



## 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:** MC041

**DATE VERIFIED:** August 20, 2012

**QUALITY ASSURANCE TECHNICIAN:** Leah Hardenbergh

*Leah Hardenbergh*

**LOCATION:** WILLIAMSBURG, VIRGINIA



# Stormwater Division

## MEMORANDUM

Date: April 5, 2012  
To: Michael J. Gillis, Virginia Correctional Enterprises Document Management Services  
From: Leah Hardenbergh  
PO: 110426  
Re: Files Approved for Scanning

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**General File ID or BMP ID:** MC041  
**PIN:** 4810100057A  
**Owner Name (if known):** ROLLING WOODS  
**Legal Property Description:** NORTH PORTION OF LAKE LORING  
**Site Address:**

*(For internal use only):*

Box # 4/

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

MC-041

**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

JAMESTOWN ROAD

US 199

**DRAINAGE  
AREA  
150 AC. ±**

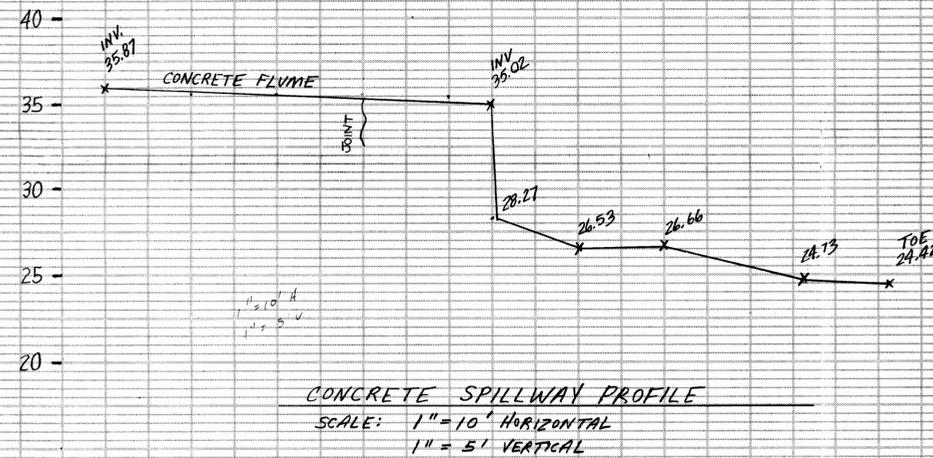
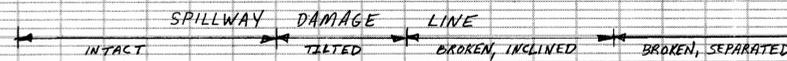
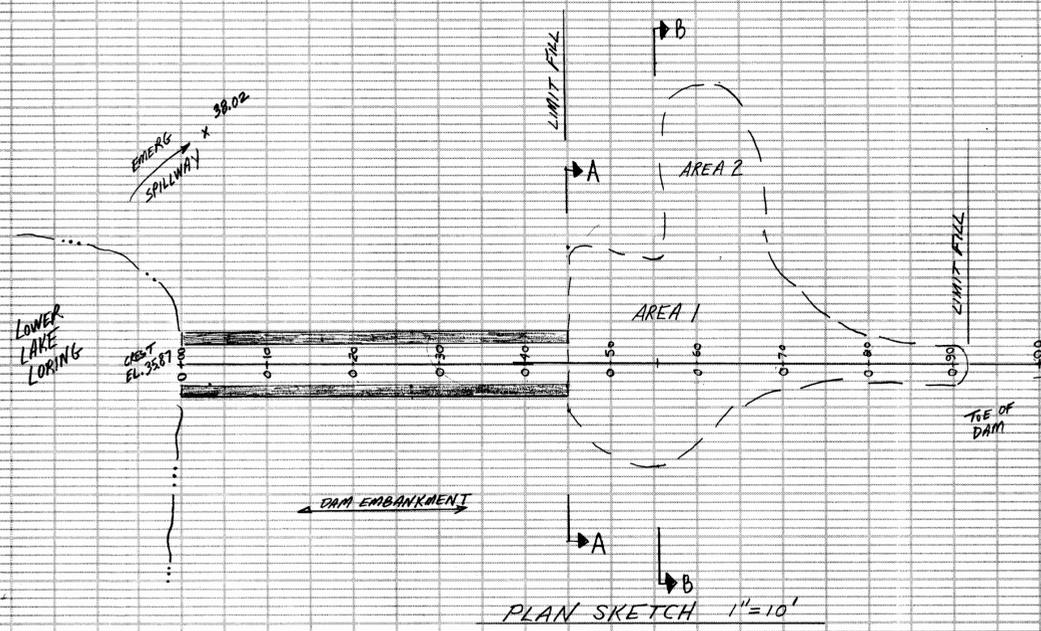
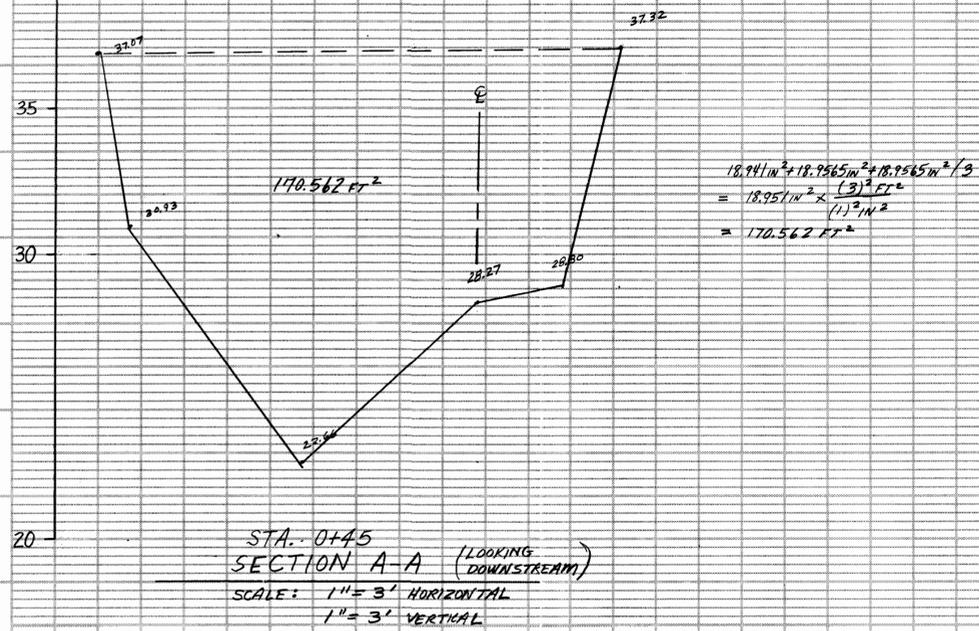
BIRCHWOOD

UPPER

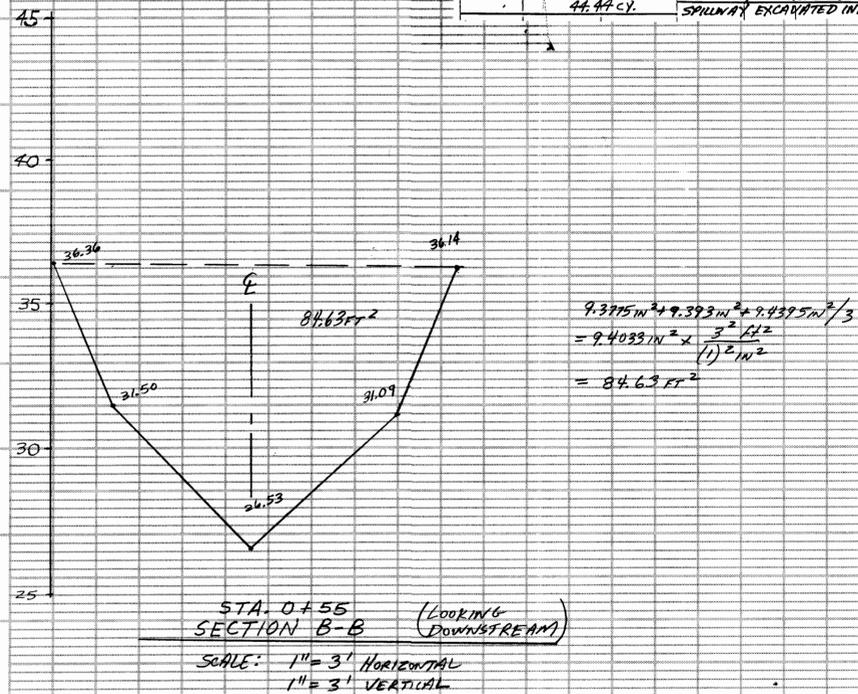
LOWER

ROLLING WOODS

1 in<sup>2</sup> = 9 ft<sup>2</sup>

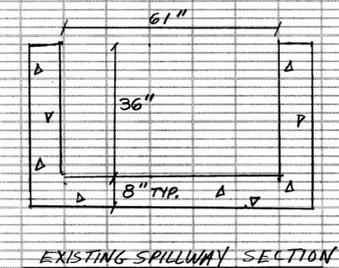


Project Name LAKE LORING							
Sheet Number 1 of 1							
BY SJT Date 6-3-03							
Scale 1" = 3'							
Elev.	Area in <sup>2</sup>	Area ft <sup>2</sup>	Avg. Area ft <sup>2</sup>	Dist. Between ft	Volume ft <sup>3</sup>	Volume cu yd	Σ Volume cu yd
0+45	18.951	170.562	127.546	10'	1,275.96'	47.258	
0+55	9.4033	84.63	42.31	35'	1,480.85	54.846	
0+90	0.00	0					
						AREA 1	102.10 CY
						AREA 2*	45.0 CY
						* AREA 2: 20' x 10' x 6'	147.10
						1,200 CF	ADD 20%
						OR 44.44 CY	161.80 CY
						IMPORTED COMPACTED FILL	161.80 CY
						SPILLWAY EXCAVATED INTO COMPACTED SOIL.	



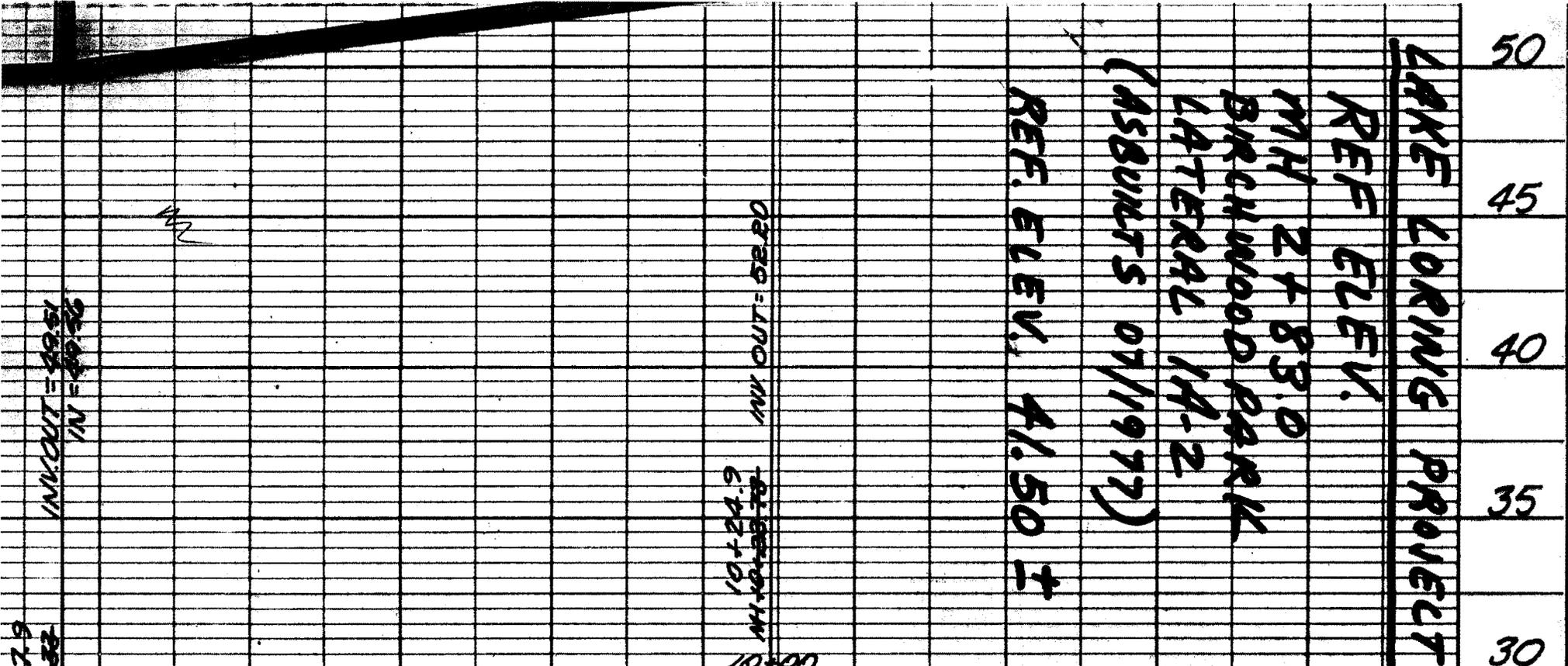
OTHER NOTES:

1. DAM EMBANKMENT APPROXIMATELY 200 FT. LONG.
2. DOWNSTREAM FACE OF DAM, 3H:1V
3. NORMAL POOL AT SPILLWAY 2-3 FT. DEEP.
4. NORMAL POOL AT UPSTREAM FLUME, EL. 35.87
5. TOP OF DAM APPROXIMATELY 15 FT. WIDE
6. DRAINAGE AREA ESTIMATE (TO LOWER POOL), 148.10 ACRES. PER COUNTY GIS



PRELIMINARY SPILLWAY REPAIR PROJECT	
DESIGNED	DRAWN
SCALE	DATE
PROJECT NO.	
DRAWING NO.	

NO.	DATE	REVISION / COMMENT / NOTE	BY



DEWARD M. MARTIN & ASSOCIATES, INC.  
 ENGINEERS, PLANNERS & SURVEYORS  
 P.O. BOX 523, TOANO, VIRGINIA 23168

SANITARY DISTRICT NO. 3  
 BIRCHWOOD PARK  
 SEWAGE WORKS PROJECT  
 LATERAL-IA-2

FROM STA. 0+00 TO STA. 10+22.73

JAMES CITY COUNTY VIRGINIA

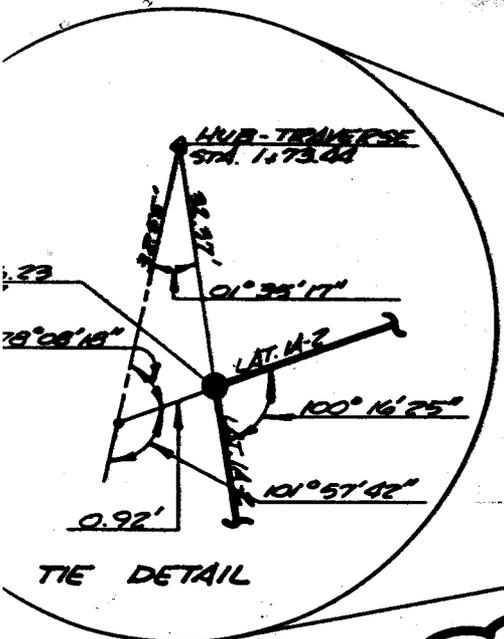
TRAVERSE LINE		R.W.E. WAN.
TH OF PIPE		S.O.B. D.M.M.
PROFILE FROM STA. 2+91.53 TO END WAN D.M.M.		
DESCRIPTION	BY	CKD.
REVISIONS		

DES W.A.W.	JOB NO 7202-8-II	SECTION NO. I
DRWN T.C.S.	DATE AUG. 1975	SHEET NO 21A
APP D.M.M.	SCALE AS SHOWN	OF 73 SHEETS

GRANT NO. C-510-52801

INFORMATION FURNISHED BY J.C.C. PUBLIC WORKS DEPT. 7/77

98



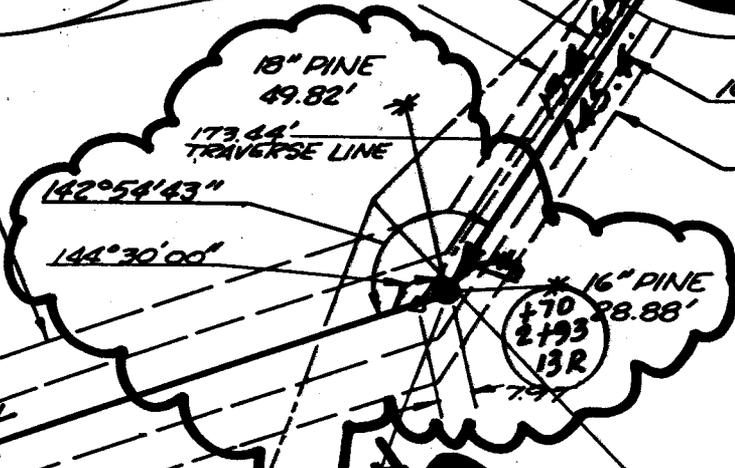
4+28.4  
MI 4+26.25  
LAT. 1A-2

STA. 1+73.44'  
TRAVERSE

471  
4+99  
13L

99

CONSTRUCTION  
EASEMENT



10' PERMANENT  
EASEMENT  
20' CONSTRUCTION  
EASEMENT

12" RCP

96

291.58L  
283.0'

2+83.0  
MI 2+91.58  
LAT. 1A-2

DAM LOCATION

LAKE LORING

LAT. 1A-2

83.0'  
134.65' OF 8" PIPE @ 5.30%

145.4  
134.65' OF 8" PIPE @

PAVED AREA  
OPEN CUT

PG  
9.8

REF ELEV.  
41.50

EXISTING GROUND

45

40

35

2483.0  
MIN CUT = 34.98  
IN = 35.84

1087.1  
MIN CUT = 39.07  
IN = 40.02

1+00

+

2+00

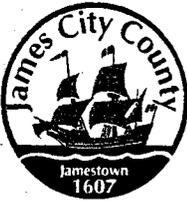
+

3+00

+

4+00

+



# DEVELOPMENT MANAGEMENT

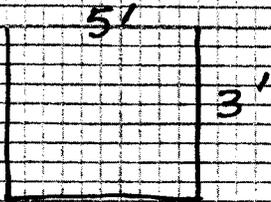
101-E MOUNTS BAY ROAD, P.O. BOX 8784, WILLIAMSBURG, VIRGINIA 23187-8784  
 (757) 253-6671 Fax: (757) 253-6850 E-MAIL: devtman@james-city.va.us

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

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

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

COUNTY ENGINEER  
 (757) 253-6678  
 INTEGRATED PEST MANAGEMENT  
 (757) 253-2620



5' x 3' RECTANGULAR SPILLWAY  
 $n = 0.013$   
 $S = 33\% (3H:4V)$

CAPACITY = 1211 CFS  
 AREA = 15 SF  
 WP = 11 FT.  
 HYD RAD = 1.4 FT.

VELOCITY = 80.8 FPS.

## FLAT SECTION

$$\frac{35.87 - 35.02}{45'} = 0.0189\%$$

1.89%

Q CAPACITY FULL = 290 CFS (FLAT CREST)

$$Q = 290 \text{ CFS}$$

$$V = 19.3 \text{ FPS}$$

$$d = 3.06 \text{ FT}$$

## IN STEEP SECTION

$$Q = 290 \text{ CFS}$$

$$V = 54.6 \text{ FPS}$$

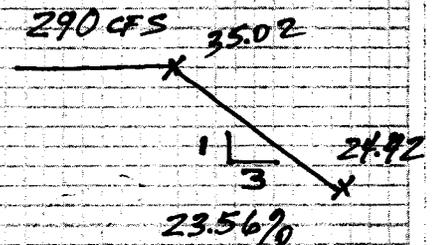
$$D = 1.06 \text{ FT.}$$

## ACTUAL

$$\frac{35.02 - 24.42}{45} = 23.56\%$$

$$D = 1.20 \text{ FT}$$

$$V = 48.3 \text{ FPS}$$



# LAKE LORING - SPILLWAY REPAIR

- ADJUST FIELD DATA TO JCSA MH ELEV
- FINAL FIELD SURVEY ELEVATIONS

REF EL. 100.00 ⇒ JCSA MH ELEV. 105.82

JCSA MH Z+83.0 EL. 41.50, BACK

ADJUST = 64.32 (105.82 = 41.50)

	<u>SURV. EL.</u>	<u>ADJ.</u>	<u>NEW ELEV.</u>	
29	105.82	64.32	41.50	JCSA MH Z+83.0
28	103.79	64.32	39.47	TOP DAM 200'
27	103.34		39.02	TOP DAM 150'
26	103.52		39.20	TOP DAM 100'
25	103.71		39.39	TOP DAM 50' @ CONC.
24	103.04		39.72	TOP DAM EMER. SPILL HIGH
23	102.34		38.02	PAVED FLUME DS
22	99.34		35.02	PAVED FLUME INV.
21	99.51		35.19	PAVED FLUME INV.
20	99.77		35.45	PAVED FLUME INV. @ JOINT
19	99.99		35.67	PAVED FLUME INV.
18	100.01		35.69	PAVED FLUME INV.
17	100.02		35.70	PAVED FLUME INV.
16	100.19		35.87	PAVED FLUME V/S.
15	88.74		24.42	TOE OF DAM
14	90.05		25.73	INV CH/X2
13	90.98		26.66	INV CH/X2
12	90.85		26.53	INV CH/X2

	<u>SURV ELEV</u>	<u>ADJ.</u>	<u>NEW ELEV.</u>	
10	95.41	64.32	31.09	X2
9	100.46	64.32	36.14	X2
8	95.82		31.50	X2
7	100.68		36.36	X2
6	101.64		37.32	X1-T.B.
5	93.12		28.80	X1
4	92.59		28.27	X1
3	86.98		22.66	X1
2	95.25		30.93	X1
1	101.39		37.07	X1-T.B.
SURV REF	100.00		35.68	NORTH ENDWALL

# LAKE CORING 5/9/03

PAT Menichino, Scott Thomas

	+	-	HI	ELEV	NOTE
REF	7.68		107.68	100.00	W/ATH ENDWALL

SEC 1	X SECTION		HI	ELEV	NOTE
1	↑	6.29	107.68	101.39	T.B.
2	↑	12.43	6'	95.25	
3	↑	14.41	6'	86.98	
4	↑	15.09	6'	92.59	
5	↑	14.56	3'	93.12	
6	↓	6.04	2'	101.64	T.B.

(DIST SEC 1 - SEC 2 = 10')

SEC 2	X SECTION		HI	ELEV	NOTE
7	↑	7.00	107.68	100.68	
8	↑	11.86	10'	95.82	
9	2	7.22	2'	100.46	#8 & #10 BETWEEN
10	↓	12.27	2'	95.41	

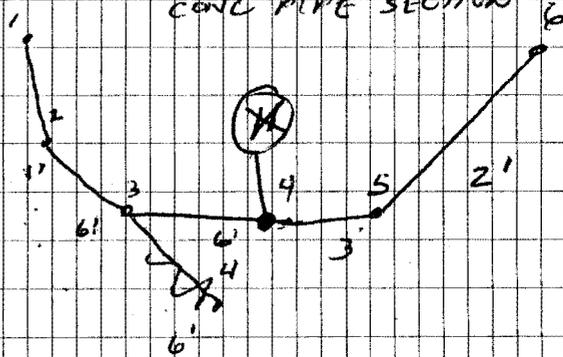
SEC 12	SEC 2 INV CH		HI	ELEV	NOTE
12	16.83	107.68	90.85	INV CHANNEL	
13	16.70		90.98	INV CH	
14	17.63		90.05		
15	18.94		88.74	TOE DAM	

LAKE CORING 2/4

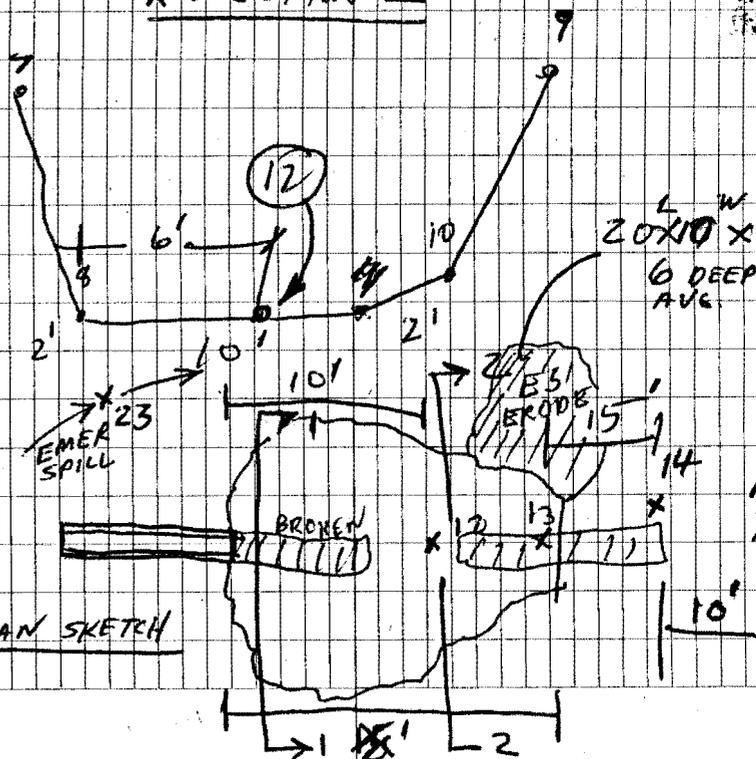
LOOKING DS

X-SECTION 1

END NON BROKEN CONCL PIPE SECTION



X-SECTION 2



# LAKE LORING

3/4

+ HI - ELEV  
 ES EROSION AREA (SITUATED 24' DOWN, END CONC SPILL)

SECT 2 ADDITIONAL 100 CY  
 (20x9x6)

(16)	↑	107.68	7.49	10'	100.19	U/S INV PAVED
(17)			7.66	10'	100.02	INV
(18)			7.67	10'	100.01	INV
(19)			7.69	10'	99.99	@ JOINT INV
(20)			7.91	10'	99.77	INV
(21)			8.17	10'	99.51	U/S END
(22)			8.34	10'	99.34	DS END

(23) E. SPILLWAY 5.34 102.34 ES HIGH CR.

TOP OF DAM SHOTS

(24)	TOP DAM @ CONC.	↑	4.64		103.04	
(25)	TOP DAM		3.97	50'	103.71	

TP1 BS # 25 ELEV. 103.71 (50', 25-26)  
 4.61 108.32

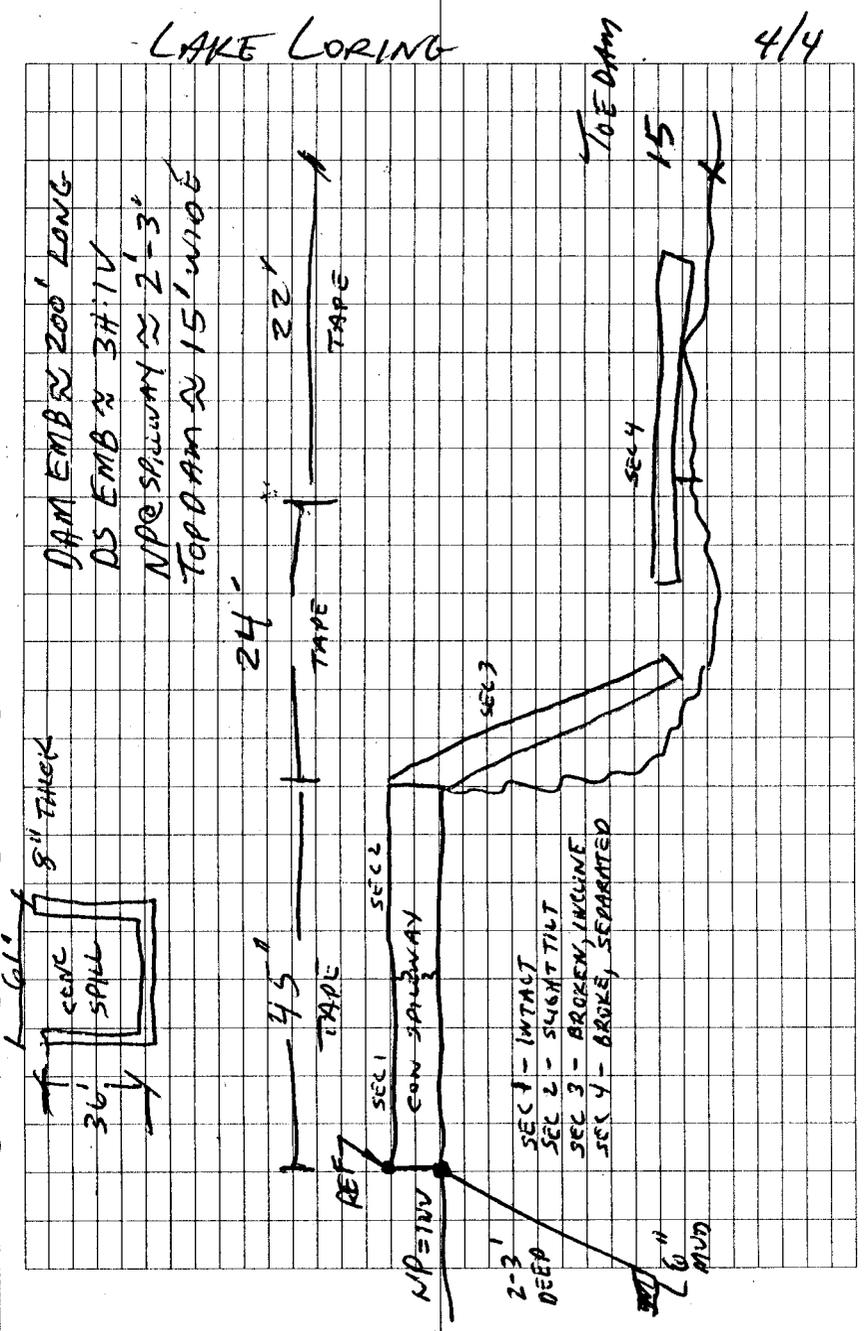
(26)			4.80	50'	103.52	
(27)			4.98		103.34	

TP2 BS # 27 ELEV. (50', 27-28)  
 4.45 107.79

(28)			4.00		103.79	
(29)			1.97	50'	105.82	MH NORTH END

# LAKE LORING

4/4



## Scott Thomas

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**From:** Scott Thomas  
**Sent:** Wednesday, June 04, 2003 5:26 PM  
**To:** John J. McGlennon  
**Cc:** John Horne; Darryl Cook; Pat Menichino  
**Subject:** RE: Dam in Rolling Woods

At your request, attached for your review and comment are ***Preliminary Cost Estimates*** for the Lower Lake Loring Spillway Repair. For simplicity, I am just going to just email you the report at this time.

Two files are included, one is a 3-page narrative report (MS word format) which provides basic information about the project, our field investigation, and descriptions of work involved for each of the three (3) evaluated alternatives. The second attachment is an MS Excel spreadsheet which outlines preliminary quantities and costs assigned to each of the alternatives. Alternatives range from about \$ 40,000 to \$ 70,000.

Obviously, staff would prefer any of the design-based alternatives as compared to reconstruction to previous conditions which (for various reasons) have a history of failure. However, since this particular location represents a serious erosion problem area, we do understand that selection of any of the alternatives for corrective action may be solely based on participation of homeowners who live in the vicinity.

Thanks for your assistance on this matter. If you have any questions, you can contact me, Pat or Darryl.



Narrative.doc (47 KB)



Cost.est.xls (26 KB)

***Scott J. Thomas, P.E.***  
*James City County*  
*Environmental Division*

-----Original Message-----

**From:** John J. McGlennon  
**Sent:** Friday, May 30, 2003 6:16 PM  
**To:** Scott Thomas  
**Cc:** Pat Menichino; Darryl Cook  
**Subject:** RE: Dam in Rolling Woods

Thanks, Scott. I'll look forward to the report.

John

***John J. McGlennon***  
***Jamestown District Supervisor***  
***James City County Board of Supervisors***  
***757-221-3034 (work)***  
***757-220-0568 (home)***

-----Original Message-----

**From:** Scott Thomas  
**Sent:** Thursday, May 29, 2003 9:56 AM  
**To:** John J. McGlennon  
**Cc:** Pat Menichino; Darryl Cook  
**Subject:** RE: Dam in Rolling Woods

John

I apologize for not having some information sooner, I take the blame for this. We been really busy this past 2 weeks. Me and Pat did a survey at the site and I need to reduce the survey notes and do up some quantities, then prepare a cost estimate. I anticipate to have the background work done this week, and to get with Pat early next week to assign costs to quantities. We can then have some of the costs/ideas generated in presentable fashion to you by mid-week (around June 4<sup>th</sup>). I suggest three scenarios that we will prepare rough costs for:

- 1) Reconstruct to previous conditions only (prior to failure).
- 2) Reconstruct to previous conditions with a few basic improvements consistent with current standards.
- 3) Reconstruct to fully meet current standards.

This would give a preliminary indication of what the project costs are to move forward.

**Scott J. Thomas, P.E.**  
*James City County  
Environmental Division*

Visit:

[http://www.james-city.va.us/resources/devmgmt/div\\_devmgmt\\_envirn.html](http://www.james-city.va.us/resources/devmgmt/div_devmgmt_envirn.html)

and

[www.protectedwithpride.org](http://www.protectedwithpride.org) <http://www.protectedwithpride.org>

-----Original Message-----

**From:** John J. McGlennon  
**Sent:** Thursday, May 29, 2003 9:11 AM  
**To:** Scott Thomas; Pat Menichino  
**Subject:** Dam in Rolling Woods

Scott and Pat:

Have you been able to put anything together yet on the dam?

John

**John J. McGlennon**  
*Jamestown District Supervisor  
James City County Board of Supervisors  
757-221-3034 (work)  
757-220-0568 (home)*

### Lower Lake Loring – Preliminary Spillway Repair Estimate

Lower Lake Loring is situated between Birchwood Park and Rolling Woods subdivisions approximately 0.65 mile southeast of the intersection of US 199 and Jamestown Road. The lake is situated approximately ½ mile west of Lake Powell Road. Approximately 30 lots are situated around both the upper and lower Lake Loring basins. Drainage area to the lower basin is approximately 150 acres. Dam height for the lower pond is approximately 15 feet with a 15 ft. top width and 3H:1V downstream face.

The principal flow control structure for the lower pond maintains normal water surface elevation in the pond. Based on an Environmental Division field survey as performed on May 9<sup>th</sup> 2003, which was tied to an existing JCSA manhole situated at the north end of the dam, the normal pool elevation for lower Lake Loring is at Elevation 35.9. The primary spillway for the lower basin is a concrete-lined rectangular shaped flume spillway approximately 5 feet wide and 3 feet deep. Prior to failure, the flume spillway was approximately 90 feet long with about 45 feet being the crest (or flat) part of the discharge structure across the top of dam. Failure of the spillway occurred during Hurricane Floyd in 1999 which was a recorded rainfall event in excess of the 500-year recurrence interval. Although speculated, failure of the facility was probably due to a combination of the following reasons:

- 1) The occurrence of rainfall event well in excess of the design frequency storm used to size the concrete flume spillway;
- 2) The age of the facility;
- 3) Inadequacy of the outlet protection device at the end of the paved spillway which resulted in scouring and undermining of the end of the concrete flume;
- 4) Joint separation in the flume which lead to seepage of water and soil piping below and along the edge of the spillway which in turn resulted in undermining;
- 5) Severe erosion which occurred at the end of the emergency (overflow) spillway, which is adjacent to the paved flume. Erosion at the end of the emergency overflow created a scour hole which undermined the principal concrete flume spillway;
- 6) Inadequate proper routine inspection and maintenance.

Currently, the first 30 ft. of the flume spillway to an existing expansion joint appears intact. The second segment of the spillway beyond the joint is tilted due to undermining at the end. Approximately 45 ft. of the lower end of the concrete spillway is completely failed with about 25 ft. inclined in an erosion gully approximately 15 ft. deep and the last 20 ft. segment of the flume is broken and separated. Well over 60 percent of the existing flume device is not able to be salvaged for repair.

Depending on funding and participation in the reconstruction effort, three scenarios exist to repair the existing failed spillway. Each of the alternatives are presented below:

Alternative 1	Reconstruct to previous conditions only (prior to failure).
Alternative 2	Reconstruct to previous conditions with a few basic improvements.
Alternative 3	Reconstruct to meet current design/construction standards.

#### Alternative 1

No formal design or geotechnical investigation. Access to the repair area would be across existing top of dam from the north (Birchwood) side. Clear debris and pieces of the existing concrete spillway. Grade, bench and fill with compacted imported fill material. Excavate and construct new concrete paved flume spillway matching existing (previous) flume dimensions, provide basic rock outlet protection and minor grade and stabilize the emergency spillway. Seed and mulch disturbed area and provide proper erosion and sediment control during construction.

**Preliminary estimated cost of Alternative 1 is about \$ 39,900.**

**Alternative 2**

No formal design. Limited geotechnical investigation. Access to the repair area would be across existing top of dam from the north (Birchwood) side. Clear debris and pieces of the existing concrete spillway. Grade, bench and fill with compacted imported fill material. Excavate and construct new concrete paved flume spillway matching existing (previous) flume dimensions; however, construct in accordance with Minimum Standard & Specification 3.16 of the VESCH (Paved Flume). Provide an enhanced outlet protection device meeting the requirements of Minimum Standard & Specification 3.18 of the VESCH and minor grade and stabilize the emergency spillway. Clear trees and woody vegetation from the entire downstream embankment face of the dam. Seed and mulch disturbed area and provide proper erosion and sediment control during construction. **Preliminary estimated cost of Alternative 2 is about \$ 46,500.**

**Alternative 3**

Formal design and full geotechnical investigation. Access to the repair area would be across existing top of dam from the north (Birchwood) side. Clear debris and pieces of the existing concrete spillway. Grade, bench and fill with compacted imported fill material. Excavate and construct a new primary spillway based on design and anticipated outflows from the basin based on current and projected development conditions. The primary spillway could be a paved flume, gabion or other erosion-resistant material lining or a standard pipe and barrel. Construction of paved flume or other similar flow control device in accordance with the Virginia Stormwater Management Handbook and applicable standards of the Virginia Erosion and Sediment Control Handbook. Full emergency spillway rehabilitation and outlet protection or energy dissipation device at outfall of principal and emergency spillway per design. Clear trees and woody vegetation from the entire downstream embankment face of the dam and perform other minor dam embankment improvements such as filling and repairing erosion areas and depressions. Seed and mulch or provide erosion control matting on disturbed area and provide proper erosion and sediment control during construction. Geotechnical testing during construction and provide asbuilts and construction certification following construction. **Preliminary estimated cost of Alternative 3 is about \$ 69,900.**

Preliminary cost estimates as provided are based on preliminary field investigation and the general experience of Environmental Division staff. No liability is expressed or implied for design and construction of Alternatives 1 and 2 should work proceed in accordance with the work plan or the preliminary cost estimates as presented. If you have any questions, please contact our office at 757-253-6639 or 757-253-6675.

\_\_\_\_\_  
Scott J. Thomas, P.E.  
Civil Engineer  
James City County Environmental Division

\_\_\_\_\_  
Date

\_\_\_\_\_  
Patrick T. Menichino  
Environmental Inspector Supervisor  
James City County Environmental Division

\_\_\_\_\_  
Date

***Lower Lake Loring – Preliminary Spillway Repair Estimate***  
**Line Items – Scope of Work**

**Alternative 1**

Mobilization  
Top of Dam Clearing and Access  
Clearing and Removal of Debris  
Grading & Benching  
Imported Fill Placement (Compacted)  
Concrete Spillway Replacement  
Existing Spillway Repair (joints)  
Minor Emergency Spillway Grading  
Outlet Protection (basic)  
Erosion & Sediment Control  
Contingency 15%

**Alternative 2**

Mobilization  
Top of Dam Clearing and Access  
Clearing & Removal of Debris  
Grading & Benching  
Imported Fill Placement (Compacted)  
Concrete Spillway Replacement (VESCH 3.18)  
Existing Spillway Repair (joints)  
Minor Emergency Spillway Grading  
Outlet Protection (enhanced)  
Erosion & Sediment Control  
Limited Geotechnical Testing  
Clear Dam Embankment  
Contingency 10%

**Alternative 3**

Engineering & Design  
Geotechnical Investigation  
Mobilization  
Top of Dam Clearing and Access  
Clearing & Removal of Debris  
Grading & Benching  
Imported Fill Placement (Compacted)  
Primary Spillway Replacement  
Emergency Spillway Rehabilitation/Lining  
Improved Outlet Protection or Energy Dissipator Structure (designed)  
Erosion & Sediment Control  
Geotechnical Testing  
Clear Dam Embankment  
Embankment Repairs  
Contingency 5%

Lower Lake Loring - Preliminary Spillway Repair Estimates

**Alternative 1**

<u>Item</u>	<u>Description</u>	<u>Unit</u>	<u>Quantity</u>	<u>Unit Cost</u>	<u>Total</u>
1-1	Mobilization	L.S.	1	1,000.00	\$1,000
1-2	Top of Dam Clearing - Access	Acre	0.07	3,850.00	\$270
1-3	Clearing and Removal of Debris	S.F.	1500	1.34	\$2,010
1-4	Grading & Benching	C.Y.	60	10.00	\$600
1-5	Imported Compacted Fill Placement	C.Y.	161.8	25.00	\$4,045
1-6	Concrete Spillway Replacement (Match Current)	C.Y.	27.2	200.00	\$5,440
1-7	Existing Spillway Repairs (joints)	L.S.	1	300.00	\$300
1-8	Minor Emergency Spillway Grading	L.F.	25	100.00	\$2,500
1-9	Outlet Protection (Basic)	S.Y.	350	50.00	\$17,500
1-10	Erosion & Sediment Control	L.S.	1	1,000.00	\$1,000
1-11	Contingency 15%				<u>\$5,200</u>
<b>TOTAL ALTERNATIVE 1</b>					<b>\$39,864</b>

**Alternative 2**

<u>Item</u>	<u>Description</u>		<u>Quantity</u>	<u>Unit Cost</u>	<u>Total</u>
2-1	Mobilization	L.S.	1	1,000.00	\$1,000
2-2	Top of Dam Clearing - Access	Acre	0.07	3,850.00	\$270
2-3	Clearing & Removal of Debris	S.F.	1500	1.34	\$2,010
2-4	Grading & Benching	C.Y.	60	10.00	\$600
2-5	Imported Compacted Fill Placement	C.Y.	161.8	30.00	\$4,854
2-6	Concrete Flume Replacement (per VESCH 3.18)	C.Y.	27.2	250.00	\$6,800
2-7	Existing Spillway Repair (joints)	L.S.	1	500.00	\$500
2-8	Minor Emergency Spillway Grading	L.F.	25	100.00	\$2,500
2-9	Outlet Protection (Enhanced)	S.Y.	400	50.00	\$20,000
2-10	Erosion & Sediment Control	L.S.	1	1,000.00	\$1,000
2-11	Limited Geotechnical Testing	L.S.	1	1,500.00	\$1,500
2-12	Clear Dam Embankment	Acre	0.4	3,000.00	\$1,200
2-13	Contingency 10%				<u>\$4,223</u>
<b>TOTAL ALTERNATIVE 2</b>					<b>\$46,457</b>

**Alternative 3**

<u>Item</u>	<u>Description</u>		<u>Quantity</u>	<u>Unit Cost</u>	<u>Total</u>
3-1	Engineering & Design	L.S.	1	8,000.00	\$8,000
3-2	Geotechnical Investigation	L.S.	1	3,000.00	\$3,000
3-3	Mobilization	L.S.	1	1,500.00	\$1,500
3-4	Top of Dam Clearing - Access	Acre	0.07	3,850.00	\$270
3-5	Clearing & Removal of Debris	S.F.	1500	1.34	\$2,010
3-6	Grading & Benching	C.Y.	100	10.00	\$1,000
3-7	Imported Compacted Fill Placement	C.Y.	175	30.00	\$5,250
3-8	Primary Spillway Replacement (designed)	C.Y.	50	250.00	\$12,500
3-9	Emergency Spillway Rehabilitation/Lining	L.F.	50	100.00	\$5,000
3-10	Outlet Protection / Energy Dissipator (designed)	S.Y.	400	60.00	\$24,000
3-11	Geotechnical Testing	L.S.	1	2,000.00	\$2,000
3-12	Minor Misc. Embankment Repairs	L.S.	1	2,000.00	\$2,000
3-13	Contingency 5%				<u>\$3,326</u>
<b>TOTAL ALTERNATIVE 3</b>					<b>\$69,856</b>

## Scott Thomas

---

**From:** Darryl Cook  
**Sent:** Thursday, April 10, 2003 10:25 AM  
**To:** Scott Thomas  
**Cc:** Pat Menichino  
**Subject:** RE: Lake Loring/John McGlennon

Go ahead and meet with him and mention the ownership issue is unclear at this point.

-----Original Message-----

**From:** Scott Thomas  
**Sent:** Wednesday, April 09, 2003 5:32 PM  
**To:** Darryl Cook; Pat Menichino  
**Subject:** Lake Loring/John McGlennon  
**Importance:** High

As I informed you the other day, John McGlennon approached me after the BOS work session on March 25<sup>th</sup> about Lake Loring. As I understand, based on a concurrent drainage complaint we were working this issue from the enforcement side trying to find out property ownership.

John left me a message today (Wednesday) asking if I could call him back to arrange a field meeting with him as he previously requested. I need to know whether I am to respond to him or if one of you are going to respond. I certainly don't want to double the work effort but I do want to respond to him in a timely manner.

I am willing to still meet with him in the field if you want to approach from several angles.

*Scott J. Thomas*

**Scott Thomas**

---

**From:** Scott Thomas  
**Sent:** Thursday, April 10, 2003 10:37 AM  
**To:** John J. McGlennon  
**Cc:** Darryl Cook; Pat Menichino  
**Subject:** Lake Loring

John

I left you a voice mail message and will also respond via email. There are no asbuilt files for this pond in the Environmental Division records. Although we have listed the pond in our inventory, it is considered a private dam, which is not tracked as a BMP.

I can meet with you in the field as you requested to look at and discuss the situation. I can work around your schedule if you let me know when you are available. As a start, I am open next Monday, Tuesday and Thursday April 14<sup>th</sup>, 15<sup>th</sup> or 17<sup>th</sup>.

We are also currently pursuing this from other angles by trying to get a handle on property ownership through the real estate office.

***Scott J. Thomas, P.E.***  
*James City County*  
*Environmental Division*

Visit:  
[http://www.james-city.va.us/resources/devmgmt/div\\_devmgmt\\_environ.html](http://www.james-city.va.us/resources/devmgmt/div_devmgmt_environ.html)  
and  
[www.protectedwithpride.org](http://www.protectedwithpride.org)

**Scott Thomas**

---

**From:** John J. McGlennon  
**Sent:** Tuesday, April 15, 2003 8:01 AM  
**To:** Scott Thomas  
**Cc:** Pat Menichino; Darryl Cook  
**Subject:** RE: Lake Loring

Scott,

Let's plan to meet at 4 pm today at the home of Shea Murphy, 2884 Hidden Lake in Rolling Woods. Mr. Murphy and John Oakley of the RWHOA will be there.

John

***John J. McGlennon***  
***Jamestown District Supervisor***  
***James City County Board of Supervisors***  
***757-221-3034 (work)***  
***757-220-0568 (home)***

-----Original Message-----

**From:** Scott Thomas  
**Sent:** Monday, April 14, 2003 8:44 AM  
**To:** John J. McGlennon  
**Cc:** Pat Menichino; Darryl Cook  
**Subject:** RE: Lake Loring

Tuesday at 4pm seems to be better for us. Me and Pat Menichino will attend.

Scott

-----Original Message-----

**From:** John J. McGlennon  
**Sent:** Sunday, April 13, 2003 10:02 PM  
**To:** Scott Thomas  
**Cc:** Darryl Cook; Pat Menichino  
**Subject:** RE: Lake Loring

Scott,

How about Tuesday or Thursday afternoon about 4 pm? If you are available, I'll check with the homeowners assn.

John

***John J. McGlennon***  
***Jamestown District Supervisor***  
***James City County Board of Supervisors***  
***757-221-3034 (work)***

757-220-0568 (home)

-----Original Message-----

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**Sent:** Thursday, April 10, 2003 10:37 AM  
**To:** John J. McGlennon  
**Cc:** Darryl Cook; Pat Menichino  
**Subject:** Lake Loring

John

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I can meet with you in the field as you requested to look at and discuss the situation. I can work around your schedule if you let me know when you are available. As a start, I am open next Monday, Tuesday and Thursday April 14<sup>th</sup>, 15<sup>th</sup> or 17<sup>th</sup>.

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and  
[www.protectedwithpride.org](http://www.protectedwithpride.org)

## Scott Thomas

---

**From:** Scott Thomas  
**Sent:** Wednesday, August 13, 2003 8:54 AM  
**To:** Sandy Wanner  
**Subject:** RE: Lake Loring II

As the spillway has a history of failure, I recommend a design-based alternative as compared to reconstruction back to the way it was. Option 2 minimum, Option 3 preferred.

**Scott J. Thomas, P.E.**  
*James City County  
Environmental Division*

-----Original Message-----

**From:** Sandy Wanner  
**Sent:** Monday, August 11, 2003 9:40 AM  
**To:** Scott Thomas  
**Subject:** RE: Lake Loring II

Do you have a preference?

-----Original Message-----

**From:** Scott Thomas  
**Sent:** Thursday, August 07, 2003 5:07 PM  
**To:** William Porter; John McDonald; John Horne  
**Cc:** Sandy Wanner; Pat Menichino; Darryl Cook  
**Subject:** RE: Lake Loring II

Attached are the *Preliminary Cost Estimates* for the Lower Lake Loring Spillway repair as prepared by the Environmental Division. Two files were part of the report which was forwarded to John McGlennon on June 4<sup>th</sup> 2003. One is a 3-page narrative providing basic information about the project, our investigation and descriptions of work involved for each of the three alternatives evaluated. The second attachment is an excel spreadsheet outlining costs assigned to each of the alternatives. Alternatives ranged from \$ 40,000 to \$ 70,000.

At that time, staff did not give specific recommendations for selection of an alternative, just a range of costs under different options. If you need anything else, let me know.

<< File: Narrative.doc >>

<< File: Cost.est.xls >>

**Scott J. Thomas, P.E.**  
*James City County  
Environmental Division*

-----Original Message-----

**From:** Darryl Cook  
**Sent:** Thursday, August 07, 2003 4:49 PM  
**To:** Scott Thomas  
**Subject:** FW: Lake Loring II

Can you forward the Lake Loring write-up to those listed below?

-----Original Message-----

**From:** John Horne  
**Sent:** Thursday, August 07, 2003 3:52 PM  
**To:** Darryl Cook  
**Subject:** FW: Lake Loring II

Darryl- For some reason I can't find my email copy of Scott's options. I was looking at it yesterday but I've lost it. Please forward to me, Bill, and John.

-----Original Message-----

**From:** John McDonald  
**Sent:** Thursday, August 07, 2003 3:42 PM  
**To:** John Horne  
**Cc:** William Porter  
**Subject:** FW: Lake Loring II

John - could I get a better understanding of Scott's recommendation? Thanks.

-----Original Message-----

**From:** Sandy Wanner  
**Sent:** Thursday, August 07, 2003 3:02 PM  
**To:** John McDonald; William Porter  
**Subject:** FW: Lake Loring II

-----Original Message-----

**From:** John Horne  
**Sent:** Thursday, August 07, 2003 3:00 PM  
**To:** John J. McGlennon  
**Cc:** Sandy Wanner; Darryl Cook  
**Subject:** Lake Loring II

I've talked to Darryl and Scott. If there is to be a repair project, we think the second option in Scott's email is the most reasonable. There are a few issues and recommendations.

1. The dam/lake is privately owned by some combination of the Rolling Woods HOA and a couple of individual homeowners in Birchwood. We think there should be some financial participation by those private owners. The Drainage Improvement Program guidelines that we have been using encourage such participation. This project is a little beyond that program's scope but I think the same basic principle applies. Even some small amount would help preserve the partnership idea. We would be happy to participate in some type of neighborhood meeting to talk about this.
2. There were several other private lakes that were damaged by Hurricane Floyd on which the owners contacted staff for help. We uniformly told them we could provide design/advice, but they should not expect County funds.
3. At the time we negotiated the agreement with Rolling Woods on repair and maintenance of the neighborhood ponds, this pond was not included as a County responsibility. There is, however, some off site pollution control provided by the lake and a dam failure would do significant environmental damage.

This County expense is not budgeted. The normal source of money for this would be the Water Quality CIP account. There is sufficient money in that account to pay for this, but that money was anticipated to be used on other projects. The water quality projects take a long time to design and build, so there is time to replenish the CIP account in the next budget cycle. I just wanted to make sure that you knew that there was not some "undesignated" funding waiting for this level of unanticipated expenditure.

Once you know which way you want to go, staff can get the design going and a project put together. It will take, however, 6-9 months.

## Scott Thomas

---

**From:** Scott Thomas  
**Sent:** Thursday, August 07, 2003 5:07 PM  
**To:** William Porter; John McDonald; John Horne  
**Cc:** Sandy Wanner; Pat Menichino; Darryl Cook  
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Narrative.doc (47 KB)



Cost.est.xls (26 KB)

**Scott J. Thomas, P.E.**  
*James City County  
Environmental Division*

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Once you know which way you want to go, staff can get the design going and a project put together. It will take, however, 6-9 months.

**WATERSHED** MC  
**BMP ID NO** 041  
**PLAN NO**  
**TAX PARCEL**  
**PIN NO** 4810100057A  
**CONSTRUCTION DATE**  
**PROJECT NAME** Lake Loring - Private Dam

**FACILITY LOCATION**  
**CITY-STATE**  
**CURRENT OWNER**  
**OWNER ADDRESS**  
**OWNER ADDRESS 2**  
**CITY-STATE-ZIP CODE**  
**OWNER PHONE**

**MAINT AGREEMENT** No  
**EMERG ACTION PLAN** No

**MAINTENANCE PLAN** No  
**SITE AREA** acre  
**LAND USE**  
**old BMP TYP**  
**JCC BMP CODE**  
**POINT VALUE**

**SVC DRAIN AREA** acres

**SERVICE AREA DESCR**  
**IMPERV AREA** acres 0.00  
**RECV STREAM** UT of Mill Creek  
**EXT DET-WQ-CTRL** No  
**WTR QUAL VOL** acre-ft  
**CHAN PROT CTRL** No  
**CHAN PROT VOL** acre-ft  
**SW/FLOOD CONTROL** No  
**GEOTECH REPORT** No

**CTRL STRUC DESC**  
**CTRL STRUC SIZE** inches  
**OTLT BARRL DESC**  
**OTLT BARRL SIZE** inch

**EMERG SPILLWAY** No  
**DESIGN HW ELEV**  
**PERM POOL ELE**  
**2-YR OUTFLOW** cfs 0.00  
**10-YR OUTFLOW** cfs 0.00  
**REC DRAWING** No

**CONSTR CERTI** No

**LAST INSP DATE**  
**INTERNAL RATING**  
**MISC/COMMENTS**  
 Drains to Lake Powell.

**Get Last BMP No**

**Return to Menu**



Shore Drive

Birchwood Park

Lake Loring - Lower

Hidden Lake Drive

Rolling Woods

Plan View  
1 inch = 200 feet



MC041





MC041

Ortho Map  
Scale: 1 inch = 200 feet

3/08/08

# Tides affecting Lake Powell

## That could delay the repair process

By Cortney Langley

JAMES CITY — Is Lake Powell still a lake?

That's a key question the owners may have to answer in trying to repair their dam, which was destroyed more than a year ago when Tropical Storm Ernesto and later a nor'easter breached it.

The lake owners recently filed an application with the Army Corps of Engineers to repair the dam. The application notes that tides are coming up Mill Creek from the James River and through the dam. Nearby homeowners have observed the tide ebbing and flowing.

"I noticed this several months ago, now," said Henry Lindsey, who serves on the local Wetlands Board. "I was driving across there and noticed there was more water in the lake."

The issue is important if the lake has to be reclassified as tidal wetlands instead of a man-made lake.

The Powell and Reed families, owners of the lakes, applied to the Corps of Engineers under a provision that allows maintenance and repair. If the lake's rightful designation is tidal wetlands, a whole different set of permits and regulations applies.

The families would need to scrap the current application to reapply for a joint permit. That would send the application to the Virginia Marine Resource Commission and the local Wetlands Board for reconsideration.

The tides could also affect the repair work. The state has a zero-tolerance policy for wetlands impacts. The regs are clear that if wetlands are harmed during reconstruction, the owners would have to agree to mitigation plans that could raise costs considerably.

The tides could also limit the ability for homeowners to expand decks and piers



Goggle Earth

Tidal water is flowing up Mill Creek into Lake Powell, potentially creating different guidelines for reformation of the lake.

into the lake.

Last month, the Corps of Engineers asked the families and their agent, Williamsburg Environmental Group, for more information about the repair plans, including plans to do the spillway.

4-15-03  
LAKE LORING

Notes:

Meeting with John McErdon, Pat Henchman, Scott Thomas  
Shea Murphy, OAKLEY (RWTHM)

Visited deteriorated spillway area; part section of concrete spillway totally broken off; rest section collapsed; upper part still intact; signs of embankment seepage at under collapsed section; severe erosion from collapsed section; deep cuts 10-15' deep.

Discussed:

Possible repair options, status of ownership (vuclear)  
status of surrounding homeowner partnership, funding  
cost estimate (staff thru Sandy); access;  
embankment observations

Other:

Other than damaged, collapsed concrete spillway:

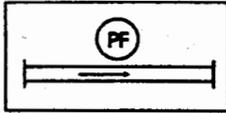
seepage

large trees on dam d/s face

animal burrows on dam

- high safety hazard (children - fall)
- potential for full failure - d/s damage to
- property, structures, public infrastructure (sewer & pump station)
- Erosion + Sediment discharge to d/s natural channel.

## STD &amp; SPEC 3.16



## PAVED FLUME

Definition

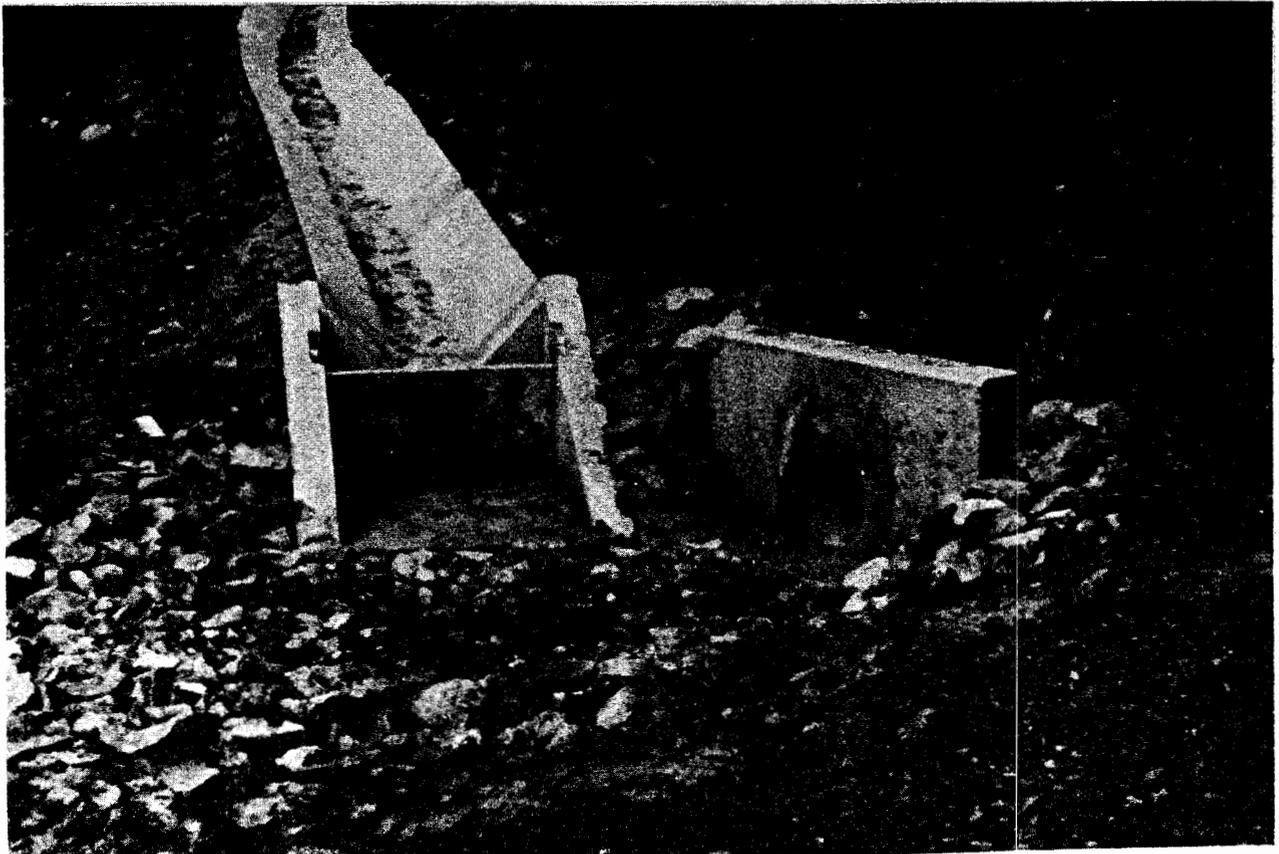
A permanent paved channel constructed on a slope.

Purpose

To conduct stormwater runoff safely down the face of a slope without causing erosion problems on or below the slope.

Conditions Where Practice Applies

Wherever concentrated stormwater runoff must be conveyed from the top to the bottom of cut or fill slopes on a permanent basis and a riprap-lined channel is not capable of conveying the runoff without erosion.



### Planning Considerations

Paved flumes are used routinely on highway cuts and fills to convey concentrated stormwater runoff from the top to the bottom of the slope without erosion. VDOT has developed standards and specifications for these structures which apply to all secondary and primary highway construction projects.

Fortunately, these structures have equal applicability to cut-and-fill slopes for construction projects other than highways. Therefore, for the sake of continuity and to prevent possible conflicts, the standards and specifications for paved flumes contained in this practice correspond to those of VDOT.

Consideration must be given to protecting structures against buoyancy failures. The potential for buoyancy failures due to hydrostatic uplift forces exists in channels constructed in periodically saturated areas (basically all channels will experience saturation of the subgrade by virtue of the function of the channel) and especially if a submerged outfall condition exists.

Paved flumes should be utilized and constructed carefully. Field experience has shown a significant amount of post-construction problems with these controls. If the base contains some unsuitable material or is too "soft," the flume will subject to undermining and fracturing. There are also many cases where the outlet velocities and flow rates of stormwater which travels in a paved flume are so great that erosion and flooding at the end of the structure are inevitable, no matter what type of treatment is installed at the outlet. In these cases, strong consideration should be given to a riprapped channel or to a system of inlets, manholes, and pipe to safely convey the stormwater to the receiving channel or drainage structure.

### Design Criteria

#### VDOT Design

Paved flumes shall be designed and constructed in accordance with criteria established by VDOT for "Paved Flumes." Design criteria and construction specifications contained herein are extracted and summarized from the latest edition of the following VDOT publications:

Road and Bridge Specifications  
Road and Bridge Standards  
Drainage Manual

Users of this handbook should refer to the above publications for additional information or clarification, if needed.

### Capacity

Paved flumes shall be capable of passing the peak flow expected from a 10-year frequency storm.

### Cross-Sections

Plate 3.16-1 illustrates a typical trapezoidal cross-section of a VDOT "Standard Paved Flume (PG-4)." Where additional flow capacity is required, larger trapezoidal cross-sections may be designed. The following criteria apply to all trapezoidal flume designs:

1. The maximum slope of the structure shall be 1.5:1 (67%).
2. Curtain Walls shall be provided at the beginning and end of all paved flumes not abutted to another structure. The curtain wall shall be as wide as the flume channel, extend at least 18 inches into the soil below the channel, and have a thickness of 6 inches. Curtain walls shall be reinforced with #4 reinforcing steel bars placed on 6-inch centers.
3. Anchor Lugs shall be spaced at a maximum of 10 feet on center for the length of the flume. Where no curtain wall is required, an anchor lug shall be installed within 2 feet of the end of the flume. Anchor lugs are to be as wide as the bottom of the flume channel, extend at least 1 foot into the soil below the channel, and have a thickness of 6 inches. Anchor lugs shall be reinforced with #4 reinforcing steel bars placed on 4-inch centers.
4. The flume channel shall have at least a 4-inch thickness of class A-3 concrete with welded wire fabric (6 X 6 - W2.1 x W2.1) in the center for reinforcement.
5. Expansion Joints shall be provided approximately every 90 feet. Eighteen-inch dowels of #4 reinforcing steel placed on 5-inch centers shall be located at all required joints.

### Outlet

Outlets of paved flumes should be protected from erosion. The use of an energy dissipator with OUTLET PROTECTION (Std. & Spec. 3.18) is recommended in order to temporarily reduce the existing velocity of the flow, thus preventing undermining of the structure and providing a stable transition zone between the flume and the receiving channel or drainage structure at the base of the slope. Plates 3.16-2 and 3.16-3 show a "Standard Energy Dissipator (EG-1)," which is designed for use in conjunction with the "Standard Paved Flume (PG-4)." OUTLET PROTECTION should still be utilized with the use of an "EG-1" structure to further dissipate flow energy and to provide a smooth transition into the receiving channel. Larger energy dissipator systems may be similarly designed for larger flume cross-sections.

### Construction Specifications

1. The subgrade shall be constructed to the required elevations. All soft sections and unsuitable material shall be removed and replaced with suitable material. The subgrade shall be thoroughly compacted and shaped to a smooth, uniform surface. The subgrade shall be moist at the time the concrete is poured.
2. Anchor lugs and curtain walls shall be formed to be continuous with the channel lining.
3. Traverse joints for crack control should be provided at approximately 20-foot intervals and when more than 45 minutes elapses between consecutive concrete placements. All sections should be at least 6 feet long. Crack control joints may be formed by using a 1/8-inch thick removable template, by scoring or sawing to a depth of at least 3/4 inch or by an approved "leave-in" type insert.

### Maintenance

Prior to permanent stabilization of the slope, the structure should be inspected after each rainfall. Damages to the slope, flume or outlet area must be repaired immediately. After the slope is stabilized, the structure should be inspected to ensure continued adequate functioning (see potential problems noted in Planning Considerations).

PERMANENT STRUCTURE

SOIL MOIST @ POUR

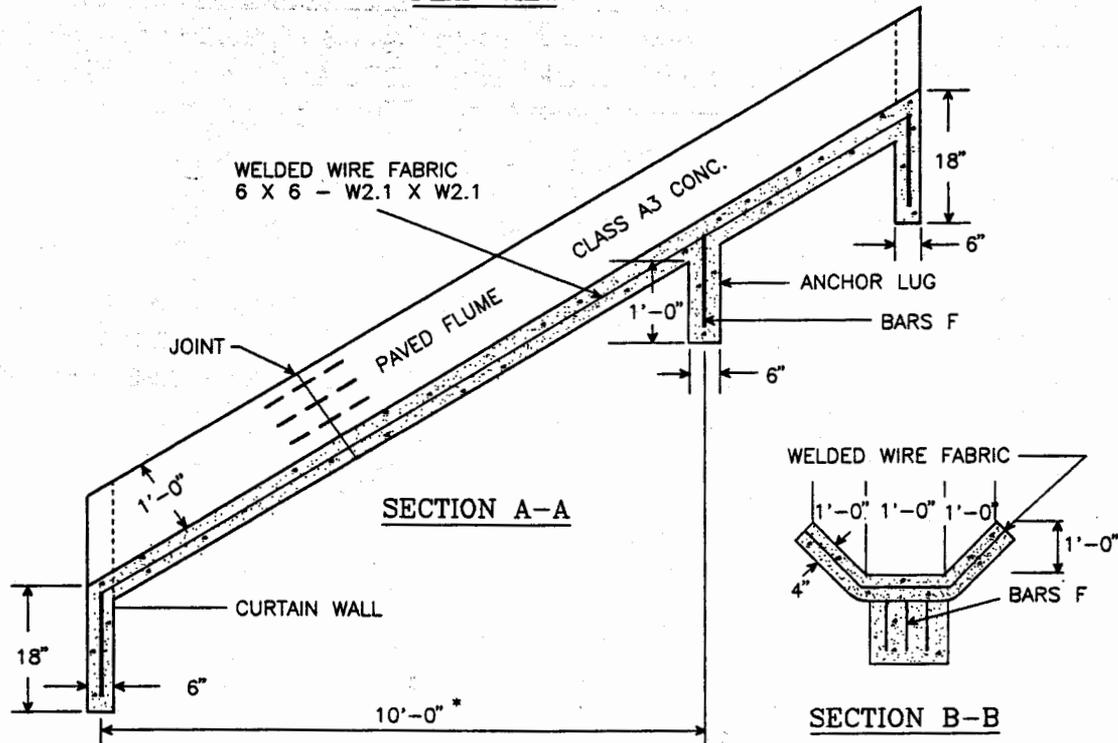
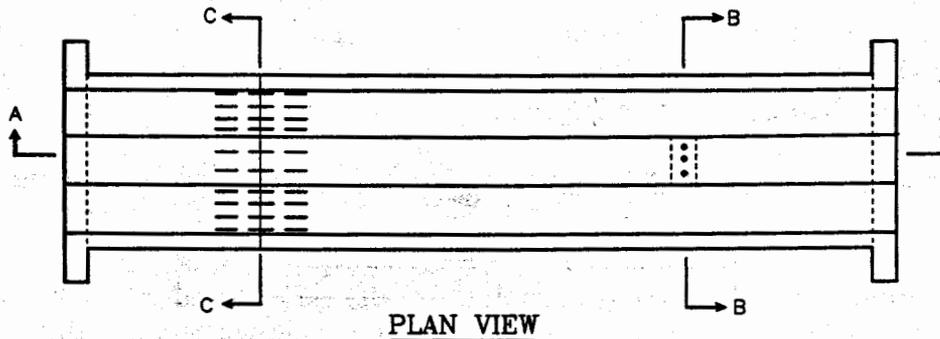
MAX 1.5H:1V

CURTAIN WALLS

#4 (1/2 INCH) BAR

OP @ END

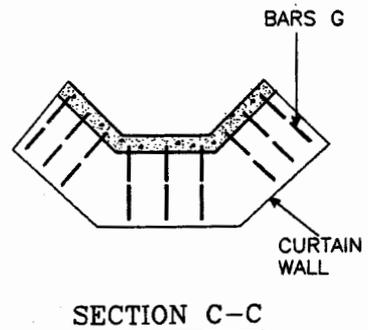
# PAVED FLUME



\* 10'-0" C-C MAXIMUM TYPICAL SPACING BETWEEN ANCHOR LUGS. WHERE CURTAIN WALL IS NOT REQUIRED ANCHOR LUG IS TO BE A MAXIMUM OF 2' FROM END OF CHANNEL.

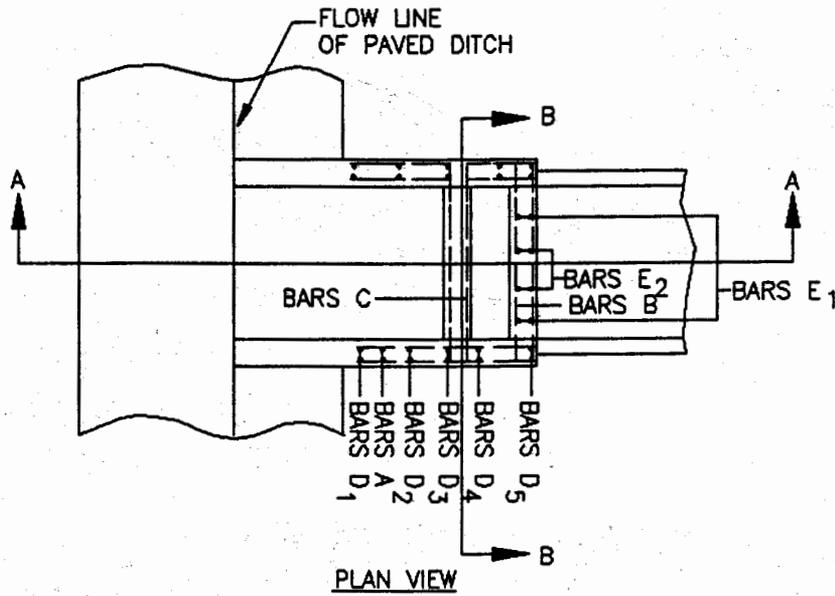
SCHEDULE OF REINFORCING STEEL

MARK	NO.	LENGTH		SIZE	SPACING C-C	SHAPE
		2:1	1 1/2:1			
F	3	1'-2"	1'-2"	4	4"	STRAIGHT
G	9	1'-5"	1'-5"	4	6"	STRAIGHT
DOWELS	10	1'-6"	1'-6"	4	5"	STRAIGHT

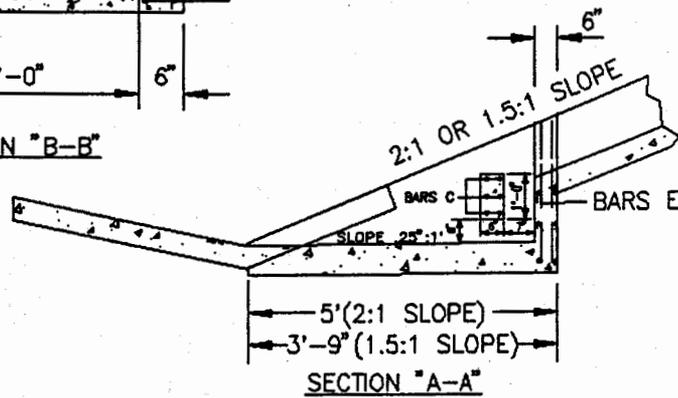
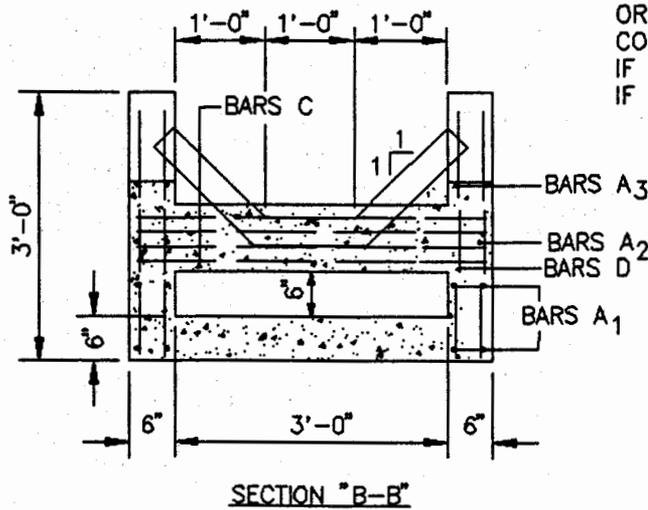


NO. SHOWN ARE FOR ONE ANCHOR LUG, CURTAIN WALL AND JOINT

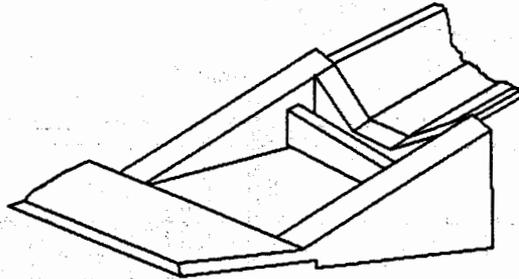
# ENERGY DISSIPATOR



THIS ITEM MAY BE PRECAST OR CAST IN PLACE.  
 CONCRETE TO BE CLASS A3 IF CAST IN PLACE, CLASS A4 IF PRECAST.



# ENERGY DISSIPATOR (CONTINUED)



ISOMETRIC

SCHEDULE OF REINFORCING STEEL

MARK	NO.	LENGTH		SIZE	SPACING C-C	SHAPE
		2:1	1.5:1			
A <sub>1</sub>	8	2'-10"	2'-10"	3	8"	STRAIGHT
A <sub>2</sub>	4	2'-6 1/4"	1'-10"	3	8"	STRAIGHT
A <sub>3</sub>	4	1'-0 3/4"	0'-10"	3	8"	STRAIGHT
B	6	3'-9"	3'-9"	3	8"	STRAIGHT
C	8	3'-8"	3'-8"	3	2 1/2"	STRAIGHT
D <sub>1</sub>	4	1'-2 1/2"	0'-8"	3	8"	STRAIGHT
D <sub>2</sub>	4	1'-6 1/2"	1'-1 1/2"	3	8"	STRAIGHT
D <sub>3</sub>	4	1'-10 1/2"	1'-7"	3	8"	STRAIGHT
D <sub>4</sub>	4	2'-2 1/2"	2'-0 1/2"	3	8"	STRAIGHT
D <sub>5</sub>	4	2'-6 1/2"	2'-6"	3	8"	STRAIGHT
E <sub>1</sub>	4	1'-11 1/2"	1'-11 1/2"	3	8"	STRAIGHT
E <sub>2</sub>	4	1'-5 1/2"	1'-5 1/2"	3	8"	STRAIGHT

APPROXIMATE QUANTITIES			
		CONCRETE	REINFORCING STEEL
		CU. YDS.	LBS.
ENERGY DISSIPATOR	2:1	0.7479	61.20
	1.5:1	0.5921	57.63

Source: VDOT Road and Bridge Standards

Plate 3.16-3