTILITY PLAN
C6.3 UTILITY PLAN
C6.4 UTILITIES PROFILE

RECEIVED
FEB 2000
PLANNING DEPARTMENT

mark	date	description	by
revisions			

date	11/08/99
job #	C98-1670
designed	E A E
drawn	W T L
checked	C J B

W.P. LARGE, Inc.
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242 MUSTANG TRAIL - SUITE 8
VIRGINIA BEACH, VIGINIA
PH. (757) 431-1041
FAX. (757) 463-1412

ZONED: R4

N 58°39'56" E
436.81'

BLDG. C
TYPE 2A

CARRIAGE HOUSE WAY

BLDG. B
TYPE 1

CLUB HSE
#520

BY OTHERS)

R=923.00'
A=70'

S 40°18'44" E
84.66'

S 63°42'23" E
125.83'

R=925.00'
A=128.51'

PROPOSED
VDOT EW-6S(30")
(BY OTHERS)

VAR. LANDSCAPE
BUFFER

716.63'

BLDG. E
TYPE 2A

BLDG. D
TYPE 2

BLDG. U
TYPE 1A

BLDG. V
TYPE 1

BLDG. W
TYPE 2A

PINNACLE ARCH

SUMMIT LOOP

BLDG. G
TYPE 1

BLDG. M
TYPE 1A

BLDG. N
TYPE 1

BLDG. S
TYPE 2A

BLDG. T
TYPE 2

BLDG. X
TYPE 1

PHASE 1

PHASE 2

PARCEL A
21.76 ACRES TOTAL
AREA DESIGNATION D
(APARTMENTS)

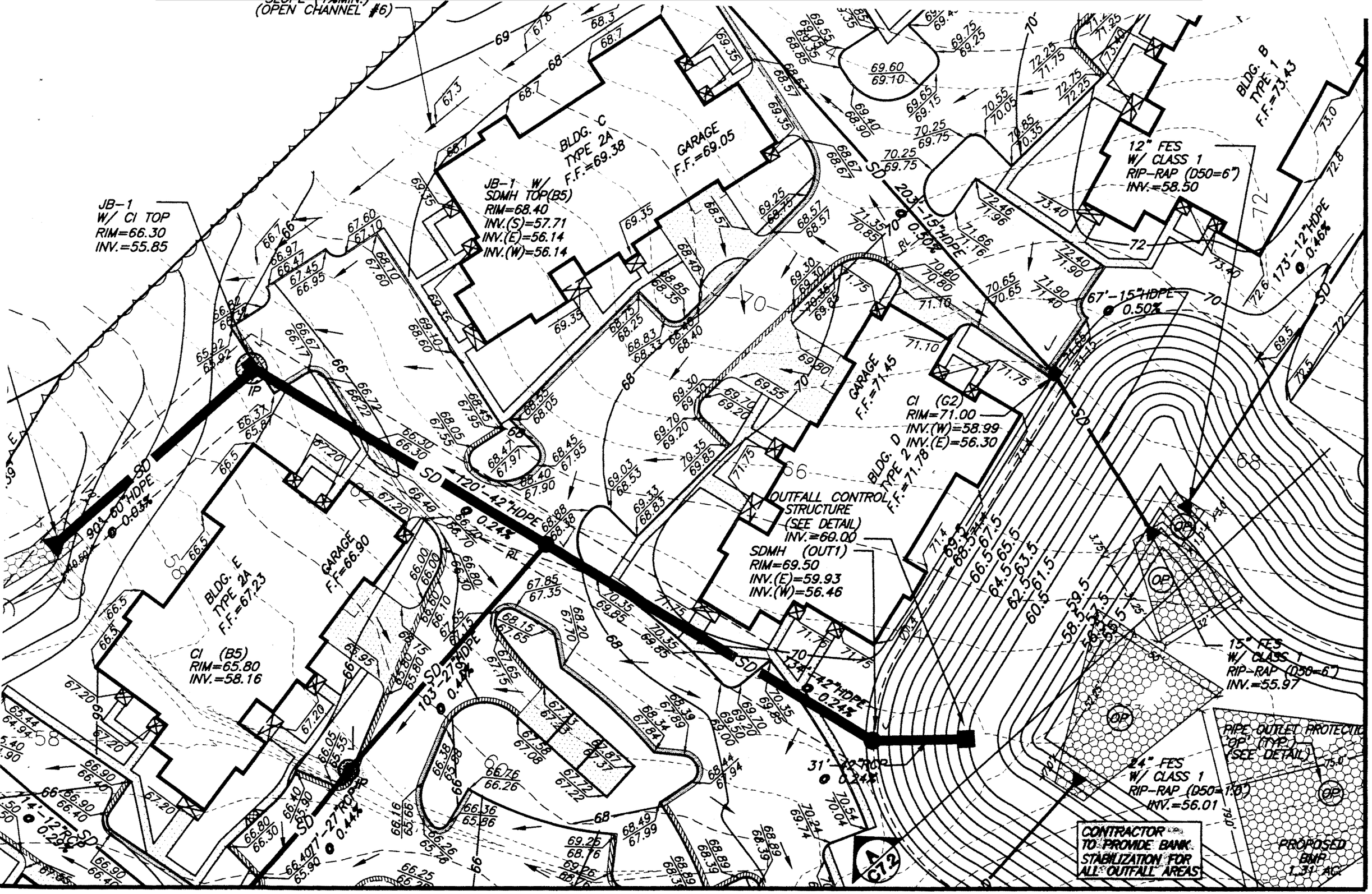
BLDG. J
TYPE 1

BLDG. L
TYPE 2

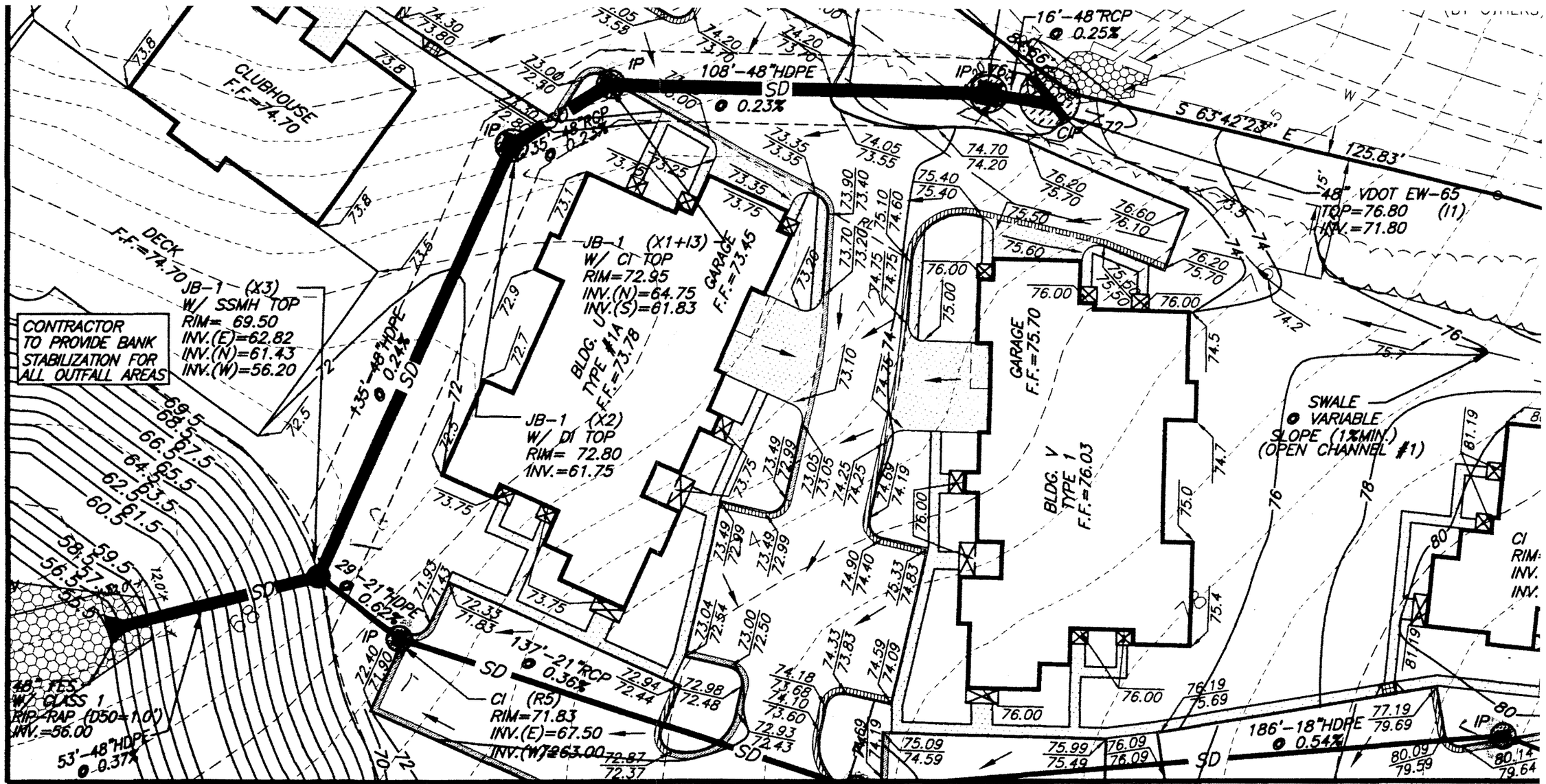
BLDG. O
TYPE 2

BLDG. R
TYPE 2

BLDG. BB
TYPE 1


(OPEN CHANNEL #6)
JB-1
W/ CI TOP
RIM=66.30
INV.=55.85
BLDG. C
TYPE 2A
F.F.=69.38
GARAGE
F.F.=69.05
JB-1 W/
SDMH TOP(B5)
RIM=68.40
INV.(S)=57.71
INV.(E)=56.14
INV.(W)=56.14
203'-15"HDPE
0.50%
12" FES
W/ CLASS 1
RIP-RAP (D50=6")
INV.=58.50
BLDG. B
TYPE 1
F.F.=73.43
173'-12"HDPE
0.46%
67'-15"HDPE
0.50%
GARAGE
F.F.=71.45
CI (G2)
RIM=71.00
INV.(W)=58.99
INV.(E)=56.30
BLDG. D
TYPE 2
F.F.=71.78
OUTFALL CONTROL
STRUCTURE
(SEE DETAIL)
INV.=69.00
SDMH (OUT1)
RIM=69.50
INV.(E)=59.93
INV.(W)=56.46
120'-42"HDPE
0.24%
42"HDPE
0.24%
31'-42"RCP
0.24%
90'-60"HDPE
0.83%
BLDG. E
TYPE 2A
F.F.=67.23
GARAGE
F.F.=66.90
CI (B5)
RIM=65.80
INV.=58.16
103'-27"HDPE
0.44%
77'-27"RCP
0.44%
114'-12"RCP
0.29%
15" FES
W/ CLASS 1
RIP-RAP (D50=6")
INV.=55.97
24" FES
W/ CLASS 1
RIP-RAP (D50=1.0')
INV.=56.01
PIPE OUTLET PROTECTION
"OP" (TYP.)
(SEE DETAIL)
CONTRACTOR
TO PROVIDE BANK
STABILIZATION FOR
ALL OUTFALL AREAS
PROPOSED
BMP
1.31 AC.
MATCHLINE - SHEET
C72

MATCHLINE

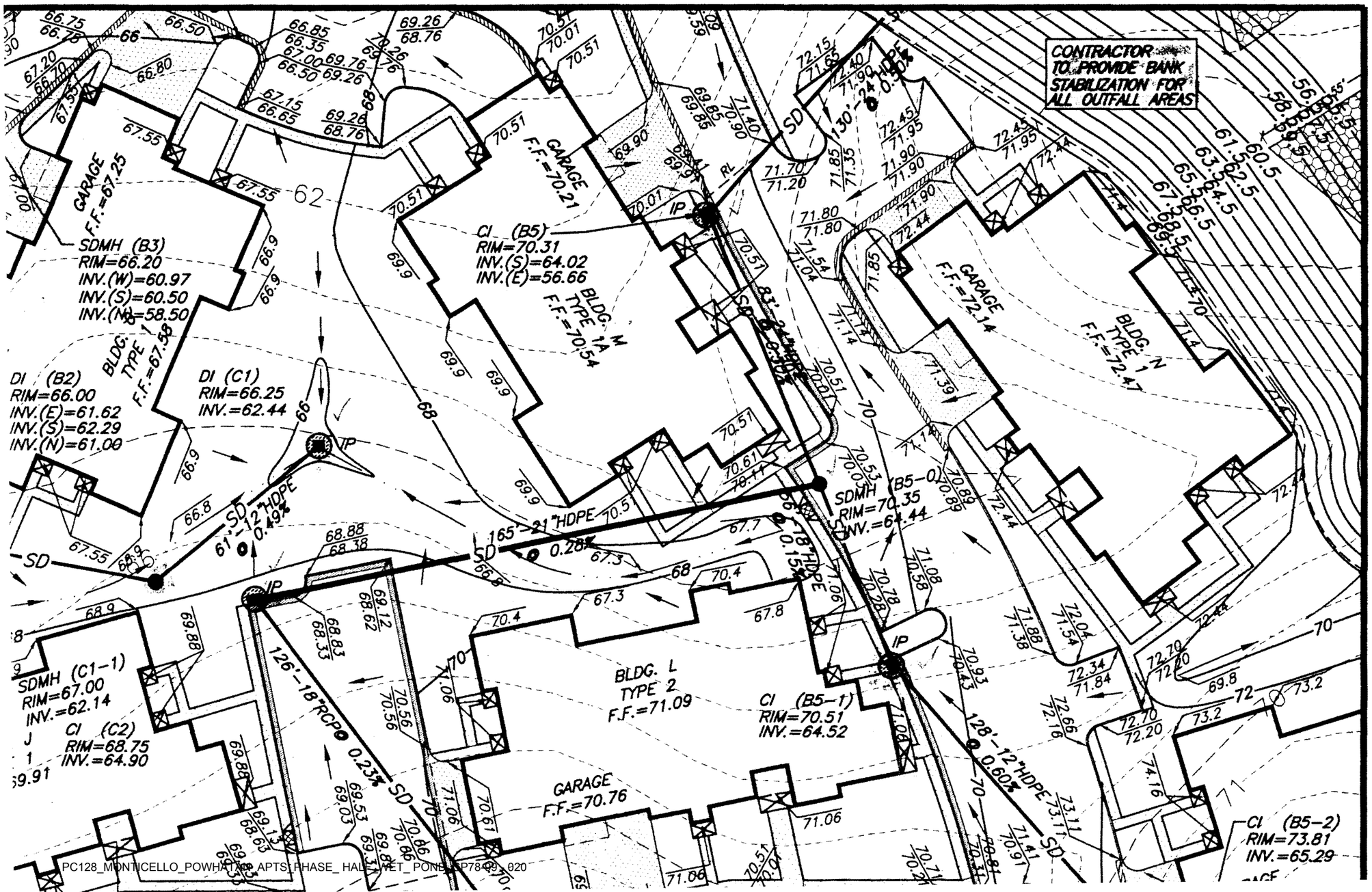


MATCH

tech.: WTL
jn: C98-1670 dwg: C-GRAD.DWG
ref.:
fb/p:

A | B | C | D | E | F | G | H

NE - SHEET, C5.0



E - SHEET C5.3

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date	11/08/99
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designed	E A E
drawn	W T L
checked	C J B

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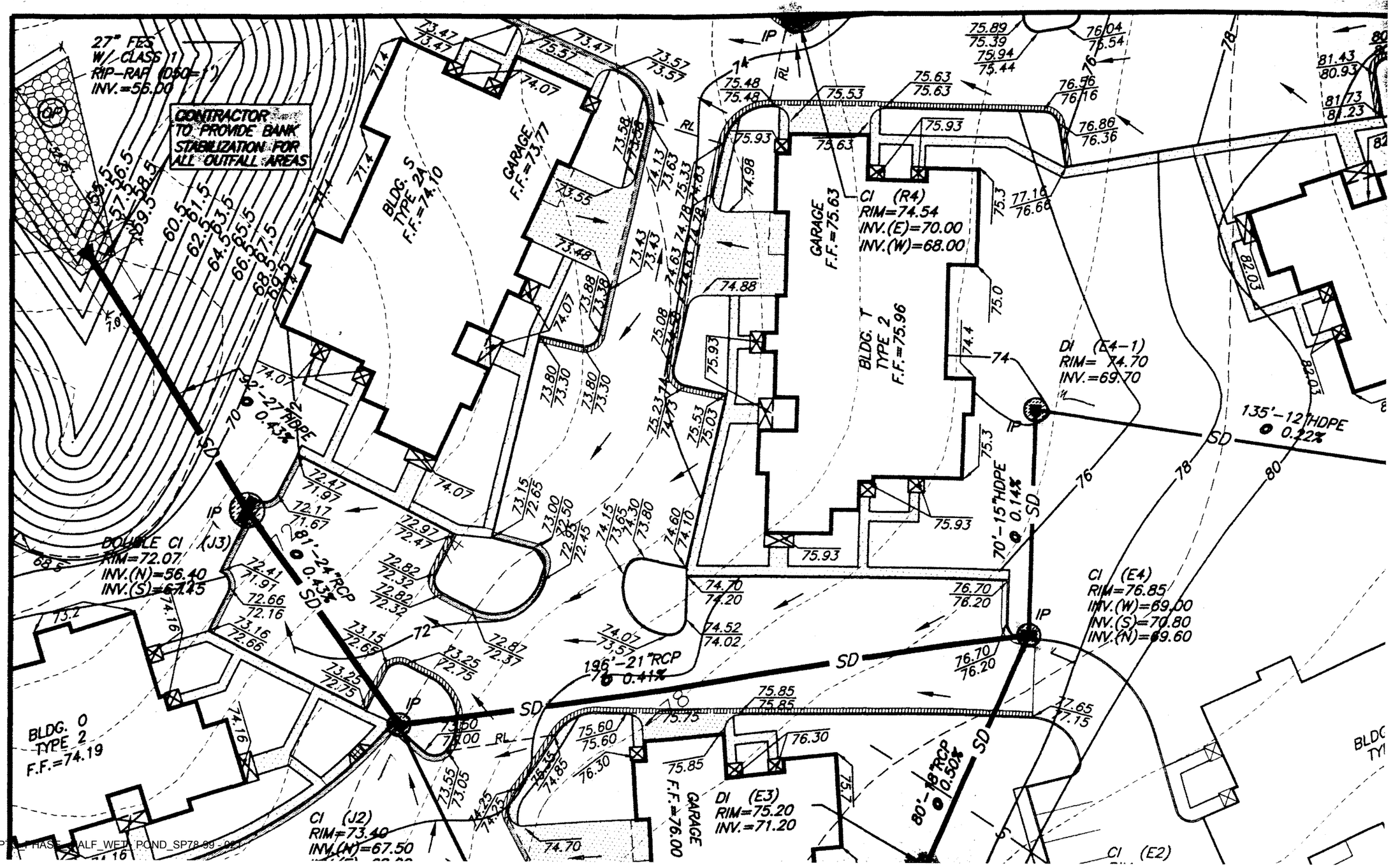
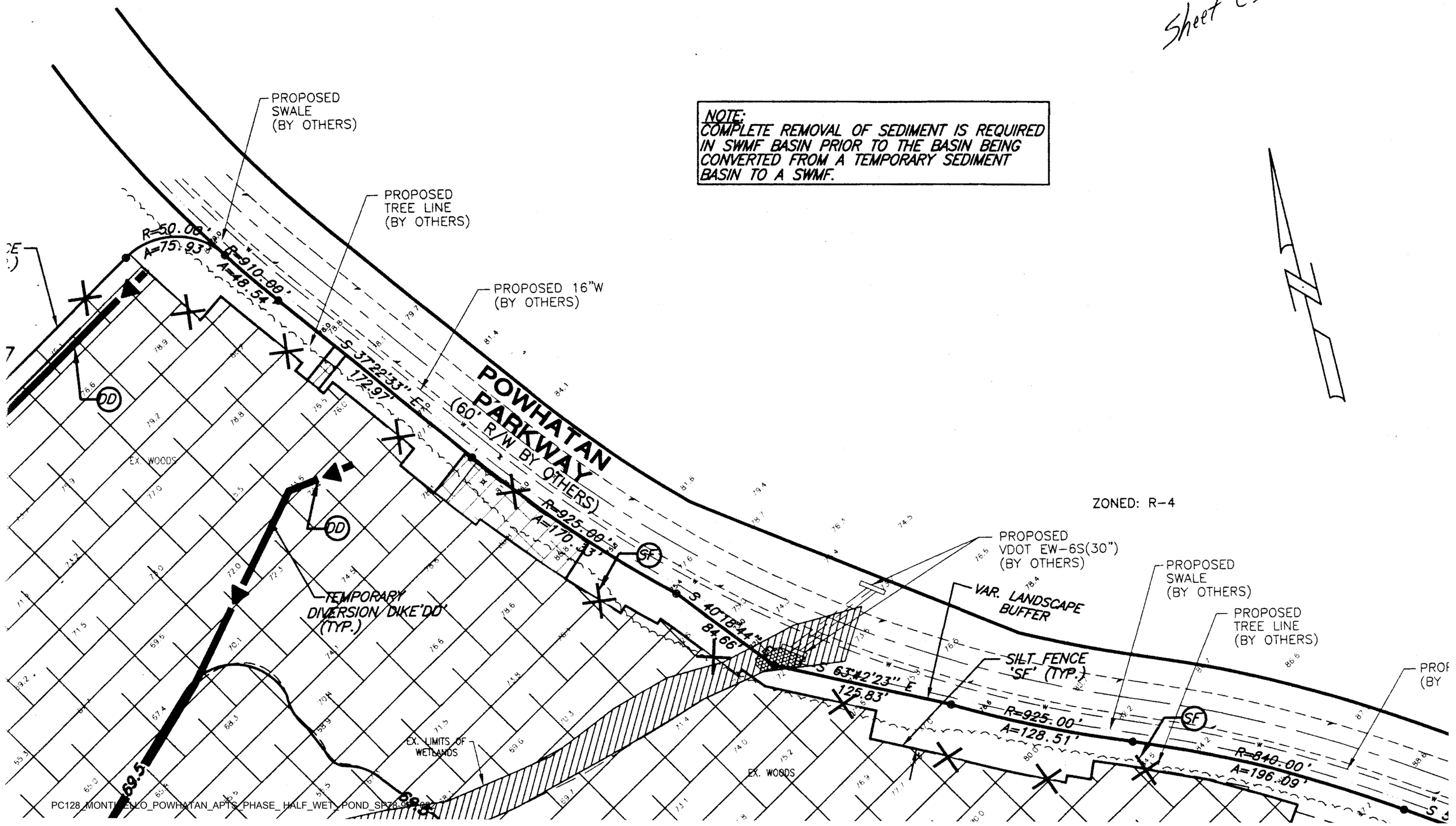

27" FES W/ CLASS 1 RIP-RAP (D50=1')
INV.=56.00
CONTRACTOR TO PROVIDE BANK STABILIZATION FOR ALL OUTFALL AREAS
BLDG. S TYPE 2A F.F.=74.10
GARAGE F.F.=73.77
GARAGE F.F.=75.63
BLDG. T TYPE 2 F.F.=75.96
CI (R4) RIM=74.54 INV.(E)=70.00 INV.(W)=68.00
DI (E4-1) RIM=74.70 INV.=69.70
135'-12"HDPE @ 0.22%
70'-15"HDPE @ 0.14%
92'-27"HDPE @ 0.43%
81'-24"RCP @ 0.43%
DOUBLE CI (J3) RIM=72.07 INV.(N)=56.40 INV.(S)=67.45
CI (E4) RIM=76.85 INV.(W)=69.00 INV.(S)=70.80 INV.(N)=69.60
196'-21"RCP @ 0.41%
80'-18"RCP @ 0.50%
BLDG. O TYPE 2 F.F.=74.19
CI (J2) RIM=73.40 INV.(N)=67.50
DI (E3) RIM=75.20 INV.=71.20
GARAGE F.F.=76.00
CI (E2)
SD
IP
RL

SHEET C5.2

Sheet C3.0

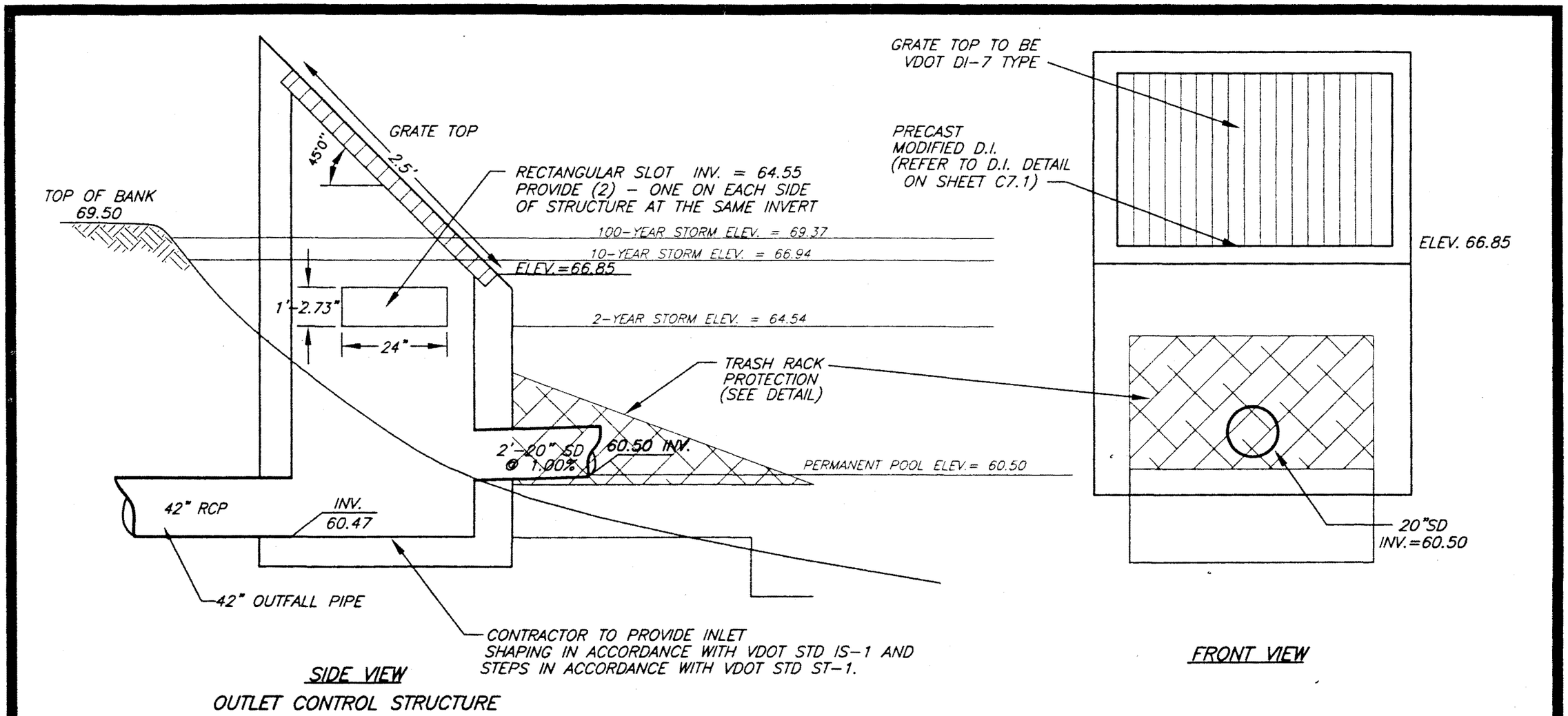
NOTE:
COMPLETE REMOVAL OF SEDIMENT IS REQUIRED IN SWMF BASIN PRIOR TO THE BASIN BEING CONVERTED FROM A TEMPORARY SEDIMENT BASIN TO A SWMF.



OUTLET (PERSPECTIVE VIEW)

JRCE: VA. DSWC

PLATE. 3.13-2



OUTLET CONTROL STRUCTURE

OUTLET CONTROL MODIFIED DROP INLET

DETAIL A

N.T.S.

C D E F G H I J K

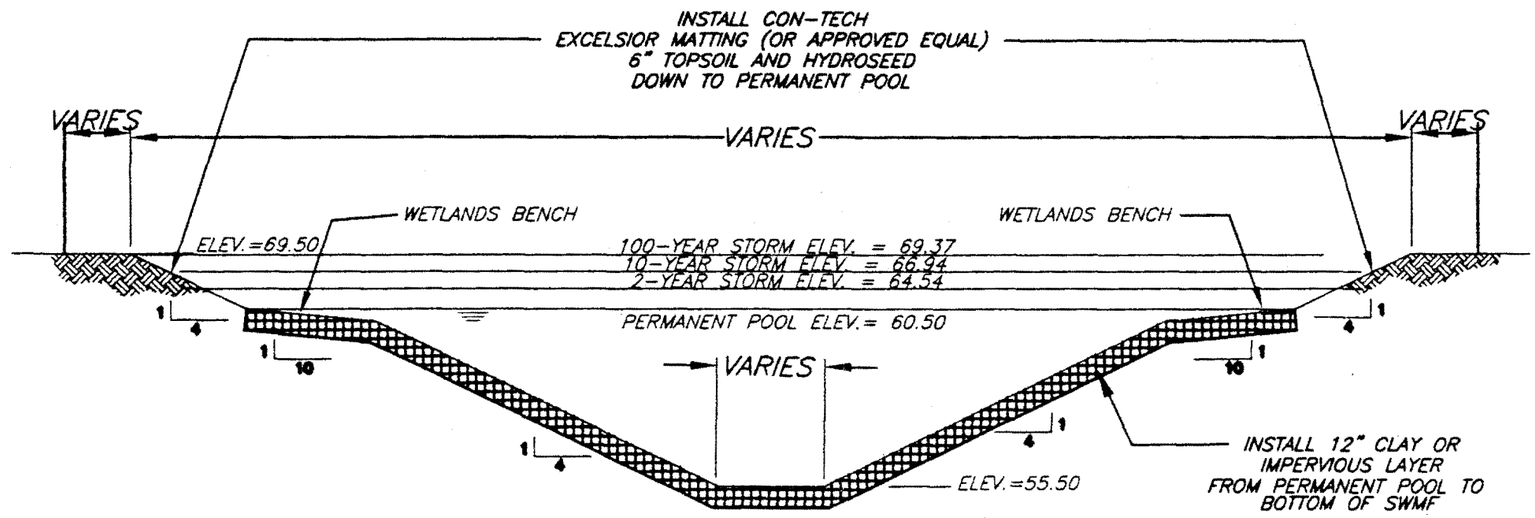
OR SQUARE
OPTIONAL

LE STEPS
F 1441 B

L CHANNELS WALLS TO
MED OF CONCRETE OR
CK & MORTAR WITH
ED FINISH. SLOPE = 2"

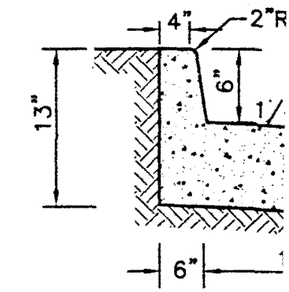
IL VINYL VAPOR BARRIER
IF AGGREGATE IS USED)

REGATE SUB-BASE
H. STANDARDS) MAY
TOM IS FIRM & DRY



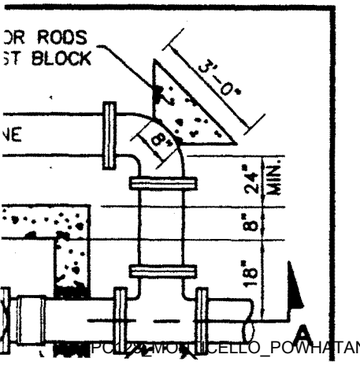
SECTION 'A'- WET RETENTION BASIN

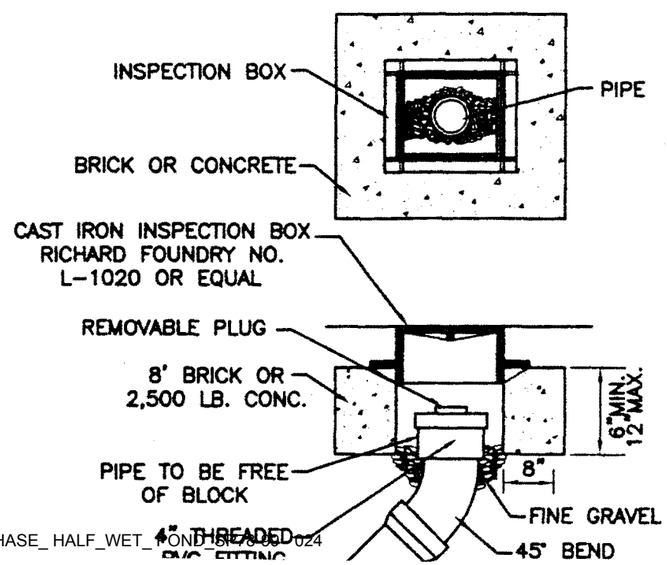
N.T.S.



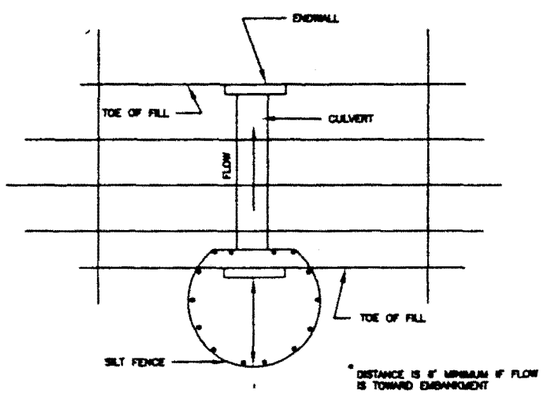
CONCRETE

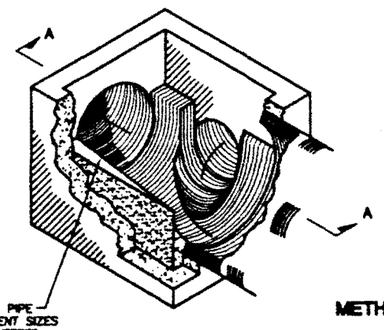
NOT





SILT FENCE CULVERT INLET PROTECTION





TRANSITION BETWEEN PIPE DIAMETERS WHEN DIFFERENT SIZES OF PIPES ARE ENCOUNTERED.

METHOD OF

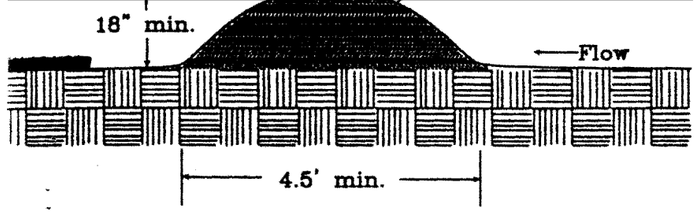
SHAPING OF MANHOLE AND INLET INVERTS IN ACCORDANCE WITH THIS DRAWING IS TO APPLY TO THOSE STRUCTURES SPECIFIED ON PLANS OR WHERE INVERT OF PIPE IS ABOVE INVERT OF STRUCTURE.

MANHOLE OR DROP INLET IS TO BE FORMED AND CONSTRUCTED IN ACCORDANCE WITH APPLICABLE STANDARD OR SPECIAL DRAWING. THE INVERT SHAPING AS DETAILED HEREON IS TO CONSIST OF A PORTLAND CEMENT CONCRETE MIX CONFORMING TO CLASS A3 OR CLASS C1, EXCEPT THAT 25% OF COARSE AGGREGATE MAY BE UP TO 4" IN DIAMETER AND CONSIST OF STONE, BROKEN BRICK, BROKEN CONCRETE, OR BROKEN CONCRETE BLOCK. THE SURFACE SHALL BE LEFT SMOOTH BY MEANS OF HAND TROWELLING. NONE OF THE COARSE AGGREGATE SHALL REMAIN EXPOSED.

DETAILS OF INVERT SHAPING AS SHOWN HEREON ARE FOR EXAMPLE PURPOSES ONLY. EACH MANHOLE OR DROP INLET IS TO BE SHAPED INDIVIDUALLY TO BEST FIT THE PARTICULAR INLET AND OULET

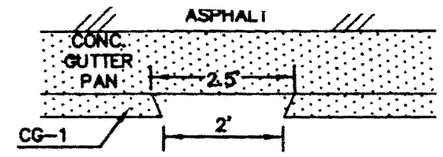
PLAN

PU_22_MONTICELLO_POWHATAN_APTS_PHASE_ HALF_WET_POND_SHEA_00_024



DSWC

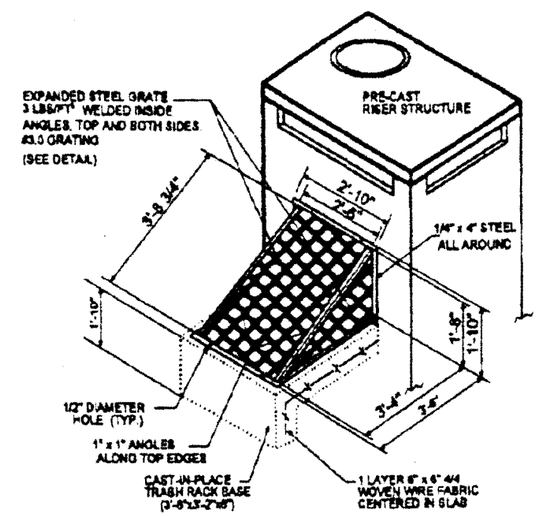
PLATE 3.09-1



TYPICAL CURB CUT DETAIL

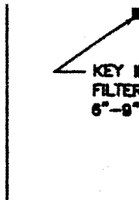
NOT TO SCALE

CONTRACTOR TO CONTACT MR. SCOTT THOMAS OF THE JAMES CITY COUNTY ENVIRONMENTAL DEPARTMENT FOR FURTHER INFORMATION.



CONTRACTOR TO CONNECT TRASH RACK TO BASE AND RISER WITH 1/4" x 4" STEEL AND 1" BOLTS

TRASH RACK DETAIL



SOURCE: A

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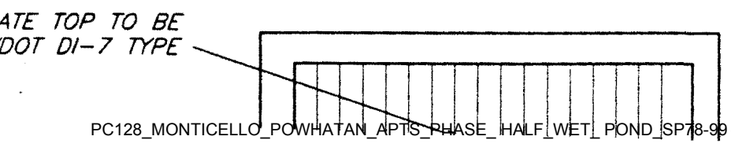
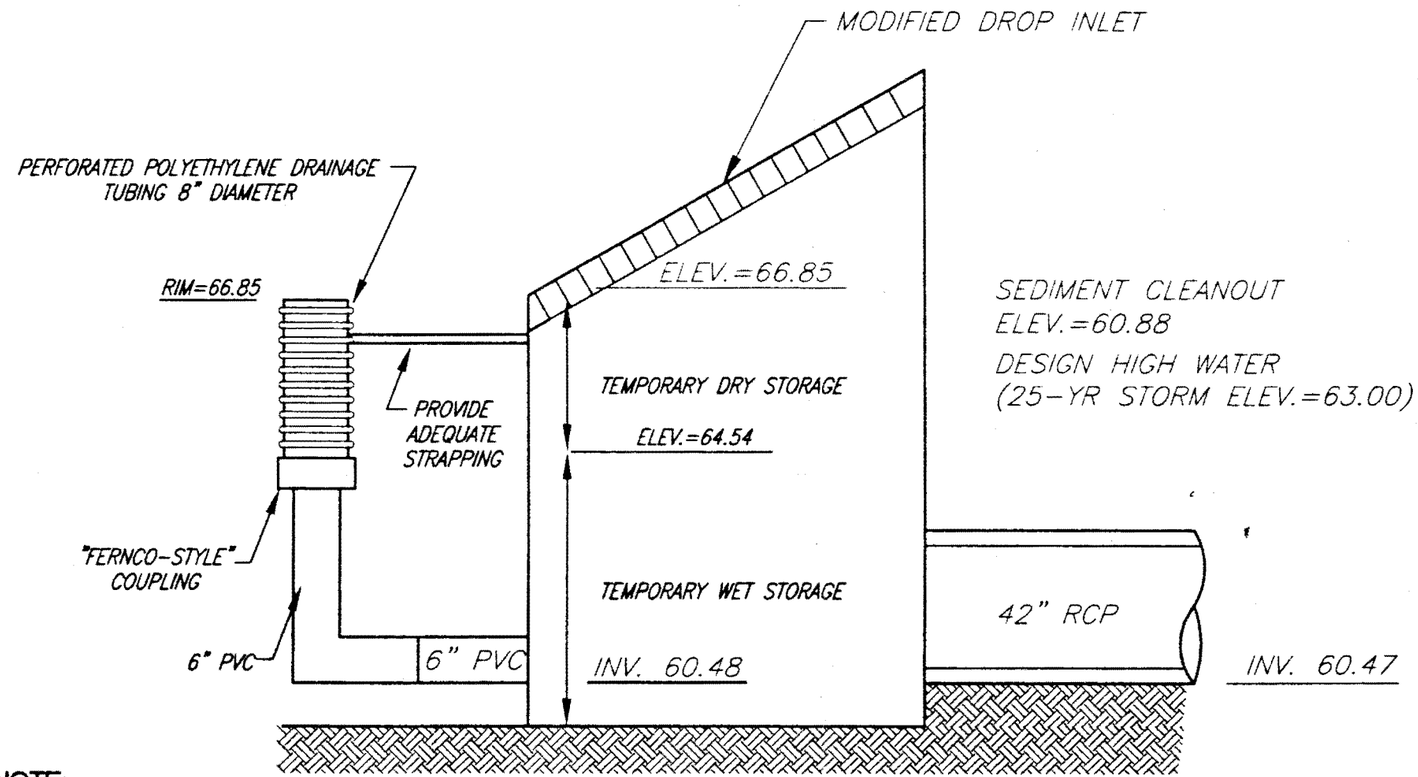




NOTE:
FOR USE DURING CONSTRUCTION PHASE

TEMPORARY OUTLET CONTROL STRUCTURE DETAIL

NTS

BEFORE PROCEEDING WITH THE WORK.

22. COMPACTION REPORTS, WITH PROCTOR, ARE RE
DRAINAGE STRUCTURES, AND UTILITIES WITHIN THE
WITH VDOT SPECIFICATIONS AND STANDARDS.

23. INSTALLATION OF PIPE CULVERTS, STORM SEWE
ACCORDANCE WITH VDOT SPECIFICATIONS AND STAN
ROOTS AND EXCESS MOISTURE, AND COMPACTED.

24. ALL ROADSIDE DITCHES SHOWN AS PAVED ON
SECTION AS SHOWN ON THE PLANS. UNLESS OTHE
ADDITIONAL PAVING OF THE DITCHES, OTHER THAN
ACCEPTANCE OF THE ROADS INTO THE VDOT SECO

25. ALL DRAINAGE EASEMENTS SHALL BE LABELED
EASEMENTS".

26. VDOT AND COUNTY APPROVAL OF SUBDIVISION
FACILITIES.

27. VDOT APPROVAL OF THESE PLANS WILL EXPIRE

28. CLEARING AND GRUBBING SHALL BE COMPLETE

29. THE SUBGRADE MUST BE APPROVED BY VDOT
COMPACTION REPORTS AND PERFORMED PROOF ROL

30. BASE MUST BE APPROVED BY VDOT FOR DEPT

31. A PRIME COAT SEAL WILL BE REQUIRED FOR A
APPLICATION SM-2A (PRIME COAT RE-250, 0.30 G

32. SURFACE MIXES SHALL BE PLACED WHEN THE
BASED ON THE MARSHALL DESIGN OF THE BITUMIN
VDOT FOR VERIFICATION.

33. ALL UTILITIES ARE TO BE IN PLACE PRIOR TO

34. AN ACTUAL COPY OF THE CBR REPORT IS TO
DESIGN. IF THE CBR VALUES ARE LESS THAN 10,
PROPOSED METHOD OF CONSTRUCTION.

35. PAVED DITCHES MAY BE REQUIRED WHERE FIEL
EXCEEDING 3% OR 1% OR LESS SHALL BE PAVED
THE LOCAL GOVERNING BODY.

36. ALL EROSION AND SEDIMENT CONTROL MEASUR

37. ALL VEGETATION AND OVERBURDEN TO BE REM
SUBGRADE.

38. CERTIFICATION AND SOURCE OF MATERIALS ARE
ACCORDANCE WITH THE "ROAD AND BRIDGE SPECIFI

39. DRY GUTTER IS NOT ALLOWED IN VDOT RIGHT

PE ON SITE PROVIDED PIPE MEETS
RBS, SECTION 232.02,
P PIPE IS TO BE USED OTHERWISE.

STORMWATER QUALITY BMP MAINTENANCE PLAN

1. MAINTENANCE OF BMP'S SHALL BE RESPONSIBILITY OF THE PROPERTY OWNER AS SPECIFIED BY THE DECLARATION OF COVENANTS FOR STORM AND SURFACE WATER FACILITY AND SYSTEM MAINTENANCE. PROPER MAINTENANCE WILL ENSURE THAT THE BMP CONTINUES TO FUNCTION AS DESIGNED, TO IMPROVE WATER QUALITY.

2. THE BMP SHALL BE INSPECTED AT LEAST TWICE A YEAR BY THE OWNER. THE BMP WILL BE INSPECTED AT LEAST ONCE A YEAR BY JAMES CITY COUNTY INSPECTION DEPARTMENT (757) 727-6150 AND AN INSPECTION REPORT WILL BE PROVIDED TO THE OWNER. RECOMMENDED AND/OR CORRECTIVE MEASURES WILL BE IDENTIFIED.

SCHEDULED BMP MAINTENANCE PRACTICES

A. BI-WEEKLY: MAINTAIN A GRASS HEIGHT OF AT LEAST THREE INCHES DURING THE GROWING SEASON OR SIX TO EIGHT INCHES IF MAINTAINED AS AN UPLAND MEADOW.

B. MONTHLY: REMOVE DEBRIS AND TRASH.

C. MONTHLY: OPERATE MECHANICAL COMPONENTS SUCH AS DRAINPIPE VALVES AND SLUICE GATES, IF PRESENT.

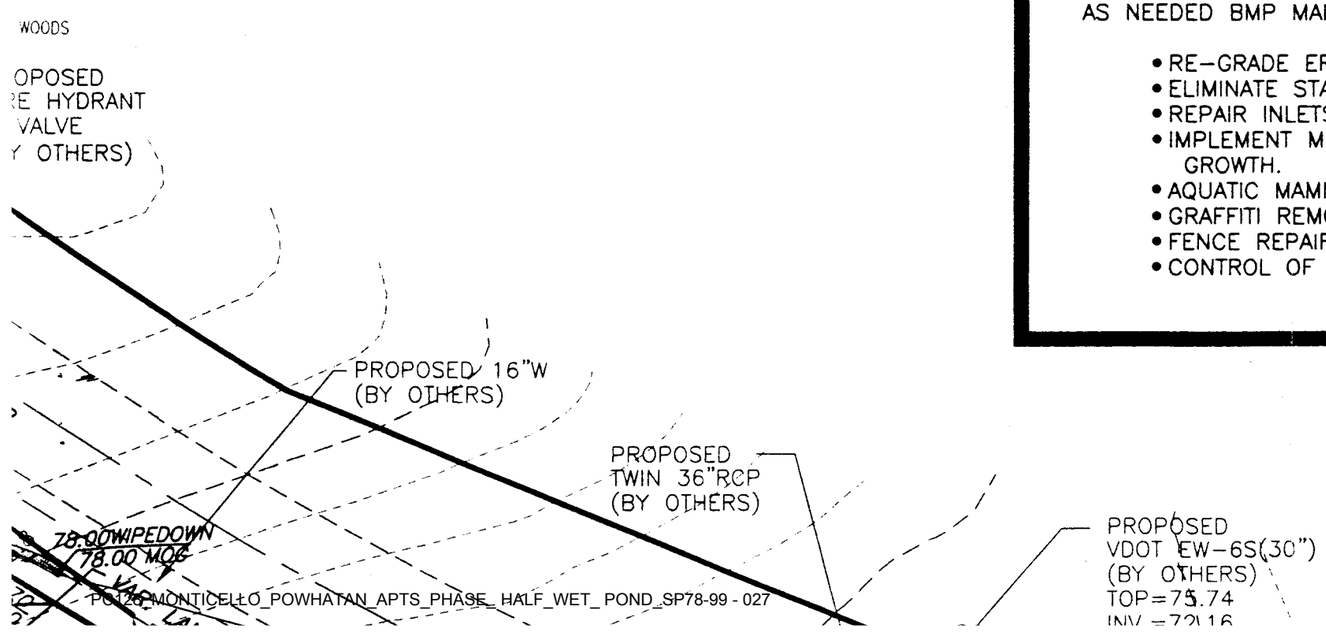
D. SPRING AND FALL: REPAIR BARE SPOTS IN VEGETATION AND PRUNE OR REMOVE TREES, BRUSH, ROOTS AND ANIMAL BURROWS.

E. EVERY SIX MONTHS: REMOVE ACCUMULATED SEDIMENT AT INLET POINTS.

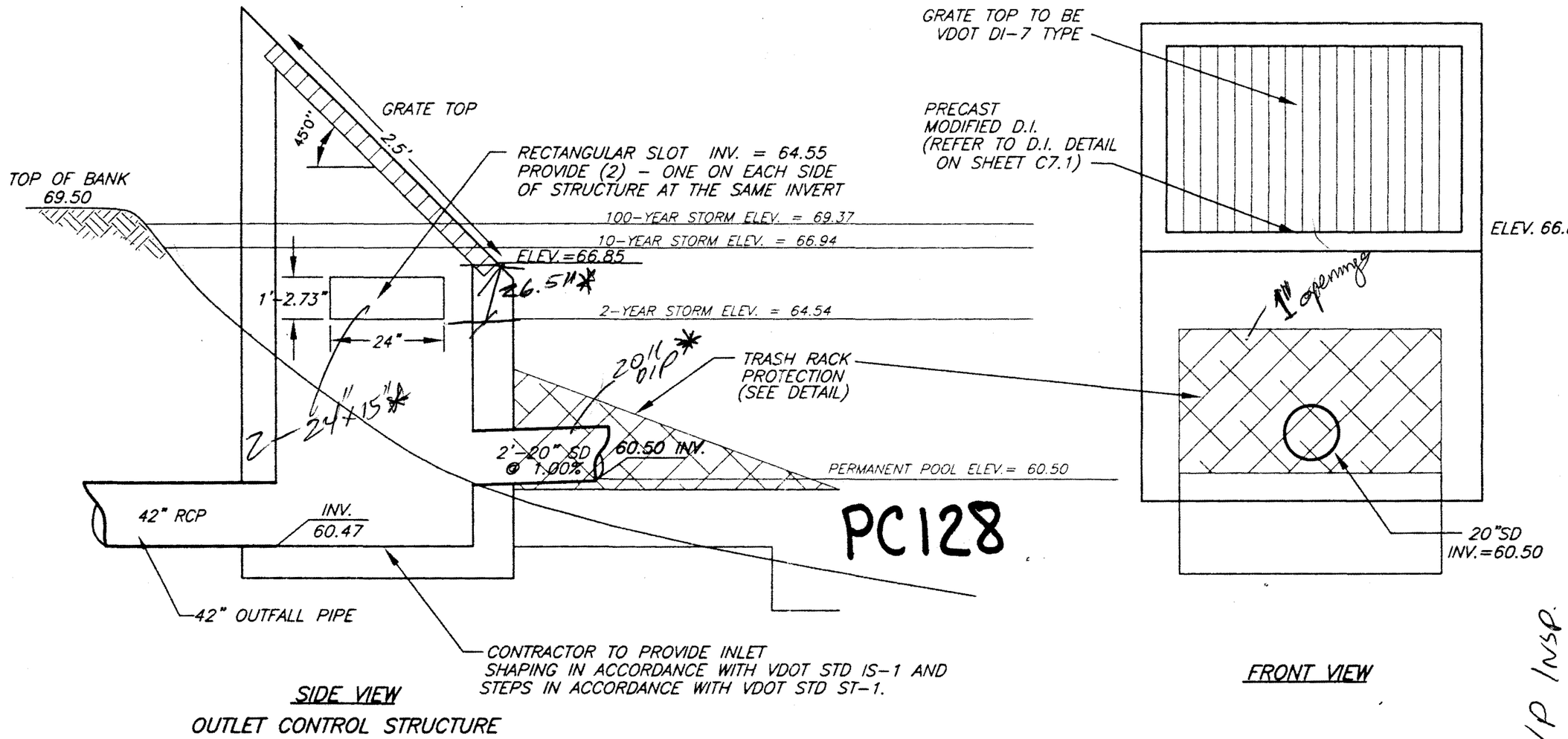
F. EVERY 2-10 YEARS (DRY PONDS) OR EVERY 5-15 YEARS (WET PONDS): REMOVE ACCUMULATED SEDIMENT FROM POND BOTTOM AND CLEAN OUTLET STRUCTURES.

AS NEEDED BMP MAINTENANCE PRACTICES

- RE-GRADE ERODED BANK SLOPES AND STABILIZE.
- ELIMINATE STAGNANT WATER TO PREVENT MOSQUITO BREEDING HABITAT.
- REPAIR INLETS, OUTLETS, TRASH RACKS, AND DAM EMBANKMENTS.
- IMPLEMENT MECHANICAL AND MAINTENANCE CONTROLS TO MINIMIZE ALGAE GROWTH.
- AQUATIC MAMMAL CONTROL.
- GRAFFITI REMOVAL.
- FENCE REPAIRS.
- CONTROL OF WEEDS.



NOTE: VDOT DOES NOT ASSUME RE
DETENTION/RETENTION POND
SAVED HARMLESS FROM ANY
THE DAM AND ITS OUTFLOW



OUTLET CONTROL MODIFIED DROP INLET

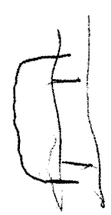
DETAIL A

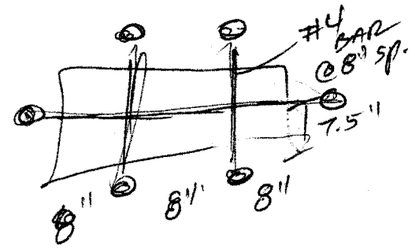
N.T.S.

* FIELD MEASURED.

Follow UP Insp. SJT FIELD COPY

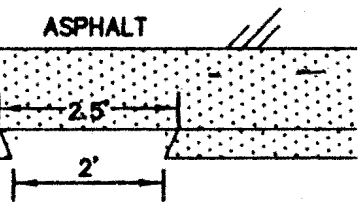
RISER ONLY 6/18/01





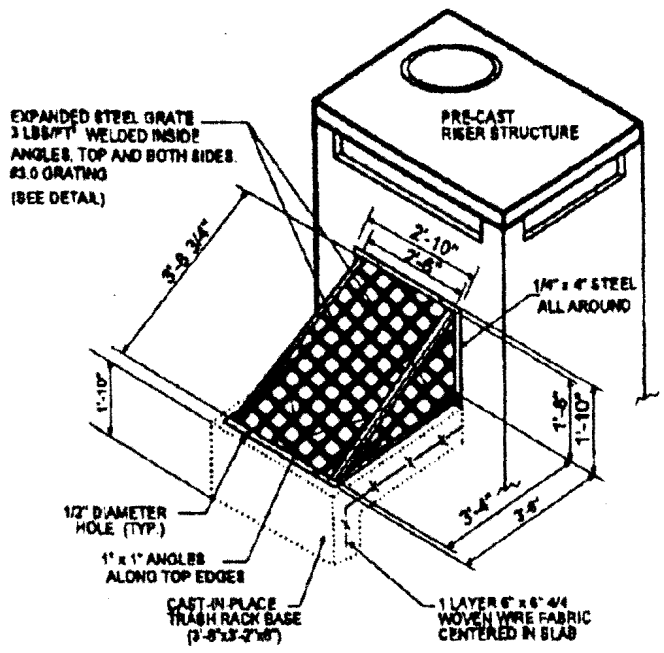
Note: for safety entry, although not on plan would like to see simple grate on two reef (24"x15") slots Rebar two vertical, one horiz.

tech.: WTL
jn: C98-1670.dwg: DETAILS.DWG
ref.:
fb/p:



URB CUT DETAIL

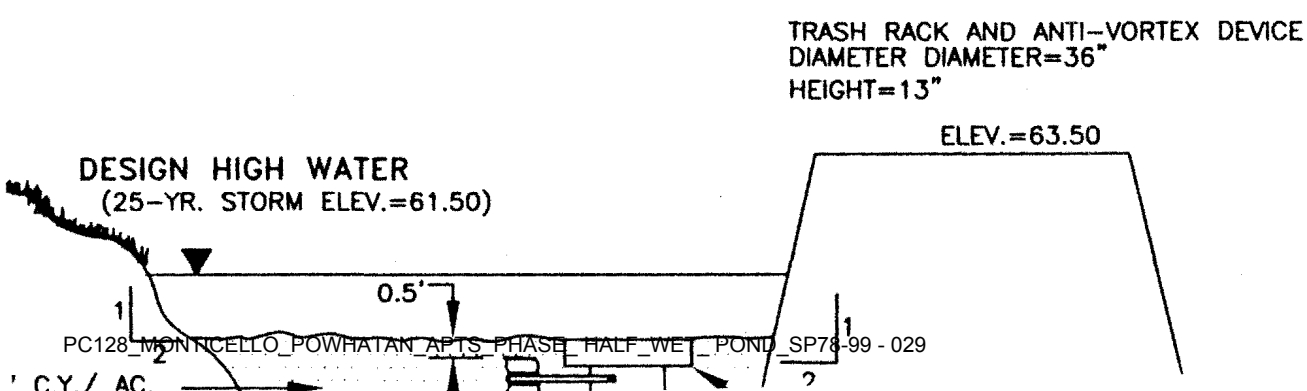
CONTRACTOR TO CONTACT MR. SCOTT THOMAS OF THE JAMES CITY COUNTY ENVIRONMENTAL DEPARTMENT FOR FURTHER INFORMATION.



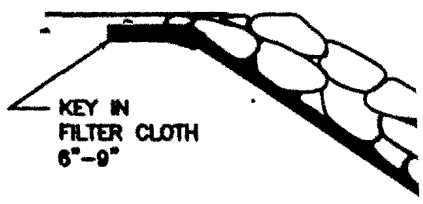
CONTRACTOR TO CONNECT TRASH RACK TO BASE AND RISER WITH 1/4" x 4" STEEL AND 1" BOLTS

TRASH RACK DETAIL

SEDIMENT BASIN #2 SCHEMATIC ELEVATIONS

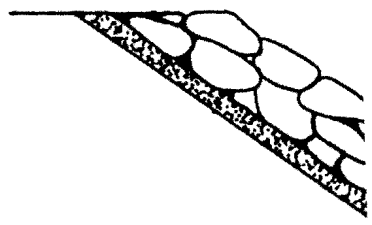


PC128_MONTICELLO_POWHATAN_APTS_PHASE_HALF_WET_POND_SP78-99 - 029



FILTER CLOTH

GRAI



COARSE AGGREGATE
MIN. THICKNESS = 6"

SOURCE: Adapted from VDOT Drai

BASIC EROSIO
CONSTRUCTIO

1 THE CONTRACTOR MUST SCHEDU
PLANNING/CIVIL INSPECTIONS PR
CONSTRUCTION ACTIVITIES.

2 ALL EROSION AND SEDIMENT CO
THE CURRENT VIRGINIA EROSION

3 CONSTRUCT TEMPORARY CONSTR

4 INSTALL PERIMETER EROSION C
THROUGHOUT CONSTRUCTION.

5 INSTALL INLET PROTECTION AROU
AND MAINTAIN THROUGHOUT CON

6 INSTALL ON-SITE STORM WATER
TO SERVE AS TEMPORARY SEDIME
SEDIMENT BASIN AND TEMPORARY

7 PERFORM DEMOLITION, CLEARING
AS INDICATED ON THE PLANS AN
CONTROL MEASURES AS NEEDED.

8 EXCAVATE STORMWATER MANAGEM
AS DETAILED AND SHOWN ON PLA

9 INSTALL ALL ON-SITE STORM DR
AS SHOWN OR OTHER APPROVED

10 ONCE STORM DRAINAGE SYSTEM
STORMWATER MANAGEMENT BASIN,
SHALL BE FILLED CONCURRENT W
AND G AND THE RESPECTIVE PAR

A. TEMPORARY SEDIMENT BASIN
SEDIMENT REMOVED AND DISP
CONTROL STRUCTURES SHALL
LAWFUL MANNER.

B. IN AREAS TO BE PAVED OR
SHALL BE FILLED WITH SELEC
98% OF THE MATERIAL'S MAX
INSTALLED TO THE SUBGRADE

C. IN AREAS TO BE LANDSCAPE
CONTROLLED FILL IN 8" LIFTS
MAXIMUM DENSITY. CONTROLL
ELEVATION 6" BELOW THE PR
LANDSCAPING SHALL THEN BE

ADDITIONAL EROSION CONTROLS,
EROSION CONTROL MATTING, SHAL
ENGINEER AND THE LOCAL AUTHO
CONTROL.

STORM WATER MANAGEMENT DESIGN FOR MONTICELLO AT POWHATAN APARTMENTS

The stormwater management facility is designed to treat the above referenced site, a portion of the proposed 60 foot right-of-way, and the site across the right-of-way for a two (2)-year, ten (10)-year, and 100-year storm event.

A portion of the site will directly discharge into the existing ditch located on the western side of the property. The outfall ditch has a channel adequacy of 76 cfs. The outfall pipe from the stormwater management facility will thus be restricted to the difference between the channel adequacy and the flow directly discharging.

The stormwater management facility was sized using the SCS Method for each storm duration. The pipe sizing and hydraulic grade line calculations were based on the Virginia Department of Transportation Drainage Manual (1980) and sized according to a 10-year storm event. The time of concentrations on our site were based on using the Kinematic Wave Formula in this manual.

Letter from WPLARGE
1/04/00 ALL SITE GRADES RAISED 0.5' TO BALANCE SITE.

2-YR WSEL = 64.04+0.5 = 64.54
10-YR WSEL = 66.44+0.5 = 66.94
100-YR WSEL = 68.87+0.5 = 69.37

2-out 15.73cfs

WPL

W.P. LARGE, Inc.
242 Mustang Trail
Virginia Beach, VA 23452
(757) 431-1041

Spectra Precision Software, Inc.
5901 Peachtree-Dunwoody Rd., Suite A-300
Atlanta, GA 30328-5548
800-235-4972
Tue Nov 30 18:17:39 1999

PROJECT: C:\Tmodwin\shookie2.pro

HYDROLOGIC REPORT FOR JCC Apts
SUMMARY OF PEAK FLOW RATES

FREQ (yr)	PRE-DEVELOPED FLOW (c.f.s.)	POST-DEVELOP FLOW (c.f.s.)	POND ELEVATION (ft.)	STORAGE (cu.ft.)	ROUTED OUTFLOW (c.f.s)	POND ALLOWABLE
2	29.54 ✓	83.44 ✓	64.04 ✓	141816.2	15.73	< 15.7 CFS
10	73.08 ✓	154.34 ✓	66.44 ✓	251004.8	48.73	< 49.1 CFS
100	129.48 ✓	237.43 ✓	68.87 ✓	381948.0	74.57	< 94.4 CFS

OK 8/1 OK

MAX DESIGN WSEL
68.87
+ 2.00 FB
70.87

MIN. ELEV. AROUND POND

	OLD RUN	NEW RUN	
2	15.73 CFS @ 64.04	15.73 @ 64.04	(NO CHANGE CFS & WSEL)
10	46.78 CFS @ 66.45	48.73 @ 66.44	(INCREASE 1.95 cfs < 49.1 OK, NO CHANGE WSEL
100	95.91 CFS @ 68.42	74.57 @ 68.87	(≈ 100 YR CFS +0.45' WSEL)

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SP-078-99

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HYDROLOGIC REPORT FOR JCC Apts
SUMMARY OF PEAK FLOW RATES

FREQ (yr)	PRE-DEVELOPED FLOW (c.f.s.)	POST-DEVELOP FLOW (c.f.s.)	POND ELEVATION (ft.)	POND STORAGE (cu.ft.)	ROUTED OUTFLOW (c.f.s)	ALLOWABLE POND OUT
2	29.54 ✓	83.44 ✓	64.04	141816.2	15.73	15.7 ✓
10	73.08 ✓	154.34 ✓	66.44	251004.8	48.73	49.1 ✓
100	129.48 ✓	237.43 ✓	68.87	381948.0	74.57	94.4
	OK	OK				

DISCHARGE:	New POND OUT	OLD POND OUT
2	15.73 CFS	15.73 CFS ✓
10	48.73 CFS	46.78 CFS ✓
100	74.57 CFS	95.91 CFS

WSEL'S:		
2	64.04	64.04 ✓
10	66.44	66.45 ✓
100	68.87	68.42

NOTE: HYDRAULIC CHECK BMP RISER DUE TO INCLINING & DI-7 BAR TOP GRATE INSTEAD OF FLAT DI-1.

MIN. EL RQD
68.87 + 2 = 70.87
AROUND BMP.

▶ MIN 2' F.B. REQUIRED PER ENVIR. COMMENTS DATED

REVISED POND HYDRAULICS 12/01/99

SP- 78-99

Monticello at Powhatan Apartments Phase I

FINAL SITE PLAN

Sheets Applicable to E+S/Swm Review
C1.0, C2.0, C3.0, ~~[illegible]~~
C5.0, C5.1, C5.2, C5.3, C6.4, C7.0,
C7.1, C7.2, C7.3

WET RETENTION BASIN

HYDROLOGY

Predev SCS 24 hour $A = 41.2$ AC., $CN = 71.6$ $T_c = 0.53$ hrs. (31.8 min.)

$P_2 = 3.70$ in 29.54 cfs @ 6.6 HRS. 2 runoff = 1.23", Basin slope 1.9% $L = 2000'$

$P_{10} = 5.70$ in. 73.08 cfs @ 6.5 HRS 10 yr. runoff = 2.71"

$P_{100} = 7.90$ in. 129.48 cfs @ 6.5 hrs. 100 yr runoff = 4.56"

Developed INFLOW TO POND $A = 36.97$ AC., $CN = 85.3$, $T_c = 0.30$ hrs. (18 min.)
(OFFSITE 19.44 AC)
Basin slope 1.9%, $L = 2000'$

$P_2 = 3.70$ in. 83.4 cfs @ 6.3 hrs. 2-yr. runoff = 2.22 in.

$P_{10} = 5.70$ in 154.3 cfs @ 6.3 hrs. 10-yr runoff = 4.05"

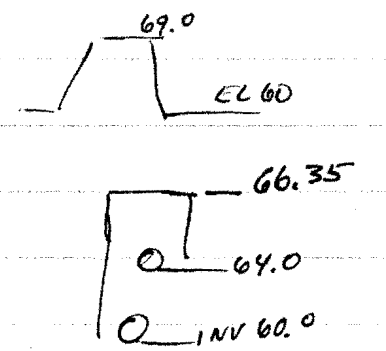
$P_{100} = 7.90$ in 237.4 cfs @ 6.2 hrs. 100-yr runoff = 7.90"

BYPASS
2 = 13.8 CFS
10 = 23.9 CFS
100 = 35.0 CFS

Routed

	ALLOW W/BYPASS			WSEL
2-yr.	15.7	15.7 cfs @ 6.8 hrs	297,606.9 cf	64.04
10-yr.	49.1	46.8 cfs @ 6.8 hrs	543,956.7 cf	66.45
100-yr.	94.4	95.9 cfs @ 6.6 hrs.	825,986.4 cf	68.42

POND



PREVIOUS POND HYDRAULICS

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Sun Oct 03 13:53:52 1999

PROJECT: C:\Tmodwin\shookie2.pro

HYDROLOGIC REPORT - SUMMARY OF PEAK FLOW RATES

BASIN: JCC Apts
ID: Pond 1

PREDEVELOPMENT

AREA	=	41.20
AVERAGE BASIN SLOPE	=	1.90
HYDRAULIC LENGTH	=	2000.00
TIME OF CONCENTRATION	=	0.89
BASIN CURVE NUMBER	=	71.60

DEVELOPMENT

AREA	=	36.97
AVERAGE BASIN SLOPE	=	1.90
HYDRAULIC LENGTH	=	2000.00
TIME OF CONCENTRATION	=	0.50
BASIN CURVE NUMBER	=	85.30

BYPASS

AREA	=	4.23
AVERAGE BASIN SLOPE	=	1.90
HYDRAULIC LENGTH	=	600.00
TIME OF CONCENTRATION	=	0.30
BASIN CURVE NUMBER	=	89.00

Frequency (years)	Pre-developed Peak Q (cfs)	By-pass area Peak Q (cfs)	Developed Peak Q (cfs)	Allowable peak Peak Q (cfs)
2	29.5	13.8	83.4	15.7
10	73.1	23.9	154.3	49.1
100	129.5	35.0	237.4	94.4

Spectra Precision Software, Inc.
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Sun Oct 03 13:51:54 1999

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HYDROLOGIC REPORT

PRE-DEVELOPED 24 HOUR SCS HYDROGRAPH
BASIN IDENTIFIER JCC Apts
DISCHARGES INTO Pond 1
BASIN AREA = 41.20 ACRES
BASIN CURVE NUMBER = 71.60
24-HOUR PRECIPITATION = 3.70 INCHES
24-HOUR RUNOFF = 1.23 INCHES
AVERAGE BASIN SLOPE = 1.9 %
HYDRAULIC LENGTH = 2000.0 FEET
BASIN LAG, (Tc) = 0.53 HOURS 0.89 HOURS
UNITPEAK COEFFICIENT = 484
RAINFALL DISTRIBUTION = c:\tmodwin\iia.scs
HYDROGRAPH RUNOFF VALUES
2 YEAR STORM FREQUENCY

TIME HOUR	RUNOFF C.F.S.	TIME HOUR	RUNOFF C.F.S.	TIME HOUR	RUNOFF C.F.S.	TIME HOUR	RUNOFF C.F.S.
5.50	0.0	5.58	0.0	5.67	0.0	5.75	0.0
5.83	0.1	5.92	0.5	6.00	1.4	6.08	3.4
6.17	7.1	6.25	11.8	6.33	17.5	6.42	22.9
6.50	27.0	6.58	29.5	6.67	29.5	6.75	28.2
6.83	25.9	6.92	22.9	7.00	19.8	7.08	17.0
7.17	14.6	7.25	12.9	7.33	11.4	7.42	10.1
7.50	8.9	7.58	8.0	7.67	7.2	7.75	6.5
7.83	6.0	7.92	5.5	8.00	5.1	8.08	4.8
8.17	4.5	8.25	4.3	8.33	4.2	8.42	4.0
8.50	3.8	8.58	3.6	8.67	3.3	8.75	3.1
8.83	2.8	8.92	2.6	9.00	2.5	9.08	2.3
9.17	2.2	9.25	2.1	9.33	2.1	9.42	2.0
9.50	2.0	9.58	2.0	9.67	1.9	9.75	1.9
9.83	1.9	9.92	1.9	10.00	1.9	10.08	1.9
10.17	1.9	10.25	1.9	10.33	1.9	10.42	1.8
10.50	1.8	10.58	1.7	10.67	1.6	10.75	1.5
10.83	1.4	10.92	1.3	11.00	1.2	11.08	1.2
11.17	1.1	11.25	1.1	11.33	1.1	11.42	1.1
11.50	1.2	11.58	1.4	11.67	1.5	11.75	1.7
11.83	1.9	11.92	2.0	12.00	2.1	12.08	2.0
12.17	2.0	12.25	1.8	12.33	1.7	12.42	1.6
12.50	1.5	12.58	1.5	12.67	1.5	12.75	1.5
12.83	1.6	12.92	1.6	13.00	1.6	13.08	1.6
13.17	1.5	13.25	1.4	13.33	1.4	13.42	1.3
13.50	1.2	13.58	1.2	13.67	1.1	13.75	1.1
13.83	1.1	13.92	1.1	14.00	1.0	14.08	1.0
14.17	1.0	14.25	1.0	14.33	1.0	14.42	1.0
14.50	1.0	14.58	1.0	14.67	1.1	14.75	1.1
14.83	1.1	14.92	1.1	15.00	1.1	15.08	1.2
15.17	1.2	15.25	1.2	15.33	1.2	15.42	1.2
15.50	1.2	15.58	1.2	15.67	1.2	15.75	1.2
15.83	1.2	15.92	1.2	16.00	1.2	16.08	1.2
16.17	1.2	16.25	1.2	16.33	1.2	16.42	1.2
16.50	1.2	16.58	1.2	16.67	1.2	16.75	1.1
16.83	1.1	16.92	1.1	17.00	1.1	17.08	1.1
17.17	1.0	17.25	1.0	17.33	1.0	17.42	1.0
17.50	1.0	17.58	1.0	17.67	1.0	17.75	1.0
17.83	1.0	17.92	1.0	18.00	1.0	18.08	1.0
18.17	1.0	18.25	1.0	18.33	1.0	18.42	1.0

18.50	1.0	18.58	1.0	18.67	1.0	18.75	1.0
18.83	1.0	18.92	1.0	19.00	1.0	19.08	1.0
19.17	1.0	19.25	1.0	19.33	1.0	19.42	1.0
19.50	1.0	19.58	1.0	19.67	1.0	19.75	1.0
19.83	1.0	19.92	1.0	20.00	1.0	20.08	1.0
20.17	1.0	20.25	1.0	20.33	1.0	20.42	1.0
20.50	1.0	20.58	0.9	20.67	0.9	20.75	0.8
20.83	0.8	20.92	0.7	21.00	0.7	21.08	0.6
21.17	0.6	21.25	0.6	21.33	0.6	21.42	0.6
21.50	0.5	21.58	0.5	21.67	0.5	21.75	0.5
21.83	0.5	21.92	0.5	22.00	0.5	22.08	0.5
22.17	0.5	22.25	0.5	22.33	0.5	22.42	0.5
22.50	0.5	22.58	0.5	22.67	0.5	22.75	0.5
22.83	0.5	22.92	0.5	23.00	0.5	23.08	0.5
23.17	0.5	23.25	0.5	23.33	0.5	23.42	0.5
23.50	0.5	23.58	0.5	23.67	0.5	23.75	0.5
23.83	0.5	23.92	0.5	24.00	0.5	24.08	0.5
24.17	0.5	24.25	0.5	24.33	0.5	24.42	0.5
24.50	0.4	24.58	0.4	24.67	0.3	24.75	0.3
24.83	0.2	24.92	0.2	25.00	0.1	25.08	0.1
25.17	0.1	25.25	0.1	25.33	0.1	25.42	0.0
25.50	0.0	25.58	0.0	25.67	0.0	25.75	0.0
25.83	0.0	25.92	0.0	26.00	0.0	26.08	0.0
26.17	0.0	26.25	0.0	26.33	0.0	26.42	0.0
26.50	0.0	26.58	0.0	26.67	0.0	26.75	0.0

PEAK FLOW = 29.5 CFS
TIME TO PEAK = 6.6 HRS
TOTAL VOLUME = 183862.6 CU FT

PRE-DEVELOPED 24 HOUR SCS HYDROGRAPH
BASIN IDENTIFIER JCC Apts
DISCHARGES INTO Pond 1
BASIN AREA = 41.20 ACRES
BASIN CURVE NUMBER = 71.60
24-HOUR PRECIPITATION = 5.70 INCHES
24-HOUR RUNOFF = 2.71 INCHES
AVERAGE BASIN SLOPE = 1.9 %
HYDRAULIC LENGTH = 2000.0 FEET
BASIN LAG, (Tc) = 0.53 HOURS 0.89 HOURS
UNITPEAK COEFFICIENT = 484
RAINFALL DISTRIBUTION = c:\tmodwin\iia.scs
HYDROGRAPH RUNOFF VALUES
10 YEAR STORM FREQUENCY

TIME HOUR	RUNOFF C.F.S.	TIME HOUR	RUNOFF C.F.S.	TIME HOUR	RUNOFF C.F.S.	TIME HOUR	RUNOFF C.F.S.
5.42	0.0	5.50	0.0	5.58	0.0	5.67	0.0
5.75	0.0	5.83	0.7	5.92	2.5	6.00	5.9
6.08	12.4	6.17	22.8	6.25	35.1	6.33	48.8
6.42	60.5	6.50	68.7	6.58	73.1	6.67	71.5
6.75	66.9	6.83	60.4	6.92	52.7	7.00	45.1
7.08	38.3	7.17	32.6	7.25	28.5	7.33	24.9
7.42	21.8	7.50	19.2	7.58	17.0	7.67	15.2
7.75	13.6	7.83	12.3	7.92	11.3	8.00	10.4
8.08	9.7	8.17	9.1	8.25	8.7	8.33	8.3
8.42	7.9	8.50	7.5	8.58	7.0	8.67	6.5
8.75	6.0	8.83	5.6	8.92	5.1	9.00	4.8
9.08	4.5	9.17	4.3	9.25	4.1	9.33	4.0
9.42	3.9	9.50	3.8	9.58	3.8	9.67	3.7
9.75	3.7	9.83	3.7	9.92	3.6	10.00	3.6
10.08	3.6	10.17	3.6	10.25	3.6	10.33	3.6
10.42	3.5	10.50	3.4	10.58	3.2	10.67	3.1
10.75	2.9	10.83	2.7	10.92	2.5	11.00	2.4
11.08	2.3	11.17	2.2	11.25	2.1	11.33	2.1
11.42	2.2	11.50	2.4	11.58	2.6	11.67	2.9
11.75	3.3	11.83	3.6	11.92	3.8	12.00	3.9
12.08	3.9	12.17	3.7	12.25	3.5	12.33	3.3
12.42	3.1	12.50	2.9	12.58	2.9	12.67	2.9
12.75	2.9	12.83	3.0	12.92	3.0	13.00	3.0
13.08	3.0	13.17	2.9	13.25	2.7	13.33	2.6
13.42	2.4	13.50	2.3	13.58	2.2	13.67	2.1
13.75	2.1	13.83	2.0	13.92	2.0	14.00	2.0
14.08	1.9	14.17	1.9	14.25	1.9	14.33	1.9
14.42	1.9	14.50	1.9	14.58	1.9	14.67	2.0
14.75	2.0	14.83	2.1	14.92	2.1	15.00	2.2
15.08	2.2	15.17	2.2	15.25	2.2	15.33	2.2
15.42	2.3	15.50	2.3	15.58	2.3	15.67	2.3
15.75	2.3	15.83	2.3	15.92	2.3	16.00	2.3
16.08	2.3	16.17	2.3	16.25	2.3	16.33	2.3
16.42	2.3	16.50	2.3	16.58	2.2	16.67	2.2
16.75	2.1	16.83	2.1	16.92	2.0	17.00	2.0
17.08	2.0	17.17	2.0	17.25	1.9	17.33	1.9
17.42	1.9	17.50	1.9	17.58	1.9	17.67	1.9
17.75	1.9	17.83	1.9	17.92	1.9	18.00	1.9
18.08	1.9	18.17	1.9	18.25	1.9	18.33	1.9
18.42	1.9	18.50	1.9	18.58	1.9	18.67	1.9
18.75	1.9	18.83	1.9	18.92	1.9	19.00	1.9
19.08	1.9	19.17	1.9	19.25	1.9	19.33	1.9
19.42	1.9	19.50	1.9	19.58	1.9	19.67	1.9
19.75	1.9	19.83	1.9	19.92	1.9	20.00	1.9
20.08	1.9	20.17	1.9	20.25	1.9	20.33	1.9
20.42	1.8	20.50	1.8	20.58	1.7	20.67	1.6
20.75	1.5	20.83	1.4	20.92	1.3	21.00	1.2
21.08	1.2	21.17	1.1	21.25	1.1	21.33	1.1
21.42	1.0	21.50	1.0	21.58	1.0	21.67	1.0
21.75	1.0	21.83	1.0	21.92	1.0	22.00	1.0

22.08	1.0	22.17	1.0	22.25	1.0	22.33	1.0
22.42	0.9	22.50	0.9	22.58	0.9	22.67	0.9
22.75	0.9	22.83	0.9	22.92	0.9	23.00	0.9
23.08	0.9	23.17	0.9	23.25	0.9	23.33	0.9
23.42	0.9	23.50	0.9	23.58	0.9	23.67	0.9
23.75	0.9	23.83	0.9	23.92	0.9	24.00	0.9
24.08	0.9	24.17	0.9	24.25	0.9	24.33	0.9
24.42	0.9	24.50	0.8	24.58	0.7	24.67	0.6
24.75	0.5	24.83	0.4	24.92	0.3	25.00	0.3
25.08	0.2	25.17	0.2	25.25	0.1	25.33	0.1
25.42	0.1	25.50	0.1	25.58	0.1	25.67	0.0
25.75	0.0	25.83	0.0	25.92	0.0	26.00	0.0
26.08	0.0	26.17	0.0	26.25	0.0	26.33	0.0
26.42	0.0	26.50	0.0	26.58	0.0	26.67	0.0
26.75	0.0	26.83	0.0	26.92	0.0	27.00	0.0

PEAK FLOW = 73.1 CFS
TIME TO PEAK = 6.5 HRS
TOTAL VOLUME = 405875.6 CU FT

PRE-DEVELOPED 24 HOUR SCS HYDROGRAPH
BASIN IDENTIFIER JCC Apts
DISCHARGES INTO Pond 1
BASIN AREA = 41.20 ACRES
BASIN CURVE NUMBER = 71.60
24-HOUR PRECIPITATION = 7.90 INCHES
24-HOUR RUNOFF = 4.56 INCHES
AVERAGE BASIN SLOPE = 1.9 %
HYDRAULIC LENGTH = 2000.0 FEET
BASIN LAG, (Tc) = 0.53 HOURS 0.89 HOURS
UNITPEAK COEFFICIENT = 484
RAINFALL DISTRIBUTION = c:\tmodwin\iia.scs
HYDROGRAPH RUNOFF VALUES
100 YEAR STORM FREQUENCY

TIME HOUR	RUNOFF C.F.S.	TIME HOUR	RUNOFF C.F.S.	TIME HOUR	RUNOFF C.F.S.	TIME HOUR	RUNOFF C.F.S.
5.42	0.0	5.50	0.0	5.58	0.0	5.67	0.1
5.75	0.3	5.83	2.1	5.92	6.4	6.00	13.9
6.08	27.3	6.17	46.8	6.25	68.8	6.33	92.3
6.42	111.2	6.50	123.7	6.58	129.5	6.67	125.1
6.75	115.7	6.83	103.6	6.92	89.7	7.00	76.3
7.08	64.6	7.17	54.7	7.25	47.4	7.33	41.2
7.42	35.9	7.50	31.4	7.58	27.8	7.67	24.6
7.75	21.9	7.83	19.8	7.92	18.1	8.00	16.6
8.08	15.4	8.17	14.5	8.25	13.7	8.33	13.0
8.42	12.4	8.50	11.7	8.58	11.0	8.67	10.2
8.75	9.4	8.83	8.6	8.92	8.0	9.00	7.4
9.08	7.0	9.17	6.6	9.25	6.4	9.33	6.2
9.42	6.1	9.50	5.9	9.58	5.8	9.67	5.8
9.75	5.7	9.83	5.7	9.92	5.6	10.00	5.6
10.08	5.6	10.17	5.6	10.25	5.5	10.33	5.5
10.42	5.4	10.50	5.2	10.58	5.0	10.67	4.7
10.75	4.4	10.83	4.2	10.92	3.9	11.00	3.7
11.08	3.5	11.17	3.3	11.25	3.3	11.33	3.3
11.42	3.4	11.50	3.6	11.58	4.0	11.67	4.5
11.75	5.0	11.83	5.5	11.92	5.8	12.00	6.0
12.08	5.9	12.17	5.7	12.25	5.4	12.33	5.0
12.42	4.7	12.50	4.5	12.58	4.4	12.67	4.4
12.75	4.5	12.83	4.6	12.92	4.7	13.00	4.6
13.08	4.6	13.17	4.4	13.25	4.2	13.33	4.0
13.42	3.7	13.50	3.5	13.58	3.4	13.67	3.3
13.75	3.2	13.83	3.1	13.92	3.0	14.00	3.0
14.08	2.9	14.17	2.9	14.25	2.9	14.33	2.9
14.42	2.9	14.50	2.9	14.58	3.0	14.67	3.0
14.75	3.1	14.83	3.2	14.92	3.2	15.00	3.3
15.08	3.3	15.17	3.4	15.25	3.4	15.33	3.4
15.42	3.4	15.50	3.5	15.58	3.5	15.67	3.5
15.75	3.5	15.83	3.5	15.92	3.5	16.00	3.5
16.08	3.5	16.17	3.5	16.25	3.5	16.33	3.5
16.42	3.5	16.50	3.4	16.58	3.4	16.67	3.3
16.75	3.2	16.83	3.2	16.92	3.1	17.00	3.1
17.08	3.0	17.17	3.0	17.25	2.9	17.33	2.9
17.42	2.9	17.50	2.9	17.58	2.9	17.67	2.9
17.75	2.9	17.83	2.9	17.92	2.8	18.00	2.8
18.08	2.8	18.17	2.8	18.25	2.8	18.33	2.8
18.42	2.8	18.50	2.8	18.58	2.8	18.67	2.8
18.75	2.8	18.83	2.8	18.92	2.8	19.00	2.8
19.08	2.8	19.17	2.8	19.25	2.8	19.33	2.8
19.42	2.8	19.50	2.8	19.58	2.8	19.67	2.8
19.75	2.8	19.83	2.8	19.92	2.8	20.00	2.8
20.08	2.8	20.17	2.8	20.25	2.8	20.33	2.8
20.42	2.8	20.50	2.7	20.58	2.6	20.67	2.4
20.75	2.3	20.83	2.1	20.92	2.0	21.00	1.9
21.08	1.8	21.17	1.7	21.25	1.7	21.33	1.6
21.42	1.6	21.50	1.5	21.58	1.5	21.67	1.5
21.75	1.5	21.83	1.5	21.92	1.5	22.00	1.5

22.08	1.4	22.17	1.4	22.25	1.4	22.33	1.4
22.42	1.4	22.50	1.4	22.58	1.4	22.67	1.4
22.75	1.4	22.83	1.4	22.92	1.4	23.00	1.4
23.08	1.4	23.17	1.4	23.25	1.4	23.33	1.4
23.42	1.4	23.50	1.4	23.58	1.4	23.67	1.4
23.75	1.4	23.83	1.4	23.92	1.4	24.00	1.4
24.08	1.4	24.17	1.4	24.25	1.4	24.33	1.4
24.42	1.3	24.50	1.2	24.58	1.1	24.67	0.9
24.75	0.8	24.83	0.6	24.92	0.5	25.00	0.4
25.08	0.3	25.17	0.3	25.25	0.2	25.33	0.2
25.42	0.1	25.50	0.1	25.58	0.1	25.67	0.1
25.75	0.0	25.83	0.0	25.92	0.0	26.00	0.0
26.08	0.0	26.17	0.0	26.25	0.0	26.33	0.0
26.42	0.0	26.50	0.0	26.58	0.0	26.67	0.0
26.75	0.0	26.83	0.0	26.92	0.0	27.00	0.0

PEAK FLOW = 129.5 CFS
TIME TO PEAK = 6.5 HRS
TOTAL VOLUME = 682304.7 CU FT

Spectra Precision Software, Inc.
5901 Peachtree-Dunwoody Rd., Suite A-300
Atlanta, GA 30328-5548
800-235-4972
Sun Oct 03 14:34:16 1999

PROJECT: C:\Tmodwin\shookie2.pro

HYDROLOGIC REPORT

DEVELOPED 24 HOUR SCS HYDROGRAPH
BASIN IDENTIFIER JCC Apts
DISCHARGES INTO Pond 1
BASIN AREA = 36.97 ACRES
BASIN CURVE NUMBER = 85.30
24-HOUR PRECIPITATION = 3.70 INCHES
24-HOUR RUNOFF = 2.22 INCHES
AVERAGE BASIN SLOPE = 1.9 %
HYDRAULIC LENGTH = 2000.0 FEET
BASIN LAG, (Tc) = 0.30 HOURS 0.50 HOURS
UNITPEAK COEFFICIENT = 484
RAINFALL DISTRIBUTION = c:\tmodwin\iia.scs
HYDROGRAPH RUNOFF VALUES
2 YEAR STORM FREQUENCY

TIME HOUR	RUNOFF C.F.S.	TIME HOUR	RUNOFF C.F.S.	TIME HOUR	RUNOFF C.F.S.	TIME HOUR	RUNOFF C.F.S.
5.42	0.0	5.50	0.0	5.58	0.0	5.67	0.1
5.75	1.3	5.83	6.0	5.92	16.1	6.00	31.5
6.08	50.3	6.17	68.5	6.25	81.2	6.33	83.4
6.42	73.6	6.50	58.9	6.58	44.3	6.67	32.8
6.75	25.6	6.83	20.4	6.92	16.4	7.00	13.4
7.08	11.3	7.17	9.8	7.25	8.8	7.33	7.9
7.42	7.1	7.50	6.3	7.58	5.7	7.67	5.3
7.75	5.0	7.83	4.9	7.92	4.8	8.00	4.8
8.08	4.7	8.17	4.7	8.25	4.6	8.33	4.4
8.42	4.0	8.50	3.5	8.58	3.2	8.67	2.9
8.75	2.7	8.83	2.6	8.92	2.5	9.00	2.4
9.08	2.4	9.17	2.4	9.25	2.4	9.33	2.4
9.42	2.4	9.50	2.4	9.58	2.4	9.67	2.4
9.75	2.4	9.83	2.4	9.92	2.4	10.00	2.4
10.08	2.4	10.17	2.4	10.25	2.3	10.33	2.2
10.42	2.0	10.50	1.8	10.58	1.6	10.67	1.5
10.75	1.4	10.83	1.3	10.92	1.3	11.00	1.2
11.08	1.2	11.17	1.2	11.25	1.3	11.33	1.5
11.42	1.9	11.50	2.3	11.58	2.7	11.67	3.0
11.75	3.1	11.83	3.0	11.92	2.8	12.00	2.4
12.08	2.0	12.17	1.7	12.25	1.6	12.33	1.5
12.42	1.6	12.50	1.8	12.58	2.0	12.67	2.1
12.75	2.2	12.83	2.1	12.92	2.0	13.00	1.8
13.08	1.6	13.17	1.4	13.25	1.4	13.33	1.3
13.42	1.3	13.50	1.2	13.58	1.2	13.67	1.2
13.75	1.2	13.83	1.2	13.92	1.2	14.00	1.2
14.08	1.2	14.17	1.2	14.25	1.2	14.33	1.2
14.42	1.3	14.50	1.3	14.58	1.4	14.67	1.4
14.75	1.5	14.83	1.5	14.92	1.5	15.00	1.5
15.08	1.5	15.17	1.5	15.25	1.5	15.33	1.5
15.42	1.5	15.50	1.5	15.58	1.5	15.67	1.5
15.75	1.5	15.83	1.5	15.92	1.5	16.00	1.5
16.08	1.5	16.17	1.5	16.25	1.5	16.33	1.5
16.42	1.4	16.50	1.4	16.58	1.3	16.67	1.3
16.75	1.3	16.83	1.2	16.92	1.2	17.00	1.2
17.08	1.2	17.17	1.2	17.25	1.2	17.33	1.2
17.42	1.2	17.50	1.2	17.58	1.2	17.67	1.2
17.75	1.2	17.83	1.2	17.92	1.2	18.00	1.2
18.08	1.2	18.17	1.2	18.25	1.2	18.33	1.2

18.42	1.2	18.50	1.2	18.58	1.2	18.67	1.2
18.75	1.2	18.83	1.2	18.92	1.2	19.00	1.2
19.08	1.2	19.17	1.2	19.25	1.2	19.33	1.2
19.42	1.2	19.50	1.2	19.58	1.2	19.67	1.2
19.75	1.2	19.83	1.2	19.92	1.2	20.00	1.2
20.08	1.2	20.17	1.2	20.25	1.2	20.33	1.1
20.42	1.0	20.50	0.9	20.58	0.8	20.67	0.8
20.75	0.7	20.83	0.7	20.92	0.7	21.00	0.6
21.08	0.6	21.17	0.6	21.25	0.6	21.33	0.6
21.42	0.6	21.50	0.6	21.58	0.6	21.67	0.6
21.75	0.6	21.83	0.6	21.92	0.6	22.00	0.6
22.08	0.6	22.17	0.6	22.25	0.6	22.33	0.6
22.42	0.6	22.50	0.6	22.58	0.6	22.67	0.6
22.75	0.6	22.83	0.6	22.92	0.6	23.00	0.6
23.08	0.6	23.17	0.6	23.25	0.6	23.33	0.6
23.42	0.6	23.50	0.6	23.58	0.6	23.67	0.6
23.75	0.6	23.83	0.6	23.92	0.6	24.00	0.6
24.08	0.6	24.17	0.6	24.25	0.6	24.33	0.5
24.42	0.3	24.50	0.2	24.58	0.2	24.67	0.1
24.75	0.1	24.83	0.0	24.92	0.0	25.00	0.0
25.08	0.0	25.17	0.0	25.25	0.0	25.33	0.0
25.42	0.0	25.50	0.0	25.58	0.0	25.67	0.0

PEAK FLOW = 83.4 CFS
TIME TO PEAK = 6.3 HRS
TOTAL VOLUME = 297606.3 CU FT

DEVELOPED 24 HOUR SCS HYDROGRAPH
BASIN IDENTIFIER JCC Apts
DISCHARGES INTO Pond 1
BASIN AREA = 36.97 ACRES
BASIN CURVE NUMBER = 85.30
24-HOUR PRECIPITATION = 5.70 INCHES
24-HOUR RUNOFF = 4.05 INCHES
AVERAGE BASIN SLOPE = 1.9 %
HYDRAULIC LENGTH = 2000.0 FEET
BASIN LAG, (Tc) = 0.30 HOURS 0.50 HOURS
UNITPEAK COEFFICIENT = 484
RAINFALL DISTRIBUTION = c:\tmodwin\iia.scs
HYDROGRAPH RUNOFF VALUES
10 YEAR STORM FREQUENCY

TIME HOUR	RUNOFF C.F.S.	TIME HOUR	RUNOFF C.F.S.	TIME HOUR	RUNOFF C.F.S.	TIME HOUR	RUNOFF C.F.S.
4.92	0.0	5.00	0.0	5.08	0.0	5.17	0.0
5.25	0.0	5.33	0.1	5.42	0.2	5.50	0.5
5.58	0.9	5.67	1.6	5.75	5.7	5.83	17.8
5.92	40.7	6.00	71.8	6.08	105.7	6.17	135.8
6.25	154.3	6.33	154.3	6.42	134.1	6.50	106.3
6.58	79.3	6.67	58.4	6.75	45.2	6.83	35.8
6.92	28.6	7.00	23.2	7.08	19.5	7.17	16.9
7.25	15.0	7.33	13.4	7.42	11.9	7.50	10.7
7.58	9.6	7.67	8.9	7.75	8.5	7.83	8.2
7.92	8.1	8.00	8.0	8.08	7.9	8.17	7.8
8.25	7.7	8.33	7.3	8.42	6.6	8.50	5.9
8.58	5.3	8.67	4.8	8.75	4.5	8.83	4.3
8.92	4.2	9.00	4.1	9.08	4.0	9.17	4.0
9.25	4.0	9.33	3.9	9.42	3.9	9.50	3.9
9.58	3.9	9.67	3.9	9.75	3.9	9.83	3.9
9.92	3.9	10.00	3.9	10.08	3.9	10.17	3.9
10.25	3.9	10.33	3.7	10.42	3.3	10.50	3.0
10.58	2.7	10.67	2.4	10.75	2.3	10.83	2.2
10.92	2.1	11.00	2.1	11.08	2.0	11.17	2.0
11.25	2.1	11.33	2.5	11.42	3.2	11.50	3.9
11.58	4.5	11.67	5.0	11.75	5.2	11.83	5.0
11.92	4.6	12.00	4.0	12.08	3.4	12.17	2.9
12.25	2.6	12.33	2.5	12.42	2.7	12.50	3.0
12.58	3.3	12.67	3.5	12.75	3.6	12.83	3.5
12.92	3.2	13.00	2.9	13.08	2.6	13.17	2.4
13.25	2.3	13.33	2.2	13.42	2.1	13.50	2.1
13.58	2.0	13.67	2.0	13.75	2.0	13.83	2.0
13.92	2.0	14.00	2.0	14.08	2.0	14.17	2.0
14.25	2.0	14.33	2.0	14.42	2.1	14.50	2.2
14.58	2.3	14.67	2.4	14.75	2.4	14.83	2.4
14.92	2.4	15.00	2.5	15.08	2.5	15.17	2.5
15.25	2.5	15.33	2.5	15.42	2.5	15.50	2.5
15.58	2.5	15.67	2.5	15.75	2.5	15.83	2.5
15.92	2.5	16.00	2.5	16.08	2.5	16.17	2.5
16.25	2.5	16.33	2.4	16.42	2.3	16.50	2.2
16.58	2.2	16.67	2.1	16.75	2.1	16.83	2.0
16.92	2.0	17.00	2.0	17.08	2.0	17.17	2.0
17.25	2.0	17.33	2.0	17.42	2.0	17.50	2.0
17.58	2.0	17.67	2.0	17.75	2.0	17.83	2.0
17.92	2.0	18.00	2.0	18.08	2.0	18.17	2.0
18.25	2.0	18.33	2.0	18.42	2.0	18.50	2.0
18.58	2.0	18.67	2.0	18.75	2.0	18.83	2.0
18.92	2.0	19.00	2.0	19.08	2.0	19.17	2.0
19.25	2.0	19.33	2.0	19.42	2.0	19.50	2.0
19.58	2.0	19.67	2.0	19.75	2.0	19.83	2.0
19.92	2.0	20.00	2.0	20.08	2.0	20.17	2.0
20.25	2.0	20.33	1.9	20.42	1.7	20.50	1.5
20.58	1.4	20.67	1.2	20.75	1.2	20.83	1.1
20.92	1.1	21.00	1.0	21.08	1.0	21.17	1.0
21.25	1.0	21.33	1.0	21.42	1.0	21.50	1.0

21.58	1.0	21.67	1.0	21.75	1.0	21.83	1.0
21.92	1.0	22.00	1.0	22.08	1.0	22.17	1.0
22.25	1.0	22.33	1.0	22.42	1.0	22.50	1.0
22.58	1.0	22.67	1.0	22.75	1.0	22.83	1.0
22.92	1.0	23.00	1.0	23.08	1.0	23.17	1.0
23.25	1.0	23.33	1.0	23.42	1.0	23.50	1.0
23.58	1.0	23.67	1.0	23.75	1.0	23.83	1.0
23.92	1.0	24.00	1.0	24.08	1.0	24.17	1.0
24.25	0.9	24.33	0.8	24.42	0.6	24.50	0.4
24.58	0.3	24.67	0.2	24.75	0.1	24.83	0.1
24.92	0.1	25.00	0.0	25.08	0.0	25.17	0.0
25.25	0.0	25.33	0.0	25.42	0.0	25.50	0.0

PEAK FLOW = 154.3 CFS
TIME TO PEAK = 6.3 HRS
TOTAL VOLUME = 543954.5 CU FT

DEVELOPED 24 HOUR SCS HYDROGRAPH
BASIN IDENTIFIER JCC Apts
DISCHARGES INTO Pond 1
BASIN AREA = 36.97 ACRES
BASIN CURVE NUMBER = 85.30
24-HOUR PRECIPITATION = 7.90 INCHES
24-HOUR RUNOFF = 6.15 INCHES
AVERAGE BASIN SLOPE = 1.9 %
HYDRAULIC LENGTH = 2000.0 FEET
BASIN LAG, (Tc) = 0.30 HOURS 0.50 HOURS
UNITPEAK COEFFICIENT = 484
RAINFALL DISTRIBUTION = c:\tmodwin\iia.scs
HYDROGRAPH RUNOFF VALUES
100 YEAR STORM FREQUENCY

TIME HOUR	RUNOFF C.F.S.	TIME HOUR	RUNOFF C.F.S.	TIME HOUR	RUNOFF C.F.S.	TIME HOUR	RUNOFF C.F.S.
4.33	0.0	4.42	0.0	4.50	0.0	4.58	0.0
4.67	0.0	4.75	0.1	4.83	0.2	4.92	0.2
5.00	0.3	5.08	0.4	5.17	0.5	5.25	0.6
5.33	1.0	5.42	1.7	5.50	2.6	5.58	3.6
5.67	5.2	5.75	12.9	5.83	34.2	5.92	72.2
6.00	121.1	6.08	171.5	6.17	213.7	6.25	237.4
6.33	234.0	6.42	201.6	6.50	159.0	6.58	118.3
6.67	86.8	6.75	66.9	6.83	52.7	6.92	42.0
7.00	34.0	7.08	28.5	7.17	24.5	7.25	21.7
7.33	19.3	7.42	17.2	7.50	15.4	7.58	13.9
7.67	12.8	7.75	12.2	7.83	11.8	7.92	11.6
8.00	11.5	8.08	11.4	8.17	11.3	8.25	11.1
8.33	10.5	8.42	9.5	8.50	8.5	8.58	7.6
8.67	6.9	8.75	6.5	8.83	6.2	8.92	6.0
9.00	5.9	9.08	5.8	9.17	5.7	9.25	5.7
9.33	5.7	9.42	5.6	9.50	5.6	9.58	5.6
9.67	5.6	9.75	5.6	9.83	5.6	9.92	5.6
10.00	5.6	10.08	5.6	10.17	5.6	10.25	5.5
10.33	5.2	10.42	4.8	10.50	4.3	10.58	3.8
10.67	3.5	10.75	3.3	10.83	3.1	10.92	3.0
11.00	2.9	11.08	2.9	11.17	2.9	11.25	3.1
11.33	3.6	11.42	4.5	11.50	5.6	11.58	6.5
11.67	7.1	11.75	7.4	11.83	7.2	11.92	6.5
12.00	5.7	12.08	4.9	12.17	4.1	12.25	3.7
12.33	3.6	12.42	3.9	12.50	4.3	12.58	4.7
12.67	5.0	12.75	5.1	12.83	5.0	12.92	4.6
13.00	4.2	13.08	3.7	13.17	3.4	13.25	3.2
13.33	3.1	13.42	3.0	13.50	2.9	13.58	2.9
13.67	2.9	13.75	2.9	13.83	2.8	13.92	2.8
14.00	2.8	14.08	2.8	14.17	2.8	14.25	2.9
14.33	2.9	14.42	3.0	14.50	3.2	14.58	3.3
14.67	3.4	14.75	3.4	14.83	3.5	14.92	3.5
15.00	3.5	15.08	3.5	15.17	3.5	15.25	3.5
15.33	3.5	15.42	3.5	15.50	3.5	15.58	3.5
15.67	3.5	15.75	3.5	15.83	3.5	15.92	3.5
16.00	3.5	16.08	3.5	16.17	3.5	16.25	3.5
16.33	3.4	16.42	3.3	16.50	3.2	16.58	3.1
16.67	3.0	16.75	2.9	16.83	2.9	16.92	2.9
17.00	2.9	17.08	2.9	17.17	2.8	17.25	2.8
17.33	2.8	17.42	2.8	17.50	2.8	17.58	2.8
17.67	2.8	17.75	2.8	17.83	2.8	17.92	2.8
18.00	2.8	18.08	2.8	18.17	2.8	18.25	2.8
18.33	2.8	18.42	2.8	18.50	2.8	18.58	2.8
18.67	2.8	18.75	2.8	18.83	2.8	18.92	2.8
19.00	2.8	19.08	2.8	19.17	2.8	19.25	2.8
19.33	2.8	19.42	2.8	19.50	2.8	19.58	2.8
19.67	2.8	19.75	2.8	19.83	2.8	19.92	2.8
20.00	2.8	20.08	2.8	20.17	2.8	20.25	2.8
20.33	2.6	20.42	2.4	20.50	2.2	20.58	1.9
20.67	1.8	20.75	1.6	20.83	1.6	20.92	1.5

21.00	1.5	21.08	1.5	21.17	1.4	21.25	1.4
21.33	1.4	21.42	1.4	21.50	1.4	21.58	1.4
21.67	1.4	21.75	1.4	21.83	1.4	21.92	1.4
22.00	1.4	22.08	1.4	22.17	1.4	22.25	1.4
22.33	1.4	22.42	1.4	22.50	1.4	22.58	1.4
22.67	1.4	22.75	1.4	22.83	1.4	22.92	1.4
23.00	1.4	23.08	1.4	23.17	1.4	23.25	1.4
23.33	1.4	23.42	1.4	23.50	1.4	23.58	1.4
23.67	1.4	23.75	1.4	23.83	1.4	23.92	1.4
24.00	1.4	24.08	1.4	24.17	1.4	24.25	1.3
24.33	1.1	24.42	0.8	24.50	0.6	24.58	0.4
24.67	0.2	24.75	0.2	24.83	0.1	24.92	0.1
25.00	0.0	25.08	0.0	25.17	0.0	25.25	0.0
25.33	0.0	25.42	0.0	25.50	0.0	25.58	0.0

PEAK FLOW = 237.4 CFS
TIME TO PEAK = 6.2 HRS
TOTAL VOLUME = 825986.2 CU FT

Spectra Precision Software, Inc.
5901 Peachtree-Dunwoody Rd., Suite A-300
Atlanta, GA 30328-5548
800-235-4972
Sun Oct 03 13:53:09 1999

PROJECT: C:\Tmodwin\shookie2.pro

HYDROLOGIC REPORT - POND DEPTH VS STORAGE PROVIDED
POND: JCC Apts

ELEV feet	DEPTH feet	AREA sq.ft.	VOLUME cu.ft.	SUMVOL cu.ft.
60.0		29213.0		0.0
	1.0		30612.5	
61.0		32012.0		30612.5
	1.0		33475.5	
62.0		34939.0		64088.0
	1.0		36466.0	
63.0		37993.0		100554.0
	1.0		39584.5	
64.0		41176.0		140138.5
	1.0		42831.5	
65.0		44487.0		182970.0
	1.0		46206.0	
66.0		47925.0		229176.0
	1.0		49708.5	
67.0		51492.0		278884.5
	1.0		53339.5	
68.0		55187.0		332224.0
	0.5		28067.3	
68.5		57082.3		360291.3
	0.5		29023.0	
69.0		59009.7		389314.3

Spectra Precision Software, Inc.
5901 Peachtree-Dunwoody Rd., Suite A-300
Atlanta, GA 30328-5548
800-235-4972
Tue Nov 30 18:24:22 1999

PROJECT: C:\Tmodwin\shookie2.pro

HYDROLOGIC REPORT - STAGE, STORAGE, AND DISCHARGE
POND: JCC Apts

```
 1=CIRCULAR ORIFICE
   INVERT 60.00  C 0.50  D 1.67
   if (H < D) Q = 3.0 * D * (H ** 1.5)
      if (H >= D) Q = C * A * SQRT(64.4 * (H - RAD)
 2=CIRCULAR ORIFICE
   INVERT 64.05  C 0.50  D 2.50
   if (H < D) Q = 3.0 * D * (H ** 1.5)
      if (H >= D) Q = C * A * SQRT(64.4 * (H - RAD)
 3=CIRCULAR STANDPIPE
   INVERT 66.35  C 0.50  D 0.63
   if (H <= D) Q = C * 3.14159 * D * (H ** 1.5)
      if (H > D) Q = C * A * SQRT(64.4 * H)
 4=CIRCULAR STANDPIPE
   INVERT 66.60  C 0.50  D 0.63
   if (H <= D) Q = C * 3.14159 * D * (H ** 1.5)
      if (H > D) Q = C * A * SQRT(64.4 * H)
 5=CIRCULAR STANDPIPE
   INVERT 66.85  C 0.50  D 0.63
   if (H <= D) Q = C * 3.14159 * D * (H ** 1.5)
      if (H > D) Q = C * A * SQRT(64.4 * H)
 6=CIRCULAR STANDPIPE
   INVERT 67.10  C 0.50  D 0.63
   if (H <= D) Q = C * 3.14159 * D * (H ** 1.5)
      if (H > D) Q = C * A * SQRT(64.4 * H)
 7=CIRCULAR STANDPIPE
   INVERT 67.35  C 0.50  D 0.63
   if (H <= D) Q = C * 3.14159 * D * (H ** 1.5)
      if (H > D) Q = C * A * SQRT(64.4 * H)
 8=CIRCULAR STANDPIPE
   INVERT 67.60  C 0.50  D 0.63
   if (H <= D) Q = C * 3.14159 * D * (H ** 1.5)
      if (H > D) Q = C * A * SQRT(64.4 * H)
 9=CIRCULAR STANDPIPE
   INVERT 67.85  C 0.50  D 0.63
   if (H <= D) Q = C * 3.14159 * D * (H ** 1.5)
      if (H > D) Q = C * A * SQRT(64.4 * H)
10=CIRCULAR STANDPIPE
   INVERT 68.10  C 0.50  D 0.63
   if (H <= D) Q = C * 3.14159 * D * (H ** 1.5)
      if (H > D) Q = C * A * SQRT(64.4 * H)
```

CIRCULAR ORIFICE
STAND PIPES
IMITATE POND
ORIFICE-WEIRS.

ELEV	STORAGE (CU.FT.)	OUTFLOW (CFS)	2S/T+O (CFS)
60.00	0.0	0.0	0.0
60.50	15306.3	1.8	103.8
61.00	30612.5	5.0	209.1
61.50	47350.3	9.2	324.9
62.00	64088.0	9.5	436.7
62.50	82321.0	11.3	560.1
63.00	100554.0	12.9	683.3
63.50	120346.3	14.3	816.7
64.00	140138.5	15.6	949.9
64.03	141209.3	15.7	957.1
64.05	142280.1	15.8	964.3

Spectra Precision Software, Inc.
5901 Peachtree-Dunwoody Rd., Suite A-300
Atlanta, GA 30328-5548
800-235-4972
Tue Nov 30 18:24:22 1999

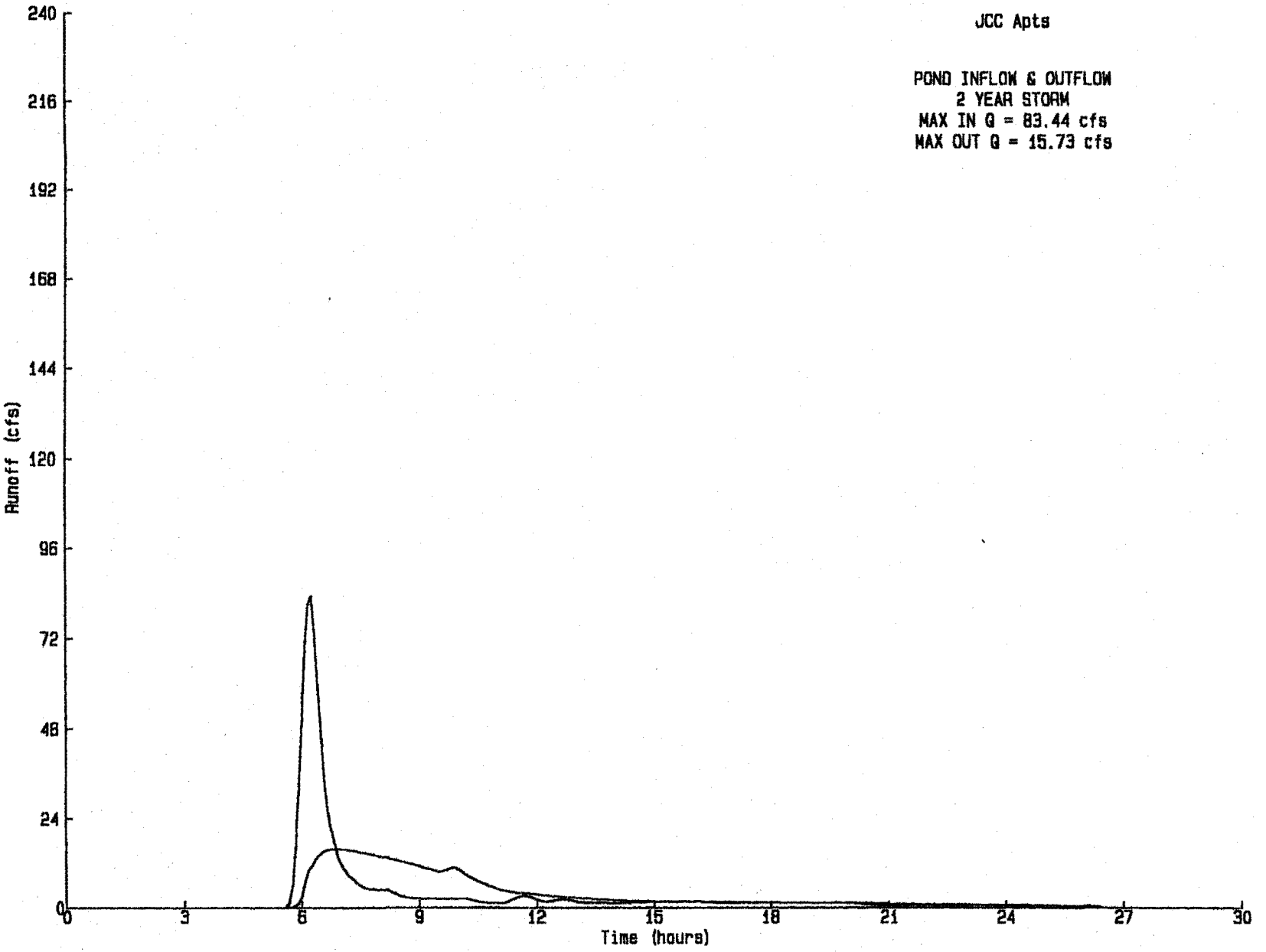
PROJECT: C:\Tmodwin\shookie2.pro

HYDROLOGIC REPORT - STAGE, STORAGE, AND DISCHARGE
POND: JCC Apts

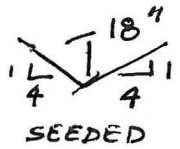
64.53	162625.0	19.3	1103.5
65.00	182970.0	24.9	1244.7
65.50	206073.0	32.1	1405.9
66.00	229176.0	40.4	1568.2
66.17	237875.0	43.5	1629.4
66.35	246574.0	46.8	1690.6
66.47	252787.5	49.5	1734.8
66.60	259001.1	44.2	1770.8
66.72	265214.7	45.9	1814.0
66.85	271428.2	47.6	1857.1
66.92	275156.4	48.6	1883.0
67.00	278884.5	49.7	1908.9
67.05	281551.5	50.4	1927.4
67.10	284218.4	51.0	1945.8
67.22	290885.9	52.8	1992.0
67.35	297553.3	54.4	2038.1
67.47	304220.8	56.2	2084.4
67.60	310888.2	57.9	2130.5
67.72	317555.6	59.7	2176.7
67.85	324223.1	61.4	2222.9
67.92	328223.5	62.5	2250.6
68.00	332224.0	63.6	2278.4
68.05	335030.7	64.3	2297.8
68.10	337837.5	64.9	2317.2
68.30	349064.4	67.9	2395.0
68.50	360291.3	70.4	2472.3
68.75	374802.8	73.2	2571.9
69.00	389314.3	75.9	2671.4
69.25	404311.6	78.5	2773.9
69.50	419309.0	81.0	2876.4

48.73
46.78
1.95

68.87
68.42
0.45


JCC Apts
POND INFLOW & OUTFLOW
2 YEAR STORM
MAX IN Q = 83.44 cfs
MAX OUT Q = 15.73 cfs
Runoff (cfs)
240
216
192
168
144
120
96
72
48
24
0
0
3
6
9
12
15
18
21
24
27
30
Time (hours)

Stormwater Conveyance Channel Calculations
for
Monticello at Powhatan Apartments



All calculations are based on a time of concentration of 5 minutes, which, using the 10-year design storm, gives a rainfall intensity of 7.20 inches per hour. All stormwater conveyance channels were assumed to meet the detail shown on the drawings (bottom width of 0, side slopes of 3:1) and to have a minimum slope of one percent (1%). Depth of flow was calculated using Manning's Equation.

- Channel 1

Drainage Area	=	0.610 acres
Runoff coefficient	=	0.60
Quantity of Flow, Q	=	2.63 cfs
Manning's coefficient for ground	=	0.03

Using Manning's equation:

Depth of flow	=	0.63 feet
Velocity	=	2.21 feet per second OK
Area of swale	=	1.19 square feet
Wetted Perimeter	=	3.99 feet
Hydraulic Radius	=	0.30 feet

- Channel 2

Drainage Area	=	0.360 acres
Runoff coefficient	=	0.40
Quantity of Flow, Q	=	1.04 cfs
Manning's coefficient for ground	=	0.03

Using Manning's equation:

Depth of flow	=	0.45 feet
Velocity	=	1.74 feet per second OK
Area of swale	=	0.60 square feet
Wetted Perimeter	=	2.82 feet
Hydraulic Radius	=	0.21 feet

- Channel 3

Drainage Area	=	0.353 acres
Runoff coefficient	=	0.40
Quantity of Flow, Q	=	1.02 cfs
Manning's coefficient for ground	=	0.03

Using Manning's equation:

Depth of flow	=	0.44 feet
Velocity	=	1.73 feet per second
Area of swale	=	0.59 square feet
Wetted Perimeter	=	2.80 feet
Hydraulic Radius	=	0.21 feet

OK

- Channel 4

Drainage Area	=	0.357 acres
Runoff coefficient	=	0.40
Quantity of Flow, Q	=	1.03 cfs
Manning's coefficient for ground	=	0.03

Using Manning's equation:

Depth of flow	=	0.44 feet
Velocity	=	1.74 feet per second
Area of swale	=	0.59 square feet
Wetted Perimeter	=	2.81 feet
Hydraulic Radius	=	0.21 feet

OK

- Channel 5

Drainage Area	=	0.299 acres
Runoff coefficient	=	0.40
Quantity of Flow, Q	=	0.86 cfs
Manning's coefficient for ground	=	0.03

Using Manning's equation:

Depth of flow	=	0.41 feet
Velocity	=	1.66 feet per second
Area of swale	=	0.52 square feet
Wetted Perimeter	=	2.62 feet
Hydraulic Radius	=	0.20 feet

OK

- Channel 6

Drainage Area	=	0.247 acres
Runoff coefficient	=	0.40
Quantity of Flow, Q	=	0.71 cfs
Manning's coefficient for ground	=	0.03

Using Manning's equation:

Depth of flow	=	0.39 feet
Velocity	=	1.58 feet per second
Area of swale	=	0.45 square feet
Wetted Perimeter	=	2.45 feet
Hydraulic Radius	=	0.18 feet

ok

- Channel 7

Drainage Area	=	0.265 acres
Runoff coefficient	=	0.40
Quantity of Flow, Q	=	0.76 cfs
Manning's coefficient for ground	=	0.03

Using Manning's equation:

Depth of flow	=	0.40 feet
Velocity	=	1.61 feet per second
Area of swale	=	0.47 square feet
Wetted Perimeter	=	2.51 feet
Hydraulic Radius	=	0.19 feet

- Channel 8

Drainage Area	=	0.352 acres
Runoff coefficient	=	0.40
Quantity of Flow, Q	=	1.01 cfs
Manning's coefficient for ground	=	0.03

Using Manning's equation:

Depth of flow	=	0.44 feet
Velocity	=	1.73 feet per second
Area of swale	=	0.58 square feet
Wetted Perimeter	=	2.79 feet
Hydraulic Radius	=	0.21 feet

- Channel 9

Drainage Area	=	0.273 acres
Runoff coefficient	=	0.50
Quantity of Flow, Q	=	0.98 cfs
Manning's coefficient for ground	=	0.03

Using Manning's equation:

Depth of flow	=	0.44 feet
Velocity	=	1.72 feet per second
Area of swale	=	0.57 square feet
Wetted Perimeter	=	2.76 feet
Hydraulic Radius	=	0.21 feet

- Channel 10

Drainage Area	=	0.253 acres
Runoff coefficient	=	0.50
Quantity of Flow, Q	=	0.91 cfs
Manning's coefficient for ground	=	0.03

Using Manning's equation:

Depth of flow	=	0.42 feet
Velocity	=	1.69 feet per second
Area of swale	=	0.54 square feet
Wetted Perimeter	=	2.68 feet
Hydraulic Radius	=	0.20 feet

TEMPORARY SEDIMENT BASIN DESIGN DATA SHEET

(with or without an emergency spillway)

Project MONTICELLO AT POWHATAN APARTMENTS

Basin # 2 Location POWHATAN PARKWAY

Total area draining to basin: 5.37 acres.

Lower Temporary Basin.

Basin Volume Design

Wet Storage:

1. Minimum required volume = 67 cu. yds. x Total Drainage Area (acres).

   67 cu. yds. x 5.37 acres = 360 cu. yds.

2. Available basin volume = 360 cu. yds. at elevation 59.21. (From storage - elevation curve)

3. Excavate 614 cu. yds. to obtain required volume*.

   * Elevation corresponding to required volume = invert of the dewatering orifice.

4. Available volume before cleanout required.

   33 cu. yds. x 5.37 acres = 177 cu. yds.

5. Elevation corresponding to cleanout level = 58.60.

   (From Storage - Elevation Curve)

6. Distance from invert of the dewatering orifice to cleanout level = 1.40 ft. (Min. = 1.0 ft.)

Dry Storage:

7. Minimum required volume = 67 cu. yds. x Total Drainage Area (acres).

   67 cu. yds. x 5.37 acres = 360 cu. yds.

8. Total available basin volume at crest of riser* = 784 cu. yds. at elevation 60.50. (From Storage - Elevation Curve)

* Minimum = 134 cu. yds./acre of total drainage area.

9. Diameter of dewatering orifice = 6 in.

10. Diameter of flexible tubing = 8 in. (diameter of dewatering orifice plus 2 inches).

Preliminary Design Elevations

11. Crest of Riser = 60.50

Top of Dam = 63.50

Design High Water = 61.50

Upstream Toe of Dam = NA

Basin Shape

12. Length of Flow / Effective Width — L / We = 140 / 70 = 2

If > 2, baffles are not required ✓

If < 2, baffles are required NA

Runoff

13. Q_2 = 8.38 cfs ok (From Chapter 5) 0.6(5.57)2.60 = 8.38

14. Q_{25} = 13.53 cfs ok (From Chapter 5)(.6)5.57(4.20

Principal Spillway Design

15. With emergency spillway, required spillway capacity $Q_p = Q_2$ = NA cfs. (riser and barrel)

Without emergency spillway, required spillway capacity $Q_p = Q_{25}$ = 13.53 cfs. (riser and barrel)

16. With emergency spillway:

Assumed available head (h) = NA ft. (Using Q_2)

h = Crest of Emergency Spillway Elevation - Crest of Riser Elevation

Without emergency spillway:

Assumed available head (h) = 1.0 ft. (Using Q_{25})

h = Design High Water Elevation - Crest of Riser Elevation

17. Riser diameter (D_r) = 24 in. Actual head (h) = 1.0 ft.

OK

(From Plate 3.14-8.)

Note: Avoid orifice flow conditions.

18. Barrel length (l) = 30 ft.

Head (H) on barrel through embankment = 5.5 ft.

(From Plate 3.14-7).

19. Barrel diameter = 18 in. OK

(From Plate 3.14-B [concrete pipe] or Plate 3.14-A [corrugated pipe]).

20. Trash rack and anti-vortex device

Diameter = 36 inches.

Height = 13 inches.

(From Table 3.14-D).

Emergency Spillway Design NOT APPLICABLE

21. Required spillway capacity $Q_e = Q_{25} - Q_p$ = _____ cfs.

22. Bottom width (b) = _____ ft.; the slope of the exit channel (s) = _____ ft./foot; and the minimum length of the exit channel (x) = _____ ft.
(From Table 3.14-C).

Anti-Seep Collar Design

23. Depth of water at principal spillway crest (Y) = 2.5 ft.

Slope of upstream face of embankment (Z) = 2 :1.

Slope of principal spillway barrel (S_b) = 0.5 %

Length of barrel in saturated zone (L_s) = 15 ft.

24. Number of collars required = 1 dimensions = 4.75' x 4.75'

(from Plate 3.14-12).

Final Design Elevations

25. Top of Dam = 63.50

Design High Water = 61.50

Emergency Spillway Crest = NA

Principal Spillway Crest = 60.50

Dewatering Orifice Invert = 60.00

Cleanout Elevation = 58.60

Elevation of Upstream Toe of Dam or Excavated Bottom of "Wet Storage Area" (if excavation was performed) = 58.0

W.P.LARGE INC.
STORM PIPE SIZING

PROJECT: JAMES CITY COUNTY

STORM: 10 YR

CHECKED BY: CB

FORMULA: Q = C i A

DESIGNED BY: EE

DATE: 08/99

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
FROM PT.	TO PT.	"A" AREA (ACRE)	"C" COEF.	CA INCR.	CA SYS.	TIME (MIN.) INCR.	RAINFALL "I"(IN.) INCR.	"Q" (CFS) INCR.	"Q" (CFS) SYS.	INV. ELEV. UPPER	INV. ELEV. LOWER	LENGT (FT)	SLOPE (%)	DIA. (IN)	CAP. (CFS)	VEL. (FPS)	FLOW TIME (SEC)	RI
10 YEAR																		
C1	C1-1	0.6800	0.50	0.340	0.380	5.000	6.955	2.365	2.365	62.44	62.14	61	0.49	12	2.709	3.450	17.68	

Q= 2.365 CFS
N= 0.1
S= 0.01 FT/FT
Sx= 0.01 FT/FT
T= 10 FT
W= 2.5 FT
L= 2.5 FT

Eo= 0.54
Vn= 0.026
V= 0.26 FPS
Rf= 1
Rs= 1
Qi= 2.365 CFS
Qi= 2.365-2.365= 0 CFS CARRYOVER

PONDING TO REACH ELEVATION 65.90

100 YEAR																	
C1	C1-1	0.6800	0.50	0.340	0.380	5.000	9.495	3.228	3.228	62.44	62.14	61	0.49	12	2.709	3.450	17.68

Q= 3.228 CFS
N= 0.1
S= 0.01 FT/FT
Sx= 0.01 FT/FT
T= 10 FT
W= 2.5 FT
L= 2.5 FT

Eo= 0.54
Vn= 0.026
V= 0.26 FPS
Rf= 1
Rs= 1
Qi= 3.228 CFS
Qi= 3.228-3.228= 0 CFS CARRYOVER

PONDING TO REACH ELEVATION 65.98 ✓

STORM PIPE SIZING

PROJECT: JAMES CITY COUNTY

STORM: 10 YR

CHECKED BY: CB

FORMULA: Q = C i A

DESIGNED BY: EE

DATE: 08/99

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
FROM (ID)	TO (ID)	"A" AREA (ACRES)	"C" COEF	CA INCR	CA SYS	TIME (MIN) INCR	RAINFALL "I" (IN) INCR	"Q" (CFS) INCR	"Q" (CFS) SYS	INV ELEV UPPER	INV ELEV LOWER	LENGTH (FT)	SLOPE (%)	DIA (IN)	CAP (CFS)	VEL (FPS)	FLOW TIME (MIN)	REMARKS
[illegible]	[illegible]	0.8200	0.60	0.492	0.492	8.000	6.301	3.100	3.100	63.78	63.50	140	0.20	15	3.132	2.552	54.85	
[illegible]	[illegible]	0.8800	0.70	0.616	0.563	8.000	6.301	3.881	3.881	63.80	63.50	92	0.33	15	3.999	3.259	28.23	
[illegible]	[illegible]	0.1800	0.75	0.135	1.190	8.914	6.125	0.827	7.808	62.99	62.29	137	0.51	18	8.140	4.606	29.74	
[illegible]	[illegible]	1.0100	0.70	0.707	0.707	5.000	6.955	4.917	4.917	65.19	64.90	126	0.23	18	5.463	3.091	40.76	
[illegible]	[illegible]	0.6800	0.50	0.340	0.380	5.000	6.955	2.365	2.365	62.44	62.14	61	0.49	12	2.709	3.450	17.68	
[illegible]	[illegible]	0.0000	0.00	0.000	0.380	5.295	6.885	0.000	2.365	62.14	61.62	106	0.49	12	2.706	3.445	30.77	
[illegible]	[illegible]	0.1300	0.80	0.104	1.191	5.679	6.795	0.707	5.624	62.00	61.60	144	0.28	21	9.052	3.763	38.26	
[illegible]	[illegible]	0.9400	0.80	0.752	3.133	9.410	6.034	4.538	14.711	61.00	60.50	136	0.37	27	20.351	5.118	26.57	
[illegible]	[illegible]	0.4900	0.50	0.245	0.250	5.000	6.955	1.704	1.704	61.30	60.97	114	0.29	12	2.079	2.646	43.08	
[illegible]	[illegible]	0.0000	0.00	0.000	3.383	9.853	5.955	0.000	16.415	58.50	58.16	77	0.44	27	22.303	5.609	13.73	
[illegible]	[illegible]	0.8800	0.70	0.616	3.999	10.082	5.915	3.644	20.058	58.16	57.71	103	0.44	27	22.185	5.580	18.46	
[illegible]	[illegible]	0.6700	0.65	0.436	0.420	6.000	6.722	2.928	2.928	65.29	64.52	128	0.60	12	2.996	3.815	33.55	
[illegible]	[illegible]	0.1400	0.80	0.112	0.532	6.559	6.599	0.739	3.667	64.52	64.44	56	0.14	18	4.304	2.436	22.99	
[illegible]	[illegible]	0.0000	0.00	0.000	0.532	6.942	6.517	0.000	9.291	64.44	64.02	83	0.51	24	17.442	5.552	14.95	
[illegible]	[illegible]	0.3900	0.80	0.312	0.844	6.942	6.517	2.033	11.324	56.66	56.01	130	0.50	24	17.338	5.519	23.56	
[illegible]	[illegible]	0.8000	0.50	0.400	0.400	10.000	5.929	2.372	2.372	79.00	78.70	253	0.12	15	2.412	1.965	128.74	
[illegible]	[illegible]	1.1300	0.60	0.678	1.078	12.146	5.576	3.781	6.152	75.00	74.70	70	0.43	18	7.455	4.218	16.59	
[illegible]	[illegible]	0.2500	0.50	0.125	1.203	12.422	5.534	0.692	6.844	71.20	70.80	80	0.50	18	8.052	4.556	17.56	
[illegible]	[illegible]	0.5000	0.45	0.225	0.225	7.000	6.505	1.464	1.464	70.00	69.70	135	0.22	12	1.821	2.319	58.22	
[illegible]	[illegible]	0.4500	0.40	0.180	0.405	7.970	6.307	1.135	2.599	69.70	69.60	70	0.14	15	2.647	2.157	32.45	
[illegible]	[illegible]	0.1100	0.80	0.088	1.696	12.715	5.490	0.483	9.926	69.00	68.20	196	0.41	21	10.973	4.562	42.96	
[illegible]	[illegible]	0.6000	0.50	0.300	0.300	5.000	6.955	2.087	2.087	68.00	67.50	139	0.36	12	2.317	2.950	47.12	
[illegible]	[illegible]	0.6600	0.75	0.495	2.491	13.431	5.384	2.665	14.678	67.50	67.15	81	0.43	24	16.117	5.130	15.79	
[illegible]	[illegible]	0.7800	0.80	0.624	3.115	13.694	5.347	3.336	18.014	56.40	56.00	92	0.43	27	22.132	5.566	16.53	
[illegible]	[illegible]	0.5500	0.70	0.385	0.385	10.000	5.929	2.283	2.283	75.00	74.70	73	0.41	12	2.477	3.153	23.15	
[illegible]	[illegible]	0.4200	0.85	0.357	0.742	10.386	5.862	2.093	4.376	74.70	73.75	157	0.61	15	5.448	4.439	35.37	
[illegible]	[illegible]	0.7500	0.80	0.600	1.342	10.975	5.763	3.458	7.834	71.00	70.00	186	0.54	18	8.349	4.725	39.37	
[illegible]	[illegible]	0.4400	0.80	0.352	1.694	11.631	5.657	1.991	9.825	68.00	67.50	137	0.36	21	10.376	4.314	31.76	
[illegible]	[illegible]	0.5900	0.80	0.472	2.166	12.161	5.574	2.631	12.456	63.00	62.82	29	0.62	21	13.531	5.626	5.16	

MATCHES PREVIOUS CALCS OK

FROM PT.	TO PT.	"A" AREA (ACRE)	"C" COEF.	CA INCR.	CA SYS.	TIME (MIN.) INCR.	RAINFALL IT (IN.) INCR.	"Q" (CFS) INCR.	"Q" (CFS) SYS.	INV. ELEV. UPPER	INV. ELEV. LOWER	LENGT (FT.)	SLOPE (%)	DIA. (IN)	CAP. (CFS)	VEL. (FPS)	FLOW TIME (SEC)	REMARKS
J2	X1-B	0.6100	0.60	0.366	0.366	10.000	5.929	2.170	72.170	65.00	64.75	108	0.23	48	74.870	5.958	18.13	
X1-B	X2	0.4400	0.80	0.352	0.718	10.302	5.877	2.069	74.239	64.75	64.67	35	0.23	48	74.398	5.920	5.91	
X2	X3	0.0500	0.50	0.025	0.743	10.401	5.860	0.146	74.385	61.75	61.43	135	0.24	48	75.763	6.029	22.39	
X3	OUTLET	0.0000	0.00	0.000	0.000	0.000	0.000	0.000	86.841	56.20	56.00	62	0.32	48	88.383	7.033	8.82	
H1	F	0.3400	0.70	0.238	0.238	5.000	6.955	1.655	1.655	63.00	62.45	176	0.31	12	2.160	2.750	64.01	
F	OUTLET	0.1500	0.85	0.128	0.366	6.067	6.707	0.855	2.510	59.30	58.50	173	0.46	12	2.627	3.345	51.72	
G1	G	0.8900	0.70	0.623	0.989	5.000	6.955	4.333	4.333	60.00	59.00	203	0.49	15	4.916	4.006	50.68	
G	OUTLET	0.1500	0.85	0.128	1.116	5.845	6.758	0.862	5.195	56.30	56.00	67	0.45	15	4.686	3.819	17.54	
OUTFALL	SDMH	0.0000	0.00	0.000	0.000	0.000	0.000	0.000	51.798	60.00	59.93	31	0.23	42	51.798	5.384	5.76	
SDMH	SDMH	0.0000	0.00	0.000	0.000	0.000	0.000	0.000	51.798	56.46	56.14	134	0.23	42	51.798	5.433	24.66	
SDMH	G1	0.0000	0.00	0.000	0.000	0.000	0.000	0.000	51.798	56.14	55.86	118	0.23	42	51.798	5.433	21.72	
G1	OUTLET	0.8900	0.70	0.623	0.623	0.000	0.000	0.000	58.823	55.86	55.82	92	0.04	60	58.823	2.996	30.71	

MATCHES PREV. CALCS OK

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	~	18	19	20	22
INLET STATION	OUTLET WATER ELEV	Do	Qo	Lo	Sko	Hl	Vo	Ho	Q	VI	Q(VI)	Hl	ANG	H(DELTA)	Hl	1.3 Hl	0.5 Hl	FINAL H	INLET WATER ELEV	RIM ELEV
BS	66.45	2.00	11.32	130	0.0014	0.182	5.519	0.118	9.29	5.552	51.58	0.168	90	0.335	0.621	0.807	0.404	0.586	67.04	69.31
BS-0	67.04	2.00	9.29	83	0.0014	0.116	5.552	0.120	5.62	3.763	21.16	0.077	0	0.000	0.197	0.256	0.098	0.215	67.25	69.81
BS-1	67.25	1.50	3.67	56	0.0014	0.078	2.436	0.023	2.93	3.815	11.17	0.079	0	0.158	0.260	0.338	0.169	0.248	67.50	70.01
BS-2	67.50	1.00	2.93	128	0.0014	0.179	3.815	0.056	0.00	0.000	0.00	0.000	0	0.000	0.056	0.073	0.037	0.216	67.71	72.81
15	66.45	2.25	18.01	92	0.0014	0.129	5.566	0.120	14.68	5.130	75.30	0.143	0	0.000	0.263	0.342	0.171	0.300	66.75	71.07
14	66.75	2.00	14.68	81	0.0014	0.113	5.130	0.102	9.93	4.562	45.28	0.113	90	0.226	0.441	0.574	0.287	0.400	67.15	72.40
13	67.15	1.00	2.09	139	0.0014	0.195	2.950	0.034	0.00	0.000	0.00	0.000	0	0.000	0.034	0.044	0.022	0.217	67.37	74.50
12	66.75	1.75	9.93	196	0.0014	0.274	4.562	0.081	6.84	4.556	31.18	0.113	90	0.226	0.419	0.545	0.273	0.547	67.30	75.85
11	67.30	1.25	2.60	70	0.0014	0.098	2.157	0.018	1.46	2.319	3.39	0.029	90	0.058	0.106	0.137	0.069	0.167	67.46	73.70
10	67.46	1.00	1.46	135	0.0014	0.189	2.319	0.021	0.00	0.000	0.00	0.000	0	0.000	0.021	0.027	0.014	0.203	67.67	79.00
9	67.30	1.50	6.84	80	0.0014	0.112	4.556	0.081	6.15	4.218	25.95	0.097	90	0.193	0.371	0.482	0.241	0.353	67.65	74.70
8	66.45	4.00	86.84	62	0.0014	0.087	7.033	0.192	74.39	6.029	448.47	0.198	90	0.395	0.785	1.020	0.510	0.597	67.05	69.00
7	67.05	4.00	74.39	135	0.0014	0.189	6.029	0.141	74.24	5.920	439.52	0.190	30	0.218	0.549	0.714	0.357	0.546	67.59	73.30

MATHES REV CALCS 8/1

INLET STATION	OUTLET WATER ELEV	Do	Qo	Lo	SFo	Hf	Vo	Ho	Qi	Vi	Qi(Vi)	Hi	ANG.	H(DELTA)	Hi	1.5 Hi	0.5 Hi	FINAL H	INLET WATER ELEV	RIM ELEV
X1-2	67.59	4.00	74.24	35	0.0014	0.049	5.920	0.136	72.17	5.958	429.98	0.193	0	0.000	0.329	0.428	0.214	0.263	67.86	71.95
12	67.86	4.00	72.17	108	0.0014	0.151	5.958	0.138	70.00	5.958	417.06	0.193	30	0.220	0.551	0.717	0.358	0.509	68.37	76.85
R5	67.05	1.75	12.46	29	0.0014	0.041	5.626	0.123	9.83	4.314	42.38	0.101	0	0.000	0.224	0.291	0.146	0.186	67.23	70.83
R4	67.23	1.75	9.83	137	0.0014	0.192	4.314	0.072	7.83	4.725	37.01	0.121	0	0.104	0.298	0.387	0.193	0.385	67.62	73.54
R3	67.62	1.50	7.83	186	0.0014	0.260	4.725	0.087	4.38	4.439	19.43	0.107	30	0.122	0.316	0.411	0.206	0.466	68.08	79.75
R7	68.08	1.25	4.38	157	0.0014	0.220	4.439	0.077	2.28	3.153	7.20	0.054	90	0.108	0.239	0.310	0.155	0.375	68.46	80.67
R2	66.45	1.00	2.51	173	0.0014	0.242	3.345	0.043	1.66	2.750	4.55	0.041	90	0.082	0.167	0.217	0.108	0.351	66.80	72.80
R1	66.80	1.00	1.66	176	0.0014	0.246	2.750	0.029	0.00	0.000	0.00	0.000	0	0.000	0.029	0.038	0.019	0.265	67.07	69.18
G2	66.45	1.25	5.19	67	0.0014	0.094	3.819	0.057	4.33	4.006	17.36	0.087	0	0.025	0.169	0.219	0.110	0.203	66.65	69.95
G1	66.65	1.25	4.33	203	0.0014	0.284	4.006	0.062	0.00	0.000	0.00	0.000	0	0.000	0.062	0.000	0.031	0.315	66.97	67.00
G-2	67.25	1.75	5.62	144	0.0014	0.202	3.763	0.055	4.92	3.091	15.20	0.052	0	0.015	0.122	0.158	0.079	0.281	67.53	67.75
G-1	67.53	1.50	4.92	126	0.0014	0.176	3.091	0.037	0.00	0.000	0.00	0.000	0	0.000	0.037	0.000	0.019	0.195	67.73	69.27

METHOD CALCS

W.F.LARGE INC.

S[redacted]M PIPE SIZING

PROJECT: JAMES CITY COUNTY

STORM: 10 YR

CHECKED BY: CB

FORMULA: Q = C i A

DESIGNED BY: EE

DATE: 08/99

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
FROM PT.	TO PT.	"A" AREA (ACRE)	"C" COEF.	CA INCR.	CA SYS.	TIME (MIN.) INCR.	RAINFALL "I"(IN.) INCR.	"Q" (CFS) INCR.	"Q" (CFS) SYS.	INV. ELEV. UPPER	INV. ELEV. LOWER	LENGT (FT)	SLOPE (%)	DIA. (IN)	CAP. (CFS)	VEL. (FPS)	FLOW TIME (SEC)	REMARKS
10 YEAR																		
C1	C1-1	0.6800	0.50	0.340	0.380	5.000	6.955	2.365	2.365	62.44	62.14	61	0.49	12	2.709	3.450	17.68	

Q= 2.365 CFS
N= 0.1
S= 0.01 FT/FT
Sx= 0.01 FT/FT
T= 10 FT
W= 2.5 FT
L= 2.5 FT

No "D"

Eo= 0.54
Vn= 0.026
V= 0.26 FPS
Rf= 1
Rs= 1
Qi= 2.365 CFS
Qi= 2.365-2.365= 0 CFS CARRYOVER

WEIR FLOW

$Q_i = C W P d^{1.5}$

$2.365 = 3.00 (10) d^{1.5}$

$d = \left[\frac{Q}{CWP}\right]^{0.67} = \left[\frac{2.365}{3.00 \times 10}\right]^{0.67} = 0.021^{0.67} = 0.182 = 2.18''$

ALTS
AS WEIR
0.18' depth
2.16"
SPREAD
18.38'

CI	CI-1	0.6800	0.50	0.340	0.380	5.000	9.495	3.228	3.228	62.44	62.14	61	0.49	12	2.709	3.450	17.68	

Q_{100}

Q= 3.228 CFS
N= 0.1
S= 0.01 FT/FT
Sx= 0.01 FT/FT
T= 10 FT
W= 2.5 FT
L= 2.5 FT

Eo= 0.54
Vn= 0.026
V= 0.26 FPS
Rf= 1
Rs= 1
Qi= 3.228 CFS
Qi= 3.228-3.228= 0 CFS CARRYOVER

NO "D"

D = 0.23' (2.76")
SPREAD 22 Ft.
OPERATES AS WEIR

Time of Concentration
and
Runoff Curve Number Calculations
for
Monticello at Powhatan Apartments

All calculations are based on the entire drainage area for the site. The developed calculations are based on the off-site development (being designed by Langley and McDonald) fully developed. Unless otherwise noted, all soils are hydrologic soil group C (per Langley and McDonald's channel adequacy calculations for Powhatan Parkway).

- Pre-Developed 41.2 AC.

Drainage Area	Curve Number
3 acres of existing residential lots	72
0.9 acres of roadway (Powhatan Parkway)	92
31.3 acres of woods	70
6 acres of woods (soil group D)	77

Average CN = Sum of the areas times the curve number divided by the total area

Average CN = 71.6

Time of concentration from Langley and McDonald's channel adequacy calculations for Powhatan Parkway (James City County Case Number SP-38-99).

- Bypass 36.97 AC.

Drainage Area	Curve Number
4.23 acres of apartments	89

Time of concentration from storm pipe sizing calculations included with this package.

- Developed Site

Drainage Area	Curve Number
3 acres of existing residential lots	72
6 acres of commercial development (church)	89
11.9 acres of new residential lots (30% impervious)	81
16.07 acres of apartments	89

Average CN = Sum of the areas times the curve number divided by the total area

Average CN = 85.3

Time of concentration from Langley and McDonald's Powhatan Parkway storm drainage calculations (James City County Case Number SP-38-99) plus time to reach the pond from the right-of-way (found in the storm drainage calculations included in this package).

CN 85.3 ~
60% imperv.

MISSING GROUPS
11C
10C
8B

Soils Description
for
Monticello at Powhatan Apartments

Bethera silt loam (Soil number 5) POND LOCATION. HYDRIC

This soil is deep, nearly level, and poorly drained. It is on upland flats and in depressions. Areas of this soil are irregularly oval or rectangular or are elongated. They range from about 2 to 30 acres. Slopes range from 0 to 2 percent.

Typically, the surface layer of this soil is dark grayish brown and light brownish gray silt loam about 7 inches thick. The subsoil extends to a depth of more than 65 inches. It is mostly mottled gray clay loam, silty clay loam and clay.

Included in mapping are small areas of moderately well drained Izagora and Slagle soils and somewhat poorly drained Yemassee soils that are on slightly higher areas throughout the unit. Also included are areas of soils that have water on the surface throughout early summer, soils at the base of escarpments that have less clay, and soils that have a thinner solum. Included soils make up about 15 percent of this unit.

The permeability of this Bethera soil is slow, and available water capacity is moderate. Surface runoff is very slow or ponded. The erosion hazard is slight. The subsoil has moderate shrink-swell potential. The root zone extends to a depth of 60 inches or more. The soil is low in organic matter content and natural fertility. It ranges from extremely acid through strongly acid, but reaction in the surface layer varies in areas that have been limed. A seasonal high water table is 1 foot above the surface to 1 ½ feet below the surface during winter and spring.

In most areas this soil is in woodland. In a few areas it is farmed, and in some areas it is in pasture.

If drained, the soil is moderately well suited to cultivated crops. It is poorly suited in undrained areas. Crops respond well to lime and fertilizer, but the soil is wet and cold in spring, and wetness often interferes with tillage. Drainage generally does not completely overcome wetness or protect crops from damage because outlets for drainage are not always available and water does not readily percolate through the clayey subsoil. Conservation tillage, using cover crops and grasses and legumes in the cropping system, and use of crop residue help to maintain organic matter content and tilth, reduce crusting, and increase water infiltration.

If drained, this Bethera soil is moderately well suited to pasture and hay crops. Establishing and maintaining a mixture of grasses and legumes, using proper stocking rates, rotational grazing of pasture, deferred grazing, and use of lime and fertilizer help to increase the carrying capacity of pastures. Overgrazing and grazing when the soil is too wet cause compaction of the surface layer and damage the stands of grasses and legumes. Ponding of water during winter and spring also damages the stands of grasses and legumes.

The potential for trees is high, but generally is restricted to water-tolerant species. Seed and seedling survival are limited by wetness. Drainage helps to increase productivity and seedling survival. When the soil is wet, it is soft, thus limiting the use of heavy timber equipment.

The seasonal high water table, ponding and slow permeability are the main limitiations of the soil for community development. The high water table, ponding, and permability limit the use of this soil as a building site, as a site for sanitary landfills or septic tank absorption fields, and for most types of recreation.

The soil is in capability subclass IIIw, drained, and subclass IVw, undrained.

LABEL?

Of the total acreage of this map unit, about 35 percent is Craven soils, 35 percent is Uchee soils and 30 percent is other soils.

Typically, the surface layer of the Craven soils is dark grayish brown fine sandy loam about 4 inches thick. The subsurface layer is pale olive fine sandy loam 5 inches thick. The subsoil extends to a depth of 42 inches. It is yellowish brown clay in the upper part and yellowish brown sandy clay loam mottled with gray in the middle and lower parts. The substratum extends to a depth of at least 72 inches. It is brownish yellow fine sandy loam mottled with gray in the upper part and gray loamy fine sandy with yellow mottles in the lower part.

Typically, the surface layer of the Uchee soils is dark grayish brown loamy fine sand about 5 inches thick. The subsurface layer is light yellowish brown and very pale brown loamy fine sand 19 inches thick. The subsoil extends to a depth of 56 inches. It is strong brown sandy clay loam above a depth of 36 inches and strong brown sandy clay loam and clay mottled with gray and red from 36 to 56 inches. The substratum from 56 to at least 65 inches is variegated red, brown, and gray stratified sandy loam and sandy clay loam.

Included with these soils in mapping are small, intermingled areas of well drained Caroline, Emporia and Kempsville soils and moderately well drained Slagle soils. These soils are throughout the map unit. Also included are small areas of ferricrete outcrops and areas of severely eroded soils that are generally on points of ridges and the upper part of side slopes. Also included are steeper soils on side slopes and along narrow escarpments. In some areas seeps are at the base of slopes.

In the Craven soils, permeability is slow; and in the Uchee soils, it is moderate in the upper part of the subsoil and moderately slow in the lower part. The available water capacity is moderate for the Craven soils and low or moderate for the Uchee soils. Surface runoff is rapid. The erosion hazard is severe. The surface layer of both soils is friable and easily tilled. The subsoil of both soils has moderate shrink-swell potential. The root zone extends to a depth of 60 inches or more. Both soils are low in organic matter content and natural fertility. The Craven soils range from extremely acid through strongly acid, and the Uchee soils commonly are very strongly acid or strongly acid; however, reaction in the surface layer of both soils varies because of local liming practices. During winter and early spring, a seasonal high water table is at a depth of 2 to 3 feet for Craven soils and 3 ½ to 5 feet in the Uchee soils.

Most of the acreage is in woodland. A small acreage is farmed or in pasture.

The soils in this complex are poorly suited for cultivated crops. Crops respond well to lime and fertilizer; however, wetness in spring often restricts tillage on the Craven soils, and the low available water capacity often limits crop response to lime and fertilizer on the Uchee soils. The erosion hazard is severe and is a major management concern. Also, the complex, short slopes are an equipment limitation and erosion hazard in some areas. Conservation tillage, using cover crops and grasses and legumes in the cropping system, stubble mulching, and use of crop residue help to maintain organic matter content and tilth, reduce erosion and crop damage, and help to hold moisture in the soil. Grassed waterways and diversions also help to reduce erosion in critical areas.

These soils are poorly suited to pasture and hay crops. Establishing and maintaining a mixture of grasses and legumes, using proper stocking rates, rotational grazing of pasture, deferred grazing, and use of lime and fertilizer help to increase the carrying capacity of pastures. Grazing during wet periods compacts the surface layer of this complex, damages the stands of grasses and legumes, and increases erosion.

The potential for trees on this complex is moderately high, especially for loblolly pine, Virginia pine, sweetgum, and oak. Seeds and seedlings grow well on the Craven soils if competing vegetation is controlled, but survival and growth are often limited by the low available water capacity of the Uchee soils during the growing season. The surface layer of both soils is soft when wet, thus limiting the use of heavy timber equipment during wet periods.

The seasonal high water table, slope, slow and moderately slow permeability and moderate shrink-swell potential of the subsoil are the main limitations if the soils are used for community development. These

soil features especially limit use for septic tank absorption fields, sanitary landfills, and building sites and for most types of recreation.

The soils in this complex are in capability subclass IVe.

Emporia fine sandy loam, 2 to 6 percent slopes (Soil number 14B)

This soil is deep, gently sloping, and well drained. It is on medium and broad upland ridges. Slopes are smooth, commonly convex and 150 to 800 feet long. Areas of this soil commonly are elongated or irregularly oval. They range from 3 to 40 acres.

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

Included with this soil in mapping are small areas of well drained Caroline, Kenansville, Kempsville, Suffolk and Uchee soils and moderately well drained Izagora and Slagle soils. The Caroline, Kenansville, Suffolk and Uchee soils are on small knolls, and the Izagora and Slagle soils are in shallow depressions. The Emporia soils and the Kempsville soils are in similar areas throughout the map unit. Included soils make up about 20 percent of the unit.

In this Emporia soil, permeability is moderate in the upper part of the subsoil and moderately slow to slow in the lower part. The available water capacity is moderate. Surface runoff is medium. The erosion hazard is moderate. The surface layer is friable and easily tilled. The subsoil has moderate shrink-swell potential. The root zone extends to a depth of 60 inches or more, but is somewhat restricted by a firm, compacted layer at about 37 inches. The soil is low in organic matter content and natural fertility. It commonly is very strongly acid or strongly acid, but reaction in the surface layer varies because of local liming practices. A perched high water table is at a depth of 3 to 4 ½ feet in winter and spring.

In most areas this soil is in woodland. Some of the acreage is in farmland or pasture, and some is in residential developments.

This soil is well suited to cultivated crops. Crops respond well to lime and fertilizer. Conservation tillage, using cover crops and grasses and legumes in the cropping system, and use of crop residue help to maintain organic matter content and tilth, control erosion, reduce crusting and increase water infiltration.

This soil is well suited to pasture and hay crops. Establishing and maintaining a mixture of grasses and legumes, using proper stocking rates, rotational grazing of pasture, deferred grazing, and use of lime and fertilizer help to increase the carrying capacity of pastures. Overgrazing causes compaction of the surface layer and increase runoff and erosion.

The potential for trees on this soil is moderately high, especially for loblolly pine, sweetgum, and yellow-poplar. Seeds and seedlings grow well if competing vegetation is controlled. When the soil is wet, it is soft and will not support heavy timber equipment.

The low strength of the soil, moderate shrink-swell potential, seasonal high water table and slow permeability of the subsoil are the main limitations for community development. The low strength and the moderate shrink-swell potential limit use of the soil as a building site, and the high water table limits excavation. The slowly permeable subsoil and the water table also limit use of the soil for septic tank absorption fields.

This soil is in capability subclass IIe.

Emporia complex, 10 to 15 percent slopes (Soil number 15D)

This complex consists of areas of deep, moderately steep, well drained Emporia soils and areas of similar soils that formed over layers of fossil shells. Individual areas of these soils are so intermingled that it is not practical to separate them at the scale used in mapping. This complex is on side slopes along rivers, creeks and drainageways. Slopes are convex and irregularly shaped and range from 50 to 200 feet long. Areas of this complex are long and winding, and they range from about 2 to 20 acres.

Of the total acreage of this map unit, about 50 percent is Emporia soils, 25 percent is similar soils and 25 percent is other soils.

Typically, the surface layer of Emporia soils is dark grayish brown fine sandy loam about 4 inches thick. The subsurface layer is pale brown loam 7 inches thick. The subsoil extends to a depth of 54 inches. It is yellowish brown loam with mostly strong brown mottles in the upper part; yellowish brown, firm sandy clay loam with strong brown and gray mottles in the middle part; and mottled gray and brown, firm sandy clay loam in the lower part. The substratum is variegated brown, red and gray, firm sandy clay loam to a depth of at least 75 inches.

Included with these soils in mapping are small areas of well drained Caroline and Uchee soils, moderately well drained Craven and Slagle soils, and very poorly drained Johnston soils. The Caroline and Uchee soils are in similar areas. The Craven and Slagle soils are in gently sloping areas around the heads of drainageways. The Johnston soils are in small drains and along the edge of large drainageways. Also included are soils that have a sandy subsoil and small areas of gravelly or severely eroded soils that are on some knobs and short, steep side slopes. Small areas of fossiliferous shells are on the surface in some areas. Also included are areas having springs or seeps, especially at the bases of the slopes.

In these Emporia soils, permeability is moderate in the upper part of the subsoil and moderately slow in the lower part. The available water capacity is moderate. Surface runoff is rapid. The erosion hazard is severe. The subsoil has moderate shrink-swell potential. The root zone extends to a depth of 60 inches or more, but is somewhat restricted by a firm, compacted layer at a depth of 37 inches. The soils are low in organic matter content and natural fertility. They commonly are very strongly acid or strongly acid. A perched high water table is at a depth of 3 to 4 ½ feet during winter and springs.

Slope limits the use of farm equipment and makes these soils generally unsuitable for farming. The potential for trees on these soils is moderately high. Most of the acreage is in woodland that is managed for loblolly pine, sweetgum, and oak. Logging roads and skid trails should be on the contour of the landscape, where possible, to help reduce the concentration of runoff and thereby control erosion.

Slope is the main limitation of these soils for community development, especially if they are used for recreation sites and building sites and for sanitary facilities.

The soils in this complex are in capability subclass IVe.

Slagle fine sandy loam, 0 to 2 percent slopes (Soil number 29A)

This soil is deep, nearly level, and moderately well drained. It is on upland terraces and broad flat uplands and in slight depressions. Areas of this soil commonly are elongated, but some smaller areas are irregularly oval or rectangular. They range from about 2 to 80 acres.

Typically, the surface layer of this soil is dark grayish brown fine sandy loam about 4 inches thick. The subsurface layer is light yellowish brown fine sandy loam 5 inches thick. The subsoil extends to a depth of 50 inches. It is mostly mottled yellowish brown clay loam to a depth of 25 inches. Below this depth, it is mostly mottled clay loam and sandy clay loam. The substratum is mottled sandy clay loam to a depth of at least 60 inches.

Included with this soil in mapping are small areas of well drained Emporia, Kempsville and Uchee soils; moderately well drained Izagora and Peawick soils; somewhat poorly drained Yemassee soils; and poorly drained Bethera soils. The Emporia, Kempsville and Uchee soils are in slightly higher areas; the Izagora and Peawick soils are in similar areas; and the Yemassee and Bethera soils are in slight depressions and around drainageways. Also included are many small areas of soils that have water on the surface for brief period after heavy or prolonged rainfall in winter and spring and soils that are similar to this Slagle soil but have a thicker surface layer. Included soils make up about 20 percent of this unit.

In this Slagle soil, permeability is moderate in the upper part of the subsoil and moderately slow or slow in the lower part. The available water capacity is moderate. Surface runoff is slow. The erosion hazard is slight. The surface layer is friable and easily tilled. The subsoil has moderate shrink-swell potential. The root zone extends to a depth of 60 inches or more. The soil is low in organic matter content and natural fertility. It ranges from extremely acid through strongly acid, but reaction in the surface layer varies because of local liming practices. A high perched water table is at a depth of 1 ½ to 3 feet in winter and spring.

In most areas this soil is in woodland. In a few areas it is cultivated, and in a few it is in pasture.

This soil is well suited to cultivated crops. Crops respond well to lime and fertilizer, but the soil is wet and cold in spring; and wetness often interferes with tillage. Drainage helps to protect crops from damage caused by wetness. Conservation tillage, using cover crops and grasses and legumes in the cropping system; and use of crop residue help to maintain organic matter content and tilth, reduce crusting, and increase water infiltration.

This soil is well suited to pasture and hay. Establishing and maintaining a mixture of grasses and legumes, using proper stocking rates, rotational grazing of pasture, deferred grazing, and use of lime and fertilizer help to increase the carrying capacity of pastures. Overgrazing and grazing when the soil is too wet cause compaction of the surface layer and damage the stands of grasses and legumes.

The potential for trees on this soil is high, especially for loblolly pine, oak and sweetgum. Seeds and seedlings grow well if competing vegetation is controlled. When the soil is wet, it is soft, thus limiting the use of heavy timber equipment.

The seasonal high water table and the low strength and slow permeability of the subsoil are the main limitations of the soil for community development. The high water table and slow permeability of the subsoil limit the use of the soil as a building site or site for sanitary landfills or septic tank absorption fields and for most types of recreation. The low strength limits its use as a subgrade material for roads and streets.

This soil is in capability subclass IIw.

PROFESSIONAL SERVICE INDUSTRIES, INC.	PROJECT NO. 239-85123-1	SHEET 1 OF 1
Project Name: PROPOSED APARTMENT COMPLEX		Date: 10/01/98
Client: M & R REALTY	Boring Location: SEE BORING LOCATION PLAN	Hole No.: B-1
Project Location: WILLIAMSBURG, VIRGINIA	Drill Method: MUD DRILLING / Station:	Depth of Hole:(Ft): 20
Name of Foreman: T. JONES	Water Level Observations: (all levels noted in feet) / Noted at Rods:(Ft): 18.5	At Completion:(Ft):
Name of Inspector: L WARD, EIT/C KATTAN, PE	After Hours Feet	Cave in at:(Ft):

DEPTH	LEGEND	CLASSIFICATION OF MATERIAL (Description)	SAMPLE NO.	BLOWS/6" N-VALUES	RECOVERY (INCHES)	REMARKS
0		RED BROWN, DRY, CLAYEY SAND (SC), MEDIUM DENSE	1	8 12 / 8 10		5" TOPSOIL
		RED BROWN, DRY, SANDY CLAY (CL), VERY STIFF	2	5 9 / 11 15		
5		RED BROWN AND TAN, MIXED, DRY, CLAYEY SAND (SC), MEDIUM DENSE	3	6 9 / 10 11		
			4	6 7 / 10 10		
		RED BROWN, MOIST, SILTY SAND (SM), MEDIUM DENSE	5	10 13 / 13 16		
10						
		RED AND GRAY, MOTTLED, MOIST TO SATURATED, SANDY CLAY (CL), VERY STIFF	6	7 / 10 12		
15			7	11 / 11 12		
20		BORING TERMINATED AT 20 FT.				

Project: PROPOSED APARTMENT COMPLEX	HOLE NO. B-1

PROFESSIONAL SERVICE INDUSTRIES, INC.	PROJECT NO. 239-85123-1		SHEET 1 OF 1
Project Name: PROPOSED APARTMENT COMPLEX			Date: 10/01/98
Client: M & R REALTY	Boring Location: SEE BORING LOCATION PLAN		Hole No.: B-2
Project Location: WILLIAMSBURG, VIRGINIA	Drill Method: MUD DRILLING	Station:	Depth of Hole:(Ft): 20
Name of Foreman: T. JONES	Water Level Observations: (all levels noted in feet)	Noted on Rods:(Ft): 18.5	At Completion:(Ft):
Name of Inspector: L. WARD, EIT/C KATTAN, PE	After Hours	Feet	Cave In at:(Ft)

DEPTH	LEGEND	CLASSIFICATION OF MATERIAL (Description)	SAMPLE NO.	BLOWS/6" N-VALUES	RECOVERY (INCHES)	REMARKS
0		BROWN, DRY, SILTY SAND (SM), MEDIUM DENSE	1	10 11 / 10 11		6" TOPSOIL
			2	7 10 / 10 13		
5		BROWN AND RED BROWN MIXED ENCOUNTERED 4 TO 13.5 FEET	3	8 8 / 12 12		
			4	7 9 / 9 11		
10			5	10 10 / 12 14		
15		RED AND GRAY, MOIST TO SATURATED, SANDY CLAY (CL), VERY STIFF	6	8 / 9 11		
			7	9 / 10 10		
20		BORING TERMINATED AT 20 FT.				

Project	PROPOSED APARTMENT COMPLEX	HOLE NO. B-2

PROFESSIONAL SERVICE INDUSTRIES, INC.	PROJECT NO. 239-85123-1	SHEET 1 OF 1
Project Name: PROPOSED APARTMENT COMPLEX		Date: 10/01/98
Client: M & R REALTY	Boring Location: SEE BORING LOCATION PLAN	Hole No.: B-3
Project Location: WILLIAMSBURG, VIRGINIA	Drill Method: MUD DRILLING / Station:	Depth of Hole:(Ft) 20
Name of Foreman: T. JONES	Water Level Observations: (all levels noted in feet) / Noted on Rods:(Ft) 18.5	At Completion:(Ft)
Name of Inspector: L WARD, EIT/C KATTAN, PE	After Hours Feet	Cave In at:(Ft)

DEPTH	LEGEND	CLASSIFICATION OF MATERIAL (Description)	SAMPLE NO.	BLOWS/6" N-VALUES	RECOVERY (INCHES)	REMARKS
0		BROWN TO BROWN AND RED MIXED, DRY TO MOIST, SILTY SAND (SM), MEDIUM DENSE	1	9 9 / 10 10		6" TOPSOIL
			2	6 8 / 9 12		
5			3	7 8 / 11 14		
			4	7 9 / 10 11		
10		BROWN AND RED BROWN, MOTTLED, MOIST TO SATURATED, SILTY CLAYEY SAND (SM-SC), MEDIUM DENSE	5	10 11 / 11 15		
15			6	7 / 9 10		
			7	8 / 8 11		
20		BORING TERMINATED AT 20 FT.				

Project	PROPOSED APARTMENT COMPLEX	HOLE NO. B-3

PROFESSIONAL SERVICE INDUSTRIES, INC.	PROJECT NO. 239-85123-1		SHEET 1 OF 1
Project Name: PROPOSED APARTMENT COMPLEX			Date: 10/01/98
Client: M & R REALTY	Boring Location: SEE BORING LOCATION PLAN		Hole No.: B-4
Project Location: WILLIAMSBURG, VIRGINIA	Drill Method: MUD DRILLING	Station:	Depth of Hole:(Ft): 20
Name of Foreman: T. JONES	Water Level Observations: (all levels noted in feet)	Noted on Rods:(Ft): 18.5	At Completion:(Ft):
Name of Inspector: L WARD, EIT/C KATTAN, PE	After Hours	Feet	Cave in at:(Ft):

DEPTH	LEGEND	CLASSIFICATION OF MATERIAL (Description)	SAMPLE NO.	BLOWS/6" N-VALUES	RECOVERY (INCHES)	REMARKS
0		GRAY, DRY, SILTY SAND (SM), MEDIUM DENSE TO DENSE	1	6 8 / 9 10		4" TOPSOIL
			2	10 17 / 22 29		
		RED BROWN ENCOUNTERED	3	24 22 / 20 27		
5		RED GRAY AND BROWN, MOTTLED, DRY TO SATURATED, SANDY CLAY (CL), VERY STIFF TO HARD	4	16 20 / 25 33		
			5	15 16 / 20 27		
10						
			6	14 / 14 16		
15						
		▽	7	10 / 16 18		
20		BORING TERMINATED AT 20 FT.				

Project: PROPOSED APARTMENT COMPLEX	HOLE NO. B-4

PROFESSIONAL SERVICE INDUSTRIES, INC.	PROJECT NO. 239-85123-1		SHEET 1 OF 1
Project Name: PROPOSED APARTMENT COMPLEX			Date: 10/01/98
Client: M & R REALTY	Boring Location: SEE BORING LOCATION PLAN		Hole No.: B-5
Project Location: WILLIAMSBURG, VIRGINIA	Drill Method: MUD DRILLING	Station:	Depth of Hole:(Ft) 20
Name of Foreman: T. JONES	Water Level Observations: (all levels noted in feet)	Noted on Rods:(Ft) 8.0	At Completion:(Ft)
Name of Inspector: L WARD, EIT/C KATTAN, PE	After Hours	Feet	Cave In at:(Ft)

DEPTH	LEGEND	CLASSIFICATION OF MATERIAL (Description)	SAMPLE NO.	BLOWS/6" N-VALUES	RECOVERY (INCHES)	REMARKS
0		LIGHT BROWN TO RED BROWN AND TAN MIXED, DRY, SILTY SAND (SM), MEDIUM DENSE	1	9 13 / 9 12		6" TOPSOIL
			2	6 10 / 12 17		
5			3	6 10 / 14 17		
		RED BROWN AND TAN, MOTTLED, MOIST, SANDY CLAY (CL), HARD	4	15 18 / 23 30		
10		RED BROWN AND BROWN, MOTTLED, MOIST TO SATURATED, SILTY SAND CLAY (SM-SC), HARD	5	13 14 / 18 20		
15		GRAY AND PURPLE, SATURATED, SANDY CLAY (CL), HARD	6	11 / 17 19		
			7	13 / 19 20		
20		BORING TERMINATED AT 20 FT.				

Project	PROPOSED APARTMENT COMPLEX	HOLE NO. B-5

PROFESSIONAL SERVICE INDUSTRIES, INC.	PROJECT NO. 239-85123-1		SHEET 1 OF 1
Project Name: PROPOSED APARTMENT COMPLEX			Date: 10/01/98
Client: M & R REALTY	Boring Location: SEE BORING LOCATION PLAN		Hole No.: B-6
Project Location: WILLIAMSBURG, VIRGINIA	Drill Method: MUD DRILLING	Station:	Depth of Hole:(Ft): 20
Name of Foreman: T. JONES	Water Level Observations: (all levels noted in feet)	Noted on Rods:(Ft): 13.5	At Completion:(Ft):
Name of Inspector: L WARD, EIT/C KATTAN, PE	After Hours	Feet	Cave in at:(Ft)

DEPTH	LEGEND	CLASSIFICATION OF MATERIAL (Description)	SAMPLE NO.	BLOWS/6" N-VALUES	RECOVERY (INCHES)	REMARKS
0		LIGHT GRAY TO RED BROWN AND TAN MIXED, DRY, SILTY SAND (SM), LOOSE TO MEDIUM DENSE	1	2 4 / 6 9		5" TOPSOIL
			2	10 12 / 14 17		
5		RED BROWN AND GRAY, MOTTLED, DRY TO SATURATED, SANDY CLAY (CL), VERY STIFF TO HARD	3	10 14 / 16 21		
			4	13 17 / 17 21		
10			5	14 16 / 21 23		
		▽	6	10 / 18 20		
15			7	14 / 21 24		
20		BORING TERMINATED AT 20 FT.				

Project	PROPOSED APARTMENT COMPLEX	HOLE NO. B-6

PROFESSIONAL SERVICE INDUSTRIES, INC.	PROJECT NO. 239-85123-1		SHEET 1 OF 1
Project Name: PROPOSED APARTMENT COMPLEX			Date: 10/01/98
Client: M & R REALTY	Boring Location: SEE BORING LOCATION PLAN		Hole No.: B-7
Project Location: WILLIAMSBURG, VIRGINIA	Drill Method: MUD DRILLING	Station:	Depth of Hole:(Ft): 20
Name of Foreman: T. JONES	Water Level Observations: (all levels noted in feet)	Noted on Rods:(Ft)	At Completion:(Ft)
Name of Inspector: L WARD, EIT/C KATTAN, PE	After Hours	Feet	Cave in at:(Ft)

DEPTH	LEGEND	CLASSIFICATION OF MATERIAL (Description)	SAMPLE NO.	BLOWS/6" N-VALUES	RECOVERY (INCHES)	REMARKS
0		TAN TO LIGHT BROWN AND TAN MIXED, DRY, SILTY SAND (SM). LOOSE TO DENSE	1	4 4 / 6 12		4" TOPSOIL
			2	9 17 / 17 21		
5		RED BROWN AND GRAY, DRY, SANDY CLAY (CL). VERY STIFF TO HARD	3	11 12 / 15 20		
			4	9 11 / 15 16		
10			5	7 12 / 21 23		
15		BROWN AND RED BROWN MIXED, MOIST TO SATURATED, POORLY GRADED SAND (SP), LOOSE TO MEDIUM DENSE	6	6 / 6 8		
			7	4 / 4 4		
20		BORING TERMINATED AT 20 FT.				

Project	PROPOSED APARTMENT COMPLEX	HOLE NO. B-7

PROFESSIONAL SERVICE INDUSTRIES, INC.	PROJECT NO. 239-85123-1		SHEET 1 OF 1
Project Name: PROPOSED APARTMENT COMPLEX			Date: 10/01/98
Client: M & R REALTY	Boring Location: SEE BORING LOCATION PLAN		Hole No.: B-8
Project Location: WILLIAMSBURG, VIRGINIA	Drill Method: MUD DRILLING	Station:	Depth of Hole:(Ft): 20
Name of Foreman: T. JONES	Water Level Observations: (all levels noted in feet)	Noted on Rods:(Ft): 18.5	At Completion:(Ft):
Name of Inspector: L WARD, EIT/C KATTAN, PE	After Hours	Feet	Cave in at:(Ft):

DEPTH	LEGEND	CLASSIFICATION OF MATERIAL (Description)	SAMPLE NO.	BLOWS/6" N-VALUES	RECOVERY (INCHES)	REMARKS
0		LIGHT BROWN, DRY, SILTY SAND (SM), MEDIUM DENSE	1	4 6 / 9 10		6" TOPSOIL
			2	9 13 / 16 20		
5		LIGHT BROWN TAN AND RED, MOTTLED, DRY, SANDY CLAY (CL), VERY STIFF TO HARD	3	10 14 / 21 23		
			4	6 10 / 16 20		
10			5	6 8 / 8 12		
15		RED BROWN AND TAN MIXED, DRY TO MOIST, POORLY GRADED SAND (SP), MEDIUM DENSE	6	5 / 7 7		
		BROWN, SATURATED ENCOUNTERED	7	7 / 9 11		
20		BORING TERMINATED AT 20 FT.				

Project	PROPOSED APARTMENT COMPLEX	HOLE NO. B-8

PROFESSIONAL SERVICE INDUSTRIES, INC.	PROJECT NO. 239-85123-1	SHEET 1 OF 1
Project Name: PROPOSED APARTMENT COMPLEX		Date: 10/01/98
Client: M & R REALTY	Boring Location: SEE BORING LOCATION PLAN	Hole No. B-9
Project Location: WILLIAMSBURG, VIRGINIA	Drill Method: MUD DRILLING / Station:	Depth of Hole:(Ft) 20
Name of Foreman: T. JONES	Water Level Observations: (all levels noted in feet) / Noted on Rods:(Ft) 18.5	At Completion:(Ft)
Name of Inspector: L WARD, EIT/C KATTAN, PE	After Hours Feet	Cave In at:(Ft)

DEPTH	LEGEND	CLASSIFICATION OF MATERIAL (Description)	SAMPLE NO.	BLOWS/6" N-VALUES	RECOVERY (INCHES)	REMARKS
0		LIGHT BROWN, DRY, SILTY SAND (SM), MEDIUM DENSE	1	5 7 / 10 11		7" TOPSOIL
		LIGHT BROWN TAN AND RED, MOTTLED, DRY, SILTY SANDY CLAY (SM-SC), HARD	2	10 14 / 17 22		
5		LIGHT BROWN TAN AND RED, MOTTLED, DRY, SANDY CLAY (CL), VERY STIFF TO HARD	3	12 16 / 23 25		
			4	8 12 / 18 22		
		BROWN, DRY, SLIGHTLY SILTY SAND (SP-SM), MEDIUM DENSE	5	7 7 / 10 11		
10						
15		RED BROWN AND TAN MIXED, DRY TO SATURATED, POORLY GRADED SAND (SP), LOOSE TO MEDIUM DENSE	6	4 / 5 5		
			7	6 / 7 9		
20		BORING TERMINATED AT 20 FT.				

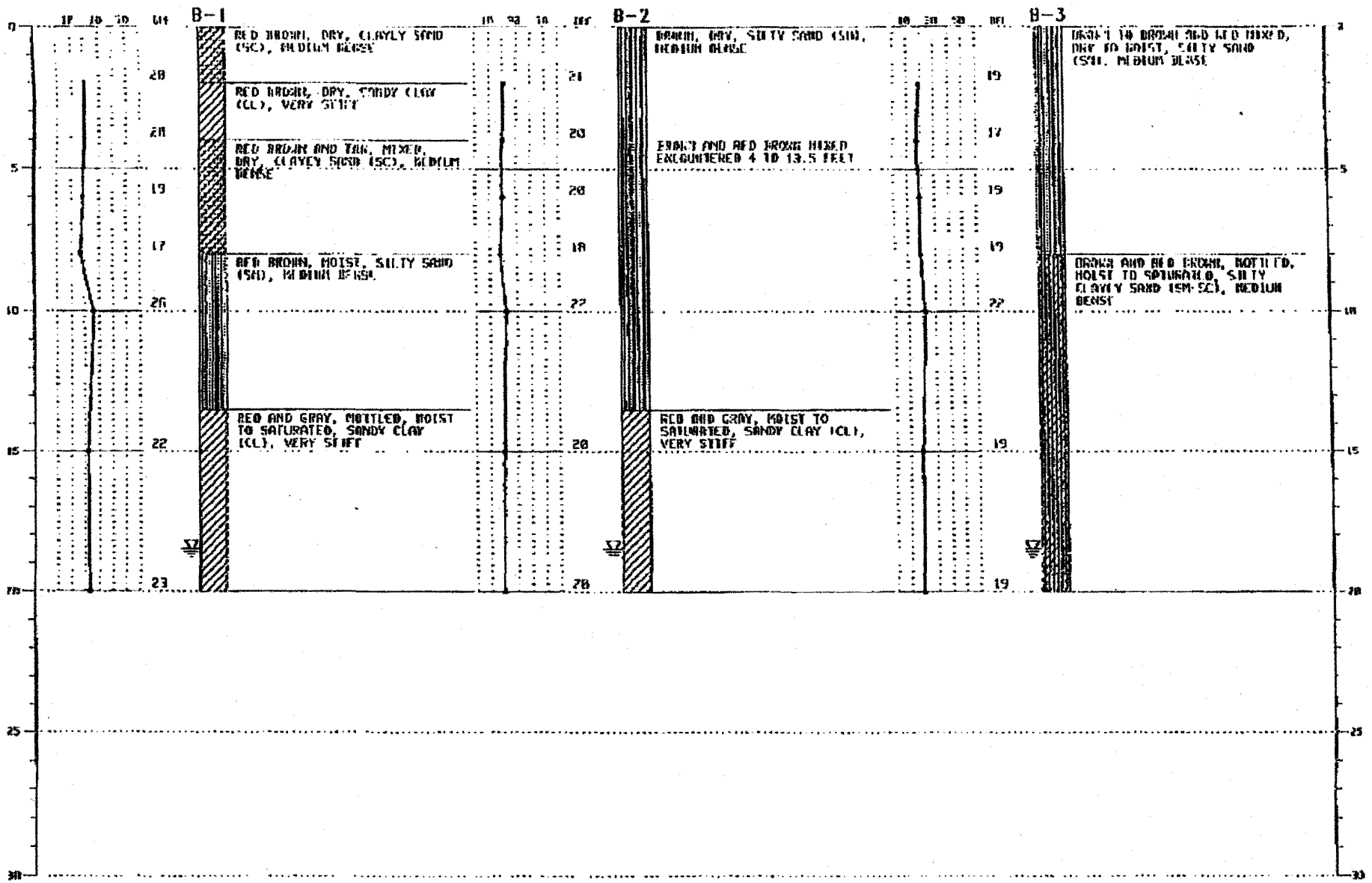
Project	PROPOSED APARTMENT COMPLEX	HOLE NO. B-9

PROFESSIONAL SERVICE INDUSTRIES, INC.	PROJECT NO. 239-85123-1		SHEET 1 OF 1
Project Name: PROPOSED APARTMENT COMPLEX			Date: 10/01/98
Client: M & R REALTY	Boring Location: SEE BORING LOCATION PLAN		Hole No.: B-10
Project Location: WILLIAMSBURG, VIRGINIA	Drill Method: MUD DRILLING	Station:	Depth of Hole:(Ft): 20
Name of Foreman: T. JONES	Water Level Observations: (all levels noted in feet)	Noted on Rods:(Ft): 18.5	At Completion:(Ft):
Name of Inspector: L WARD, EIT/C KATTAN, PE	After Hours	Feet	Cave in at:(Ft):

DEPTH	LEGEND	CLASSIFICATION OF MATERIAL (Description)	SAMPLE NO.	BLOWS/6" N-VALUES	RECOVERY (INCHES)	REMARKS
0		LIGHT GRAY, DRY, SILTY SAND (SM), MEDIUM DENSE	1	6 9 / 11 11		7" TOPSOIL
		LIGHT BROWN TAN AND RED. MOTTLED, DRY, SANDY CLAY (CL), VERY STIFF TO HARD	2	9 12 / 15 18		
5			3	11 17 / 20 22		
			4	9 9 / 14 19		
		RED BROWN AND TAN MIXED, DRY, CLAYEY SAND (SC), VERY STIFF	5	10 9 / 10 10		
10						
		RED BROWN AND TAN, MIXED, DRY TO SATURATED, POORLY GRADED SAND (SP), LOOSE TO MEDIUM DENSE	6	5 / 4 6		
15			7	5 / 7 7		
20		BORING TERMINATED AT 20 FT.				

Project: PROPOSED APARTMENT COMPLEX	HOLE NO. B-10

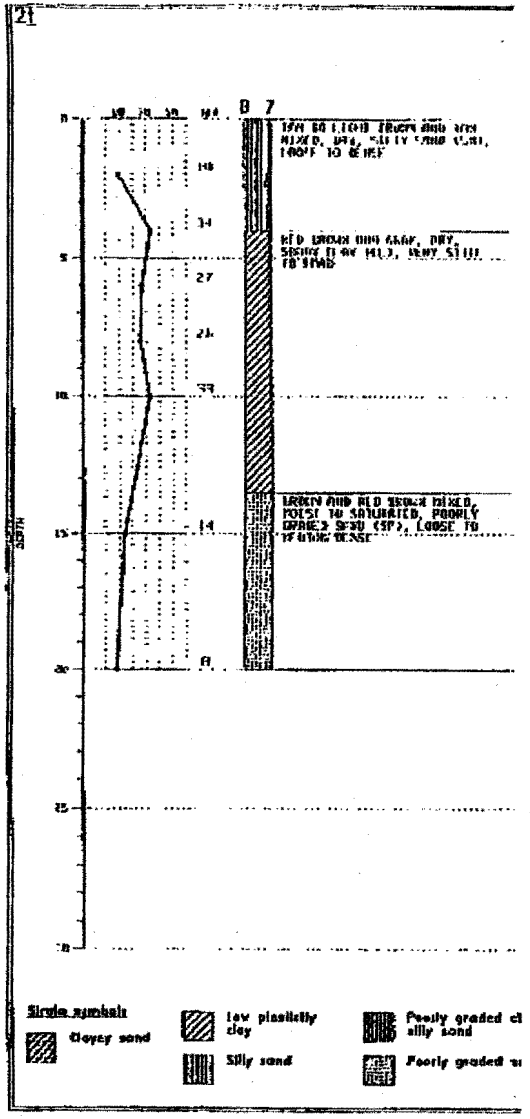
BORING PROFILE
PROPOSED APARTMENT COMPLEX

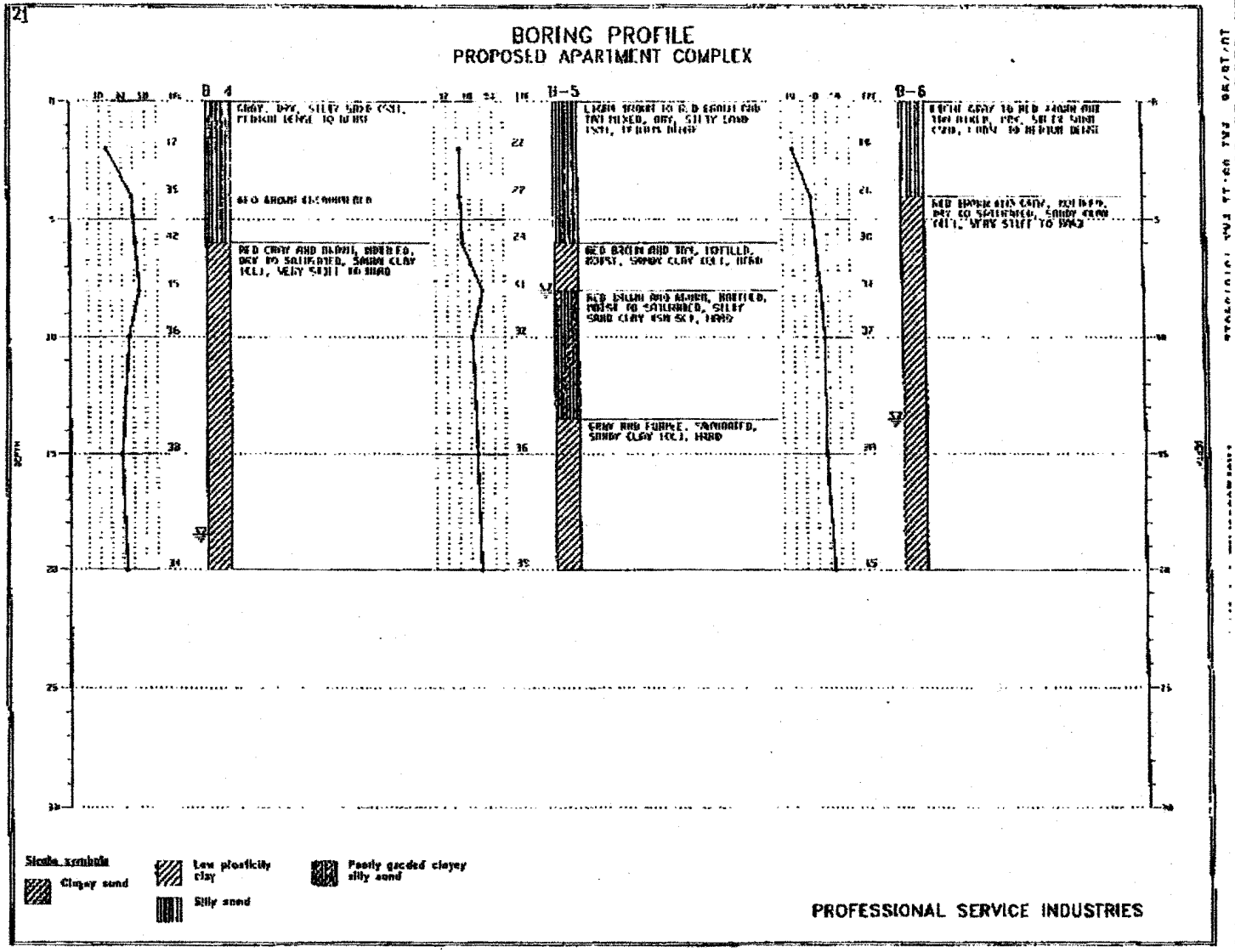


Strata symbols

- Clayey sand
- Low plasticity clay
- Silty sand
- Poorly graded clayey silty sand

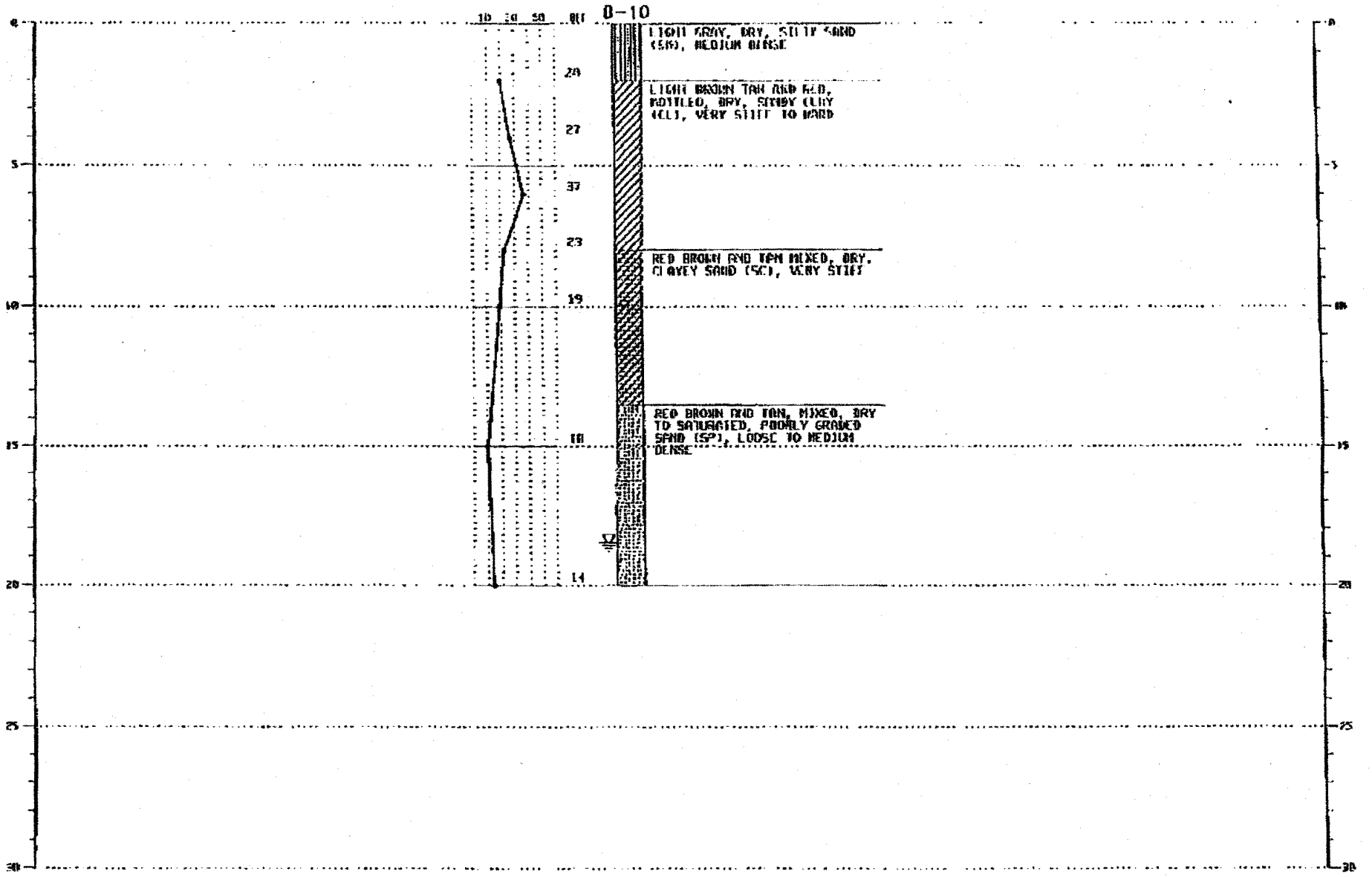
PROFESSIONAL SERVICE INDUSTRIES


B 7
Simple symbols
Clayey sand
Low plasticity clay
Silty sand
Poorly graded silty sand


BORING PROFILE
PROPOSED APARTMENT COMPLEX
B 4
B-5
B-6
Simple symbols
Clayey sand
Low plasticity clay
Silty sand
Poorly graded clayey silty sand
PROFESSIONAL SERVICE INDUSTRIES

21

BORING PROFILE
PROPOSED APARTMENT COMPLEX



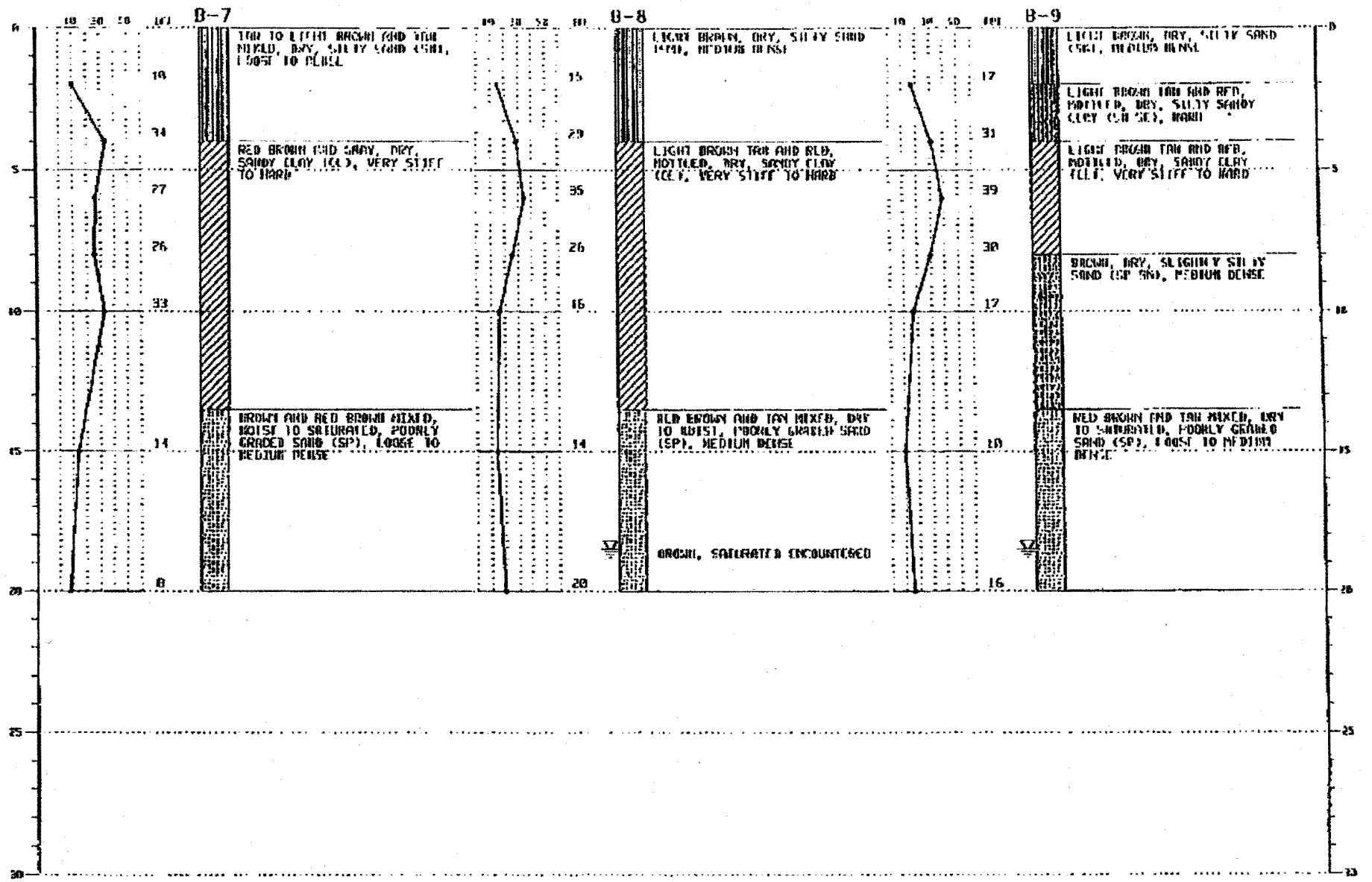
Strata symbols

- Clayey sand
- Low plasticity clay
- Silty sand
- Poorly graded clayey silty sand
- Poorly graded sand
- Poorly graded sand with silt

PROFESSIONAL SERVICE INDUSTRIES

21

BORING PROFILE
PROPOSED APARTMENT COMPLEX



Simple symbols

- Clayey sand
- Low plasticity clay
- Silty sand
- Poorly graded clayey silty sand
- Poorly graded sand
- Poorly graded sand with silt

PROFESSIONAL SERVICE INDUSTRIES

W.P. LARGE, INC.
SURVEYING - ENGINEERING - PLANNING - ENVIRONMENTAL SERVICES

242 Mustang Trail, Suite8
VIRGINIA BEACH, VA 23452
(757) 431-1041 VOICE
(757) 463-1412 FAX
E-mail: bodnar@wplarge.com

Via Facsimile 1-757-259-4032

November 30, 1999

Mr. Scott Thomas
James City County Environmental Division
Post Office Box 8784
Williamsburg, Virginia 23187

Re: Monticello at Powhatan Apartments
James City County, Virginia
WPL File No. C98-1670

Dear Mr. Thomas:

We have received your comments letter dated November 22, 1999, by facsimile. We offer the following responses:

1. Temporary Sediment Trap No. 1 and Basin No. 2: As indicated by you, this comment has been adequately addressed.

2. Sediment Basin No. 2 Design: As indicated by you, this comment has been adequately addressed.

3. Sediment Basin No. 2 Design: As indicated by you, this comment has been adequately addressed.

4. Sediment Basin No. 2 Detail: As indicated by you, this comment has been adequately addressed.

5. Modification of the BMP as a Temporary E&SC Facility: As indicated by you, this comment has been adequately addressed.

6. Sediment Basin No. 3: As indicated by you, this comment has been adequately addressed.

7. Bank Stabilization Detail: As indicated by you, this comment has been adequately addressed.

8. Principal Spillway Control Structure: As you indicated in the e-mail you sent (see Attached), we did have some confusion in our telephone conversation of November 22, 1999 regarding this comment. I did, during the conversation, think that you were discussing drainage structure C-1, not the principal spillway for the stormwater management facility. I apologize for the misunderstanding. We have, this evening, recalculated the rise in the stormwater management facility using the sloped DI-7 grate top on the principal spillway structure. A copy of the outfall calculations is attached for your review. A set of two (2) drawings will be delivered to your office early on the afternoon of December 1st revising the grading around the basin, as needed,

OK

and, revising the detail on the plans. Attached to those drawings, will be a listing of the pond showing the outfall structure configuration and pond volumes. This should address this comment.

9. Inlet C-1: As indicated by you, this comment has been adequately addressed.

We feel that, when you receive the package in the early afternoon, that we will have adequately addressed all of the issues on the plans to be able to receive the land disturbing permit. If any questions or comments should arise during your review of the plans, please do not hesitate to contact us.

Sincerely:
W.P. LARGE, INC.

Charles J. Bodnar, P.E.
Project Manager

CJB/cb

Enc.

copy to: Brad Waitzer, MOPOW, LLC (facsimile no. 422-6670)
Kyle Weidlich, Clancy and Theys (facsimile no. 873-7630)

Scott Thomas

From: Scott Thomas
Sent: Tuesday, November 30, 1999 10:10 AM
To: 'bodnar@wplarge.com'
Subject: Monticello SP-78-99

C.J.

I had spoken with Lance and Earl last week concerning remaining issues from the Environmental Division for the project, both for the land disturbance permit and final site plan. I had reviewed the response letter dated Nov 22nd from Earl which was hand delivered by Lance to our office. All 8 items were addressed except for as follows:

OK SAT

1. There was apparently some confusion about changing the DI-I inlet grate at structure # C1, which is situated between Buildings G,M, L, and J. I was only concerned with depth of flow for the 10- and 100-year due to inlet weir/orifice control at this location. I do not recall any specific requests in our comments to change the grate top, only "label or specify" which type (DI-1, DI-7, etc.) was to be used, since it was not on the plans. You can use your judgement for which grate to be used DI-1 or DI-7, just ensure the depth of flow computations match the grate used.

2. The open channel discharges to the curbed/parking areas will need resolved. These areas are at 5 locations on sheets C5.0 and C5.2. We are concerned with the conveyance of open channel concentrated flow onto parking/walkway areas and the potential for drainage problems and freezing in the winter, especially due to the development being a residential community. This issue would not hold up pursuance of the land disturbance permit, only final site plan approval.

OK SAT

3. I thought the DI-1 grate to DI-7 grate change we discussed was at the pond principal spillway structure. Due to our discussions/revisions, the trash rack was inclined and the grate top was to change from a DI-1(small openings) to DI-7 (larger bar openings). The DI-7 would allow for larger parallel bars for "rising" of trash and debris as the WSEL of the pond rises. The pond WSELs and routed discharges did not change on the plans even though changes were made to the structure (ie. the grate was inclined and a DI-7 bars would be used). The concern was to check hydraulics of the structure to ensure all the recent alterations did not affect the pond WSEL's or discharges. I WILL FAX YOU A COPY OF OUR COMMENTS DATED NOVEMBER 22ND 1999. THESE WERE THE COMMENTS THAT WERE "FORMALLY" ISSUED. REFER TO STORMWATER MANAGEMENT/DRAINAGE COMMENT # 8, PRINCIPAL SPILLWAY CONTROL STRUCTURE. PLEASE CHECK AND CONFIRM THE HYDRAULICS.

I apologize if there was a misunderstanding in the DI-1 to DI-7 grate issue. It was related to the pond principal spillway structure and not the yard inlet.
Hopefully this email and fax clarifies just what is remaining for acceptance from our division and issuance of the land disturbance permit. Call me if you have any questions.

Scott Thomas

From: Beth Davis
Sent: Friday, May 25, 2001 3:08 PM
To: Scott Thomas
Subject: Monticello at Powhatan Apartments

Scott,

The following items are my comments for the Monticello at Powhatan Apartments project:

1. Stabilize remaining denuded areas on project site with permanent vegetation.
2. Check for denuded areas behind buildings A, C, E, F, and H and reseed with permanent vegetation.
3. Remove silt fence behind buildings A, C, E, F, and H.
4. Remove rock check dam behind building H.
5. Extend and fill voids in rip rap behind building E.
6. Stabilize denuded areas around rip rap behind building E.
7. Repair inlet protection for DI (C1) between buildings G and M.
8. Remove sediment from concrete swale, open channel #3, behind building P.
9. Propose an engineering solution for the stormwater runoff drainage problem around building W.

Please allow me to review and sign the letter when you add your comments.

Thank you,
Catherine "Beth" Davis
Environmental Division
Engineering Inspector
(757) 253-6702
FAX (757) 259-4032
bdavis@james-city.va.us

Com #17
Nov 3 1999
Resp #16
on Page 3 correspondence
from Clarke + Theys
Nov 10 1999

CLANCY
&THEYS
CONSTRUCTION COMPANY
GENERAL CONTRACTORS

2001

July 25, 2001

Mr. Scott J. Thomas, P.E.
Civil Engineer
JCC Environmental Division
101 Mounts Bay Road
Williamsburg, Virginia 23185

RE: Monticello at Powhatan Apartments – Phase I
James City County, Virginia
Project No. 4253

Dear Mr. Thomas:

It is my understanding from a meeting held at the Monticello at Powhatan Apartments site with representatives from Jack L. Massie that except for the record drawing items and Item 11 under Construction Related Items, i.e. revising the permanent BMP control structure from its temporary condition, all of the balance of the items included in your letter of June 7, 2001 to W.P. Large have been addressed to the Environmental Division's satisfaction.

He states them here.

An additional item you requested was that silt fence be put up at the end of Summit Loop where the topsoil pile and small debris piles exist. This has been done. If there are additional items that your office needs addressed, we would appreciate notification of such. If there are no outstanding issues, we would like to request a letter releasing our Erosion & Sediment Control Bond #389944.

We will stay in contact with W.P. Large and work with them in any way possible to have the record drawing items of your letter of June 7, 2001 addressed and resubmitted to you as soon as possible.

Thank you for your time and energy in discussing and addressing these issues with us.

Sincerely,

CLANCY & THEYS CONSTRUCTION COMPANY

Kyle J. Weidlich
Project Manager

KJW/kdm

cc: Brad Waitzer — MOPOW, LLC
Katherine Beth Davis — JCC Environmental Division
Phoebe Honeycutt — BB & T Insurance

DISCUSSED ON 8/16/01

1. PHASE 2
E+S PLAN, BOND & PERMIT.
ADMINISTRATIVE FOLLOWUP
2. This letter. No action.
Items remain as per 1st. paragraph
3. Raised subject about adding inlet grates to large culvert near Powhatan Secondary Road. ie. safety issue due to accessibility, polyethylene pipe and drop in nearest inlet.

08/16-01

11830 FISHING POINT DR., SUITE 201 • NEWPORT NEWS, VIRGINIA 23606 • TELEPHONE: 757-873-6869 • FAX #: 757-873-7630

JAMES CITY COUNTY - ENVIRONMENTAL DIVISION

Office Phone: 757-253-6670 Fax Number: 757-259-4032

DATE SENT: 07/09/01

Name: RICK COOK
Firm or Company: JACK L. MASSIE
Facsimile Number: 566-8566
Number of pages including this transmittal: 1
From: SCOTT J. THOMAS

James City County
P O Box 8784
Williamsburg VA 23187-8784

Comments:
MONTICELLO AT POWHATAN Apartments, County Plan SP-78-99
County BMP ID Code: PC128

If you do not receive all pages, call 757-253-6670 as soon as possible

BASED ON OUR FOLLOWUP INSPECTION PERFORMED ON 07/06/01, ALL CONSTRUCTION-RELATED ITEMS PER COUNTY LETTER DATED 6/07/01 WERE FOUND SATISFACTORY & COMPLETE; EXCEPT FOR ITEM #11 (CONVERSION OF THE RISER STRUCTURE TO FINAL BMP MODE). IT IS OUR UNDERSTANDING THAT THIS WILL BE PERFORMED IN A FOLLOWUP AS FINAL BMP HYDRAULICS ARE BEING RE-VISITED DUE TO RECORD DRAWING COMMENTS AND WATER POOL - IRRIGATION ISSUES. THEREFORE, AT THIS TIME COMMENTS #10, #12 through #16 AND #17 through #23 ARE ADDRESSED.

Scott J Thomas, P.E.
CIVIL ENGINEER
ENVIRONMENTAL DIVISION 07-09-01

SCOTT J. THOMAS, P.E.
CIVIL ENGINEER

ENVIRONMENTAL DIVISION

101 MOUNTS BAY ROAD, P.O. BOX 8784 (757) 253-6639
WILLIAMSBURG, VIRGINIA 23187-8784 FAX: (757) 259-4032
E-MAIL: scott@james-city.va.us

CLANCY
&THEYS
CONSTRUCTION COMPANY
GENERAL CONTRACTORS

APR 2001
RECEIVED
ENVIRONMENTAL DIVISION

APR 2001
RECEIVED
PLANNING DEPARTMENT

April 2, 2001

FAX & MAIL
(757/253-6850 – 1 page)

Ms. Jill Schmedle
James City County Planning Dept.
101 Mounts Bay Road
Williamsburg, Virginia 23185

RE: Monticello at Powhatan Apartments
James City County, Virginia
Project No. 4253

Dear Jill:

For your review and approval, attached please find the As-Built Certification for the Permanent Storm Water Management Facility at the Monticello at Powhatan Apartments.

If you have any questions, please do not hesitate to call us. Thank you for your time and attention to this, we look forward to your response.

Sincerely,

CLANCY & THEYS CONSTRUCTION COMPANY

Kyle J. Weidlich
Project Manager

KJW/kdm

cc: W.P. Large file (cover letter only)

CONST. CERT.

11830 FISHING POINT DR., SUITE 201 • NEWPORT NEWS, VIRGINIA 23606 • TELEPHONE: 757-873-6869 • FAX #: 757-873-7630

CLANCY
&THEYS
CONSTRUCTION COMPANY
GENERAL CONTRACTORS

OCT 2001
RECEIVED
ENVIRONMENTAL DIVISION

October 22, 2001

Mr. Scott J. Thomas, P.E.
Civil Engineer
JCC Environmental Division
101 Mounts Bay Road
Williamsburg, Virginia 23185

RE: Permanent BMP As-Built
Monticello at Powhatan Apartments – Phase I
James City County, Virginia
Project No. 4253

Dear Scott:

I noted on the attached recent transmittal from W.P. Large that they had submitted the revised permanent BMP As-Built plan to you requested in your letter of June 7, 2001. Assuming upon your receipt and review of the plan that it is approved, we are respectfully requesting that the Erosion and Sediment Control Bond, recently reduced to $10,000, be released in its entirety.

I would also like to respectfully request an indication from your office once you have reviewed the plan of its status. If you have any questions, please call.

Thank you for your attention to this.

Sincerely,

CLANCY & THEYS CONSTRUCTION COMPANY

Kyle J. Weidlich
Project Manager

KJW/kdm

11830 FISHING POINT DR., SUITE 201 • NEWPORT NEWS, VIRGINIA 23606 • TELEPHONE: 757-873-6869 • FAX #: 757-873-7630

Civil Engineers
Land Surveyors
Land Planners
Landscape Architects

242 Mustang Trail Suite #8
Virginia Beach, Virginia 23452
757.431.1041 Voice
757.463.1412 Fax

Principals:
Lance C. Large, PE
Brian C. Large
William R. Pritchard, LS
William D. Almond, ASLA

OCT 2001
RECEIVED
ENVIRONMENTAL DIVISION

Transmittal

Date: 10/15/01 **Proj #:** C99-2475

To: James City County
Development Management
101 E Mounts Bay Road (PO Box 8784)
Williamsburg, VA 23187-8784

Attn: Scott J. Thomas, PE **Dept:**
Civil Engineer
Environmental Division

RE: **Monticello at Powhatan Apartments (County Plan SP-78-99)**
Stormwater Management Facility
County BMP ID Code: PC 128

- [x] For your use
- [ ] For review and comment
- [ ] As requested
- [ ] For approval
- [ ] Approved
- [ ] Approved as noted
- [ ] Disapproved

Items:

-2- Copies:
Monticello at Powhatan BMP As-Built Record Drawing

Notes:

Please call if you have any questions.

From: Donna Collins (for Lance Large) dncollins
cc: Brad Waitzer (w/-1- enc)
WPL File # C99-2475

AB File

Scott Thomas

Modified: Thu 9/20/2001 11:06 AM

Monticello at Powhatan Apartments; County Plan No. SP-78-99
BMP ID Code: PC 128; Phase I Wet Pond

Following a request from Bob Bean of Jack L. Massie, I performed a followup inspection of the riser structure at the wet pond. The inspection only pertained to the riser structure. The BMP low flow orifice appeared to have a trash rack and configuration per the currently approved design plan. One modification was made as verbally approved by our office. The low flow orifice was cut back toward the riser wall so the metal trash rack grate could fit over the orifice opening. This modified work was also confirmed and found to be acceptable. The 2 rectangular slots sizes and configuration on the riser appeared to be in accordance with the approved plan. (Note: Coincidental to our inspection, a survey crew was obtaining field data at the riser structure and surrounding area.)

This work addresses comment # 11 from our June 7th 2001 letter; therefore, all construction-related items per that subject correspondence are now properly addressed. However, record drawing comments are still outstanding.

In addition, and although not on the approved design plan, I am formally forwarding two requests which have become apparent based upon our field inspections but relate to the drainage plan from a safety perspective.

The first pertains to the rectangular slots on the riser structure. Due to the structure's proximity to the units and the ease of access to the riser when the pond is at normal pool, the two (2) 24" x 15" rectangular slots on the sides of the riser may be easily accessed for entry into the riser and into the large outfall barrel pipe. As the outfall barrel is of large size and has an extended underground length, this is a safety concern for unauthorized entry. I would prefer to see a simple rebar type rack structure added to the two rectangular openings. A suggestion would be 3 - # 4 bars drilled and grouted across the openings at 8-inch spacing, one horizontally and two vertically (U-shaped configuration). I believe this would deter access through the openings yet not restrict flow into the riser.

Secondly, and which I have verbally raised issue with the engineer (WP Large) and the project manager (Clancy & Theys), is about the possibility of constructing a protective rack device to prevent unauthorized entry into 48-inch storm drain pipe along Powhatan Parkway north of Building V. This is the pipe entrance on the south side of Powhatan Parkway and storm drain which conveys upslope drainage through the site. As I had relayed to these parties some time ago, our division had a report from the JCSA that a small dog was able to enter into the culvert and was trapped in the first JB-1 drainage structure. This structure has an approximate drop of over 6 feet from the 48-inch pipe in to the 48-inch pipe out.

Any effort between parties to pursue and alleviate these two potential safety concerns would be appreciated.

Scott J. Thomas
Civil Engineer
JCC Environmental Division

by fax: Jack L. Massie (Bob Bean)
Clancy & Theys (Kyle J. Weidlich)
WP Large (CJ Bodnar)
Beth Davis (JCC Env Div)
Jill Schmidle (JCC Planning)

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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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

June 7, 2001

W.P. Large, Inc.
242 Mustang Tr.
Virginia Beach, Va. 23452
Attn: Mr. Lance Large, P.E.

Re: Monticello at Powhatan Apartments (County Plan SP-78-99)
Stormwater Management Facility
County BMP ID Code: PC 128

Dear Mr. Large:

The Environmental Division has reviewed a record drawing and construction certification as submitted to our office on April 4th 2001 for the above referenced project. The record drawing provides as-built information for a wet pond stormwater management facility located centrally within Phase I of the project.

Based on our review of the information as submitted and a concurrent field observation as performed on May 11th 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:

ADDRESSED 10-26-01 ✓ 2. Add PVC pipe locations which were found along the east side of the basin near the pool area.

10-26-01 ✓ 3. Provide a north arrow on record drawing Sheet C-1.

10-26-01 ✓ 4. Show the entire pond outlet barrel system from the riser to the natural channel outfall. Show construction information for storm drain pipes and all intermediate manholes and inlets associated with the pond outlet system.

10-26-01 ✓ 5. Show water surface elevation of the normal pool at the time of the record drawing field survey.

10-26-01 ✓ 6. Normally, original plan design elevations are to be shown on the record drawing (not removed or erased) and "as-built" information is required to be shown next to the design values in a clearly annotated format such as in boxed or bolded text for comparison purposes. Refer to page 5 of our record drawing/construction certification guidelines. NOT BOXED, NEW DWG.

10-26-01 ✓ 7. Additional as-built spot elevation or grading contour information is required around the entire top of facility perimeter. Record drawing information is incomplete and was not extended far enough upslope from the pond to perimeter yard areas. Several top of facility finished grade spot elevations are well below the design high water elevation of 69.37. Since no emergency spillway was provided, the original design

DHW 69.37
1.00
70.37

No BUILDING WITHIN EL. 70.5 zone (See response dated Nov 10 99 #16). There adequate overflow path to parking areas.

intent was to provide 2 feet of freeboard from design high water to top of facility and any emergency overflows from the facility would be conveyed through parking areas rather than along building units or yard areas. Confirm or ensure no buildings or perimeter yard areas encroach into the freeboard zone and that adequate freeboard is provided. *(Note: Originally the design high water elevation was established at El. 68.87, therefore, minimum freeboard would be at El. 70.87. However, on January 4th 2000 our office was informed via correspondence by W.P. Large, Inc. that all elevations/inverts associated with the pond outlet control structure were raised by 0.5 feet; therefore, design high water for the facility was changed to El. 69.37 and minimum freeboard elevation would be at El. 71.37. For further information relative to freeboard requirements for the facility, refer to County review comment # 17 dated November 3rd 1999 and subsequent response # 16, page 3 from Erosion and Sediment Control Comments Review Meeting minutes as prepared by Clancy & Theys on November 10th 1999.)*

✓ 10-26-01 8. The design water surface elevations as shown on Detail A and Section A on Sheet C-2 of the record drawing set do not reflect grade change adjustments of + 0.5 feet. The water surface elevations for the 2-, 10- and 100- year storm events are 64.54, 66.94 and 69.37, respectively based on our information.

✓ 10-26-01 9. If possible add the following County identifiers to the bottom right hand corner of the record drawings: County Plan Number SP-78-99 and BMP ID Code No. PC 128.

Construction - Related Items:

ADDRESSED ✓ 7-6-01 10. Sheet C3.0 of the approved plan requires complete removal of sediment in the stormwater management basin prior to conversion to permanent BMP mode. Based on inspection, sediment buildups (plumes) were evident at the four corners of the basin where primary storm drain pipes enter into the facility and in the vicinity of the riser structure. At a minimum, clean and remove all sediment from the storm drain pipe outfalls (5 total) and in the vicinity of the pond riser structure to establish unobstructed flow. Care should be taken during the sediment removal operation to not damage the outlet protection pads at the pipe outfalls or the clay liner.

ADDRESSED ✓ 9-20-01 11. The principal spillway control structure requires proper conversion from temporary sediment basin mode to permanent BMP mode. At the time of the inspection, the riser structure still had a small diameter low-flow orifice (with perforated drainage tubing) and rectangular slots in the riser were bricked and plugged. The final configuration needs to consist of a 20-inch size low flow orifice with a cage-type, inclined trash rack and two (2) rectangular weir slots on the riser per the approved plan and details.

✓ 7-6-01 12. The Class IA riprap channel at the end of the pond barrel, where drainage from the pond is conveyed to the natural stream channel, needs to extend to the full length and width as shown on approved plan Sheet C5.0. Fill voids in the riprap lining to provide uniform channel erosion protection.

✓ 7-6-01 13. Bare soil was present along the entire interior pond perimeter between the normal pool elevation and current high water mark, just above the aquatic bench. Adequate permanent stabilization is required within this zone.

✓ 7-6-01 14. Bare soil areas were present on the interior graded side slopes, especially on the north, west and south ends of the facility. Permanently stabilize these slope/bank areas with seed & mulch or other appropriate stabilization methods.

✓ 7-6-01 15. An extensive amount of trash, wood and construction (paper, pipe, etc.) debris was observed along the entire interior normal pool shoreline and along the graded side slopes and top edges of the facility. Clean and remove all trash and debris from the perimeter as these materials may eventually work their way to the riser and clog the primary control structure.

7-6-01 16. Several onsite curb inlet and storm drain manhole structures were checked during our inspection. Most of the structures contained an excessive amount of sediment, trash and debris at the bottom of the structures. Clean and remove all trash, debris and sediment from all drainage structures draining to and from the wet pond facility.

Other Site Issues:

7-6-01 17. Check for denuded areas present behind (north of) Units A, C, E, F and H and permanently stabilize the fill slope with seed and mulch. Stabilize denuded area around the riprap channel behind Unit E.

7-6-01 18. Remove silt fence behind Units A, C, E, F and H.

7-6-01 19. Remove the rock check dam behind Unit H.

7-6-01 20. Repair the inlet protection device at drop inlet C1 between Units G and M. This inlet protection device will be required to be removed once the contributing area is stabilized with vegetation.

7-6-01 21. Remove sediment build-ups from within concrete swale, open channel # 3 behind Unit P.

7-6-01 22. Correct the stormwater runoff drainage problem around Unit W.

7-6-01 23. Stabilize any other remaining denuded areas at the project site with permanent vegetation.

Once this work is satisfactorily completed, contact our office appropriately. We can then proceed with final release or reduction of the surety on the project. Please contact either Scott Thomas at 757-253-6639 or Beth Davis at 757-253-6702, if you have any further comments or questions.

Sincerely,

Scott J. Thomas

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

C. E. Davis

Catherine "Beth" Davis
Environmental Division
Engineering Inspector

cc: Kyle J. Weidlich, Clancy & Theys - fax
Brad Waitzer - fax

G:\SWMProg\AsBuilts\SP-78-99pc128

TO: LANCE LARGE
WP LARGE INC.
From: Scott J. Thomas, P.E.
JAMES CITY County
Environmental Division
FAX: 757-463-1412

OCT 2001
RECEIVED
ENVIRONMENTAL DIVISION

Civil Engineers
Land Surveyors
Land Planners
Landscape Architects

242 Mustang Trail Suite #8
Virginia Beach, Virginia 23452
757.431.1041 Voice
757.463.1412 Fax

Principals:
Lance C. Large, PE
Brian C. Large
William R. Pritchard, LS
William D. Almond, ASLA

Transmittal

Date: 10/15/01 **Proj #:** C99-2475

To: James City County
Development Management
101 E Mounts Bay Road (PO Box 8784)
Williamsburg, VA 23187-8784

Attn: Scott J. Thomas, PE **Dept:**
Civil Engineer
Environmental Division

RE: **Monticello at Powhatan Apartments (County Plan SP-78-99)**
Stormwater Management Facility
County BMP ID Code: PC 128

- [x] For your use
- [ ] For review and comment
- [ ] As requested
- [ ] For approval
- [ ] Approved
- [ ] Approved as noted
- [ ] Disapproved

Items:

-2- Copies:
Monticello at Powhatan BMP As-Built Record Drawing

Notes:

Please call if you have any questions.

Revised record drawing as signed & sealed Oct 8 2001, reviewed and found acceptable. Addresses comments #2 thru #9 dated June 7th 2001 from the JCC Env. Div. Please forward one (1) reproducible of the record drawing to our office.
Scott J. Thomas
10-26-01

From: Donna Collins (for Lance Large) dncollins

cc: Brad Waitzer (w/-1- enc)
WPL File # C99-2475

DEVELOPMENT MANAGEMENT

101-E MOUNTS BAY ROAD, P.O. BOX 8784, WILLIAMSBURG, VIRGINIA 23187-8784
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INTEGRATED PEST MANAGEMENT
(757) 259-4116

January 9, 2002

Mr. Bradley J. Waitzer, President
MPOW, LLC
2101 Parks Avenue, Suite 201
Virginia Beach, Va. 23451

Re: Monticello at Powhatan Apartments
County Plan Numbers SP-78-99 (Phase I) and SP-156-00 (Phase 2)
Drainage / Safety Issues

Dear Mr. Waitzer:

The Environmental Division has reviewed your correspondence dated January 7th 2001. We appreciate your willingness to alert the general contractor and Phase II site contractor about the two drainage/safety issues as previous relayed to you by our office.

In your correspondence, you question the appropriateness of withholding release of erosion and sediment control bond for both phases of the project pending resolve of the items. In response, our regulatory jurisdiction on these matters comes as plan-approving authority under the provisions of the Chapter 8 Erosion and Sediment Control ordinance, Chapter 3 of the Virginia Erosion and Sediment Control Handbook and criteria as set forth in the *James City County Guidelines for Design and Construction of Stormwater Management BMPs* (JCC BMP manual) and the *James City County Environmental Division, Stormwater Drainage Conveyance Systems (Non-BMP related) General Design and Construction Guidelines.*

Again, although not part of the approved plan(s), these items became apparent as construction proceeded and as a result of reports to our office. As owner, we feel that you are obligated to provide storm drainage structures that are considered safe to the general public, regardless of when safety issues become apparent. Therefore, prior to consideration of partial or full release of the erosion and sediment control bonds as posted for both phases of the project, we formally request that these concerns be properly addressed in an appropriate manner.

Please inform us if the contractors devise a solution to the subject issues. If you have any additional questions or comments, contact me at 757-253-6639 or Darryl Cook at 757-253-6673.

Sincerely,

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

SJT/sjt

cc: Kyle J. Weidlich, Clancy & Theys
Jill Schmidle, James City County Planning

SWMProg\Z-Asbuilts\ClarLetters\PC128.1

MOPOW, LLC
2101 Parks Avenue, Suite 201
Virginia Beach, Virginia 23451
(757) 422-6030
(757) 422 6670 Fax

January 7, 2002

Mr. Scott Thomas
James City County Environmental Division
101-E Mounts Bay Road
PO Box 8784
Williamsburg, Virginia 23187-8784

Dear Scott:

This shall respond to your 9/20/01 memorandum and Mr. Cook's 12/14/01 letter concerning our alleged responsibility to install protective measures on certain stormwater management structures at Monticello at Powhatan. We have asked the General Contractor and Phase II Site Contractor to devise a solution to your concern.

In the interim, we question the appropriateness withholding the release of the bonds for this matter as we believe that we have met the requirements for release which only include:

1. Completing the improvements in accordance with the approved plans and;
2. Complying with Chapter 5A of the Code. If a determination is made that we have not met these requirements, please provide a reference to the specific Code Section in question.

In the interim, we will contact you when we have heard from Clancy & Theys and Hudgins.

Very truly yours,

Mopow, LLC

Bradley J. Waitzer

BJW: kn

Cc: Kyle Weidlich

DEVELOPMENT MANAGEMENT

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INTEGRATED PEST MANAGEMENT
(757) 259-4116

December 14, 2001

MPOW, LLC
2101 Parks Avenue
Virginia Beach, Va. 23451

Atten: Mr. Brad Waitzer, President

Re: Monticello at Powhatan Apartments
County Plan Numbers SP-78-99 (Phase I) and SP-156-00 (Phase 2)
Drainage/Safety Issues

Dear Mr. Waitzer:

On September 20th 2001, the Environmental Division issued a memorandum to the contractor and engineer for the project raising issue about two safety concerns relative to the stormwater management and drainage plan for the above referenced projects. These issues were as follows:

- The first issue pertained to the need to install a protective rack device at the entrance to the 48-inch diameter storm drain pipe along Powhatan Parkway north of Building V. This pipe entrance is located on the south side of the parkway and conveys upslope drainage through the Phase I site. As relayed in our earlier memorandum, our division had a report from the James City Service Authority that a small dog was able to enter the storm drain pipe and got trapped in the first JB-1 (junction box) structure downstream from the first segment of 48-inch corrugated polyethylene pipe. This structure has an approximate drop of over 6 feet from pipe invert in to pipe invert out. This raises serious concern about the potential for unauthorized access into the structure for safety reasons. A bar rack structure which minimizes the chance of entry, yet does not obstruct storm drainage should be incorporated at this pipe entrance.

- Similarly, the second issue pertained to the need to install a protective rack device on the two rectangular slots situated on the riser for the Phase I interior wet pond. Due to the riser's proximity to adjacent building units and it's overall accessibility along the side slope, the dual 24" x 15" rectangular slots on the sides of the riser are of a size which could easily be accessed by unauthorized individuals. As there is a considerable length of underground storm drainage system downstream of the riser, this is also a concern for safety reasons. A simple bar rack structure made of rebar would alleviate this condition.

Although we realize these features were not part of the approval plans for either Phase I or Phase II of the project, these safety concerns became apparent as construction proceeded and as a result of the report from the JCSA and our final inspections performed at the site. Although not part of the approved plan, this does not relieve your obligation as Owner to provide storm drainage structures that are considered safe to the general public. Therefore, prior to consideration of partial or full release of the erosion and sediment control bonds as posted for both phases of the project, we formally request that these concerns be properly addressed.

Please inform us of your progress on this matter. If you have any additional questions or comments, contact me at 757-253-6673 or Scott Thomas at 757-253-6639.

Sincerely,

Darryl E Cook

Darryl E. Cook, P.E.
Director, Environmental Division

DEC/sjt

cc: Bob Bean, Jack L. Massie
Kyle J. Weidlich, Clancy & Theys
Lance Large, W.P. Large
Jill Schmidle, James City County Planning

Send Letter to Owner

2101 Parks Ave
Va Beach VA 23451

CLANCY & THEYS
CONSTRUCTION COMPANY
GENERAL CONTRACTORS

October 22, 2001

MPOW LLC
1206 LASKIN ROAD
Suite 201
Virg Beach VA
23451
Attn: BRAD WARTZER, MANAGING PRESID.

Mr. Scott J. Thomas, P.E.
Civil Engineer
JCC Environmental Division
101 Mounts Bay Road
Williamsburg, Virginia 23185

RE: Permanent BMP As-Built
Monticello at Powhatan Apartments – Phase I
James City County, Virginia
Project No. 4253

Powhatan Monticello Apartments

Dear Scott:

I noted on the attached recent transmittal from W.P. Large that they had submitted the revised permanent BMP As-Built plan to you requested in your letter of June 7, 2001. Assuming upon your receipt and review of the plan that it is approved, we are respectfully requesting that the Erosion and Sediment Control Bond, recently reduced to $10,000, be released in its entirety.

I would also like to respectfully request an indication from your office once you have reviewed the plan of its status. If you have any questions, please call.

Thank you for your attention to this.

SP-78-99 Ph I
SP-156-00 Phase II

Sincerely,

CLANCY & THEYS CONSTRUCTION COMPANY

Kyle J. Weidlich
Project Manager

KJW/kdm

CLANCY &THEYS
CONSTRUCTION COMPANY
GENERAL CONTRACTORS

Facsimile Transmittal

To:	Scott Thomas James City County Environmental Division	**From:**	Kyle Weidlich Clancy & Theys Construction Co.
Fax:	757 259 4032	**Pages:**	2 (including this cover sheet)
Phone:	757 253 6670	**Date:**	12/11/01
Re:	Monticello at Powhatan Apartments-Phase I Erosion & Sediment Control Bond Release	**CC:**	Brad Waitzer, MOPOW, LLC

☐ **Urgent** ☐ **For Review and Comment** ■ **For Approval** ☐ **For Information** ☐ **As Requested**

Having not received a response from you regarding our attached letter of 10/22/01, nor my recent phone message, I opted to fax another copy of the letter and ask for your review and response. I look forward to hearing from you.

Thanks for your attention to this.

11830 POINT DR., SUITE 201 • NEWPORT NEWS, VIRGINIA 23606 • TELEPHONE: 757-873-6869 • FAX #: 757-873-7630

PC128_MONTICELLO_POWHATAN_APTS_PHASE_HALF_WET_POND_SP78-99_108
DEC. 11. 2001 6:04PM CLANCY&THEYS NO. 3033 P. 1/2

AB FILE

Scott Thomas

Modified: Thu 9/20/2001 11:06 AM

Monticello at Powhatan Apartments; County Plan No. SP-78-99
BMP ID Code: PC 128; Phase I Wet Pond

Following a request from Bob Bean of Jack L. Massie, I performed a followup inspection of the riser structure at the wet pond. The inspection only pertained to the riser structure. The BMP low flow orifice appeared to have a trash rack and configuration per the currently approved design plan. One modification was made as verbally approved by our office. The low flow orifice was cut back toward the riser wall so the metal trash rack grate could fit over the orifice opening. This modified work was also confirmed and found to be acceptable. The 2 rectangular slots sizes and configuration on the riser appeared to be in accordance with the approved plan. (Note: Coincidental to our inspection, a survey crew was obtaining field data at the riser structure and surrounding area.)

This work addresses comment # 11 from our June 7th 2001 letter; therefore, all construction-related items per that subject correspondence are now properly addressed. However, record drawing comments are still outstanding.

In addition, and although not on the approved design plan, I am formally forwarding two requests which have become apparent based upon our field inspections but relate to the drainage plan from a safety perspective.

The first pertains to the rectangular slots on the riser structure. Due to the structure's proximity to the units and the ease of access to the riser when the pond is at normal pool, the two (2) 24" x 15" rectangular slots on the sides of the riser may be easily accessed for entry into the riser and into the large outfall barrel pipe. As the outfall barrel is of large size and has an extended underground length, this is a safety concern for unauthorized entry. I would prefer to see a simple rebar type rack structure added to the two rectangular openings. A suggestion would be 3 - # 4 bars drilled and grouted across the openings at 8-inch spacing, one horizontally and two vertically (U-shaped configuration). I believe this would deter access through the openings yet not restrict flow into the riser.

Secondly, and which I have verbally raised issue with the engineer (WP Large) and the project manager (Clancy & Theys), is about the possibility of constructing a protective rack device to prevent unauthorized entry into 48-inch storm drain pipe along Powhatan Parkway north of Building V. This is the pipe entrance on the south side of Powhatan Parkway and storm drain which conveys upslope drainage through the site. As I had relayed to these parties some time ago, our division had a report from the JCSA that a small dog was able to enter into the culvert and was trapped in the first JB-1 drainage structure. This structure has an approximate drop of over 6 feet from the 48-inch pipe in to the 48-inch pipe out.

Any effort between parties to pursue and alleviate these two potential safety concerns would be appreciated.

Scott J. Thomas
Civil Engineer
JCC Environmental Division

by fax: Jack L. Massie (Bob Bean)
Clancy & Theys (Kyle J. Weidlich)
WP Large (CJ Bodnar)
Beth Davis (JCC Env Div)
Jill Schmidle (JCC Planning)

- Riser Rack - slots.
- 48-inch pipe rack.

Scott Thomas

To: Joan Etchberger; Darryl Cook; Pat Menichino
Cc: Beth Davis
Subject: Bond Release

Project: Monticello at Powhatan Apartments Phase I
Plan No. SP-78-99
BMP ID Code: PC 128

I am now ok with release of the bond for Phase I of the project. All record drawing, construction certification, contruction-related and the two safety grate issues per my letters dated June 7 2001, December 14 2001 and January 9 2002 have been addressed properly.

The safety grates which were added to the riser and at the large storm drain pipe along Powhatan Parkway were found to be acceptable based on my reinspection on 3/20/02. However, in reinspecting the riser, I noticed the water pool level in the pond was considerably higher than before. Someone had intentionally blocked the low flow orifice for the wet pond within the riser. The intent was clearly to raise the normal pool of the facility. I spoke with both Kyle Weidlich (contractor) and Brad Waitzer (owner) about the issue. Both indicated that they were not aware of the plate being added; however, Brad Waitzer indicated that he thought the irrigation contractor probably did it.

I indicated that it was not acceptable to intentionally raise the normal pool level of wet ponds without the review and approval of the Environmental Division. This issue was discussed previously with Kyle Weidlich and the engineer. Blocking the low flow orifice as such could take away extended storage volume and affect the capacity and stormwater function of the pond should a storm event occur. I indicated to Brad that two options exist due to this new situation: 1) remove the plate and restore the normal pool back to original design; or 2) An engineering evaluation of the pond hydraulic's was necessary and the approved site plan needs revised (Note: I have no major objection to the water being used for irrigation purposes as long as raising the pool does not interfere with stormwater function and/or structural integrity of the facility). He indicated he will resolve the issue by sending a letter to his engineer with copy to us.

As such, we can therefore release remaining E&SC bond for Phase I ($10,000). We can use the Phase 2 bond ($86,000) to ensure this situation is resolved.

Scott

March 15, 2002

FAX & MAIL
(757/253-6670 – 1 page)

Mr. Scott J. Thomas, P.E.
Civil Engineer
JCC Environmental Division
101 Mounts Bay Road
Williamsburg, Virginia 23185

RE: Monticello at Powhatan Apartments – Phase I
James City County, Virginia
Project No. 4253

Dear Scott:

The grates that James City County requested have been installed at the Monticello at Powhatan – Phase I. We are requesting your review of the installation and assuming your approval, release of the bonds still being held on Monticello at Powhatan – Phase I.

If you have any questions, please call. We would appreciate your response at your earliest opportunity. Thank you.

Sincerely,

CLANCY & THEYS CONSTRUCTION COMPANY

Kyle J. Weidlich
Project Manager

KJW/kdm

cc: Brad Waitzer — MOPOW, LLC
Phoebe Hunnicutt — BB&T Insurance

Response to address letter
ENV DIV comment 12/14/01 + 1/09/02

3-20-02
Reinspect
1. Grates OK.
2. LF out Blocked intentionally, to raise pond WSEL.
No plan revision forwarded for review & approval.

11830 FISHING POINT DR., SUITE 201 • NEWPORT NEWS, VIRGINIA 23606 • TELEPHONE: 757-873-6869 • FAX #: 757-873-7630

DEVELOPMENT MANAGEMENT

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INTEGRATED PEST MANAGEMENT
(757) 259-4116

January 9, 2002

Mr. Bradley J. Waitzer, President
MPOW, LLC
2101 Parks Avenue, Suite 201
Virginia Beach, Va. 23451

Re: Monticello at Powhatan Apartments
County Plan Numbers SP-78-99 (Phase I) and SP-156-00 (Phase 2)
Drainage / Safety Issues

Dear Mr. Waitzer:

The Environmental Division has reviewed your correspondence dated January 7th 2001. We appreciate your willingness to alert the general contractor and Phase II site contractor about the two drainage/safety issues as previous relayed to you by our office.

In your correspondence, you question the appropriateness of withholding release of erosion and sediment control bond for both phases of the project pending resolve of the items. In response, our regulatory jurisdiction on these matters comes as plan-approving authority under the provisions of the Chapter 8 Erosion and Sediment Control ordinance, Chapter 3 of the Virginia Erosion and Sediment Control Handbook and criteria as set forth in the *James City County Guidelines for Design and Construction of Stormwater Management BMPs* (JCC BMP manual) and the *James City County Environmental Division, Stormwater Drainage Conveyance Systems (Non-BMP related) General Design and Construction Guidelines*.

Again, although not part of the approved plan(s), these items became apparent as construction proceeded and as a result of reports to our office. As owner, we feel that you are obligated to provide storm drainage structures that are considered safe to the general public, regardless of when safety issues become apparent. Therefore, prior to consideration of partial or full release of the erosion and sediment control bonds as posted for both phases of the project, we formally request that these concerns be properly addressed in an appropriate manner.

Please inform us if the contractors devise a solution to the subject issues. If you have any additional questions or comments, contact me at 757-253-6639 or Darryl Cook at 757-253-6673.

Sincerely,

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

SJT/sjt

cc: Kyle J. Weidlich, Clancy & Theys
Jill Schmidle, James City County Planning

SWMProg\Z-Asbuilts\ClarLetters\PC128.1

MOPOW, LLC
2101 Parks Avenue, Suite 201
Virginia Beach, Virginia 23451
(757) 422-6030
(757) 422 6670 Fax

January 7, 2002

Mr. Scott Thomas
James City County Environmental Division
101-E Mounts Bay Road
PO Box 8784
Williamsburg, Virginia 23187-8784

Dear Scott:

This shall respond to your 9/20/01 memorandum and Mr. Cook's 12/14/01 letter concerning our alleged responsibility to install protective measures on certain stormwater management structures at Monticello at Powhatan. We have asked the General Contractor and Phase II Site Contractor to devise a solution to your concern.

In the interim, we question the appropriateness withholding the release of the bonds for this matter as we believe that we have met the requirements for release which only include:

1. Completing the improvements in accordance with the approved plans and;
2. Complying with Chapter 5A of the Code. If a determination is made that we have not met these requirements, please provide a reference to the specific Code Section in question.

In the interim, we will contact you when we have heard from Clancy & Theys and Hudgins.

Very truly yours,

Mopow, LLC

Bradley J. Waitzer

BJW: kn

Cc: Kyle Weidlich

DEVELOPMENT MANAGEMENT

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December 14, 2001

MPOW, LLC
2101 Parks Avenue
Virginia Beach, Va. 23451

Atten: Mr. Brad Waitzer, President

Re: Monticello at Powhatan Apartments
County Plan Numbers SP-78-99 (Phase I) and SP-156-00 (Phase 2)
Drainage/Safety Issues

Dear Mr. Waitzer:

On September 20th 2001, the Environmental Division issued a memorandum to the contractor and engineer for the project raising issue about two safety concerns relative to the stormwater management and drainage plan for the above referenced projects. These issues were as follows:

- The first issue pertained to the need to install a protective rack device at the entrance to the 48-inch diameter storm drain pipe along Powhatan Parkway north of Building V. This pipe entrance is located on the south side of the parkway and conveys upslope drainage through the Phase I site. As relayed in our earlier memorandum, our division had a report from the James City Service Authority that a small dog was able to enter the storm drain pipe and got trapped in the first JB-1 (junction box) structure downstream from the first segment of 48-inch corrugated polyethylene pipe. This structure has an approximate drop of over 6 feet from pipe invert in to pipe invert out. This raises serious concern about the potential for unauthorized access into the structure for safety reasons. A bar rack structure which minimizes the chance of entry, yet does not obstruct storm drainage should be incorporated at this pipe entrance.

- Similarly, the second issue pertained to the need to install a protective rack device on the two rectangular slots situated on the riser for the Phase I interior wet pond. Due to the riser's proximity to adjacent building units and it's overall accessibility along the side slope, the dual 24" x 15" rectangular slots on the sides of the riser are of a size which could easily be accessed by unauthorized individuals. As there is a considerable length of underground storm drainage system downstream of the riser, this is also a concern for safety reasons. A simple bar rack structure made of rebar would alleviate this condition.

Although we realize these features were not part of the approval plans for either Phase I or Phase II of the project, these safety concerns became apparent as construction proceeded and as a result of the report from the JCSA and our final inspections performed at the site. Although not part of the approved plan, this does not relieve your obligation as Owner to provide storm drainage structures that are considered safe to the general public. Therefore, prior to consideration of partial or full release of the erosion and sediment control bonds as posted for both phases of the project, we formally request that these concerns be properly addressed.

Please inform us of your progress on this matter. If you have any additional questions or comments, contact me at 757-253-6673 or Scott Thomas at 757-253-6639.

Sincerely,

Darryl E Cook

Darryl E. Cook, P.E.
Director, Environmental Division

DEC/sjt

cc: Bob Bean, Jack L. Massie
Kyle J. Weidlich, Clancy & Theys
Lance Large, W.P. Large
Jill Schmidle, James City County Planning

DEVELOPMENT MANAGEMENT

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COUNTY ENGINEER
(757) 253-6678

INTEGRATED PEST MANAGEMENT
(757) 259-4116

June 7, 2001

W.P. Large, Inc.
242 Mustang Tr.
Virginia Beach, Va. 23452
Attn: Mr. Lance Large, P.E.

Re: Monticello at Powhatan Apartments (County Plan SP-78-99)
Stormwater Management Facility
County BMP ID Code: PC 128

Dear Mr. Large:

The Environmental Division has reviewed a record drawing and construction certification as submitted to our office on April 4th 2001 for the above referenced project. The record drawing provides as-built information for a wet pond stormwater management facility located centrally within Phase I of the project.

Based on our review of the information as submitted and a concurrent field observation as performed on May 11th 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. Add PVC pipe locations which were found along the east side of the basin near the pool area.

3. Provide a north arrow on record drawing Sheet C-1.

4. Show the entire pond outlet barrel system from the riser to the natural channel outfall. Show construction information for storm drain pipes and all intermediate manholes and inlets associated with the pond outlet system.

5. Show water surface elevation of the normal pool at the time of the record drawing field survey.

6. Normally, original plan design elevations are to be shown on the record drawing (not removed or erased) and "as-built" information is required to be shown next to the design values in a clearly annotated format such as in boxed or bolded text for comparison purposes. Refer to page 5 of our record drawing/construction certification guidelines.

7. Additional as-built spot elevation or grading contour information is required around the entire top of facility perimeter. Record drawing information is incomplete and was not extended far enough upslope from the pond to perimeter yard areas. Several top of facility finished grade spot elevations are well below the design high water elevation of 69.37. Since no emergency spillway was provided, the original design

intent was to provide 2 feet of freeboard from design high water to top of facility and any emergency overflows from the facility would be conveyed through parking areas rather than along building units or yard areas. Confirm or ensure no buildings or perimeter yard areas encroach into the freeboard zone and that adequate freeboard is provided. *(Note: Originally the design high water elevation was established at El. 68.87, therefore, minimum freeboard would be at El. 70.87. However, on January 4th 2000 our office was informed via correspondence by W.P. Large, Inc. that all elevations/inverts associated with the pond outlet control structure were raised by 0.5 feet; therefore, design high water for the facility was changed to El. 69.37 and minimum freeboard elevation would be at El. 71.37. For further information relative to freeboard requirements for the facility, refer to County review comment # 17 dated November 3rd 1999 and subsequent response # 16, page 3 from Erosion and Sediment Control Comments Review Meeting minutes as prepared by Clancy & Theys on November 10th 1999.)*

8. The design water surface elevations as shown on Detail A and Section A on Sheet C-2 of the record drawing set do not reflect grade change adjustments of + 0.5 feet. The water surface elevations for the 2-, 10- and 100- year storm events are 64.54, 66.94 and 69.37, respectively based on our information.

9. If possible add the following County identifiers to the bottom right hand corner of the record drawings: County Plan Number SP-78-99 and BMP ID Code No. PC 128.

Construction - Related Items:

10. Sheet C3.0 of the approved plan requires complete removal of sediment in the stormwater management basin prior to conversion to permanent BMP mode. Based on inspection, sediment buildups (plumes) were evident at the four corners of the basin where primary storm drain pipes enter into the facility and in the vicinity of the riser structure. At a minimum, clean and remove all sediment from the storm drain pipe outfalls (5 total) and in the vicinity of the pond riser structure to establish unobstructed flow. Care should be taken during the sediment removal operation to not damage the outlet protection pads at the pipe outfalls or the clay liner.

11. The principal spillway control structure requires proper conversion from temporary sediment basin mode to permanent BMP mode. At the time of the inspection, the riser structure still had a small diameter low-flow orifice (with perforated drainage tubing) and rectangular slots in the riser were bricked and plugged. The final configuration needs to consist of a 20-inch size low flow orifice with a cage-type, inclined trash rack and two (2) rectangular weir slots on the riser per the approved plan and details.

12. The Class IA riprap channel at the end of the pond barrel, where drainage from the pond is conveyed to the natural stream channel, needs to extend to the full length and width as shown on approved plan Sheet C5.0. Fill voids in the riprap lining to provide uniform channel erosion protection.

13. Bare soil was present along the entire interior pond perimeter between the normal pool elevation and current high water mark, just above the aquatic bench. Adequate permanent stabilization is required within this zone.

14. Bare soil areas were present on the interior graded side slopes, especially on the north, west and south ends of the facility. Permanently stabilize these slope/bank areas with seed & mulch or other appropriate stabilization methods.

15. An extensive amount of trash, wood and construction (paper, pipe, etc.) debris was observed along the entire interior normal pool shoreline and along the graded side slopes and top edges of the facility. Clean and remove all trash and debris from the perimeter as these materials may eventually work their way to the riser and clog the primary control structure.

16. Several onsite curb inlet and storm drain manhole structures were checked during our inspection. Most of the structures contained an excessive amount of sediment, trash and debris at the bottom of the structures. Clean and remove all trash, debris and sediment from all drainage structures draining to and from the wet pond facility.

Other Site Issues:

17. Check for denuded areas present behind (north of) Units A, C, E, F and H and permanently stabilize the fill slope with seed and mulch. Stabilize denuded area around the riprap channel behind Unit E.

18. Remove silt fence behind Units A, C, E, F and H.

19. Remove the rock check dam behind Unit H.

20. Repair the inlet protection device at drop inlet C1 between Units G and M. This inlet protection device will be required to be removed once the contributing area is stabilized with vegetation.

21. Remove sediment build-ups from within concrete swale, open channel # 3 behind Unit P.

22. Correct the stormwater runoff drainage problem around Unit W.

23. Stabilize any other remaining denuded areas at the project site with permanent vegetation.

Once this work is satisfactorily completed, contact our office appropriately. We can then proceed with final release or reduction of the surety on the project. Please contact either Scott Thomas at 757-253-6639 or Beth Davis at 757-253-6702, if you have any further comments or questions.

Sincerely,

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

C. E. Davis

Catherine "Beth" Davis
Environmental Division
Engineering Inspector

cc: Kyle J. Weidlich, Clancy & Theys - fax
Brad Waitzer - fax

G:\SWMProg\AsBuilts\SP-78-99pc128

MOPOW, LLC
2101 Parks Avenue, Suite 201
Virginia Beach, Virginia 23451
(757) 422-6030
(757) 422 6670 Fax

March 21, 2002
VIA FACSIMILE: 463-1412

Mr. Lance Large
W.P. Large
242 Mustang Trail, Suite 8
Virginia Beach, Virginia 23452

Dear Lance:

As we have discussed, the water level as designed in the retention pond at Monticello Phase 1 is undesirably low. This is to request that calculations be formulated to determine whether the level of the outfall can be raised by 12" and, if not, how much it can be raised.

Once this is determined, we will need a detail of the outfall modification. Thank you in advance for your attention in this matter.

Very truly yours,

Brad Kn.
Bradley J. Waitzer

BJW: kn

Cc: Scott Thomas, JCC Environmental Division
Kyle Weidlich, Clancy & Theys Construction Company

2101 Parks Avenue, Suite 201
Virginia Beach, Virginia 23451
757 - 422-6030
757 - 422-6670 Fax

MOPOW, LLC

Fax

To:	Mr. Scott Thomas, JCC Environmental Division	**From:**	Brad Waitzer / Kim
Fax:	757-259-4032	**Pages:**	2 including cover
Phone:		**Date:**	Thursday, March 21, 2002
Re:	Copy of Letter to Lance Large	**CC:**	

☐ **Urgent** ☒ **For Review** ☐ **Please Comment** ☐ **Please Reply** ☐ **Please Recycle**

CLANCY
&THEYS
CONSTRUCTION COMPANY
GENERAL CONTRACTORS

MAR 2002
RECEIVED

March 22, 2002

FAX & MAIL
(757/253-6670 – 1 page)

Mr. Scott J. Thomas, P.E.
Civil Engineer
JCC Environmental Division
101 Mounts Bay Road
Williamsburg, Virginia 23185

RE: Monticello at Powhatan Apartments -- Phase I
James City County, Virginia
Project No. 4253

Dear Scott:

This is a follow up to our conversation yesterday about the additional grates the County had requested for two of the storm structures in Phase I of the Monticello at Powhatan Apartments. We had the galvanized grates installed; you had reviewed them and said they met with your approval. And although you had some concerns about some type of modification to the pond structure that appeared to have raised the level of the pond, you agreed to release the 10% bond of Clancy & Theys Construction you were still holding on Phase I.

I indicated to you that neither Clancy & Theys nor our Subcontractor, Hudgins Contracting had anything to do, to the best of my knowledge, with the apparent modifications.

Thank you for your prompt attention to our request to have the grates reviewed and the bond released. If this is not an accurate reflection of our conversation, please call me so I can clear up any discrepancies.

Sincerely,

CLANCY & THEYS CONSTRUCTION COMPANY

Kyle J. Weidlich
Project Manager

KJW/kdm

cc: Brad Waitzer MOPOW, LLC

11830 FISHING POINT DR., SUITE 201 • NEWPORT NEWS, VIRGINIA 23606 • TELEPHONE: 757-873-6869 • FAX #: 757-873-7630

MEMORANDUM

Date: September 13, 2002

To: Mick G. Harvey, EIT
W.P. Large

From: Scott J. Thomas, P.E.
Environmental Division

Subject: Request for Information
BMP at Monticello at Powhatan Apartments
County BMP ID Code: PC 128

In response to your recent request, attached is information concerning the wet extended detention pond BMP for the Monticello at Powhatan Apartments, County Plan No. SP-78-99 (Phase I) and SP-156-00 (Phase 2). In addition to hydraulic computations for the BMP as available in our record file, I have also attached copies of the series of correspondence between the County, the site owner and the site contractor relative to our concerns of plugging the 20-inch low flow orifice at the riser. Raising the normal pool reduces storage available for larger storm events, thus increasing the chance of facility overtopping or failure or parking lot, yard or unit flooding.

If you have any questions or need additional information, please call me at (757) 253-6639.

G:/SWMProg/AsBuilts/ClarLetters/PC128.3

SJT FILE

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INTEGRATED PEST MANAGEMENT
(757) 253-2620

July 11, 2002

Mr. Kyle J. Weidlich, Project Manager
Clancy & Theys
11830 Fishing Point Drive, Suite 201
Newport News, Va. 23606

✓ Addressed Reinspected by Both 8/5/02. OK by SJT 8-5-02

Re: Monticello at Powhatan Apartments, Phase 2
County Plan No. SP-156-00
County BMP ID Code: PC 128

Dear Mr. Weidlich:

The Environmental Division is in receipt of your letter request dated April 29th 2002 requesting release of surety being held for erosion and sediment control purposes for the above referenced project. Based on a field inspection as performed on July 11th 2002, there are no engineering-related comments pertaining to the onsite Phase II or connecting downstream (Phase 1) storm drainage system which conveys drainage from the Phase 2 site to the existing wet extended detention pond (PC 128).

However, based on an inspection of the riser structure for the existing wet pond facility (PC 128), there is a rectangular shaped plywood sheet (plate) anchored to the inside of the pond riser which is blocking (obstructing) flow from the normal pool through the low flow orifice into the riser structure. It appears the plywood sheet was intentionally placed to raise the normal pool elevation of the pond, as the gap between the plywood and the concrete riser structure was sealed with epoxy or sealant.

This issue was previously discussed with you and Mr. Brad Waitzer back in March of 2002. We have a copy of correspondence in our file from MPOW, L.L.C. to W.P. Large, Inc. dated March 21st 2002, which indicated that calculations be formulated to determine whether the level of the pond could be raised based on current design. We also have a copy of a letter directly forwarded to our office from Clancy & Theys dated March 22nd 2002, which indicates no knowledge of modifications as such to the riser or low flow orifice structure.

To date our division has not received any correspondence or revised plans to modify the low flow orifice configuration, raise normal pool elevation or change the pond configuration from that approved under County Plan No. SP-78-99. Based on the current drought situation, it is understandable that raising the water elevation slightly may be beneficial for onsite irrigation purposes. However, blocking the low flow orifice as such could reduce extended detention storage volume and affect the capacity and stormwater function of the pond should a large storm event occur. This could increase the chance of overtopping or failure of the facility or perhaps result in parking lot, yard or unit flooding.

Two options exist to correct this situation. **The first option is to remove the plywood sheet and restore the pond back to normal pool elevation per original design. The second alternative is to provide revised plans and supporting computations (engineering evaluation) to accurately reflect any proposed changes to the low flow orifice configuration or an increase in the normal pool elevation. Once reviewed and approved, these changes can be performed in the field consistent with supporting information.**

Please inform us of your progress on this matter. The surety being held for erosion and sediment control purpose for Phase 2 of the project cannot be released in full until one of the two alternatives as outlined above are completed and the riser is inspected.

If you have any additional questions or comments, contact me at 757-253-6639 or the assigned Environmental Division inspector, Beth Davis at 757-253-6702.

Sincerely,

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

SJT/sjt

cc: MPOW, LLC (via fax)

CLANCY &THEYS
CONSTRUCTION COMPANY
GENERAL CONTRACTORS

Facsimile Transmittal

To:	Beth Davis James City County Environmental Div.	**From:**	Kyle Weidlich KW Clancy & Theys Construction Co.
Fax:	757 259 4032	**Pages:**	1 (including this cover sheet)
Phone:	757 253 6702	**Date:**	7/30/02
Re:	Monticello at Powhatan Apartments-Phase II Environmental Division Punch List	**CC:**	MOPOW-II, LLC

☐ **Urgent** ■ **For Review and Comment** ■ **For Approval** ■ **For Information** ■ **As Requested**

Please accept this as a follow-up to our conversation earlier this afternoon. In our conversation I confirmed that I believed everything listed in your Inspection Report of July 12, 2002 has been addressed with the exception of the seeding behind Building EE along News Road. This work is scheduled to be completed tomorrow, 7/31/02.

I confirmed that the obstruction in the riser structure of the existing wet pond has been removed. I noted this during a site inspection today. This should address the comments contained in Scott Thomas' letter of July 11, 2002.

Given the above we are requesting an inspection of the site the week of 8/5/02 for the purpose of determining 100% completion of the project and full release of our E&S bond.

If you have any questions, or follow-up comments please call. We look forward to hearing the results of your inspection. Thanks.

1330 POWHATAN POINT DR. SUITE 201 • NEWPORT NEWS, VIRGINIA 23606 • TELEPHONE: 757-873-6869 • FAX #: 757-873-7630

PC128_MONTICELLO_POWHATAN_APTS_PHASE_NEWPORTNEWS_COND_SP76-99_125
JUL. 30. 2002 3:56PM CLANCY&THEYS NO. 3188 P. 1/1

AB File

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July 11, 2002

Mr. Kyle J. Weidlich, Project Manager
Clancy & Theys
11830 Fishing Point Drive, Suite 201
Newport News, Va. 23606

Re: Monticello at Powhatan Apartments, Phase 2
County Plan No. SP-156-00
County BMP ID Code: PC 128

Dear Mr. Weidlich:

The Environmental Division is in receipt of your letter request dated April 29th 2002 requesting release of surety being held for erosion and sediment control purposes for the above referenced project. Based on a field inspection as performed on July 11th 2002, there are no engineering-related comments pertaining to the onsite Phase II or connecting downstream (Phase 1) storm drainage system which conveys drainage from the Phase 2 site to the existing wet extended detention pond (PC 128).

However, based on an inspection of the riser structure for the existing wet pond facility (PC 128), there is a rectangular shaped plywood sheet (plate) anchored to the inside of the pond riser which is blocking (obstructing) flow from the normal pool through the low flow orifice into the riser structure. It appears the plywood sheet was intentionally placed to raise the normal pool elevation of the pond, as the gap between the plywood and the concrete riser structure was sealed with epoxy or sealant.

This issue was previously discussed with you and Mr. Brad Waitzer back in March of 2002. We have a copy of correspondence in our file from MPOW, L.L.C. to W.P. Large, Inc. dated March 21st 2002, which indicated that calculations be formulated to determine whether the level of the pond could be raised based on current design. We also have a copy of a letter directly forwarded to our office from Clancy & Theys dated March 22nd 2002, which indicates no knowledge of modifications as such to the riser or low flow orifice structure.

To date our division has not received any correspondence or revised plans to modify the low flow orifice configuration, raise normal pool elevation or change the pond configuration from that approved under County Plan No. SP-78-99. Based on the current drought situation, it is understandable that raising the water elevation slightly may be beneficial for onsite irrigation purposes. However, blocking the low flow orifice as such could reduce extended detention storage volume and affect the capacity and stormwater function of the pond should a large storm event occur. This could increase the chance of overtopping or failure of the facility or perhaps result in parking lot, yard or unit flooding.

Two options exist to correct this situation. The first option is to remove the plywood sheet and restore the pond back to normal pool elevation per original design. The second alternative is to provide revised plans and supporting computations (engineering evaluation) to accurately reflect any proposed changes to the low flow orifice configuration or an increase in the normal pool elevation. Once reviewed and approved, these changes can be performed in the field consistent with supporting information.

Please inform us of your progress on this matter. The surety being held for erosion and sediment control purpose for Phase 2 of the project cannot be released in full until one of the two alternatives as outlined above are completed and the riser is inspected.

If you have any additional questions or comments, contact me at 757-253-6639 or the assigned Environmental Division inspector, Beth Davis at 757-253-6702.

Sincerely,

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

SJT/sjt

cc: MPOW, LLC (via fax)

CLANCY
&THEYS
CONSTRUCTION COMPANY
GENERAL CONTRACTORS

MAR 2002
RECEIVED
ENVIRONMENTAL DIVISION

March 22, 2002

FAX & MAIL
(757/253-6670 – 1 page)

Mr. Scott J. Thomas, P.E.
Civil Engineer
JCC Environmental Division
101 Mounts Bay Road
Williamsburg, Virginia 23185

RE: Monticello at Powhatan Apartments – Phase I
James City County, Virginia
Project No. 4253

Dear Scott:

This is a follow up to our conversation yesterday about the additional grates the County had requested for two of the storm structures in Phase I of the Monticello at Powhatan Apartments. We had the galvanized grates installed; you had reviewed them and said they met with your approval. And although you had some concerns about some type of modification to the pond structure that appeared to have raised the level of the pond, you agreed to release the 10% bond of Clancy & Theys Construction you were still holding on Phase I.

I indicated to you that neither Clancy & Theys nor our Subcontractor, Hudgins Contracting had anything to do, to the best of my knowledge, with the apparent modifications.

Thank you for your prompt attention to our request to have the grates reviewed and the bond released. If this is not an accurate reflection of our conversation, please call me so I can clear up any discrepancies.

Sincerely,

CLANCY & THEYS CONSTRUCTION COMPANY

Kyle J. Weidlich
Project Manager

KJW/kdm

cc: Brad Waitzer MOPOW, LLC

11830 FISHING POINT DR., SUITE 201 • NEWPORT NEWS, VIRGINIA 23606 • TELEPHONE: 757-873-6869 • FAX #: 757-873-7630

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2101 Parks Avenue, Suite 201
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(757) 422-6030
(757) 422 6670 Fax

March 21, 2002
VIA FACSIMILE: 463-1412

Mr. Lance Large
W.P. Large
242 Mustang Trail, Suite 8
Virginia Beach, Virginia 23452

Dear Lance:

As we have discussed, the water level as designed in the retention pond at Monticello Phase 1 is undesirably low. This is to request that calculations be formulated to determine whether the level of the outfall can be raised by 12" and, if not, how much it can be raised.

Once this is determined, we will need a detail of the outfall modification. Thank you in advance for your attention in this matter.

Very truly yours,

Brad Kn.
Bradley J. Waitzer

BJW: kn

Cc: Scott Thomas, JCC Environmental Division
Kyle Weidlich, Clancy & Theys Construction Company

CLANCY
&THEYS
CONSTRUCTION COMPANY
GENERAL CONTRACTORS

March 22, 2002

FAX & MAIL
(757/253-6670 – 1 page)

Mr. Scott J. Thomas, P.E.
Civil Engineer
JCC Environmental Division
101 Mounts Bay Road
Williamsburg, Virginia 23185

RE: Monticello at Powhatan Apartments – Phase I
James City County, Virginia
Project No. 4253

Dear Scott:

This is a follow up to our conversation yesterday about the additional grates the County had requested for two of the storm structures in Phase I of the Monticello at Powhatan Apartments. We had the galvanized grates installed; you had reviewed them and said they met with your approval. And although you had some concerns about some type of modification to the pond structure that appeared to have raised the level of the pond, you agreed to release the 10% bond of Clancy & Theys Construction you were still holding on Phase I.

I indicated to you that neither Clancy & Theys nor our Subcontractor, Hudgins Contracting had anything to do, to the best of my knowledge, with the apparent modifications.

Thank you for your prompt attention to our request to have the grates reviewed and the bond released. If this is not an accurate reflection of our conversation, please call me so I can clear up any discrepancies.

Sincerely,

CLANCY & THEYS CONSTRUCTION COMPANY

Kyle J. Weidlich
Project Manager

KJW/kdm

cc: Brad Waitzer MOPOW, LLC

11830 FISHING POINT DR., SUITE 201 • NEWPORT NEWS, VIRGINIA 23606 • TELEPHONE: 757-873-6869 • FAX #: 757-873-7630

Beth Davis

From: Darryl Cook
Sent: Friday, March 22, 2002 7:14 AM
To: Scott Thomas; Joan Etchberger; Pat Menichino
Cc: Beth Davis
Subject: RE: Bond Release

OK proceed with release of the Phase 1 bond. I am interested in the situation regarding the raising of the normal pool. We need to get them to resolve that fairly quickly so we will get it back to normal operation and reduce the chances of overtopping or failure.

-----Original Message-----
From: Scott Thomas
Sent: Thursday, March 21, 2002 12:30 PM
To: Joan Etchberger; Darryl Cook; Pat Menichino
Cc: Beth Davis
Subject: Bond Release

Project: Monticello at Powhatan Apartments Phase I
Plan No. SP-78-99
BMP ID Code: PC 128

I am now ok with release of the bond for Phase I of the project. All record drawing, construction certification, contruction-related and the two safety grate issues per my letters dated June 7 2001, December 14 2001 and January 9 2002 have been addressed properly.

The safety grates which were added to the riser and at the large storm drain pipe along Powhatan Parkway were found to be acceptable based on my reinspection on 3/20/02. However, in reinspecting the riser, I noticed the water pool level in the pond was considerably higher than before. Someone had intentionally blocked the low flow orifice for the wet pond within the riser. The intent was clearly to raise the normal pool of the facility. I spoke with both Kyle Weidlich (contractor) and Brad Waitzer (owner) about the issue. Both indicated that they were not aware of the plate being added; however, Brad Waitzer indicated that he thought the irrigation contractor probably did it.

I indicated that it was not acceptable to intentionally raise the normal pool level of wet ponds without the review and approval of the Environmental Division. This issue was discussed previously with Kyle Weidlich and the engineer. Blocking the low flow orifice as such could take away extended storage volume and affect the capacity and stormwater function of the pond should a storm event occur. I indicated to Brad that two options exist due to this new situation: 1) remove the plate and restore the normal pool back to original design; or 2) An engineering evaluation of the pond hydraulic's was necessary and the approved site plan needs revised (Note: I have no major objection to the water being used for irrigation purposes as long as raising the pool does not interfere with stormwater function and/or structural integrity of the facility). He indicated he will resolve the issue by sending a letter to his engineer with copy to us.

As such, we can therefore release remaining E&SC bond for Phase I ($10,000). We can use the Phase 2 bond ($86,000) to ensure this situation is resolved.

Scott

DEVELOPMENT MANAGEMENT

101-E MOUNTS BAY ROAD, P.O. BOX 8784, WILLIAMSBURG, VIRGINIA 23187-8784
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INTEGRATED PEST MANAGEMENT
(757) 253-2620

December 3, 2002

Mr. Lance C. Large, P.E.
W. P. Large Inc.
242 Mustang Trail, Suite # 8
Virginia Beach, Va. 23452

Re: Monticello at Powhatan Apartments
Wet Extended Detention Pond
County Plan No. SP-78-99
County BMP ID Code: PC 128

Dear Mr. Large:

The Environmental Division has reviewed your request and engineering evaluation dated October 21st 2002 to reduce the size of the low flow orifice for the above referenced BMP from 20-inch to 8-inch diameter in order to raise the normal pool elevation of the BMP by 1 ft from Elevation 60.04 to Elevation 61.04. Based on our full review of this request, we offer the following comments:

1. Although it appears certain additional water quality storage volume and limited stream channel protection benefits may be achieved by the modifications as proposed, provide additional information to substantiate why normal pool elevation of the BMP is required to be raised by 1 ft.;

2. Design hydrologic calculations for inflow into the BMP facility as previously approved under County Plan No. SP-78-99 (Phase I) were performed using SCS methodology. Based on review of the "Original" (asbuilt) and "Modified" hydrologic and hydraulic models as submitted, peak discharges into the BMP were determined using PondPack v 7.5 software which utilized the Modified Rational Method. The engineering evaluation shall be consistent with hydrologic methods as previously approved under County Plan No. SP-78-99 and page 8 of the *James City County, Erosion and Sediment Control and Stormwater Management Design Plan Checklist.* Typically, for BMP designs greater than 20 acres in size, site hydrology shall be based on SCS based methodology. The drainage area to the BMP is 30.6 acres.

3. The record drawing certification on the plan entitled " Sheet BMP-2, Modified SWMF Pond" will need to be signed and sealed by a professional engineer once the 20-inch orifice is modified to 8-inch size. The drawing will need to reflect asbuilt data for the invert elevation and size of the low flow orifice as constructed. Ensure Section A, the modified outlet control drop inlet detail and the plan view show consistent asbuilt information for the low flow orifice.

Please submit additional information as requested above for review and approval of this request. If you have any additional questions or comments, contact me at 757-253-6639 or the assigned Environmental Division inspector, Beth Davis at 757-253-6702.

Sincerely,

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

SJT/sjt

Asbuilts\ClarLetters\PC128.4

cc: Brad Waitzer, MPOW (via fax)
Beth Davis, JCC Environmental Division Inspector

W.P. LARGE, INC.

SURVEYING - ENGINEERING - PLANNING - ENVIRONMENTAL SERVICES

242 Mustang Trail, Suite8
VIRGINIA BEACH, VA 23452
(757) 431-1041 VOICE
(757) 463-1412 FAX
E-mail: bodnar@wplarge.com

November 9, 1999

NOV 1999
RECEIVED
PLANNING DEPARTMENT

Ms. Jill Schmidle
James City County Planning Division
Post Office Box 8784
Williamsburg, Virginia 23187

Re: Monticello at Powhatan Apartments
James City County, Virginia
WPL File No. C98-1670

Dear Ms. Schmidle:

We are pleased to submit, for approval, twelve (12) copies of the revised construction plans for the above referenced project. In regards to the comments in your letter dated November 3, 1999, we offer the following responses:

1. James City Service Authority (JCSA) memorandum dated October 19, 1999.

   a. The note on Sheet C6.1 has been revised to call out a Neptune meter.

   b. We are resubmitting, as part of this submittal package, the maximum daily water demand calculations for this site.

   c. The callout for the easement around the meter vault has been changed to read "to be dedicated to the James City Service Authority."

   d. We have noted, on plan sheet C6.2, that the connection to the existing manhole shall be made by core drilling the manhole and installing a Kor-N-Seal boot.

   e. We have provided the JCSA standard drop connection detail on the plans.

2. Environmental Division memorandum dated November 3, 1999.

   COVER SHEET
   ✓OK a. We have noted on the cover sheet of the plans that a Land Disturbing Permit and Siltation Agreement, with surety, are required for this project.

   COVER SHEET.
   ✓OK b. Note nineteen (19) of the James City County Erosion and Sediment Control Notes on the cover sheet requires as-built drawings of the retention basin.

   ✓OK COPY IN FILE. c. The Developer will provide evidence of the proof of acquisition of credit from a wetlands mitigation bank. The note on C6.0 regarding the restoration of wetlands to their original condition has been removed from the drawings. The type of filling required has been noted on the plans.

   OK REMOVED.

OK d. All erosion control measures located on the plan have been changed to reflect the standards of the current version of the Virginia Erosion and Sediment Control Handbook.

OK e. A map and brief description of project soils based on the Soil Survey of James City and York Counties and the City of Williamsburg is included as part of this package.

OK f. A detailed sequence of construction outlining the installation of erosion and sediment control measures and site and utility work for the project site has been added to Sheet C7.3.

OK g. Proposed contours, on a two (2) foot interval, have been added to the grading plan sheets.

ITEMS MISSING POND 2, BMP MOD.

h. The temporary sediment trap and basins have been revised to meet the requirements of the Virginia Erosion and Sediment Control Handbook.

i. The referenced note on sheet C3.0 has been modified to refer the Contractor to the sequence of construction on Sheet 7.3.

NOT ADDRESSED PROPERLY.

j. The detail for the outlet protections provided within the retention basin has been modified to conform with the grading and side slopes of the retention basin. The outlet protections have been labeled on plan sheets C5.0, C5.1, C5.2 and C5.3.

DO NOT CONFORM WITH POND GRADING SIDESLOPES

PLANS SHOW 1A

k. The rip rap on the bank stabilization detail on Sheet C7.3 has been noted to be Class I rip-rap. It has been noted on the grading where bank stabilization is required.

PLANS SHOW 1A RIPRAP

l. The stormwater management narrative has been revised and is included in this package. The narrative has been corrected to show that the facility was designed using the SCS methodology. Calculations showing the hydrologic soil group classifications and runoff curve number determinations are included as part of this package.

OK

m. Computations for the runoff curve numbers to the pond and bypass area are included in this package. Where the time of concentrations were derived is also listed on this calculation. As discussed on November 2, 1999, all off-site areas have been included, in the stormwater management facility design, as developed. Curve numbers and areas were provided to us by Langley and McDonald, who will be preparing the plans for the remainder of the development in this area.

OK

REMOVED

n. We have reviewed the flat grate top unit from the plans. The outfall structure is now a sloped grate per the detail on Sheet C7.3.

o. We have noted on the outfall structure detail is to be precast. We have referenced that the structure shall meet the requirements of the standard drop inlet detail on Sheet C7.1. A note has been added to the detail requiring the Contractor to provide IS-1 inlet shaping on the bottom of the structure and VDOT Standard ST-1 steps.

p. The James City County standard non-clogging, cage-type trash rack detail has been added to Sheet C7.3. The outfall structure detail has been modified to provide a trash rack for the low flow circular orifice (twenty [20] inch diameter).

q. The grading around the retention basin has been modified to provide two (2) foot of freeboard per the comment. No curbing or outside building grade is lower than elevation 70.50. With a rise in the basin for the 100-year storm to an elevation of 68.42, this requirement has been met.

r. As discussed on November 2, 1999, we have provided storage of the 2.8 inches of the 1-year, 24 hour duration storm event. This has been done, per our telephone conversation, to meet the downstream adequacy requirements, not for quality purposes.

s. The 10-year and 2-year water surface elevations have been added to Section "A" on Sheet C7.2. All pond design water surface elevations have been added to the outlet control structure detail on sheet C7.3.

OK t. The label on pond section "A" on sheet C5.0 has been modified to reference sheet C7.2.

OK u. In the pond section detail on Sheet C7.2, we have modified the pond bottom to read elevation 55.0 through the section.

OK v. A long-term schedule for inspection and maintenance of the stormwater management facility has been added to Sheet C5.1.

OK w. Included in this package is calculations proving the adequacy of the stormwater conveyance channels for velocity and depth.

OK x. The design Q of 72.17 cubic feet per second for the offsite area tributary was taken from the design calculations for Powhatan Parkway (by Langley and McDonald), which is James City County Case Number SP-38-99.

OK y. It has been noted on each of the grading sheets the requirements for when PVC piping may be used for storm drainage.

OK z. We have checked all storm drainage pipes to ensure that minimum covers are maintained throughout the project site.

OK aa. We have checked to ensure no conflicts exist between the storm drainage system and all the other utilities (water, sanitary and electric).

bb. We have specified on the plan that the structure C1 shall be a VDOT DI-1. Enclosed as part of this submittal package is the calculations of the 10-year and 100-year ponding elevations based on the restriction of the grate opening on the structure.

James City County
VIRGINIA
Jamestown 1607

TRANSMITTAL SHEET

ENGINEERING & RESOURCE PROTECTION → STORMWATER

Project: Papers in incorrect BMP file

County Plan No. _____

Assigned BMP No.: PC 001 / PC128

BMP Type: _____

Information Enclosed:

- ☐ Record Drawings (Asbuilts)
- ☐ Construction Certification
- ☐ Computations
- ☑ Other :

The attached four pages are in the record asbuilt/construction certification file for the BMP at the Mews PC001. I believe the documents as attached belong in the file for PC128 the BMP for the Monticello at Powhatan Apartments complex.

Name: Scott J. Thomas

Date: 01/23/17

Signature: Scott J Thomas

Civil Engineers
Land Surveyors
Land Planners
Landscape Architects

242 Mustang Trail Suite #8
Virginia Beach, Virginia 23452
757.431.1041 Voice
757.463.1412 Fax

Principals:
Lance C. Large, PE
Brian C. Large
William R. Pritchard, LS
William D. Almond, ASLA

October 21, 2002

Mr. Ben Thompson, Planner
Planning Division
James City County
101-E Mounts Bay Road
Williamsburg, Virginia 23187-8784

RE: Monticello at Powhatan
Phases 1 & 2, Old News Rd.
& News Rd., James City County, VA
Wpl Project No.: 202-1813

Dear Mr. Thompson:

On behalf of the developer and owner of the above-referenced project we are requesting an approval to modify the normal water surface elevation of the stormwater management pond designed for this project. The proposal is to raise the normal water surface elevation by 1.00', from 60.04' to 61.04'. This can be accomplished by replacing the existing 20-inch outlet pipe, invert = 60.04', with an 8-inch outlet pipe with an invert equal to 61.04'.

We have enclosed computation booklets that illustrate both the existing, originally designed, storm drain system operating conditions, and the operating conditions of the storm drain system with the modified outfall. These computation booklets are labeled "Original Computation", and "Modified Computations" respectively.

A summary of the computations results are outlined as follows:

Description	Original	Modified
Normal Water Surface Elev.:	60.04'	61.04'
2-Yr. Storm Elev.:	63.02'	64.41'
10-Yr. Storm Elev.:	64.28'	65.35'
100-Yr. Storm Elev.:	65.45'	66.49'
SWMF Top of Bank Elev.:	69.00'	69.00'
2-Yr. Storm "Q":	15.45 CFS	2.96 CFS
Allowable 2-Yr. Storm "Q":	19 CFS	19 CFS
10-Yr. Storm "Q":	19.46 CFS	24.52 CFS
Allowable 2-Yr. Storm "Q":	27 CFS	27 CFS
Critical/Control HGL @ "E-1", Rim=67.00':	65.15'	66.22'

Description	Original	Modified
Permanent Pool Volume:	2.0 Ac-Ft	2.7 Ac-Ft
2-Yr. Storm Storage:	2.3 Ac-Ft	2.7 Ac-Ft
2-Yr. Storm Storage Release Time:	5 Hrs.	16 Hrs.
HGL @ "A1-4" to Offsite:	75.21'	75.21'
HGL @ "F1" Outlet Control:	62.79'	62.81'

As you can see from the computation results, the modification to outfall raising the WSE to 61.04' will not affect the proper functioning of the storm drain system, and will actually enhance the stormwater quality by increasing the permanent pool by 0.7 acre-feet, and extending the release of the 2-year storm.

We are sending you this information, since you were the planning POC for the phase 2 development. Please forward this information to the appropriate individuals in the Environmental Division so that the necessary approval can be issued. Please call me at (757) 431-1041 after you have received this package so that we can discuss it further. Thank you for your cooperation in this matter.

Wpl

Lance C. Large, PE
Principal-in-Charge

LCL/ll

Enclosures

cc: Bradley Waitzer, MOPOW
w/ enclosures

Civil Engineers
Land Surveyors
Land Planners
Landscape Architects

242 Mustang Trail Suite #8
Virginia Beach, Virginia 23452
757.431.1041 Voice
757.463.1412 Fax

Principals:
Lance C. Large, PE
Brian C. Large
William R. Pritchard, LS
William D. Almond, ASLA

October 21, 2002

SJT REVIEW
12-3-02

Mr. Ben Thompson, Planner
Planning Division
James City County
101-E Mounts Bay Road
Williamsburg, Virginia 23187-8784

SP-78-99
PC 128

- MODIFIED RATIONAL WAS USED. NEED SCS METHOD. APPROVED • 24 HR SCS HYDROGRAPH
- AB DATED OUT 8 2001 WILL NEED MODIFIED ONCE LOW FLOW ORIF IS MODIFIED FROM 20" to 8" SIZE WITH AB DATA
- AB NEEDS TO REFLECT "MODIFIED" 2, 10, 100-YR WSEL AND TOP OF BANK ELEV.

RE: Monticello at Powhatan
Phases 1 & 2, Old News Rd.
& News Rd., James City County, VA
Wpl Project No.: 202-1813

Dear Mr. Thompson:

Pond Pack V 7.5 MODIFIED RATIONAL METHOD

On behalf of the developer and owner of the above-referenced project we are requesting an approval to modify the normal water surface elevation of the stormwater management pond designed for this project. The proposal is to raise the normal water surface elevation by 1.00', from 60.04' to 61.04'. This can be accomplished by replacing the existing 20-inch outlet pipe, invert = 60.04', with an 8-inch outlet pipe with an invert equal to 61.04'.

• PROVIDES SCP BY MODIFYING LOW FLOW ORIFICE SIZE.

We have enclosed computation booklets that illustrate both the existing, originally designed, storm drain system operating conditions, and the operating conditions of the storm drain system with the modified outfall. These computation booklets are labeled "Original Computation", and "Modified Computations" respectively.

CHANGE ALL DATA AS APPROPRIATE ON SHEET BMP-1 INCLUDING
- PLAN
- SECTION A-A
- OUTLET STRUCTURE DETAIL

A summary of the computations results are outlined as follows:

DESIGN	Description	CURRENT AB MODEL Original	Modified
60.50	Normal Water Surface Elev.:	60.04' ✓	61.04' ✓
64.54	2-Yr. Storm Elev.:	63.02'	64.41'
66.94	10-Yr. Storm Elev.:	64.28'	65.35'
69.37	100-Yr. Storm Elev.:	65.45'	66.49'
69.50	SWMF Top of Bank Elev.:	69.00'	69.00'
15.73 CFS	2-Yr. Storm "Q":	15.45 CFS	2.96 CFS
15.7	Allowable 2-Yr. Storm "Q":	19 CFS	19 CFS
74.57 CFS	10-Yr. Storm "Q":	19.46 CFS	24.52 CFS
49.1 CFS	Allowable 10-Yr. Storm "Q":	27 CFS	27 CFS
	Critical/Control HGL @ "E-1", Rim=67.00':	65.15'	66.22'

24 HR SCS HYDROGRAPH METHOD WAS USED FOR ORIGINAL DESIGN.

Description	Original	Modified
Permanent Pool Volume:	2.0 Ac-Ft	2.7 Ac-Ft
2-Yr. Storm Storage:	2.3 Ac-Ft	2.7 Ac-Ft
2-Yr. Storm Storage Release Time:	5 Hrs.	16 Hrs.
HGL @ "A1-4" to Offsite:	75.21'	75.21'
HGL @ "F1" Outlet Control:	62.79'	62.81'

As you can see from the computation results, the modification to outfall raising the WSE to 61.04' will not affect the proper functioning of the storm drain system, and will actually enhance the stormwater quality by increasing the permanent pool by 0.7 acre-feet, and extending the release of the 2-year storm.

We are sending you this information, since you were the planning POC for the phase 2 development. Please forward this information to the appropriate individuals in the Environmental Division so that the necessary approval can be issued. Please call me at (757) 431-1041 after you have received this package so that we can discuss it further. Thank you for your cooperation in this matter.

Wpl

Lance C. Large, PE
Principal-in-Charge

LCL/ll

Enclosures

cc: Bradley Waltzer, MOPOW
w/ enclosures

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

FINAL CONST. INSP.

Database Inventory No. (if known): PC 128

Name of Facility: MONTICELLO AT POWHATAN APARTMENTS PHASES I & II BMP No.: 1 of 1 Date:

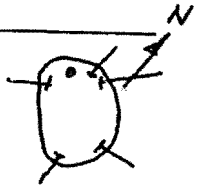
Location:

Name of Owner:

Inspector: SJ THOMAS, Beth DAVIS

Type of Facility: Wet Extended Detention FACILITY (A-3)

Weather Conditions: Sunny, Warm, High 70's



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 3H-1V SIDESLOPES, GRASS W/ EC-2			
Grass Height	X			2-4"
Vegetation Condition		X		BARESPOTS ENTIRE Perimeter BETWEEN NORMAL POOL + High WATER.
Tree Growth	X None			
Erosion		X		Reseed + Mulch bare soil Areas on north, west & south sideslopes.
Trash & Debris		X		Remove ALL construction debris WOOD, PAPER, PVC PIPE
Seepage	X			None Observed
Fencing or Benches	X			None
Interior Landscaping/Planted Areas:	☒ None ☐ Constructed Wetland/Shallow Marsh ☐ Naturally Established Vegetation			
Vegetated Conditions	X			GRASS IS somewhat brown.
Trash & Debris		X		See Above
Floating Material		X		See Above
Erosion				
Sediment				
Dead Plant				
Aesthetics				
Other				

Services Phase 1 & 2 Apartment

Facility Item	O.K.	Routine	Urgent	Comments
Water Pools	☒ Permanent Pool (Retention Basin) ☐ Shallow Marsh (Detention Basin) ☐ None (Detention Basin)			
Shoreline Erosion	X			
Algae		X		Algae 10' from edge entire
Trash & Debris		X		perimeter.
Sediment				
Aesthetics				
Other				
Inflow Stuctures (Describe Locations):	5 – 15"/12 NE Corner, 48" SE Corn; 27" South; 24" NW Corner.			
Condition of Structure	X			All Are submerged.
Erosion	X			
Trash and Debris	X			
Sediment		X		Clean & Remove Sediment from
Aesthetics	X			All 5 pipe inflows.
Other				
Principal Flow Control Structure - Intake, Riser, etc. (Describe Location):	DI Conc. Box w/ DI-7 Grate 3'x3' 6' deep			
Condition of Structure	X			6" LOW FLOW ORIF 2 – 1.1 x 2 RECT ORIF
Corrosion	X			
Trash and Debris	X			
Sediment	X			None in Box
Aesthetics	X			
Other	X			Steps on Outside Needed.
Principal Outlet Structure - Barrel, Conduit, etc. :	48" RCP AT RISER; 48" HDPE w/ ES-1 @ OUT			
Condition of Structure	X			
Settlement	X			
Trash & Debris	X			
Sediment		X		Minor 4" @ END RIPRAP
Erosion	X			
Other	X			Riprap 15' W x 60' L CLASS I A
Emergency Spillway (Overflow):	None			EXTEND RR TO PLAN LIMIT, FILL VOID AREAS W/ STONE. SEED & MULCH
Vegetation				BAREAREAS.
Lining				
Erosion				
Trash & Debris				
Other	X			Building Perimeter Low Point
				@ Building

Nuisance Type Conditions:				
Mosquito Breeding	X			
Animal Burrows	X			
Graffiti	X			
Other				
Surrounding Perimeter Conditions: Apartment Complexes				
Land Uses	X			Apartment & BACK YARD
Vegetation		X		GRASS SLOPES some bare spots
Trash & Debris		X		Needs GEN CLEANUP AROUND POND.
Aesthetics	X			
Access /Maintenance Roads or Paths	X			BMP easily accessed by interior roads
Other	X			

Remarks:
- Fix Bare Spots entire perimeter between NP & HWL.
- Fix Bare Spots North, west & South SS.
- Clean & Remove Debris, entire pond perimeter Wood, Paper, Pipe, trash. (CONST Debris)
- All inflow pipes submerged. Generally clean sed from pipe outfalls.
- Add PVC drain line location from pool area to RD.
- Riser – Remove Perf PVC & change to final BMP CONFIG. 20" ORIF w/ TrashRACK. (Note PVC is now 6 or 8"
- OP – Extend RR OP to plan limit. Fill void areas in OP w/ Stone. Seed & Mulch Perimeter Areas. Remove SF.
- North Perimeter Fill Slope – Bare Soil Areas next to ADJACENT Property.

Overall Environmental Division Internal Rating: 3

Signature: _____ Date: 5/11/07

Title: _____

SWMProg\BMP\CoInspProg\DetRet.wpd

Date Record Created:

Created By:

WS_BMPNO: PC128

Thursday, March 04
11:02:26 AM

WATERSHED	PC
BMP ID NO	128
PLAN NO	SP-78-99
TAX PARCEL	(38-3)(1-33)
PIN NO	3830100033
CONSTRUCTION DATE	8/1/2000
PROJECT NAME	Monticello at Powhatan Apart Ph 1/2
FACILITY LOCATION	4401 Powhatan Parkway
CITY-STATE	Williamsburg, Va. 23451
CURRENT OWNER	MPOW, LLC
OWNER ADDRESS	2101 Parks Avenue
OWNER ADDRESS 2	Suite 201
CITY-STATE-ZIP CODE	Virginia Beach, Va. 23451
OWNER PHONE	757-422-6030
MAINT AGREEMENT	Yes
EMERG ACTION PLAN	No

Get Last BMP No | Return to Menu | Print Record

MAINTENANCE PLAN	Yes	CTRL STRUC DESC	Conc. Inlet
SITE AREA acre	21.76	CTRL STRUC SIZE inches	DI-7
LAND USE	Res Planned Com	OTLT BARRL DESC	RCP Barrel
old BMP TYP	Wet Pond	OTLT BARRL SIZE inch	42
JCC BMP CODE	B1 Shallow Marsh		
POINT VALUE	10	EMERG SPILLWAY	No
		DESIGN HW ELEV	69.37
		PERM POOL ELEV	60.5
SVC DRAIN AREA acres	36.97	2-YR OUTFLOW cfs	15.73
		10-YR OUTFLOW cfs	46.78
		REC DRAWING	Yes
SERVICE AREA DESCRI	Onsite Apart & Roads & 19.44 ac. Offsite		
IMPERV AREA acres	22.00	CONSTR CERTIF	Yes
RECV STREAM	UT of Powhatan Creek		
EXT DET-WQ-CTRL	Yes	LAST INSP DATE 5/11/2001	Inspected by:
WTR QUAL VOL acre-ft	0.35	INTERNAL RATING	3
CHAN PROT CTRL	No	MISC/COMMENTS	
CHAN PROT VOL acre-ft	0	BMP #8. Clay liner; Ext CPP barrel; ES overflow into parking	
SW/FLOOD CONTROL	Yes		
GEOTECH REPORT	Yes		

Additional Comments:

WATERSHED	PC	MAINTENANCE PLAN	Yes	CTRL STRUC DESC	Conc. Inlet
BMP ID NO	128	SITE AREA acre	21.76	CTRL STRUC SIZE inches	DI-7
PLAN NO	SP-78-99	LAND USE	Res Planned Com	OTLT BARRL DESC	RCP Barrel
TAX PARCEL	(38-03)(01-33)	old BMP TYP	Wet Pond	OTLT BARRL SIZE inch	42
PIN NO	3830100033	JCC BMP CODE			
CONSTRUCTION DATE	8/1/2000	POINT VALUE	8	EMERG SPILLWAY	No
PROJECT NAME	Monticello at Powhatan Apart Ph 1/2			DESIGN HW ELEV	69.37 66.49
FACILITY LOCATION	4401 Powhatan Parkway			PERM POOL ELEV	60.5 61.04
CITY-STATE	Williamsburg, Va. 23451	SVC DRAIN AREA acres	~~36.97~~ 30.6	2-YR OUTFLOW cfs	~~15.73~~ 2.96
CURRENT OWNER	MPOW, LLC			10-YR OUTFLOW cfs	~~46.78~~ 69.35
OWNER ADDRESS	2101 Parks Avenue			REC DRAWING	Yes
OWNER ADDRESS 2	Suite 201	SERVICE AREA DESCRI	Onsite Apart & Roads & 19.44 ac. Offsite		
CITY-STATE-ZIP CODE	Virginia Beach, Va. 23451	IMPERV AREA acres	22.00	CONSTR CERTI	Yes
OWNER PHONE	757-422-6030	RECV STREAM	UT of Powhatan Creek		
MAINT AGREEMENT	Yes	EXT DET-WQ-CTRL	Yes	LAST INSP DATE	5/11/2001
EMERG ACTION PLAN	No	WTR QUAL VOL acre-ft	0.35	INTERNAL RATING	3
		CHAN PROT CTRL	No	MISC/COMMENTS	
		CHAN PROT VOL acre-ft	0	Parcel A. Inst # 990024180. Clay liner; Ext CPP barrel; ES overflow into parking	
		SW/FLOOD CONTROL	Yes		
		GEOTECH REPORT	Yes		

Get Last BMP No

Return to Menu

PC128_MONTICELLO_POWHATAN_APTS_PHASE_ HALF_WET_ POND_SP78-99 - 142

Scott -
Please call about
Monticello Apt BMP

Civil Engineers
Land Surveyors
Land Planners
Landscape Architects

Mick G. Harvey, EIT
Project Engineer

242 Mustang Trail
Suite #8
Virginia Beach, VA 23452

757. 431. 1041 Office
757. 463. 1412 Fax
mick@wplarge.com

ENVIRONMENTAL DIVISION REVIEW COMMENTS
MONTICELLO AT POWHATAN APARTMENTS (PHASE I)
FINAL SITE PLAN
PLAN NO. SP - 78 - 99 MCE/SJT

November 3, 1999

These comments pertain to construction plans as submitted with a professional signature and seal date of September 30th 1999.

General Comments:

1. A Land Disturbing Permit and Siltation Agreement, with surety, are required for this project.

2. As-built drawings must be provided for the retention basin upon completion. Also a note shall be provided on the plans stating that upon completion, construction of the dam will be certified by a professional engineer who has inspected the facility during construction.

3. Wetland Impact Areas. Based on U.S. Army Corp. of Engineers correspondence submitted to our office, a condition of the nationwide wetland permit includes proof of acquisition of credit from the James River Wetland Mitigation Bank. Provide evidence that this process is completed. In addition, sheet C6.0 still contains a note near the site outfall to " Restore Wetlands & Ditch to Original Conditions After Construction". Please confirm if this is the intent for the project or if Type A or B ditch filling is required as per the detail on sheet C7.2.

Erosion & Sediment Control Plan:

4. Key Symbols. Use standard Virginia Erosion and Sediment Control Handbook (VESCH) key symbols on the plans for proposed erosion and sediment control measures.

5. Soils Data. As previously requested, provide a map and brief descriptions of project soils based on the Soil Survey of James City and York Counties and the City of Williamsburg, Va. (April 1985).

6. Sequence of Construction. Provide a detailed sequence of construction outlining the installation of erosion and sediment control measures and site and utility work for the project site.

7. Proposed Grading. As previously requested, please show proposed contours for the entire site. Although spot elevations were provided, no grading was shown in any areas other than at the retention pond. It is difficult to determine grading (cut, fill and slope) impacts to vegetated buffers and adjacent properties without contour information. Section 24-145(8) of Chapter 24 Zoning requires existing and proposed finished contours for site plan submittals.

8. Temporary Sediment Traps. Temporary sediment traps # 1, # 2 and modification of the retention basin for use as a temporary sediment trapping facility as presented on plan sheet C3.0 and detail sheet C7.3 are not in conformance with requirements of the VESCH. Firstly, no narratives, calculations or details were provided to explain how the retention basin will be modified to serve as a temporary sediment basin during construction activities. Secondly, the calculations only show drainage area, required volumes and water surface elevations within the facilities based on stage-storage data. For

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temporary sediment trap # 1 (2.50 acres), the drainage area is less than 3 acres and use of a sediment trap is acceptable. However, only a general location and a general detail were provided on the plans. No construction information (dimensions, depths, etc.) were included to ensure the design volume is constructed, nor were other necessary items such as outlet length or cleanout depth shown. For temporary sediment trap # 2 (5.37 acre), the drainage area is greater than 3 acres; therefore, design as a sediment basin (not a trap) is required in accordance with VESCH, Minimum Standard 3.14. Furthermore, establishment of a water surface elevation within the structure based on required volume versus stage-storage data is not the only calculation required for proper sediment basin design. Please provide sediment basin design data sheets and details for all associated structures in accordance with Minimum Standard 3.14. Items generally would include: dewatering orifice invert and size based on a 6- hour drawdown; determination of riser crest and top of dam; emergency spillway or riser to pass 25-year event; baffle requirements; peak design discharges for the 2- and 25- year (based on the maximum contributory area between predevelopment, disturbed or postdeveloped phases of construction); riser size; barrel size, slope, length; trash rack and anti-vortex device size and detail; freeboard; anti-seep collars; base plate/foundation; and outlet protection.

9. E&SC Measure Conflicts. Note 3 on sheet C3.0 states that E&SC measures shall remain in place throughout the site construction phase until site stabilization. Installation of temporary sediment trap # 1 and # 2 will conflict with grading and development of Buildings E and F, respectively, as well as parking areas and Carriage House Way. Please revise to provide erosion control throughout the life of the project.

10. Outlet Protections. The four outlet protections (OP's) provided within the retention basin are standard configurations for end of pipe control, but do not conform with the grading and side slopes as shown within the pond. Show consistent rock placement with respect to the pond bottom and side slopes. Label the outlet protections on plan sheets C5.0, C5.1, C5.2 and C5.3.

11. Bank Stabilization. Specify rip rap size on the bank stabilization detail on sheet C7.3. Indicate on the plan views where bank stabilization is required.

Stormwater Management / Drainage:

12. SWM Narrative. The SWM design narrative indicates the SWM facility was sized using the Rational method for each storm duration. Pre- and post development hydrologic computations show a basin curve number of 71.6 and 85.3, respectively, which is indicative of SCS soil-cover-complex based hydrology. Please show the hydrologic soil group (HSG) classifications used with the runoff curve number determinations. (Please note the James City County Stormwater Detention Basin Design Checklist requires use of SCS based methodology for watersheds exceeding 20 acres. The postdeveloped drainage area to the pond is 36.97 acres)

13. Hydrologic Data. As previously requested, please submit computations for determination of pre-and post-development condition times of concentration (Tc) and composite runoff curve numbers (RCN's) to the pond and bypass area. Provide information as to whether the 19.44 acres offsite was considered as "developed" for pond design purposes. Although the response letter indicated that the pond is "regional" type facility, there is not enough information to determine whether the pre- or post-developed runoff factors considered the offsite area as developed.

14. Principal Spillway Crest. The flat grate top unit proposed for the pond's outlet structure is not acceptable. James City County does not permit and the Virginia Stormwater Management Handbook

(VSMH) does not recommend flat grates for trash racks. Structures with flow over the top should have a non-clogging trash rack such as a hood type inlet or a vertical or sloped grate. The JCC Guidelines for Design and Construction of Stormwater Management BMP's recommends principal spillways with removable trash racks. Provide a sloped, removable trash rack design and detail(s).

15. Principal Control Structure. It appears the principal control structure as shown on sheet C7.3 is intended to be a VDOT DI-I drop inlet structure with modifications. Show whether the structure is intended to be cast-in-place or precast concrete. Show wall thickness on the detail or provide applicable reference to the standard drop inlet detail provided on sheet C7.1. Provide IS-1 inlet shaping on the bottom to minimize or prevent standing or ponding water. Since final depth of the structure is greater than 4 ft., provide steps in accordance with VDOT Standard ST-1.

16. Low Flow Orifice Protection. Provide a non-clogging, cage-type trash rack or grille at the low flow circular orifice (20 inch).

17. Freeboard. The proposed wet detention basin as shown on the plans and details was designed to fully contain the 100-year storm event at WSEL 68.42 without use of an emergency spillway. The top of the SWM facility is at El. 69.0 resulting in a freeboard of 0.58 feet to top of dam and 1.78 feet to the elevation at the edge of Building D. Considering surrounding uses are residential and four buildings are in close proximity to the pond, freeboard of less than 1 ft. will not be acceptable in this case. In addition, the design 100-year WSEL as shown did not consider any clogging effects due to the overflow spillway associated with the principal spillway. The VSMH, Minimum Standard 3.02 recommends at least 1 foot of freeboard from the maximum WSEL to the lowest point on the top of embankment with emergency spillways and 2 feet of freeboard for structures without an emergency spillway. Since it appears that providing an emergency overflow spillway may be difficult due to the general site and building layout, provide a minimum 2 feet of freeboard to the top of the facility and show the flow path for any discharges that exceed the spillway's capacity.

18. Stream Channel Protection. As previously requested, include provisions for stream channel protection downstream of the stormwater management facility by providing for 24-hour extended detention of runoff generated by the 1-year, 24 hour duration storm event. The SCS Type II, 24-hour storm duration rainfall depth for the 1-year storm event in James City County is 2.8 inches. Please note that extended detention storage provided for channel protection does not simultaneously provide for water quality volume requirements but does satisfy the requirement to control the 2-year storm to pre-development levels.

19. Section "A" Wet Retention Basin WSEL's. Show the design 1-year and 2-year water surface elevations on Section "A" on sheet C7.2, as applicable. In addition, show all pond design WSEL's on the outlet control structure detail provided on sheet C7.3.

20. Section "A" Wet Retention Basin. The label on pond section "A" on sheet C5.0 indicates a reference to sheet C7.1. The detail is on sheet C7.2, not sheet C7.1.

21. Section "A" Wet Retention Basin. Section "A" detail shows a pond bottom at El. 58.0 but the plan view on sheet C5.0 shows a bottom El. of 55.0 through the section.

22. Maintenance Plan. Provide a maintenance plan for the stormwater management facility. Section 23-10(4) of the Chesapeake Bay Preservation Ordinance requires stormwater management plans to include a long-term schedule for inspection and maintenance of stormwater management/BMP facilities.

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23. Open Channels. Label all onsite open channels as stormwater conveyance channels. A swale detail was provided on Sheet C7.0 showing grass lining typical for all onsite channels. Provide data/computations as required to show whether grass linings are adequate for velocity and the 18 inch maximum depth is adequate for capacity for all the channels or channel segments.

24. Storm Sewer Design Offsite C factor. Provide the runoff coefficient used for the offsite area tributary to inlet structure I1 or I2. A design Q of 72.17 cfs was provided in the storm sewer computations but no information was provided for the runoff coefficient or whether the area was considered as ultimately "developed" for storm sewer sizing.

25. Storm Drains. Incidental drainage general notes # 3 and # 4 on sheet C1.0 refer to the use of both reinforced concrete pipe Class III and PVC ASTM D-3034 SDR-35; however, the plans do not specify which type of pipe is to be used for storm pipe segments. Provide a note or specify on the plans material requirements for storm drains (sewers) as proposed across the site.

26. Storm Drain Profiles. If storm drain (sewer) profiles are not to be provided within the project plan set, please check to ensure that minimum covers are maintained and pipe wall thicknesses are adequate and designed for maximum heights of cover for each segment.

27. Storm/Utility conflicts. Sheet C6.4 is the only profile sheet provided to indicate potential conflicts between underground storm drains and other site utilities. If storm drain profiles are not to be provided within the project plan set, please check to ensure no conflicts with other site utilities (water, sewer, electric, etc.) are present in the other site storm drainage networks.

28. Inlet C1. Inlet C1 shown between Buildings G, M, J and L is shown in a low point and collects drainage from subarea C1 (0.68 ac @ C=0.5). The difference in elevation from proposed rim El. 65.75 and Building G corner El. 66.4 is 0.65 feet or approximately 8 inches. Since the structure is the only drain for this entire area, please show inlet computations and the 10- and 100-year ponding depth to ensure the building(s) are not affected. Show grading to provide overland flow relief, if applicable. Also, please specify the inlet type at structure C1 (VDOT DI-1, DI-7, etc.).

(For information only: Please note that effective December 1, 1999, the James City County Environmental Division, upon recent Board of Supervisor approval of amendments to the Chapter 8 Erosion and Sediment Control Ordinance, will begin the use and implementation of the James City County Guidelines for Design and Construction of Stormwater Management BMP's manual dated October 1999. The manual provides general technical guidance pertaining to: stormwater control volume requirements for water quality and channel protection; revisions to the BMP Point System; the expanded list of BMP options; revisions to open space credits; and BMP selection assistance for development sites.)

ENVIRONMENTAL DIVISION REVIEW COMMENTS
MONTICELLO AT POWHATAN APARTMENTS (PHASE I)
SITE PLAN NO. SP - 78 - 99

November 22, 1999 SJT

These comments pertain to the construction plans as submitted with a professional signature and seal date of November 8, 1999.

Erosion & Sediment Control Plan:

1. Temporary Sediment Trap # 1 and Basin # 2. The notes on sheet C3.0 for these two facilities refer back to the sequence of construction on sheet 7.3. However, no detailed provisions were presented in the sequence of construction to indicate delay of grading and site development at Building F and Building G due to installation and use of Temporary Sediment Trap # 1 and Temporary Sediment Basin # 2 and at what point during construction these two specific facilities require removal. No specifics were presented in the sequence of construction pertaining to what upslope drainage facilities require installation, what upslope areas require stabilization and what additional or secondary erosion and sediment controls are to be implemented downstream of the building pad sites once the temporary sediment trap and basin require removal due to final grading and development. Since these two facilities are two of the three primary controls during construction (handling approximately 7.8 acres of drainage), please clarify with further detail their sequence for installation, operation and removal.

2. Sediment Basin # 2 Design. The peak design discharge rates shown in the computations for the 2- and 25-year storm events (4.91 cfs and 7.65 cfs, respectively) appear underestimated. The design discharges must be based on the maximum expected runoff, which in this case will occur during construction with disturbed land use conditions, and not predevelopment cover conditions. Please revise hydrologic and sediment basin design computations/details to reflect disturbed conditions or provide computations to justify the 4.91 cfs (Q2) and 7.65 cfs (Q25) values. *(For example, using the Rational Method, a conservative Tc value of 30 minutes, intensities of 2.60 and 4.20 inches per hour, runoff coefficient of 0.60 for disturbed conditions and 5.37 acres of drainage area, peak discharges would roughly result in a Q2 of 8.37 cfs and a Q25 of 13.53 cfs. Shorter time of concentration, as expected for site conditions, will result in even higher design discharges for the sediment trap.)*

3. Sediment Basin # 2 Design. The 18 inch riser as determined by computation is in an orifice flow condition which should be avoided. To maintain the minimum 1.0 feet of head above the riser crest, a larger pipe diameter will be required to avoid orifice flow. Also, larger design discharges will increase the riser size (see above).

4. Sediment Basin # 2 Detail. Show the elevation of the dewatering orifice on the "Sediment Basin # 2" detail on sheet C7.3 as well as construction details for the riser and outlet barrel (material, size, length, slope, invert elevations, etc.). Also provide a anti-vortex device detail for this sediment basin or use a note to show dimensions/specifications on the construction plans, rather than just in the computations.

5. Modification of the BMP as a Temporary E&SC Facility. Add a note to sheet C7.4, as required, to ensure complete removal of accumulated sediment in the stormwater management facility (to be temporarily used during construction as a sediment basin) prior to its intended function as a stormwater managment/BMP facility for the control of impervious site areas. Also, show the sediment cleanout depth on the modification detail.

6. Sediment Basin # 3. On sheet C7.4, a detail was shown for "Sediment Basin # 3". Please indicate the purpose of this detail and if a separate riser/outlet barrel is required at the BMP in addition to modification of the BMP principal spillway, as shown on the "temporary outlet control structure detail". If the purpose of the "Sediment Basin # 3" detail is to shown cleanout depth, etc., this information can be put on the modification detail and the "Sediment Basin # 3" detail can be removed to reduce confusion.

7. Bank Stabilization Detail. The response letter indicates that riprap for bank stabilization is to be Class I riprap and the plans/details show Class 1A. Please correct plans to show use of Class I riprap.

Stormwater Management / Drainage Plan:

8. Principal Spillway Control Structure. No modifications were shown to previously presented pond water surface elevations and routed discharges even though the principal spillway grate was altered (inclined). Due to inclination of the grate as shown on detail C7.3, it appears that the weir/orifice area used in the pond outlet rating may change which would result in changes to the hydraulics of the principal control structure. One side of the weir box will be lost in a weir flow condition due to inclination as shown and weir length/orifice area would be variable as head over the spillway crest increases. In addition, the 1 inch by 6 inch grate openings in the DI-1 inlet grate, as proposed, may be too small and clogging and maintenance problems may result. Consider use of a larger bar grate top unit (inclined) such as that used in a DI-7, for pedestrian accessible areas, modified specifically for this application. Also, please ensure the pond computations show the appropriate length/area for the weir/orifice condition being analyzed or an equivalent scenario if a circular standpipe is needed to imitate conditions. The computations and data shown for the pond output device # 3, circular standpipe, show a diameter of 0.5 for the # 3, circular standpipe, which does not appear to match or be equivalent to conditions for the grate opening.

NOT ADDRESSED NEED FOR LAND DISTURB. APPROVAL

9. Inlet C1. The computations provided for inlet C1 show the hydraulic grade elevations for storm design; however, the inlet computation does not show the flow depth (d) at the inlet as requested. Based on the design information provided and by use of the HEC-12 inlet program, it appears that the inlet will operate as a weir and the maximum depth of flow will be approximately 0.23' (2.8 inches) at El. 65.98 with a 22 ft. spread for the 100-year event. Since this is less than the 8 inches available to Building G, the flow depth at the inlet appears acceptable. Please confirm.

WILL NEED ADDRESSED FOR SITE PLAN APPROVAL

OPEN CHANNELS TO CURB/PARKING AREA ISSUE. 5 LOCATIONS

LAST ISSUE

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CHARLES J. BODNAR "CJ" P.E.
Senior Project Engineer

~~DARRYL,~~

~~Review Complete.~~
~~Waltzer Apartments~~

11-22-99

~~(File: SP 78-99.3)~~

SWM PLAN REPORT
FINAL APPROVED 12-03-99

N
1 Mile
5 000 Feet
Scale 1:15 840
(Joins sheet 17) 31B
(Joins sheet 21)
(Joins sheet 23)
(Joins sheet 26)
520 000 FEET
1 335 000 FEET
2 505 000 FEET
SITE
Powhatan Creek
Five Forks
Indigo Terrace
Berkeley High School
Canterbury Hills
Walnut Hill Church
Jamestown Farms
Berkeley Hills
Rich Neck Heights
WILLIAMSBURG
Winston Terrace
Druid Hills
St. Martin's Church
Kingswood
Rawls Byrd School
Hollybrook
Birchwood Park
COLLEGE OF WILLIAM AND MARY
Matoaka Lake
College Creek
CITY OF WILLIAMSBURG
JAMES CITY COUNTY
WILLIAMSBURG JAMESTOWN AIRPORT