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: **CC-013**

DATE VERIFIED: **March 22, 2012**

QUALITY ASSURANCE TECHNICIAN: **Leah Hardenbergh**

Leah Hardenbergh

LOCATION: WILLIAMSBURG, VIRGINIA

Stormwater Division

MEMORANDUM

DATE: March 10, 2010

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

FROM: Jo Anna Ripley, Stormwater

PO: 270712

RE: Files Approved for Scanning

General File ID or BMP ID: CC013

PIN: 4840100011

Subdivision, Tract, Business or Owner Name (if known): Vineyards at Jockeys Neck

Property Description: Common Area Landscape and Hardscape Easements and Open Space

Site Address: 2630 Lake Powell Road

(For internal use only) **Box** 10 **Drawer:** 6

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

Comments

CC013

Contents for Stormwater Management Facilities As-built Files

Each file is to contain:

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

DAM STATISTICS

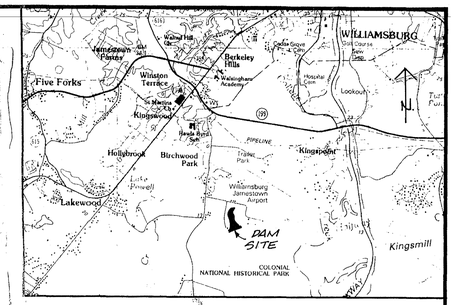
Crest of Dam Elev. = 43.5'
Emergency Spillway Elev.= 41.5'
100 year Storm and Top of Drainage Structure Elev. = 40.0'
10 year Storm Elev. = 39.0'
Normal Pool and Principle Spillway Crest Elev. = 37.0'

Dam designed to detain	2 yr. Storm	10 yr. Storm	100 yr. Storm
Pond Vol.(ft3)	785000	870000	1025000
Spillway Release Rates (cfs)	41.7	69.9	85.7

Area of Pond @ Normal Pool = 2.6 acres
Drainage Area Served = 128 acres
Drainage Area to Pond Surface Ratio = 49:1
Height of Dam @ Crest = 21.0'
Length of Dam = 240'
Max. Width of Dam = 170'
Max. Depth of Normal Pool = 13'
Avg. Depth @ Mid-Lake = 8'

GENERAL NOTES

1) Property is zoned A-2 and is currently under cultivation.
2) All disturbed areas shall be permanently seeded within 30 days after achieving final grade. Should an area be disturbed initially with the intent of not being brought to final grade in a reasonable amount of time, that area shall be temporarily seeded within 15 days of the initial disturbance.
3) Pond clearing area. All stumps below elevation 31' shall remain (except under dam) to provide a habitat for fish and wildlife. Stumps to be removed between elevation 31 and elevation 40 along the entire perimeter of the lake. Lake perimeter to be contoured where practical.
4) All joints in concrete pipe and D.I. structure to be well grouted for water tightness.
5) Strip and stockpile topsoil at location approved by the owner or Engineer.
6) Area borrow to be located in closed proximity to dam (within 1000 feet). Borrow areas are to be dressed, topsoiled and stabilized after completion of filling/borrowing activities.



LOCATION MAP SCALE : 1:50,000

NOTES

1) SITE PREPARATION: AREAS UNDER THE EMBANKMENT SHALL BE CLEARED AND STRIPPED OF TOPSOIL, VEGETATION, ROOTS AND SPOIL.

2) EMBANKMENT: THE FILL MATERIAL SHALL BE TAKEN FROM APPROVED BORROW AREAS. IT SHALL BE CLEAN MINERAL SOIL, FREE OF ROOTS, WOODY VEGETATION, OVERSIZED STONES, ROCKS, OR OTHER OBJECTIONABLE MATERIAL. AREAS ON WHICH FILL IS TO BE PLACED SHALL BE SCARIFIED PRIOR TO PLACEMENT OF FILL. THE FILL MATERIAL SHOULD CONTAIN SUFFICIENT MOISTURE SO THAT IT CAN BE FORMED BY HAND INTO A BALL WITHOUT CRUMBLING. IF WATER CAN BE SQUEEZED OUT OF THE BALL, IT IS TOO WET FOR PROPER COMPACTION. FILL MATERIAL WILL BE PLACED IN 6 TO 8 INCH CONTINUOUS LAYERS OVER THE ENTIRE LENGTH OF THE FILL. COMPACTION SHALL BE OBTAINED BY ROUTING THE HAULING EQUIPMENT OVER THE FILL SO THAT THE ENTIRE SURFACE OF THE FILL IS TRAVERSED BY AT LEAST ONE WHEEL OR TREAD TRACK OF THE EQUIPMENT, OR BY USING A COMPACTOR. THE EMBANKMENT SHALL BE CONSTRUCTED TO AN ELEVATION 10% HIGHER THAN THE DESIGN HEIGHT TO ALLOW FOR SETTLEMENT IF COMPACTION IS OBTAINED WITH HAULING EQUIPMENT. IF COMPACTORS ARE USED FOR COMPACTION, THE OVERBUILD MAY BE REDUCED TO NOT LESS THAN 5%.

3) CUTOFF TRENCH: . THE CUTOFF TRENCH SHALL BE EXCAVATED ALONG THE CENTERLINE OF THE DAM. THE MINIMUM DEPTH SHALL BE 4 FEET. THE CUTOFF TRENCH SHALL EXTEND UP BOTH ABUTMENTS TO THE INDICATED ELEVATION. THE MINIMUM BOTTOM WIDTH SHALL BE 20 FEET, BUT WIDE ENOUGH TO PERMIT OPERATION OF COMPACTION EQUIPMENT. THE SIDE SLOPES SHALL BE NO STEEPER THAN 1:1. COMPACTION REQUIREMENTS SHALL BE THE SAME AS THOSE FOR THE EMBANKMENT. THE TRENCH SHALL BE DRAINED DURING THE BACKFILLING-COMPACTING OPERATIONS.

4) PRINCIPAL SPILLWAY: THE RISER OF THE PRINCIPAL SPILLWAY SHALL BE SECURELY ATTACHED TO THE BARREL BY A WATERTIGHT CONNECTION. THE BARREL AND RISER SHALL BE PLACED ON A FIRM COMPACTED SOIL FOUNDATION. THE BASE OF THE RISER SHALL BE FIRMLY ANCHORED ACCORDING TO DESIGN CRITERIA TO PREVENT ITS FLOATING. POROUS MATERIALS SUCH AS SAND, GRAVEL OR CRUSHED STONE SHALL NOT BE USED AS BACKFILL AROUND THE BARREL OR ANTI-SEEP COLLARS. FILL MATERIAL SHALL BE LACED AROUND THE PIPE IN 4 INCH LAYERS AND COMPACTED BY HAND AT LEAST TO THE SAME DENSITY AS THE EMBANKMENT. A MINIMUM OF 2 FEET OF FILL SHALL BE HAND-COMPACTED OVER THE BARREL BEFORE CROSSING IT WITH CONSTRUCTION EQUIPMENT.

5) VEGETATIVE STABILIZATION: FINAL VEGETATIVE COVER (STABILIZATION) SHALL CONSIST OF TOPSOILING, LIMING, FERTILIZING, SEEDING, AND MULCHING TO ASSURE A FIRM STAND OF GRASS AS SOON AS PRACTICAL. SEDIMENT BASINS AND OTHER TEMPORARY EROSION CONTROL MEASURES ARE TO BE REMOVED ONLY WHEN STABILIZATION IS COMPLETE. FINAL VEGETAL COVER SHALL BE PROVIDED IN ACCORDANCE WITH THE FOLLOWING:

TOPSOIL:	AT LEAST 2" THICKNESS OBTAINED FROM STOCKPILES ON SITE, FREE OF LARGE DEBRIS
LIME:	4,000#/ACRE (90#/1000 SF)
SEED:	KENTUCKY 31 TALL FESCUE 250#/ACRE (6#/1000 SF)
FERTILIZER:	10/20/10 MIX, 1000#/ACRE (25#/1000 SF)
MULCH:	STRAW OR HAY (LOCALLY OBTAINED) (4,000#/ACRE) (90#/1,000 SF)

AES, a professional corporation
1761 Jamestown Road
Williamsburg, Virginia 23185
804-253-0040
Engineering, Planning, Surveying

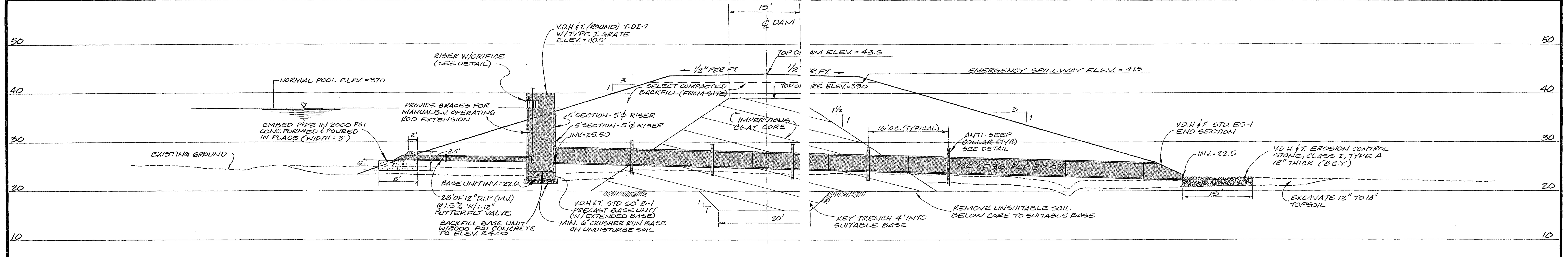
COMMONWEALTH OF VIRGINIA — PAUL C. SMALL — CERTIFICATE NO. 04267 — CERTIFIED PROFESSIONAL ENGINEER

NO.	DATE	REVISION / COMMENT / NOTE	BY

PLAN
DAM AND LAKE NO.1
JOCKEY'S NECK
OWNER : DAVID M. MURRAY
JAMES CITY COUNTY VIRGINIA

Designed	Drawn
SOW	GSB/RMS
Scale	Date
1"=50'	JULY,1986
Project No.	
6518	
Drawing No.	
1 of 2	

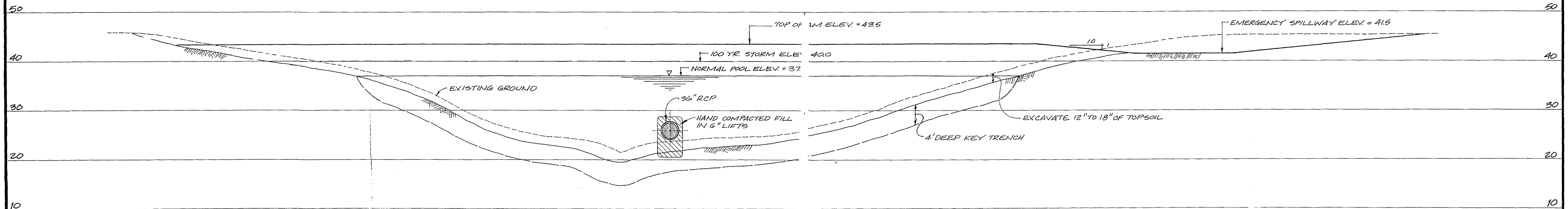
CC013 JOACHIN LAKE (DAM #1)



SECTION A-A

STATION 1+05

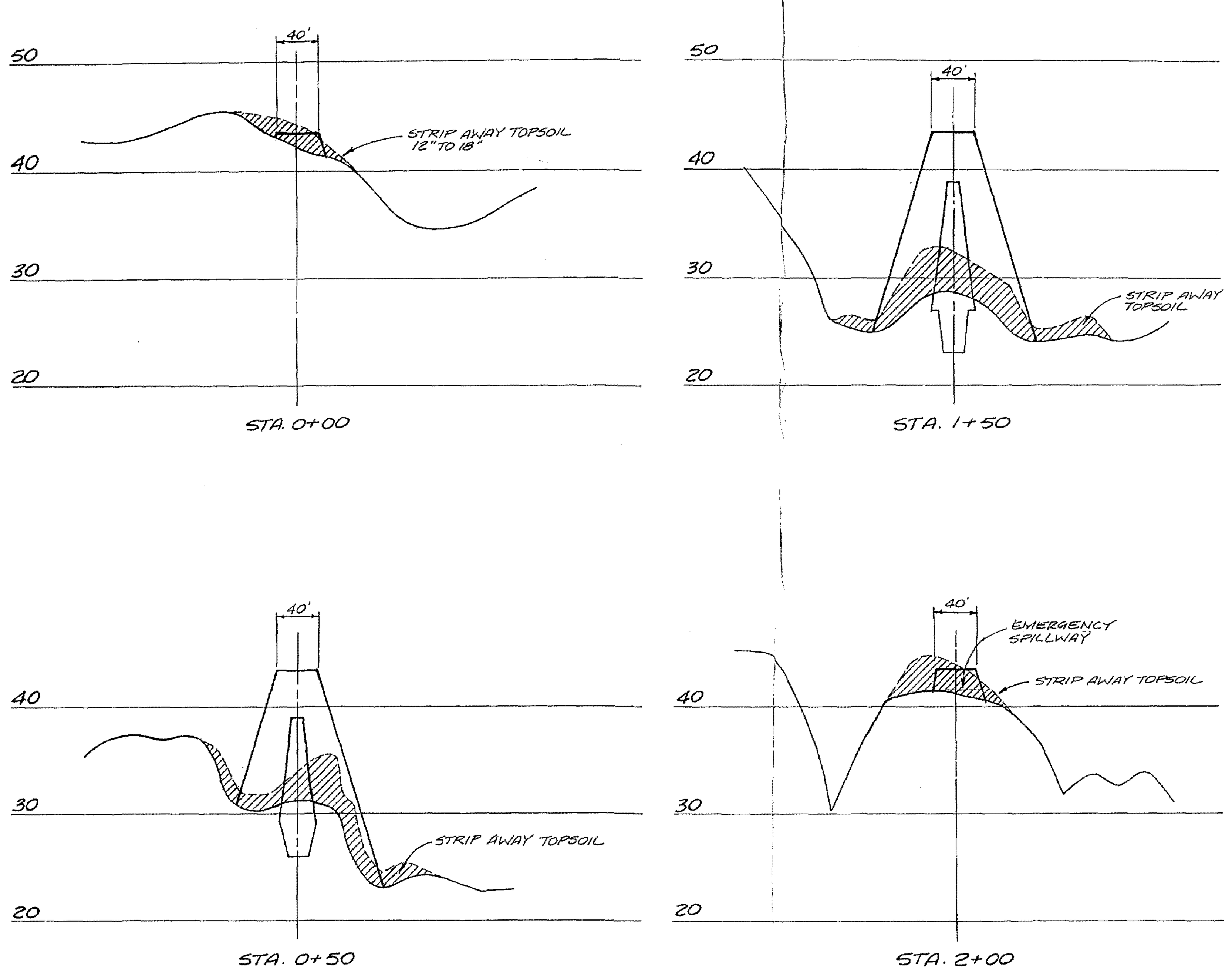
1" = 10'



SECTION B-B

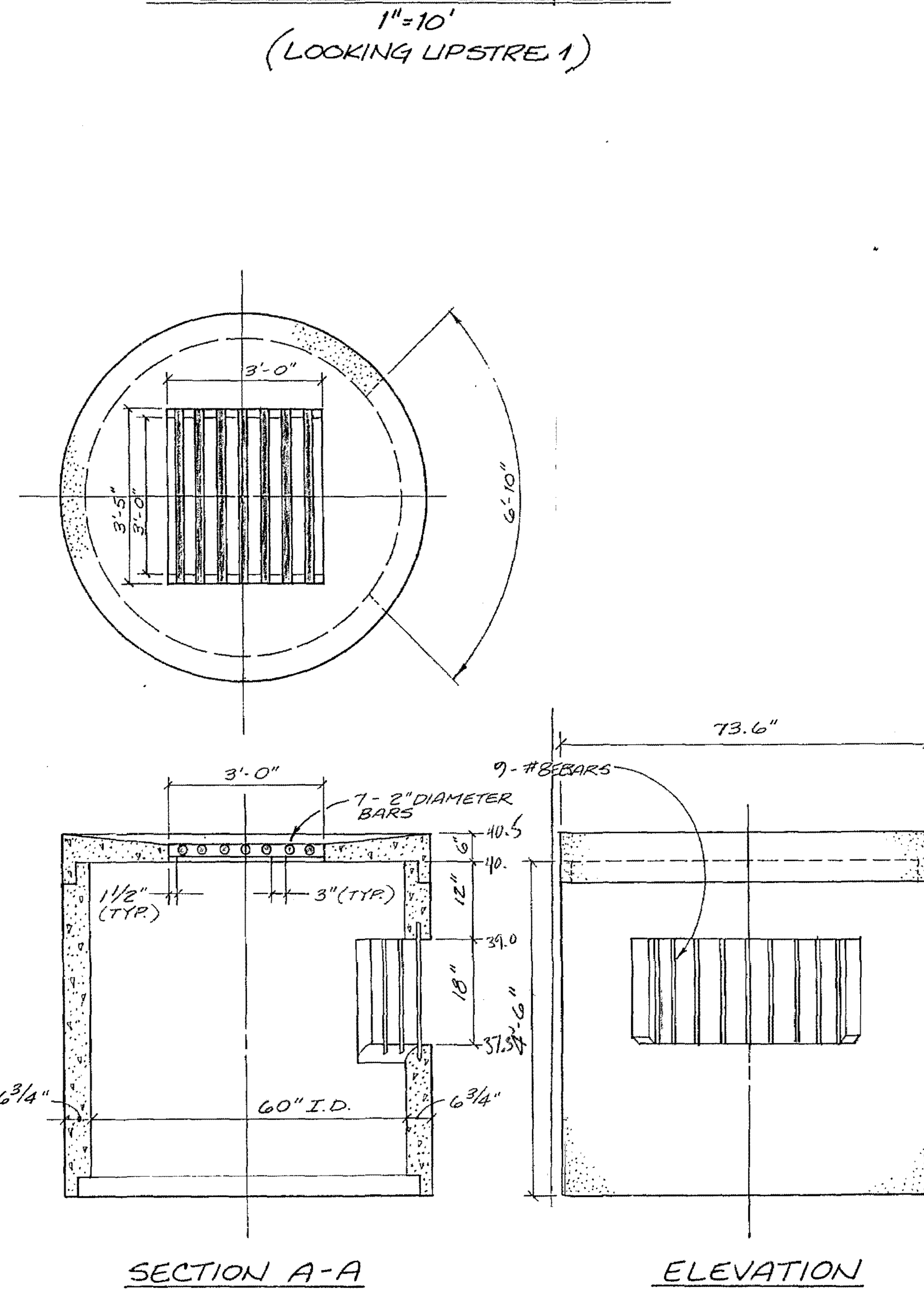
1" = 10'

(LOOKING UPSTREAM)



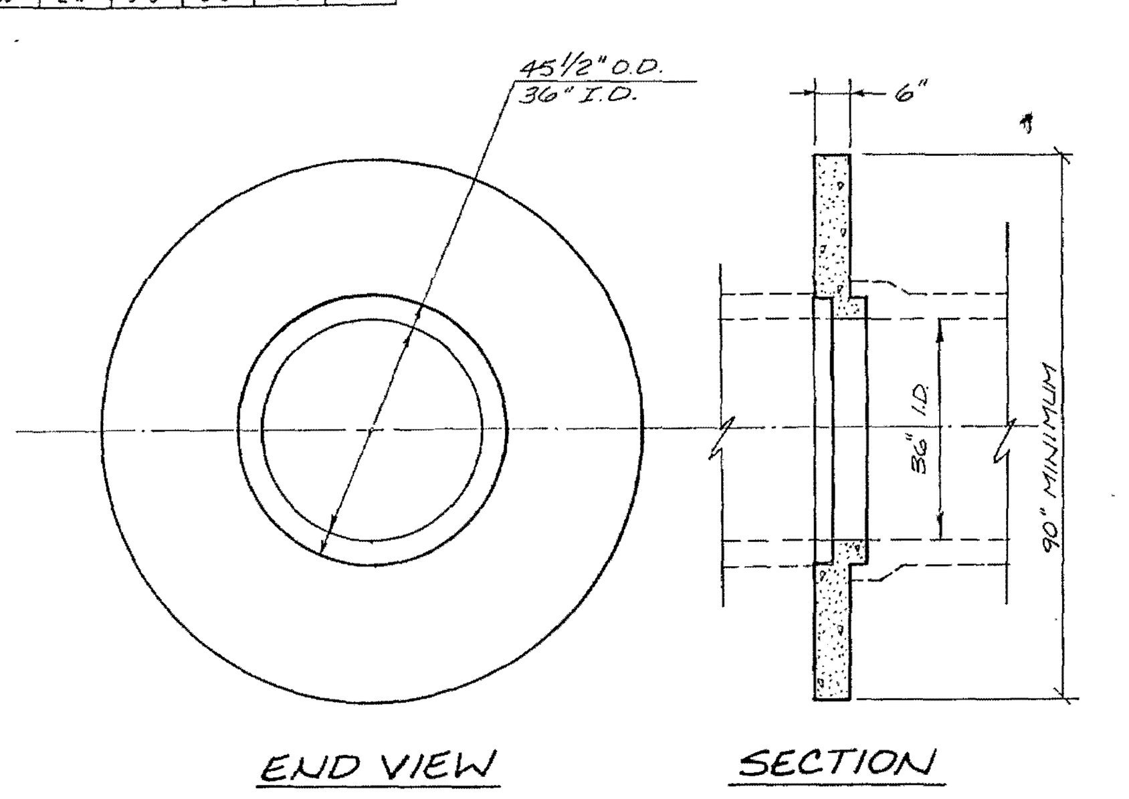
DAM CROSS SECTIONS

SCALE: 1" = 100' HORIZ.
1" = 10' VERT.



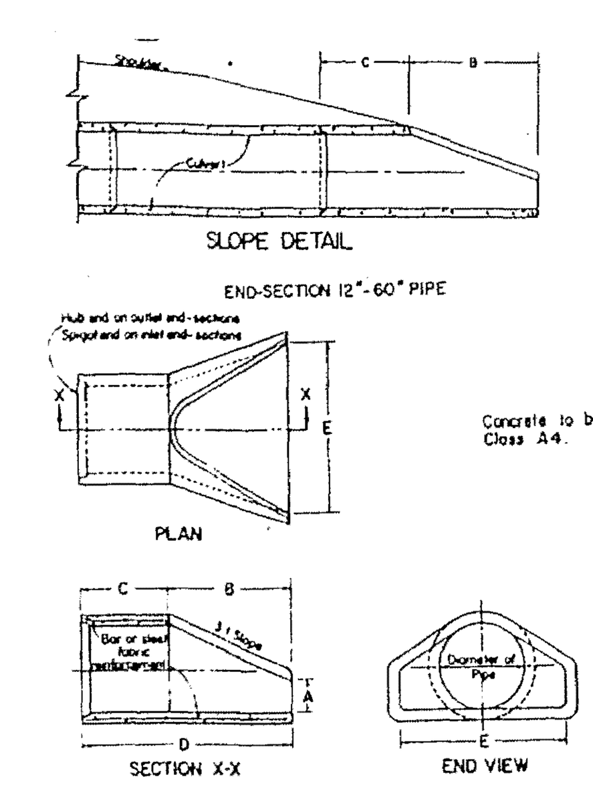
PRECAST RISER W/ ORIFICE

N.T.S.

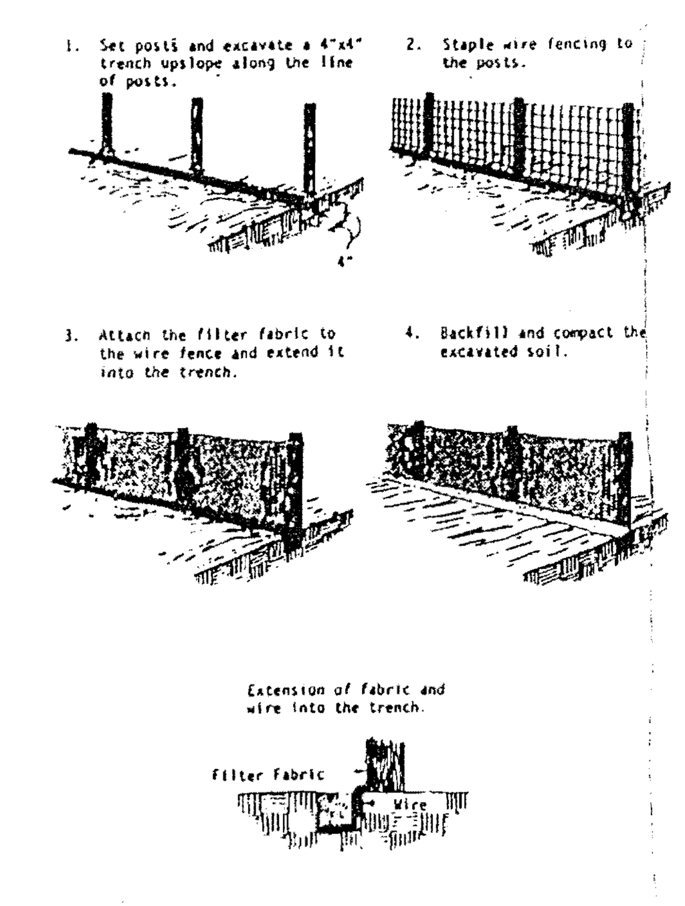


ANTI-SEEP COLLAR DETAIL

SCALE: 3/8" = 1'-0"



END-SECTION DIMENSIONS					
DIAM	A	B	C	D	E
12"	4"	2'-0"	2'-0"	4'-0"	2'-0"
15"	6"	2'-3"	1'-9"	4'-0"	2'-6"
18"	9"	2'-3"	1'-9"	4'-0"	3'-0"
24"	9 1/2"	3'-7"	2'-6"	6'-1"	4'-0"
30"	1'-0"	4'-6"	1'-7 3/4"	6'-1 1/2"	5'-0"
36"	1'-3"	5'-3"	2'-10 3/4"	8'-1 1/2"	6'-0"
42"	1'-9"	5'-3"	2'-11"	8'-2"	6'-6"
48"	2'-0"	6'-0"	2'-2"	8'-2"	7'-0"
54"	2'-3"	5'-5"	2'-9 1/4"	8'-2 1/4"	7'-6"
60"	2'-11"	5'-0"	3'-3"	8'-3"	8'-0"



CONSTRUCTION OF A SILT FENCE

EROSION & SEDIMENT CONTROL MEASURES

ALL EROSION & SEDIMENT CONTROL MEASURES SHALL BE IN ACCORDANCE WITH THE "VIRGINIA EROSION & SEDIMENT CONTROL HANDBOOK." THE CONTRACTOR SHALL THOROUGHLY FAMILIARIZE HIMSELF WITH ALL ADDITIONAL MEASURES CONTAINED THEREIN WHICH MAY BE PERTINENT TO THIS PROJECT.

THE PURPOSE OF SUCH MEASURES INCLUDING (BUT NOT LIMITED TO) THOSE SHOWN ON THIS PLAN SHALL BE TO PRECLUDE THE TRANSPORT OF ALL WATERBORNE SEDIMENTS RESULTING FROM CONSTRUCTION ACTIVITIES FROM ENTERING ONTO ADJACENT PROPERTIES OR INTO STATE WATERS. ALL SEDIMENTS MUST BE CONFINED TO THE PROJECT SITE AT THE LOCATIONS SHOWN ON THIS PLAN OR AS DIRECTED BY THE AES PROJECT REPRESENTATIVE.

THE FOLLOWING SEQUENCE OF EVENTS AND EROSION CONTROL MEASURES SHALL BE INCORPORATED INTO THE CONSTRUCTION SCHEDULE FOR THIS PROJECT AND SHALL APPLY TO ALL CONSTRUCTION ACTIVITIES WITHIN THE PROJECT UNITS:

1. LAND CLEARING & GRUBBING (IF REQUIRED) SHALL BE LIMITED TO AREAS OF WORKABLE SIZE.
2. TEMPORARY SEDIMENT BASINS, DIKES, EROSION CONTROL STONE, STRAW BALE BARRIERS, ETC., SHALL BE PLACED DURING CLEARING, GRUBBING, EARTH MOVING AND ROUGH GRADING ACTIVITIES. ALL TEMPORARY STRUCTURES SHALL BE CHECKED PERIODICALLY AND CLEANED AS NECESSARY.
3. THE CONTRACTOR SHALL STOCKPILE CLEARING & GRUBBING DEBRIS AT THE LOCATION(S) INDICATED ON THIS PLAN OR AS DIRECTED BY THE AES PROJECT REPRESENTATIVE. COLLECTED DEBRIS SHALL BE HAULED AWAY, BURIED ON SITE, OR OTHERWISE SUITABLY REMOVED PROMPTLY BY THE CONTRACTOR.
4. THE CONTRACTOR SHALL STRIP AND STOCKPILE TOPSOIL AT THE LOCATIONS SHOWN ON THIS PLAN OR AS DIRECTED BY THE AES PROJECT REPRESENTATIVE. STRAW BALE BARRIERS SHALL BE PLACED AT THE TOE OF THE STOCKPILE AFTER STRIPPING OF TOPSOIL IS COMPLETE.
5. THE CONTRACTOR SHALL COMPLETE DRAINAGE FACILITIES WITHIN 15 DAYS FOLLOWING COMPLETION OF ROUGH GRADING AT ANY POINT WITHIN THE PROJECT.
6. ALL TEMPORARY EROSION CONTROL MEASURES (SEDIMENT BASINS, STRAW BALE BARRIERS, DIKES, ETC.) SHALL BE INSTALLED PRIOR TO INITIATION OF CLEARING, GRUBBING AND/OR ROUGH GRADING ACTIVITIES.
7. TEMPORARY VEGETATIVE COVER SHALL BE PROVIDED IN ALL DISTURBED AREAS WHICH ARE NOT DESIGNATED FOR PAVING, UNDERGROUND UTILITIES OR STRUCTURAL USES. SUCH AREAS SHALL NOT BE EXPOSED FOR PERIODS EXCEEDING 15 DAYS. TEMPORARY VEGETAL COVER SHALL CONSIST OF SEEDING WITH RYE GRASS AT 40#/ACRE AND MULCHING. TEMPORARY VEGETAL COVER MAY BE ELIMINATED IN FAVOR OF FINAL VEGETAL COVER IF CONSTRUCTION CONDITIONS PERMIT AND THE CONTRACTOR IS SO DIRECTED BY THE AES PROJECT REPRESENTATIVE. APPLY FERTILIZER, LIME AND MULCH IN ACCORDANCE WITH NOTE 12.
8. ALL AREAS DESIGNATED FOR PAVING, UNDERGROUND UTILITIES, AND STRUCTURAL USE SHALL BE STABILIZED AS SOON AS POSSIBLE BUT NOT EXCEEDING 15 DAYS FOLLOWING INSTALLATION. NO MORE THAN 300' OF SANITARY SEWER, STORM SEWER OR WATER LINES ARE TO BE OPEN AT ANY ONE TIME. BASE COURSE MATERIAL SHALL BE PLACED IN ALL STREET AREAS WITHIN 30 DAYS OF FINAL GRADING.
9. ALL STORM MANAGEMENT FACILITIES, INCLUDING EROSION CONTROL STONE, ARE TO BE INSTALLED AND MADE OPERATIONAL WITHIN 15 DAYS FOLLOWING THE START OF CONSTRUCTION AND APPROVED SEDIMENT BASINS. THE INSTALLATION OF DRAINAGE FACILITIES SHALL TAKE PRECEDENCE OVER ALL OTHER UNDERGROUND UTILITIES.
10. SEDIMENT TRAPS OR BALED STRAW BARRIERS ARE TO BE INSTALLED AT THE PERIMETER OF ALL DROP INLETS AS SOON AS PRACTICAL DURING CONSTRUCTION OF SAME.
11. OUTFALL DITCHES FROM DRAINAGE STRUCTURE SHALL BE STABILIZED IMMEDIATELY AFTER CONSTRUCTION OF SAME. EROSION CONTROL STONE SHALL ALSO BE INSTALLED WHERE CALLED FOR IMMEDIATELY AFTER CONSTRUCTION OF DITCHES WHERE VELOCITIES EXCEED 6 FPS (USE VDHT STD. EC-II).
12. FINAL VEGETATIVE COVER (STABILIZATION) SHALL CONSIST OF TOPSOILING, LIMING, FERTILIZING, SEEDING, AND MULCHING TO ASSURE A FIRM STAND OF GRASS AS SOON AS PRACTICAL. SEDIMENT BASINS AND OTHER TEMPORARY EROSION CONTROL MEASURES ARE TO BE REMOVED ONLY WHEN STABILIZATION IS COMPLETE. FINAL VEGETAL COVER SHALL BE PROVIDED IN ACCORDANCE WITH THE FOLLOWING:

TOPSOIL: AT LEAST 2" THICKNESS OBTAINED FROM STOCKPILES ON SITE, OR OFFSITE SOURCE APPROVED BY THE AES PROJECT REPRESENTATIVE, FREE OF LARGE DEBRIS.
LIME: 4000 #/ACRE (90#/1000 SF)
SEED: KENTUCKY 31 TALL FESCUE 250#/ACRE (6#/1000 SF)
FERTILIZER: 10/20/10 MIX, 1000 #/ACRE (25#/1000 SF)
MULCH: STRAW OR HAY (LOCALLY OBTAINED) 4000 #/ ACRE (90#/1000 SF)

13. PAVED DITCHES WILL BE REQUIRED WHEREVER EROSION IS EVIDENT. PARTICULAR NEED SHOULD BE PAID TO THOSE AREAS WHERE GRADES EXCEED 3%.
14. THE OWNER/DEVELOPER AND CONTRACTOR SHALL KEEP ALL PAVED ROADS FREE AND CLEAR OF SEDIMENT OR OTHER DEBRIS. A STABILIZED CONSTRUCTION ENTRANCE SHALL BE PROVIDED AND ANY SEDIMENT TRACKED ONTO PUBLIC ROADS SHALL BE REMOVED DAILY BY SHOVELING OR SWEEPING.
15. IT IS THE RESPONSIBILITY OF THE OWNER/DEVELOPER TO INSPECT AND MAINTAIN ALL TEMPORARY AND PERMANENT DRAINAGE, EROSION AND SEDIMENT CONTROL STRUCTURES.

NO.	DATE	REVISION / COMMENT / NOTE	BY

COMMONWEALTH OF VIRGINIA
PAUL C. SMALL
CERTIFICATE NO.
CERTIFIED PROFESSIONAL ENGINEER

AES, a professional corporation
1761 Jamestown Road
Williamsburg, Virginia 23185
804-253-0040
Engineering, Planning, Surveying

SECTIONS AND DETAILS
DAM AND LAKE NO.1
JOCKEY'S NECK

OWNER : DAVID M. MURRAY

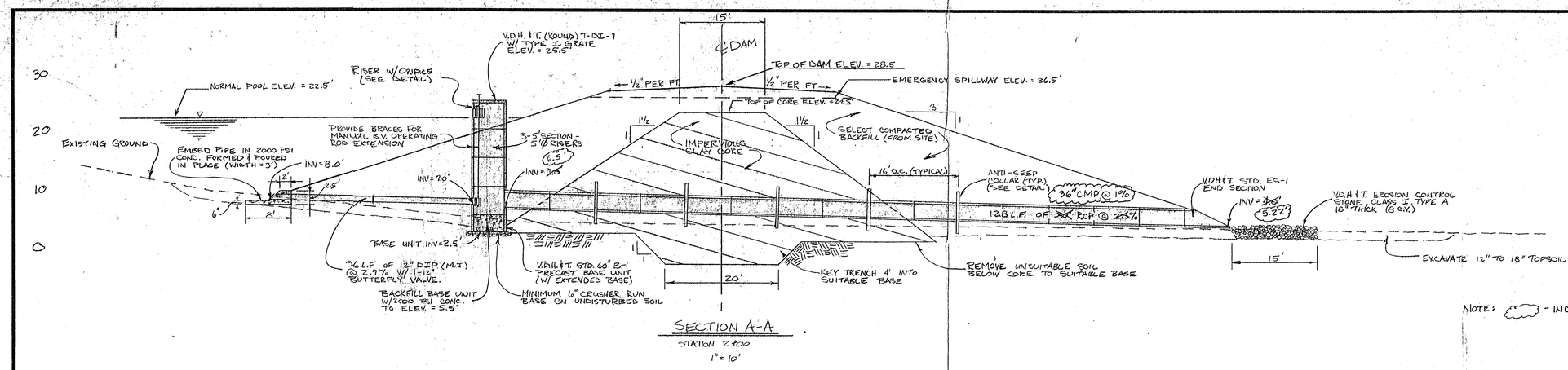
JAMES CITY COUNTY VIRGINIA

Designed	Drawn
SOW	GSB/RMS
Scale NOTED	Date JULY, 1986

Project No. 6518

Drawing No. 2 of 2

CC013_VINEYARDS_AT_JOCKEYS_NECK_DAM_1 - 005

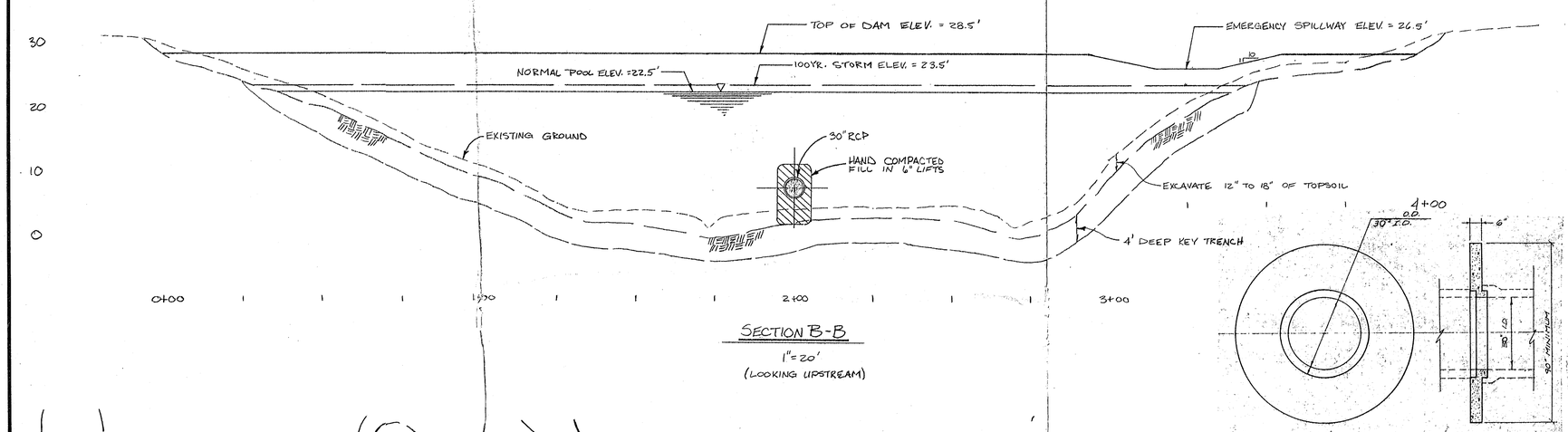


SECTION A-A

STATION 2+00

1" = 10'

NOTE: ☁ - INDICATES "AS BUILT" INFO.



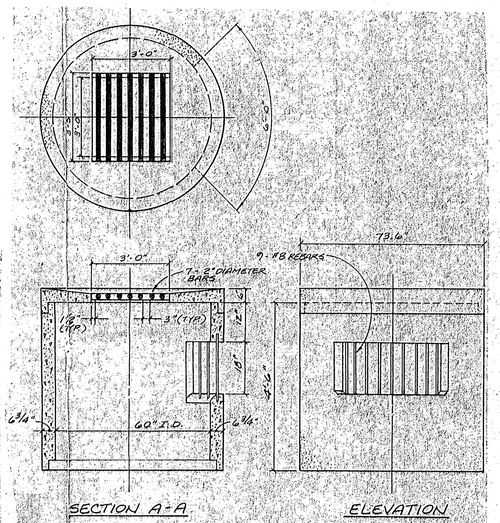
SECTION B-B

1" = 20'

(LOOKING UPSTREAM)

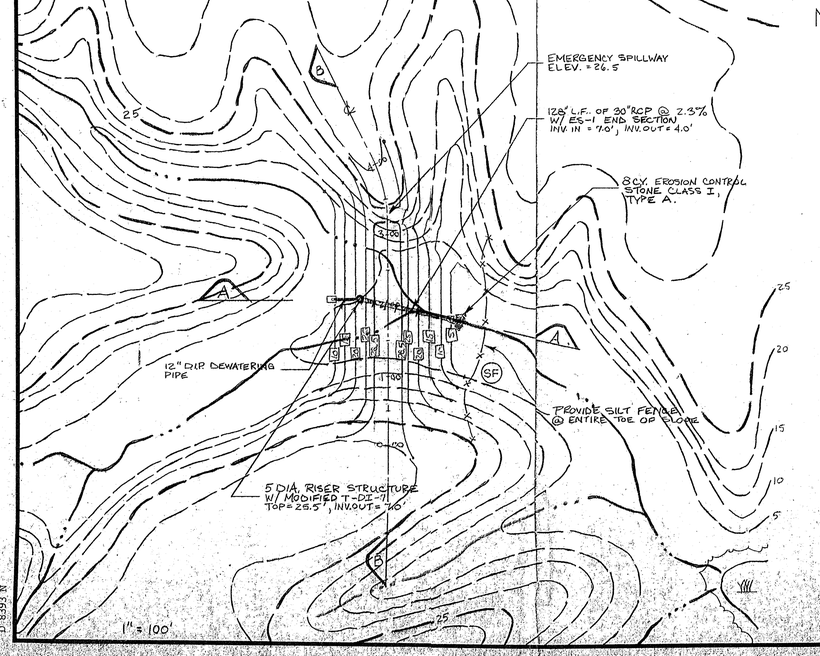
ANTI-SEEP COLLAR DETAIL

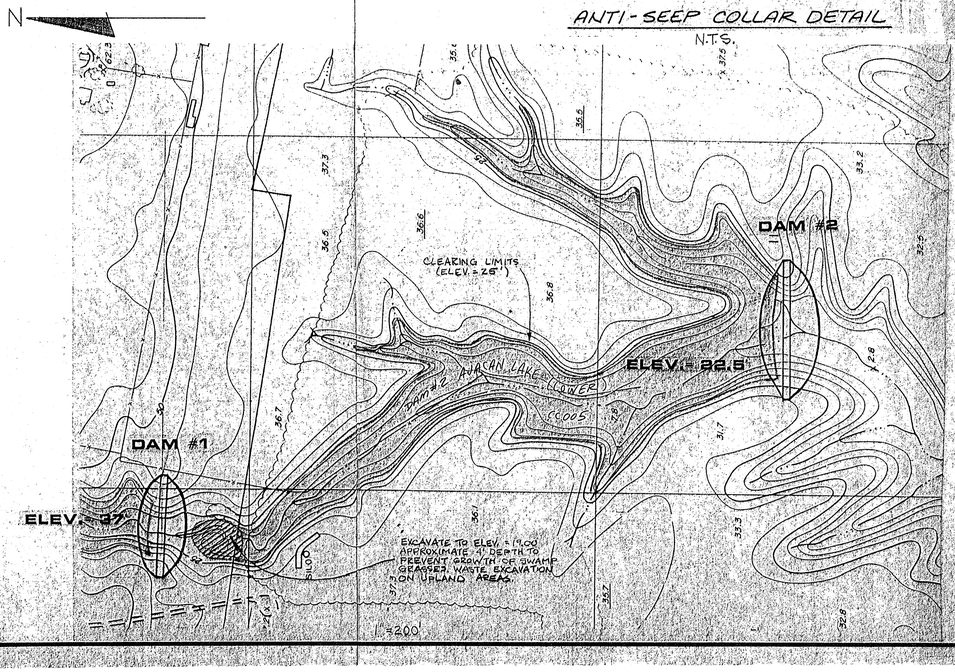
N.T.S.



PRECAST RISER W/ ORIFICE

N.T.S.





GENERAL NOTES

1) Property is zoned A-2 and is currently under cultivation.
2) All disturbed areas shall be permanently seeded within 30 days after achieving final grade. Should an area be disturbed initially with the intent of not being brought to final grade in a reasonable amount of time, that area shall be temporarily seeded within 15 days of the initial disturbance.
3) Pond clearing area: All stumps below elevation 16' shall remain (except under dam) to provide a habitat for fish and wildlife. Stumps to be removed between elevation 16 and elevation 25 along the entire perimeter of the lake. Lake perimeter to be contoured where practical.
4) All joints in concrete pipe and D.I. structure to be well grouted for water tightness.
5) Strip and stockpile topsoil at location approved by the Owner or Engineer.
6) Area borrow to be located in closed proximity to dam (within 1000 feet). Borrow areas are to be dressed, topsoiled and stabilized after completion of filling/borrowing activities.

DAM STATISTICS

CREST OF DAM = 40'			
EMERGENCY SPILLWAY ELEV. = 26.5'			
100 YEAR STORM ELEV. = 23.5'			
10 YEAR STORM ELEV. = 23.25'			
NORMAL POOL AND PRINCIPLE SPILLWAY CREST ELEV. = 22.5'			
DAM DESIGNED TO DETAIN	2 YR. STORM	10 YR. STORM	100 YR. STORM
POND VOL. (FT^3)	4325000	4540000	4750000
SPILLWAY RELEASE RATES (CFS)	6.9	13.1	19.3

AREA OF POND @ NORMAL POOL = 11.1 AC.
DRAINAGE AREA SERVED = 109.1 AC. PLUS DAM #1 OUTFLOW
DRAINAGE AREA TO POND SURFACE RATIO = 10:1
HEIGHT OF DAM @ CREST = (14.5')
LENGTH OF DAM = 400'
MAX. WIDTH OF DAM = 170'
MAX. DEPTH OF NORMAL POOL = 14.5'
AVG. DEPTH @ MID-LAKE = 7'

AES, a professional corporation
1761 Jamestown Road, Williamsburg, Va. 23185
804-253-0040
Architecture, Engineering, Surveying, Planning

PLAN
DAM AND LAKE NO. 2 JOCKEY'S NECK
OWNER/DAVID M. MURRAY
JAMES CITY COUNTY VIRGINIA

No	DATE	REVISION / COMMENT / NOTE	BY
1	6-27-88	As built L.C. on outlet structure	SCW

Designed SCW | Drawn SCW
Scale NOTED | Date JULY '87
Project No. 6513-2
Drawing No. 1 of 1

2003 RAWLAN LAKE DAM #2

D 8393 N

CC013_VINEYARDS_AT_JOCKEYS_NECK_DAM_1 - 006

Detention Pond Design for Jockey's Neck

(Use "Detention Pond Design For Small Basins")

by Steve Wigh 6/5/86

Limited to Tc = 44 min.

Pre-development

Drainage Area - A = 108.8 ac (As per J.C.C. Topo)

Composite "C" value - 40% Woodlands C = 0.2
60% Cultivated rows w/crop C = 0.25

Use → C = 0.23

CA = 25.02

Time of Concentration - t_c = 44 min. L = 3520
ΔElev. = 57.4' S = 0.01
(As per Fig. 1.5.11. From "Handbook for Civil Engr." E.E. Seelye)

Intensity - $I = \left(\frac{a}{b + t_c}\right)$ where $a_2 = 130.3$ $b_2 = 18.5$
$a_{10} = 189.2$ $b_{10} = 22.1$

$I_2 = 2.1$ in/hr $I_{10} = 2.9$ in/hr $I_{100} = 5.0$ in/hr

$Q_2 = CI_2A = 25.02(2.1) = 52.6$ cfs
$Q_{10} = CI_{10}A = 25.02(2.9) = 72.6$ cfs
$Q_{100} = CI_{100}A = 25.02(5.0) = 125.10$ cfs

Post-development

45% Impervious A = 57.6 ac @ C = 0.45 CA = 25.92
55% Undeveloped A = 70.4 ac @ C = 0.23 CA = 16.19

ΣA = 128 ac ΣCA = 42.11

Use → C = 0.33

$L = 2900$ L.F. $\quad \Delta Elev. = 57.4'$ $\quad S = 1.98\%$

$t_c = 16$ min.

$I_2 = 3.8$ in/hr. , $Q_2 = 160.5$ cfs ... a 304% increase
$I_{10} = 5.0$ in/hr. , $Q_{10} = 211.2$ cfs ... a 289% "
$I_{100} = 8.1$ in/hr. , $Q_{100} = 342.1$ cfs ... a 274% "

- Critical Storm Duration for 2yr. Post-Development:

$$T_c = \frac{\sqrt{2CAa(b - t_c/4)}}{q_o} - b$$

given: $C = 0.33$, $A = 128$, $t_c = 16$, $a = 130.3$, $b = 18.5$, $q_o = 52.6$

$$T_c = \frac{\sqrt{2(0.33)128(130.3)(18.5 - 16/4)}}{52.6} - 18.5$$

$T_c = 36.6$ min.

$t_c = 16$ min.

- Peak Inflow

$$Q_o = CA\left(\frac{a}{b + T_c}\right) = 0.33\left(\frac{130.3}{18.5 + 36.6}\right)128 = 99.9 \text{ cfs}$$

- Req'd Storage for Critical 2yr. Storm

$$V = \left[Q_o T_c + \frac{Q_o t_c}{4} - \frac{q_o T_c}{2} - \frac{3 q_o t_c}{4}\right] 60$$

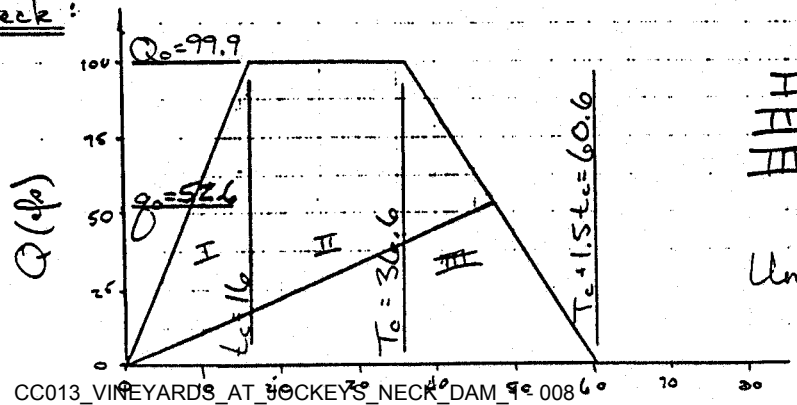
$$= \left[99.9(36.6) + \frac{99.9(16)}{4} - \frac{52.6(36.6)}{2} - \frac{3(52.6)16}{4}\right] 60$$

$V = 147{,}730$ ft^3 $\quad$ Say $150{,}000$ ft^3

- Req'd Sediment Storage Vol.

$V = 67$ cy/Ac $(128) = 231{,}552$ cf

Check:



	Area
I	$99.9(16)\frac{1}{2} = 799.2$
II	$99.9(20.6) = 2057.9$
III	$99.9(24)\frac{1}{2} = 1198.8$
	4055.9

Unshaded Area
$-52.6(60.6)\frac{1}{2} = -1593.78$

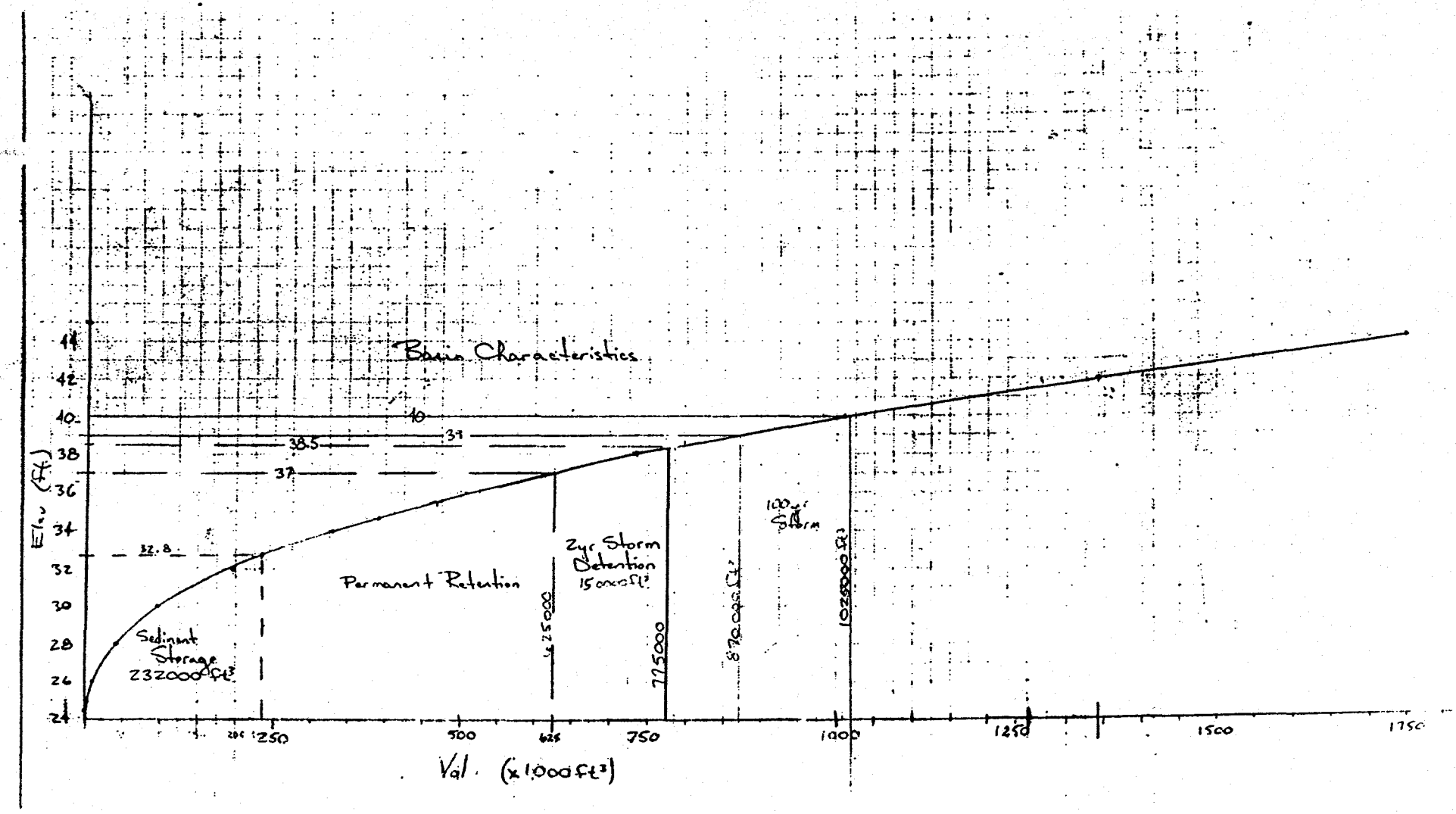
$2462.12(60) = 147730$ cf

• Basin Characteristics

Elev.	Area (ft^2)	Incremental Vol. (ft^3)	Elev. (ft^3)
24.5	0		0
		100	
25	200		100
		11075	
26	10875		11175
		29400	
28	18525		40575
		56375	
30	37850		96950
		95425	
32	57575		192375
		137150	
34	79575		329525
		179975	
36	100400		509500
		224625	
38	124225		734125
		273350	
40	149125		1007475
		335375	
42	186250		1342850
		408625	
44	222375		1751475

— See Basin Characteristics Graph —

Basin Characteristics Graph



- Storage Elevations

Sediment Storage of 231552 ft³ → Elev. 24.5 to 32.8 Vol. = 3?
Permanent Retention → Elev. 32.8 to 37.0 Vol. = ?
Need 150000 ft³ of detention → Elev. 37.0 to 38.5 Vol. = ?

- Outlet Structure:

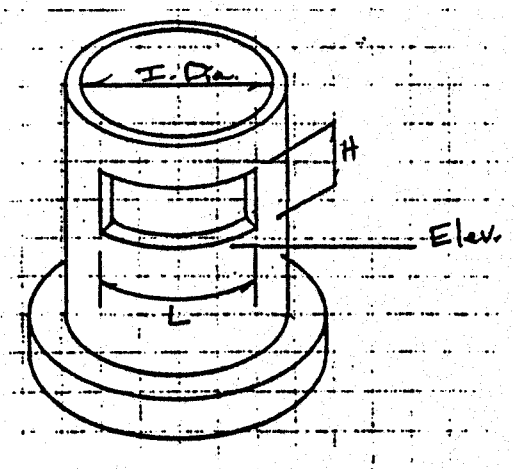
Use Precast Structure w/ Rectangular weir

$$Q = 3.33(L-0.2H)H^{3/2}$$

where: Q = 10.03 cfs (52.6)
H = 1.5 ft

$$L = \left[\frac{Q}{3.33H^{3/2}} + 0.2H\right] = \left[\frac{10.03}{3.33(1.5)^{3/2}} + 0.2(1.5)\right]$$

$$L = 6.84 \text{ ft}$$



Size Structure's Inside Dia. by checking for min. 3H end contraction reg'mt:

Trial & Error Procedure

Try I. Dia = 5.5'
Perimeter = 2πr = 17.27'
2(3H) = 9' req'd
∴ 17.27 − 6.84 = 10.43' Good

Try I. Dia = 5.0'
Perimeter = 15.71'
∴ 15.71 − 6.84 = 8.87' Close Enough

Assume orifice flow condition occurs after water surface reaches elev. 38.5' (1.5' above 2yr event weir). To route flood use trial & error.

Water Surf Elev. (E)	Outflow (cfs) Q	
37	0	Weir $Q = 3.33(L-0.2H)H^{3/2}$
38	21.8	$L = 6.84'$ $h = 1'$
39	69.9	Orifice $Q = 0.6A\sqrt{2gh}$ $h = 2'$ $A = 19.?$
40	85.7	$h = 3'$
41	98.8	$h = 4'$
42	110.5	$h = 5'$

- Determine Hydraulic Performance of structure under 10yr. & 100yr. peak discharge storm conditions.

$Q_{10} = 124.2$ cfs $Q_{100} = 219.0$ cfs $t_c = 42$ min

10 yr. Storm Q_{in} 211.2 cfs

Try Elev. 39' $q_o = 69.9$ cfs

Δstorage = 870000 - 625000 = 245000 ft³

$$V_o = \left[Q_o T_c + \frac{Q_o t_c}{4} - \frac{q_o T_c}{2} - \frac{3 q_o t_c}{4}\right] 60$$

Assume critical storm duration T for a 10yr. storm equals t_c $\therefore T = t_c = 16$ min.

Then, $V_o = 60 t_c (Q_o + \frac{1}{4}Q_o - \frac{1}{2} q_o - \frac{3}{4} q_o)$

$= 60 t_c (\frac{5}{4}Q_o - \frac{5}{4} q_o)$

$= 75 t_c (Q_o - q_o)$

$V_o = 75(16)(211.2 - 69.9) = 169560$ ft³ Elev. too High

Try Elev. 38.5' $q_o = \left[\frac{21.8 + 69.9}{2}\right] = 45.9$ cfs

Δstorage = 785000 - 625000 = 160000 ft³

$V_o = 75(16)(211.2 - 45.9) = 198360$ ft³ Elev. too Low

Therefore say 10yr storm is at Elev. 38.75'

100 yr Storm $Q_{in} = 342.1$ cfs

Try Elev. 40' $q_o = 85.7$ cfs

Δstorage = 1025000 - 625000 = 400000 ft³

$V_o = 75(16)(342.1 - 85.7) = 307680$ ft³ Elev. too high

Try Elev. 39.5 $q_o = \left[\frac{85.7 + 69.9}{2}\right] = 77.8$ cfs

Δstorage = 9500000 - 625000 = 325000 ft³

$V_o = 75(16)(342.1 - 77.8) = 317160$ Close enough!

Therefore 100yr. storm is at Elev. 39.5'

Conclusion

Orifice will pass 77.8 cfs at elev. 39.5 while allowing for 100 yr. storm detention and release at a controlled rate minimizing damage to down stream channel. Provide D.I. to at elev. 40' and allow 1.5' freeboard to 20' emergency spillway, elev. 41.5'. Emergency spillway is designed to operate in excess of 100 yr. frequency storm. Allow 2' more to top of dam for freeboard and construction tolerence, elev. 43.5'. The extra height of dam in combination with a 40' width of dam at the crest is to permit future development of a roadway across the dam.

Outlet Pipe Design

Pipe to pass 77.8 cfs

∴ Use 120' of 36" RCP @ 2.5%

$Q_{cap} = 95$ cfs

Anti-Seep Collar Design ("Design for Small Dams" p. 45)

Design collars to increase the seepage path by 15%

Length of 36" RCP = L = 120 $\quad 120(0.15) = 18'$

18' of verticle displacement of seepage path is needed.

H = height of collar

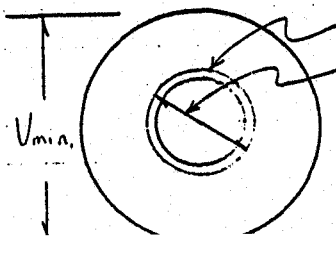
N = # of collars

$$N = \frac{18}{2H}$$

Try H = 1.5' ∴ N = 6

Try H = 2' ∴ N = 4.5 say 5

Therefore use 5 collars w/ H = 2' above pipe o.c. of 16' (2 joints of pipe)



Increase in seepage path:

$$\frac{5[2(2)] + 120'}{120'} = 1.17$$

17% Good

Buoyancy Calcs for Inlet Structure

Wt. & Vol. of 18 Ft. structure:

Barrel — $Vol. = (A_{OD} - A_{ID})h = \left[\pi\left(\frac{36.75}{12}\right)^2 - \pi\left(\frac{30}{12}\right)^2\right] 17 = 167.1$

Top — $Vol. = Ah = \pi\left(\frac{36.75}{12}\right)^2 0.5 = 14.7\ ft^3$

Base — $Vol. = Ah = \pi\left(\frac{43.75}{12}\right)^2 0.67 = 28\ ft^3$
(extended = 87.5" O.D.)

Total Vol. = 209.8 ft^3

$W_{conc.} = 150\ \#/ft^3$

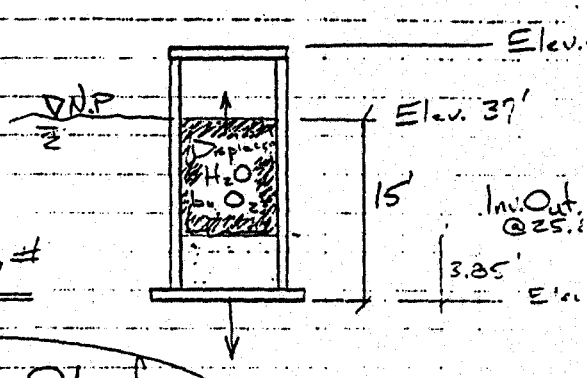
Total Wt = $209.8(150\ \#/ft^3)$

$Wt_r = 31470\ \#$

Wt & Vol. of H_2O displaced by Air

$Vol. = (15 - 3.85)\left[\pi\left(\frac{30}{12}\right)^2\right]$

Vol. = 218.9 ft^3



$W_{H_2O} = 62.4\ \#/ft^3$ $\quad Wt_w = 218.9(62.4) = 13659\ \#$

$Wt_r > Wt_w$ ∴ Will not float

Upstream 39 RCP Capacity Calc.

Inv. In

39" RCP
Inv. Elev. = 37.35'

37.35
3.25
40.60' = Top RCP Elev.

Inv. Out

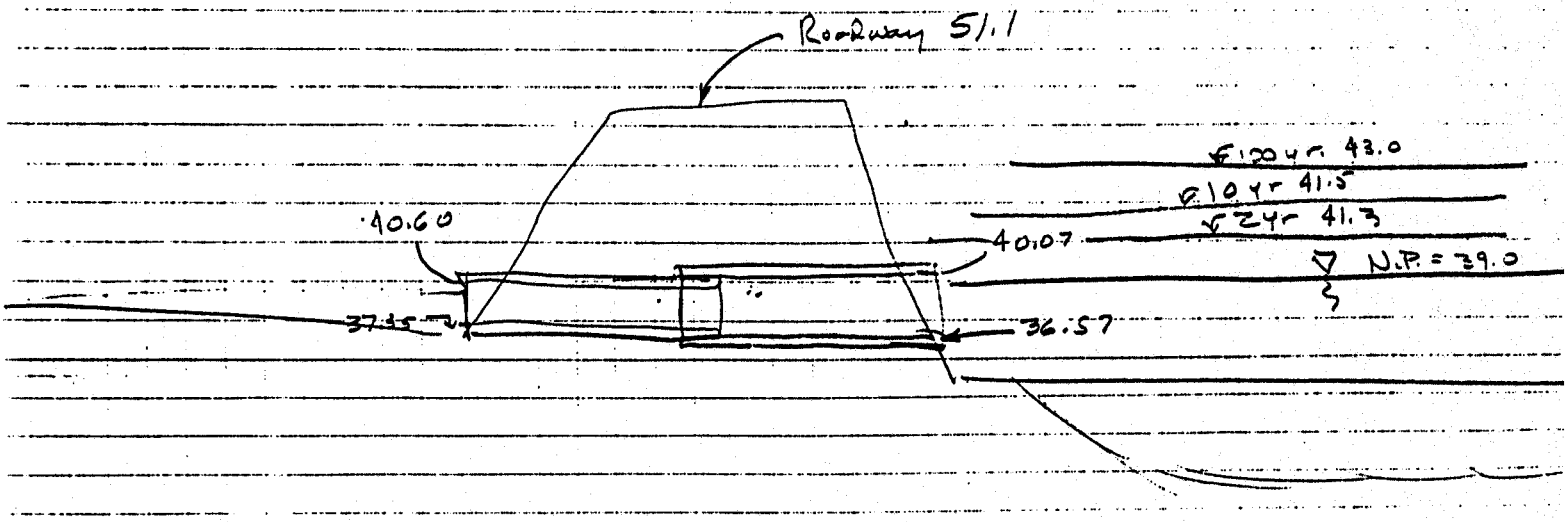
42" RCP
Inv. Elev = 36.57'

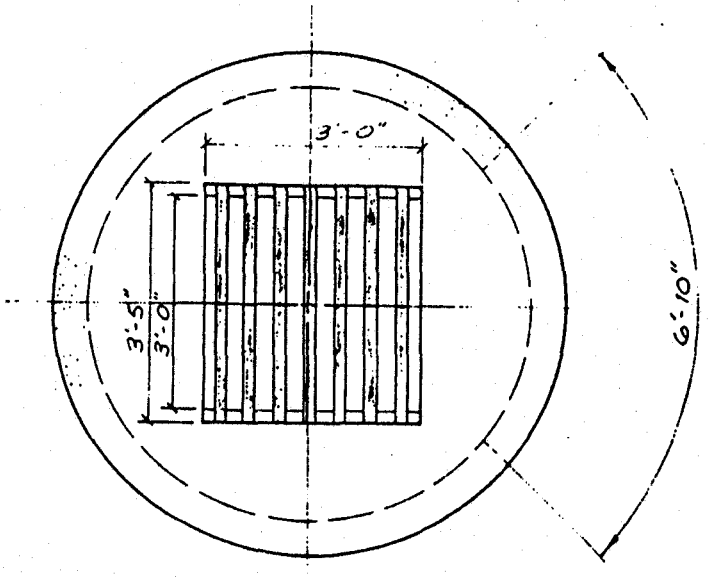
36.57
3.50
40.07' = Top RCP Elev.

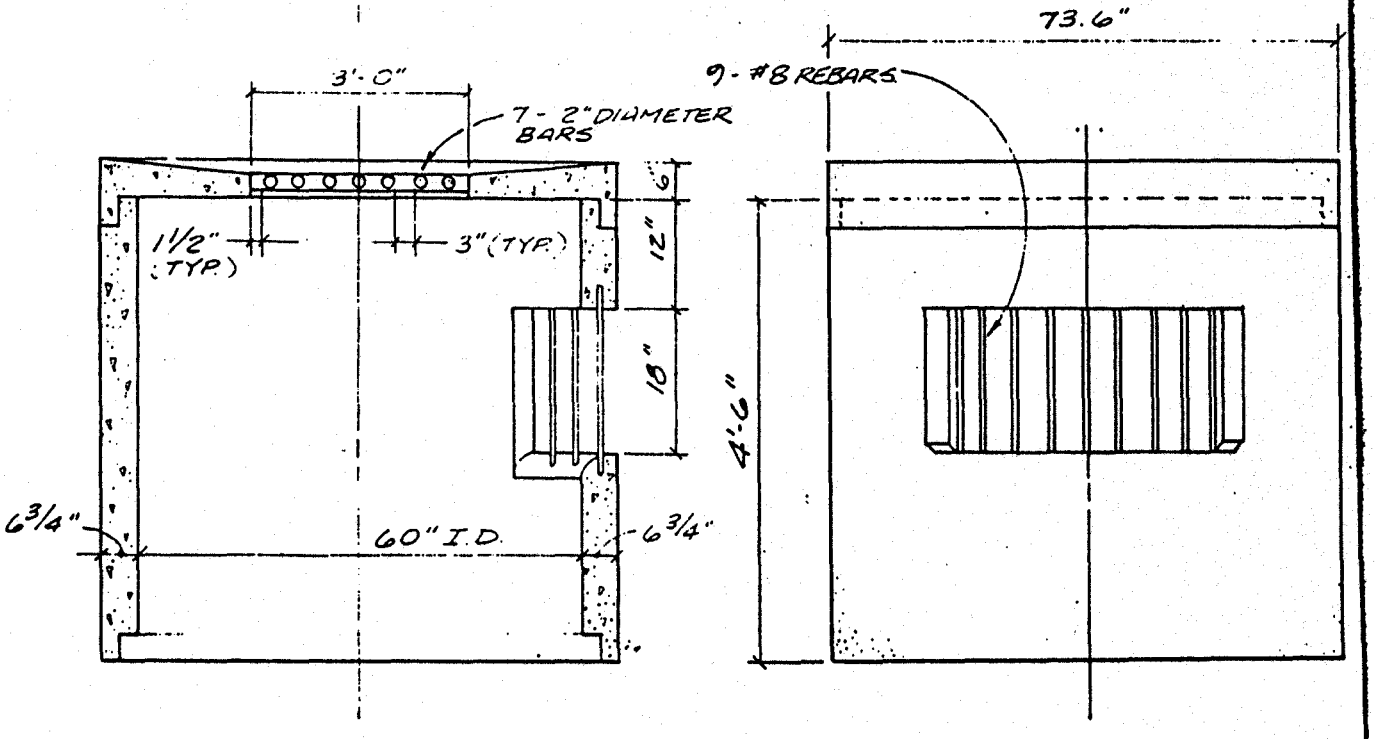
Length 65'
Slope = $S = \frac{40.60 - 40.07}{65} = \frac{0.53}{65} = 0.008$ ft/ft.

Normal Pool Elev. = 39'
2yr. storm detention = 41'

@ 41' the culverts will be under water.







SECTION A-A

ELEVATION

PRECAST RISER W/ ORIFICE

N.T.S.

Jockey's Neck
Dam #II

7/21/87
SPW.

Pre-development

Drainage Area = 4752000 S.F. = 109.1 Ac.

Composite "C" Value

	Area	C	CA
Woodlands	43.2 Ac.	0.2	8.64
Cultivated Pasture w/crop	65.9 Ac.	0.25	16.48
	109.1		25.12

$C = 25.12/109.1 = 0.23$

L = 3060 L.F. ΔElev. = 61 - 4 = 57'
S = 1.86%

t_c = 36 min (Fig. 1.5.12.)

I_2 = 2.2 in/hr., Q_2 = 55.2 cfs

I_{10} = 3.6 in/hr., Q_{10} = 90.3 cfs

I_{100} = 5.5 in/hr., Q_{100} = 138.0 cfs

Post-development

Assume surrounding environs developed to:

90% Residential	= 98.2 Ac. @	C = 0.40	CA = 39.3
10% Woodlands	= 10.9 Ac. @	C = 0.23	CA = 2.5
	ΣA = 109.1 Ac		ΣCA = 41.8

C = 0.38

t_c = 18 min. (fig. 1.5.12.)

$I = \frac{a}{b + t_c}$ $a_2 = 130.3$ $a_{10} = 189.2$ $b_2 = 18.5$ $b_{10} = 22.1$

I_2 = 3.57 in/hr., Q_2 = 148.0 cfs — a 268% increase
I_{10} = 4.72 in/hr., Q_{10} = 195.7 cfs — a 216% increase
I_{100} = 7.90 in/hr., Q_{100} = 327.5 cfs — a 237% increase

- Critical Storm Duration For 2yr. Post-dev

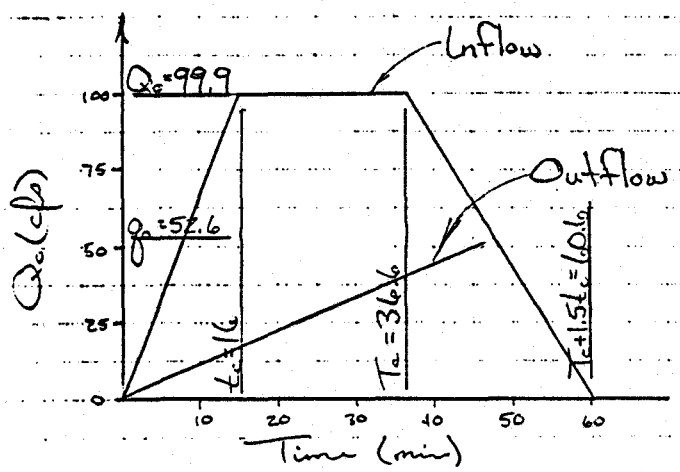
$$T_c = \sqrt{\frac{2CAa(b - t_c/4)}{q_o}} - b$$

given: $C = 0.38$, $A = 109.1$ Ac, $t_c = 18$ min, $a = 130.3$, $b = 18.5$, $q_o = 55.2$ cfs (allowable peak out)

$$T_c = \sqrt{\frac{2(0.38)109.1(130.3)(18.5 - 18/4)}{55.2}} - 18.5$$

$T_c = 24.6$ min. , $t_c = 18$ min.

- Dam #1 Inflow & Outflow Hydrograph



- Peak Inflow

$$Q_o = CA\left(\frac{a}{b + T_c}\right) = 0.38(109.1)\left(\frac{130.3}{18.5 + 24.6}\right) = 125.3 \text{ cfs}$$

Dam #1 Outflow = 52.6 cfs

Q_o, Peak Inflow = 177.9 cfs

- Req'd Storage for Critical 2yr. Storm

$$V = \left[Q_o T_c + \frac{Q_o t_c}{4} - \frac{q_o T_c}{2} - \frac{3 q_o t_c}{4}\right] 60$$

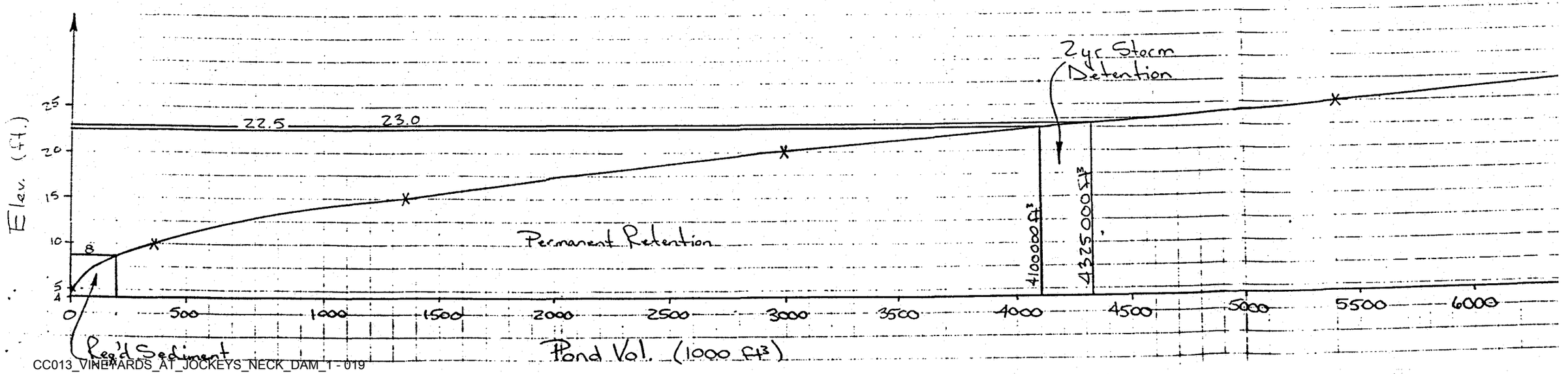
$$= \left[177.9(24.6) + \frac{177.9(18)}{4} - \frac{55.2(24.6)}{2} - \frac{3(55.2)18}{4}\right] 60$$

$= 225164$ ft^3 → say 225000 ft^3

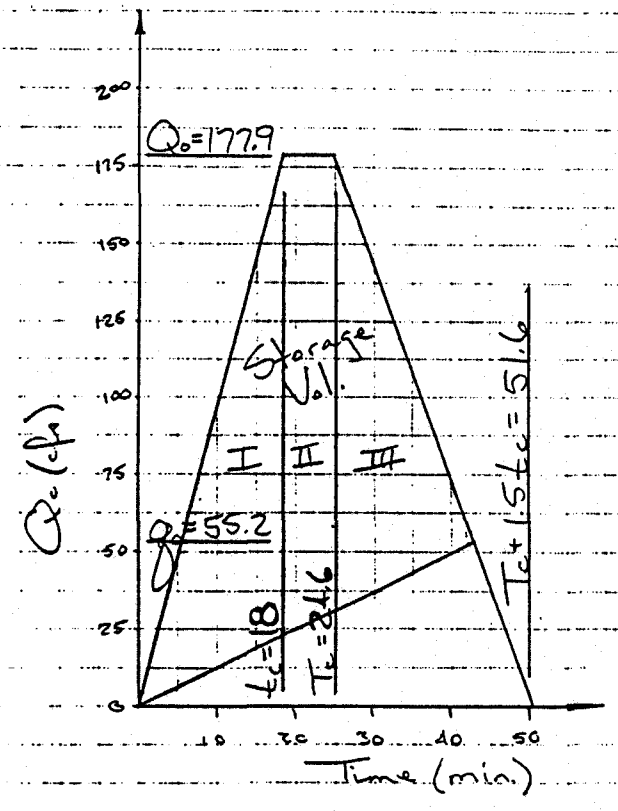
- Req'd Sediment Storage Vol.

$V = 67(109.1)27 = 197362$ ft^3 → say 200000 ft^3

Elev. (ft)	Area (ft^2)	Avg. Area (ft^2)	Depth (ft)	Incremental Vol. (ft^3)	Σ Vol. (ft^3)
4	0				
		6000	1	6000	
5	12000				6000
		72000	5	360000	
10	132000				366000
		198000	5	990000	
15	264000				1356000
		328000	5	1640000	
20	392000				2996000
		484000	5	2420000	
25	576000				5416000



Check:



Area

I $177.9(18)\frac{1}{2} = 1601$
II $177.9(6.6) = 1174$
III $177.9(27)\frac{1}{2} = 2402$
5177

Unshaded Area
$55.2(51.6)\frac{1}{2} = 1424$

3753

$V = 3753(60) = 225170\ ft^3$ check:

- Storage Elevations

	Elev.	Vol. (ft^3)
Sediment Storage of 200000 ft^3	4' to 8.3'	200000
Permanent Retention	8.3 to 22.5'	4100000

Required 225000 ft^3 detention

- Outlet Structure

Use Precast Structure w/ Rectangular Weir

(Weir Eq.n) $Q = 3.33(L - 0.2H)H^{3/2}$

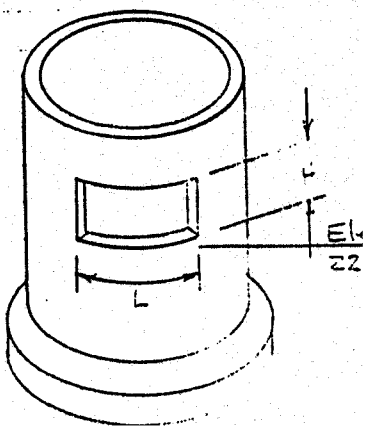
where $L = 6.0$ ft
$H = 1.5$ ft

$Q = 3.33[6 - 0.2(1.5)]1.5^{3/2} = 34.9$ cfs $< 55.2\ ft^3$ Good

Assume orifice flow condition occurs after water level reaches elev. 24 ft (1.5 ft above weir inv.)

(Orifice Eq.n) $Q = 0.6A\sqrt{2gh}$ where $A = 9\ ft^2$

Water Surface Elev. (ft.)	Outflow (cfs)	Equation
22.5	0	Weir
23.0	6.9	L=6, h=0.5
23.5	19.3	L=6, h=1
24.0	34.9	L=6, h=1.5
24.5	61.3	Orifice A=9, h=2
		h=2.5



- Determine Hydraulic Performance of Structure under 10yr & 100 yr peak discharge storm conditions

$Q_{10} = 195.7$ cfs $\quad t_c = 18$ min.
$Q_{100} = 327.5$ cfs

10 Yr. Storm $\quad Q_{in} = 195.7$ cfs

Try Elev. = 23.5 $\quad q_o = 19.3$

Δstorage = 4575000 − 4100000 = 475000 ft³
$V_o = 75 t_c (Q_{in} - q_o) = 75(18)(195.7 - 19.3) = 238140$ ft³ Elev too high

Try Elev. 23.0 $\quad q_o = 6.9$

23.0 is the 2yr. storm elev., therefore the 10yr storm event is between 23.0 & 23.5 say → Elev. = 23.25'

100yr. Storm $\quad Q_{in} = 327.5$ cfs

Try Elev. = 23.5 $\quad q_o = 19.3$

Δstorage = 4750000 ft³
$V_o = 75(18)(327.5 - 19.3) = 416070$ ft³ close enough

Elev. = 23.5 ft

Total Discharge Under 100yr. Storm Conditions
$Q_o = 19.3$ cfs → Use $q_2 = 55.2$ cfs (allowable peak flow)

Use @ 30" RCP @ 2.3% $\quad Q_{cap} = 58$ cfs

Anti-Seep Collar Design

Design Collars to increase the seepage path by 15%

Length of 30" RCP = 128' $\quad 128(0.15) = 19.2'$

20' of vertical displacement of seepage path is needed.

H = height of collar
N = # of collars $\quad N = \frac{20}{2H}$

Try H = 2', then N = 5

Use 5 collars w/ H = 2' above pipe, O.C. of 16' (2 joints of pipe)

Increase in Seepage path:
$E = [8(2)] + 128$ 17% increase

Buoyancy Calcs For Inlet Structure

Wt. & Vol. of Conc. Structure:

Barrel - $Vol. = (A_{OD} - A_{ID})h = \left[\pi\left(\frac{36.75}{12}\right)^2 - \pi\left(\frac{30}{12}\right)^2\right]20.5 = 221.2\ ft^3$

Top - $Vol. = Ah = \pi\left(\frac{36.75}{12}\right)^2 0.5 = 14.7\ ft^3$

Base - $Vol. = Ah = \pi\left(\frac{43.75}{12}\right)^2 0.67 = 28\ ft^3$
(extended 87.5" O.D.

Total Vol. = 263.9 ft^3

$W_c = 150\ \#/ft^3$

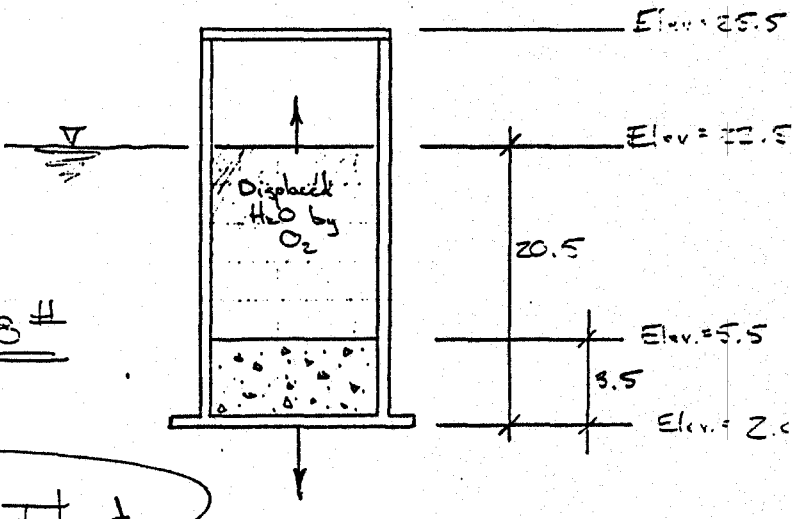
Total Wt. = $263.9\ (150\ \#/ft^3)$

$Wt_T = 39585.0\ \#$

Wt & Vol. of H_2O displaced by Air

$Vol. = (20.5 - 3.5)\pi\left(\frac{30}{12}\right)^2$

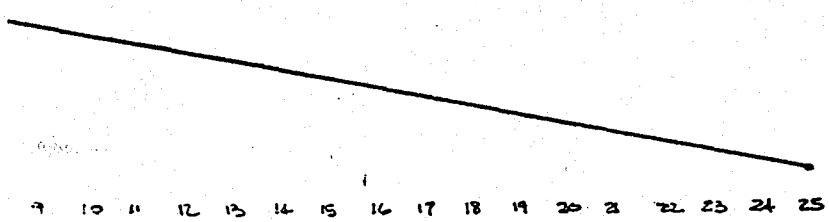
Vol. = 333.8 ft^3



$W_{H_2O} = 62.4\ \#/ft^3$

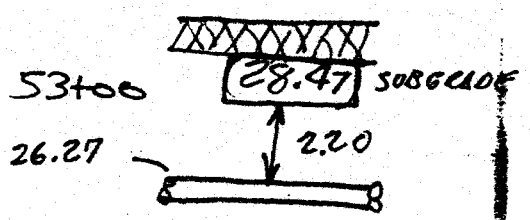
$Wt_w = 333.8\ ft^3 (62.4) = 20828.8\ \#$

$Wt_T > Wt_w$ ∴ Will Not Float



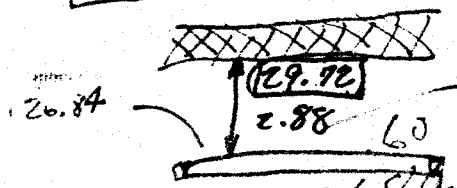
Vineyards
Lake EMERGENCY OUTFLOW
7/1/89
RM
FT

27.63 ℄ F.G.



55+00

30.88 ℄ F.G.



26.84

27.44

1.00

24.44

55+00 - 26.84

1.00

55

53.00

52+26.06 ℄ 5.73 34.03

TOP ℄ 53+00

℄ TOP GRATE

℄ CONC. TOP

℄ SIDE GRATE

TOP ℄ 55+00

51+50 R

28.30

7.76 (26.27) TOP ℄ 53+00

7.43 26.60 (GRATE @ OVERFLOW)

7.31 (26.72) (TOP OF OVERFLOW)

10.29 (23.74) (SIDE GRATE FLOW)

7.19 (26.84) TOP ℄ 55+00

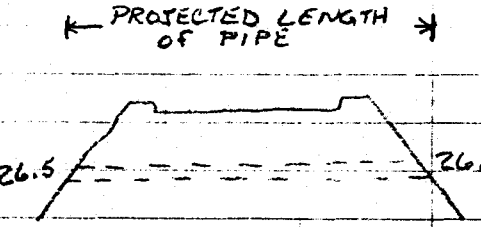
6.96 27.07 ±0.03

Subgrade @53+00 28.88

Subgrade @55+00 30.13

Projected Length of Pipe @53+00 ±58'

Projected Length of Pipe @55+00 ±68'



29.72

26.84

2.88

AES, A PROFESSIONAL CORPO TION
Engineering And Surveying
~~1761 Jamestown Road~~ 5248 Olde Towne Rd., Suite 1
WILLIAMSBURG, VIRGINIA 23185

(804) 253-0040

LETTER OF TRANSMITTAL

DATE	JOB NO.
8-10-89	6518

ATTENTION Debbie Lenceski

RE: Jockey's Neck (Williamsburg Winery) Dam I & II

TO V.D.O.T.

WE ARE SENDING YOU ☒ Attached ☐ Under separate cover via _____ the following items:

☐ Shop drawings ☒ Prints ☐ Plans ☐ Samples ☐ Specifications

☐ Copy of letter ☐ Change order ☒ Calculations

COPIES	DATE	NO.	DESCRIPTION
1	7-86	2 of 2	Dam & Lake No. 1 Site Plan
1	7-87	1 of 1	Dam & Lake No. 2 Site Plan
1	6-5-86	Copy	Dam # 1 Calculations
1	7-21-87	Copy	Dam # 2 Calculations
1		Copy	Watersheds for Lakes.

THESE ARE TRANSMITTED as checked below:

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

☒ For your use ☐ Approved as noted ☐ Submit _____ copies for distribution

☒ As requested ☐ Returned for corrections ☐ Return _____ corrected prints

☐ For review and comment ☐ _____

☐ FOR BIDS DUE _____ 19____ ☐ PRINTS RETURNED AFTER LOAN TO US

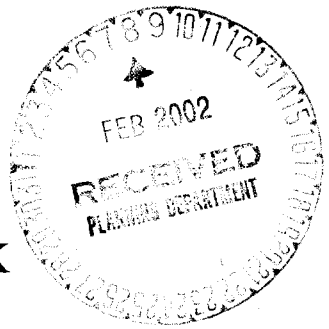
REMARKS

If you have any questions please do not hesitate to call.

COPY TO

SIGNED: Steven O. Wigley

S-018-02



AMENDMENT TO

THE VINEYARDS AT JOCKEY'S NECK

PHASE III

(JCC CASE NO. S-030-00, Approved December 22, 2000)

JAMES CITY COUNTY, VIRGINIA

FEBRUARY 2002

SUPPORTING ENGINEERING DOCUMENTS

STORM DRAINAGE CALCULATIONS

EROSION & SEDIMENT CONTROL NARRATIVE

Calculated by: LMP Date: 3-24-00 REV 1/30/02 -MCH
Checked By: Date:
N = 0.013 (RCP)
Storm Frequency: 10 YEAR

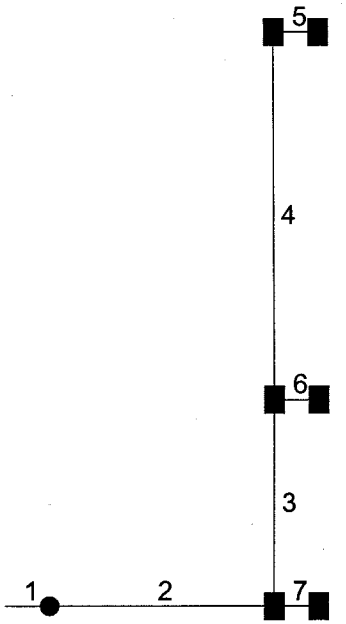
Project No.: 1880039-000.90
Project Desc: VINEYARDS AT JOCKEY'S NECK PHASE III

STORM DRAINAGE COMPUTATION SHEET

Sheet ____ of ____ Sheets

LOCATION			RUN-OFF									PIPE - CHANNEL DESIGN								HGL DATA		
			AREA-AC.					FLOW - MIN.														
LINE I.D.	FROM (UP)	TO (DOWN)	INCREMENT	TOTAL	RUN-OFF COEFF.	INCREM. CA	ACCUM. CA	TO INLET/ UPPER RCH	WITHIN REACH	TOTAL Tc	INTENSITY	DISCHARGE C.F.S.	PIPE SIZE	CHANNEL SECTION	SLOPE FT./FT.	CAPACITY FULL (CFS)	VELOCITY FULL (FPS)	DESIGN VEL. (FPS)	CONVEYANCE LENGTH (FT)	INVERT UPSTREAM	INVERT DOWNSTREAM	FRICTION SLOPE (FT./FT.)	VELOCITY (FPS)	COVER ELEV. UPSTREAM
	1	2	0.58	0.58	0.50	0.29	0.29	9+3 12.0	0.1	12.1	5.70	1.65	15"		0.0078	5.70	4.64	3.9	32	29.60	29.35			
	2	4	0.60	1.18	0.50	0.30	0.59		0.6	12.7	5.69	3.36	15"		0.0120	7.08	5.75	5.6	191	29.25	26.95			
	3	4	0.26	0.26	0.50	0.13	0.13	7+2 9.0	0.2	9.2	6.20	0.81	15"		0.0078	5.70	4.64	3.3	32	27.30	27.05			
	4	6	0.26	0.52	0.50	0.13																		
					+	0.59	0.85	12.7	0.3	13.0	5.60	4.76	15"		0.0110	6.78	5.51	4.9	107	26.95	25.77			
	5	6	0.36	0.36	0.50	0.18	0.18	7+1 8.0	0.2	8.2	6.40	1.15	15"		0.0078	5.70	4.64	3.6	32	26.02	25.77			
	6	9	0.30		0.50	0.15																		
					+	0.18																		
				2.36	+	0.85	1.18	13.0			5.55	6.55	15"		0.0380	12.59	10.24	9.73	162	22.45	16.80			
	9	10										6.55	24"		0.0016	9.05	2.88	3.11	32	15.55	15.50			

Hydraflow Plan View



Project file: Vin3.stm	IDF file: Eastern.IDF	No. Lines: 7	01-30-2002

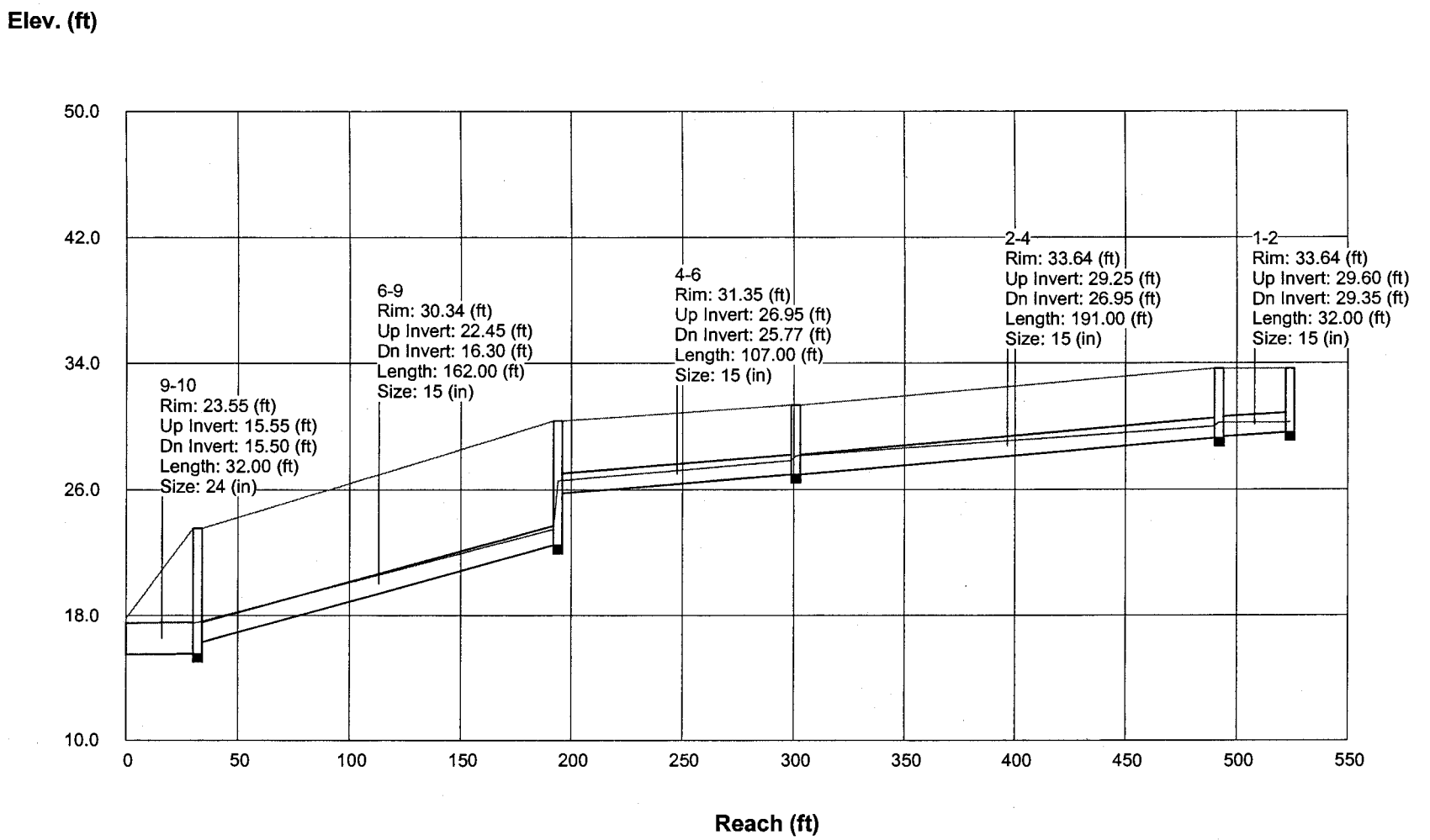
AMENDMENT TO THE VINEYARDS AT JOCKEY'S NECK PHASE 3
HYDRAULIC GRADE LINE CALCULATIONS SUMMARY

Line No.	To Line	Length	Total Flow	Capac. Full	Pipe Size	Pipe Slope	Inv Elev Up	Inv Elev Dn	HGL Elev Up	HGL Elev Dn	Gr/Rim El	Gr/Rim El	Line ID
		(ft)	(cfs)	(cfs)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
1	End	32	6.55	8.94	24	0.16	15.55	15.50	17.52	17.50	23.55	17.80	9-10
2	1	162	6.55	12.58	15	3.80	22.45	16.30	23.47	17.55	30.34	23.55	6-9
3	2	107	4.76	6.78	15	1.10	26.95	25.77	27.82	26.55	31.35	30.34	4-6
4	3	191	3.36	7.09	15	1.20	29.25	26.95	29.98	28.14	33.64	31.35	2-4
5	4	32	1.65	5.71	15	0.78	29.60	29.35	30.21	30.22	33.64	33.64	1-2
6	3	32	0.81	5.71	15	0.78	27.30	27.05	28.14	28.14	31.35	31.35	3-4
7	2	32	1.15	5.71	15	0.78	26.02	25.77	26.45	26.15	30.34	30.34	5-6

LMDG Project No.: 1880039-001.01
Run Da 1/30/02
Project file: Vin3.stm
Return period = 10 Yrs.

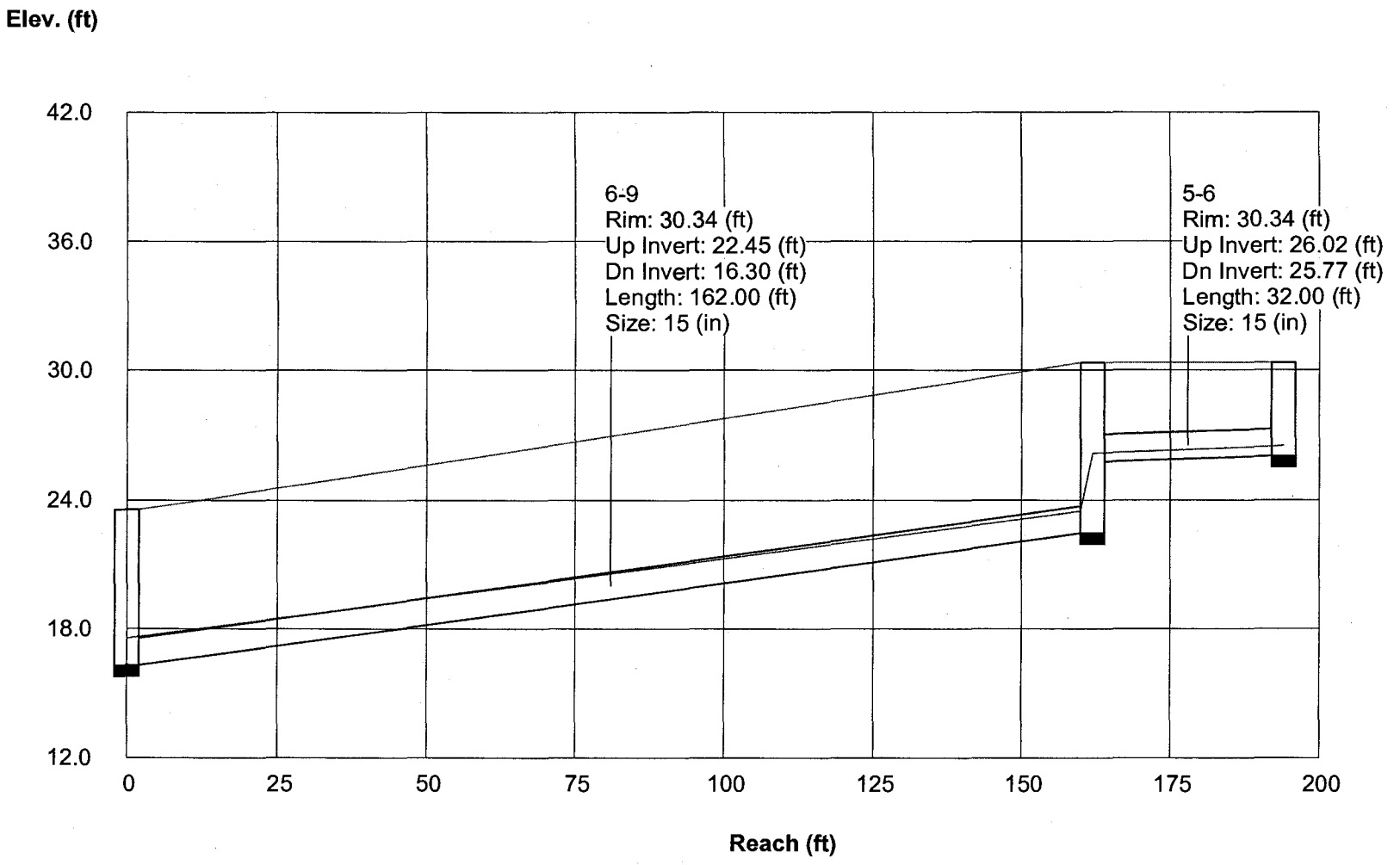
Storm Sewer Profile

Proj. file: Vin3.stm



Storm Sewer Profile

Proj. file: Vin3.stm



AMENDMENT TO THE VINEYARDS AT JOCKEY'S NECK PHASE III
PROJECT 1880039-001.01
HEC12 Version: V2.91 Run Date: 01-30-2002

INLET NUMBER 5 ***LENGTH 6.0*** ***STATION 19+32***

DRAINAGE AREA = 0.150 ACRES C VALUE = .500 CA = 0.075
DRAINAGE AREA = 0.210 ACRES C VALUE = .500 CA = 0.105

FOR THE FIRST SIDE
SUM CA= 0.075 INT= 4.00 CFS= 0.300 CO= 0.010 GUTTER FLOW= 0.310
FOR THE OTHER SIDE
SUM CA= 0.105 INT= 4.00 CFS= 0.420 CO= 0.000 GUTTER FLOW= 0.420
AT THE INLET
SUM CA= 0.180 INT= 4.00 CFS= 0.720 CO= 0.010 GUTTER FLOW= 0.730

GUTTER SLOPE = 0.0010 FT/FT PAVEMENT CROSS SLOPE = 0.0208 FT/FT

SPREAD AT A SLOPE OF .001 (ft./ft.) AND 0.42 (cfs) IS 6.11 (ft.)

XXXXXXXXXX CURB INLET IN A SUMP XXXXXXXXXX
P EFFEC. LENGTH (ft) = 9.60 H (ft) = 0.290
DEPTH OF WATER (ft) = 0.10 SPREAD (ft) = 4.94

INLET NUMBER 5 CHECK STORM ***LENGTH 6.0*** ***STATION 19+32***

DRAINAGE AREA = 0.150 ACRES C VALUE = .500 CA = 0.075
DRAINAGE AREA = 0.210 ACRES C VALUE = .500 CA = 0.105

FOR THE FIRST SIDE
SUM CA= 0.075 INT= 6.50 CFS= 0.488 CO= 0.010 GUTTER FLOW= 0.498
FOR THE OTHER SIDE
SUM CA= 0.105 INT= 6.50 CFS= 0.683 CO= 0.000 GUTTER FLOW= 0.683
AT THE INLET
SUM CA= 0.180 INT= 6.50 CFS= 1.170 CO= 0.010 GUTTER FLOW= 1.180

GUTTER SLOPE = 0.0010 FT/FT PAVEMENT CROSS SLOPE = 0.0208 FT/FT

SPREAD AT A SLOPE OF .001 (ft./ft.) AND 0.68 (cfs) IS 7.93 (ft.)

XXXXXXXXXX CURB INLET IN A SUMP XXXXXXXXXX
P EFFEC. LENGTH (ft) = 9.60 H (ft) = 0.290
DEPTH OF WATER (ft) = 0.14 SPREAD (ft) = 6.80

INLET NUMBER 6 ***LENGTH 6.0*** ***STATION 19+32***

DRAINAGE AREA = 0.140 ACRES C VALUE = .500 CA = 0.070
DRAINAGE AREA = 0.160 ACRES C VALUE = .500 CA = 0.080

FOR THE FIRST SIDE
SUM CA= 0.070 INT= 4.00 CFS= 0.280 CO= 0.010 GUTTER FLOW= 0.290
FOR THE OTHER SIDE
SUM CA= 0.080 INT= 4.00 CFS= 0.320 CO= 0.000 GUTTER FLOW= 0.320
AT THE INLET
SUM CA= 0.150 INT= 4.00 CFS= 0.600 CO= 0.010 GUTTER FLOW= 0.610

GUTTER SLOPE = 0.0010 FT/FT PAVEMENT CROSS SLOPE = 0.0208 FT/FT

SPREAD AT A SLOPE OF .001 (ft./ft.) AND 0.32 (cfs) IS 5.17 (ft.)

XXXXXXXXXX CURB INLET IN A SUMP XXXXXXXXXX
P EFFEC. LENGTH (ft) = 9.60 H (ft) = 0.290
DEPTH OF WATER (ft) = 0.09 SPREAD (ft) = 4.38

INLET NUMBER 6 CHECK STORM ***LENGTH 6.0*** ***STATION 19+32***

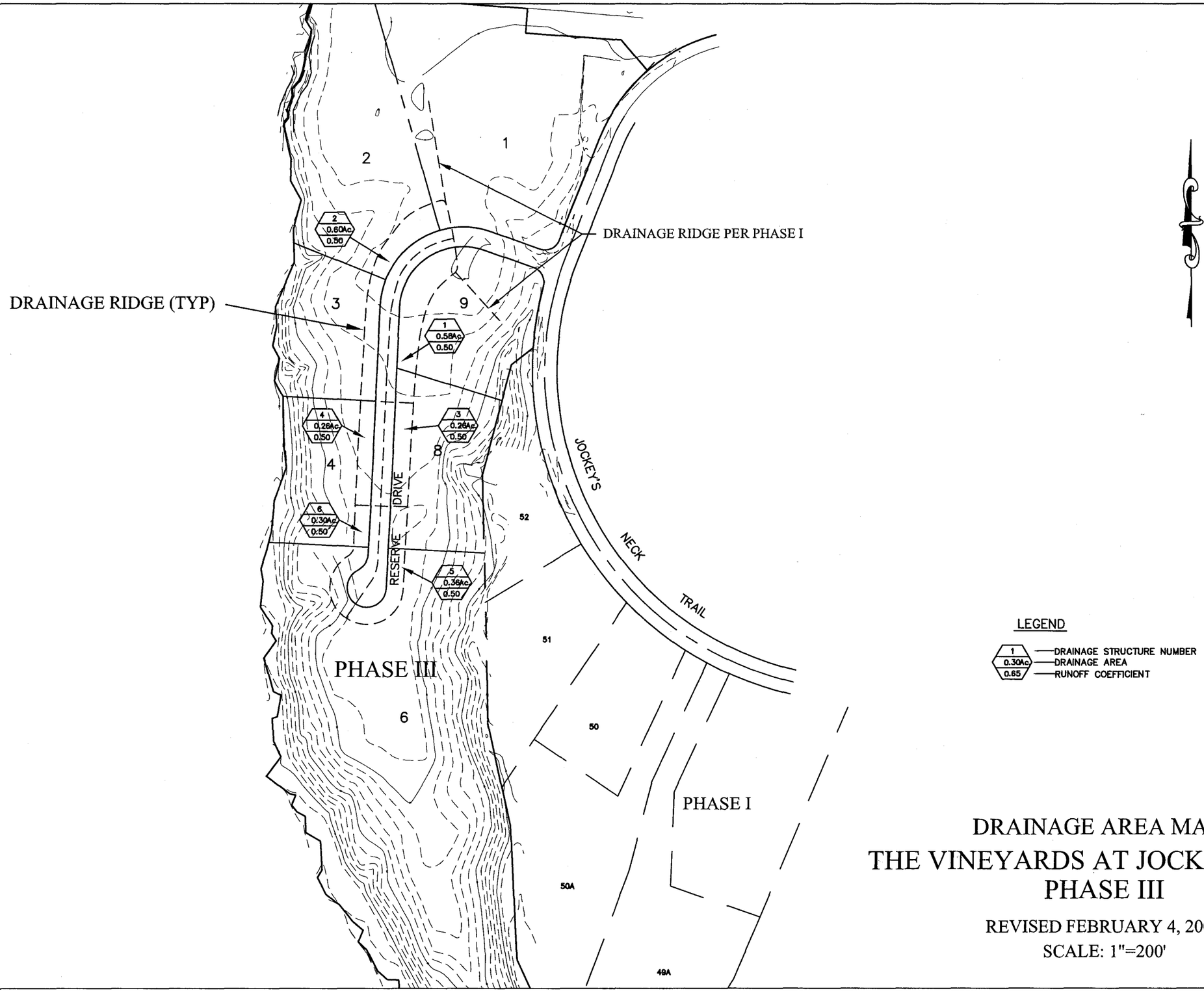
DRAINAGE AREA = 0.140 ACRES C VALUE = .500 CA = 0.070
DRAINAGE AREA = 0.160 ACRES C VALUE = .500 CA = 0.080

FOR THE FIRST SIDE
SUM CA= 0.070 INT= 6.50 CFS= 0.455 CO= 0.010 GUTTER FLOW= 0.465
FOR THE OTHER SIDE
SUM CA= 0.080 INT= 6.50 CFS= 0.520 CO= 0.000 GUTTER FLOW= 0.520
AT THE INLET
SUM CA= 0.150 INT= 6.50 CFS= 0.975 CO= 0.010 GUTTER FLOW= 0.985

GUTTER SLOPE = 0.0010 FT/FT PAVEMENT CROSS SLOPE = 0.0208 FT/FT

SPREAD AT A SLOPE OF .001 (ft./ft.) AND 0.52 (cfs) IS 6.88 (ft.)

XXXXXXXXXX CURB INLET IN A SUMP XXXXXXXXXX
P EFFEC. LENGTH (ft) = 9.60 H (ft) = 0.290
DEPTH OF WATER (ft) = 0.13 SPREAD (ft) = 6.03



DRAINAGE AREA MAP
THE VINEYARDS AT JOCKEY'S NECK
PHASE III

REVISED FEBRUARY 4, 2002

SCALE: 1"=200'

AMENDMENT TO
THE VINEYARDS AT JOCKEY'S NECK
PHASE III
JAMES CITY COUNTY, VIRGINIA

EROSION AND SEDIMENT CONTROL PLAN NARRATIVE
FEBRUARY 2002

PROJECT DESCRIPTION

Amendment to The Vineyards at Jockey's Neck –Phase III is a proposed 7 lot residential subdivision situated within the overall Vineyards at Jockey's Neck project site. The amendment includes reducing the number of lots from nine to seven, along with shortening Reserve Drive by approximately 180 feet and adjusting utilities as necessary. The Phase III project is located on the west side of Jockey's Neck Trail approximately 2500 feet south of Lake Powell Road. The total project area for Phase III is approximately 23.3 acres of land and is depicted on the site development plans. As shown on the site development plans, approximately 2.2 acres will be cleared for demolition of roadway, construction of proposed roadway, and removal/relocation of existing utilities. The project site is identified as assessor's Parcel No. (1-11) Tax Map (48-4).

EXISTING SITE CONDITIONS

The entire site is undeveloped except for approximately 1,200 feet of existing roadway, drainage structures, and associated sanitary and water services. The site is moderately wooded with light understory. The landform in the general area is a rolling terrain with slopes varying from relatively flat to slopes of approximately 25 % along the ravine areas. Elevations within the project site generally range from elevation 3 to elevation 38. Drainage from the project is directed to tributary drainageways of College Creek.

SOILS

The predominant soil types which will be disturbed during the project construction are Craven-Uchee complex, Emporia complex, and Peawick silt loam, as depicted on soil mapping contained in the USDA - Soil Conservation Service, Soil Survey of James City and York Counties and the City of Williamsburg, Virginia.

Craven-Uchee complex consists of moderately well drained Craven soils and well-drained Uchee soils. Areas of this complex are on side slopes and narrow ridge tops. Typically, the surface layer of the Craven soils is dark grayish brown fine sandy loam

about 4 inches thick. The subsurface layer is pale olive fine sandy loam 5 inches thick. The subsoil extends to a depth of 42 inches. It is yellowish brown clay in the upper part and yellowish brown sandy clay loam mottled with gray in the middle and lower parts. The substratum is brownish yellow fine sandy loam mottled with gray in the upper part and gray loamy fine sand with yellow mottles in the lower part, and extends to a depth of at least 72 inches. Typically, the surface layer of the Uchee soils is dark grayish brown loamy fine sand about 5 inches thick. The subsurface layer is light yellowish brown and very pale brown loamy fine sand 19 inches thick. The subsoil extends to a depth of 56 inches. It is strong brown sandy clay loam and clay mottled with gray and red from 36 to 56 inches. The substratum from 56 to at least 65 inches is variegated red, brown, and gray stratified sandy loam and sandy clay loam. In the Craven soils, permeability is slow: and in the Uchee soils, it is moderate in the upper part of the subsoil and moderately slow in the lower part. The available water capacity is moderate for the Craven soils and low or moderate for the Uchee soils. Surface runoff is rapid. The erosion hazard is severe. The subsoil of both soils has moderate shrink-swell potential. During winter and early spring a seasonal high water table is at a depth of 2 to 3 feet in the Craven soil and 3 ½ feet to 5 feet in the Uchee soil. This soil is in capability subclass IVe. These soils are in hydrologic soil group C and A.

Emporia complex appears on side slopes along drainageways. Typically, the surface layer of this soil is dark grayish brown fine sandy loam about 4 inches thick. The subsoil extends to a depth of 45-50 inches and is yellowish brown loam with mostly strong brown mottles in the upper parts; yellowish brown, firm sandy clay loam with strong brown and gray mottles in the middle part; and mottled gray and brown, firm sandy clay loam in the lower part. The substratum is variegated gray, brown, and red, firm sandy clay loam to a depth of at least 75 inches. In this Emporia soil, permeability is moderate in the upper part of the subsoil and moderately slow to slow in the lower part. The available water capacity is moderate. Surface runoff is medium. The erosion hazard is moderate. The subsoil has moderate shrink-swell potential. A perched high water table is at a depth of 3 to 4 ½ feet in winter and spring. This soil is in capability subclass VIIe. The hydrologic soil group for this soil is C.

Peawick silt loam soil is deep, nearly level, and moderately well drained. It is on broad ridges of high stream terraces. Typically, the surface layer is dark grayish brown silt loam about 2 inches thick. The upper 14 inches of the subsoil is light yellowish brown silty clay loam and yellowish brown silty clay. The next 25 inches of the subsoil is mottled brown and gray silty clay. The lower part of the subsoil is mostly mottled, gray silty clay and clay to a depth of at least 99 inches. The permeability is very slow and the available water capacity is moderate. Surface runoff is slow and the erosion hazard is slight. The subsoil has a high shrink-swell potential. In winter and early spring, a perched high water table is at a depth of 1 ½ to 3 feet. These soils are in capability subclass IIw. The hydrologic soil group for this soil is D.

CRITICAL EROSION AREAS

The soils identified on the site suggest a slight to severe erosion hazard. The potential for severe erosion exists along the slopes and within the ravine areas. No construction is anticipated within the more severe erosion hazard areas. All disturbed slopes will be stabilized by vegetative practices.

EROSION AND SEDIMENT CONTROL MEASURES

Unless otherwise indicated. All vegetative and structural erosion and sediment control practices will be constructed and maintained according to minimum standards and specifications of the Virginia Erosion and Sediment Control Handbook, 1992, and in accordance with James City County Standards.

STRUCTURAL PRACTICE:

The following practices are shown on the development plan sheets and detailed on erosion control details sheet.

1. SILT FENCE (3.05)

   Silt fence will be installed where shown on the plan.

2. STORM DRAIN INLET PROTECTION (3.07)

   Storm drain inlet protection will be installed for all drainage inlet structures where shown on the plan.

3. OUTLET PROTECTION (3.18)

   Outlet protection shall be placed at all drainage outfalls.

4. TREE PROTECTION (3.38)

   Tree protection fencing or other suitable devices shall be placed along the "clearing limits" to protect desirable trees from mechanical and other injury during land disturbing and construction activity.

VEGETATIVE PRACTICES:

1. TOPSOIL STOCKPILE

   Topsoil shall be stripped from areas to be graded and stockpiled for later use. The Owner shall approve stockpile locations.

2. TEMPORARY SEEDING (3.31)

   All distributed areas on-site will be seeded with a fast-germinating, temporary vegetation immediately following grading or where exposed soil surfaces will not be brought to final grade for a period of time exceeding 15 days. Selection of the appropriate seed mixture as recommended by the Virginia Erosion and Sediment Control Handbook, 1992 will depend on the time of year it is to be applied.

MANAGEMENT STRATEGIES AND CONSTRUCTION SEQUENCE

1. Establish tree protection/clearing limits flagging and erosion control devices.

2. Place all permanent erosion and sediment control devices, proceed with roadway clearing and grubbing operations. Proceed with demolition as shown on Demolition Plan.

3. If temporary stockpiles are used, the contractor shall install silt fences at the base to prevent sediment runoff. Stockpiles shall not be placed within any easement, or between the right-of-way and the building setback line.

4. Install sewer and water utilities, curb and gutter, sub-base materials and pavement surface course in the roadways.

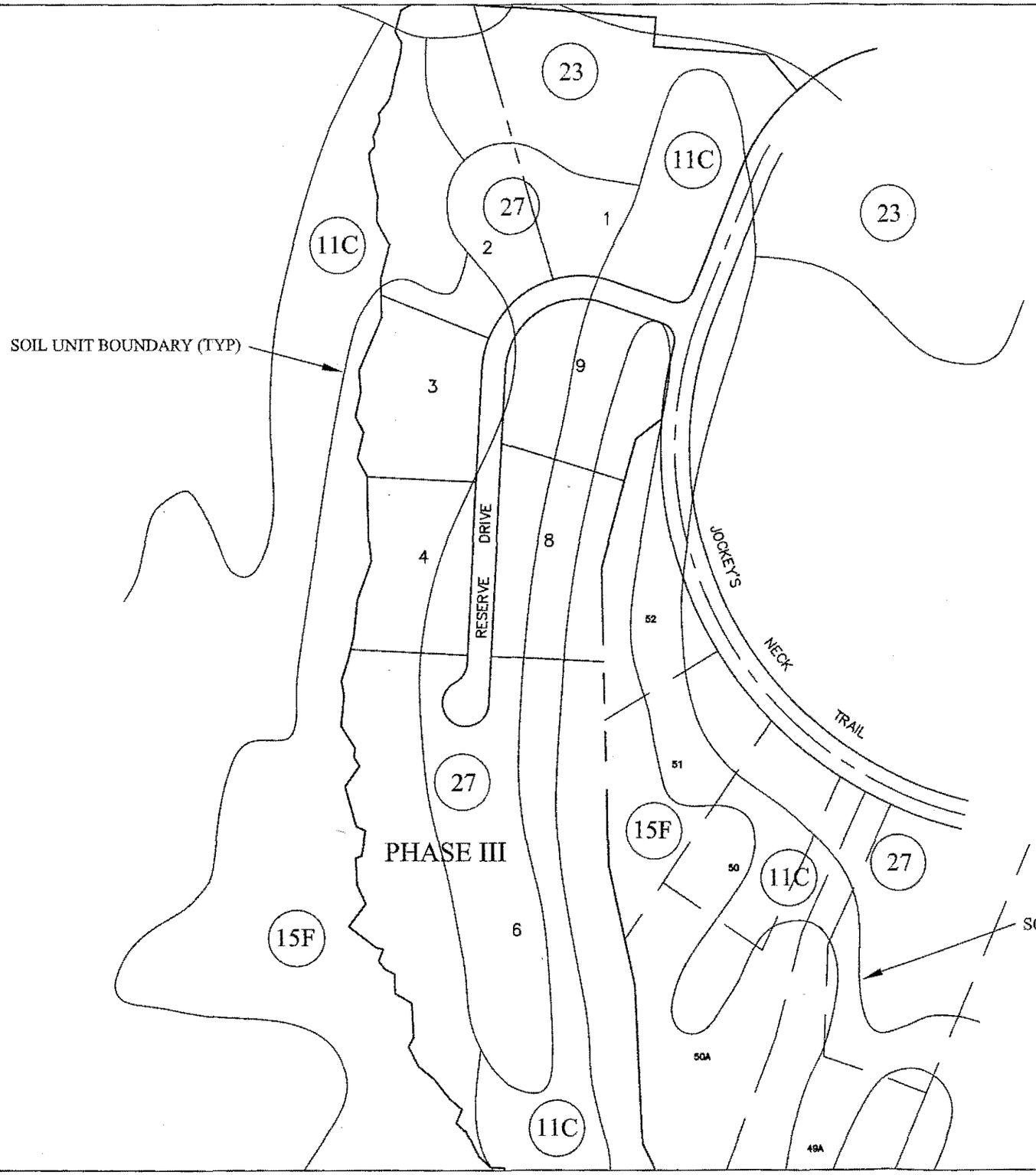
5. Provide permanent seeding as required. Permanent seeding may take place at prior phases as deemed appropriate.

PERMANENT STABILIZATION

All areas disturbed by grading will be stabilized with permanent seeding immediately following finish grading. Seeding will be done according to Std. and Spec. 3.32 of the Virginia erosion and Sediment Control Handbook, 1992. Permanently seeded areas shall be protected during establishment with straw mulch.

MAINTENANCE

Maintenance of temporary erosion and sediment control devices is the responsibility of the developer. In general, all erosion and sediment control measures will be checked weekly and after each significant rainfall. Silt fencing shall be inspected immediately after each rainfall and at least daily during prolonged rainfall for undermining or repair. All seeded areas will be checked to insure a good stand of grass is maintained. Seeded areas deficient shall be reseeded as necessary.



SOIL MAPPING LEGEND

11C	CRAVEN-UCHEE COMPLEX
15F	EMPORIA COMPLEX
23	NEWFLAT SILT LOAM
27	PEAWICK SILT LOAM

SCS SOILS MAPPING EXHIBIT

THE VINEYARDS AT JOCKEY'S NECK

PHASE III

REVISED FEBRUARY 4, 2002

SCALE: 1"=200'

DEVELOPMENT MANAGEMENT

101-E MOUNTS BAY ROAD, P.O. BOX 8784, WILLIAMSBURG, VIRGINIA 23187-8784
(757) 253-6671 Fax: (757) 259-4032 E-MAIL: devtman@james-city.va.us

ENVIRONMENTAL DIVISION	PLANNING	COUNTY ENGINEER	MOSQUITO CONTROL
(757) 253-6670	(757) 253-6685	(757) 253-6678	(757) 259-4116
environ@james-city.va.us	planning@james-city.va.us		

March 3, 2006

Mr. Bruce Jackson
2605 Jockey's Neck Trail
Williamsburg, VA 23185 - 8057

Re: Lake Joachim Shoreline Work at 2605 Jockey's Neck Trail

Dear Mr. Jackson:

I appreciated the opportunity on January 23, 2006, to discuss the shoreline protection work you completed at your residence. As you are aware the regulatory status of Lake Joachim, changed in 2005. Because of a determination that perennial stream flow enters the lake, the Chesapeake Bay Preservation Ordinance requires Lake Joachim be designated as a protected body of water. As a protected body of water, there is a 100 ft Resource Protection Area Buffer that extends landward from the high water line around the lake, as well as a Best Management Practice (BMP) pond buffer extending 25 ft. We have reviewed the shoreline work and have determined that although prior approvals from the County were required an enforcement action at this time is not warranted given the minor nature of the impacts.

Please be advised that in the future, the Chesapeake Bay Preservation Ordinance requires that any proposed encroachment activity within that 100 ft buffer be reviewed and have written approval from the Environmental Division prior to the onset of work. Failure to obtain prior approval may constitute a violation of the County ordinance and can be subject to a civil penalty of up to $5,000.00 per day.

Should you have any questions concerning any of this information please don't hesitate to contact me at 253-6675.

Sincerely,

Patrick T. Menichino

Patrick T. Menichino
James City County Environmental Division

CC: Darryl Cook
Scott Thomas ✓
The Vineyards HOA

DEVELOPMENT MANAGEMENT

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

CODE COMPLIANCE	ENVIRONMENTAL DIVISION	PLANNING	COUNTY ENGINEER
(757) 253-6626	(757) 253-6670	(757) 253-6685	(757) 253-6678
codecomp@james-city.va.us	environ@james-city.va.us	planning@james-city.va.us	INTEGRATED PEST MANAGEMENT
			(757) 259-4116

January 16, 2001

Mr. David Coffield
The Vineyards
2400 Sarah Spence
Williamsburg, Va. 23185

Re: The Vineyards
Dam # 1 Joachin and Dam # 2 Ajacan Lakes
Stormwater Management Facilities
County Plan No. S-52-88; County BMP ID Codes (CC 013 and CC 005)

Dear Mr. Coffield:

At your request, the Environmental Division is forwarding information relative to a meeting held on October 18th for the above referenced facilities. In addition to specific comments as outlined below, the following additional information is also attached for your group's review and use:

- ☐ A 1 inch = 800 ft. scale map showing the general location of the development's two stormwater management facilities (lakes).
- ☐ Current Inspection Reports for the facilities as performed on November 28th 2000.
- ☐ Typical Maintenance Plans prepared for both facilities.
- ☐ General Landscaping Guidance (Tips).
- ☐ Two (2) Informative Brochures published by the Association of State Dam Safety Officials - *Dam Ownership: Responsibility and Liability* and *Dam Ownership: Procuring the Services of a Professional Engineer*.
- ☐ An informational brochure entitled *A Guide for Maintaining and Operating BMP's*. This publication is distributed through our office in response to a cooperative effort from the Hampton Roads Regional Stormwater Management Committee and HR STORM, a regional stormwater education effort coordinated by the Hampton Roads Planning District Commission.
- ☐ Information relative to the Virginia Department of Conservation and Recreation's Dam Safety Program, including summary information from their website and a copy of the Virginia Impounding Structure Regulations (1997).

Currently there are 3 sheets of plan and detail drawings related to design and construction of Dam #1 (Joachin) and Dam # 2 (Ajacan) in our records file. These plans were prepared by AES Consulting Engineers (Project No. 6518) in July of 1986 and 1987. The plan for Dam # 2 reflects an as-built status for the outlet structure dated June 1988. These drawings, as well as any hydrologic and hydraulic maps or computations, are available for sign out and reproduction by your group if desired.

General maintenance plans were prepared and provided for both facilities as a courtesy. The plans were prepared based on our general knowledge of maintenance required for these types of facilities and subsequent to our site specific inspections. It is provided for information and guidance purposes when no other specifically approved maintenance plans are available for use. The plans are not meant to replace or supersede any specific recommendations offered by a qualified professional.

The maintenance plans only address normal structural, stormwater runoff control and aesthetic activities related to safe function of the facility. Landscaping, cosmetic or ornamental features associated with the facility are usually left to the discretion of the Owner, or its designated representative, unless these features deter from the structural integrity or the performance of water quality/quantity controls as designed and constructed for the facility.

Specific Comments about Dam # 1 Joachin (Upper Lake - CC 013):

Based on field observations, the facility appears to be in satisfactory condition for its age. Adequate maintenance mowing is being performed routinely on the top berm of the facility. However, the facility is in need of regular (routine) maintenance typical of most wet pond facilities. From our perspective, main concerns were the presence of trees on and along the downstream fill embankment; debris and tree growth in the vicinity of the riser structure; and minor joint leakage observed in the upper portion of the concrete riser structure.

The pond embankment is steep and high on the downstream face. Large trees to 6-inch diameter, smaller saplings and heavy ground cover and vegetation are present on most of the downstream embankment, especially lower portions of the embankment adjacent to normal pool of Dam # 2 (Ajacan). Several of the larger trees are well-established and roots have penetrated into the embankment zone.

Usually trees, shrubs and woody vegetation are not permitted to grow on any part of pond embankments constructed using engineered (compacted) fills. Saturated roots mats combined with high wind can cause trees to overtop and accelerate soil erosion and embankment failure conditions. In addition, fluctuating water surface elevations in Dam # 2 could potentially cause trees on the lower portion of the embankment to become exposed to saturated conditions, thus increasing the potential to die, overtop and create a structural concern for the Dam # 1embankment. Usually for this type of condition, we recommend that the subject trees be cut to or below ground level and be maintained in that fashion as to not disturb root systems that may already be extensive and efforts be made to replace the tree growth with an established low maintenance grass covering.

There was a considerable amount of trash, debris (leaves, dead tree branches, etc.) and trees and vegetation near and around the vicinity of the riser's DI-7 top grate. It is recommended to clean and remove all debris and trees from within 15 ft. of the riser to prevent unobstructed weir flow into the riser grate and to minimize root growth migration into the riser's joints.

Finally, there was a minor observation of seepage through the joints of the riser in its upper sections. This condition does not currently appear to be a major structural concern to the riser, however, an attempt to correct the condition should be performed concurrently with debris and tree removal operations around the riser. Although it does not appear the riser needs to be reset or replaced at the current time, interior joint sealing with grout should be performed to alleviate this condition. Continued migration of tree root systems through the riser could seriously displace the joints in the riser structure and cause structural instability.

Specific Comments about Dam # 2 Ajacan (Lower Lake - CC 005):

Adequate maintenance and mowing is being performed routinely on the top 1/3 portion of the facility along the paved curb and gutter roadway. However, the facility is in need of regular (routine) maintenance typical of most wet pond facilities and several non-routine maintenance action items were also noted. From our perspective, main concerns were the presence of trees on and along the bottom two-thirds portion of the downstream fill embankment; soft soils and minor seepage on the downstream west toe (emergency spillway side); soft soils and considerable seepage on the downstream east toe; degradation of the interior coating within the primary CMP outlet barrel; severe erosion and undercutting at the outlet barrel outfall; severe erosion and damage to the emergency spillway lining; and debris and tree growth in the vicinity of the riser structure.

Larger 2- to 6-inch trees, smaller saplings and heavy ground cover and vegetation are present on the entire bottom 2/3 portion of the downstream embankment. Several of the larger tree species are pine which pose a distinct threat to the structural integrity of the embankment. Usually trees, shrubs and woody vegetation are not permitted to grow on any part of pond embankments constructed using engineered (compacted) fills. Saturated roots mats combined with high wind can cause trees to overtop and accelerate soil erosion and embankment failure. Usually for this type of condition, we recommend that the subject trees be cut to or below ground level and be maintained in that fashion as to not disturb root systems that may already be extensive and efforts be made to replace the tree growth with an established low maintenance grass covering. For this case, we recommend that the maintenance zone, which is adequate on the upper 1/3 part of the downstream embankment be expanded in the same manner to include the lower 2/3 of the downstream embankment. This expansion can be performed all at once or phased over the next couple of maintenance (tree removal) cycles.

Soft soils and minor seepage was observed along the downstream left (west) embankment toe near the outlet barrel location. Although minor, this condition should be monitored and evaluated on a regular, continuing basis. A more discernible seepage area was observed along the downstream right (east) embankment toe approximately 125 ft. east of the outlet barrel. The seepage area was approximately 20 feet in length, had an approximate 12 inch depth and flow was considerable (estimated at > 1 gpm). Discoloration and an oily film was observed on the surface of the discharge from the seep area. This area should be inspected by a qualified professional engineer and its effect/impact to the structural integrity of embankment properly evaluated. In addition, the seepage area should be monitored in the future on a regular, continuing basis.

At the downstream end of the principal spillway outlet barrel (36-inch CMP), the end section was undercut by erosion into the dam embankment approximately 3 feet. Continued erosion under the barrel threatens the integrity of the outlet barrel and dam embankment toe. Remediation should include removal of the end section, proper placement of compacted soil material, resetting the flared end section and placement of armor protection over the soil to prevent reoccurrence.

The outlet protection pad at the barrel outfall is missing and needs replaced and a large tree (and rootmat) which has fallen at the outlet protection location needs removed.

Based on observation, the bituminous coating within the lower end of the 36-inch outfall barrel appeared worn and flaking, especially in the bottom portion of the pipe up to about ½ pipe depth. Although the inner metal wall of the pipe did not appear corroded, over time a lack of and continued loss of the inner pipe wall coating will tend to lead to premature corrosion and possible failure of the outlet barrel. It is highly suggested that a suitable lining be re-established in the pipe interior where loss has occurred. There are several after market type in-situ lining materials that can be applied to protect the pipe inner wall from further degradation.

There was a considerable amount of trash and wood debris and trees and vegetation near and around the vicinity of the riser's DI-7 top grate and its rectangular weir slot. Clean and removal of all debris and trees from within 15 ft. of the riser is recommended to prevent unobstructed weir flow to the riser grate and to minimize root growth migration into the riser joints. Also, exposed rebar was present on all three - 18 inch diameter emergency spillway overflow pipes on the upstream side of the embankment.

Of primary concern to the integrity of the facility is a severe erosion and undercutting condition observed along the outlet channel portion of the emergency spillway. All erosion protection rock (riprap) which was placed within the channel has displaced and the underlying geotextile is fully exposed and damaged. A 7' wide x 7' long x 4' deep scour hole has formed at the bottom of the spillway. The emergency spillway has fully failed, offers no type of erosion protection for larger storm events and is in need of immediate attention to restore it back to its intended design function. Continued erosion and undercutting along the emergency spillway outlet channel poses a severe threat to the integrity of the downstream embankment.

Interior Storm Drainage System:

Spot checks were performed at several of the inlets/storm drain systems tributary to Dam # 2. In general, these systems are small cross-culvert and collection subsystems which are mainly located at road profile low points. These systems collect "through" (on and offsite) drainage from open channels and roadside drainage via paved roadway and curb and gutter flow. Based on our physical inspection of approximately 6 inlets within 2 of the storm drainage subsystems on the eastern side of Jockey's Neck Trail, the systems appear to be adequate for their intended function and appear to be routinely cleaned and maintained, as no accumulations of leaves, debris, etc. was observed beyond that to be expected during the fall/early seasons.

Other:

Some concern was presented about whether the lower lake, Dam # 2 Ajacan (CC 005) fell under the criteria of a permitted dam facility per the Virginia Dam Safety regulations. These regulations exclude a dam if the downstream embankment is less than 25 feet (as measured from the streambed at the downstream toe to top of the impounding structure) ***and*** creates a maximum impoundment greater than 50 acre-feet. There are also provisions for exclusion of dams constructed, maintained or operated primarily for agricultural purposes which are less than 25 feet in height or which create a maximum impoundment smaller than 100 acre-feet.

Based on our cursory review of file information, design volume to El. 25.0 is approximately 124.33 acre-feet and original design top of dam is at El. 28.5; therefore, there appears to be volume well in excess of either 50 or 100 acre-feet. Original design dam height was approximately 24.5 feet (El. 28.5- El. 4.00 = 24.5 feet). Per as-built information dated June 27th 1988, the actual downstream invert of the outlet barrel was defined as El. 5.22 rather than El. 4.00 per design, thus resulting in a dam height of 23.28 feet (El. 28.5 - 5.22 = 23.28 feet). In August of 1989, computations as performed to size an emergency spillway pipe system across the embankment/roadway reflected a road centerline design elevation at El. 30.0, which would result in a dam height of 24.78 feet (El. 30.0 - El. 5.22 = 24.78 feet). Although it appears the original dam design and modifications would not require the facility to fall under state permitting criteria because of dam height, our records do not reflect any as-built information for the top of the facility; thus it is unclear if 25 feet in vertical distance is present.

It is our recommendation that dam height be confirmed via field survey based methods, and since land-use alterations may have changed original classifications assigned to the dam, determination of permits and classification under the Dam Safety Act requirements, if necessary, be coordinated with the following office:

Department of Conservation and Recreation
Division of Dam Safety
203 Governor Street, Suite 402
Richmond, Va. 23219
Att: Mr. Jon Phillippe
804-786-1369

I have attached some general information from the Virginia dam safety program website at www.dcr.state.va.us/damsafty and my most current copy of the Virginia Impounding Structure regulations for your review.

Hopefully, this material is helpful to your group to understand maintenance associated with both facilities. Please review the attached information and contact us at 757-253-6639 or 757-253-6673, if you have any further questions or comments.

Sincerely,

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

SJT/sjt
Enclosures

cc: Robert Emmett

Shared\SWMProg\Education\Subdivisions\Vineyards.lett1

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

S-52-88
GPIN 4840100011

Database Inventory No. (if known): CC013

Name of Facility: VINEYARDS @ JOCKEYS NECK SEC 1 & 2 DAM #1 JOACHIN LAKE BMP No.: 1 of 2 Date: 11/28/00

Location: Behind 2609 JOCKEYS NECK TRAIL (LOT 70) GPIN

Name of Owner:

Inspector: SJ Thomas

Type of Facility: Wet Pond (DAM)

Weather Conditions: Sunny, Mild, 50's

If an inspection item is not applicable, mark NA, otherwise mark the appropriate column. (NOTE: UPPER LAKE EMBANK D/S)

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: STEEP D/S 2H:1V & HIGH; U/S 3H:1V LOW				
Grass Height	X			GOOD COVER 100% EMBANK.
Vegetated Condition		X	X	SMALL SAPLINGS TO 6" DIA PINES, WILLOWS & TREES
Weed Growth		X	X	Brush & Small Trees
Erosion	X			Minor Erosion AT Toe. DUE TO DAM #2 HWL.
Trash & Debris	X			None.
Seepage				Minor Spot D/S Left (WEST) ABUTMENT.
Fencing or Benches	X			None.
Constructed Wetlands (Interior Landscaped & Planted) Areas: NATURAL, WET POOL				
Vegetated Conditions				N/A
Trash & Debris				N/A
Floatables				N/A
Erosion				N/A
Sediment				N/A
Dead Plant				N/A
Aesthetics				N/A
Other				N/A
				N/A

Facility Item	O.K.	Routine	Urgent	Comments
Water Pools	☒ Permanent Pool (Retention Basin) ☐ Shallow Marsh (Detention Basin)			
Shoreline Erosion	X			Acceptable. More prevalent at Lot-Lawn Areas.
Algae	X			None Observed.
Trash & Debris	X			
Sediment	X			Unknown. Pool not accessible.
Aesthetics	X			Good Natural Look.
Other				
Inflow Stuctures (Describe Locations):	Various Sheet, open channel & storm drain inflows.			
Condition of Structure	X			
Erosion	X			
Trash and Debris	X	X		Routine Channel + Inlet/storm drain
Sediment	X			cleaning recommended. slight buildup with leaves but free-flowing
Aesthetics	X			
Other	X			Checked 4 inlets trib to dam. (East)
Principal Flow Control Structure - Intake, Riser, etc. (Describe Location):	South End, Mid Embank.			
Condition of Structure	X			Riser RCP 4'ϕ w/steps, minor joint leakage
Corrosion	X			
Trash and Debris		X	X	Clear + Remove Debris, Leave,
Sediment	X			Trees + Sed 15' from Riser. (Sed 12" deep at riser)
Aesthetics		X	X	Cleaning Top Unit. (Flat)
Other				Riser 3x3 DI-7 Top, >25' deep
Principal Outlet Structure - Barrel, Conduit, etc. :	Could not be identified u/s or d/s. 36" RCP by plan			
Condition of Structure	X			Appears functional, about 1"
Settlement				flow over riser crest is outletting
Trash & Debris				d/s thru barrel in riser. No
Sediment				excessive ponding within riser.
Erosion				
Other				
Emergency Spillway (Overflow):	East side embankment thru adjacent Lot areas.			
Vegetation	X			
Lining	X			Grass
Erosion		X	X	Erosion @ d/s Toe Rt (East) emb.
Trash & Debris	X			
Other				Functional during flood. (Floyd)

Based on historical reports, ES flow occured at east side embankment
Depth < 6" thru Lot Areas during Hurricane Floyd Sept 1999

Facility Item	O.K.	Routine	Urgent	Comments
Nuisance Type Conditions:				
Mosquito Breeding	X			
Animal Burrows	X			None observed. Rabbit + Grouse on O/S EMB.
Graffiti	X			
Other				
Surrounding Perimeter Conditions:				
Land Uses	X			Mixed Wooded + Lot, Alternating.
Vegetation	X			Good Natural Buffers.
Trash & Debris	X			
Aesthetics	X			Natural setting.
Access /Maintenance Roads or Paths	X			Good access from west. CLEARED 15' PATH.
Other	X			VINEYARD AREA U/S DRAINS TO POND.

Remarks: ▷ LARGE Trees + Saplings Weed Removed D/S EMB. HIGH HAZARD DUE TO D/S SLOPE STEEPNESS.

△ Minor Seepage Spot Left (west) Abutment toe. Continue to monitor.

▷ Riser 3x3 01-7 top on 48"ϕ RCP Riser. Outlet barrel size COULD NOT BE IDENTIFIED U/S (Deep in Riser) AND O/S (SUBMERGED)

▷ Clean + Remove all leaves, debris AND trees (willows) AND brush 15' from riser. obstructing weir flow into top grate.

△ Minor Leakage upper section joints of riser. Needs reset or sealed with grout. Does not appear to be a major structural concern, but releases enough flow to drawdown pool. At time of inspection very little weir flow over riser, but large amount of flow within riser.

▷ Lots – Roadways Curb + Gutter to Inlets/Storm DRAINS.

Overall Environmental Division Internal Rating: 2 (O/S EMBANKMENT GROWTH.)

Signature: Scott J Thorne P.E. **Date:** 11/28/00 2:40pm

Title: Civil Engineer Environmental Div.

SWMProg\BMP\CoInspProg\DetRet.wpd

DAM SAFETY PROGRAM

DEPARTMENT OF CONSERVATION & RECREATION

Division of Dam Safety
203 Governor Street, Suite 402
Richmond, Virginia 23219-2094

OWNER'S ANNUAL INSPECTION FORM

Name of Dam VINEYARDS @ JOCKEYS NECK SEC 1 & 2 DAM #1 JOACHIN LAKE
Name of Reservoir UPPER LAKE
Owner's Name
Address
Telephone ( )

Inventory Number JCC CC 013
County/City JCC
Hazard Class I, II, III or IV N/A
Inspected by SJ Thomas SWI.
Date 11/28/00

DIRECTIONS: MARK "X" in YES, NO or N/A COLUMN

ITEM	YES	NO	N/A	REMARKS
1. GENERAL CONDITIONS				
A. Alterations to dam?		X		
B. Development in downstream flood plain?		X		LAKE #2 DIRECTLY D/S.
C. Grass cover adequate? (embankment & spillway)	X			
D. Settlements, misalignment, or cracks?		X		
E. Recent high water marks?		X		Elevation:
2. UPSTREAM SLOPE				
A. Erosion?		X		
B. Trees?	X			SMALL TREES, WEEDS & BRUSH
C. Rodent holes?		X		
D. Cracks, settlement, or bulges?		X		
E. Adequate and sound riprap?			X	
3. INTAKE STRUCTURE X Concrete ☐ Metal				Water Surface Elevation: UNKNOWN @ RISER CREST. EL. 40.1 / 1" DEPTH
A. Spalling, cracking, scaling?		X		
B. Exposed reinforcement?		X		
C. Corrosion present?		X		
D. Coating adequate?	X			
E. Leakage?	X			MINOR UPPER JOINT LEAKAGE
F. Trash rack adequate?		X		NONE. DI-7 TOP GRATE
G. Obstacles to inlet?	X			DEBRIS, LEAVES & TREES WITHIN 15'
H. Drawdown operative? ☐ Closed ☐ Open		X		None Observed.
4. ABUTMENT CONTACTS				
A. Erosion, cracks or slides?		X		
B. Seepage?	X			Estimated GPM: <5, MINOR D/S LEFT WEST EMB.
5. EMERGENCY SPILLWAY				EAST SIDE THRU ADJ. LOTS
A. Obstructions?	X			DOWNSTREAM CHANNEL
B. Erosion?	X			D/S TOE @ RT EAST EMB
C. Rodent holes?		X		
6. DOWNSTREAM SLOPE				
A. Erosion?	X			MINOR DUE TO D/S LAKE 2 LEVELS
B. Trees?	X			SMALL SAPLINGS & 6" DIA. PINE
C. Rodent holes?				

OWNER'S ANNUAL INSPECTION FORM Inventory Number JCC CC013

ITEM	YES	NO	N/A	REMARKS
D. Cracks, settlements or bulges?		X		
E. Drains or wells flowing?		X		Estimated GPM:
F. Seepage or boils?		X		Estimated GPM:
7. CONDUIT AND OUTLET ☒ Concrete ☐ Metal	COULD OBSERVE	NOT		Tail water elevation and flow: LAKE #2 NP
A. Spalling, cracking, scaling?		X		
B. Exposed reinforcement?		X		
C. Joints displaced or offset?		X		Note: COULD NOT OBSERVE
D. Joint material lost?		X		36"ϕ OUTLET
E. Leakage?		X		BARREL.
F. Earth erosion?		X		
G. Conduit misaligned?		X		
H. Outlet channel obstructed?	X			BELOW N.P. LAKE 2
8. STILLING BASIN				COULD NOT OBSERVE
A. Spalling, cracking, scaling?		X		
B. Exposed reinforcement?		X		
C. Joints displaced or offset?		X		
D. Joint material lost?		X		
E. Joints leak?		X		
F. Rock adequate?		X		
G. Dissipators deteriorating?		X		
H. Dissipators clean of debris?		X		
9. CONCRETE SPILLWAY			X	NOT APPLICABLE
A. Spalling, cracking, scaling?				
B. Exposed reinforcement?				
C. Joints displaced or offset?				
D. Joint material lost?				
E. Leakage?				
F. Dissipators deteriorating?				
G. Dissipators clean of debris?				
H. Earth erosion?				
I. Outlet channel eroding?				
10. GATES			X	NONE
A. Floodgates broken, bent?				
B. Floodgates eroded or rusted?				
C. Floodgates operational?				
11. RESERVOIR				
A. Development?	X			SF LARGE LOTS (WOOD & GRASSED)
B. Slides or erosion on banks?		X		
C. Reservoir managed?	X			SF UNITS
12. INSTRUMENTS			X	NONE
A. Is structure instrumented?				
B. Monitoring performed?				
13. SHOULD DAM BE INSPECTED BY ENGINEER?				
14. REEVALUATE HAZARD CLASSIFICATION				
15. IS EMERGENCY ACTION PLAN CURRENT?				

REMARKS: FUNCTIONAL DURING HUR FLOYD. LARGE TREES & SAPLINGS D/S EMB NEED REMOVED. MINOR SEEPAGE SPOT TO BE MONITORED. CLEAN & REMOVE TREES 15' FROM RISER INLET. REPAIR MINOR LEAKAGE UPPER JOINTS RISER.

Date Record Created:

Created By:

WS_BMPNO: CC013

Print Record

PRINTED ON
Wednesday, March 10, 201
2:32:58 PM

WATERSHED	CC
BMP ID NO	013
PLAN NO	S-84-89
TAX PARCEL	
PIN NO	4840100011
CONSTRUCTION DATE	
PROJECT NAME	Vineyards at Jockey's Neck -Joachin
FACILITY LOCATION	
CITY-STATE	Williamsburg, VA
CURRENT OWNER	
OWNER ADDRESS	
OWNER ADDRESS 2	
CITY-STATE-ZIP CODE	
OWNER PHONE	
MAINT AGREEMENT	No
EMERG ACTION PLAN	No

Get Last BMP No | Return to Menu

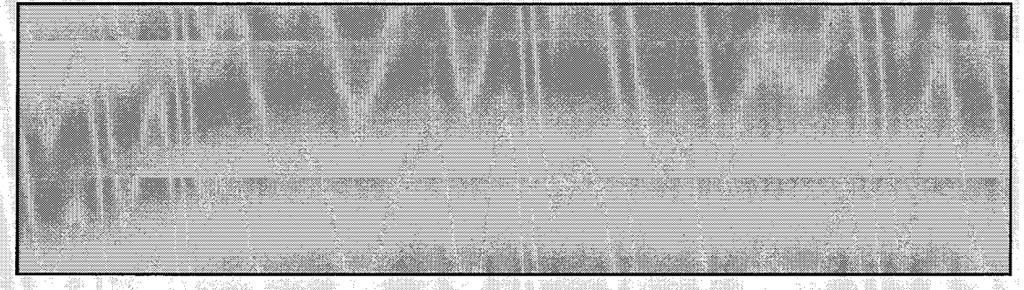
MAINTENANCE PLAN	No
SITE AREA acre	661
LAND USE	SF Residential
old BMP TYP	Wet Pond
JCC BMP CODE	A2 Wet Pond
POINT VALUE	
SVC DRAIN AREA acres	108.8
SERVICE AREA DESCRI	SF Lots, Roadways & Offsite Vineyards
IMPERV AREA acres	22.00
RECV STREAM	Pates Creek
EXT DET-WQ-CTRL	No
WTR QUAL VOL acre-ft	
CHAN PROT CTRL	No
CHAN PROT VOL acre-ft	
SW/FLOOD CONTROL	Yes
GEOTECH REPORT	No

CTRL STRUC DESC	RCP Riser
CTRL STRUC SIZE inches	60
OTLT BARRL DESC	RCP
OTLT BARRL SIZE inch	36
EMERG SPILLWAY	Yes
DESIGN HW ELEV	40.0
PERM POOL ELEV	37.0
2-YR OUTFLOW cfs	40.03
10-YR OUTFLOW cfs	69.90
REC DRAWING	No
CONSTR CERTIF	No
LAST INSP DATE	11/28/2000
Inspected by:	
INTERNAL RATING	2

MISC/COMMENTS

This is Upper Lake - Joachin -connects to downstream Dam # 2 Ajachan CC 005.

Additional Comments:



ENVIRONMENTAL DIVISION REVIEW COMMENTS
The Vineyards att Jockey's Neck, Phase 3
S-018-02
February 26, 2002 MDW/DEC

General Comments

1. A Land Disturbing Permit and Siltation Agreement are already in place for this project.

2. The Subdivision Agreement and surety in place for Phase 3 will need to be revised as a new plat will be recorded for the subdivision.

3. Provide final contours on the plan in the area of the abandoned road and right-of-way.

4. Provide additional silt fence along the western side of the proposed demolition for the road.

SRS TECHNOLOGIES

7/31/06

Scott,

Thanks. It looks like the upper dam was not built to the drawing.

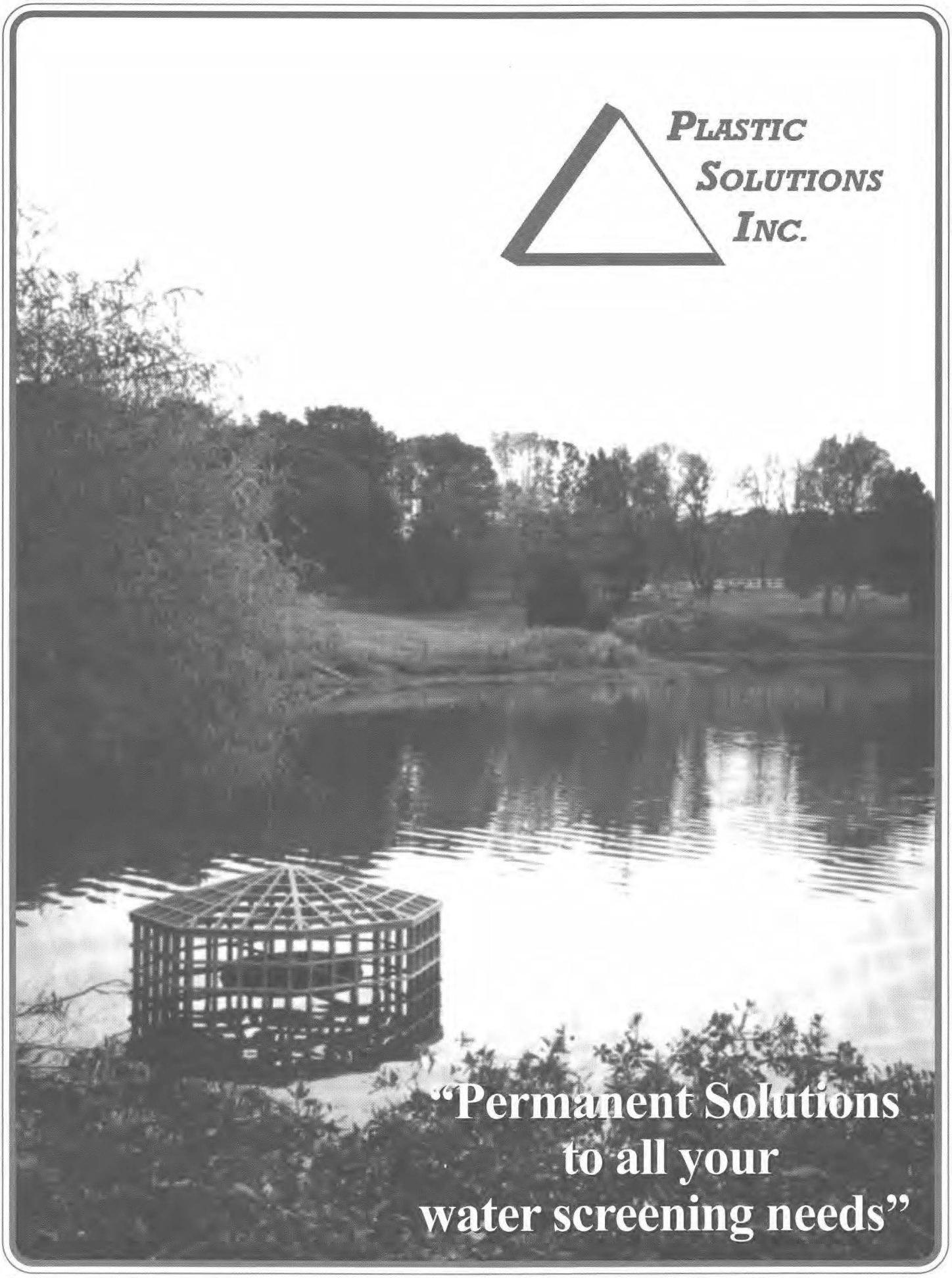
Bill Robert
253-8504

PLASTIC SOLUTIONS INC.

DAN REEVES
V.P. - Operations

Plant
240 McGhee Road
P.O. Box 4386
Winchester, VA 22604

Office: 877-877-5727
540-722-4694
Fax: 540-722-2219
Email: d.reeves@plastic-solution.com
www.plastic-solution.com


PLASTIC
SOLUTIONS
INC.
"Permanent Solutions
to all your
water screening needs"

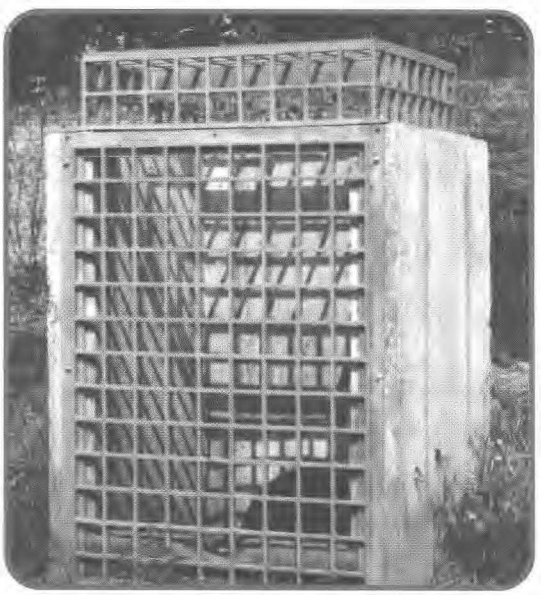
Plastic Solutions, Inc. is pleased to introduce its line of ***structural plastic*** trash racks and debris cages for storm water management basins and pond structures. Plastic Solutions offers a full line of standard sizes and can also customize to fit your specific requirements.
Available in concrete grey and black.

Patent Pending

5000 lb. truck is supported by four 48" Pyramid structures.

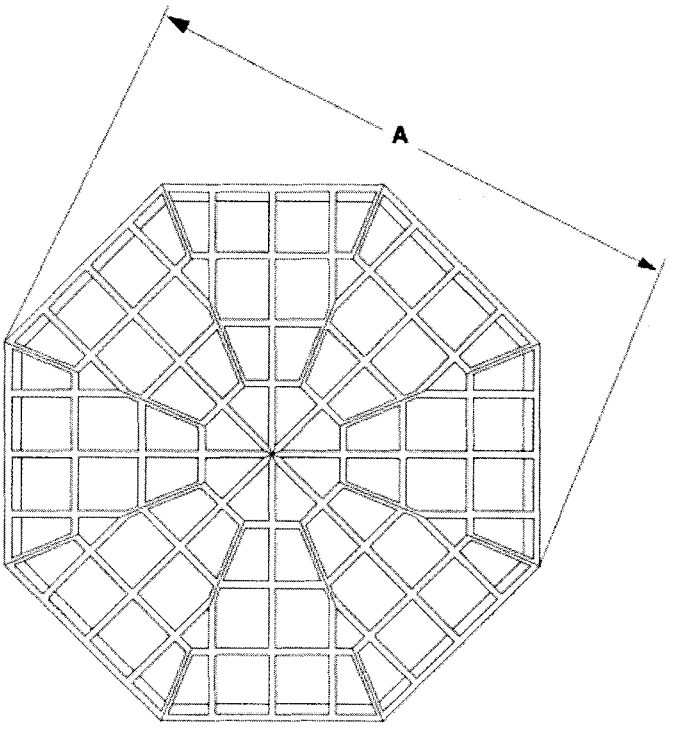
Structural plastic has a cellular core surrounded by integral skins forming a totally integrated structure. Structural molded parts made from H.D.P.E. and fiberglass have a high strength-to-weight ratio and have 3 to 4 times greater rigidity than solid parts of the same material of equal weight.

Trash racks are available in numerous sizes and shapes
to accommodate nearly every type of application.



Trailside Residential Subdivision

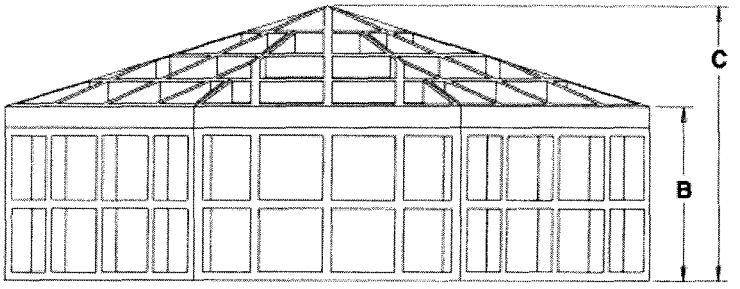
Dulles Toll Road



PYRAMID STRUCTURES

(STANDARD SIZES)

Dimensions in Inches to the Nearest 1/4"



Pyramid Racks for Concrete Pipe

		Pipe			
Part No.	**I.D.**	**O.D.**	**A**	**B**	**C**
PYD-24	24	30	30	7 1/2	11 3/4
PYD-36	36	44	44	13	19 1/4
PYD-48	48	58	58	13	21 1/4
PYD-60	60	72	71	17 3/4	28
PYD-72	72	86	84	23 1/2	31 3/4
PYD-84	84	100	94 1/2	25 1/2	39 1/2
PYD-96	96	114	114	22 3/4	39 1/2

Pyramid Racks for Plastic and Metal Pipe

(Includes Fastening Kit)

		Pipe			
Part No.	**Corrugated**	**Plastic**	**A**	**B**	**C**
PYDP-24	12,15,18	12,15,18	30	7 1/2	11 3/4
PYDP-36	21,24,27,30	24,30	44	13	19 1/4
PYDP-48	33,36,42	36,42	58	13	21 1/4
PYDP-60	48,54	48	71	17 3/4	28
PYDP-72	60,66	60	84	23 1/2	31 3/4
PYDP-84	72,78		94 1/2	25 1/2	39 1/2
PYDP-96	84,90,96		114	22 3/4	39 1/2

PLASTIC SOLUTIONS INC.

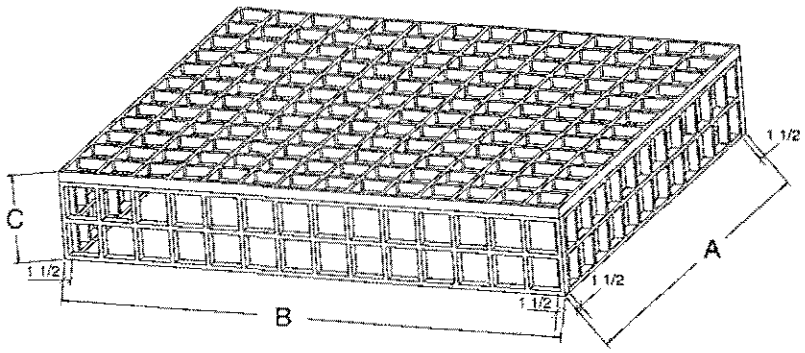
CAD Drawings Available from Our Website www.plastic-solution.com

P.O. Box 4386 • Winchester, VA 22604 • 540-722-4694 • 877-877-5727 • Fax: 540-722-2219

FLAT ROOF RECTANGULAR RACKS/WEIRS

(Standard Sizes)

Dimensions in Inches to the Nearest 1/4"



STANDARD WIDTHS

A	11 3/8	16 3/4	22 1/8	27 1/2	32 7/8	38 1/4	43 5/8	49	54 3/8	59 3/4	65 1/8	71 1/8	76 1/2	81 7/8	87 1/4
Width Code	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16

STANDARD LENGTHS

B	11 3/8	16 3/4	22 1/8	27 1/2	32 7/8	38 1/4	43 5/8	49	54 3/8	59 3/4	65 1/8	70 1/2	75 7/8	81 7/8	87 1/4
Length Code	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16

STANDARD HEIGHT

C	7 1/2	12 7/8
Height Code	01	02

PART CODE = FR _____ _____ _____ (example: FR080802)

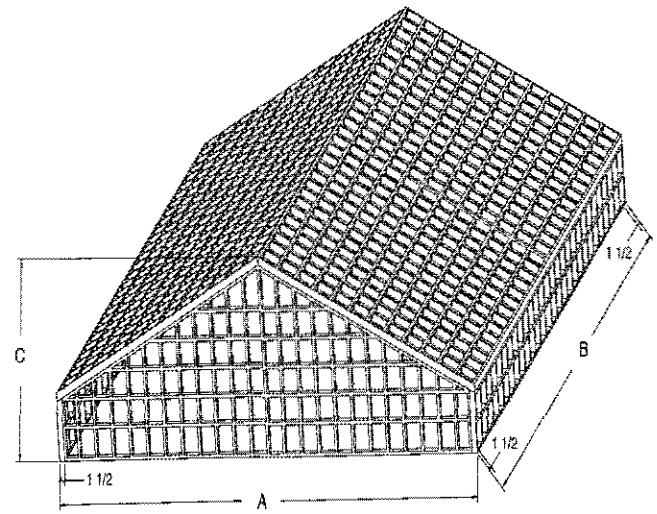
Width Code Length Code Height Code

***** CUSTOM SIZES AVAILABLE UPON REQUEST *****

PEAK ROOF STRUCTURE

(Standard Sizes)

Dimensions in Inches to the Nearest 1/4"



STANDARD WIDTHS AND HEIGHTS

A	49 3/4	59 3/4	69 1/2	79 1/2	89 1/2	99 1/2	109 1/4	120 1/2
Width Code	10	12	14	16	18	20	22	24
C	18	20	22	24	26	28	30	32

STANDARD LENGTHS

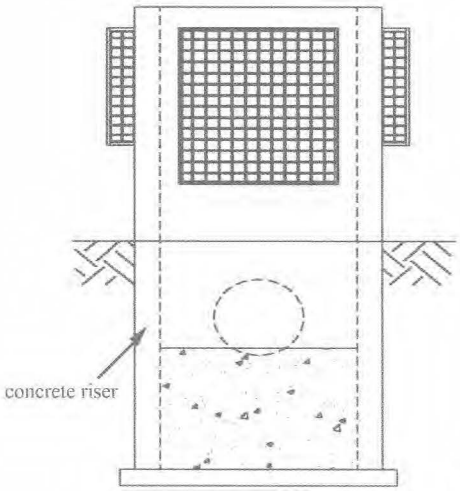
B	49	54 1/2	59 3/4	65 1/4	70 1/2	76	82	87 1/4	92 3/4	98	103 1/2	108 3/4
Length Code	09	10	11	12	13	14	15	16	17	18	19	20

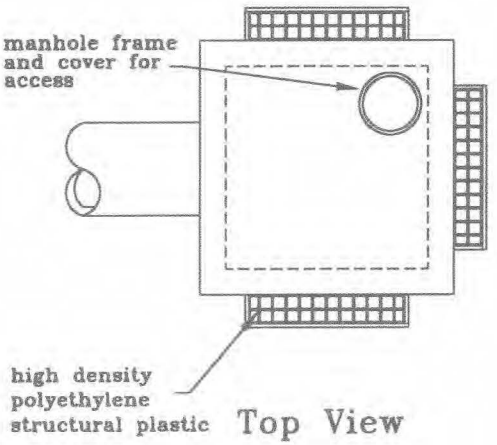
PART CODE = PR _____ _____ _____ (example: PR121201)

Width Code Length Code Height Code

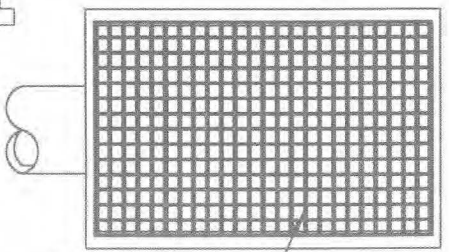
***** CUSTOM SIZES AVAILABLE UPON REQUEST *****

CAD drawings can be downloaded from our website.

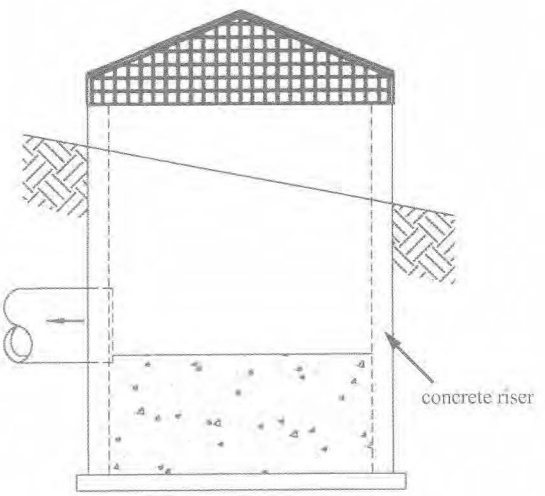


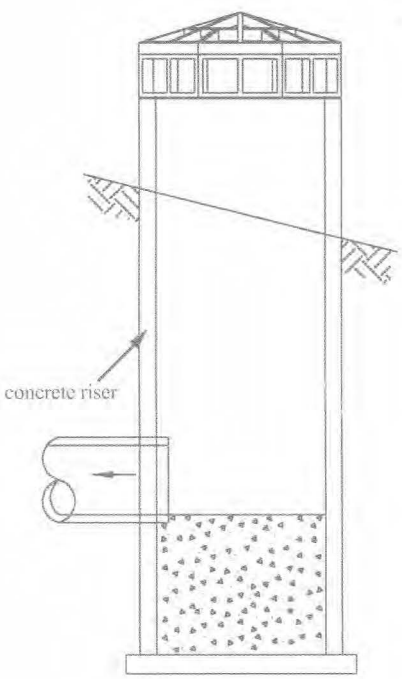


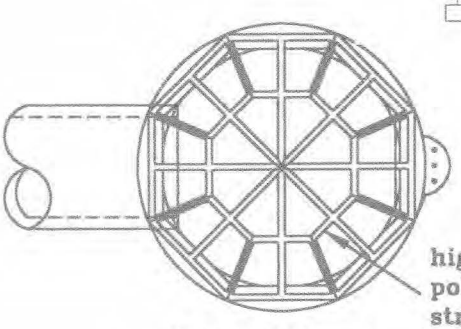
Top View



Top View







Top View

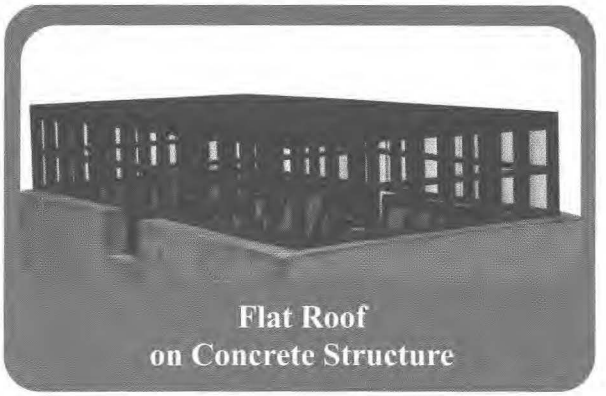
Pyramid racks are available with an anti-vortex device, but through empirical testing, the configuration of the grid pattern mitigates the need for a plated anti-vortex device.

Patent Pending

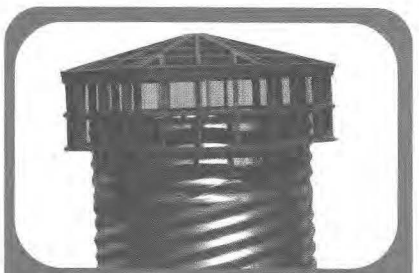
For more information, please contact
Plastic Solutions, Inc. at:
P.O. Box 4386 • Winchester, VA 22604
540-722-4694 • 877-877-5727 • Fax: 540-722-2219
Visit our website at http://www.plastic-solution.com

PLASTIC SOLUTIONS INC.

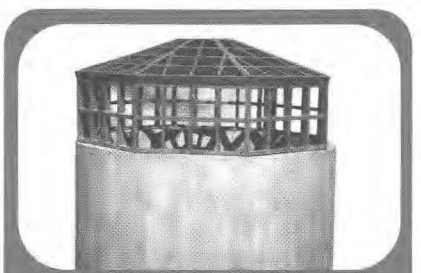
Racks can be mounted on concrete structures, plastic and metal pipe.



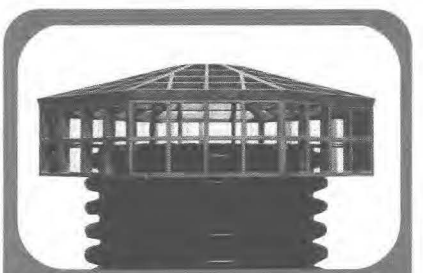
Flat Roof
on Concrete Structure



Pyramid on
Metal Pipe

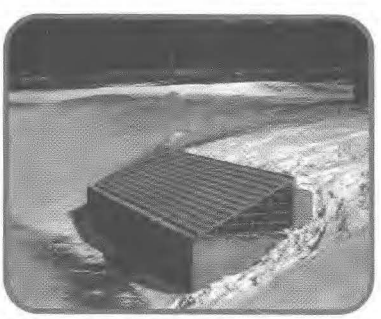


Pyramid on
Concrete Structure



Pyramid on
Corrugated Pipe

Racks are designed to withstand the conditions of pond structures - rough handling, high/low temperatures and long term weather exposure. ***Structural plastic*** has replaced wood, concrete, solid plastics and metals in a variety of applications. With ***structural plastic***, you can take advantage of the many benefits such as:

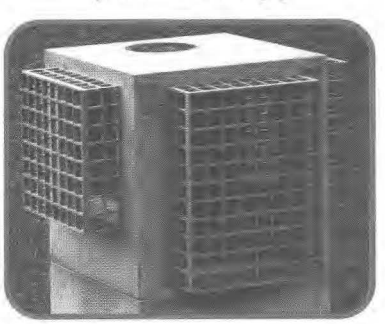


Belmont Green Recreation Area
(*Design Flexibility*)

- Lighter Weight
- Elimination of Corrosion
- Design Flexibility
- Greater Part Stiffness and Stability
- Chemical Resistance
- Installation Savings

Installing Pyramid at
Trex Manufacturing Facility
(*Installation Savings*)

Hunting Ridge Townhouses



Frederick County Landfill

Structural plastic racks are a great alternative to painted and galvanized steel racks for use in storm water management ponds and general water screening. ***Structural plastic*** provides a structurally sound product with a long lasting quality appearance.

SWM/BMP Maintenance Plan for Dam # 1 Joachin Lake (CC 013)

(Note: This is a typical Maintenance Plan for your Retention Pond facility. For general use by HOA's, or other designated parties which are responsible for operation, maintenance and inspection of the facility when no other specifically approved plans are available. This is provided as a courtesy by the Environmental Division of James City County for informational purposes only. This plan addresses normal structural and stormwater runoff control aspects of the facility. It does not address landscaping, cosmetic, or ornamental features associated with the facility nor does it replace any specific recommendations offered by a registered professional.)

Maintenance Plan (Retention Pond BMP's)

A maintenance program is required to ensure the Stormwater Management (SWM) / Best Management Practice (BMP) pond facility functions as designed and to provide for reasonable aesthetic conditions. Proper maintenance is encouraged to prevent the introduction of debris and sediment into pretreatment areas, the SWM/BMP itself, its principal inflow and outflow control structures and downstream waterways. Following facility installation, acceptance and establishment of vegetation in disturbed areas, inspections for sediment buildups should 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 upland of the BMP, adequate protection measures should be implemented and inspection frequencies increased to at least once weekly.

The designated party 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 will be taken to ensure appropriate maintenance. Keys to locked access points or structures shall be made available to the County upon request and adequate notice should be given to nearby residences of inspection activities that may take place.

Facility Description: Dam # 1 Joachin Lake is located in the north central portion of Section 1 and 2 of the Vineyards and serves a drainage area of 108 acres associated with development of the subdivision and offsite area. The facility is wet-type retention lake facility. A wet-type retention pond has a permanent impoundment which enhances water quality and is normally "wet" even during non-rainfall periods. The facility contains a 60-inch vertical concrete pipe riser, a DI-7 inlet top grate unit, a 36-inch concrete outlet pipe barrel and a grass-lined shallow emergency spillway located to the east of the embankment. There is an approximate 7 ft. wide by 18 inch high opening in the riser pipe to provide for draw down and to offer control for larger storm events. During the 100-year storm, the maximum water level should rise to just above the riser structure which is 3.5 feet from top of dam at design El. 43.5. Higher water levels should draw down in about 24 to 36 hours.

Inspection and Maintenance of the Facility Should Consist of the Following Additional Measures:

1. Inspect for sediment buildup by visual observation and a physical determination of sediment depth within pond's storage area. If sediment reaches a substantial depth above the bottom of pond, 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 is approximately 10 percent of design 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 on any part of pond 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 a 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 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, overflow grate, rectangular weirs, outlet barrel and pond embankment. Exposed metal surfaces shall be painted to minimize rust damage or replaced if rust damage is irreversible. If damage is evident, further investigation by a registered 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.

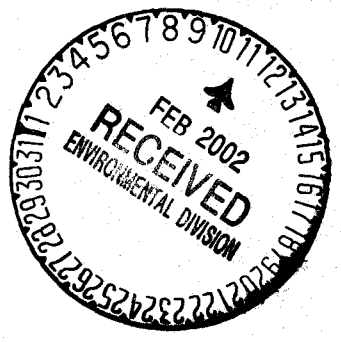
8. Perform yearly observations of perimeter areas surrounding the facility to ensure changes in land use, topography or access have not occurred and do not affect the operation, maintenance, access or safety features provided for the facility. Appropriate action is required to ensure adequacy and to 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. Keep reasonable, accurate written records of inspections and maintenance activities performed for the BMP structure at all times. 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)



TRANSMITTAL

DATE:	February 11, 2002
TO:	[redacted] Fire Health VDOT JCSA County Engineer Real Estate
FROM:	Dave Anderson, Planner
SUBJECT:	Case No. S-018-02 The Vineyards at Jockey's Neck, Phase III
ITEMS ATTACHED:	Subdivision plan Supporting Engineering Docs
INSTRUCTIONS:	Please review and comment
RETURN REQUESTED BY:	February 25, 2002
AGENCY COMMENTS:	

Is this development served by Newport News Water Works? _____ *(JCSA please check if yes)*

If checked, PLANNER please fax copy of *preliminary approval letter* with *Fire Department comments*, and the *JCSA completed water data sheet* to Newport News Water Works - Chief Engineer as soon as all three are available (Fax # 247-2334)

MEMORANDUM

Date: January 16, 2001

To: Jon Phillippe, Department of Conservation & Recreation
Division of Dam Safety SAT

From: Scott J. Thomas

Subject: The Vineyards at Jockeys Neck Subdivision
James City County, Virginia

For your information, I have attached a full copy of report forwarded to a representative of the homeowner's association for the above referenced subdivision. There are two lakes associated with the development and there has been some question as to whether the lower lake, Dam # 2 Ajacan Lake should fall under the state permit requirements.

I am forwarding information that I have compiled to this point in this packet. It includes a cover letter outlining our inspection of the two facilities, a location map and inspection reports (both in County and state inspection form formats). If you need any other information such as original design computations, drainage maps, etc., please contact me at 757-253-6639 to discuss.

I don't think there is any immediate action required on your part; however, I am forwarding a copy to you as a courtesy since I referenced your office on page 5 of the report and forwarded some general information from the Division of Dam Safety.

MAIL TO:
Department of Conservation & Recreation
Division of Dam Safety
203 Governors Street
Suite 402
Richmond, VA. 23219
ATTN: MR. Jon Phillippe