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: **PC062**

DATE VERIFIED: **July 3, 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: PC062

PIN: 3211100001A

Subdivision, Tract, Business or Owner Name (if known): Heron Run

Property Description: Conservation Easement Parcel 1

Site Address: 120 Heron Court

(For internal use only) **Box** 1 **Drawer:** 1

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

Comments

HERON RUN SUBDIVISION

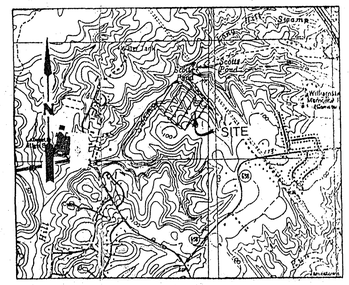
JAMES CITY COUNTY, VIRGINIA

ABBREVIATIONS

@	AT	NO.	NUMBER
#	POUND	NTS	NOT TO SCALE
ACCESS	ACCESSIBLE	OC	ON CENTER
AFF	ABOVE FINISHED FLOOR	PC	POINT ON CURVE
℄	CENTERLINE	PL	PROPERTYLINE
CMP	CORRUGATED METAL PIPE	P.R.C.	POINT ON REVERSE CURVE
CONC.	CONCRETE	PT	POINT OF TANGENCY
DET.	DETAIL	PSI	POUNDS PER SQUARE INCH
D.I.	DROP INLET	PVC	POLYVINYL CHLORIDE/POINT OF VERTICAL CURVE
DIA.	DIAMETER	PVI	POINT OF VERTICAL INTERSECTION
DIM	DIMENSION	PVT	POINT OF VERTICAL TANGENT
DWG.	DRAWING	R	RADIUS
ELEV.	ELEVATION	RCP	REINFORCED CONCRETE PIPE
EP	EDGE OF PAVEMENT	RE:	REFERENCE
E&S	EROSION & SEDIMENT	REINF.	REINFORCED
E.W.	ENDWALL	REQ'D	REQUIRED
EXIST.,EX.	EXISTING	RP	RADIUS POINT
FF,FIN FL	FINISHED FLOOR	R/W	RIGHT OF WAY
FH	FIRE HYDRANT	SAN	SANITARY SEWER
FT.	FOOT, FEET	S.F.	SQUARE FOOT/FEET
FTG.	FOOTING	STA.	STATION
GAL	GALLONS	T&B	TOP & BOTTOM
G.V.	GATE VALVE	TC	TOP OF CURB
HORIZ	HORIZONTAL	TYP.	TYPICAL
HP	HIGH POINT	V.B.	VALVE BOX
HT.	HEIGHT	VC	VERTICAL CURVE
INV	INVERT	VDOT	VIRGINIA DEPARTMENT OF TRANSPORTATION
MAX	MAXIMUM	VERT.	VERTICAL
MIM	MINIMUM	W/	WITH
MH	MANHOLE	W	WATERLINE
NIC	NOT IN CONTRACT	WWF	WELDED WIRE FABRIC

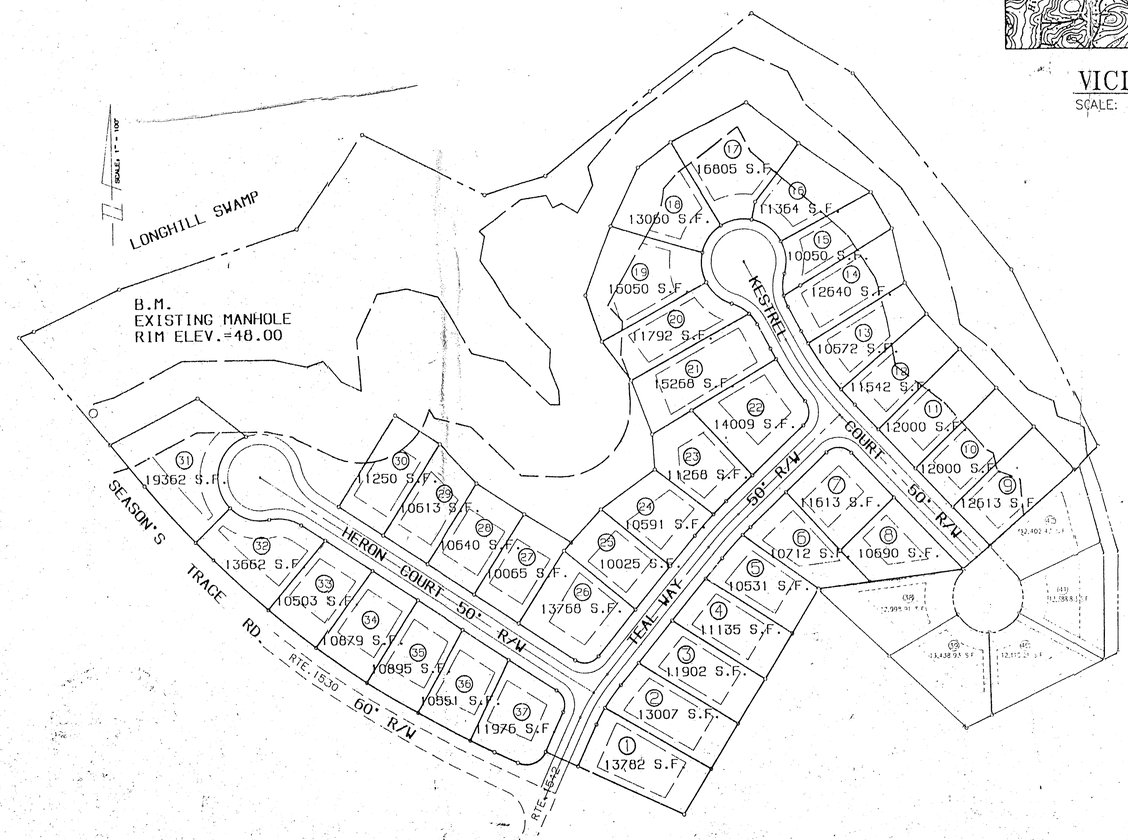
INDEX OF SHEETS

SHEET NO.	DESCRIPTION
TS-1	TITLE SHEET
C-1A	ROAD, WATER, SEWER AND GRADING PLAN/PROFILE
C-1	LAYOUT AND UTILITIES PLAN
C-2	GRADING, STORM DRAINAGE & E&S
C-3	STORM DRAINAGE DETAILS & PROFILES
C-4	E&S DETAILS & NOTES
C-5	ROAD, WATER & SEWER PROFILES
C-6	SEWER PROFILES
C-7	STANDARD WATER DETAILS & NOTES
C-8	STANDARD SEWER DETAILS & NOTES
C-9	VDOT STANDARD DETAILS & NOTES



VICINITY MAP

SCALE: 1"= 2000'



AREA TABULATION

TOTAL ACREAGE:	996,217.2 S.F.	22.87 AC.
AREA OF RESIDENTIAL LOTS (42 LOTS):	512,522 S.F.	11.76 AC.
R/W DEDICATION:	109,183 S.F.	2.50 AC.
42 LOTS:		
AVERAGE LOT SIZE:	12,203 S.F.	0.28 AC.
LARGEST LOT (#31):	19,362 S.F.	0.44 AC.
SMALLEST LOT (#25):	10,025 S.F.	0.23 AC.
NUMBER OF LOTS PER GROSS ACREAGE:	1.83 LOTS/ACRE	

ALL CONSTRUCTION SHALL CONFORM TO THE CURRENT VIRGINIA SOIL AND WATER CONSERVATION COMMISSION AND THE VIRGINIA DEPARTMENT OF TRANSPORTATION (VDOT) STANDARDS AND SPECIFICATIONS.
METHODS AND MATERIALS USED IN THE CONSTRUCTION OF THE IMPROVEMENTS HEREIN SHALL CONFORM TO THE CURRENT VDOT CONSTRUCTION STANDARDS AND SPECIFICATIONS
TAX MAP NO. (32-4)-(1-1) ; (32-1)-(1-11)

BUILDING RESTRICTIONS

PROPERTY IS ZONED GENERAL RESIDENTIAL DISTRICT R-2. LOTS ARE SERVED BY PUBLIC WATER AND SEWER.
MINIMUM LOT SIZE ALLOWABLE = 10,000 S.F./0.2296 ACRES

FRONTAGE REQUIREMENTS:
LOTS OF LESS THAN 20,000 S.F. SHALL HAVE A MINIMUM WIDTH AT THE SETBACK LINE OF 75 FEET.

YARD REGULATIONS:
FRONT: 25' MINIMUM
SIDES: 10' MINIMUM FOR EACH SIDE YARD
REAR: 35' MINIMUM

SPECIAL PROVISIONS FOR CORNER LOTS:
FOR CORNER LOTS, THE FRONT OF THE LOT SHALL BE THE SHORTER OF THE TWO SIDES FRONTING ON STREETS:
NO STRUCTURES SHALL BE LOCATED CLOSER THAN 25' TO THE SIDE STREET;
EACH CORNER LOT SHALL HAVE A MINIMUM WIDTH AT THE SETBACK LINE OF 100'.

S-44-96

JUL 1995 RECEIVED PLANNING DEPARTMENT

COMMONWEALTH OF VIRGINIA DANIEL J. DE YOUNG No. 3517 CERTIFIED PROFESSIONAL ENGINEER

REV #3 7/3/96 PER J.C.S.A. COMMENTS DATED 6/21/96
REV #2 5/7/96 HERON RUN PHASE II SUBMITTAL
REV #1 9/26/94 - PER REVIEW COMMENTS DATED 9/13/94

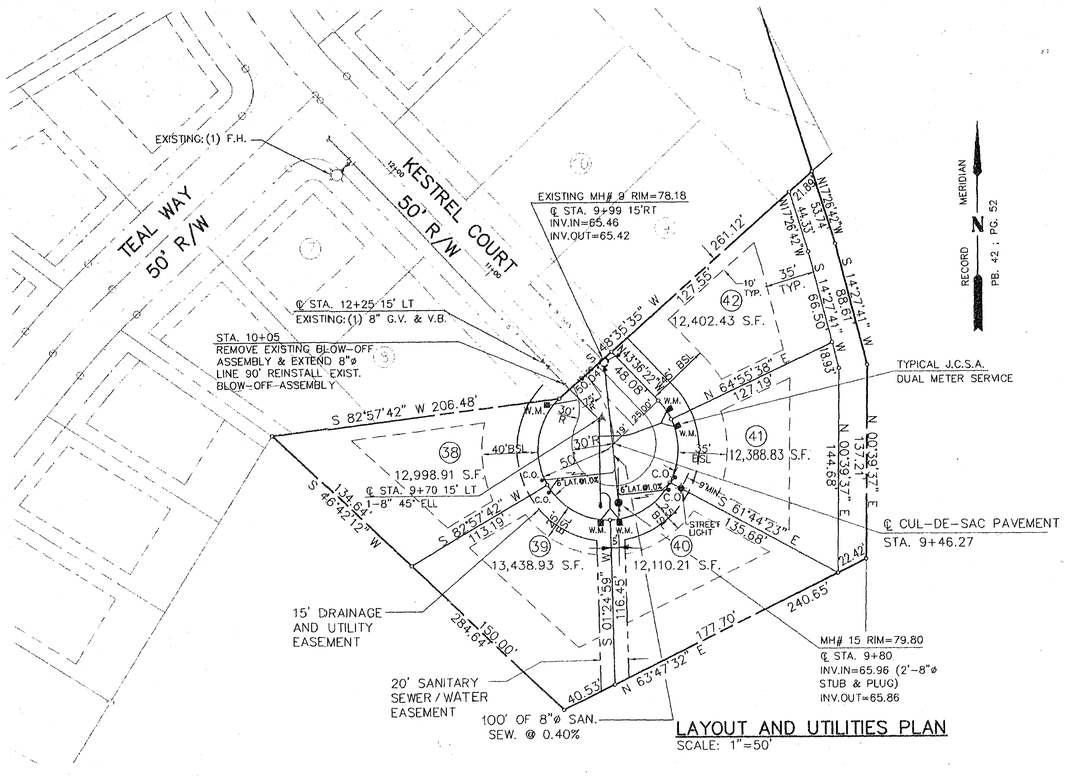
ENGINEERS · ARCHITECTS · SURVEYORS
INTERIOR DESIGNERS · PLANNERS
P.O. BOX 3505 WILLIAMSBURG, VIRGINIA 23187 (804)253-0673 (804)937-5015

TITLE SHEET
HERON RUN SUBDIVISION
OWNER/DEVELOPER: HEATHERSTONE, LLC
JAMES CITY COUNTY VIRGINIA

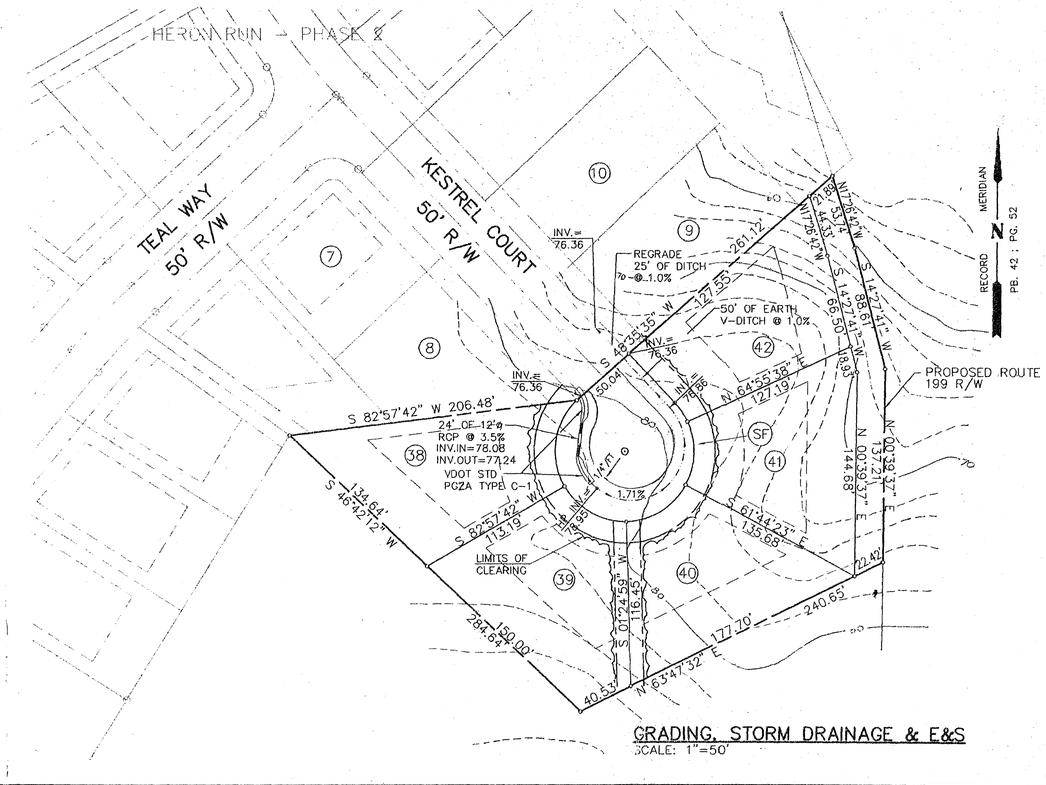
SCALE	AS SHOWN
DESIGNED	TCS
DRAWN	LBA
CHECKED	WDJ
DATE	07-29-94
COMMISSION NO.	1940160
SHEET	TS-1 OF 11

FILENAME: 940160TS
PLOT DATE: 7/3/96
PLOT SCALE: 1"=1'

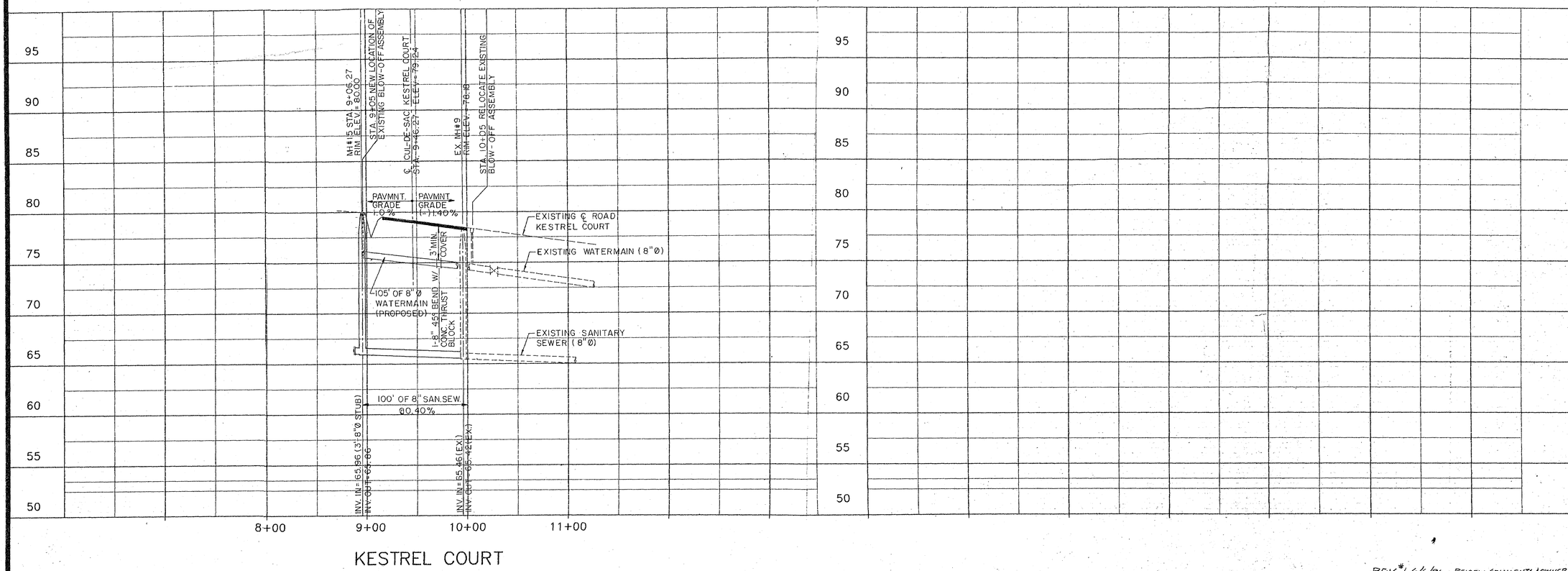
PC062_HERON_RUN_SUBDIVISION_WET_POND_AT_HERON_PT_TEAL_WAY - 003



LAYOUT AND UTILITIES PLAN
SCALE: 1"=50'



GRADING, STORM DRAINAGE & E&S
SCALE: 1"=50'



REV #1 6/6/96 - REVIEW COMMENTS & OWNER

ENGINEERS · ARCHITECTS · SURVEYORS
INTERIOR DESIGNERS · PLANNERS
P.O. BOX 3305 WILLIAMSBURG, VIRGINIA 23187 (804)253-0672 (804)874-5015

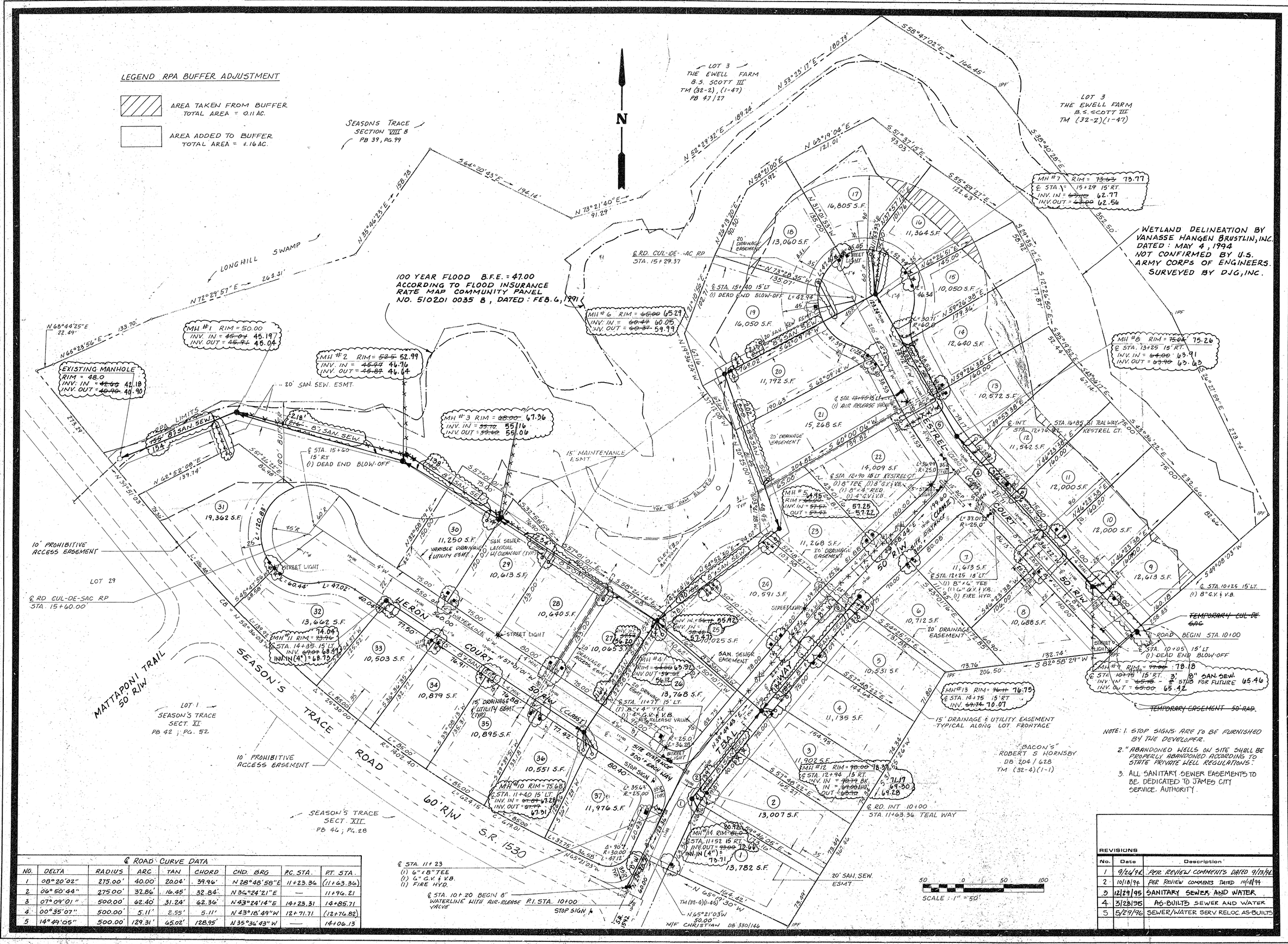
COMMONWEALTH OF VIRGINIA
COARRE L. DE YOUNG
No. 3513
LICENSED PROFESSIONAL ENGINEER

ROAD, WATER, SEWER, & GRADING PLAN/PROFILE

HERON RUN PHASE III
OWNER/DEVELOPER: HEATHERSTONE, LLC
JAMES CITY COUNTY VIRGINIA

SCALE	1" = 50' HORIZ. 1" = 5' VERT.
DESIGNED	MRK
DRAWN	RDK
CHECKED	MRK
DATE	5-7-1996
COMMISSION NO.	1960390
SHEET	C-1A
	2 OF 11

PC062_HERON_RUN_SUBDIVISION_WET_POND_AT_HERON_PT_TEAL_WAY - 004



℄ ROAD CURVE DATA								
NO.	DELTA	RADIUS	ARC	TAN	CHORD	CHD. BRG	P.C. STA.	P.T. STA.
1	08°20'02"	275.00'	40.00'	20.04'	39.96'	N 28°48'58" E	11+23.36	(11+63.36)
2	06°50'44"	275.00'	32.86'	16.45'	32.84'	N 36°24'21" E	—	11+96.21
3	07°09'01"	500.00'	62.40'	31.24'	62.36'	N 43°24'14" E	14+23.31	14+85.71
4	00°35'07"	500.00'	5.11'	2.55'	5.11'	N 43°18'49" W	12+71.71	(12+76.82)
5	14°49'05"	500.00'	129.31'	65.02'	128.95'	N 35°36'43" W	—	14+06.13

NOTE: 1. STOP SIGNS ARE TO BE FURNISHED BY THE DEVELOPER.
2. ABANDONED WELLS ON SITE SHALL BE PROPERLY ABANDONED ACCORDING TO STATE PRIVATE WELL REGULATIONS.
3. ALL SANITARY SEWER EASEMENTS TO BE DEDICATED TO JAMES CITY SERVICE AUTHORITY.

REVISIONS

No.	Date	Description
1	9/26/94	PER REVIEW COMMENTS DATED 9/13/94
2	10/18/94	PER REVIEW COMMENTS DATED 10/18/94
3	12/29/95	SANITARY SEWER AND WATER
4	3/28/95	AS-BUILTS SEWER AND WATER
5	5/29/96	SEWER/WATER SERV. RELOC. AS-BUILTS

ENGINEERS · ARCHITECTS · SURVEYORS
INTERIOR DESIGNERS · PLANNERS
P.O. BOX 3505 WILLIAMSBURG, VIRGINIA 23187 (804) 253-0673 (804) 874-5015
COMMONWEALTH OF VIRGINIA
William D. Johnson, Jr.
CERTIFICATE NO. 7427
6/1/94
CERTIFIED PROFESSIONAL ENGINEER

LAYOUT AND UTILITIES PLAN

HERON RUN SUBDIVISION

OWNER/DEVELOPER: HEATHERSTONE LLC

JAMES CITY COUNTY VIRGINIA

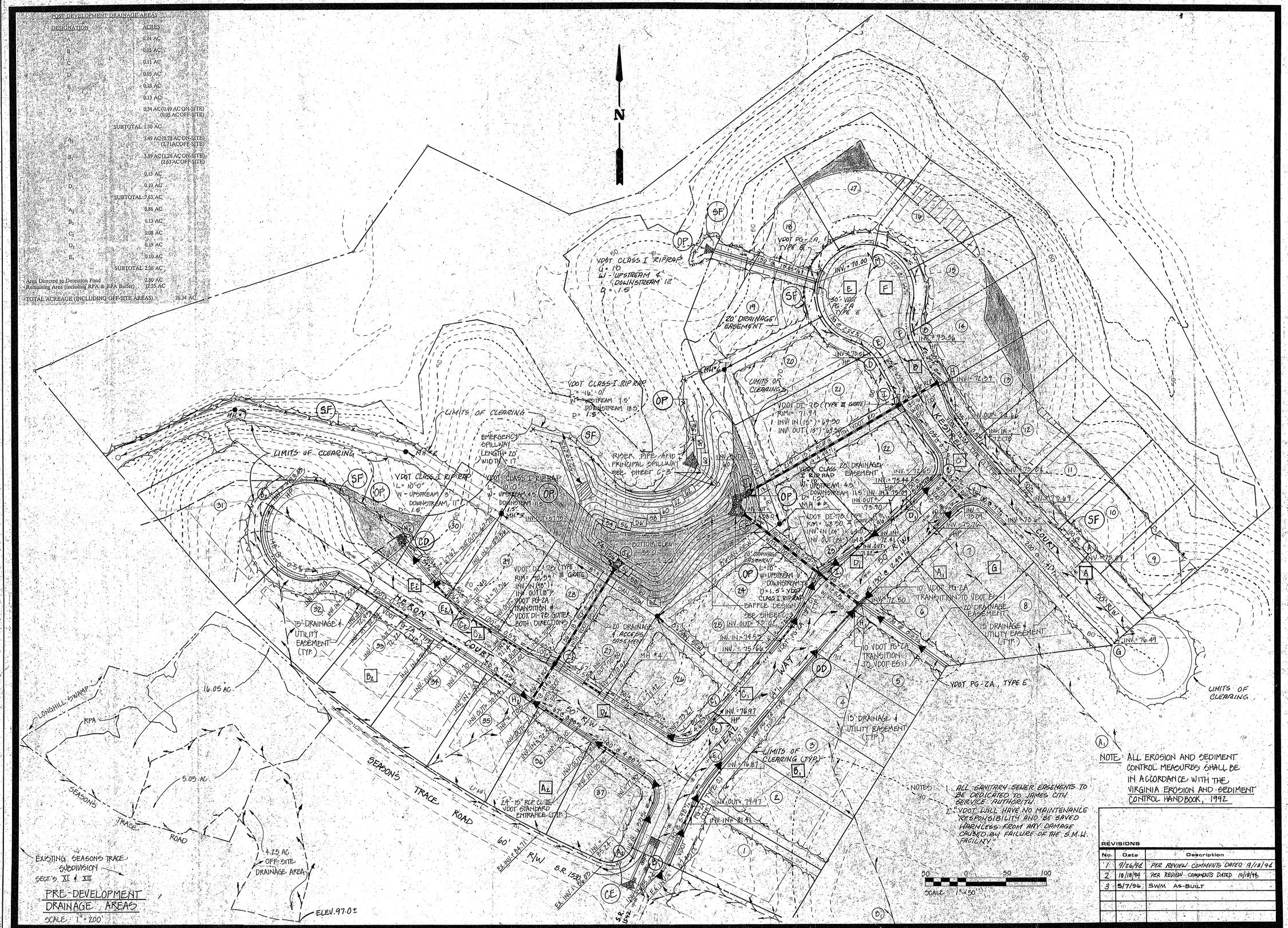
SCALE	AS SHOWN
DESIGNED	TCS
DRAWN	TCS
CHECKED	WDJ
DATE	07-29-94
COMMISSION NO.	1940160
SHEET	C-1

3 OF 11

PC062_HERON_RUN_SUBDIVISION_WET_POND_AT_HERON_PT_TEAL_WAY - 005

POST DEVELOPMENT DRAINAGE AREAS

DESIGNATION	ACRES
A	0.24 AC
B	0.05 AC
C	0.11 AC
D	0.05 AC
E	0.18 AC
F	0.13 AC
G	0.34 AC (0.49 AC ON-SITE) (0.05 AC OFF-SITE)
SUBTOTAL	1.30 AC
A_1	3.49 AC (0.78 AC ON-SITE) (2.71AC OFF-SITE)
B_1	3.89 AC (1.26 AC ON-SITE) (2.63 AC OFF-SITE)
C_1	0.15 AC
D_1	0.10 AC
SUBTOTAL	7.63 AC
A_2	0.86 AC
B_2	1.13 AC
C_2	0.08 AC
D_2	0.19 AC
E_2	0.10 AC
SUBTOTAL	2.36 AC
Area Directed to Detention Pond	2.80 AC
Remaining Area (including RPA & RPA Buffer)	12.25 AC
TOTAL ACREAGE (INCLUDING OFF-SITE AREAS)	26.34 AC



REVISIONS

No.	Date	Description
1	9/26/94	PER REVIEW COMMENTS DATED 9/12/94
2	10/18/94	PER REVIEW COMMENTS DATED 10/18/94
3	5/7/96	SWM AS-BUILT

ENGINEERS · ARCHITECTS · SURVEYORS
INTERIOR DESIGNERS · PLANNERS
P.O. BOX 3505 WILLIAMSBURG, VIRGINIA 23187 (804) 253-0673 (804) 874-5015

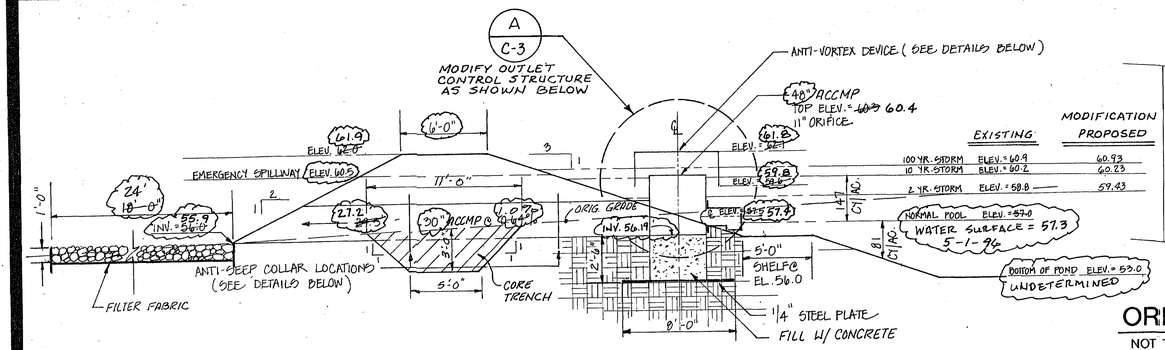
COMMONWEALTH OF VIRGINIA
William D. Johnson, Jr.
CERTIFICATE No.: 06421
DATE: 6/1/94
CERTIFIED PROFESSIONAL ENGINEER

GRADING, STORM DRAINAGE & E&S

HERON RUN SUBDIVISION

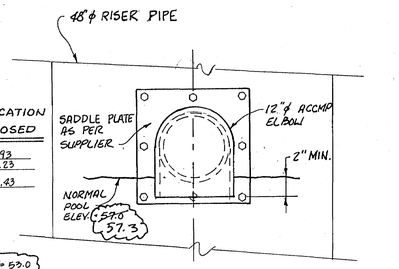
OWNER/DEVELOPER: HEATHERSTONE LLC
JAMES CITY COUNTY, VIRGINIA

SCALE: AS SHOWN
DESIGNED: MEH
DRAWN: PG MEH
CHECKED: WDJ
DATE: 07-29-94
COMMISSION NO.: 1940160
SHEET: C-2
4 OF 11



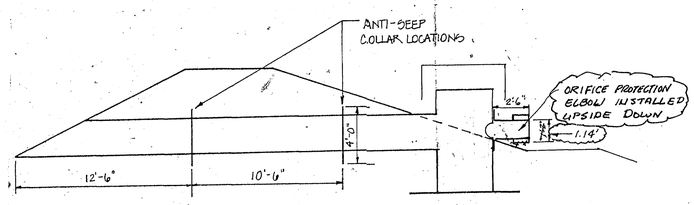
PRINCIPAL SPILLWAY

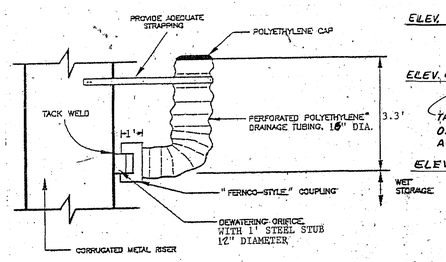
SCALE: 1" = 5'



ORIFICE PROTECTION ELBOW

NOT TO SCALE



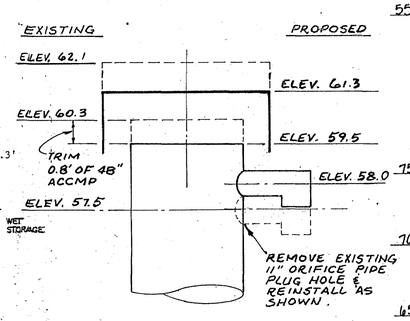


NOTE: WITH CONCRETE RISER, USE PVC SCHEDULE 40 STUB FOR DEWATERING ORIFICE

*DRAINAGE TUBING SHALL COMPLY WITH ASTM F667 AND AASHTO M294

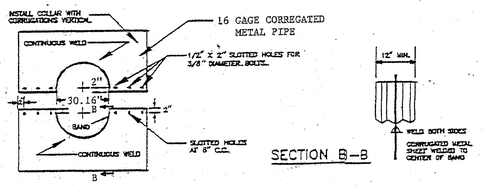
DEWATERING SYSTEM DETAIL

NOT TO SCALE



A C-3 DETAIL

NOT TO SCALE



SECTION B–B

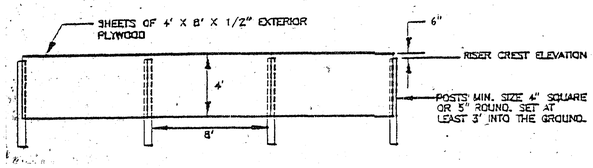
ELEVATION OF UNASSEMBLED COLLAR

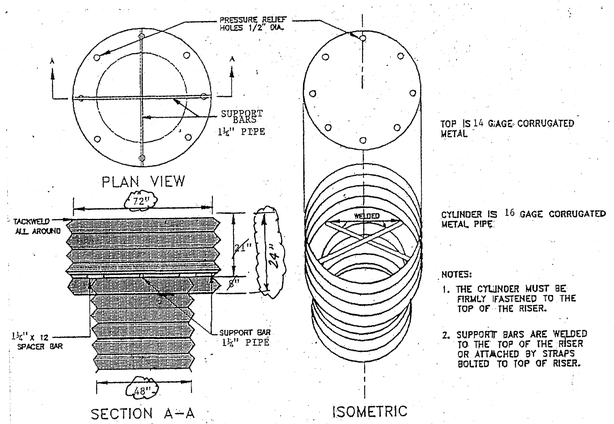
NOTES FOR COLLARS:

1. ALL MATERIALS TO BE IN ACCORDANCE WITH CONSTRUCTION AND CONSTRUCTION MATERIAL SPECIFICATIONS.
2. COLLARS SHALL BE FULL-COATED.
3. UNASSEMBLED COLLARS SHALL BE MARKED BY PAINTING OR TAGGING TO IDENTIFY MATCHING PAIRS.
4. THE LAP BETWEEN THE TWO HALF SECTIONS AND BETWEEN THE PIPE AND CONNECTING BAND SHALL BE CAULKED WITH ASPHALT MASTIC AT TIME OF INSTALLATION.
5. EACH COLLAR SHALL BE FURNISHED WITH TWO 1/2" DIAMETER RODS WITH STANDARD TANK LUGS FOR CONNECTING COLLARS TO PIPE.

ANTI-SEEP COLLARS

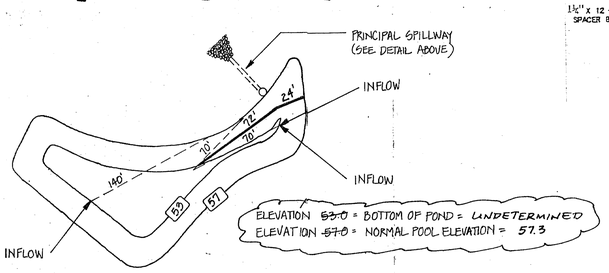
NOT TO SCALE





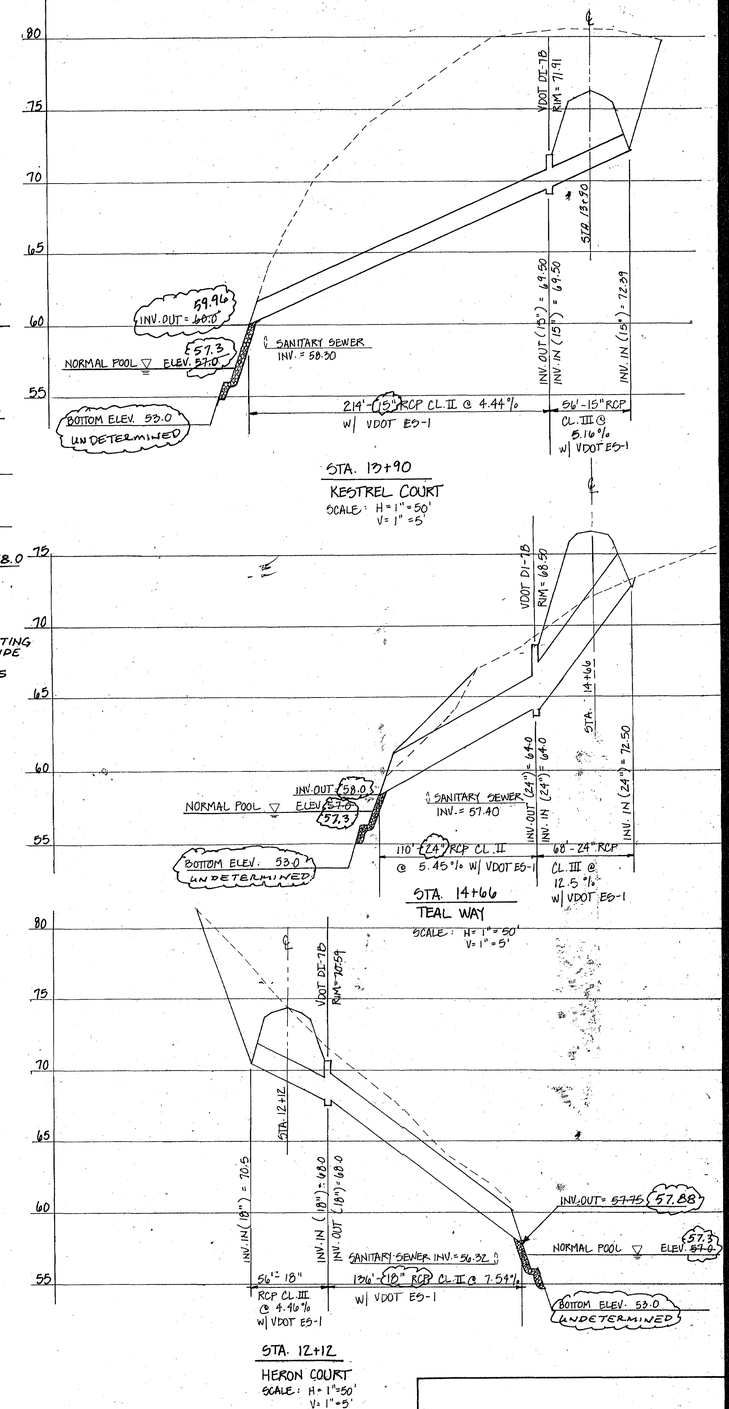
ANTI-VORTEX DEVICE

NOT TO SCALE



BAFFLE DESIGN AND LOCATION

SCALE: 1" = 50'



REVISIONS

No.	Date	Description
1	9/26/94	PER REVIEW COMMENTS DATED 9/13/94
2	5/1/96	AS BUILT INFO AS SHOWN
3	6/6/96	REVISED PER J.C.C. CODE
—	—	COMPLIANCE COMMENTS 5/16/96

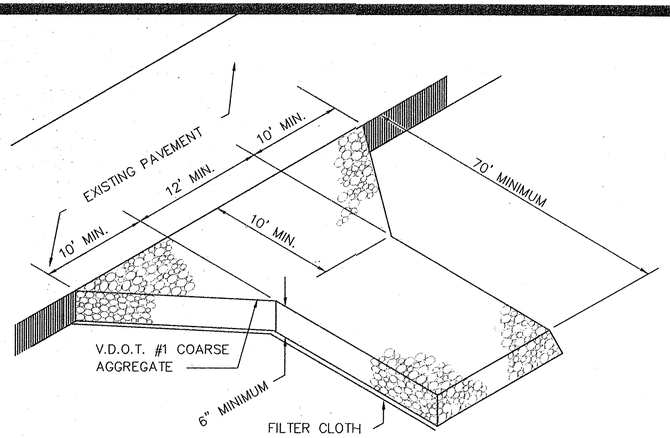
ENGINEERS · ARCHITECTS · SURVEYORS
INTERIOR DESIGNERS · PLANNERS
P.O. BOX 3505 WILLIAMSBURG, VIRGINIA 23187 (804) 253-0673 (804) 874-5015

COMMONWEALTH OF VIRGINIA
William D. Johnson, Jr.
CERTIFICATE No. 7427
8/1/96
REGISTERED PROFESSIONAL ENGINEER

STORM DRAINAGE DETAILS AND PROFILES

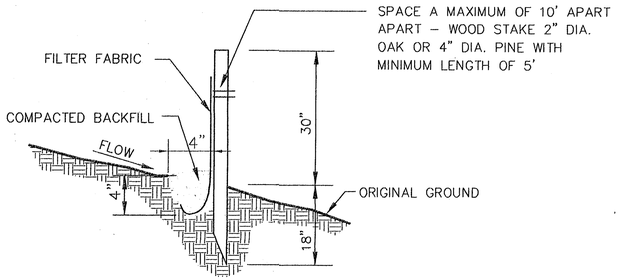
HERON RUN SUBDIVISION
OWNER/DEVELOPER: HEATHERSTONE LLC
JAMES CITY COUNTY, VIRGINIA

SCALE AS SHOWN
DESIGNED MEH
DRAWN PG, MEH
CHECKED WDJ
DATE 07-29-94
COMMISSION NO. 1940160
SHEET C-3
5 OF 11



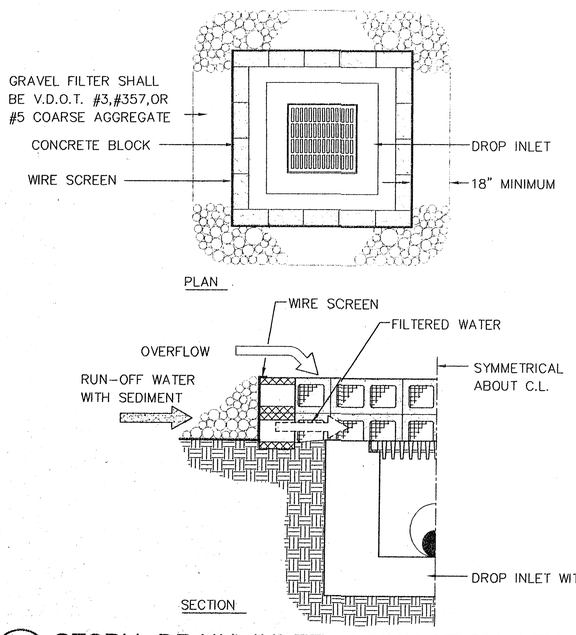
CE TEMPORARY STONE CONSTRUCTION ENTRANCE VESC 3.02

NOT TO SCALE



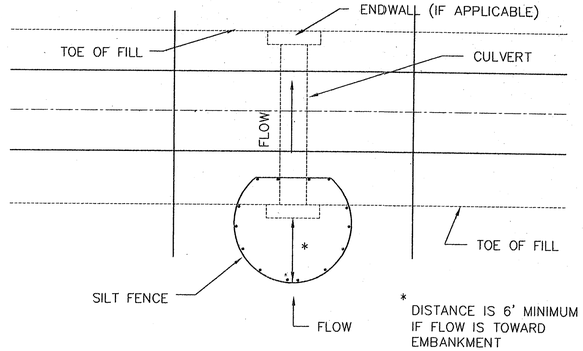
SF SILT FENCE VESC 3.05

NOT TO SCALE



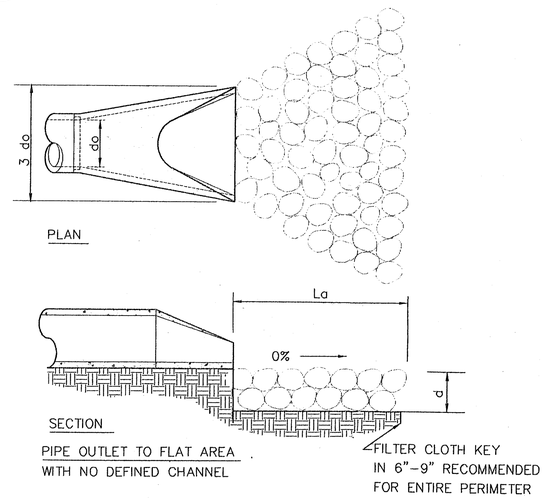
IP STORM DRAIN INLET PROTECTION VESC 3.07

NOT TO SCALE



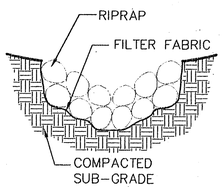
CIP CULVERT INLET PROTECTION VESC 3.08

NOT TO SCALE



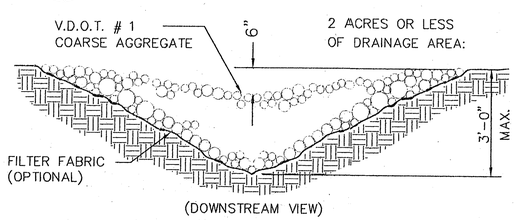
OP OUTLET PROTECTION VESC 3.18

NOT TO SCALE



RR RIPRAP VESC 3.19

NOT TO SCALE



CD ROCK CHECK DAMS VESC 3.20

NOT TO SCALE

EROSION AND SEDIMENT CONTROL NOTES

THE PURPOSE OF THE EROSION CONTROL MEASURES SHOWN ON THESE PLANS SHALL BE TO PRECLUDE THE TRANSPORT OF ALL WATERBORNE SEDIMENTS RESULTING FROM CONSTRUCTION ACTIVITIES FROM ENTERING ONTO ADJACENT PROPERTIES OR STATE WATERS. IF FIELD INSPECTION REVEALS THE INADEQUACY OF THE PLAN TO CONFINE SEDIMENT TO THE PROJECT SITE, APPROPRIATE MODIFICATIONS WILL BE MADE TO CORRECT ANY PLAN DEFICIENCIES. IN ADDITION TO THESE NOTES, ALL PROVISIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL REGULATIONS SHALL APPLY TO THIS PROJECT.

1. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE "VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK." THE CONTRACTOR SHALL BE THOROUGHLY FAMILIAR WITH ALL APPLICABLE MEASURES CONTAINED THEREIN WHICH MAY BE PERTINENT TO THIS PROJECT.
2. ALL POINTS OF CONSTRUCTION INGRESS AND EGRESS SHALL BE PROTECTED BY A TEMPORARY CONSTRUCTION ENTRANCE TO PREVENT TRACKING OF MUD ONTO PUBLIC RIGHT-OF-WAYS. AN ENTRANCE PERMIT FROM VDOT IS REQUIRED PRIOR TO ANY CONSTRUCTION ACTIVITIES WITHIN STATE RIGHT-OF-WAYS.
3. SEDIMENT BASINS AND TRAPS, PERIMETER DIKES, SEDIMENT BARRIERS AND OTHER MEASURES INTENDED TO TRAP SEDIMENT ON-SITE MUST BE CONSTRUCTED AS A FIRST STEP IN GRADING AND BE MADE FUNCTIONAL BEFORE UPSLOPE LAND DISTURBANCE TAKES PLACE. EARTHEN STRUCTURES SUCH AS DAMS, DIKES, AND DIVERSIONS MUST BE SEEDED AND MULCHED IMMEDIATELY AFTER INSTALLATION. AN ON-SITE PRE-CONSTRUCTION MEETING WILL BE HELD BETWEEN THE OFFICE OF CODE COMPLIANCE AND THE CONTRACTOR TO IDENTIFY THOSE MEASURES TO BE INITIALLY INSTALLED.
4. MAINTENANCE OF EROSION AND SEDIMENT CONTROL MEASURES SHALL INCLUDE THE REPAIR OF MEASURES DAMAGED BY ANY SUBCONTRACTOR INCLUDING THOSE OF THE PUBLIC UTILITY COMPANIES. AT THE PRECONSTRUCTION MEETING, THE CONTRACTOR WILL SUPPLY CODE COMPLIANCE WITH THE NAME OF THE INDIVIDUAL WHO WILL BE RESPONSIBLE FOR ENSURING MAINTENANCE OF INSTALLED MEASURES ON A DAILY BASIS.
5. SURFACE FLOWS OVER CUT AND FILL SLOPES SHALL BE CONTROLLED BY EITHER REDIRECTING FLOWS FROM TRANSVERSING THE SLOPES OR BY INSTALLING MECHANICAL DEVICES TO SAFELY LOWER WATER DOWNSLOPE WITHOUT CAUSING EROSION. A TEMPORARY FILL DIVERSION (STD. & SPEC. 3.10) SHALL BE INSTALLED PRIOR TO THE END OF EACH WORKING DAY.
6. SEDIMENT CONTROL MEASURES MAY REQUIRE MINOR FIELD ADJUSTMENT AT THE TIME OF CONSTRUCTION TO INSURE THEIR INTENDED PURPOSE IS ACCOMPLISHED. OFFICE OF CODE COMPLIANCE APPROVAL WILL BE REQUIRED FOR OTHER DEVIATIONS FROM THE APPROVED PLANS.
7. THE CONTRACTOR SHALL PLACE SOIL STOCKPILES AT THE LOCATIONS SHOWN ON THIS PLAN OR AS DIRECTED BY THE ENGINEER. SOIL STOCKPILES SHALL BE STABILIZED OR PROTECTED WITH SEDIMENT TRAPPING MEASURES.
8. THE CONTRACTOR SHALL COMPLETE DRAINAGE FACILITIES WITHIN 30 DAYS FOLLOWING COMPLETION OF ROUGH GRADING AT ANY POINT WITHIN THE PROJECT. THE INSTALLATION OF DRAINAGE FACILITIES SHALL TAKE PRECEDENCE OVER ALL UNDERGROUND UTILITIES. OUTFALL DITCHES FROM DRAINAGE STRUCTURES SHALL BE STABILIZED IMMEDIATELY AFTER CONSTRUCTION OF SAME. THIS INCLUDES INSTALLATION OF EROSION CONTROL STONE WHERE REQUIRED. ANY DRAINAGE OUTFALLS REQUIRED FOR A STREET MUST BE COMPLETED BEFORE STREET GRADING BEGINS.
9. PERMANENT OR TEMPORARY SOIL STABILIZATION MUST BE APPLIED TO ALL DENUDED AREAS WITHIN 7 DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. SOIL STABILIZATION MUST ALSO BE APPLIED TO DENUDED AREAS WHICH MAY NOT BE AT FINAL GRADE BUT WILL REMAIN DORMANT (UNDISTURBED) FOR LONGER THAN 30 DAYS. SOIL STABILIZATION MEASURES INCLUDE VEGETATIVE ESTABLISHMENT, MULCHING AND THE EARLY APPLICATION OF GRAVEL BASE MATERIAL ON AREAS TO BE PAVED.
10. NO MORE THAN 300 FEET OF SANITARY SEWER, STORM SEWER, WATERLINES, UNDERGROUND UTILITY LINES ARE TO BE OPEN AT ONE TIME. FOLLOWING INSTALLATION OF ANY PORTION OF THESE ITEMS, ALL DISTURBED AREAS ARE TO BE IMMEDIATELY STABILIZED (I.E., THE SAME DAY).
11. IF DISTURBED AREA STABILIZATION IS TO BE ACCOMPLISHED DURING THE THE MONTHS OF DECEMBER, JANUARY, OR FEBRUARY, STABILIZATION SHALL CONSIST OF MULCHING IN ACCORDANCE WITH SPECIFICATION 3.35. SEEDING WILL THEN TAKE PLACE AS SOON AS THE SEASON PERMITS.
12. THE TERM SEEDING, FINAL VEGETATIVE COVER OR STABILIZATION, ON THIS PLAN SHALL MEAN THE SUCCESSFUL GERMINATION AND ESTABLISHMENT OF A STABLE GRASS COVER FROM A PROPERLY PREPARED SEEDBED CONTAINING THE SPECIFIED AMOUNTS OF SEED, LIME, AND FERTILIZER IN ACCORDANCE WITH SPECIFICATION 3.32, PERMANENT SEEDING. IRRIGATION SHALL BE REQUIRED AS NECESSARY TO ENSURE ESTABLISHMENT OF GRASS COVER.
13. ALL SLOPES STEEPER THAN 3:1 SHALL REQUIRE THE USE OF EROSION CONTROL BLANKETS SUCH AS EXCELSIOR BLANKETS TO AID IN THE ESTABLISHMENT OF VEGETATIVE COVER. INSTALLATION SHALL BE IN ACCORDANCE WITH SPECIFICATION 3.35, MULCHING AND MANUFACTURER'S INSTRUCTIONS.
14. INLET PROTECTION IN ACCORDANCE WITH SPECIFICATION 3.07 SHALL BE PROVIDED FOR ALL STORM DRAIN INLETS AS SOON AS PRACTICAL FOLLOWING CONSTRUCTION OF SAME.
15. TEMPORARY LINERS, SUCH AS POLYETHYLENE SHEETS, SHALL BE PROVIDED FOR ALL PAVED DITCHES UNTIL THE PERMANENT CONCRETE LINER IS INSTALLED.
16. PAVED DITCHES SHALL BE REQUIRED WHEREVER EROSION IS EVIDENT. PARTICULAR ATTENTION SHALL BE PAID TO THOSE AREAS WHERE GRADES EXCEED 3 PERCENT.
17. TEMPORARY EROSION CONTROL MEASURES ARE NOT TO BE REMOVED UNTIL ALL DISTURBED AREAS ARE STABILIZED. AFTER STABILIZATION IS COMPLETE, ALL MEASURES SHALL BY REMOVED WITHIN 30 DAYS. TRAPPED SEDIMENT SHALL BE SPREAD AND SEEDED.
18. OFF-SITE WASTE OR BORROW AREAS SHALL BE APPROVED BY THE OFFICE OF CODE COMPLIANCE PRIOR TO THE IMPORT OF ANY BORROW OR EXPORT OF ANY WASTE TO OR FROM THE PROJECT SITE.
19. ALL PAVED AND/OR PIPED OUTFALLS WILL BE CONSTRUCTED BEFORE ROAD GRADING AND UTILITY INSTALLATION BEGINS.

No RO/CO Requirement

REFERENCE : VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, THIRD EDITION, 1992

REVISIONS

No.	Date	Description
1	9/26/94	PER REVIEW COMMENTS DATED 9/13/94

ENGINEERS · ARCHITECTS · SURVEYORS
INTERIOR DESIGNERS · PLANNERS
P.O. BOX 3505 WILLIAMSBURG, VIRGINIA 23187 (804) 253-0673 (804) 874-5015

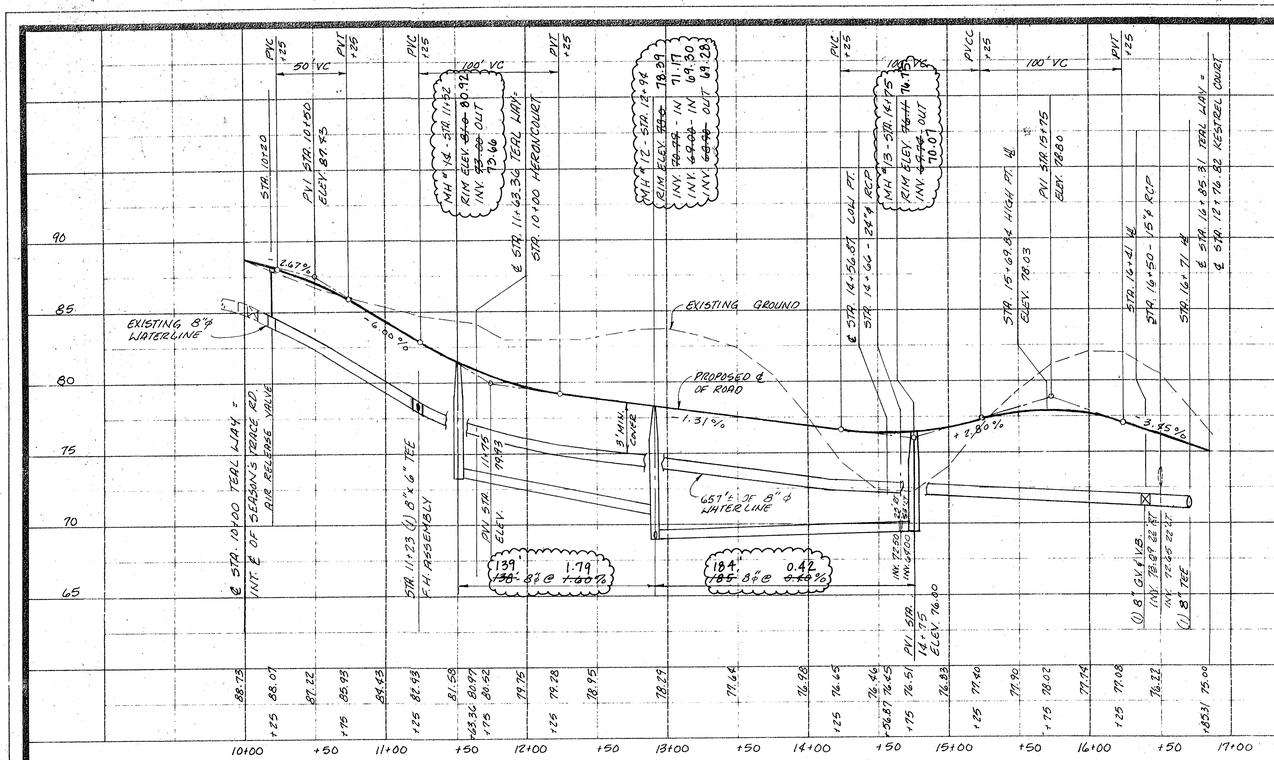
E & S CONTROL DETAILS AND NOTES

HERON RUN SUBDIVISION
OWNER/DEVELOPER: HEATHERSTONE LLC
JAMES CITY COUNTY VIRGINIA

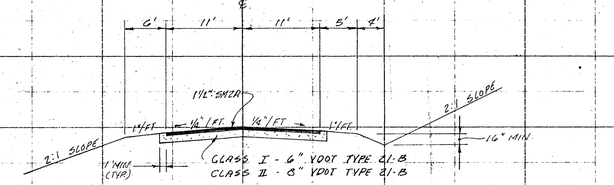
SCALE AS SHOWN
DESIGNED MEH
DRAWN LBA\MEH
CHECKED WDJ
DATE 07-29-94

1940160
COMMISSION NO.

SHEET C-4 OF 11



TEAL WAY

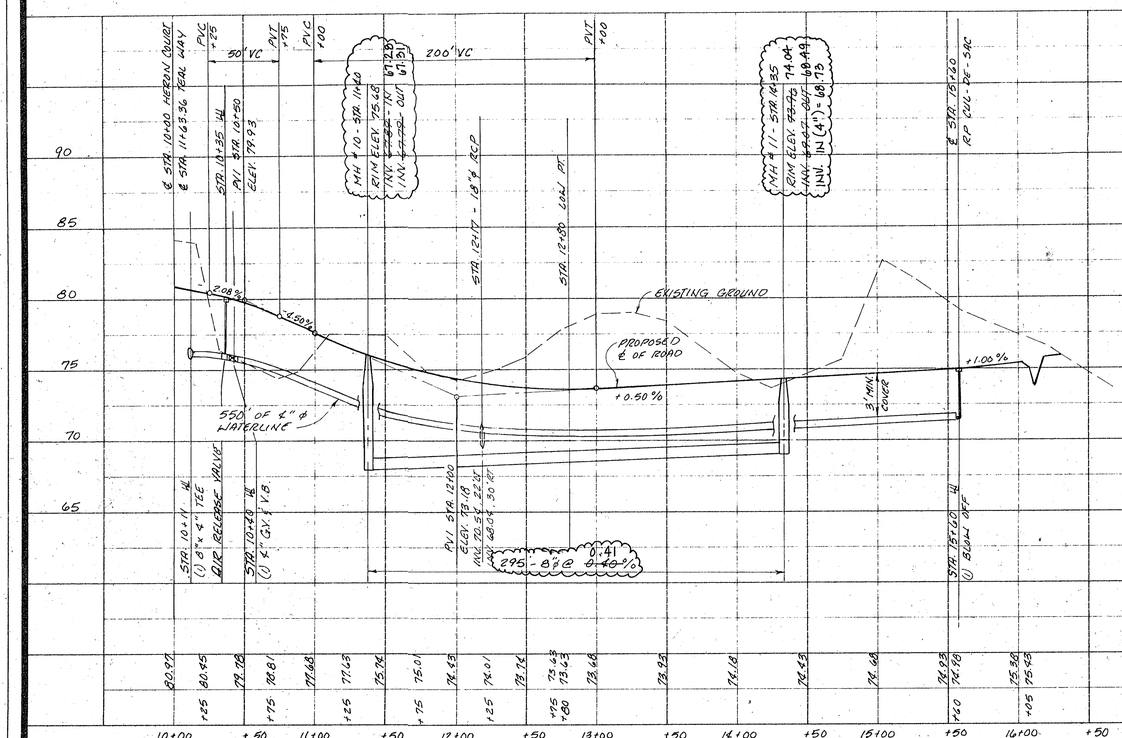


TYPICAL PAVEMENT SECTION

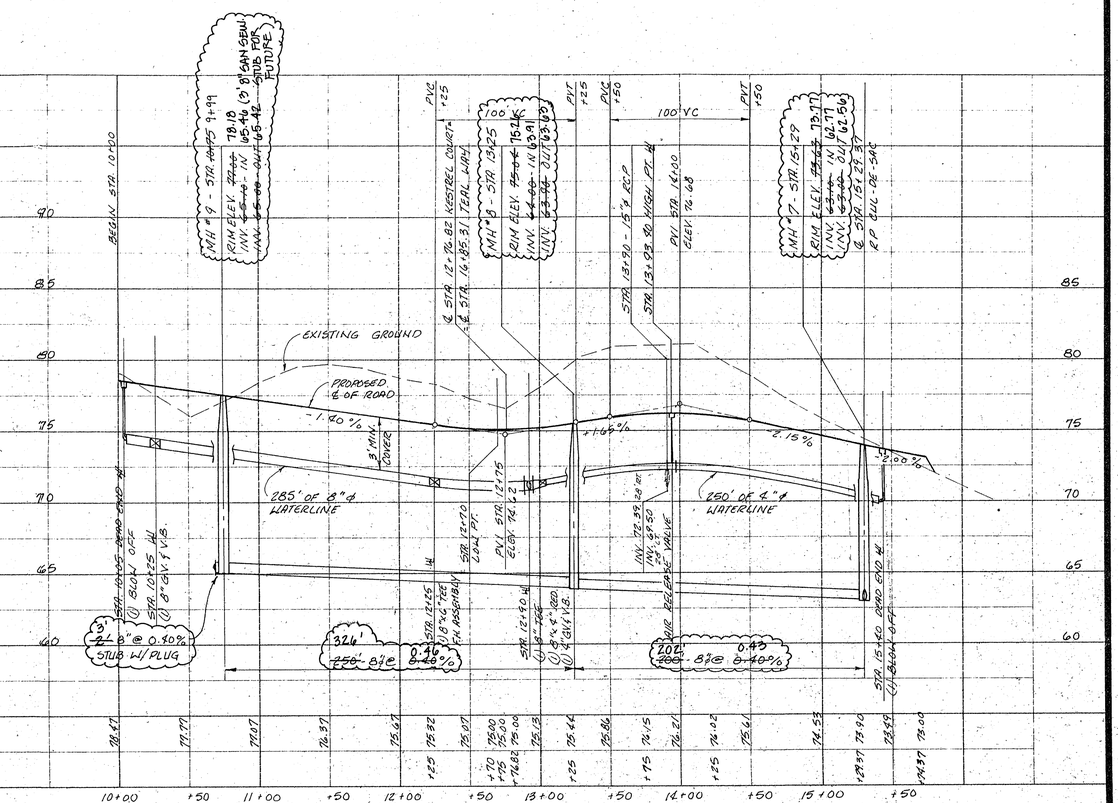
NOT TO SCALE

CLASS I - STA. 10+11 TO END OF CUL-DE-SAC HERON COURT
STA. 13+00 TO END OF CUL-DE-SAC KESTREL COURT

CLASS II - STA. 10+12 ± TO STA. 16+74 ± TEAL WAY
STA. 13+00 TO END OF TEMPORARY CUL-DE-SAC KESTREL COURT



HERON COURT



KESTREL COURT

REV. #2 12/29/95 - SANITARY SEWER AS-BUILTS
REV. #1 9/26/94 - PER REVIEW COMMENTS DATED 9/9/94

FILENAME 94016HERONG
DATE 8-08-94
PLOT SCALE 1/4" = 1'-0"

ENGINEERS · ARCHITECTS · SURVEYORS
INTERIOR DESIGNERS · PLANNERS
P.O. BOX 3505 WILLIAMSBURG, VIRGINIA 23187 (804)253-0673 (804)874-5016

COMMONWEALTH OF VIRGINIA
William D. Johnson, Jr.
CERTIFICATE NO. 02423
8/1/94
REGISTERED PROFESSIONAL ENGINEER

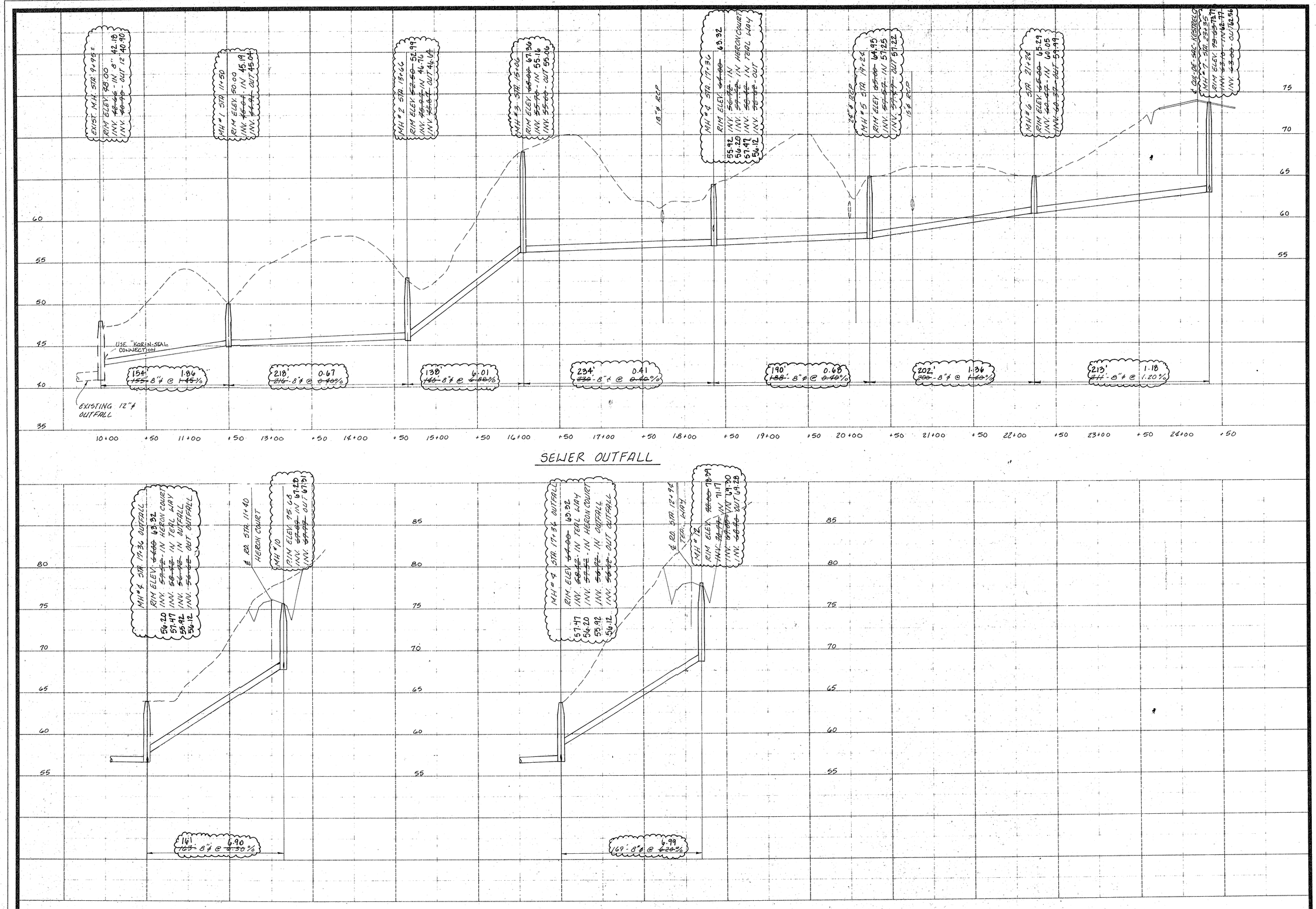
ROAD, WATER, & SEWER PROFILE

HERON RUN SUBDIVISION

OWNER/DEVELOPER: HEATHERSTONE LLC
JAMES CITY COUNTY · VIRGINIA

SCALE	1" = 50' HORIZ 1" = 5' VERT
DESIGNED	TCS
DRAWN	LBA
CHECKED	WDJ
DATE	07-29-94
COMMISSION NO.	1940160
SHEET	C-5 7 OF 11

PC062_HERON_RUN_SUBDIVISION_WET_POND_AT_HERON_PT_TEAL_WAY - 009



SEWER OUTFALL

CONNECTION HERON COURT
SEWER TO OUTFALL

CONNECTION TEAL WAY
SEWER TO OUTFALL

REV. #2 12/29/95 - SANITARY SEWER AS-BUILTS
REV. #1 9/26/94 - PWA REVIEW COMMENTS DATED 9/12/94

FILENAME 94C1-SR.DWG
DATE 7-29-94
PLOT SCALE 1"=2'-0"

ENGINEERS · ARCHITECTS · SURVEYORS
INTERIOR DESIGNERS · PLANNERS

P. O. BOX 7505 WILLIAMSBURG, VIRGINIA 23187 (804)253-0673 (804)874-5015

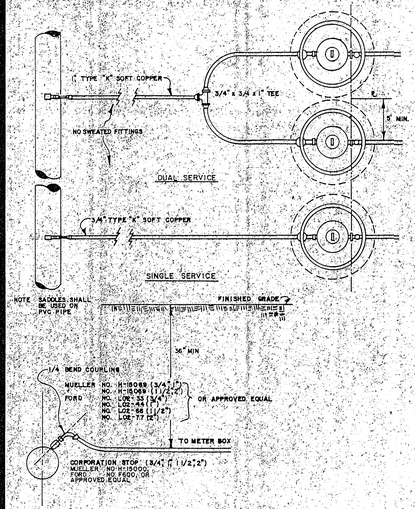
COMMONWEALTH OF VIRGINIA
William H. Johnson, Jr.
CERTIFICATE NO. 8422
CERTIFIED PROFESSIONAL ENGINEER

SEWER PROFILE

HERON RUN SUBDIVISION
OWNER/DEVELOPER: HEATHERSTONE LLC
JAMES CITY COUNTY VIRGINIA

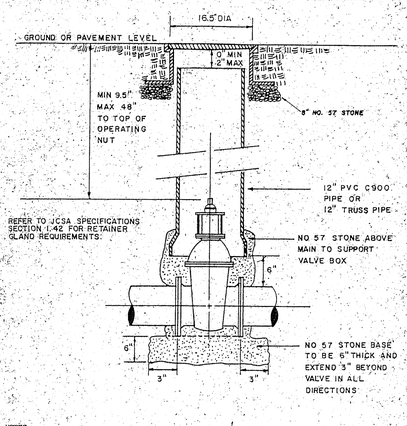
SCALE	1" = 50' HORIZ 1" = 5' VERT
DESIGNED	TCS
DRAWN	LBA
CHECKED	WDJ
DATE	07-29-94
COMMISSION NO.	1940160
SHEET	C-6 8 OF 11

PC062_HERON_RUN_SUBDIVISION_WET_POND_AT_HERON_PT_TEAL_WAY - 010



DUAL & SINGLE SERVICE INSTALLATION

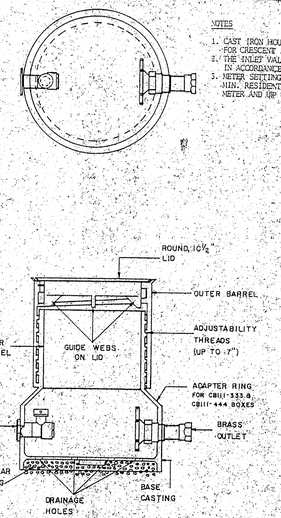
NOT TO SCALE



NOTES
1. MINIMUM COVER ON PIPE WHERE VALVES ARE INSTALLED SHALL BE IN ACCORDANCE WITH SECTION 1.54(3)(a) OF CONSTRUCTION STANDARDS.
2. IF OPERATING NUT IS MORE THAN 48" BELOW GROUND LEVEL, THEN A VALVE STEM EXTENSION SHALL BE INSTALLED IN ACCORDANCE WITH SECTION 1.54(3)(a) OF THE STANDARDS.

TYPICAL VALVE SETTING

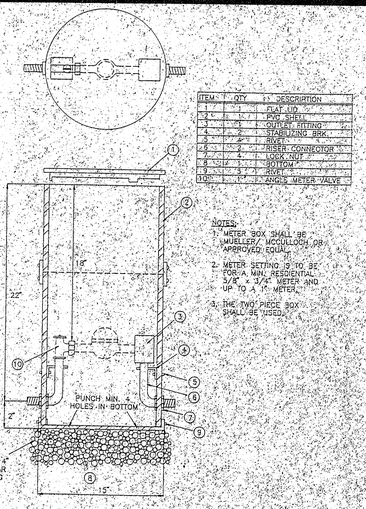
NOT TO SCALE



NOTES
1. CAST IRON HOUSING SHALL BE USED FOR CRESCENT BOXES.
2. THE INLET VALVE SHALL BE BRASS IN ACCORDANCE WITH AWWA C800-84.
3. METER SETTING IS TO BE FOR A MIN. RESIDENTIAL 5/8" x 3/4" METER AND UP TO A 1" METER.

RESIDENTIAL METER SETTING CRESCENT BOX

NOT TO SCALE

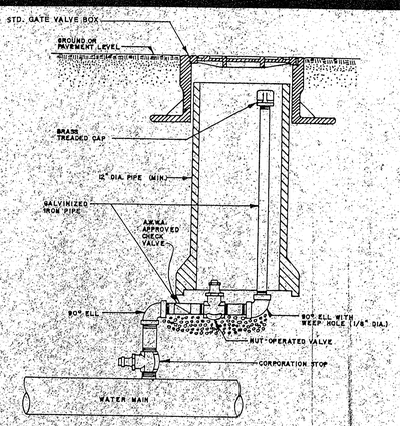


ITEM	QTY	DESCRIPTION
1	1	FLAT LID
2	1	POT STEEL
3	1	SERVICE FITTING
4	2	STABILIZING BRK.
5	1	ROD
6	1	RISER CONNECTOR
7	4	LOCK NUT
8	4	BOTTOM
9	1	ROD
10	1	ANGLE METER VALVE

NOTES
1. METER BOX SHALL BE (MUELLER, MCCULLOCH OR APPROVED EQUAL.
2. METER SETTING IS TO BE FOR A MIN. RESIDENTIAL 5/8" x 3/4" METER AND UP TO A 1" METER.
3. THE TWO PIECE BOX SHALL BE USED.

RESIDENTIAL METER SETTING

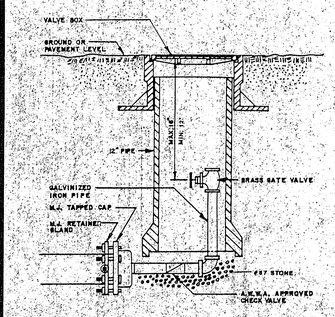
NOT TO SCALE



GENERAL NOTES
1. 2" MATERIAL TO BE USED ON ALL PIPES.
2. TAPPING SADDLES SHALL BE USED ON PVC PIPE. DUCTILE IRON PIPE MAY BE DIRECT TAPPED.

MANUAL AIR RELEASE VALVE

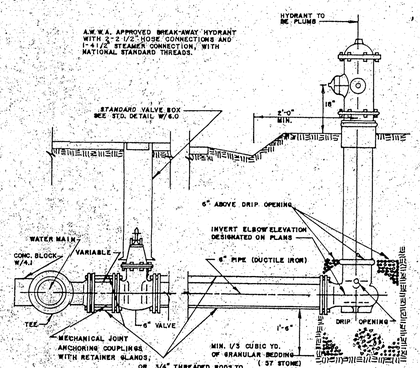
NOT TO SCALE



NOTE:
2. MATERIAL TO BE USED ON ALL MAINS

DEAD-END BLOW-OFF

NOT TO SCALE

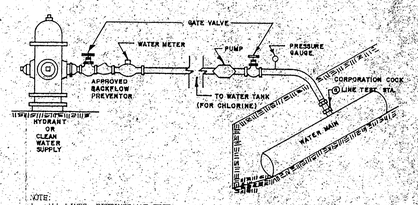


NOTE:
HYDRANTS TO BE LOCATED AS APPROVED BY THE FIRE DEPT.

FIRE HYDRANT SETTING

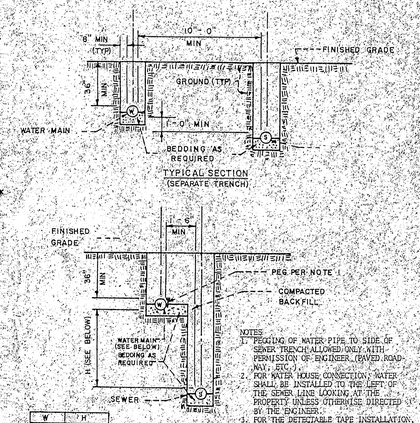
NOT TO SCALE

VOLUME OF WATER PER 100' OF PIPE	
PIPE SIZE	GALLONS
6"	44
8"	261
12"	588
16"	1044



NOTE:
1. ALL LINES, FITTINGS AND TEST APPURTENANCES SHALL BE CAPABLE OF WITHSTANDING MAXIMUM TEST PRESSURE. (SEE SEC. 1.61 OF STANDARDS)
2. PROVIDE ADEQUATE PROTECTION TO ALL LINES, FITTINGS AND TEST APPURTENANCES WHEN TESTING DURING FREEZING WEATHER.
3. PUMP MUST BE CAPABLE OF PRESSURE WITHIN TEST RANGE (PROVIDE FOR PRESSURE RELIEF ON PUMP).
4. DISINFECTION TO BE IN ACCORDANCE WITH SEC. 1.65 OF THE STANDARDS.

METHOD OF TESTING AND DISINFECTING WATER MAINS

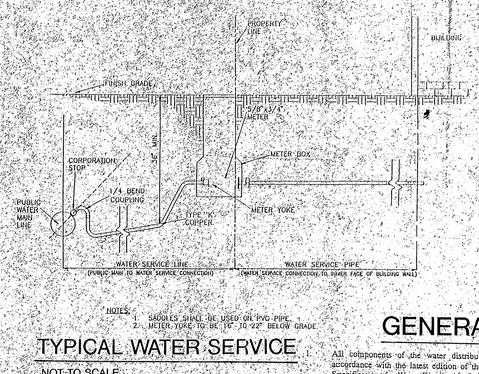


W	H
D.I.	4'-0" (MIN)
COPPER	1'-0" (MIN)

NOTES
1. PEGGING OF WATER PIPE TO SIDE OF SEWER TRENCH ALLOWED ONLY WITH PERMISSION OF ENGINEER. (PAVED ROAD, NAV., ETC.)
2. FOR WATER HOUSE CONNECTION, WATER SHALL BE INSTALLED TO THE LEFT OF THE SEWER LINE LOOKING AT THE PROPERTY UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
3. FOR THE DETECTABLE TAPE INSTALLATION, SEE SPECIFICATIONS.

MINIMUM WATER & SEWER LINE SEPARATION

NOT TO SCALE



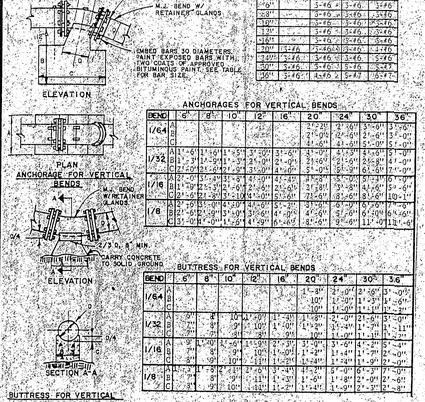
NOTES
1. SADDLES SHALL BE USED ON PVC PIPE.
2. METER YOKE TO BE 16" TO 22" BELOW GRADE

TYPICAL WATER SERVICE

NOT TO SCALE

GENERAL NOTES

1. All components of the water distribution system shall be installed and tested in accordance with the latest edition of the James City Service Authority Standards and Specifications for Water Distribution Systems and the Virginia Waterworks Regulations.
2. The developer's representative shall submit a list of materials for approval to the James City Service Authority prior to commencement of construction.
3. Water mains shall be installed after grading to 6-inch of final grade and prior to placement of base material.
4. All approved Erosion and Sediment Control requirements shall be observed during water main construction.
5. All water mains shall be disinfected and pressure tested, and satisfactory bacteriological samples obtained, in accordance with James City Service Authority standards.
6. After testing is complete and all components of the water system are acceptable to the James City Service Authority, as-built drawings shall be submitted to the Service Authority. No water meters will be installed until as-built drawings are received and checked for accuracy by the James City Service Authority. Any discrepancies noted during the as-built inspection shall be corrected by the developer's representatives within 30 days.
7. Routine periodic inspections during construction will be provided by the James City Service Authority. These inspections do not relieve the developer from his obligation and responsibility for constructing a water distribution system in strict accordance with the Standards and Specifications of the James City Service Authority.
8. Any changes to the final plans shall be approved by the James City Service Authority and shall be accurately indicated on the as-built drawings.
9. All lots shall be provided with water service connections. The connections shall be extended from the main to the property line or easement line, and shall terminate with a yoke in a meter box set at final finished grade. Meters for all lots (units) shall be paid for by the developer or builder and installed by the JCSA.
10. The developer is required to submit water data sheets and shall acquire a certificate to construct prior to commencement of construction.
11. Any required easements, permits and approvals shall be acquired by the developer prior to commencement of water main construction.
12. The water main contractor shall comply with all applicable laws, ordinances, rules, regulations and orders of any public body having jurisdiction. He shall erect and maintain, as required by the conditions and progress of the work, all necessary safeguards for safety and protection. He shall also notify "Miss Utility" prior to performing any underground excavation.



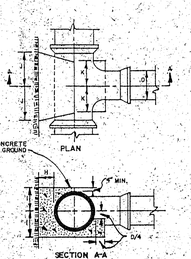
REINFORCING BARS				
SIZE	1/64	1/32	1/16	1/8
6"		3-#6	3-#6	3-#6
8"		3-#6	3-#6	3-#6
10"		3-#6	3-#6	3-#6
12"		3-#6	3-#6	3-#6
16"		3-#6	3-#6	3-#6
20"	3-#6	3-#6	3-#6	3-#6
24"	3-#6	3-#6	3-#6	3-#7
30"	3-#6	4-#6	3-#7	4-#7
36"	3-#6	4-#6	3-#7	6-#7

ANCHORAGES FOR VERTICAL BENDS										
BEND		6"	8"	10"	12"	16"	20"	24"	30"	36"
1/64	A						3'-2"	3'-10"	5'-0"	5'-10"
	B						2'-10"	3'-6"	4'-6"	5'-0"
	C						4'-6"	4'-6"	5'-0"	5'-0"
1/32	A	1'-6"	1'-10"	2'-5"	3'-0"	3'-10"	4'-8"	5'-6"	6'-10"	8'-0"
	B	1'-3"	1'-9"	2'-0"	2'-6"	3'-2"	3'-10"	4'-6"	5'-6"	6'-6"
	C	2'-0"	2'-6"	3'-0"	3'-6"	4'-6"	5'-0"	5'-0"	6'-0"	6'-0"
1/16	A	2'-0"	2'-6"	3'-3"	4'-0"	5'-2"	6'-2"	7'-3"	9'-0"	10'-6"
	B	1'-9"	2'-3"	2'-9"	3'-6"	4'-6"	5'-6"	6'-6"	8'-0"	9'-6"
	C	2'-6"	3'-0"	3'-6"	4'-0"	5'-0"	6'-0"	7'-0"	8'-6"	10'-0"
1/8	A	2'-9"	3'-6"	4'-3"	5'-0"	6'-6"	8'-0"	9'-6"	11'-6"	13'-6"
	B	2'-3"	2'-9"	3'-3"	4'-0"	5'-0"	6'-0"	7'-0"	8'-6"	9'-6"
	C	3'-0"	3'-6"	4'-0"	4'-6"	5'-6"	6'-6"	7'-6"	9'-0"	10'-0"

BUTTRESS FOR VERTICAL BENDS										
BEND		6"	8"	10"	12"	16"	20"	24"	30"	36"
1/64	A						1'-8"	2'-0"	2'-6"	3'-0"
	B						1'-0"	1'-3"	1'-9"	1'-9"
	C						1'-0"	1'-3"	1'-9"	1'-9"
1/32	A	1'-0"	1'-3"	1'-6"	1'-9"	2'-3"	2'-9"	3'-3"	4'-0"	4'-11"
	B	0'-9"	1'-0"	1'-3"	1'-6"	1'-9"	2'-3"	2'-6"	3'-0"	3'-6"
	C	1'-3"	1'-6"	1'-9"	2'-0"	2'-6"	3'-0"	3'-6"	4'-0"	4'-6"
1/16	A	1'-9"	2'-0"	2'-6"	3'-0"	3'-9"	4'-6"	5'-3"	6'-3"	7'-0"
	B	1'-6"	1'-9"	2'-0"	2'-3"	2'-9"	3'-3"	3'-9"	4'-3"	4'-9"
	C	2'-0"	2'-3"	2'-6"	2'-9"	3'-3"	3'-9"	4'-3"	4'-9"	5'-3"
1/8	A	2'-6"	2'-9"	3'-3"	3'-9"	4'-6"	5'-3"	6'-0"	6'-9"	7'-6"
	B	2'-0"	2'-3"	2'-6"	2'-9"	3'-3"	3'-9"	4'-3"	4'-9"	5'-3"
	C	2'-9"	3'-0"	3'-3"	3'-6"	4'-0"	4'-6"	5'-0"	5'-6"	6'-0"

NOTES:
1. ALL CONCRETE TO BE 3000 PSI.
2. BUTTRESS DIMENSIONS SHOWN ARE MINIMUM. DIMENSIONS ARE BASED ON SOIL BEARING PRESSURE OF 3000 PSF AND STATIC WATER PRESSURE IS LESS THAN 3000 PSF. SPECIAL BUTTRESS DESIGN IS REQUIRED.

BUTTRESSES & ANCHORAGES FOR VERTICAL BENDS



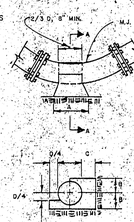
REFER TO JCSA SPECIFICATIONS SECTION 1.41 FOR RETAINER GLAND REQUIREMENTS.

SIZE OF BRANCH									
D	6"	8"	10"	12"	16"	20"	24"	30"	36"
H	8"	9"	10"	(-0"	1'-2"	(-4"	(-6"	(-9"	2'-0"
I	8"	10"	(-0"	(-3"	(-8"	2'-1"	2'-6"	3'-("	3'-9"
J	6"	8"	(-0"	(-0"	(-4"	(-8"	2'-0"	2'-6"	3'-0"
K	6"	8"	8"	8"	10"	(-2"	(-4"	(-6"	(-10"

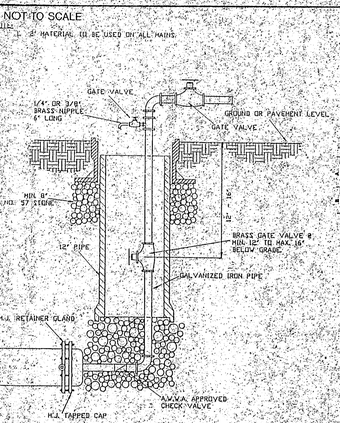
1. ALL CONCRETE TO BE 3000 P.S.I.
2. BUTTRESS DIMENSIONS SHOWN ARE MINIMUM. DIMENSIONS ARE BASED UPON SOIL BEARING PRESSURE OF 3000 P.S.F. AND STATIC WATER PRESSURE OF 150 P.S.I. WHEN PRESSURE EXCEEDS 150 PSI. OR WHERE SOIL BEARING PRESSURE IS LESS THAN 3000 P.S.F. SPECIAL BUTTRESS DESIGN IS REQUIRED.

BUTTRESS FOR TEES

NOT TO SCALE

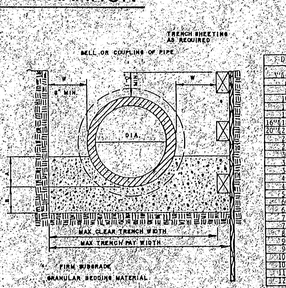


BUTTRESS FOR HORIZONTAL BENDS



CHLORINE ASSEMBLY BLOW-OFF

NOT TO SCALE



O.D.	A	W	B
4"	14"	24"	6"
6"	16"	26"	6"
8"	17"	27"	6"
10"	18"	28"	6"
12"	19"	29"	6"
14"	20"	30"	6"
16"	21"	31"	6"
18"	22"	32"	6"
20"	23"	33"	6"
24"	25"	35"	6"
30"	28"	38"	6"
36"	31"	41"	6"
42"	34"	44"	6"
48"	37"	47"	6"
54"	40"	50"	6"
60"	43"	53"	6"
66"	46"	56"	6"
72"	49"	59"	6"
78"	52"	62"	6"
84"	55"	65"	6"
90"	58"	68"	6"
96"	61"	71"	6"
102"	64"	74"	6"
108"	67"	77"	6"
114"	70"	80"	6"
120"	73"	83"	6"

WHERE SPECIFICALLY REQUIRED, 2500 PSI @ 28 DAYS CONCRETE AND SADDLE BLOCKS SHALL BE USED IN LIEU OF THE GRAVEL CRADLE.

THE GRANULAR MATERIALS FOR BEDDING SHALL BE (ASTM C33-67) WASHED GRAVEL OR CRUSHED STONE FOR 90° AND BALLER.

MAXIMUM CLEAR TRENCH WIDTH SHALL BE 24" PLUS THE OUTSIDE DIAMETER OF THE PIPE.

ELLIPTICAL PIPE SHALL BE BEDDED IN SAND. SEE CONTRACT DRAWINGS FOR AMOUNT OF BEDDING REQUIRED.

BEDDING AND TRENCH WIDTHS

NOT TO SCALE

ENGINEERS · ARCHITECTS · SURVEYORS
INTERIOR DESIGNERS · PLANNERS
P.O. BOX 5088 · WILLIAMSBURG, VIRGINIA 23188 · (804) 253-0673 · (804) 874-9115

STANDARD WATER DETAILS AND NOTES

HERON RUN SUBDIVISION
OWNER/DEVELOPER: HEATHERSTONE LLC
JAMES CITY COUNTY, VIRGINIA

SCALE: AS SHOWN
DESIGNED: JCC
DRAWN: MEH
CHECKED: WDJ
DATE: 07-29-94
1940160
COMMISSION NO.
SHEET C-7 9 OF 11

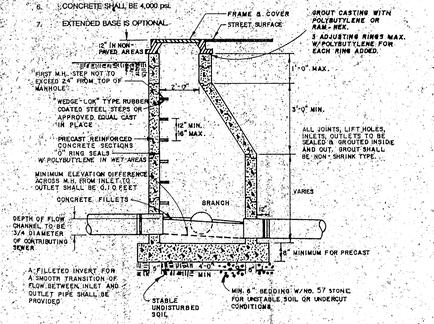
REVISIONS

No.	Date	Description
1	9/26/94	PZ Review COMMENTS DATED 9/13/94

PC062_HERON_RUN_SUBDIVISION_WET_POND_AT_HERON_PT_TEAL_WAY - 011

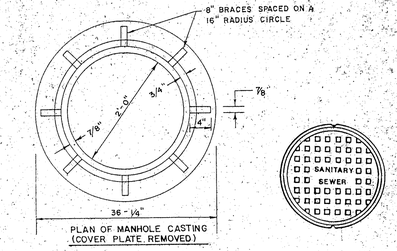
NOTE:

1. MANHOLE STEPS SHALL HAVE A MINIMUM EMBEDMENT OF 3" AND A MAXIMUM PROJECTION OF 6".
2. BOTTOM STEP SHALL BE A MINIMUM OF 5" AND A MAXIMUM OF 16-1/2" ABOVE WORKING LEVEL.
3. STEPS TO BE SET IN VERTICAL ALIGNMENT.
4. MAXIMUM MANHOLE DEPTH TO BE 24'-0".
5. CONNECTION BETWEEN MANHOLE AND SEWER PIPE TO BE FLEXIBLE GASKET.
6. CONCRETE SHALL BE 4,000 psi.
7. EXTENDED BASE IS OPTIONAL.

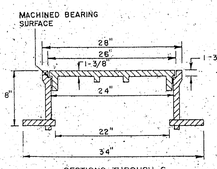


STANDARD MANHOLE

NOT TO SCALE

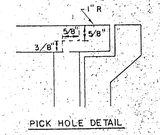


PLAN OF MANHOLE CASTING (COVER PLATE REMOVED)



SECTIONS THROUGH ℄ OF MANHOLE CASTING

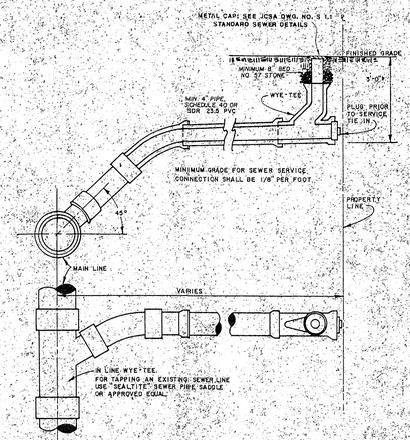
NOTE: THERE WILL BE NO HOLES IN MANHOLE CAST OR LIDS.



PICK HOLE DETAIL

STANDARD MANHOLE CASTING

NOT TO SCALE

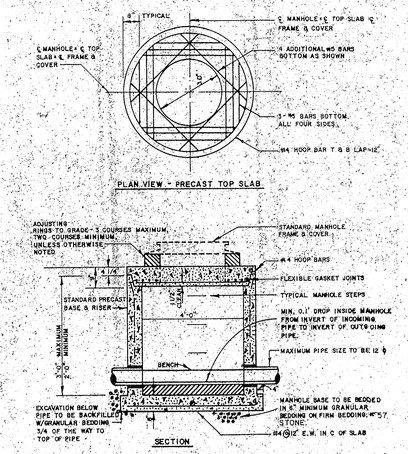


TYPICAL SEWER LATERAL CONNECTION

NOT TO SCALE

GENERAL NOTES

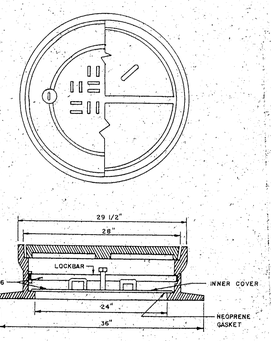
1. All components of the sanitary sewer system shall be installed and tested in accordance with the latest edition of the James City Service Authority Standards and Specifications for Sanitary Sewer Systems and the Virginia Sewerage Regulations.
2. The developer's representative shall submit a list of materials for approval to the James City Service Authority prior to commencement of construction.
3. Sewer lines shall be installed after rough grading and prior to placement of base material.
4. All approved Erosion and Sediment Control requirements shall be observed during sewer line construction.
5. All sewers shall be mirrored and pressure tested in accordance with James City Service Authority standards.
6. After testing is complete and all components of the sewer system are acceptable to the James City Service Authority, as-built drawings shall be submitted to the Service Authority. No wastewater flow shall be allowed to enter the sanitary sewer system until as-built drawings are received and checked for accuracy by the James City Service Authority. Any discrepancies noted, during the as-built inspection, shall be corrected by the developer's representatives within 30 days.
7. Routine periodic inspections during construction will be provided by the James City Service Authority. These inspections do not relieve the developer from his obligation and responsibility for constructing a sanitary sewer system in strict accordance with the standards and specifications of the James City Service Authority.
8. Any changes to the final plans shall be approved by the James City Service Authority and shall be accurately indicated on the as-built drawings.
9. All lots shall be provided with sewer service connections. The connections shall be extended from the main to the property line or easement line, and shall terminate with a wye, fitting, plug and clean out with removable plug and metal cover.
10. The developer is required to submit sewer data sheets and shall acquire a certificate to construct prior to commencement of construction.
11. Any required easements, permits and approvals shall be acquired by the developer prior to commencement of sanitary sewer construction.
12. The sewer main contractor shall comply with all applicable laws, ordinances, rules, regulations and orders of any public body having jurisdiction. He shall erect and maintain, as required by the conditions and progress of the work, all necessary safeguards for safety and protection. He shall also notify "Miss Utility" prior to performing any underground excavation.



NOTE:
EXTENDED BASE IS OPTIONAL.

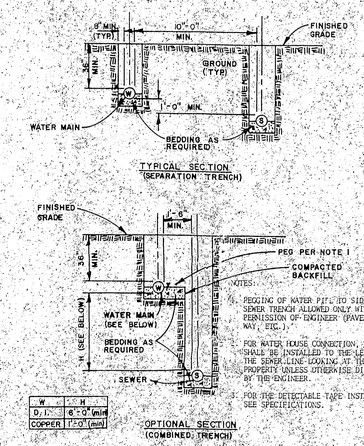
SHALLOW MANHOLE

NOT TO SCALE



WATERTIGHT MANHOLE FRAME & COVER

NOT TO SCALE

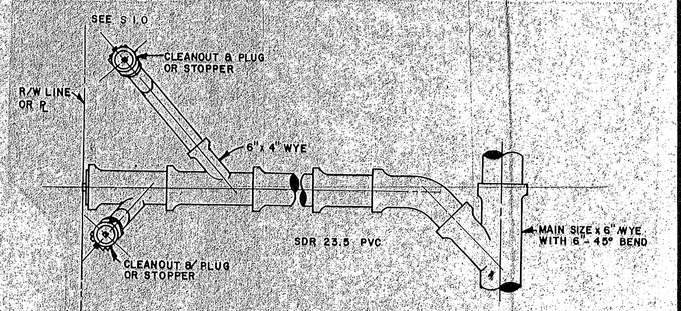


NOTES:

1. PEGGING OF WATER PIPE TO SIDE OF SEWER TRENCH ALLOWED ONLY WITH PERMISSION OF ENGINEER (PAVED ROADWAY, ETC.).
2. FOR WATER HOUSE CONNECTION, WATER SHALL BE INSTALLED TO THE LEFT OF THE SEWER LINE LOOKING AT THE PROPERTY UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
3. FOR THE DETECTABLE TAPE INSTALLATION, SEE SPECIFICATIONS.

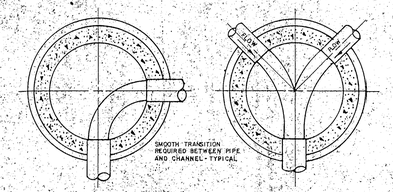
MINIMUM WATER & SEWER LINE SEPARATION

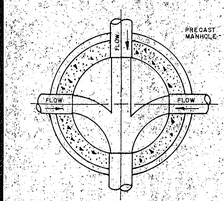
NOT TO SCALE



TYPICAL 6" LATERAL SERVING TWO DWELLINGS

NOT TO SCALE



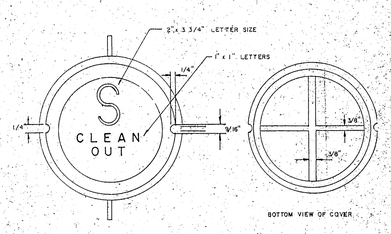


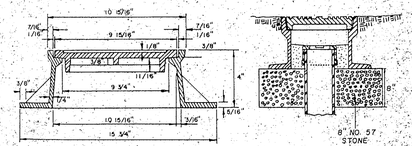
CHANNEL LINING NOTES:

1. CHANNEL LININGS SHALL BE CONCRETE, 4" MINIMUM THICK.
2. CHANNEL LINING WIDTH SHALL MATCH INSIDE DIAMETER OF INCOMING AND OUTGOING PIPES. BLEND CHANNEL LINING FOR SMOOTH CONTOUR BETWEEN PIPES.
3. CONCRETE CHANNELS SHALL BE FORMED AS SHOWN AND SHALL HAVE 3000 PSI AT 28 DAYS.

PLANS FOR MANHOLES

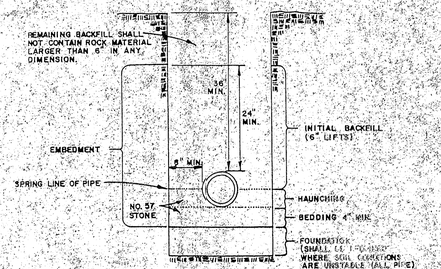
NOT TO SCALE





CLEANOUT COVER ASSEMBLY

NOT TO SCALE



1. OPEN CUTS IN PAVED AREAS SHALL BE BACKFILLED ENTIRELY WITH NO. 57 STONE.
2. DUCTILE IRON PIPE MAY BE INSTALLED WITH LIMITED BEDDING AS APPROVED BY THE JCSA.
3. WHERE ROCK IS ENCOUNTERED DUCTILE IRON PIPE SHALL BE INSTALLED ON A MINIMUM 6" BEDDING OF NO. 57 STONE.

* THOROUGHLY COMPACTED BY HAND OR APPROVED MECHANICAL TAMPER

SEWER TRENCH INSTALLATION

NOT TO SCALE

ENGINEERS · ARCHITECTS · SURVEYORS
INTERIOR DESIGNERS · PLANNERS
P.O. BOX 3505 WILLIAMSBURG, VIRGINIA 23187 (804) 253-0673 (804) 874-5015

STANDARD SEWER DETAILS AND NOTES

HERON RUN SUBDIVISION
OWNER/DEVELOPER: HEATHERSTONE, LLC
JAMES CITY COUNTY VIRGINIA

SCALE	AS SHOWN
DESIGNED	JCC
DRAWN	MEH
CHECKED	WDJ
DATE	07-29-94
COMMISSION NO.	1940160
SHEET	C-8
	10 OF 11

REVISIONS

No.	Date	Description
1.	9/26/94	PER REVIEW COMMENTS DATED 9/13/94
1.	7/3/96	PER JCSA COMMENTS DATED 6/27/96

PC-1

CONCRETE PIPE CULVERT CRUSHING STRENGTH (LBS. PER LIN. FT. ULTIMATE STRENGTH, OR CLASS)

DIAM. (IN)	AREA (SQ FT)	METHOD A BEDDING: NON REINF	III	IV	V	METHOD B BEDDING B1: V	B2: VI	DIAM. (IN)
		MAXIMUM HEIGHT OF COVER IN FEET – STRENGTH OR CLASS						
12	0.8	1800 / 14'	14'	19'	29'	USE BETWEEN 30' and 60' B1	USE BETWEEN 60' and 90' B2	12
15	1.2	2125 / 14'	14'	19'	29'			15
18	1.8	2400 / 14'	14'	20'	29'			18
21	2.4	2700 / 13'	14'	20'	29'			21
24	3.1	3000 / 13'	14'	20'	29'			24
27	4.0		14'	20'	29'			27
30	4.9		14'	20'	29'			30
33	5.9		14'	20'	29'			33
36	7.1		14'	20'	30'			36
42	9.6		14'	21'	30'			42
48	12.6		14'	21'	30'			48
54	15.9		14'	21'	30'			54
60	19.6		14'	21'	30'			60
66	23.8		14'	21'	30'			66
72	28.3		14'	21'	30'			72
78	33.2		14'	21'	30'			78
84	38.5		14'	21'	30'			84
90	44.4		14'	21'	30'			90
96	50.3		14'	21'	30'			96
102	56.7		14'	21'	30'			102
108	63.6		14'	21'	30'			108

Heights of cover shown in table are for finished construction.
To protect pipe during construction, minimum heights of cover prior to allowing construction traffic to cross installation are to be Dia./2 or 3.0' whichever is the greater. This cover shall extend the full length of the pipe culvert. The approach fill ramp is to extend a minimum of 10(Dia.+3') on each side of the culvert, or to the intersection with a cut.
Minimum finished height of cover to be Dia./2 or 2.0' whichever is the greater, except pipe under entrances, median crossovers, street and secondary connections where a 9" min. will be permitted.

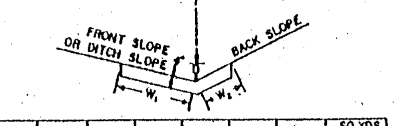
Sheet 1 of 17

CONCRETE PIPE
CLASS TABLE FOR H-20 LIVE LOAD
VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION REFERENCE 302 232

107.05

OUTSIDE ROAD DITCHES

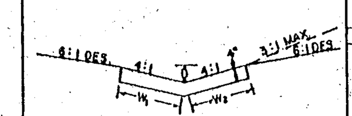


TYPE	D	FRONT SLOPE	BACK SLOPE	W_1	W_2	K	SQ YDS SURFACE AREA/L.F.
A1	6"	6:1	4:1	3'-0"	2'-1"	48	0.565
	8"	6:1	4:1	4'-1"	2'-9"	104	0.759
A2	6"	6:1	3:1	3'-0"	1'-7"	42	0.509
	8"	6:1	3:1	4'-1"	2'-1"	92	0.685
A3	6"	6:1	2:1	3'-0"	1'-2"	38	0.463
	8"	6:1	2:1	4'-1"	1'-6"	82	0.620
B1	6"	4:1	4:1	2'-1"	2'-1"	38	0.463
	8"	4:1	4:1	2'-9"	2'-9"	82	0.611
B2	8"	4:1	3:1	2'-9"	2'-1"	72	0.537
	10"	4:1	3:1	3'-5"	2'-8"	130	0.676
B3	8"	4:1	2:1	2'-9"	1'-6"	60	0.472
	10"	4:1	2:1	3'-5"	1'-10"	111	0.583
B4	8"	4:1	11/2:1	2'-9"	1'-2"	55	0.435
	10"	4:1	11/2:1	3'-5"	1'-6"	101	0.546
C1	8"	3:1	2:1	2'-1"	1'-6"	50	0.398
	10"	3:1	2:1	2'-8"	1'-10"	92	0.500
C2	10"	3:1	11/2:1	2'-8"	1'-6"	80	0.463
C3	10"	3:1	1:1	2'-8"	1'-2"	70	0.426

MEDIAN DITCH

PG-2A

TYPE D

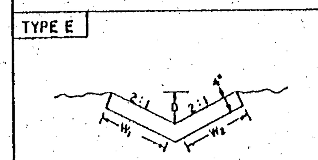


D=DEPTH	W_1	W_2	SQ. YDS. SURFACE AREA PER LIN. FT.
8"	2'-9"	2'-9"	0.611

K=82

DITCH AT TOE OF FILL OR TOP OF CUT

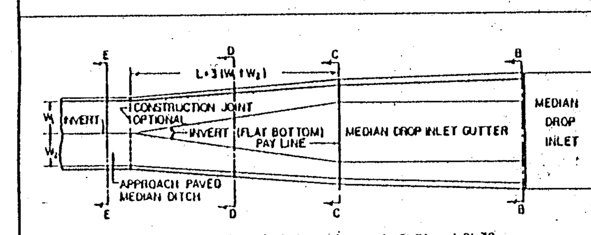
TYPE E



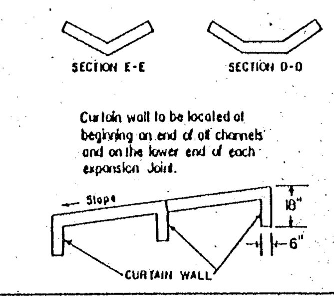
D=DEPTH	W_1	W_2	SQ. YDS. SURFACE AREA PER LIN. FT.
12"	2'-3"	2'-3"	0.500

K=115

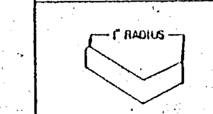
PLAN FOR TRANSITION OF PAVED MEDIAN DITCH TO MEDIAN DROP INLET GUTTER



NOTES: For sections C-C and B-B see Standards DI-7A and DI-7B. Transitional portion of paved ditch to be paid for at the same price bid per sq. yd. for approach paved median ditch. St'd PG-2A ditches to be Class A3 Concrete.



ALTERNATE METHOD OF FORMING DITCHES



NOTE: All ditches may be constructed with vertical sides at the option of the contractor.

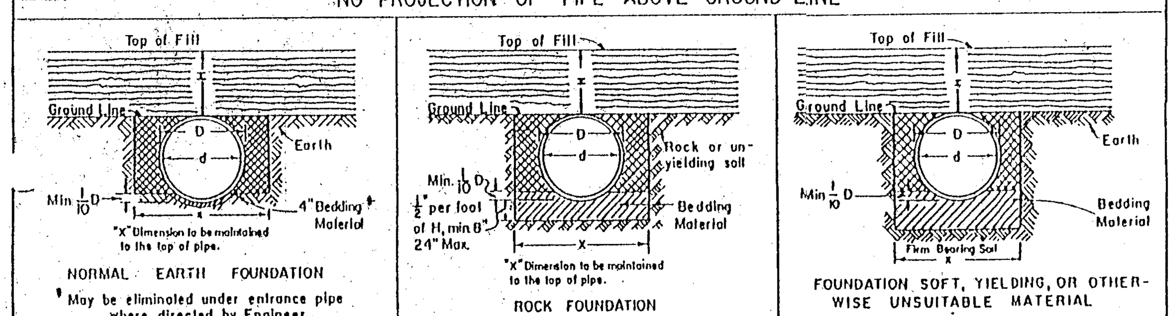
SPECIFICATION REFERENCE 502

STANDARD PAVED DITCHES
VIRGINIA DEPARTMENT of TRANSPORTATION

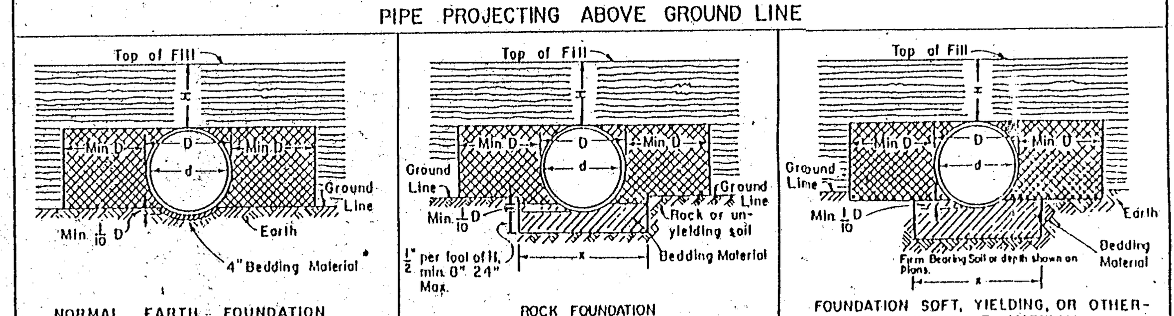
109.01

PB-1

NO PROJECTION OF PIPE ABOVE GROUND LINE



PIPE PROJECTING ABOVE GROUND LINE



Culverts less than d = 36"
x = D + 24"

Culverts where d = 36" and over
x = D + 36"

Method "A" Pipe Bedding shall be used as follows unless otherwise noted on plans:

RIGID PIPE
Fills up to 30' (No projection of pipe above ground line.)
Fills up to 30' (Pipe projection above ground line)

FLEXIBLE PIPE
As shown on tables
H = Height of cover measured from top of drainage structure to finished grade.

- Bedding material in accordance with Section 302.02 of the Road and Bridge Specifications.
- Backfill material in accordance with Section 302.02 of the Road and Bridge Specifications.
- Embankment

Bedding requirements detailed under Method A, Projecting Condition, are applicable to Method B1 and B2.

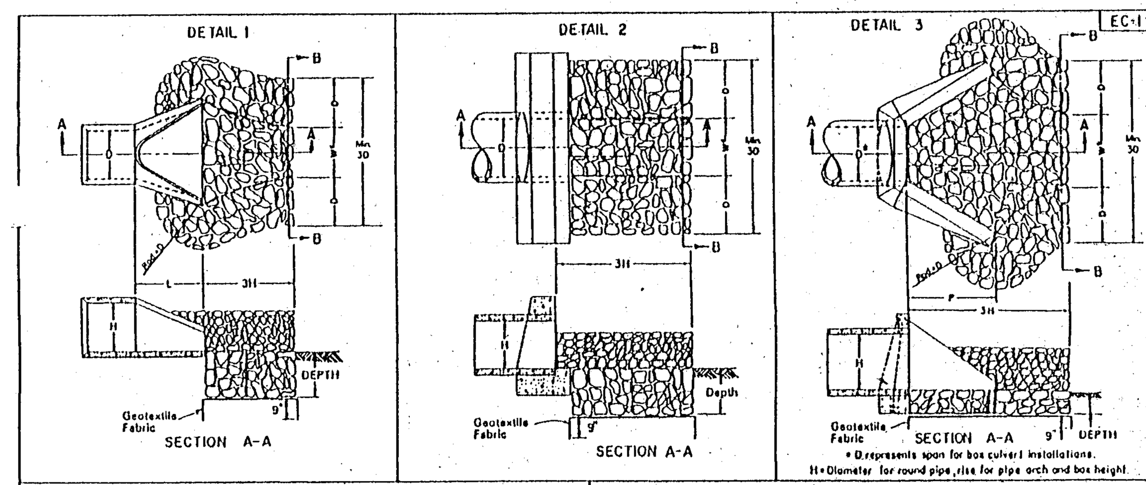
INSTALLATION OF PIPE CULVERTS AND STORM SEWERS
PIPE BEDDING – METHOD "A" (FILLS UP to 30')
VIRGINIA DEPARTMENT OF TRANSPORTATION

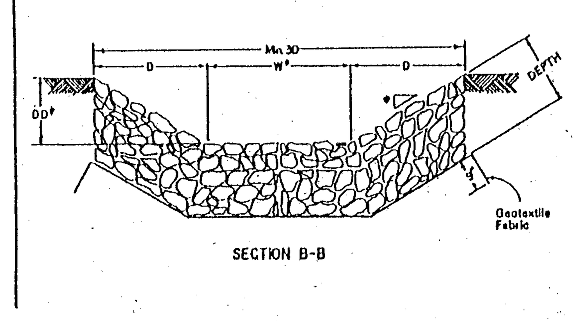
Sheet 1 of 4

SPECIFICATION REFERENCE 302 303

107.01

EC-1





Use Typical Section shown on plans or normal side slope, bottom width, and depth of channel, ditch or natural ground.

NOTES

For multiple line installations Dimension D is to govern the protection outside the channel width (W).
On any Secondary Roads installation requiring erosion control stone where no endwall or endsection is specified on plans, construction is to be in accordance with Detail 2 shown above.

Geotextile Fabric to be installed under all erosion control stone in accordance with the specifications.

Dry Rip Rap	MIN. DEPTH Rip Rap
Class I	2'
Class II	3'

SPECIFICATION REFERENCE 204, 303 245 414

STONE FOR EROSION CONTROL
VIRGINIA DEPARTMENT of TRANSPORTATION

114.01

PB-1

All bedding requirements detailed under Method "A", Projecting Condition, are to be followed in addition to those described hereon for Method "B".

Method "B1" or "B2" Pipe Installation shall be used as follows, unless otherwise noted on plans:

Rigid Pipe
B1 - Fills from 30' to 60'
B2 - Fills from 60' to 90'

Flexible Pipe
Method "B" Bedding will not be used for flexible pipe unless specifically called for on the plans.

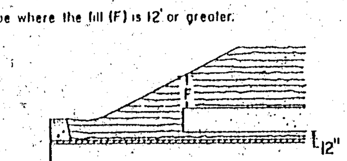
Culverts less than d = 36", x = D + 12" Min., D + 24" Max.
Culverts when d = 36" and over, x = D + 36"

- Bedding material in accordance with Section 302.02 of the Road and Bridge Specifications.
- Backfill material in accordance with Section 302.07 of the Road and Bridge Specifications.
- Embankment
- Compressible material

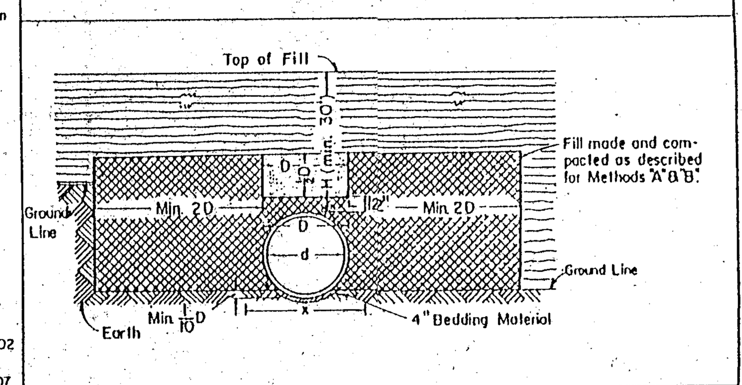
In case of rock or soft or otherwise unsuitable foundation material, the method shown for Method "A", Projecting Condition, must be followed, in addition to the above and as set forth in the specification.

H = Height of cover measured from top of drainage structure to finished grade.

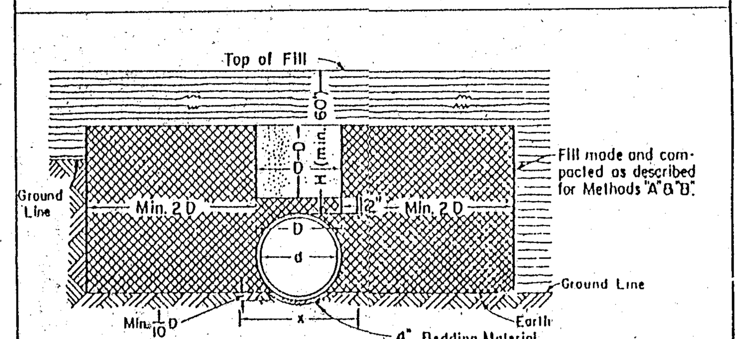
The compressible material is to be confined to the portion of pipe where the fill (F) is 12' or greater.



METHOD B1 (FILLS 30' to 60')



METHOD B2 (FILLS 60' to 90')



FOR SINGLE LINE INSTALLATION ONLY, NOT TO BE USED FOR MULTIPLE LINE CULVERTS

SPECIFICATION REFERENCE 302 303

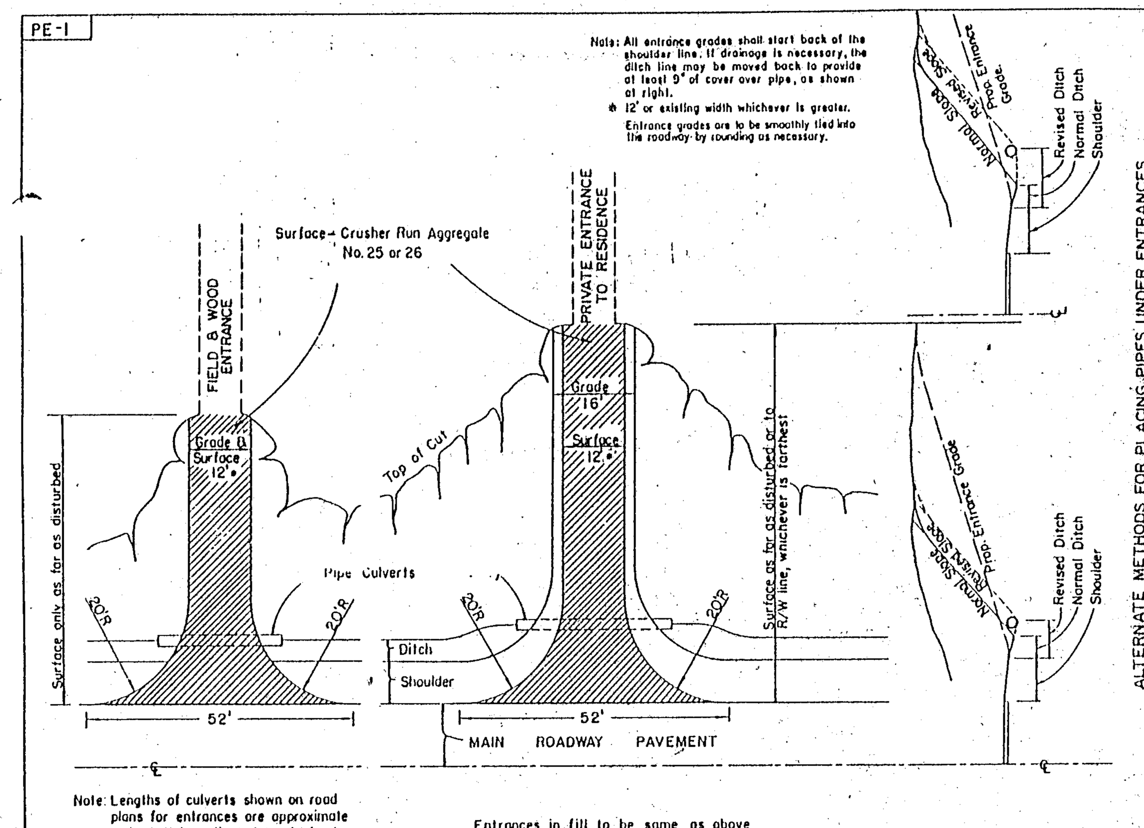
INSTALLATION OF PIPE CULVERTS AND STORM SEWERS
PIPE BEDDING-METHOD "B" (INDUCED TRENCH)
VIRGINIA DEPARTMENT OF TRANSPORTATION

Sheet 2 of 4

107.02

PE-1

Note: All entrance grades shall start back of the shoulder line. If drainage is necessary, the ditch line may be moved back to provide at least 9" of cover over pipe, as shown at right.
12' or existing width whichever is greater.
Entrance grades are to be smoothly tied into the roadway by rounding as necessary.



Note: Lengths of culverts shown on road plans for entrances are approximate and shall be adjusted to obtain above roadway widths.

Entrances in fill to be same as above except location of culvert (when necessary).

MINIMUM 15" RCP, LARGER SIZE
PIPE AS WARRANTED.
24 FOOT MINIMUM LENGTH

STANDARD PRIVATE ENTRANCES
VIRGINIA DEPARTMENT of TRANSPORTATION

SPECIFICATION REFERENCE 512

60202

VDOT

GENERAL NOTES

____ All materials and construction within the public right of way shall be in accordance with current Virginia Department of Transportation's specifications and standards.
____ Permits must be obtained from the Virginia Department of Transportation BEFORE construction is started within the existing right of way.
____ Prior to any construction, the contractor shall consult the engineer and verify the approval of the plans by the various agencies.
____ The contractor shall verify the elevations of all points of connection or proposed work to existing curbs, sanitary lines, water lines, etc., prior to construction.
____ 5 When soils occur that are unsuitable for foundations, subgrades, or other roadway purposes, the contractor shall be required to excavate such material below the grade shown on the plans. The areas so excavated shall be backfilled with suitable material and compacted in accordance with VDOT specifications. The contractor shall immediately inform the engineer upon discovery of the unsuitable material. Concurrence of the developer shall be obtained before additional on-site work is undertaken.
____ 6 All storm sewer pipe shall be reinforced tongue and grove concrete pipe in accordance with ASTM-C-76 or alternative pipe that has been approved on the plans. Pipe within the right of way shall be a minimum CL-111 or greater in accordance with VDOT standards 107.05 and specifications 232 and 302.
____ 7 Temporary drainage during construction is to be provided by the contractor to relieve areas that may cause damage to roadways or adjacent property.
____ 8 All concrete shall be class A3-AE (air entrained 3,000 PSI).
____ 9 Curb and gutter shall have 4" of aggregate base 21B under the curb and gutter and aggregate shall extend 1' beyond the back of the curb.
____ 10 All curb and gutter shall have a standard gutter entrance in accordance with VDOT standards.
____ 11 All entrances are to be built in accordance with VDOT standards.
____ 12 The developer is responsible for furnishing and installing stop signs at street intersections.
____ 13 Design or specified materials changes from the approved plans need to be re-submitted to VDOT. A letter needs to accompany the revised plans and/or drainage calculations which shall be submitted to VDOT for review and approval by the resident engineer.
____ 14 The contractor/sub-contractor shall have a current copy of VDOT's "Road and Bridge Specifications" and "Road and Bridge Standards" on the project.
____ 15 VDOT is to receive written notification 48 hours prior to the start of any work.
____ 16 The contractor shall be responsible for locating and protecting all utilities, whether or not shown on the plans, and shall repair at his own expense all utilities damaged by construction. Miss Utility must be contacted at 1-800-552-7001 72 hours prior to the beginning of construction.
____ 17 All utility pedestalls, cabinets, fire hydrants, and street lights shall be located a minimum of 9.5' from the edge of pavement adjacent to the right of way line on curb and gutter streets and/or located behind the ditch line on open ditch streets. Pedestals and cabinets should be located at the property lines between lots. Where required, fire hydrant crossings shall have a minimum of 15" of RCP or larger, as warranted in open roadside ditches and have 8' length.
____ 18 All storm sewer pipes, drop inlets, and curb inlets shall be cleaned of debris and eroded material during last stages of construction.
____ 19 The contractor shall be responsible for replacing, with matching materials, any pavement, driveways, walks, curbs, etc., that must be cut or that are damaged during construction.
____ 20 Any errors, conflicts, or discrepancies in this plan shall be reported to the engineer for resolution before proceeding with the work.
____ 21 Compaction reports, with proctor, are required for subgrade, subbase, base, surface course, culverts, drainage structures, and utilities within the right of way by a certified materials test lab in accordance with VDOT specifications and standards.
____ 22 Installation of pipe culverts, storm sewers, and drainage structures shall have bedding material in accordance with VDOT specifications and standards. Backfill shall be suitable material free of debris, tree roots, and excess moisture, and compacted.
____ 23 All roadside ditches shown as paved on plans are to be paved in accordance with the standard typical section as shown on the plans, unless otherwise directed by the resident engineer, in writing. Any additional paving of the ditches, other than those shown on the road plans will be determined prior to acceptance of the roads into the VDOT secondary road system.
____ 24 VDOT and county approval of subdivision road plans does not preclude the right to add additional facilities.
____ 25 VDOT approval of these plans will expire three years from the date of approval.
____ 26 Clearing and grubbing shall be completed within the right of ways, and indicated on the layout plan.
____ 27 The subgrade must be approved by VDOT prior to placement of base.
____ 28 Base must be approved by VDOT for depth, template, and compaction before surface is applied.
____ 29 All utilities are to be in place prior to laying base material.
____ 30 An actual copy of the CBR report is to be submitted to VDOT prior to approval of the the pavement typical design. If the CBR values are less 10, the developer will be required to submit for our approval, his proposed method of construction.
____ 31 Paved ditches may be required where field conditions warrant. Generally, all ditches with slopes exceeding 3% or 1% or less shall be paved unless otherwise approved by the engineer, owner, VDOT, and the local governing body.
____ 32 All erosion and sediment control measures shall be the responsibility of the road contractor.
____ 33 All vegetation and overburden to be removed from shoulder to shoulder prior to the condition of subgrade.
____ 34 Certification and source of materials are to be submitted to VDOT of all materials and be in accordance with the "Road and Bridge Specifications" and "Road and Bridge Standards."

REVISIONS

No.	Date	Description
1	9/26/94	PER REVIEW COMMENTS DATED 9/13/94

ENGINEERS · ARCHITECTS · SURVEYORS
INTERIOR DESIGNERS · PLANNERS
P.O. BOX 3505, WILLIAMSBURG, VIRGINIA 23187 (804) 253-0673 (804) 874-5015

VDOT STANDARD DETAILS AND NOTES

HERON RUN SUBDIVISION
OWNER/DEVELOPER: HEATHERSTONE LLC
JAMES CITY COUNTY VIRGINIA

SCALE AS SHOWN
DESIGNED VDOT
DRAWN MEH
CHECKED WDJ
DATE 07-29-94
1940160
COMMISSION NO.
SHEET
C-9
11 OF 11

169805

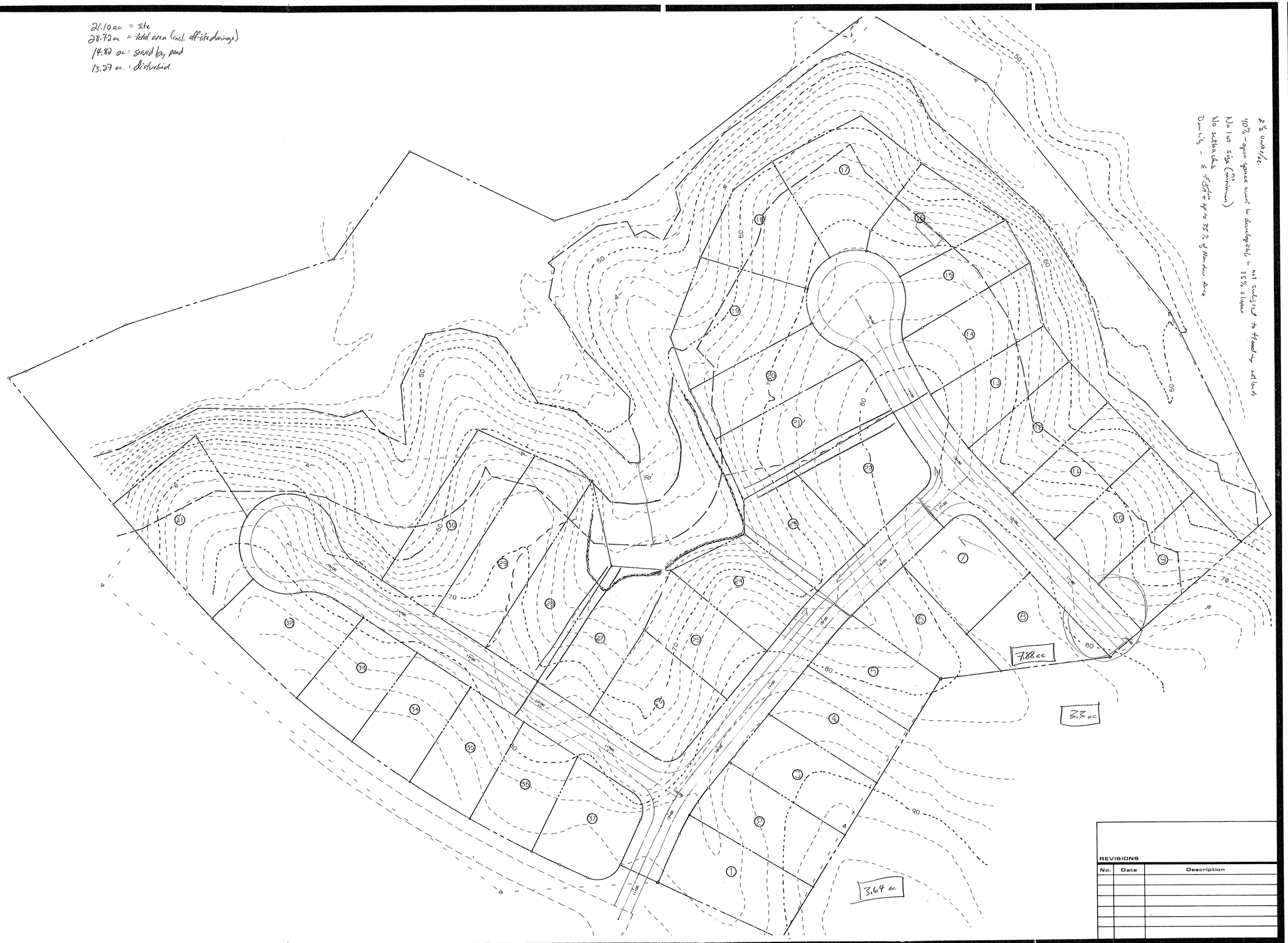
PC062_HERON_RUN_SUBDIVISION_WET_POND_AT_HERON_PT_TEAL_WAY - 013

1) Problem w/ 30' criteria on lot

2) Look @ cluster possibly

21.10 ac = site
28.72 ac = total area (incl. off-site drainage)
14.80 ac = second bay pond
13.27 ac. = disturbed

2½ units/ac.
40% open space must be developable – not subject to flooding or wetlands
No lot size (minimum)
No setbacks
Density – ≤ 7 units up to 35% of Max dev. area



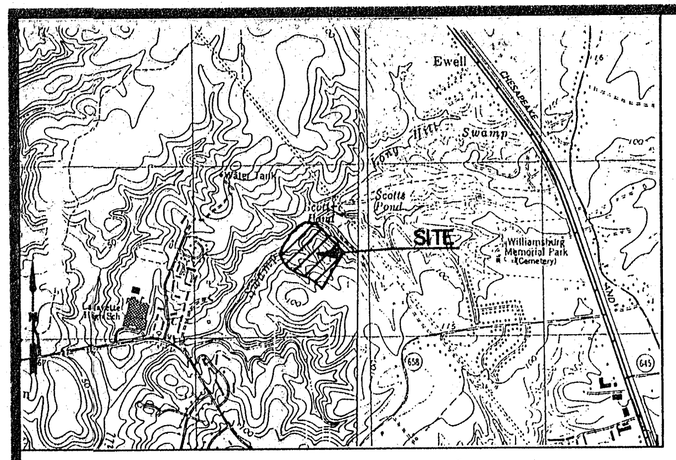
REVISIONS

No.	Date	Description

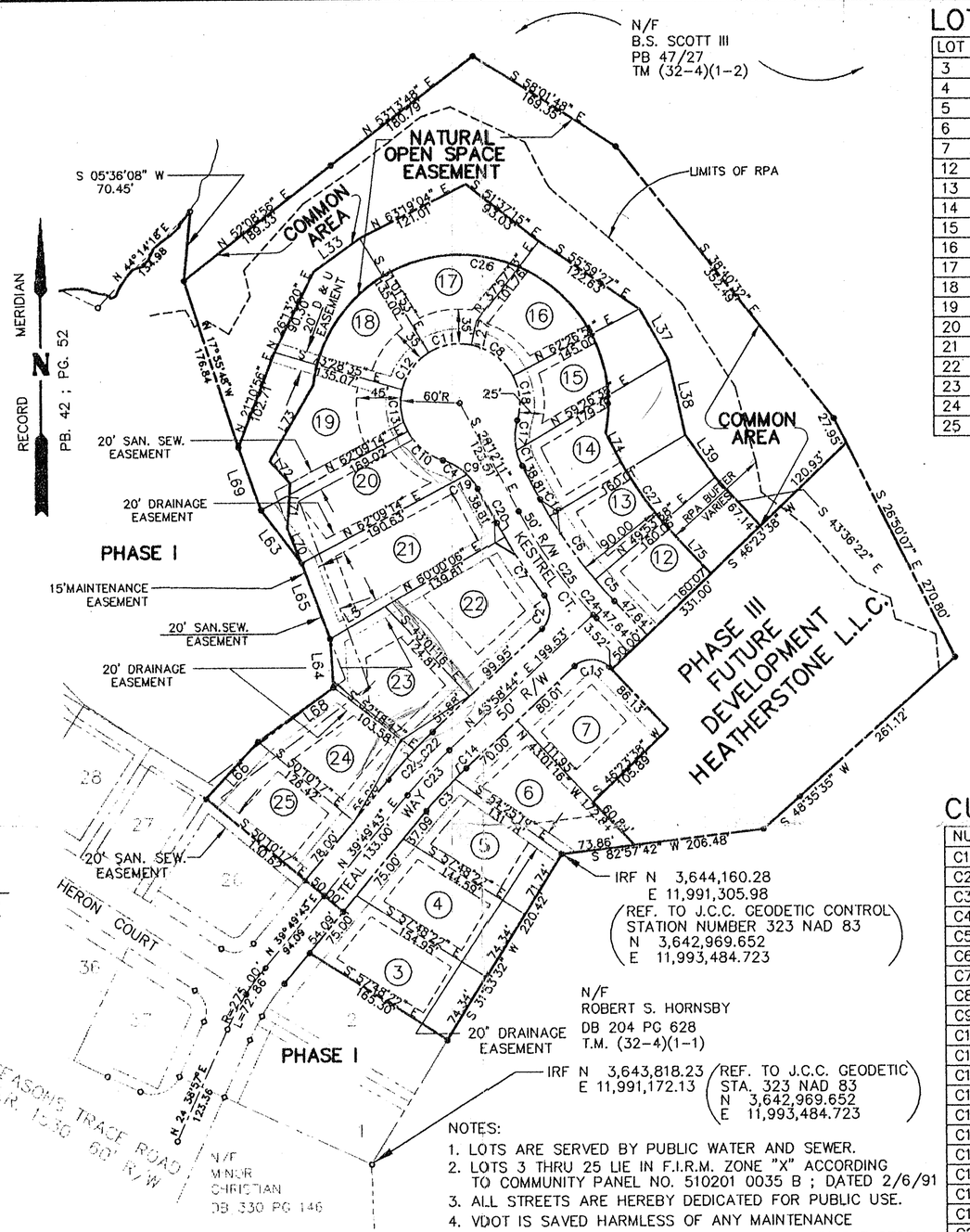
ENGINEERS · ARCHITECTS · SURVEYORS
INTERIOR DESIGNERS · PLANNERS
P.O. BOX 3505 WILLIAMSBURG, VIRGINIA 23187 (804) 253-0673 (804) 874-5015

SCALE
DESIGNED
DRAWN
CHECKED
DATE
COMMISSION NO.
SHEET
OF

169805



VICINITY MAP 1"= 2000'



LOT AREAS

LOT #	SQUARE FEET	ACRES
3	11,903	0.27
4	11,133	0.26
5	10,517	0.24
6	10,721	0.25
7	11,604	0.27
12	11,547	0.27
13	10,575	0.24
14	12,640	0.29
15	10,050	0.23
16	11,364	0.26
17	16,805	0.39
18	13,060	0.30
19	16,050	0.37
20	11,792	0.27
21	15,268	0.35
22	14,006	0.32
23	11,268	0.26
24	10,591	0.24
25	10,025	0.23

LINE DATA

NUMBER	DIRECTION	DISTANCE
L27	N 11°53'33" E	25.00'
L33	N 54°21'00" E	57.92'
L37	S 29°35'12" E	58.92'
L38	S 12°26'50" E	77.87'
L39	S 35°19'52" E	52.44'
L63	N 37°12'08" W	67.66'
L64	N 03°41'28" W	48.95'
L65	N 20°25'00" W	81.45'
L66	N 42°54'16" E	78.11'
L68	N 54°52'30" E	94.07'
L69	N 19°36'24" W	67.16'
L70	N 22°12'21" W	37.65'
L71	N 03°43'58" E	46.78'
L72	N 43°40'27" W	29.95'
L73	N 30°17'18" E	88.49'
L74	S 28°12'11" E	27.21'
L75	S 43°36'22" E	47.67'

TOTAL NO. OF LOTS PHASE II = 19
TOTAL AREA OF PHASE II = 363,798 S.F./ 8.35 ACRES
LOT AREA = 230,927 S.F./ 5.30 ACRES
RIGHT OF WAY = 42,645 S.F./ 0.98 ACRES
NATURAL OPEN SPACE EASEMENT = 133,583 S.F./ 3.07 ACRES
COMMON AREA = 90,167 S.F./ 2.07 ACRES

ZONING : R2
TAX MAP : (32-1) (1-11)
BUILDING SETBACK :
FRONT = 25'
REAR = 35'
SIDE = 10'

CURVE DATA

NUMBER	DELTA	RADIUS	ARC	TAN	CHORD	CHORD BEARING
C1	15°34'36"	60.00	16.31	8.21	16.26	S 20°24'53" E
C2	04°20'20"	525.00	39.76	19.89	39.75	S 41°59'53" W
C3	05°14'32"	475.00	43.46	21.75	43.45	S 42°26'59" W
C4	27°19'40"	60.00	28.62	14.59	28.35	N 59°26'23" W
C5	03°31'58"	475.00	29.29	14.65	29.28	S 41°50'24" E
C6	09°33'02"	475.00	79.18	39.68	79.09	S 35°17'53" E
C7	07°48'32"	525.00	71.55	35.83	71.50	N 33°52'21" W
C8	50°33'18"	60.00	52.94	28.33	51.24	S 52°49'48" E
C9	44°54'02"	60.00	47.02	24.79	45.83	N 50°39'12" E
C10	45°15'27"	60.00	47.39	25.01	46.17	N 50°28'29" W
C11	43°24'19"	60.00	45.45	23.88	44.37	N 80°11'24" E
C12	45°20'00"	60.00	47.47	25.06	46.24	N 35°49'14" E
C13	41°00'00"	60.00	42.94	22.43	42.02	S 07°20'46" E
C14	01°54'29"	475.00	15.82	7.91	15.82	S 46°01'30" W
C15	89°24'53"	25.00	39.01	24.75	35.17	N 88°18'49" W
C16	02°19'11"	475.00	19.23	9.62	19.23	S 29°21'47" E
C17	29°19'26"	60.00	30.71	15.70	30.37	S 02°02'08" W
C18	44°15'00"	60.00	46.34	24.39	45.20	S 05°25'39" E
C19	17°34'22"	60.00	18.40	9.27	18.33	N 36°59'22" W
C20	01°45'54"	525.00	16.17	8.09	16.17	N 29°05'08" W
C21	84°45'22"	25.00	36.98	22.81	33.70	N 04°36'04" E
C22	02°48'41"	525.00	25.76	12.88	25.76	N 45°34'24" E
C23	07°09'01"	500.00	62.40	31.24	62.36	N 43°24'14" E
C24	00°36'57"	500.00	5.37	2.69	5.37	N 43°17'54" W
C25	14°47'14"	500.00	129.04	64.88	128.69	N 35°35'48" W
C26	184°33'52"	150.00	483.19		299.76	S 80°32'27" E
C27	15°24'11"	385.00	103.50	52.06	103.19	N 35°54'17" W

OWNER'S CERTIFICATE

THE SUBDIVISION OF LAND SHOWN ON THIS PLAT AND KNOW AS HERON RUN – PHASE I IS WITH FREE CONSENT AND IN ACCORDANCE WITH THE DESIRES OF THE UNDERSIGNED OWNERS,PROPRIETORS AND OR TRUSTEES.

12-19-95 Thomas R Tucker
DATE

DATE

DATE

CERTIFICATE OF NOTARIZATION

STATE OF VIRGINIA
CITY/~~COUNTY~~ OF Williamsburg I, Patricia L. Gaskins A NOTARY PUBLIC IN AND FOR THE CITY/~~COUNTY~~ AND STATE AFORESAID, DO HEREBY CERTIFY THAT THE PERSON(S) WHOSE NAMES ARE SIGNED TO THE FOREGOING WRITING HAVE ACKNOWLEDGED THE SAME BEFORE ME IN THE CITY/~~COUNTY~~ AFORESAID. GIVEN UNDER MY HAND THIS 19th DAY OF December, 19 95 MY COMMISSION EXPIRES 7.31.99

Patricia L. Gaskins
NOTARY PUBLIC

CERTIFICATE OF SOURCE OF TITLE

THE PROPERTY SHOWN ON THIS PLAT WAS CONVEYED BY ROBERT S. HORNSBY TO HEATHERSTONE L.L.C. BY DEED DATED 11/14/1994 AND RECORDED IN THE OFFICE OF THE CLERK OF CIRCUIT COURT OF THE COUNTY OF JAMES CITY IN DEED BOOK 714 PAGE 508.

ENGINEERS OR SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT TO THE BEST OF MY KNOWLEDGE OR BELIEF, THIS PLAT COMPLIES WITH ALL OF THE REQUIREMENTS OF THE BOARD OF SUPERVISORS AND ORDINANCES OF THE COUNTY OF JAMES CITY, VIRGINIA, REGARDING THE PLATTING OF SUBDIVISIONS WITHIN THE COUNTY.

12-15-95 Thomas C. Sublett
DATE THOMAS C. SUBLETT L.S.#1886

CERTIFICATE OF APPROVAL

THIS SUBDIVISION IS APPROVED BY THE UNDERSIGNED IN ACCORDANCE WITH WITH EXISTING SUBDIVISION REGULATIONS AND MAY BE ADMITTED TO RECORD.

Dec 20 1995 Beverly Mazzeo
DATE VIRGINIA DEPARTMENT OF TRANSPORTATION

Dec. 19, 1995 Valerie Wilson
DATE VIRGINIA DEPARTMENT OF HEALTH

DATE SUBDIVISION AGENT OF JAMES CITY COUNTY

STATE OF VIRGINIA, JAMES CITY COUNTY

IN THE CLERK'S OFFICE OF THE CIRCUIT COURT FOR THE COUNTY OF JAMES CITY THE _____ DAY OF _____, 19 ___ THIS MAP WAS PRESENTED AND ADMITTED TO RECORD AS THE LAW DIRECTS IN PLAT BOOK _____, PAGE _____.
TESTE _____
BY _____ CLERK

GRAPHIC SCALE
100' 0' 100' 200'

NOTES:
1. LOTS ARE SERVED BY PUBLIC WATER AND SEWER.
2. LOTS 3 THRU 25 LIE IN F.I.R.M. ZONE "X" ACCORDING TO COMMUNITY PANEL NO. 510201 0035 B ; DATED 2/6/91
3. ALL STREETS ARE HEREBY DEDICATED FOR PUBLIC USE.
4. VDOT IS SAVED HARMLESS OF ANY MAINTENANCE RESPONSIBILITY OR LIABILITY ASSOCIATED WITH THE STORM WATER BASIN, TO THE EXTENT ALLOWED BY LAW.
5. ALL UTILITIES SHALL BE PLACED UNDERGROUND.
6. WETLANDS AND LAND WITHIN RESOURCE PROTECTION AREAS SHALL REMAIN IN A NATURAL UNDISTURBED STATE EXCEPT FOR THOSE ACTIVITIES PERMITTED BY SECTION 19B-9C(1) OF THE JAMES CITY COUNTY CODE.
7. NATURAL OPEN SPACE EASEMENTS SHALL REMAIN IN A NATURAL UNDISTURBED STATE EXCEPT FOR THOSE ACTIVITIES REFERENCED ON THE DEED OF EASEMENT.

1 OF 1

COMMISSION NO. 1940160

DJG
ENGINEERS · ARCHITECTS · SURVEYORS
INTERIOR DESIGNERS · PLANNERS
P.O. BOX 3505 WILLIAMSBURG, VIRGINIA 23187
(804)253-0673 (804)874-5015

DATE 12-15-95 | DESIGNED TCS | DRAWN MHC | SCALE 1"=100'

COMMONWEALTH OF VIRGINIA
THOMAS C. SUBLETT
No. 1886
12-15-95
LAND SURVEYOR

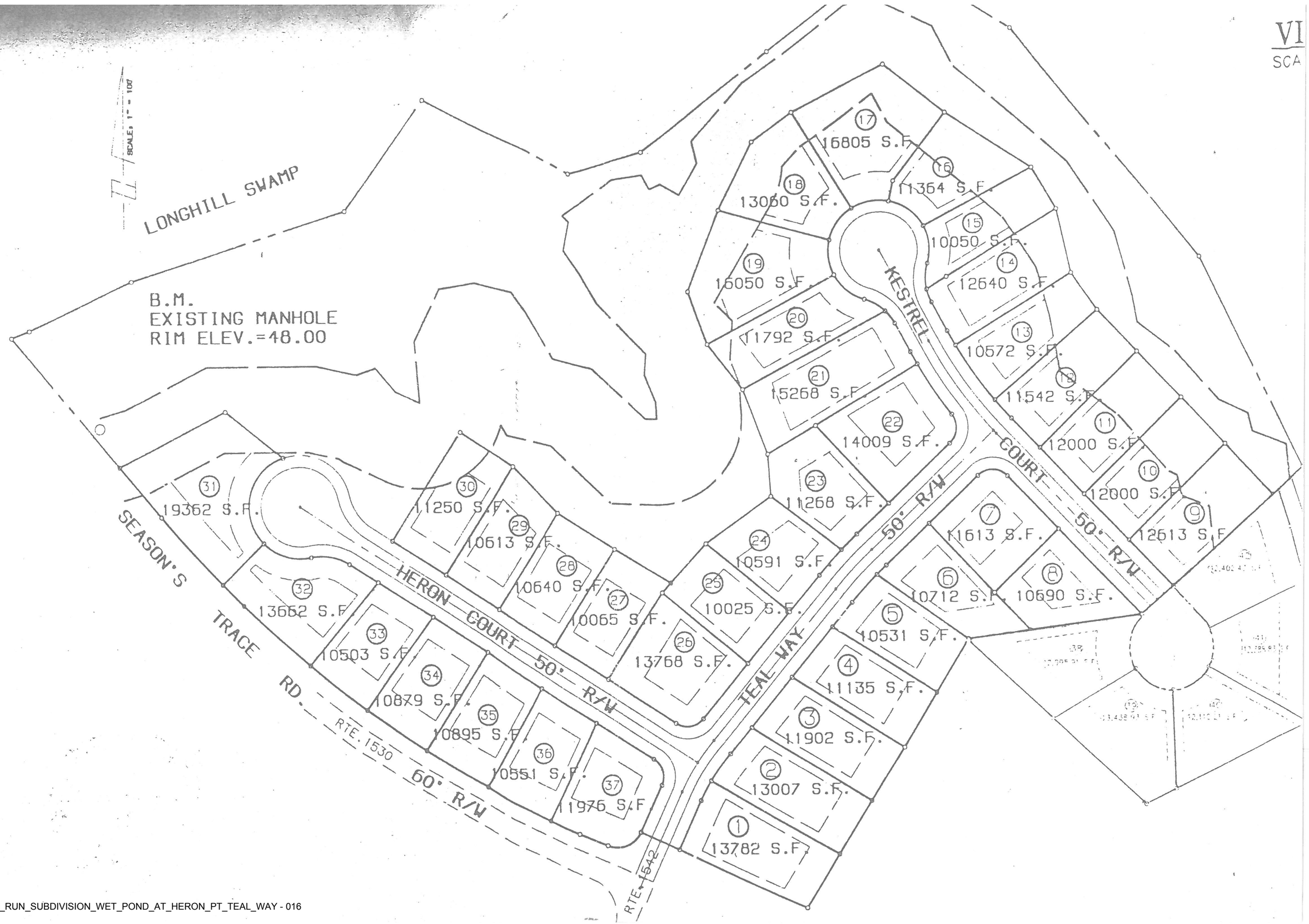
REF.
DB. 714 PG. 508
PB. 42 PG. 52

FB. 163 PG. 43

SUBDIVISION PLAT OF HERON RUN – PHASE 2

OWNER: HEATHERSTONE L.L.C.

POWHATAN DISTRICT, JAMES CITY COUNTY VIRGINIA


SCALE: 1" = 100'
LONGHILL SWAMP
B.M.
EXISTING MANHOLE
RIM ELEV.=48.00
KESTREL
COURT
50' R/W
TEAL WAY
HERON COURT 50' R/W
SEASON'S TRACE RD.
RTE. 1530 60' R/W
RTE. 1542
1 13782 S.F.
2 13007 S.F.
3 11902 S.F.
4 11135 S.F.
5 10531 S.F.
6 10712 S.F.
7 11613 S.F.
8 10690 S.F.
9 12613 S.F.
10 12000 S.F.
11 12000 S.F.
12 11542 S.F.
13 10572 S.F.
14 12640 S.F.
15 10050 S.F.
16 11364 S.F.
17 16805 S.F.
18 13060 S.F.
19 15050 S.F.
20 11792 S.F.
21 15268 S.F.
22 14009 S.F.
23 11268 S.F.
24 10591 S.F.
25 10025 S.F.
26 13768 S.F.
27 10065 S.F.
28 10640 S.F.
29 10613 S.F.
30 11250 S.F.
31 19362 S.F.
32 13662 S.F.
33 10503 S.F.
34 10879 S.F.
35 10895 S.F.
36 10551 S.F.
37 11976 S.F.

STORMWATER MANAGEMENT CALCULATIONS

FOR

HERON RUN SUBDIVISION PHASE III

BY

DJG, INC.
1006 RICHMOND ROAD
WILLIAMSBURG, VA 23185

MAY 8, 1996

DJG COMMISSION NO. 1960390

DJG
P.O. Box 3505
Williamsburg, Virginia 23187
(804) 253-0673
Fax (804) 253-2319

PROJECT HERON RUN PHASE III
DATE 5-6-96 COMM NO. 1960390
CAL HLDG CKD PAGE # 1 OF 2
TITLE STORM WATER MANAGEMENT CALC'S

• MODIFIED BMP POINT TOTAL:

TOTAL ON-SITE ACREAGE = 22.88 +/- AC. (21.1 AC. + 1.78 AC.)
TOTAL OFF-SITE ACREAGE = 5.79 +/- AC. (4.25 AC. + 1.54 AC.)
TOTAL = 28.67 AC.

- NATURAL OPEN SPACE CREDIT:

ON-SITE = (9.45 AC. + 0.13 AC.) = 9.58 AC.
OFF-SITE = 0.15(5.79 AC. − 0.13 AC.) = 0.85 AC.

$$\text{POINTS} = \frac{9.58\text{ AC.} + 0.85\text{ AC.}}{22.88\text{ AC.}} \times 10 = 4.56 \text{ pts.}$$

4.2 - onsite only

- RETENTION POND (DESIGN #7) CREDIT:

ON-SITE ACREAGE SERVED BY POND = 8.30 AC. + 0.82 AC. = 9.12 AC.
OFF-SITE ACREAGE SERVED BY POND = 5.79 AC.
TOTAL = 14.91 AC.

$$\text{POINTS} = \frac{14.91\text{ AC.}}{22.88\text{ AC.}} \times 9 = 5.87 \text{ pts.}$$

10.07

- TOTAL CREDIT = 4.56 pts. + 5.87 pts. = **10.43 pts**

4.2

• BMP DESIGN #7 (4.0 × V):

- MEAN STORM = 0.50"
- IMPERVIOUS RATIO = 30%
- $R_V = 0.05 + 0.009(30\%) = 0.32$

$$\Rightarrow \frac{(0.32)(0.50'')(4.0)}{12} = 0.0533 \text{ ft/ac.}$$

$$\Rightarrow \text{REQ'D STORAGE} = (0.0533 \text{ ft/ac.})(43{,}560 \text{ ft}^2/\text{ac.})(14.91 \text{ AC.}) = \boxed{34{,}617.3 \text{ ft}^3}$$

DJG
P.O. Box 3505
Williamsburg, Virginia 23187
(804) 253-0673
Fax (804) 253-2319

PROJECT HERON RUN PHASE III
DATE 5-6-96 COMM NO. 1960390
CAL HLPG CKD PAGE # 2 OF 2
TITLE STORM WATER MANAGEMENT CALC.'S

· OUTLET STRUCTURE DESIGN:

- INV. OF ORIFICE = 58.0
  STORAGE = 34,715 A^3
- ELEV. 48" CMP RISER = 59.5
- ELEV. 30" CMP BARREL = 55.91
  = INV. OUT

11" ORIFICE, ℄ = 58.46 (ELEV.)

$Q = C \times AREA \times \sqrt{2g H_o}$

$= (0.6)(0.66)\sqrt{64.4 H_o}$

$L = 27.2' \Rightarrow Q_p = 1.23$

- STAGE - STORAGE - DISCHARGE:

	ELEV.	STAGE	H_p	Q_p(cfs)	H_o	Q_o(cfs)	ΣQ(cfs)	*EXISTING STORAGE (A^3)
	58.0 ✓	–	–	–	–	–	–	–
	58.5	0.5	–	–	0.04	0.64	0.64	6,532
	59.0	1.0	–	–	0.54	2.34	2.34	14,506
C.R.	59.5 ✓	1.5	–	–	1.04	3.24	3.24	23,756
	60.0	2.0	(R) 0.5	13.6	1.54	3.94	17.54	34,172
	60.5	2.5	(B) 2.84	38.92	2.04	4.54	43.46	45,667
	61.0	3.0	(B) 3.34	42.19	2.54	5.07	47.26	58,175
	62.0	4.0	(B) 4.34	48.13	3.54	5.98	54.11	86,024

* USING AS-BUILT INFORMATION

3 0 0
HERON RUN PHASE III POND ROUTING CALCULATIONS

HERON RUN PHASE III

INPUT DESIGN DATA PREDEVELOPMENT

DESIGN STORM FOR ANALYSIS = 2 YEAR
DRAINAGE AREA (ACRES) = 9.3
AVERAGE SLOPE OF DRAINAGE AREA (%) = 6
HYDRAULIC LENGTH (FT) = 1150
IMPERVIOUS SURFACE (%) = 1
HYDRAULIC LENGTH MODIFIED (%) = 1
COMPOSITE CURVE NUMBER = 62
SLOPE ADJUSTMENT FACTOR = 1.07
PONDING ADJUSTMENT FACTOR = 1

RESULTS OF HYDRAULIC CALCULATIONS
(SCS TR-55 & TP-149 PROCEDURES)

WATERSHED LAG ADJUSTED (IMPER. AREAS & CHAN. IMPROV.) IS .235 HOURS
TIME OF CONCENTRATION ADJUSTED IS .392 HOURS
THE PEAK DISCHARGE FROM THIS WATERSHED IS 4 C.F.S.

THE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE
INFLOW HYDROGRAPH

(HOURS)	(C.F.S.)
0,0	
9.399999E-02	0
.188	0
.282	.006
.376	.244
.47	1.06
.564	2.552
.658	3.824
.752	4.173
.846	3.424
.94	2.432
1.034	1.443
1.128	.594
1.222	.091
1.316	0

HERON RUN PHASE III

HERON RUN PHASE III

INPUT DESIGN DATA POST DEVELOPMENT

DESIGN STORM FOR ANALYSIS = 2 YEAR
DRAINAGE AREA (ACRES) = 14.91
AVERAGE SLOPE OF DRAINAGE AREA (%) = 2.4
HYDRAULIC LENGTH (FT) = 1550
IMPERVIOUS SURFACE (%) = 30
HYDRAULIC LENGTH MODIFIED (%) = 35
COMPOSITE CURVE NUMBER = 75
SLOPE ADJUSTMENT FACTOR = 1
PONDING ADJUSTMENT FACTOR = .92

RESULTS OF HYDRAULIC CALCULATIONS
(SCS TR-55 & TP-149 PROCEDURES)

WATERSHED LAG ADJUSTED (IMPER. AREAS & CHAN. IMPROV.) IS .212 HOURS
TIME OF CONCENTRATION ADJUSTED IS .353 HOURS
THE PEAK DISCHARGE FROM THIS WATERSHED IS 17 C.F.S.

THE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE INFLOW HYDROGRAPH

(HOURS)	(C.F.S.)
0,0	
.085	.193
.169	.756
.254	2.012
.339	4.476
.423	8.429
.5080001	13.53
.593	16.619
.677	16.38
.762	12.645
.847	8.465999
.931	4.705
1.016	1.853
1.101	.249
1.186	0

STAGE (FT)	DISCHARGE (CFS)	STORAGE (CF)
0	0	0
.5	.64	6532
1	2.34	14506
1.5	3.24	23756

THE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE OUTFLOW HYDOGRAPH

(HOURS)	(C.F.S.)
0.000	0.003
0.085	0.017
0.169	0.057
0.254	0.151
0.339	0.336
0.423	0.660
0.508	1.568
0.593	2.418
0.677	2.771
0.762	2.999
0.847	3.104
0.931	3.109
1.016	3.049
1.101	2.963
1.186	2.876
1.270	2.792
1.355	2.711
1.440	2.632

1.524	2.555
1.609	2.480
1.694	2.408
1.778	2.334
1.863	2.187
1.948	2.049
2.032	1.920
2.117	1.799
2.202	1.686
2.286	1.580
2.371	1.481
2.456	1.387
2.540	1.300
2.625	1.218
2.710	1.142
2.794	1.070
2.879	1.002
2.964	0.939
3.048	0.880
3.133	0.825
3.218	0.773

MAXIMUM OUTFLOW IS 3.109 C.F.S. ✓ O.K.
MAXIMUM STAGE IS 1.427222 FT.
MAXIMUM STORAGE IS 22409 CUBIC FEET 0.51 Ac/ft.

HERON RUN PHASE III

HERON RUN PHASE III

INPUT DESIGN DATA POST DEVELOPMENT

DESIGN STORM FOR ANALYSIS = 10 YEAR
DRAINAGE AREA (ACRES) = 14.91
AVERAGE SLOPE OF DRAINAGE AREA (%) = 2.4
HYDRAULIC LENGTH (FT) = 1550
IMPERVIOUS SURFACE (%) = 30
HYDRAULIC LENGTH MODIFIED (%) = 35
COMPOSITE CURVE NUMBER = 75
SLOPE ADJUSTMENT FACTOR = 1
PONDING ADJUSTMENT FACTOR = .95

RESULTS OF HYDRAULIC CALCULATIONS
(SCS TR-55 & TP-149 PROCEDURES)

WATERSHED LAG ADJUSTED (IMPER. AREAS & CHAN. IMPROV.) IS .212 HOURS
TIME OF CONCENTRATION ADJUSTED IS .353 HOURS
THE PEAK DISCHARGE FROM THIS WATERSHED IS 42 C.F.S.

THE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE INFLOW HYDROGRAPH

(HOURS)	(C.F.S.)
0,0	
.085	.729
.169	2.713
.254	6.804
.339	13.835

.423	23.976
.5080001	35.959
.593	42.303
.677	40.458
.762	30.71
.847	20.225
.931	11.003
1.016	4.246
1.101	.559
1.186	0

STAGE (FT)	DISCHARGE (CFS)	STORAGE (CF)
0	0	0
.5	.64	6532
1	2.34	14506
1.5	3.24	23756
2	17.54	34172
2.5	43.46	45667

THE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE OUTFLOW HYDOGRAPH

(HOURS)	(C.F.S.)
0.000	0.011
0.085	0.061
0.169	0.199
0.254	0.497
0.339	1.493
0.423	2.779
0.508	10.363
0.593	22.800
0.677	29.340
0.762	27.359
0.847	21.350
0.931	15.367
1.016	10.880
1.101	7.211
1.186	4.715
1.270	3.227
1.355	3.132
1.440	3.041
1.524	2.952
1.609	2.866
1.694	2.782
1.778	2.701
1.863	2.622
1.948	2.545
2.032	2.471
2.117	2.399
2.202	2.315
2.286	2.169
2.371	2.033
2.456	1.905
2.540	1.785
2.625	1.673
2.710	1.567

2.794	1.469
2.879	1.376
2.964	1.290
3.048	1.208
3.133	1.132
3.218	1.061

58.0 = 0
2.2
60.2 - E.S. : 60.5

MAXIMUM OUTFLOW IS 29.34 C.F.S.
MAXIMUM STAGE IS 2.227624 FT.
MAXIMUM STORAGE IS 39405 CUBIC FEET

HERON RUN PHASE III

HERON RUN PHASE III

INPUT DESIGN DATA POSTDEVELOPMENT

DESIGN STORM FOR ANALYSIS = 100 YEAR
DRAINAGE AREA (ACRES) = 14.91
AVERAGE SLOPE OF DRAINAGE AREA (%) = 2.4
HYDRAULIC LENGTH (FT) = 1550
IMPERVIOUS SURFACE (%) = 30
HYDRAULIC LENGTH MODIFIED (%) = 35
COMPOSITE CURVE NUMBER = 75
SLOPE ADJUSTMENT FACTOR = 1
PONDING ADJUSTMENT FACTOR = .98

RESULTS OF HYDRAULIC CALCULATIONS
(SCS TR-55 & TP-149 PROCEDURES)

WATERSHED LAG ADJUSTED (IMPER. AREAS & CHAN. IMPROV.) IS .212 HOURS
TIME OF CONCENTRATION ADJUSTED IS .353 HOURS
THE PEAK DISCHARGE FROM THIS WATERSHED IS 72 C.F.S.

THE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE INFLOW HYDROGRAPH

(HOURS)	(C.F.S.)
0,0	
.085	1.411
.169	5.177
.254	12.758
.339	25.215
.423	42.459
.5080001	62.08
.593	71.787
.677	67.805
.762	51.098
.847	33.408
.931	18.007
1.016	6.886
1.101	.899
1.186	0

STAGE (FT)	DISCHARGE (CFS)	STORAGE (CF)

0	0	0
.5	.64	6532
1	2.34	14506
1.5	3.24	23756
2	17.54	34172
2.5	43.46	45667
3	47.26	58175
4	54.11	86024

THE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE OUTFLOW HYDOGRAPH

(HOURS)	(C.F.S.)
0.000	0.021
0.085	0.117
0.169	0.378
0.254	1.250
0.339	2.786
0.423	14.994
0.508	40.347
0.593	45.528
0.677	46.761
0.762	46.362
0.847	44.533
0.931	33.248
1.016	18.231
1.101	11.853
1.186	7.751
1.270	5.068
1.355	3.314
1.440	3.149
1.524	3.057
1.609	2.968
1.694	2.881
1.778	2.797
1.863	2.715
1.948	2.636
2.032	2.559
2.117	2.484
2.202	2.411
2.286	2.341
2.371	2.195
2.456	2.057
2.540	1.927
2.625	1.806
2.710	1.692
2.794	1.586
2.879	1.486
2.964	1.392
3.048	1.305
3.133	1.223
3.218	1.146

```
MAXIMUM OUTFLOW IS    46.761    C.F.S.
MAXIMUM STAGE IS    2.934343    FT.
MAXIMUM STORAGE IS    56532    CUBIC FEET
```

BMP CALCULATIONS

FOR

HERON ~~QUAIL~~ RUN SUBDIVISION

BY

DJG, INC.
1006 RICHMOND ROAD
WILLIAMSBURG, VIRGINIA 23185

AUGUST 1, 1994

DJG COMMISSION NO: 1940600

THE DEYOUNG-JOHNSON GROUP, INC.

S-04-94

THE DeYOUNG-JOHNSON GROUP, INC.
P.O. Box 3505
WILLIAMSBURG, VIRGINIA 23187
(804) 253-0673

JOB: SEASON'S TRACE 19-0160
SHEET NO. 1 OF 5
CALCULATED BY: GOERING DATE: 7-25-04
CHECKED BY: DATE:
SCALE:

— FINAL CALCULATIONS —

BMP POINT SYSTEM

- **NATURAL OPEN SPACE CREDIT:**

ON-SITE: RPA + BUFFER = 9.45 ac.
TOTAL SITE ACREAGE = 21.1 ac.

% OPEN SPACE = (9.45 ac. / 21.1 ac.) x 100 = 44.8%

POINTS = 44.8% x 0.1 = 4.48 ≃ **4.5 POINTS**

OFF-SITE: TOTAL OFF-SITE ACREAGE = 4.25 ac. 4.8

% OPEN SPACE = % MANDATED IN DEVELOPMENT PLAN = 15%

POINTS = ~~15.0% x 0.1~~ = **1.5 POINTS**
$\frac{4.25 \times .15}{21.1} = 0.03 \times 100 = 3 \times 0.1 = 0.3$

- **WETPOND DESIGN #7 CREDIT:** 4.5 + .3 = 4.8

ON-SITE ACREAGE SERVED BY POND = 8.30 ac. ✓
OFF-SITE ACREAGE SERVED BY POND = 4.25 ac. ✓ 5.35
TOTAL ACREAGE SERVED BY POND = 12.55 ac. ✓
TOTAL ON-SITE + OFFSITE ACREAGE = 25.35 ac.

% OF ACREAGE SERVED BY POND = 12.55 ac. / ~~25.35~~ 21.1 ac. x 100 = 47.9%
= 59.5

POINTS = 0.495 x 9 = **4.5 POINTS**
.595 x 9 = 5.35

- **BMP POINT TOTAL:**

= NATURAL OPEN SPACE POINTS + POND POINTS
4.5 + .3 + 5.35 = 10.15 TTS
= (~~4.5~~ + ~~.5~~) + 4.5 = **10.5 POINTS**

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JOB
SHEET NO. 2 OF 5
CALCULATED BY DATE
CHECKED BY DATE
SCALE

CBLAD METHOD

RELATIVE PRE-DEVELOPMENT PHOSPHORUS LOAD:

$$L_{PRE} = P \times P_j \times [0.05 + 0.009(I_w)] \times C \times A \times 2.72/12$$

WHERE:

L_{PRE} = RELATIVE PRE-DEVELOPMENT TOTAL PHOS. LOAD (lbs/yr.)
P = AVG. ANNUAL RAINFALL DEPTH (in.) = 45 in. pg. C-4
P_j = UNITLESS CORRELTION FACTOR FOR STORM W/O RUNOFF = 0.9 pg. C-4
I_w = IMPERVIOUS COVER FOR WATERSHED (% in WHOLE #) = 10 PER JCC FRONT COVER
C = FLOW-WEIGHTED MEAN POLLUTANT CONC. (Mg/L) = 0.26
A = AREA OF SITE (ACRES) = 21.1
2.72/12 = CONVERSION FACTOR

$$L_{PRE} = 45\text{in} \times 0.9 \times [0.05 + 0.009(10\%)] \times 0.26\text{mg/l} \times 21.1\text{ac.} \times 2.72/12$$

$$= \boxed{7.05 \text{ lbs/yr}}$$

RELATIVE POST-DEVELOPMENT PHOSPHORUS LOAD:

$$L_{POST} = P \times P_j \times [0.05 + 0.009(I_{SITE})] \times C \times A \times 2.72/12$$

WHERE:

L_{POST} = RELATIVE POST-DEVELOPMENT TOTAL PHOS. LOAD (lbs/yr)
I_{SITE} = POST-DEVELOPMENT IMPERVIOUS COVER (% in WHOLE #) = $\frac{1.5\text{ac(STREET)} + 37\text{ac}(38\%\ 10{,}000)}{21.1}$ $\simeq 25\%$

THIS SAYS THAT 25% OF SITE OR 45% OF THE 16.1 ACRES THAT WILL BE DEVELOPED – VERY CONSERVATIVE!

P, P_j, C, A = SEE PRE-DEVELOPMENT DEFINITIONS ABOVE

$$L_{POST} = 45\text{in} \times 0.9 \times [0.05 + 0.009(25\%)] \times 0.26\text{mg/l} \times 21.1\text{ac} \times 2.72/12$$

$$= \boxed{13.85 \text{ lbs/yr}}$$

REMOVAL REQUIREMENT (RR):

$RR = L_{POST} - L_{PRE}$ $\quad RR = 13.85\text{ lbs/yr} - 7.05\text{ lbs/yr} = 6.8\text{ lbs/yr}$

REMOVAL EFFICIENCY: $\frac{6.8\text{ lbs/yr}}{13.85\text{ lbs/yr}} \times 100 = 49.1\%$ $\quad$ DESIGN #7 = 50%

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JOB [illegible]
SHEET NO. 3 OF 5
CALCULATED BY GOERING DATE [illegible]
CHECKED BY DATE
SCALE

- REQUIRED STORAGE

  - DESIGN #7: 4.0 V

    MEAN STORM = 0.50"

    IMPERVIOUS RATIO = 30%

    $RV = 0.05 + 0.009(I)$

    $= 0.05 + 0.009(30.0) = 0.32$

    $\Rightarrow \frac{(0.32)(0.50'')(4.0)}{12} = 0.0533 \text{ ft/ac}$

    $\Rightarrow (0.0533)(12.55)(43560) = 29138 \text{ ft}^3$ ✓

  - SEDIMENT CONTROL

    $(67 \text{ cy/ac})(12.55 \text{ ac})(27) = 22703 \text{ ft}^3$ - wet storage

  - $29138 > 22703 \quad \therefore$ $\boxed{\text{REQ'D STORAGE} = 29138}$

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JOB: SEASON'S TRACE
SHEET NO. 4 OF 5
CALCULATED BY: GOERING DATE: 7-13-94
CHECKED BY: DATE:
SCALE:

29138 ft^3 = REQ'D STORAGE FOR BMP = 7

• BASIN STORAGE TO SHELF @ 56'

ELEV.	AREA	$\Sigma(A_i + A_j)/2$	VOL.	Σ VOL.
53	0	0	0	0
53.1	3565	1783	178	178
56	7700	5633	16336	16514

29138 − 16514 = 12624 ft^3 NEED ABOVE SHELF @ 56'

ELEV	AREA	$\Sigma(A_i + A_j)/2$	VOL.	Σ VOL.
56	0	0	0	0
56.1	10650	5325	532	532
58	14430	12540	23826	24358

— STORAGE ALGORITHM: $z_1 = 0.1$ $z_2 = 2$ $S_1 = 532$ $S_2 = 24358$

$$b = \frac{\ln\left(\frac{S_2}{S_1}\right)}{\ln\left(\frac{z_2}{z_1}\right)} = 1.277 \quad k_s = \frac{S_2}{z_2^{\,b}} = 10051 \quad z = \left(\frac{11649}{10051}\right)^{\frac{1}{1.277}} = 1.12$$

$\Rightarrow 56' + 1.12 \approx 57'$ ESTABLISH MIN. POOL ELEV. = 57'

• BASIN STORAGE ABOVE MIN. POOL ELEV. @ 57'

Dry Storage = 22,700

ELEV.	AREA	$\Sigma(A_i + A_j)/2$	VOL.	Σ VOL.
57	0	0	0	0
58	14430	7215	7215	7215
60	19690	17060	34120	41335

45,400 Total

≈ Elev. 59

— STORAGE ALGORITHM: $z_1 = 1.0$ $z_2 = 3.0$ $S_1 = 7215$ $S_2 = 41335$

$$b = \frac{\ln\left(\frac{S_2}{S_1}\right)}{\ln\left(\frac{z_2}{z_1}\right)} = 1.59 \quad k_s = \frac{S_2}{z_2^{\,b}} = 7215 \Rightarrow S = 7215\left(z^{1.59}\right)$$

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JOB: SEASON'S TRACE
SHEET NO. 5 OF 5
CALCULATED BY: GOERING DATE: 7-13-94
CHECKED BY: DATE:
SCALE:

• STORAGE ABOVE MIN. POOL ELEV. - STAGE - STORAGE - DISCHARGE

	ELEV	STAGE	H_p	Q_p	H_o	Q_o	ΣQ	STORAGE (ft^3)
	57.0	0.0	–	–	–	–	–	0
	57.5	0.5	–	–	0.04	0.6	0.6	2397
	58.0	1.0	–	–	0.54	2.3	2.3	7215
	58.5	1.5	–	–	1.04	3.2	3.2	13747
	59.0	2.0	–	–	1.54	3.9	3.9	21721 – 59.1 - dry storage
	59.5	2.5	–	–	2.04	4.5	4.5	30971
	60.0	3.0	–	–	2.54	5.1	5.1	41387
CR	60.3	3.3	–	–	2.84	5.4	5.4	48158
ES	60.5	3.5	3.45	RISER (13.8 / 40.0)	3.04	5.5	19.3	52882
	61.0	4.0	3.95		3.54	6.0	46.0	65390
	61.5	4.5	4.45	48.0	4.04	6.4	54.4	78858
	62.0	5.0	4.95	50.7	4.54	6.8	57.5	93239

ORIFICE = 11" ∴ A = 0.66 C = 0.6 $Q_o = CA\sqrt{2gH_o}$ ELEV. = 57.46
RISER = 48"
PIPE = 30' - 30" CORRECTION - 1.21 (Q_p) ELEV. = 57.05

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JOB
SHEET NO. OF
CALCULATED BY DATE
CHECKED BY DATE
SCALE

BARREL PIPE OUTLET CONDITIONS:

PIPE DIAM. = 30" Q_p (10 YR) = 5.333cfs

ASSUME MINIMUM TAILWATER CONDITIONS

APRON LENGTH = 16'

APRON WIDTH = 3 x 30" = 7.5' UPSTREAM

= 30" + 16' = 18.5' DOWNSTREAM

RIPRAP = 6" DIA.

RIPRAP DEPTH = 1.5 x 6.0" = 9.0" DEEP

Needs to be Class I RR @ 18" deep

SEASON'S TRACE 2-YR PRE-DEVELOPMENT

SEASON'S TRACE 2-YR PRE-DEVELOPMENT

INPUT DESIGN DATA

DESIGN STORM FOR ANALYSIS = 2 YEAR
DRAINAGE AREA (ACRES) = 9.3
AVERAGE SLOPE OF DRAINAGE AREA (%) = 6
HYDRAULIC LENGTH (FT) = 1150
IMPERVIOUS SURFACE (%) = 1
HYDRAULIC LENGTH MODIFIED (%) = 1
COMPOSITE CURVE NUMBER = 62 Provide supporting documentation
SLOPE ADJUSTMENT FACTOR = 1.07
PONDING ADJUSTMENT FACTOR = 1

RESULTS OF HYDRAULIC CALCULATIONS
(SCS TR-55 & TP-149 PROCEDURES)

WATERSHED LAG ADJUSTED (IMPER. AREAS & CHAN. IMPROV.) IS .235 HOURS
TIME OF CONCENTRATION ADJUSTED IS .392 HOURS
THE PEAK DISCHARGE FROM THIS WATERSHED IS 4.0 C.F.S.

THE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE
INFLOW HYDROGRAPH

(HOURS)	(C.F.S.)
0,0	
9.399999E-02	0
.188	0
.282	.006
.376	.244
.47	1.06
.564	2.552
.658	3.824
.752	4.173
.846	3.424
.94	2.432
1.034	1.443
1.128	.594
1.222	.091
1.316	0

SEASON'S TRACE 2-YR POST-DEVELOPMENT

SEASON'S TRACE 2-YR POST-DEVELOPMENT

INPUT DESIGN DATA

DESIGN STORM FOR ANALYSIS = 2 YEAR
DRAINAGE AREA (ACRES) = 12.13
AVERAGE SLOPE OF DRAINAGE AREA (%) = 6
HYDRAULIC LENGTH (FT) = 1150
IMPERVIOUS SURFACE (%) = 30
HYDRAULIC LENGTH MODIFIED (%) = 25
COMPOSITE CURVE NUMBER = 75
SLOPE ADJUSTMENT FACTOR = 1.07
PONDING ADJUSTMENT FACTOR = 1

WATERSHED LAG ADJUSTED (IMPER. AREAS & CHAN. IMPROV.) IS .114 HOURS
TIME OF CONCENTRATION ADJUSTED IS .19 HOURS
THE PEAK DISCHARGE FROM THIS WATERSHED IS 21 C.F.S.

THE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE INFLOW HYDROGRAPH

(HOURS)	(C.F.S.)
0.0	
.046	.586
.091	2.082
.137	4.956
.183	8.588
.228	12.743
.274	16.884
.32	20.626
.365	21.207
.411	18.631
.457	12.895
.502	7.986
.548	4.095
.594	1.39
.639	0

STAGE (FT)	DISCHARGE (CFS)	STORAGE (CF)
0	0	0
.5	.6	2397
1	2.3	7215
1.5	3.2	13747
2	3.9	21721
2.5	4.5	30971
3	5.1	41387
3.3	5.4	48158
3.5	19.3	52882
4	46	65390
4.5	54.4	78858
5	57.5	93239

THE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE OUTFLOW HYDOGRAPH

(HOURS)	(C.F.S.)
0.000	0.012
0.046	0.065
0.091	0.204
0.137	0.469
0.183	0.992
0.228	1.771
0.274	2.470
0.320	2.884
0.365	3.242
0.411	3.421
0.457	3.522
0.502	3.558
0.548	3.546
0.594	3.505
0.639	3.455
0.685	3.406
0.731	3.357

0.822	3.261
0.868	3.214
0.913	3.151
0.959	3.080
1.005	3.011
1.050	2.944
1.096	2.878
1.142	2.813
1.187	2.750
1.233	2.689
1.279	2.628
1.325	2.569
1.370	2.512
1.416	2.456
1.462	2.401
1.507	2.347
1.553	2.286
1.599	2.157
1.644	2.035
1.690	1.920
1.736	1.812

MAXIMUM OUTFLOW IS 3.558 C.F.S. ✓
MAXIMUM STAGE IS 1.755714 FT. → 57 + 1.75 = 58.75'
MAXIMUM STORAGE IS 17825 CUBIC FEET

SEASON'S TRACE 10-YR POST-DEVELOPMENT

SEASON'S TRACE 10-YR POST-DEVELOPMENT

INPUT DESIGN DATA

DESIGN STORM FOR ANALYSIS = 10 YEAR
DRAINAGE AREA (ACRES) = 12.13
AVERAGE SLOPE OF DRAINAGE AREA (%) = 6
HYDRAULIC LENGTH (FT) = 1150
IMPERVIOUS SURFACE (%) = 30
HYDRAULIC LENGTH MODIFIED (%) = 25
COMPOSITE CURVE NUMBER = 75
SLOPE ADJUSTMENT FACTOR = 1.07
PONDING ADJUSTMENT FACTOR = 1

RESULTS OF HYDRAULIC CALCULATIONS
(SCS TR-55 & TP-149 PROCEDURES)

WATERSHED LAG ADJUSTED (IMPER. AREAS & CHAN. IMPROV.) IS .114 HOURS
TIME OF CONCENTRATION ADJUSTED IS .19 HOURS
THE PEAK DISCHARGE FROM THIS WATERSHED IS 50 C.F.S.

THE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE
INFLOW HYDROGRAPH

(HOURS)	(C.F.S.)
0.0	
.046	1.762
.091	6.09
.137	14.069
.183	23.47
.228	33.476
.274	42.668
.32	50.219
.365	50.232
.411	[illegible]

.502	18.119
.548	9.169
.594	3.086
.639	0

STAGE (FT)	DISCHARGE (CFS)	STORAGE (CF)
0	0	0
.5	.6	2397
1	2.3	7215
1.5	3.2	13747
2	3.9	21721
2.5	4.5	30971
3	5.1	41387
3.3	5.4	48158
3.5	19.3	52882
4	46	65390
4.5	54.4	78858
5	57.5	93239

THE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE OUTFLOW HYDOGRAPH

(HOURS)	(C.F.S.)
0.000	0.036
0.046	0.192
0.091	0.591
0.137	1.612
0.183	2.629
0.228	3.342
0.274	3.944
0.320	4.435
0.365	4.841
0.411	5.130
0.457	5.266
0.502	5.327
0.548	5.333
0.594	5.305
0.639	5.267
0.685	5.229
0.731	5.191
0.776	5.153
0.822	5.116
0.868	5.072
0.913	5.024
0.959	4.977
1.005	4.930
1.050	4.883
1.096	4.837
1.142	4.792
1.187	4.747
1.233	4.702
1.279	4.658
1.325	4.614
1.370	4.570
1.416	4.527
1.462	4.482
1.507	4.435
1.553	4.388
1.599	4.341
1.644	4.295
1.690	4.256

MAXIMUM OUTFLOW IS 5.333 C.F.S.
MAXIMUM STAGE IS 3.233 FT. = 60.2'
MAXIMUM STORAGE IS 46645 CUBIC FEET

SEASON'S TRACE 100-YR POST-DEVELOPMENT

SEASON'S TRACE 100-YR POST-DEVELOPMENT

INPUT DESIGN DATA

DESIGN STORM FOR ANALYSIS = 100 YEAR
DRAINAGE AREA (ACRES) = 12.13
AVERAGE SLOPE OF DRAINAGE AREA (%) = 6
HYDRAULIC LENGTH (FT) = 1150
IMPERVIOUS SURFACE (%) = 30
HYDRAULIC LENGTH MODIFIED (%) = 25
COMPOSITE CURVE NUMBER = 75
SLOPE ADJUSTMENT FACTOR = 1.07
PONDING ADJUSTMENT FACTOR = 1

RESULTS OF HYDRAULIC CALCULATIONS
(SCS TR-55 & TP-149 PROCEDURES)

WATERSHED LAG ADJUSTED (IMPER. AREAS & CHAN. IMPROV.) IS .114 HOURS
TIME OF CONCENTRATION ADJUSTED IS .19 HOURS
THE PEAK DISCHARGE FROM THIS WATERSHED IS 82 C.F.S.

THE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE INFLOW HYDROGRAPH

(HOURS)	(C.F.S.)
0,0	
.046	3.115
.091	10.671
.137	24.397
.183	40.145
.228	56.423
.274	70.845
.32	82.14601
.365	81.233
.411	69.362
.457	47.211
.502	28.763
.548	14.518
.594	4.854
.639	0

STAGE (FT)	DISCHARGE (CFS)	STORAGE (CF)
0	0	0
.5	.6	2397
1	2.3	7215
1.5	3.2	13747
2	3.9	21721
2.5	4.5	30971
3	5.1	41387
3.3	5.4	48158
3.5	19.3	52862
4	46	65390
4.5	[illegible]	[illegible]

THE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE OUTFLOW HYDOGRAPH

(HOURS)	(C.F.S.)
0.000	0.063
0.046	0.338
0.091	1.204
0.137	2.560
0.183	3.446
0.228	4.202
0.274	4.917
0.320	11.647
0.365	32.439
0.411	40.157
0.457	39.509
0.502	34.174
0.548	26.862
0.594	19.566
0.639	12.025
0.685	7.341
0.731	5.383
0.776	5.344
0.822	5.305
0.868	5.267
0.913	5.228
0.959	5.190
1.005	5.153
1.050	5.115
1.096	5.072
1.142	5.024
1.187	4.976
1.233	4.930
1.279	4.883
1.325	4.837
1.370	4.791
1.416	4.746
1.462	4.702
1.507	4.657
1.553	4.613
1.599	4.570
1.644	4.527
1.690	4.482
1.736	4.434

MAXIMUM OUTFLOW IS [redacted]
MAXIMUM STAGE IS [redacted]
MAXIMUM STORAGE IS 62652 CUBIC FEET

THE DeYOUNG-JOHNSON GROUP, INC.
P.O. Box 3505
WILLIAMSBURG, VIRGINIA 23187
(804) 253-0673

JOB REVISED SEASONS TRACE RUN
SHEET NO. 1 OF 3
CALCULATED BY GOERING DATE 9-14-94
CHECKED BY DATE
SCALE

REVISED CALCULATIONS

ADDRESSING WATLAND STAS CO. ENGINEER COMMENT #1

- REVISED BMP POINT SYSTEM:

TOTAL ON-SITE ACREAGE = 21.1 ac
TOTAL OFF-SITE ACREAGE = 4.25 ac
GRAND TOTAL = 25.35 ac

- NATURAL OPEN SPACE CREDIT:

ON-SITE = RPA + BUFFER = 9.45 ac.
OFF-SITE = 15% OF 4.25 ac = 0.64 ac.

$$\text{POINTS} = \frac{9.45\text{ac} + 0.64\text{ac}}{21.1\text{ac}} \times 10 = \boxed{4.8 \text{ POINTS}}$$

- WETPOND DESIGN #7 CREDIT (9 POINTS)

ON-SITE ACREAGE SERVED BY POND = 8.30 ac.
OFF-SITE ACREAGE SERVED BY POND = 4.25 ac.
TOTAL = 12.55 ac.

$$\text{POINTS} = \frac{12.55\text{ac}}{21.1\text{ac.}} \times 9 \text{ POINTS} = \boxed{5.4 \text{ POINTS}}$$

- TOTAL BMP CREDIT:

= NATURAL OPEN SPACE POINTS + POND POINTS

= 4.8 + 5.4

= $\boxed{10.2 \text{ POINTS}}$

ADDRESSING COUNTY COMPLIANCE COMMENT #16

- ANTI-SEEP COLLAR CALCULATIONS:

$L_s = 40'$ (USING PLATE 3.14-11, E&S)
$P = 4' \times 4'$ (USING PLATE 3.14-12, E&S)

SPACING:

$$14 \times \left[\frac{4' - \left(\frac{30''}{12''/ft}\right)}{2}\right] = 10.5'$$

THE DeYOUNG-JOHNSON GROUP, INC.
P.O. Box 3505
WILLIAMSBURG, VIRGINIA 23187
(804) 253-0673

JOB: SEASONS TRACE SEC. XIII
SHEET NO. 2 OF 3
CALCULATED BY: GOERING DATE: 9/13/04
CHECKED BY: DATE:
SCALE:

ADDRESSING CODE COMPLIANCE COMMENT #11

• **DRAWDOWN CALCULATIONS:**

DESIGN:

2-YR STORM: ELEV. = 58.8', Volume = 52098 ft³

6 hr drawdown $Q_{avg} = \dfrac{\text{Vol. detained}}{6\text{hrs} \times 3600}$

$$= \frac{52098\ ft^3}{6 \times 3600}$$

$$Q_{avg} = 2.41\ cfs$$

ACTUAL:

2-YR STORM: ELEV = 58.8' VOL. = 52098 ft³

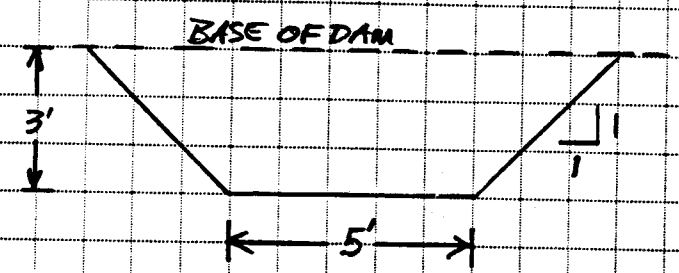
$Q_{avg} = 2.52\ ft^3$ (DETERMINED FROM TR-55 METHOD INCLUDED)

$$2.52\ ft^3 = \frac{52098\ ft^3}{T \times 3600}$$

$$\Rightarrow \boxed{T = 5.75\ hrs.}$$

ADDRESSING CODE COMPLIANCE COMMENT # 19

• **CORE TRENCH DETAIL:**



* NOTE:
CORE TRENCH RUNS ALONG CENTERLINE OF DAM UP THE SIDES OF THE ABUTMENT TO AN ELEVATION OF 60'

THE DeYOUNG-JOHNSON GROUP, INC.
P.O. Box 3505
WILLIAMSBURG, VIRGINIA 23187
(804) 253-0673

JOB: REVISED SEASONS TRACE SEC. III
SHEET NO. 3 OF 3
CALCULATED BY: E.C. FRING DATE: 9-16-94
CHECKED BY: DATE:
SCALE:

ADDRESSING CODE COMPLIANCE COMMENT # 1

- CN CALCULATIONS:

• PRE-DEVELOPMENT:

ACREAGE, AC.	SOILGROUP	CN (WOODS, FAIR)	WEIGHTED (A×CN)
18.42	B	60	1105.20
6.45	C	73	470.85
1.47	A	36	52.92
26.34			1628.97

$$CN = \frac{1628.97}{26.34} = 61.84 \approx \boxed{62}$$

• POST-DEVELOPMENT:

FROM TABLE 5.5, E&S pg. V-57:

RESIDENTIAL DISTRICT w/ 1/4 ACRE LOTS (AVERAGE), CN = $\boxed{75}$

ADDRESSING CODE COMPLIANCE COMMENT # 2

- LINE IV (M → N) OUTLET PROTECTION: (PAVED CHANNEL)

DESIGN DEPTH = 0.24 Q_p (10 YR) = 1.56 cfs

— ASSUME MINIMUM TAILWATER CONDITION —

• APRON LENGTH (E&S, pg III-159) = 10'
• APRON WIDTH = 3 × WIDTH = 3 × 0.24/2 × 3 × 2 = 2.16 ⇒ 4' UPSTREAM
= DESIGN WIDTH + APRON LENGTH = 2.16 + 10 ≈ 12.0' DOWNSTREAM
=
• RIPRAP DIA. = min. d_{50} = 6"

DEPTH = 18"

TIME OF CONCENTRATION CALCULATIONS (PRE & POST DEVELOPMENT)

ADDRESSING CODE COMPLIANCE COMMENT #15

[redacted]

EASON'S TRACE 2-YR PRE-DEVELOPMENT

INPUT DESIGN DATA

ESIGN STORM FOR ANALYSIS = 2 YEAR
RAINAGE AREA (ACRES) = 9.3
VERAGE SLOPE OF DRAINAGE AREA (%) = 6
YDRAULIC LENGTH (FT) = 1150
MPERVIOUS SURFACE (%) = 1
YDRAULIC LENGTH MODIFIED (%) = 1
OMPOSITE CURVE NUMBER = 62
LOPE ADJUSTMENT FACTOR = 1.07
ONDING ADJUSTMENT FACTOR = 1

RESULTS OF HYDRAULIC CALCULATIONS
(SCS TR-55 & TP-149 PROCEDURES)

ATERSHED LAG ADJUSTED (IMPER. AREAS & CHAN. IMPROV.) IS .235 HOURS
IME OF CONCENTRATION ADJUSTED IS .392 HOURS
HE PEAK DISCHARGE FROM THIS WATERSHED IS [redacted]
4 CFS

HE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE
INFLOW HYDROGRAPH

(HOURS)	(C.F.S.)
0,0	
9.399999E-02	0
38	0
92	.006
76	.244
[illegible]	1.06
54	2.552
68	3.824
62	4.173
46	3.424
1	2.432
034	1.443
128	.594
222	.091
316	0

[redacted]

EASON'S TRACE 2-YR POST-DEVELOPMENT

INPUT DESIGN DATA

ESIGN STORM FOR ANALYSIS = 2 YEAR
RAINAGE AREA (ACRES) = 12.13
VERAGE SLOPE OF DRAINAGE AREA (%) = 6
YDRAULIC LENGTH (FT) = 1150
MPERVIOUS SURFACE (%) = 30
YDRAULIC LENGTH MODIFIED (%) = 25
OMPOSITE CURVE NUMBER = 75
LOPE ADJUSTMENT FACTOR = 1.07
ONDING ADJUSTMENT FACTOR = 1

RESULTS OF HYDRAULIC CALCULATIONS

[illegible] LAG ADJUSTED TIMPER, [illegible] (MINUTES) [illegible]
IME OF CONCENTRATION ADJUSTED IS .19 HOURS
[illegible] DISCHARGE FROM THIS WATERSHED IS 21 C.F.S.

HE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE
INFLOW HYDROGRAPH

URS)	(C.F.S.)
0.0	
46	.386
91	2.082
37	4.956
83	8.588
28	12.743
74	16.894
2	20.626
65	21.207
11	18.631
57	12.895
02	7.986
48	4.095
94	1.39
39	0

AGE T)	DISCHARGE (CFS)	STORAGE (CF)
0	0	0
.5	.6	2397
1	2.3	7215
1.5	3.2	13747
2	3.9	21721
5	4.5	30971
	5.1	41387
3	5.4	48158
5	19.3	52882
	46	65390
5	54.4	78858
	57.5	93239

HE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE
OUTFLOW HYDOGRAPH

OURS)	(C.F.S.)
.000	0.012
.046	0.065
.091	0.204
.137	0.469
.183	0.992
.228	1.771
.274	2.470
.320	2.884
.365	3.242
.411	3.421
.457	3.522
.502	3.558
.548	3.546
.594	3.505
.639	3.455
.685	3.406
[illegible]	[illegible]

[illegible]	[illegible]
[illegible]	1.181
[illegible]	3.080
[illegible]	3.011
.050	2.944
.096	2.878
.142	2.813
.187	2.750
.233	2.689
.279	2.628
.325	2.569
.370	2.512
.416	2.456
.462	2.401
.507	2.347
.553	2.286
.599	2.157
.644	2.035
.690	1.920
.736	1.812

AXIMUM OUTFLOW IS 3.558 [redacted]
AXIMUM STAGE IS [redacted] 1.755714 FT.
AXIMUM STORAGE IS 17825 CUBIC FEET

[redacted]

EASON'S TRACE 10-YR POST-DEVELOPMENT

INPUT DESIGN DATA

DESIGN STORM FOR ANALYSIS = 10 YEAR
DRAINAGE AREA (ACRES) = 12.13
AVERAGE SLOPE OF DRAINAGE AREA (%) = 6
YDRAULIC LENGTH (FT) = 1150
PERVIOUS SURFACE (%) = 30
HYDRAULIC LENGTH MODIFIED (%) = 25
COMPOSITE CURVE NUMBER = 75
SLOPE ADJUSTMENT FACTOR = 1.07
PONDING ADJUSTMENT FACTOR = 1

RESULTS OF HYDRAULIC CALCULATIONS
(SCS TR-55 & TP-149 PROCEDURES)

ATERSHED LAG ADJUSTED (IMPER. AREAS & CHAN. IMPROV.) IS .114 HOURS
IME OF CONCENTRATION ADJUSTED IS .19 HOURS
HE PEAK DISCHARGE FROM THIS WATERSHED IS 50 C.F.S.

HE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE
INFLOW HYDROGRAPH

URS)	(C.F.S.)
0.0	
46	1.762
91	6.09
37	14.069
83	23.47
28	33.476
74	42.668
[illegible]	50.219
65	50.232
[illegible]	[illegible]

	[illegible]	
	[illegible]	
	[illegible]	

[illegible]	[illegible] (CFS)	[illegible] (CF)
	0	[illegible]
	.9	[illegible]
	2.3	[illegible]
	3.2	[illegible]
	3.7	[illegible]
	4.3	[illegible]
	5.1	41387
	5.[illegible]	48158
	14.3	52882
	46	65390
	54.4	78858
	57.5	93239

HE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE
OUTFLOW HYDOGRAPH

OURS)	(C.F.S.)
.000	0.036
.046	0.192
.091	0.591
0.137	1.612
0.183	2.629
0.228	3.342
0.274	3.944
0.320	4.435
0.365	4.841
.411	5.130
.457	5.266
.502	5.327
.548	5.333
.594	5.305
.639	5.267
.685	5.229
.731	5.191
.776	5.153
.822	5.116
.868	5.072
.913	5.024
.959	4.977
.005	4.930
.050	4.883
.096	4.837
.142	4.792
.187	4.747
.233	4.702
.279	4.658
.325	4.614
.370	4.570
.416	4.527
.462	4.482
.507	4.435
.553	4.388
.599	4.341
.644	4.295
.690	[illegible]

MAXIMUM OUTFLOW IS 5.333 C.F.S.
MAXIMUM STAGE IS 3.233 FT.
MAXIMUM STORAGE IS 4e48 CUBIC FEET

EASON'S TRACE 100-YR POST-DEVELOPMENT

EASON'S TRACE 100-YR POST-DEVELOPMENT

INPUT DESIGN DATA

ESIGN STORM FOR ANALYSIS = 100 YEAR
RAINAGE AREA (ACRES) = 12.13
VERAGE SLOPE OF DRAINAGE AREA (%) = 6
YDRAULIC LENGTH (FT) = 1150
MPERVIOUS SURFACE (%) = 30
YDRAULIC LENGTH MODIFIED (%) = 25
OMPOSITE CURVE NUMBER = 75
LOPE ADJUSTMENT FACTOR = 1.07
ONDING ADJUSTMENT FACTOR = 1

RESULTS OF HYDRAULIC CALCULATIONS
(SCS TR-55 & TP-149 PROCEDURES)

ATERSHED LAG ADJUSTED (IMPER. AREAS & CHAN. IMPROV.) IS .114 HOURS
IME OF CONCENTRATION ADJUSTED IS .19 HOURS
HE PEAK DISCHARGE FROM THIS WATERSHED IS 82 C.F.S.

HE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE
INFLOW HYDROGRAPH

HOURS)	(C.F.S.)
0,0	
.046	3.115
91	10.671
37	24.397
83	40.145
28	56.423
74	70.845
2	82.14601
65	81.233
11	69.362
57	47.211
02	28.763
48	14.518
94	4.854
39	0

AGE T)	DISCHARGE (CFS)	STORAGE (CF)
	0	0
	.6	2397
	2.3	7215
5	3.2	13747
	3.9	21721
5	4.5	30971
	5.1	41387
3	5.4	48158
5	19.3	52882
	46	65390
5	[illegible]	[illegible]

HE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE
OUTFLOW HYDOGRAPH

(HRS)	(C.F.S.)
.000	0.083
.046	0.338
.091	1.204
.137	2.560
.183	3.446
.228	4.202
.274	4.917
.320	11.647
.365	32.439
.411	40.157
.457	39.509
.502	34.174
.548	26.862
.594	19.566
.639	12.025
.685	7.341
.731	5.383
.776	5.344
.822	5.305
.868	5.267
.913	5.228
.959	5.190
.005	5.153
.050	5.115
1.096	5.072
1.142	5.024
1.187	4.976
1.233	4.930
1.279	4.883
1.325	4.837
.370	4.791
.416	4.746
.462	4.702
.507	4.657
.553	4.613
.599	4.570
.644	4.527
.690	4.482
.736	4.434

AXIMUM OUTFLOW IS 40. 157 C.F.S. [redacted]
AXIMUM STAGE IS [redacted] 3.890581 FT.
AXIMUM STORAGE IS 62652 CUBIC FEET

EASON'S TRACE 10-YR PRE-DEVELOPMENT

EASON'S TRACE 10-YR PRE-DEVELOPMENT

INPUT DESIGN DATA

ESIGN STORM FOR ANALYSIS = 10 YEAR
RAINAGE AREA (ACRES) = 9.3
VERAGE SLOPE OF DRAINAGE AREA (%) = 6
YDRAULIC LENGTH (FT) = 1150
MPERVIOUS SURFACE (%) = 1
YDRAULIC LENGTH MODIFIED (%) = 1
OMPOSITE CURVE NUMBER = 62
LOPE ADJUSTMENT FACTOR = 1.07
ONDING ADJUSTMENT FACTOR = 1

RESULTS OF HYDRAULIC CALCULATIONS
(SCS TR-55 & TP-149 PROCEDURES)

ATERSHED LAG ADJUSTED (IMPER. AREAS & CHAN. IMPROV.) IS .235 HOURS
IME OF CONCENTRATION ADJUSTED IS .392 HOURS
HE PEAK DISCHARGE FROM THIS WATERSHED IS 16 C.F.S.

THE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE
INFLOW HYDROGRAPH

HOURS)	(C.F.S.)
0,0	
399999E-02	.105
38	.484
32	1.446
76	3.678
7	7.67
64	12.871
58	16.216
52	16.047
46	12.51
4	8.425
034	4.691
128	1.82
222	.267
316	0

EASON'S TRACE 100-YR PRE-DEVELOPMENT

EASON'S TRACE 100-YR PRE-DEVELOPMENT

INPUT DESIGN DATA

ESIGN STORM FOR ANALYSIS = 100 YEAR
RAINAGE AREA (ACRES) = 9.3
VERAGE SLOPE OF DRAINAGE AREA (%) = 6
YDRAULIC LENGTH (FT) = 1150
MPERVIOUS SURFACE (%) = 1
YDRAULIC LENGTH MODIFIED (%) = 1
OMPOSITE CURVE NUMBER = 62
LOPE ADJUSTMENT FACTOR = 1.07

RESULTS OF HYDRAULIC CALCULATIONS
(SCS TR-55 & TP-149 PROCEDURES)

ATERSHED LAG ADJUSTED (IMPER. AREAS & CHAN. IMPROV.) IS .235 HOURS
IME OF CONCENTRATION ADJUSTED IS .392 HOURS
HE PEAK DISCHARGE FROM THIS WATERSHED IS 32 C.F.S.

HE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE
INFLOW HYDROGRAPH

URS)	(C.F.S.)
0,0	
399999E-02	.324
.88	1.383
82	3.821
76	8.733
7	16.63
64	26.162
58	31.685
52	30.55
46	23.463
94	15.572
034	8.508001
.128	3.239
.222	.467
.316	0

1992 ADDRESSING SCC COMPLIANCE COMMENT # 11 3.14

TEMPORARY SEDIMENT BASIN DESIGN DATA SHEET

(with or without an emergency spillway)

Project HERON RUN (SEASON'S TRACE SECTION XIII) 1940160

Basin # _____ Location JCC

Total area draining to basin: 12.55 acres.

Basin Volume Design

Wet Storage:

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

   67 cu. yds. x 12.55 acres = 840.9 cu. yds.

2. Available basin volume = 1016.6 cu. yds. at elevation 57. (From storage - elevation curve)

3. Excavate approx. 2000 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 12.55 acres = 414.2 cu. yds.

5. Elevation corresponding to cleanout level = 58.0'.

   (From Storage - Elevation Curve)

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

Dry Storage:

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

   67 cu. yds. x 12.55 acres = 840.9 cu. yds.

8. Total available basin volume at crest of riser* = 1844.9 cu. yds. at elevation 60.2'. (From Storage - Elevation Curve)

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

9. Diameter of dewatering orifice = 11 in.

10. Diameter of flexible tubing = 13 in. (diameter of dewatering orifice plus 2 inches).

Preliminary Design Elevations

11. Crest of Riser = 60.3'

Top of Dam = 62.0'

Design High Water = 60.9'

Upstream Toe of Dam = 53.0'

Basin Shape

12. Length of Flow / Effective Width — $\frac{L}{We}$ = $\frac{40'}{25'} = 1.6$

If > 2, baffles are not required _____

If < 2, baffles are required ✓

Runoff

13. Q_2 = 3.6 cfs (From Chapter 5)

14. Q_{25} = 50.1 cfs (From Chapter 5)

Principal Spillway Design

15. With emergency spillway, required spillway capacity $Q_p = Q_2$ = 3.6 cfs. (riser and barrel)

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

16. With emergency spillway:

Assumed available head (h) = 0.2 ft. (Using Q_2)

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

Without emergency spillway:

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

h = Design High Water Elevation - Crest of Riser Elevation

17. Riser diameter (D_r) = 48 in. Actual head (h) = 0.2 ft.

(From Plate 3.14-8.)

Note: Avoid orifice flow conditions.

18. Barrel length (l) = 29.5' ft.

Head (H) on barrel through embankment = 3.65 ft.

(From Plate 3.14-7).

19. Barrel diameter = 30 in.

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

20. Trash rack and anti-vortex device

Diameter = 72 inches.

Height = 29 inches.

(From Table 3.14-D).

Emergency Spillway Design

21. Required spillway capacity $Q_e = Q_{25} - Q_p$ = 46.5 cfs.

22. Bottom width (b) = 17 ft.; the slope of the exit channel (s) = 0.029 ft./foot; and the minimum length of the exit channel (x) = 55 ft.
(From Table 3.14-C).

Anti-Seep Collar Design

23. Depth of water at principal spillway crest (Y) = 4.1 ft.

Slope of upstream face of embankment (Z) = 3 :1.

Slope of principal spillway barrel (S_b) = 0.64 %

Length of barrel in saturated zone (L_s) = 40 ft.

24. Number of collars required = 2 dimensions = 4' x 4'

(from Plate 3.14-12).

Final Design Elevations

25. Top of Dam = 62.0'

Design High Water = 60.9'

Emergency Spillway Crest = 60.5'

Principal Spillway Crest = 60.3

Dewatering Orifice Invert = 57.0'

Cleanout Elevation = 58'

Elevation of Upstream Toe of Dam or Excavated Bottom of "Wet Storage Area" (if excavation was performed) = 53.0'

ADDENDUM DECOMMISSIONING COMMENT 3.3

NE II $B_1 \rightarrow E_1$ FULL:

Created Revised
16-Sep-94 16-Sep-94 02:50

MANNING'S EQUATION Rec/Trap/Tria

ts (ft)	= FEET		Area (sq ft)	=	3.07
th (ft)	= <.83>		Velocity (ft/s)	=	15.04
charge (cfs)	= <31.08>	<----	Froude Number	=	4.12
ning's n	= <.013>		Critical Depth (ft)	=	1.46
pe(decimal)	= <.06>		Normal Depth (ft)	=	0.83
tom Width(ft)	= <0>		Hydraulic Radius (ft)	=	0.39
			Depth to Centroid(ft)	=	0.28
e Slope	= <3>		Top Width (ft)	=	4.98

DESIGN:

Created Revised
16-Sep-94 16-Sep-94 03:00

MANNING'S EQUATION Rec/Trap/Tria

ts (ft)	= FEET		Area (sq ft)	=	0.97
th (ft)	= <.54>	<----	Velocity (ft/s)	=	11.25
charge (cfs)	= <9.75>		Froude Number	=	3.83
ning's n	= <.013>		Critical Depth (ft)	=	0.92
pe(decimal)	= <.06>		Normal Depth (ft)	=	0.54
tom Width(ft)	= <0>		Hydraulic Radius (ft)	=	0.25
			Depth to Centroid(ft)	=	0.18
e Slope	= <3>		Top Width (ft)	=	3.22

LINE II E, → H, FULL:

MANNING'S EQUATION Rec/Trap/Tria

Created Revised
16-Sep-94 16-Sep-94 03:01

ts (ft)	= FEET		Area (sq ft)	=	2.07
th (ft)	= <.83>		Velocity (ft/s)	=	7.77
scharge (cfs)	= <16.05>	<---	Froude Number	=	2.13
ning's n	= <.013>		Critical Depth (ft)	=	1.12
pe(decimal)	= <.016>		Normal Depth (ft)	=	0.83
tom Width(ft)	= <0>		Hydraulic Radius (ft)	=	0.39
			Depth to Centroid(ft)	=	0.28
de Slope	= <3>		Top Width (ft)	=	4.98

DESIGN:

MANNING'S EQUATION Rec/Trap/Tria

Created Revised
16-Sep-94 16-Sep-94 03:02

ts (ft)	= FEET		Area (sq ft)	=	1.68
th (ft)	= <.75>	<---	Velocity (ft/s)	=	7.25
scharge (cfs)	= <12.22>		Froude Number	=	2.09
ning's n	= <.013>		Critical Depth (ft)	=	1.01
pe(decimal)	= <.016>		Normal Depth (ft)	=	0.75
tom Width(ft)	= <0>		Hydraulic Radius (ft)	=	0.36
			Depth to Centroid(ft)	=	0.25
de Slope	= <3>		Top Width (ft)	=	4.50

LINE II E → M FULL:

[illegible]

Created Revised
16-Sep-94 16-Sep-94 03:07

MANNING'S EQUATION Rec/Trap/Tria

ts (ft)	= FEET		Area (sq ft)	=	2.07
th (ft)	= <.83>		Velocity (ft/s)	=	2.62
scharge (cfs)	= <5.42>	<---	Froude Number	=	0.72
ning's n	= <.05>		Critical Depth (ft)	=	0.73
ope(decimal)	= <.027>		Normal Depth (ft)	=	0.83
tom Width(ft)	= <0>		Hydraulic Radius (ft)	=	0.39
			Depth to Centroid(ft)	=	0.28
de Slope	= <3>		Top Width (ft)	=	4.98

DESIGN:

Created Revised
16-Sep-94 16-Sep-94 03:03

MANNING'S EQUATION Rec/Trap/Tria

ts (ft)	= FEET		Area (sq ft)	=	0.55
th (ft)	= <.43>	<---	Velocity (ft/s)	=	1.68
scharge (cfs)	= <.92>		Froude Number	=	0.64
ning's n	= <.05>		Critical Depth (ft)	=	0.36
ope(decimal)	= <.027>		Normal Depth (ft)	=	0.43
tom Width(ft)	= <0>		Hydraulic Radius (ft)	=	0.20
			Depth to Centroid(ft)	=	0.14
de Slope	= <3>		Top Width (ft)	=	2.56

LINE IV F→M FULL:

Created Revised
16-Sep-94 16-Sep-94 03:08

MANNING'S EQUATION Rec/Trap/Tria

Units (ft)	= FEET		Area (sq ft)	=	2.07
Depth (ft)	= <.83>		Velocity (ft/s)	=	2.08
Discharge (cfs)	= <4.3>	<---	Froude Number	=	0.37
Manning's n	= <.03>		Critical Depth (ft)	=	0.66
Slope(decimal)	= <.017>		Normal Depth (ft)	=	0.83
Bottom Width(ft)	= <0>		Hydraulic Radius (ft)	=	0.39
			Depth to Centroid(ft)	=	0.28
Side Slope	= <3>		Top Width (ft)	=	4.98

DESIGN:

Created Revised
16-Sep-94 16-Sep-94 03:09

MANNING'S EQUATION Rec/Trap/Tria

Units (ft)	= FEET		Area (sq ft)	=	0.49
Depth (ft)	= <.41>	<---	Velocity (ft/s)	=	1.29
Discharge (cfs)	= <.64>		Froude Number	=	0.51
Manning's n	= <.05>		Critical Depth (ft)	=	0.31
Slope(decimal)	= <.017>		Normal Depth (ft)	=	0.41
Bottom Width(ft)	= <0>		Hydraulic Radius (ft)	=	0.19
			Depth to Centroid(ft)	=	0.14
Side Slope	= <3>		Top Width (ft)	=	2.44

LINE IV M→N FULL:

MANNING'S EQUATION

Created Revised
16-Sep-94 16-Sep-94 03:06

Rec/Trap/Tria

Units (ft)	=	FEET	Area (sq ft)	=	2.07
Depth (ft)	=	<.83>	Velocity (ft/s)	=	20.27
Discharge (cfs)	=	<41.9> <---	Froude Number	=	5.55
Manning's n	=	<.013>	Critical Depth (ft)	=	1.65
Slope(decimal)	=	<.109>	Normal Depth (ft)	=	0.83
Bottom Width(ft)	=	<0>	Hydraulic Radius (ft)	=	0.39
			Depth to Centroid(ft)	=	0.28
Side Slope	=	<3>	Top Width (ft)	=	4.98

DESIGN:

MANNING'S EQUATION

Created Revised
16-Sep-94 16-Sep-94 03:06

Rec/Trap/Tria

Units (ft)	=	FEET	Area (sq ft)	=	0.18
Depth (ft)	=	<.24> <---	Velocity (ft/s)	=	8.91
Discharge (cfs)	=	<1.56>	Froude Number	=	4.52
Manning's n	=	<.013>	Critical Depth (ft)	=	0.44
Slope(decimal)	=	<.109>	Normal Depth (ft)	=	0.24
Bottom Width(ft)	=	<0>	Hydraulic Radius (ft)	=	0.11
			Depth to Centroid(ft)	=	0.08
Side Slope	=	<3>	Top Width (ft)	=	1.45

Calculated By: GOERWG Date: 9-16-94
Checked By: TCS Date: 9-16-94
N= 0.013 (PAVED) 0.05 (GRASS)
Storm Frequency 10-YR
[illegible] #12 & #25

DJG P.O. Box 3505
Williamsburg, Virginia 23187

Project No.: 1940160
Project Desc. REVISED SEASON'S TRACE XII

Sheet 1 of 1 Sheets

STORM DRAINAGE COMPUTATION SHEET

LOCATION				RUN-OFF										PIPE - CHANNEL DESIGN						HYDRAULIC GRADE LINE								
				AREA-ACRES					TIME OF FLOW - MIN.																			
LINE	RUN	FROM	TO	INCREMENT	TOTAL	RUN-OFF COEFF.	INCREMENTAL CA	ACCUMULATED CA	TO INLET/ UPPER REACH	WITHIN REACH CONVEYANCE	TIME OF CONCENTRATION	INTENSITY	DISCHARGE C.F.S.	PIPE SIZE	CHANNEL SECTION	SLOPE FT./FT.	CAPACITY FULL C.F.S.	VELOCITY FULL F.P.S.	DESIGN VELOCITY F.P.S.	CONVEYANCE LENGTH FT.	INVERT UPSTREAM	INVERT DOWNSTREAM	FRICTION SLOPE FT./FT.	VELOCITY F.P.S.	$V^2/2G$ FT.	H.G.L. ELEV. UPSTREAM	H.G.L. ELEV. DOWNSTREAM	COVER ELEV. TOP OF BANK
II		B,	E,	3.09	3.09	0.5	1.95	1.95			15.0	5.0	9.75	-	PG-2A	0.060	31.08	15.04	11.25	140'	85.24	76.87						
		E,	H,	0.80	3.89	0.5	0.4	2.35			12.0	5.2	12.22	-	PG-2A	0.016	16.05	7.77	7.25	267'	76.87	72.50						
IV		E	M	0.18	0.18	0.7	0.13	0.13			5.0	7.10	0.92	-	V-GRASS	0.027	5.42	2.62	1.68	130	73.56	70.00						
		F	M	0.13	0.31	0.7	0.09	0.09			5.0	7.10	0.64	-	V-GRASS	0.017	4.30	2.08	1.29	215	73.56	70.00						
		M	N	—	0.31	0.7	—	0.22			5.0	7.10	1.56	-	PG-2A	0.109	41.90	20.27	8.91	110	70.00	58.00						

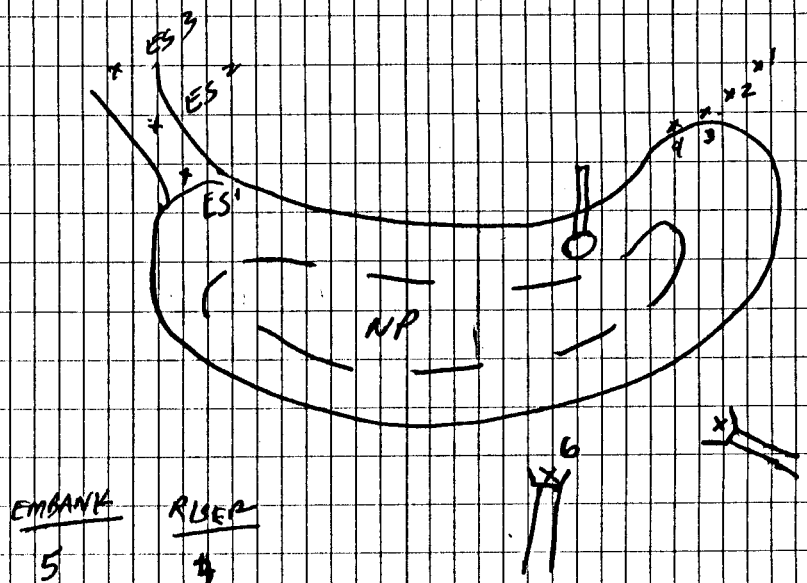
As-Built Season Trace
Heron Run PC 062 10/16/02

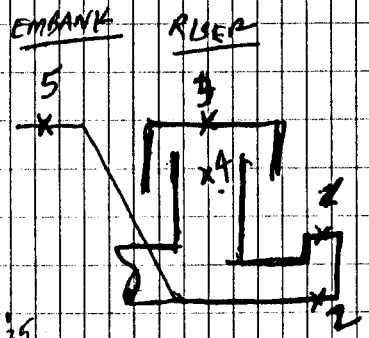
	+	HI	−	ELEV	
BS REF. 30" CMP	10.22	66.12		55.9	INV OUT BARREL
TOP LOW FLOW ORIF (1)		66.12	8.07	58.05	
INV LFOR (2)		66.12	9.24	56.88	
TOP CAP (3)		66.12	4.46	61.66	
CREST (4)			5.66	60.46	
TOP DAM (5)			3.80	62.32	
24" PIPE (6)			8.07	58.05	
15" PIPE (7)			6.09	60.03	
T.O.D.¹ (8)	@ 0		1.63	64.49	
TOD²	@ 15'		3.94	62.18	
TOD³	@ 25'		4.65	61.47	
TOD⁴	@ 35'		3.61	62.51	
TOD⁵	@ 60' (25')		3.64	62.48	
TOD⁶	85		3.82	62.30	
TOD⁷	110'		3.70	62.42	

"PRIDE" UNVEILING

REF = 55.9
NP = 57.3
100-YR = 60.93
TOD AB = 8' WIDE

55.90
10.22
66.12
8.07
58.05





BIOLOG STAKEOUT
NP = 58.05
STAKE 57.55

35
25
60

NP = 57.68 Normal pool was down 4-6" due to recent drought.

SEASON TRACE - HERON RUN

+	HI	⊕	ELEV
TOD 7 @ 135'	66.12	3.94	62.18
TOD 8 @ 160'		3.72	62.40
TOD 9 @ 185'		3.945	62.17
TOD 10 @ 210'		3.91	62.21
TOD 11 @ 235'		4.24	61.88
TOD 12 @ 260'		4.13	61.99
E.S 1		5.79	60.33
ES 2		5.01	61.11
ES 3		5.00	61.12
NP (10-15-02)	66.12	8.44	57.68

DEVELOPMENT MANAGEMENT

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

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

COUNTY ENGINEER
(757) 253-6678

INTEGRATED PEST MANAGEMENT
(757) 259-4116

April 17,2001
Heatherstone LLC
P.O.Box 1275
Grafton, Va.23692

RE: Seasons Trace Section 13 Heron Run Pond Conversion
County BMP I.D.Code PC-062

A site visit was conducted on April 16,2001 regarding the pond conversion of the sediment basin on site. As a result of this site visit, several items need to be addressed during the reconstruction of this pond in order to facilitate the acceptance of the pond and the release of your surety. These items are:

- Removal of all dead trees within and adjacent to the designed 100-yr flood elevation.
- Remove sediment and restore the pond to original design plan contours.
- Clean the pipe inflows of vegetation and sediment.
- Reconstruct the "Bench" along the inside of the pond.
- Clean debris from the inside of the riser, and low orifice (12 inch pipe).
- Install riprap at outfall as per plans.
- Removal of all woody vegetation on the embankment.
- Remove all silt fences in the area.
- Clean and flush all inflow storm pipes. Replace all riprap at inflow pipes.
- Remove debris from lower portion of emergency spillway and establish to design grade shown on plan.

An inspector from our office will be glad to meet with you on site to discuss these issues if you have any questions. Please call our office to arrange a site visit at 253-6670.

Environmental Division
JCC Environmental Division

DEVELOPMENT MANAGEMENT

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- Remove debris from lower portion of emergency spillway and establish to design grade shown on plan.

An inspector from our office will be glad to meet with you on site to discuss these issues if you have any questions. Please call our office to arrange a site visit at 253-6670.

Note: Work performed Nov-Dec 2001 by developer. Reinspected by GERALD Lewis 12/31/01 AND Scott Thomas 1-02-02. Silt Fences Removed & grass in seeded + mulched disturbed areas is germinated. SAT

Environmental Division
JCC Environmental Division

DEVELOPMENT MANAGEMENT

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(757) 259-4116

Tom Tucker
757-880-7973
OK for Bond Rel.
SJT 1-2-01

April 17,2001
Heatherstone LLC
P.O.Box 1275
Grafton, Va.23692

RE: Seasons Trace Section 13 Heron Run Pond Conversion
County BMP I.D.Code PC-062

A site visit was conducted on April 16,2001 regarding the pond conversion of the sediment basin on site. As a result of this site visit, several items need to be addressed during the reconstruction of this pond in order to facilitate the acceptance of the pond and the release of your surety. These items are:

10-23-01 SJT.

- ✓ Removal of all dead trees within and adjacent to the designed 100-yr flood elevation.
- ✓ Remove sediment and restore the pond to original design plan contours.
- ✓ Clean the pipe inflows of vegetation and sediment.
- ✓ Reconstruct the "Bench" along the inside of the pond. WAIVED PER MEETING SJT + GEL.
- ✓ Clean debris from the inside of the riser, and low orifice (12 inch pipe).
- ✓ Install riprap at outfall as per plans.
- ✓ Removal of all woody vegetation on the embankment. GOOD JOB!
- ⊙ Remove all silt fences in the area.
- ✓ Clean and flush all inflow storm pipes. Replace all riprap at inflow pipes.
- ✓ Remove debris from lower portion of emergency spillway and establish to design grade shown on plan.

GRASS IS OK. SF REMOVED 12/31/01. check BY GEL OK

An inspector from our office will be glad to meet with you on site to discuss these issues if you have any questions. Please call our office to arrange a site visit at 253-6670.

NOTE: SF ALONG DS "RIGHT" TOE + ALONG 2 INFLOW PIPES NEAR RISER INSTALLED TO CONTROL DISTURBED AREAS WHICH WERE SEEDED + MULCH DUE TO CONVERSION OPERATION. ONCE GRASS GROWS, REMOVE SF.

ONCE GRASS GROWS, SF REMOVED OK w/ CR Mems.

Environmental Division
JCC Environmental Division

FILE -

JUL 1999

July 22, 1999

Mr Darryl Cook
Environmental Division Administrator
101 E Mounts Bay Road
P.O. Box 8784
Williamsburg, VA 23187

Dear Mr Cook,

The members of Heron Run Homes Association are concerned about the lack of progress in the completion of the Heron Run development, state approval of the roads, and the clean-up of the BMP pond. The developer, Mr Thomas Tucker passed the pond and other common areas to the Heron Run Homes Association without anyone's knowledge or approval in January, 1998. At this juncture, the Association wants to ensure that the bond money that the developer was required to post by James City County for the roads and BMP pond are not returned to the developer prior to approval of the pond and roads. In our previous conversations, I believe you indicated that there will be an inspection of the pond prior to return of the bond money. The Association President or designated representative would like to be present at that inspection.
This is a small Association (28 Members) without the resources to absorb any developer costs or shortfall. Should you have any questions, please call Mr Frank Widrig, President, Heron Run Homes at 259-5833 or the undersigned at 253-2727.

Sincerely,

Te-Ata R. Hery

Cannot reach either person
@ phone #s listed. DEC

Te-Ata R. Hery
Secretary/Treasurer
Heron Run Homes Assn
101 Heron Run
Williamsburg, VA 23187

Scott Thomas

From: Scott Thomas
Sent: Wednesday, August 07, 2002 10:40 AM
To: Mike Woolson
Subject: RE: Heron Run pond info

Based on as-built and design hydraulic data:

Normal Pool: El. 57.3
1-year storm: No data available. I would guesstimate at around El. 58.5
2-year storm: El. 59.43
10-year storm: El. 60.23
100-year storm: 60.93

Assuming installation of the 12-inch logs is such that the normal pool elevation (57.3) will match the 2/3 height of the log per manufacturers recommendations, then:

Top of log: El. 57.63
2/3 height log: El. 57.3
1/3 height log: El. 56.96
Invert log: El. 56.63

Therefore, roughly:

1-year WSEL is about 1 ft. above top of log.
2-year WSEL is about 2 ft. above top of log.
10-year WSEL is about 2.5 ft. above top of log.
100-year WSEL is about 3.5 ft. above top of log.

-----Original Message-----
From: Mike Woolson
Sent: Wednesday, August 07, 2002 8:11 AM
To: Scott Thomas
Subject: Heron Run pond info

Scott,

Can you provide me with the normal pool elevation, 1-yr, 2-yr, and 10-yr storm elevations and the approximate elevation of the top of the biologs? I am putting together the planting list and will need to develop approximate areas for the plant quantities. Also, I was thinking about planting below the biolog (waterside) for approximately 2 feet. Thanks for the help.

Michael Woolson, LA
Watershed Planner
JCC Environmental Division
mwoolson@james-city.va.us
757-253-6823 - office
757-259-4032 - fax

Scott Thomas

From: Scott Thomas
Sent: Wednesday, January 24, 2007 4:44 PM
To: 'mjevans@wm.edu'
Cc: Joan Etchberger; Beth Davis
Subject: RE: Heron Run BMP PC062

Attachments: SeasonsTrace.jpg; Maint.wetdry.pdf; WatAware.tips.pdf; Landscaping.tips.pdf

SeasonsTrace.jpg (309 KB) Maint.wetdry.pdf (21 KB) WatAware.tips.pdf (15 KB) Landscaping.tips.pdf (31 KB)

Matt

My name is Scott Thomas. I am Chief Engineer with the Environmental Division and the primary contact for HOA interaction with the County on long-term stormwater management facility (BMP-Best Management Practice) maintenance. I am guessing (and hope) that you got information about the BMP in Heron Run from the BMP Guide portion of our County PRIDE water quality website www.protectedwithpride.org

I'm gonna throw a lot of information to you at once to answer your questions. My previous HOA contact for the BMP at Heron Run was Dan Stebbins and Te-ata Hery but that was some time ago. For your information, the County ID # for the BMP is PC 062. It is a wet pond, County 9-point BMP which serves a drainage area of 12.25 acres. It was approved with the Heron Run subdivision plan under approved County Plan No. S-44-96. We have an asbuilt file here at our office with information about design and construction of the pond.

Our last documented inspection date for the pond was 04/16/2001. However, the 2003 date reflects our involvement with the pond in 2002-2003 when we performed a PRIDE demonstration project there. Visit the News & projects portion of the PRIDE website for additional information. The link is: http://www.protectedwithpride.org/news_101903_pr.html At that demonstration, we stabilized the west shoreline of the pond with a coconut fiber log, we did a wetland planting by the flow control structure and we planted trees in the common area to the west of the pond.

Every year, we visit all of PRIDE demonstration projects (currently at 9). On December 12 of this year we visited Heron Run BMP to look at our project items. While I was there, I got a good look at the pond. Nothing to me stood out as requiring immediate attention and there appeared to be no drastic maintenance issues as compared to 2002-03. Actually the dam embankment looked fairly good, the trees have not come back substantially. Probably the main item to keep ongoing is keeping trees and ground cover from coming back on the downstream face of the dam. And also keep the primary flow control structure (standpipe) and the outlet barrel (pipe through the dam) free and clear of vegetation, debris and sediment. Especially at the end of the outlet barrel.

The pond shoreline looked good with a natural pond buffer which is what we prefer. The shoreline plants were doing well. Algae has always been an issue at the pond and it didn't look any worse or better to me. I still think it is a matter of runoff at the source than a problem at end. Overuse of chemical, nutrients and fertilizers from the residence as opposed to any kind of malfunction or lack of storage in the pond.

As far as the aerator-fountain issue. We remain neutral in that recommendation. That is a decision by the owner, based upon funds available and how they want the pond to look. Aerator-fountains provide very limited benefit for water quality, more so with algae but still very limited. Our PRIDE mini-grant program ($500) will not fund aerators or fountains.

I'm attaching a map of your area and also a typical maintenance plan for wet/dry pond BMPs. There are no special maintenance concerns beyond the maintenance plan that I am giving you and following it should provide you with what you need. Of course, we could meet and look around so I get a chance to meet you. Email me back to see what your schedule is maybe in about two weeks because I'm pretty slammed right now. I've also included some general watershed awareness tips and landscaping tips for BMPs.

Scott J. Thomas, P.E.
Chief Engineer - Stormwater
James City County
Environmental Division

Visit:
http://www.james-city.va.us/resources/devmgmt/div_devmgmt_environ.html
and
www.protectedwithpride.org

-----Original Message-----
From: Joan Etchberger On Behalf Of Environmental Division
Sent: Thursday, January 18, 2007 4:38 PM
To: Scott Thomas
Cc: 'Matt Evans'
Subject: RE: heron run retention pond

FY response.

-----Original Message-----
From: Matt Evans [mailto:mjevan@wm.edu]
Sent: Thursday, January 18, 2007 1:42 PM
To: Environmental Division
Subject: heron run retention pond

Hi,
I am the homeowners association pond chairman for Heron Run (at the end of Season's Trace). I was hoping we could get a BMP inspection of our pond, the last one was in 2003. I'd like to get an idea of the baseline we are working from, and what the priorities should be.

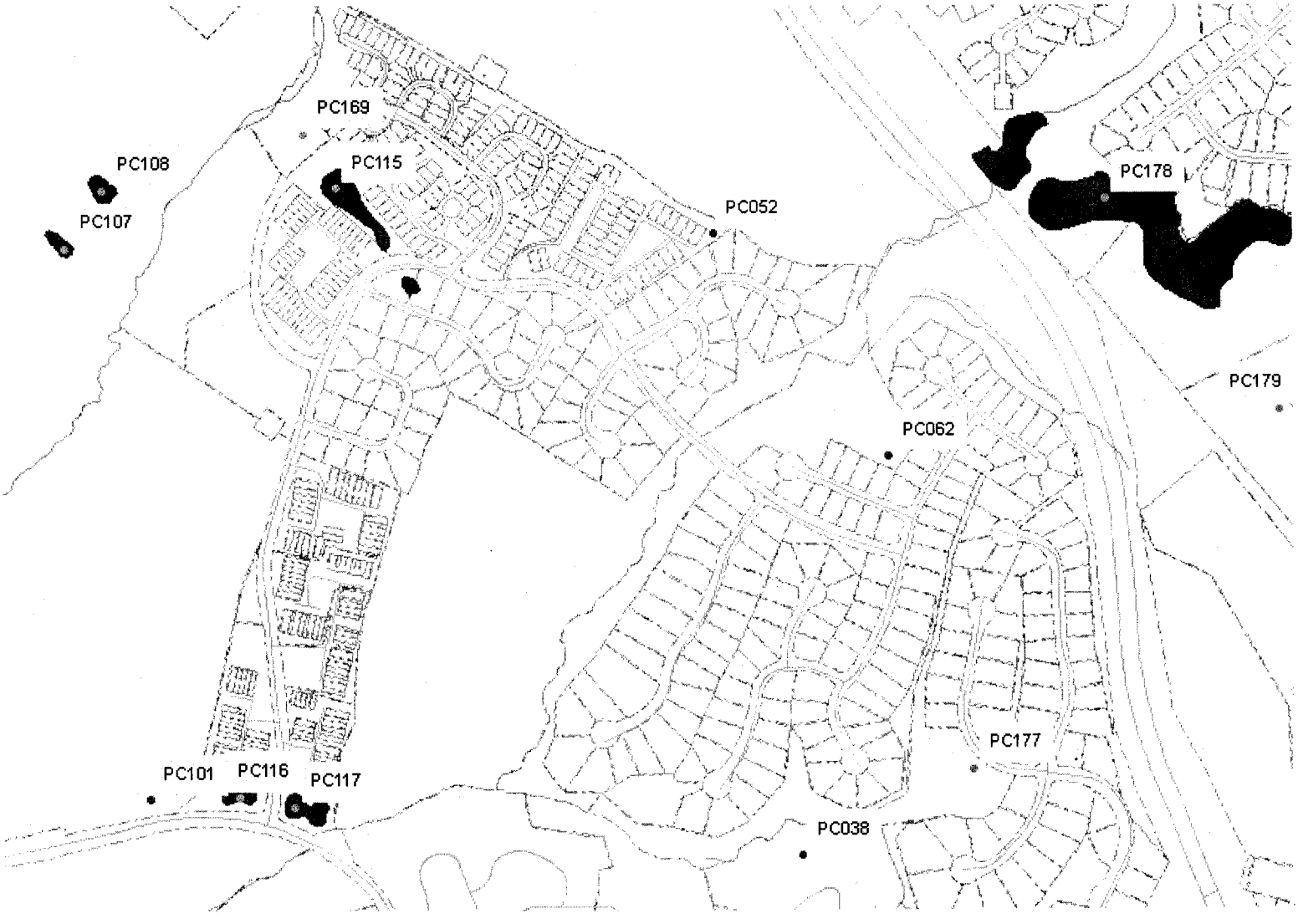
We are also hoping to install solar-powered aerators in hopes of improving water quality... are there any resources available to homeowners associations as far as funds or information for bmp improvements such as this?

thank you,
Matt Evans

--
Matthew Evans, Assistant Professor
Department of Geology The College of William and Mary P.O. Box 8795 Williamsburg, VA 23187-8795

Fed Ex or UPS mailing address:
Dept. of Geology The College of William and Mary McGlothlin-Street Hall Rm 226 Williamsburg, VA 23185

Phone: (757) 221-2951 Fax: (757) 221-2093 email: mjevan@wm.edu


PC169
PC108
PC115
PC107
PC052
PC178
PC179
PC062
PC177
PC101
PC116
PC117
PC038

(Note: This is a Sample Maintenance Plan for a Detention or Retention type facilities. Use or modify as required specific to operation, maintenance and inspection requirements for your designed SWM / BMP facility.)

Maintenance Plan (Detention or Retention Pond BMP's)

A maintenance program is required to ensure the Stormwater Management (SWM) / Best Management Practice (BMP) facility functions as designed and to provide for reasonable aesthetic conditions. Proper maintenance is encouraged to prevent the introduction of debris and sediment at inflow locations, pretreatment areas, the BMP itself, its principal control structures and downstream waterways. Following installation and establishment of vegetation in disturbed site areas, inspections for sediment buildups will be performed at least quarterly. It is anticipated that under normal conditions, sediment removal will be required once every 5 to 10 years. If other construction or related land-disturbing activities are performed upslope of the BMP, adequate protection measures should be implemented with inspections performed at least once weekly.

The Owner or its designated representative will inspect the SWM/BMP structure after each significant rainfall event or the following working day if a weekend or holiday occurs. A significant rainfall for this structure is defined as one (1) inch or more of gauged rainfall within a 24 hour period. Once per year (more or less) a representative of the County may jointly inspect the structure. Appropriate action, performed at the cost of the owner will be taken to ensure appropriate maintenance. Keys to locked access points or structures shall be made available to the County upon request.

BMP Description: {Briefly describe the type of structure, the site it serves and function in layman terms. Example: BMP # 1 serves a drainage area of 5.5 acres associated with Section 1 of XYZ Development. The facility is a 4 point, dry-type detention facility, County Type F-2 BMP. A dry-type detention pond temporarily stores runoff and is normally dry during non-rainfall periods. Typically draw down times range from 24 to 72 hours following a storm event. Principal structures associated with the BMP consist of two 24 inch inflow storm drains, a 72 inch vertical RCP riser, 36 inch RCP outlet barrel and 6 ft. wide, grass-lined trapezoidal shaped emergency overflow channel. There are 3 openings in the riser to provide for water quality drawdown and to offer control for the 2- and 10- year design storm events. During the 100-year storm, the maximum water level should rise to about 2 feet above the top of the riser and within 1.5 feet below the top of dam. During this type of larger storm event, the emergency spillway, which is located through the embankment directly west of the riser structure, will discharge flow. If functioning properly, normal storm events should reach an elevation just below the top of the riser and the pond should draw down in about 24 to 36 hours.}

Inspection and maintenance of the facility will consist of the following additional measures:

1. Inspect for sediment buildup by visual observation and a physical determination of sediment depth within pond storage areas. If the depth of sediment reaches the depth of x ' - x " above the bottom of pond (or Cleanout Elevation of xxx.x) , removal is required. At the same time, or at least once per year, clean pretreatment devices, the riser bottom and outlet pipes of accumulated sediments. Dispose of sediments removed from the facility at an acceptable disposal area. (Note: Cleanout Elevation corresponds to 10 percent of the Water Quality Volume).

2. Perform maintenance mowing of pond grasses at least twice each year. Grasses such as tall fescue should be mowed in early summer after emergence of the heads on cool season grasses and in late fall to prevent seeds of annual weeds from maturing. Mowing of legumes can be less frequent. Trees, shrubs and woody vegetation are not be permitted to grow along or on any part of the embankment embankment that was constructed using engineered (compacted) fills.

3. Perform soil sampling on stabilized pond soil areas at least once every 4 years. Soil sampling and testing should be performed by qualified independent soil testing laboratory such as VPI&SU. Apply additional lime and fertilizer in accordance with test recommendations.

4. In stabilized pond areas, if vegetation covers less than 40 % of soil surfaces, lime, fertilize and seed in accordance with recommendations for new seedlings. If vegetation covers more than 40 % but less than 70 % of soil surfaces, lime, fertilize and over seed in accordance with current seeding recommendations or requirements of the Virginia Erosion and Sediment Control Handbook (VESCH).

5. Perform quarterly inspections of the riser section and crest spillway for the observance of collected trash and debris. Immediately remove any trash or debris that prevents the movement of water. Remove any trash and litter downstream and at storm drain or channel inflow locations to maintain the integrity of the structure and provide an attractive appearance.

6. Perform yearly structural inspections of the facility for damage. Structural inspection shall be performed on the concrete riser, anti-vortex device, trash rack, orifices/weirs, outlet barrel and pond embankment. Exposed metal surfaces shall be re-painted or re-galvanized to minimize rust damage or replaced if rust damage is irreversible. If damage is evident, further investigation by a professional engineer may be required to assess the integrity of the structure.

7. Perform quarterly inspections of the graded side slopes of the facility for signs of animal/rodent borrows or slope erosion. Immediately perform necessary repairs, refilling or reseeding.

8. Perform yearly observations of perimeter areas surrounding the facility to ensure changes in land use, topography or access have not occurred and do not affect the operation, maintenance, access or safety features as provided. Appropriate action is required to ensure adequacy and to provide a clear, safe passage for maintenance vehicles to the engineered embankment and principal flow control structures.

9. Inspect and exercise pond drain valves, if provided, on a regular basis.

10. Record Keeping. The owner or designated representative shall keep reasonable, accurate written records of inspections performed for the structure. Records shall document routine maintenance and/or repairs performed. Copies shall be provided to the County upon request.

11. The facility shall not accept additional drainage or be modified in any way without prior consent or approval by the Environmental Division of James City County.

(End)

Watershed Awareness Tips

Although you may not have waterfront property or property located directly adjacent to a stormwater management or storm drainage facility, the rain that runs off your roof, lawn, driveway or lot can eventually end up in the nearest drainage facility, waterway or waterbody. Stormwater which enters inlets and storm drain systems along your street eventually leads to the nearest stormwater management facility, waterway, lake, pond, river, stream or bay.

By following these tips, you can help prevent pollution into these features and promote watershed awareness.

- ❒ ***Easy on pesticides and herbicides.*** *Don't overspray your lawn or garden since these products may be toxic or a source for contamination. Use them sparingly and in strict accordance with label directions. Seek non-toxic alternatives whenever possible and pull weeds by hand. The local office of the Virginia Cooperative Extension and local master gardener groups are good sources of information relative to the application and use of these types of products.*

- ❒ ***Use chemical fertilizers sparingly.*** *Don't overuse fertilizers especially near pond or stream edges. Rain and lawn watering washes excess fertilizers into waterways and waterbodies causing nutrient pollution which contributes to the overgrowth of algae.*

- ❒ ***Control grass clippings.*** *If you don't use your grass clippings for mulch or compost, put them in the trash instead of a storm drain, channel or along the edge of waterbodies. These materials decay and are a source of water quality problems. Contact your local solid waste disposal department to understand proper disposal of bagged woody or grass material.*

- ❒ ***Plant instead of paving.*** *Ground cover minimizes runoff. Consider converting lawns adjacent to waterways and waterbodies with native woody and meadow-like vegetation to create buffers to control runoff and erosion. Plants native to the area should be used for landscaping purposes since they have reduced needs for fertilizers and pesticides.*

- ❒ ***Redirect runoff from roofs, patios and driveways.*** *Minimize flow by redirecting runoff from downspouts to grassed or landscaped areas or to rain gardens to promote filtering and infiltration into soils. Runoff which is conveyed directly to impervious surfaces and into storm drainage systems carries leaves, fertilizers, pesticides, grass clippings, trash, debris and sediment load.*

- ❒ ***Watering the driveway won't make it grow.*** *Save the hose for gardening rather than for sweeping or cleaning. Wash vehicles on lawn areas to help filter out detergents. Use soap and cleaning products sparingly and utilize biodegradable detergents with little or no phosphates if possible.*

- ❒ ***Storm drains are for stormwater.*** *Never pour used motor oil, anti-freeze, leaves, lawn clippings or other waste materials or chemicals directly into inlets, storm drains or channels. Motor oils and anti-freeze are extremely toxic to wildlife and plants and can contaminate water supply sources. Drop off used vehicle lubricants and chemicals at acceptable disposal or recycling stations.*

- ❒ ***Add grassed swales and berms to yards.*** *A swale is a small dip in the slope of a yard. A berm is a small mound. Vegetated linings in swales/berms help to filter or infiltrate runoff into the soils. Although use of swales/berms are encouraged, avoid conveying concentrated drainage onto an adjacent property or neighbor.*

- ❒ ***Educate your neighbors.*** *Pass these tips on to your friends and neighbors. Work together to promote watershed awareness and strive to improve water quality by preserving or adding vegetation, promoting infiltration and by neighborhood sponsored cleanup programs.* *Rev 01/30/02*

General Landscaping Guidance for All Stormwater Management /BMP Facilities

- ❒ *Trees, shrubs and/or any type of woody vegetation are not allowed on earthen fill embankments.*
- ❒ *Keep trees and shrubs at least 15 feet away from the toe of constructed earthen fill embankment slopes.*
- ❒ *Keep trees or shrubs having long taproot systems away from constructed fill embankments or subsurface drains.*
- ❒ *Keep trees and shrubs at least 25 feet away from perforated pipes, drains or stone/soil filters.*
- ❒ *Keep trees and shrubs at least 25 feet away from principal flow control structures (risers, grates, etc.).*
- ❒ *Keep vegetation and sediment at least 15 feet away from low flow orifice openings.*
- ❒ *Clean trash and debris frequently from within the facility and at principal flow control structures. Only trained or authorized personnel should enter confined spaces or structural components of the facility.*
- ❒ *Keep herbaceous (not woody) embankment plantings limited in height and girth.*
- ❒ *Maintain erosion control mats, blankets and fabrics in channels or on slopes to reduce erosion potential.*
- ❒ *Keep emergency spillways stabilized with plant material that can withstand strong flows. Root material should be fibrous and substantial, but lacking a taproot.*
- ❒ *Seed and mulch bare, exposed or formed soil erosion gullies around the facility. Divert surface runoff from seeded and mulched areas until vegetation establishes.*
- ❒ *Check water tolerances of existing native plant materials prior to inundation of pond areas.*
- ❒ *Stabilize aquatic and safety benches with emergent wetland plant species and specialized wet-seed mix.*
- ❒ *Keep access to embankments or flow control structures free of trees or shrubs. Ensure areas that are planted adjacent to access routes can withstand compaction, damage or vibration that may occur due to passing vehicles or heavy equipment.*
- ❒ *To reduce thermal warming effects, shade inflow and outflow channels as well as southern exposures.*
- ❒ *Avoid plantings that require routine or intensive chemical applications such as turf, lawn grass, etc.*
- ❒ *Use salt-tolerant plants if excessive amounts of deicing salt are anticipated in inflow runoff.*
- ❒ *Soil test perimeter areas periodically to determine if soil amendments are necessary. Contact the local office of the Virginia Cooperative Extension for assistance.*
- ❒ *Select native plant species which adapt to local soil and climate conditions over exotic or foreign species.*
- ❒ *Decrease or minimize areas where yard turf is used. Use low maintenance ground cover to help absorb and filter runoff and prevent erosion where possible.*
- ❒ *Maintain pond buffers (25 ft. minimum from design high water elevation) as meadow or forest areas. Preserve existing trees and ground cover within buffer areas to the greatest extent possible.*
- ❒ *Discourage resident geese populations by planting trees, shrubs and native ground covers in non-forested pond buffer areas.*
- ❒ *Plant stream and normal pool buffers (except fill embankments) with native trees, shrubs, grasses and herbaceous material where possible to stabilize banks, provide shade and provide for water quality enhancement.*
- ❒ *Stabilize eroded pond shorelines with native wetland plants or coconut (coir) fiber logs.*
- ❒ *Use selective or strategic plantings to minimize access to deeper pools, steep slopes or structures.*
- ❒ *If warranted, provide educational signs around the perimeter of the facility to indicate that it is a Stormwater Management Area or to designate planting, maintenance or mowing (or non-mowing) zones.*
- ❒ *Avoid the overuse of any one type of plant material and seed mixtures with weeds or invasive species.*
- ❒ *Preserve existing, native vegetation to the greatest extent possible unless it deters from the stormwater function or structural integrity of the facility. Strive to keep all tributary drainage areas in a stabilized condition..*
- ❒ *Aesthetics and cosmetic characteristics are important considerations. Strive to maintain the BMP with a natural, scenic character that blends well with the community theme, physical location and all surrounding land uses. Screening is promoted, but care should be exercised to avoid conflicts with required maintenance activities or practices that would threaten the stormwater function or structural integrity of the facility. Critical areas are embankments, riser structures, outlet barrels, spillways, trash racks, forebays, inlets, inflow channels, etc.*
- ❒ *Original design or enhanced landscaping should not encroach upon public or private roadways, sidewalks, trails or emergency vehicle access routes.*
- ❒ *Refer to the approved plan for the BMP. Some plans provide specific guidance relative to operation, inspection and maintenance. Although this is a current requirement of the Environmental Division, this information may not necessarily be found on all plans, especially for older facilities. Contact the Environmental Division at **757-253-6670** for additional information.*

PROTECTED WITH PRIDE IN JAMES CITY COUNTY

Revised 07/10/03

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

5-44-96

Database Inventory No. (if known): PC 062 FINAL CONST INSPECT.

Name of Facility: HERON RUN SEASONS TRACE SECT 13 BMP No.: 1 of 1 Date: 04/16/01

Location: 120 HERON COURT (NEAR INTX HERON Ct & Teal Way)

Name of Owner:

Inspector: SJ Thomas, GE Lewis

Type of Facility: WET POND

Weather Conditions: P.Cloudy, Cool, High 50'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:		2H:1V		
Grass Height	X			
Vegetation Condition		X	X	Trees Shrubs + Woody Veg From Entire D/S Emb.
Tree Growth		X	X	" " "
Erosion	X			
Trash & Debris	X			
Seepage	X			No SIGNS.
Fencing or Benches	X			
Interior Landscaping/Planted Areas:	☒ None	☐ Constructed Wetland/Shallow Marsh	☐ Naturally Established Vegetation	
Vegetated Conditions				Wet Pool, IRREGULAR SHAPED
Trash & Debris				
Floating Material				
Erosion				
Sediment				
Dead Plant				
Aesthetics				
Other				

Serves SF LOTS & ROADWAYS

Facility Item	O.K.	Routine	Urgent	Comments
Water Pools	☒ Permanent Pool (Retention Basin)	☐ Shallow Marsh (Detention Basin)	☐ None (Detention Basin)	
Shoreline Erosion	X			No major problems
Algae	X			Minor back of pool.
Trash & Debris	X			None.
Sediment		X		2-3' deep at riser.
Aesthetics	X			
Other				Pool 2' deep mid, back
Inflow Stuctures (Describe Locations): 3 pipes 1) 15" RCP NE 2) 24" RCP NE 3) 18" RCP SW				
Condition of Structure	X			
Erosion	X			
Trash and Debris			X	Clean + Remove sediment and veg
Sediment			X	at three pipe outfalls (15' in vicinity)
Aesthetics				Sed 1-2' deep all locations (plume)
Other				
Principal Flow Control Structure - Intake, Riser, etc. (Describe Location): 48" ACCP w/ 6' TOP				
Condition of Structure	X			
Corrosion	X			
Trash and Debris		X		Remove Debris from Low Flow Orif (12").
Sediment	X			
Aesthetics	X			
Other		X		Remove Willows within 15' of riser.
Principal Outlet Structure - Barrel, Conduit, etc. : 30" ACCMP				
Condition of Structure	X			
Settlement	X			
Trash & Debris		X	X	Remove TAR PAPER COVER
Sediment	X			
Erosion	X			
Other		X		Need 24' of Rock
Emergency Spillway (Overflow): 8' GRASSED				
Vegetation	X			
Lining	X			
Erosion				
Trash & Debris			X	Debris in lower portion of ES
Other				Weeds Removed
EMER SPILLWAY WEEDS CLEANED + FINISHED				

Facility Item	O.K.	Routine	Urgent	Comments
Nuisance Type Conditions:				
Mosquito Breeding	X			
Animal Burrows	X			
Graffiti	X			
Other	X			
Surrounding Perimeter Conditions: South side SF; North Side Wooded				
Land Uses	X			SF & WOODS
Vegetation	X			
Trash & Debris	X			
Aesthetics	X			LAWNS
Access /Maintenance Roads or Paths		X		Between Lot 27/28 (104 & 108 HERON CT.) Possible Access Problem
Other				

Remarks:

- Remove Trees, Shrubs + Woody Veg from Entire D/S EmB
- CLEAN + Remove sediment 2-4' deep in vicinity of riser.
- CLEAN + Remove sed plumes at all 3 inflow pipe outfalls. CLEAN + Remove vegetation at same locations.
- Remove debris from 12" LOW FLOW ORIFICE. CLOGGED AT TIME OF INSP.
- Remove willows from within 15' of Pond Riser.
- Remove siltfence/ tarpaper from pond barrel & inflow pipes AT NE CORNER NEAR RISER.
- NEED OF ESTABLISHED AT POND BARREL (30")
- Debris in Lower portion of Em. Spillway needs removed + DESIGN GRADE ESTABLISHED

Overall Environmental Division Internal Rating: 3

Signature: [signature] PE **Date:** 04/16/01

Title: CIVIL ENGINEER ENVIRONMENTAL DIVISION

SWMProg\BMP\CoInspProg\DetRet.wpd

IMPORTANT MESSAGE

FOR Scott -

DATE 12/21 TIME 11:35 A.M. P.M.

WHILE YOU WERE OUT

M Tom Tucker

OF

PHONE NO. ~~873~~ - ~~890~~

TELEPHONED		PLEASE CALL	
CALLED TO SEE YOU		WILL CALL AGAIN	
WANTS TO SEE YOU		RUSH	
RETURNED YOUR CALL			

MESSAGE Pulling up silt fence in Heron Run @ BMP - wants to know if everything can be released.

SIGNED Darryl

HighMark™ P3-A2334 PRINTED IN U.S.A.

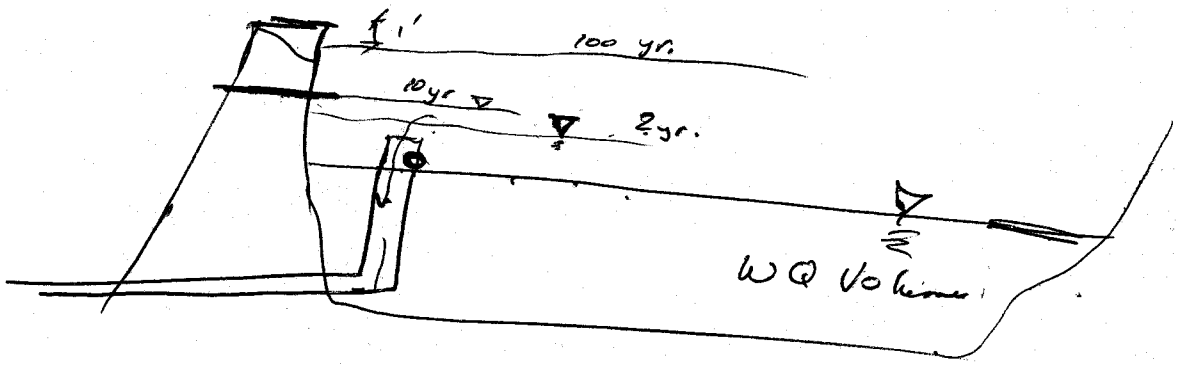
7/6/94

Seasons Trace 13

1) Offsite credit? - Master Plan for all areas.
2) Location of Basin in RPA - reducing buffer to 50' - ok but pond includes the outlet works -
3) Sewer in RPA buffer - need exception
4) To elev. 60 - ~~dam~~ pool area
5) Temp Ponding on lots - in drg. easement around Pond.
   - RPA - must have a min. of 90' on lot clear -

Trails on site - identified

8 Pt BMP - 33% of site



~~Longhill Gate - Sect. 2~~

~~Does it need BMPs - Ches Bay Reqts~~

~~- Master Plan Approv - 1986 - SP-4-86~~

~~Deploy Chute~~

~~- ok if built in conformance w/ approved plan~~

Scott Thomas

From: Dan Stebbins [DSTEB@prodigy.net]

Sent: Wednesday, May 29, 2002 1:59 PM

To: Scott J. Thomas

Subject: Thanks!

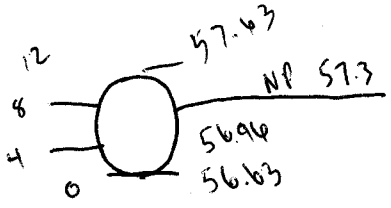
Scott,

I certainly did enjoy meeting and talking with you about the pond. Mary and I are glad to be involved with the h.o.a. and the timing seems just perfect, from a variety of perspectives and opportunities, for making some meaningful contributions to the situation.

As I said, the annual home owners meeting is the end of June and we will be discussing options/ideas with all the folks. I will keep you up to date on our end.

Thanks again; take care.

Dan Stebbins



7/6/94

Season's Trace 13

Don Dysong
Tom Sublett
Tom Tucker - developer

- Include drainage area from Westmoreland -
  use it as BMP points - structural
  also consider the fact that 15% NOS is to be provided
  on the offsite Westmoreland property
- 10 Points for the whole drainage area

Setbacks -
- maintain an 80' - 90' depth on the lots
- will entertain individual exceptions for ~~lots~~ relaxation on lots
  of RPA.

August 5, 1994

Mr. Bernard Farmer
Director of Code Compliance
James City County
P. O. Box JC
Williamsburg, VA 23187

Re: Tucker/Quail Run
DJG #1940160

Dear Mr. Farmer:

Enclosed for your review is a copy of the Quail Run Subdivision Plan. As we have discussed, there are several considerations worth note.

By our plan, 47% of the site is natural open space, and another 40% is served by the detention pond. The detention pond surpasses all of the applicable requirements such as, effluent velocities and storage capacity. In fact, the detention pond also meets all of CBLAD's requirements.

Easements to and around the detention pond provide access for maintenance. Access has also been provided to the RPA/buffer area on-site as the county requested. Furthermore, we were able to increase this protected area by 11% after adjusting the plans.

We believe we have met our responsibilities to the environment and James City County and look forward to your review. Please feel free to contact us if you have any questions or comments. I sincerely appreciate all of your assistance.

Sincerely,

Phillip Goering

Phillip Goering
Environmental Engineer

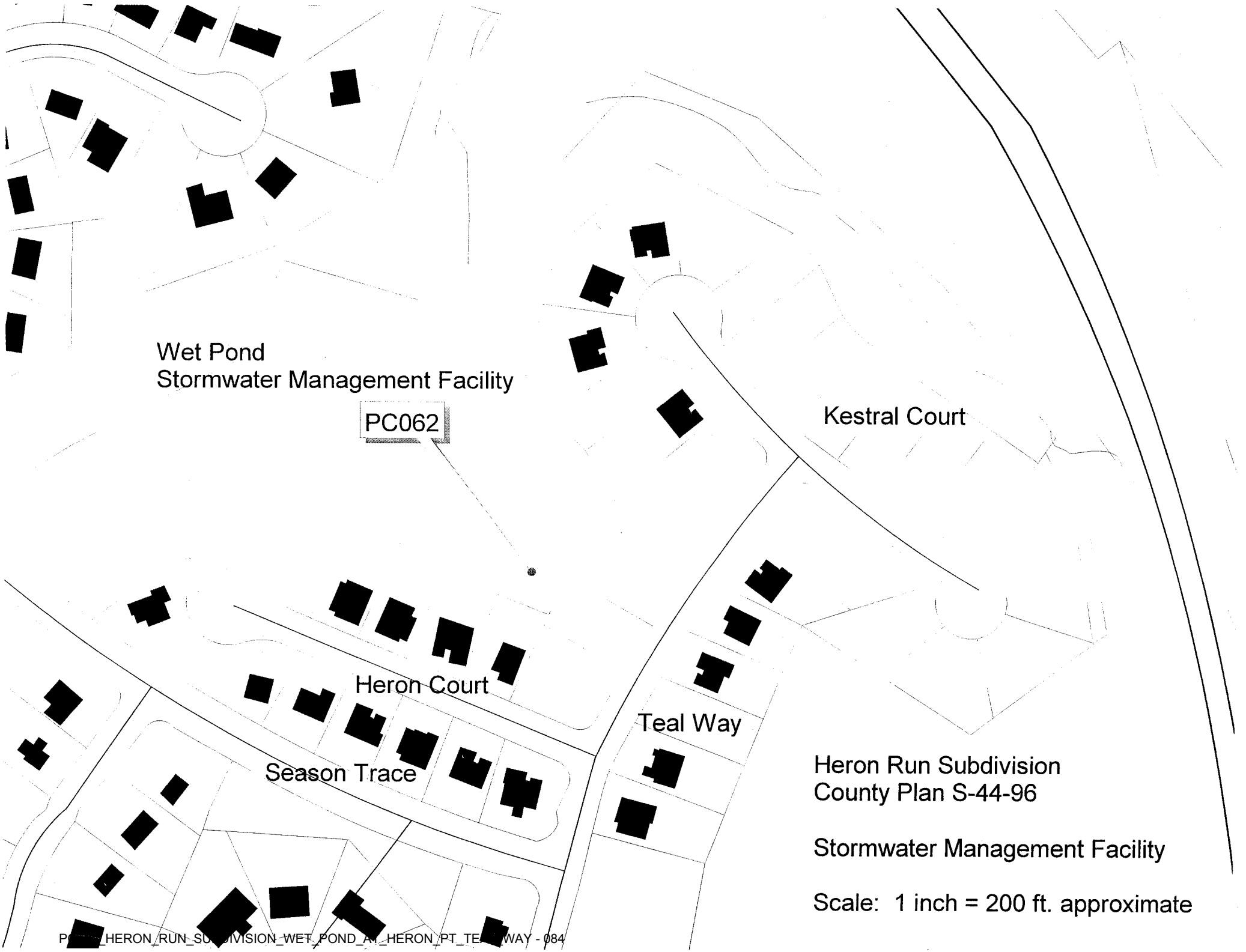
PG:rwb

THE DeYOUNG-JOHNSON GROUP, INC. ENGINEERS·ARCHITECTS·SURVEYORS
P.O. BOX 3505 WILLIAMSBURG, VIRGINIA 23187 (804) 253-0673 FAX-(804) 253-2319
DANIEL J. DeYOUNG, P.E., WILLIAM D. JOHNSON, JR., P.E., WILLIAM C. BLACK, A.I.A.

WATERSHED	PC	MAINTENANCE PLAN	No	CTRL STRUC DESC	ACCMP Rise
BMP ID NO	062	SITE AREA acre	22.87	CTRL STRUC SIZE inches	48
PLAN NO	S-44-96	LAND USE	Gen Residential	OTLT BARRL DESC	ACCMP Barr
TAX PARCEL	(32-1)(11-1A)	old BMP TYP	Wet Pond	OTLT BARRL SIZE inch	30
PIN NO	3211100001A	JCC BMP CODE			
CONSTRUCTION DATE	2/1/1995	POINT VALUE	9	EMERG SPILLWAY	Yes
PROJECT NAME	Heron Run Subdivision			DESIGN HW ELEV	60.93
FACILITY LOCATION	120 Heron Court			PERM POOL ELEV	57.3
CITY-STATE	Williamsburg, Va. 23188	SVC DRAIN AREA acres	12.25	2-YR OUTFLOW cfs	
CURRENT OWNER	Heron Run Homes Association			10-YR OUTFLOW cfs	
OWNER ADDRESS	917 Ventures Way			REC DRAWING	Yes
OWNER ADDRESS 2		SERVICE AREA DESCRI	SF Lots & Roadways		
CITY-STATE-ZIP CODE	Chesapeake, Va. 23320	IMPERV AREA acres		CONSTR CERTI	No
OWNER PHONE		RECV STREAM	UT to Powhatan Creek		
MAINT AGREEMENT	Yes	EXT DET-WQ-CTRL	Yes	LAST INSP DATE	4/16/2001
EMERG ACTION PLAN	No	WTR QUAL VOL acre-ft	0.51	INTERNAL RATING	3
		CHAN PROT CTRL	No	MISC/COMMENTS	
		CHAN PROT VOL acre-ft	0	Season Trace Sec 13. Access between 104 & 108 Heron Ct.	
		SW/FLOOD CONTROL	Yes		
		GEOTECH REPORT	No		

Get Last BMP No

Return to Menu


Wet Pond
Stormwater Management Facility
PC062
Kestral Court
Heron Court
Teal Way
Season Trace
Heron Run Subdivision
County Plan S-44-96
Stormwater Management Facility
Scale: 1 inch = 200 ft. approximate
HERON_RUN_SUBDIVISION_WET_POND_AT_HERON_PT_TEAL_WAY - 084