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NATIONAL DAM SAFETY PROGRAM. DIASCUND RESERVOIR DAM. INVENTORY --ETC(U)
MAR 79 J A WALSH

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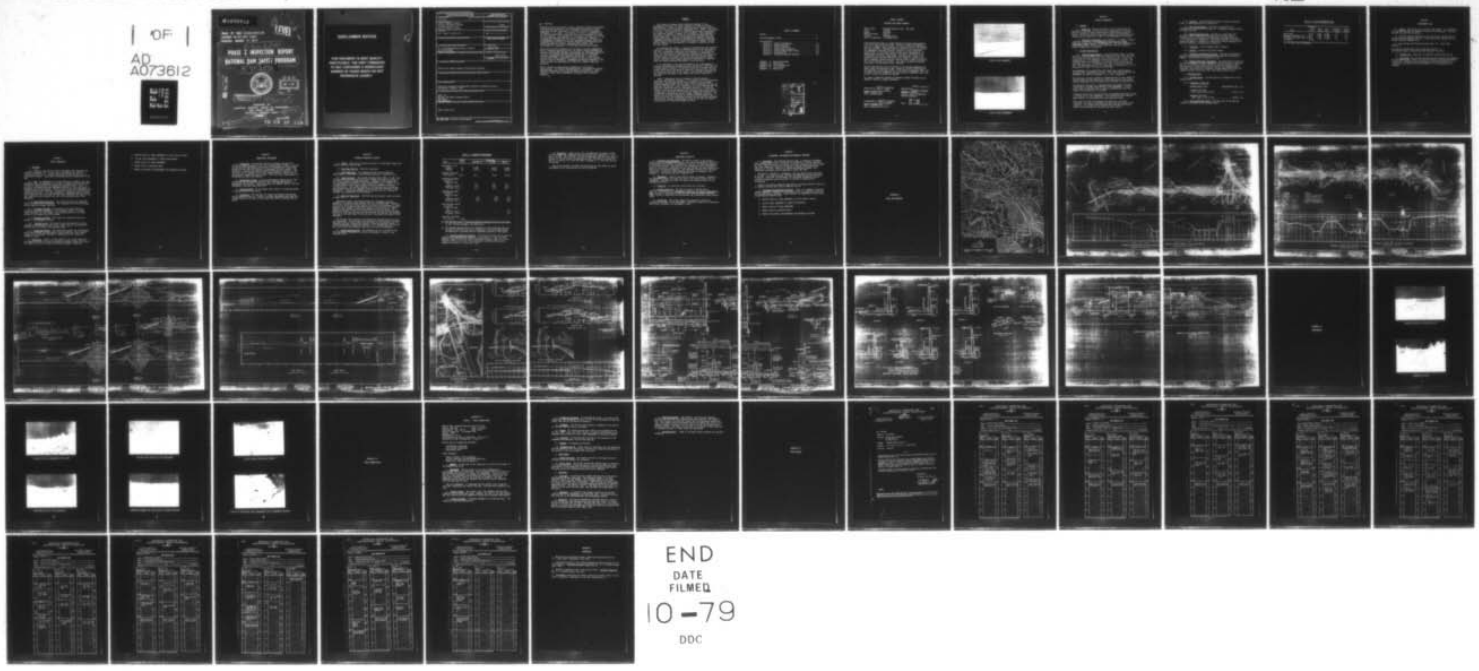

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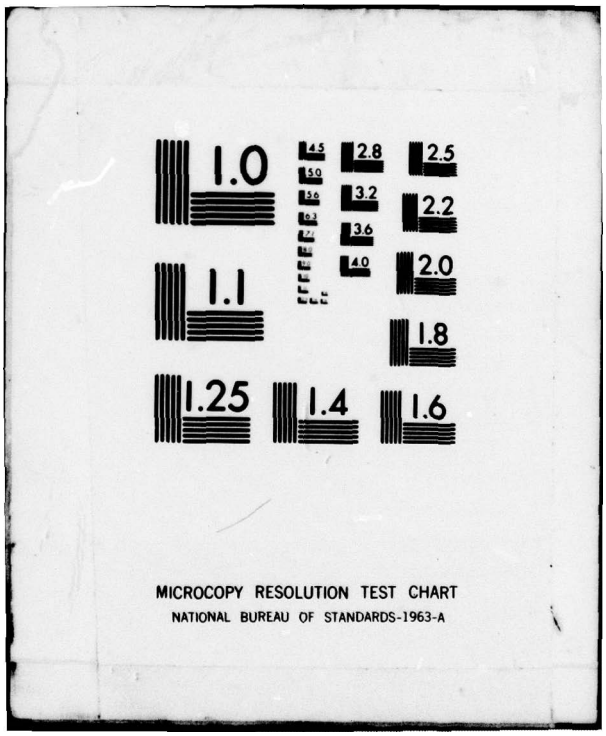
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LEVEL II

Name Of Dam: DIASCUND RESERVOIR DAM
Location: NEW KENT COUNTY, VIRGINIA
Inventory Number: VA 12703

James A. Welsh

PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM.

Diascund Reservoir Dam. Inventory Number: VA-12703. New Kent County, Virginia. Phase I Inspection Report.

Final rept.

PREPARED BY
NORFOLK DISTRICT CORPS OF ENGINEERS
803 FRONT STREET
NORFOLK, VIRGINIA 23510

56 p.

MAR 1979

Army Engineer Dist

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20. Abstract

Pursuant to Public Law 92-367, Phase I Inspection Reports are prepared under guidance contained in the recommended guidelines for safety inspection of dams, published by the Office of Chief of Engineers, Washington, D. C. 20314. The purpose of a Phase I investigation is to identify expeditiously those dams which may pose hazards to human life or property. The assessment of the general conditions of the dam is based upon available data and visual inspections. Detailed investigation and analyses involving topographic mapping, subsurface investigations, testing, and detailed computational evaluations are beyond the scope of a Phase I investigation; however, the investigation is intended to identify any need for such studies.

Based upon the field conditions at the time of the field inspection and all available engineering data, the Phase I report addresses the hydraulic, hydrologic, geologic, geotechnic, and structural aspects of the dam. The engineering techniques employed give a reasonably accurate assessment of the conditions of the dam. It should be realized that certain engineering aspects cannot be fully analyzed during a Phase I inspection. Assessment and remedial measures in the report include the requirements of additional indepth study when necessary.

Phase I reports include project information of the dam and appurtenances, all existing engineering data, operational procedures, hydraulic/hydrologic data of the watershed, dam stability, visual inspection report and an assessment including required remedial measures.

PREFACE

This report is prepared under guidance contained in the Recommended Guidelines for Safety Inspection of Dams, for Phase I Investigations. Copies of these guidelines may be obtained from the Office of the Chief of Engineers, Washington, D.C. 20314. The purpose of a Phase I investigation is to identify expeditiously those dams which may pose hazards to human life or property. The assessment of the general condition of the dam is based upon available data and visual inspections. Detailed investigation and analyses involving topographic mapping, subsurface investigations testing and detailed computational evaluations are beyond the scope of a Phase I investigation; however, the investigation is intended to identify any need for such studies.

In reviewing this report, it should be realized that the reported condition of the dam is based on observations of field conditions at the time of inspection along with data available to the inspection team. In cases where the reservoir was lowered or drained prior to inspection, such action, while improving the stability and safety of the dam, removes the normal load on the structure and may obscure certain conditions which might otherwise be detectable if inspected under the normal operating environment of the structure.

It is important to note that the condition of a dam depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through continued care and inspection can there be any chance that unsafe conditions be detected.

Phase I inspections are not intended to provide detailed hydrologic and hydraulic analyses. In accordance with the established guidelines, the spillway design flood is based on the estimated "Probable Maximum Flood" for the region (flood discharges that may be expected from the most severe combination of critical meteorologic and hydrologic conditions that are reasonably possible), or fractions thereof. Because of the magnitude and rarity of such a storm event, a finding that a spillway will not pass the design flood should not be interpreted as necessarily posing a highly inadequate condition. The design flood provides a measure of relative spillway capacity and serves as an aide in determining the need for more detailed hydrologic and hydraulic studies, considering the size of the dam, its general condition and the downstream damage potential.

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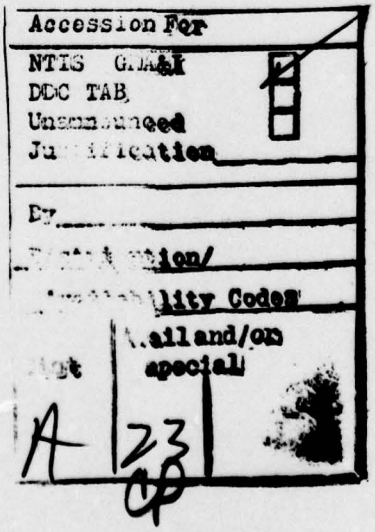

PHASE I REPORT

NATIONAL DAM SAFETY PROGRAM

Name of Dam:	Diascund Reservoir Dam #VA 12703
State:	Virginia
County:	New Kent
USGS Quad Sheet:	Walkers
Stream:	Diascund Creek
Date of Inspection:	14 December 1978

Diascund Reservoir Dam is a zoned earthfill structure approximately 5,510 feet long and 34 feet high. The dam is owned and operated by the city of Newport News, Virginia, and supplies water to the Newport News Water System. A pumping station located on the left portion of the embankment furnishes raw water through a 42 inch reinforced concrete pipe to filtration plants several miles downstream in the Newport News, Virginia Water System. The dam is classified as an intermediate size with a high hazard classification. There is an ungated concrete spillway (250 feet crest length at elevation 26.0) and an emergency earthen spillway (300 feet crest length at elevation 28.0 with 10 percent side slopes). The dam is located on Diascund Creek about 1/2 mile north of U.S. Route 60.

The two spillways will pass 72 percent of the Probable Maximum Flood (PMF) without overtopping the dam. Based on criteria established by the Department of the Army, Office of the Chief of Engineers (OCE), the spillways are rated inadequate, but not seriously inadequate since they do pass at least 50 percent of the PMF.

The visual inspection revealed no apparent problems and there are no immediate needs for remedial measures.

Submitted By: Original signed by JAMES A. WALSH

JAMES A. WALSH, P.E.
Chief, Design Branch

Approved By: Original signed by: Douglas L. Haller

DOUGLAS L. HALLER
Colonel, Corps of Engineers
District Engineer

Recommended By: Original signed by ZANE M. GOODWIN

ZANE M. GOODWIN, P.E.
Chief, Engineering Division

Date: MAR 13 1979
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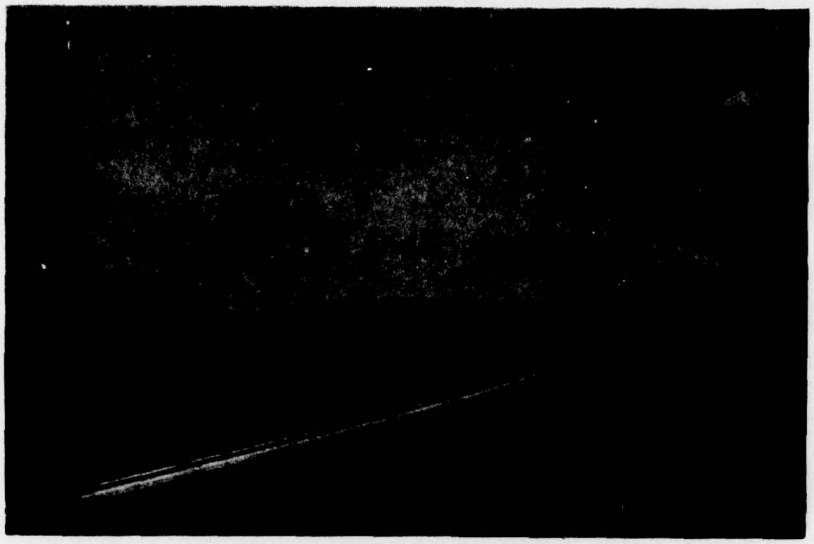


VIEW OF LEFT EMBANKMENT

VIEW OF RIGHT EMBANKMENT

SECTION 1

PROJECT INFORMATION

1.1 General:

1.1.1 Authority: Public Law 92-367, 8 Aug 72 authorized the Secretary of the Army, through the Corps of Engineers to initiate a national program of safety inspections of dams through the United States. The Norfolk District has been assigned the responsibility of supervising the inspection of dams in the Commonwealth of Virginia.

1.1.2 Purpose of Inspection: The purpose is to conduct a Phase I inpsection according to the Recommended Guidelines for Safety Inspection of Dams (Appendix V, Reference 4). The main responsibility is to expeditiously identify those dams which may be a potential hazard to human life or property.

1.2 Project Description:

1.2.1 Dam and Appurtenances: Diascund Reservoir Dam is a zoned earthfill structure about 5,510 feet long and 34 feet high. The crest of the dam is 36 feet wide and is at elevation 34.42. A road that transverses the left embankment raises the elevation to 34.82. The upstream slope is 3 horizontal to 1 vertical (3H:1V) from crest to elevation 16.0, 5.5:1 to elevation 12.0 and 5:1 to the heel of the dam. The downstream slope is 3:1 from crest to elevation 14.0, 4:1 to elevation 8.0, and 3:1 to the toe of the dam.

The embankment has an impervious core keyed into a marine deposit formation and a foundation toe drain. Plan views and profiles of the embankment are shown on Drawings 2, 3, 4, and 5, Appendix I.

The principal concrete spillway is ungated and has a crest length of 250 feet with the crest elevation at 25.0 and vertical side slopes. Wooden flashboards raise the crest of the spillway to elevation 26.0.

The emergency spillway is a vegetated earth side-channel spillway located on the extreme right portion of the embankment. It has a crest length of 300 feet with a crest at elevation 28.0 and side slopes of 10 horizontal to 1 vertical.

A pumping station that supplies water to the Newport News Water System is located on the left embankment. The bricked structure contains pumps capable of discharging 30 million gallons per day.

Two 4-foot by 6-foot sluice gates with invert at a low level (elevation 1.0) permits withdrawal of water from the bottom of the reservoir. The sluice gates discharge into an 8-foot by 10-foot tunnel running through the dam below the pump station.

1.2.2 Location: Diascund Reservoir Dam is located on Diascund Creek, 1/2 mile upstream of U.S. Route 60.

1.2.3 Size Classification: The dam is classified as an "intermediate" size structure because of its maximum storage potential of 18,000 acre-feet.

1.2.4 Hazard Classification: The dam is located 1500 feet upstream of four houses and is therefore given a high hazard classification in accordance with guidelines contained in Section 2.1.2 of Reference 4, Appendix V. The hazard classification used to categorize dams is a function of location only and has nothing to do with its stability or probability of failure.

1.2.5 Ownership: City of Newport News, Virginia.

1.2.6 Purpose: Recreation and water supply.

1.2.7 Design and Construction History: The dam was designed by Malcolm Pirnie Engineers and constructed by Carpenter Construction Company. Construction was completed in 1963.

1.2.8 Normal Operational Procedures: The pump station located on the left embankment can pump a maximum 30 million gallons of raw water per day to filtration plants operated by the city of Newport News. This operation is used during dry periods and high demand periods. Otherwise, the operation is automatic, passing excess flows over the ungated spillway as the pool level rises above elevation 26.0.

1.3 Pertinent Data:

1.3.1 Drainage Areas: The dam controls a drainage area of 43.5 square miles.

1.3.2 Discharge at Dam Site:

Maximum Known Flood. . . . . .Approximately 825 c.f.s.

Principal Spillway
Pool level at top of dam . . . . . 20,157 c.f.s.

Emergency Spillway
Pool level at top of dam . . . . . 20,740 c.f.s.

1.3.3 Dam and Reservoir Data: Pertinent data on the dam and reservoir are shown in the following table:

Table 1.1 DAM AND RESERVOIR DATA

Item	Elevation feet, m.s.l.	Area, acres	Acre-feet	Watershed, inches	Length, miles
Top of dam	34.82	2,680	18,000	7.8	6.2
Emergency spillway crest	28.0	1,560	14,300	6.2	4.9
Principal spillway crest (a)	26.0	1,340	12,200	5.3	3.8
Streambed	0.0±	-	-	-	-

(a) At top of the flashboards.

SECTION 2

ENGINEERING DATA

2.1 Design: Design data was provided by the owners. No information was available through the designers, Malcolm Pirnie Engineers. The data reviewed included the following.

a. As-built drawings indicating plans, elevations, and sections of the dam and appurtenant structures. Also shown on the drawings are test boring locations, Appendix III.

b. Test borings by Froehling and Robertson, Inc., March 1960, Appendix V.

No stability calculations, soil and geology reports, or hydrologic/hydraulic calculations were available for review.

2.2 Construction: There were no available construction records.

2.3 Evaluation: The as-built drawings and test borings were adequate. No construction reports were available to evaluate construction methods or alterations. However, as-built drawings were available during the inspection, and external structures appear to be in accordance to the drawings.

SECTION 3

VISUAL INSPECTION

3.1 Findings:

3.1.1 General: The results of the 14 December 1978 inspection are recorded in Appendix III. At the time of the inspection, the pool elevation was 26.0 m.s.l. Ground conditions were wet and soft due to recent moist weather. There were no recorded previous inspections of the dam.

3.1.2 Dam: The embankment is in good condition. However, the right embankment, and the emergency spillway and its immediate downstream area are heavily vegetated with tall grass and coniferous trees. Also, a portion of the downstream right embankment abuting the left side of the emergency spillway has eroded. Vehicle access to the right embankment was prohibited due to wet conditions. Access was limited to a half-mile hike through mud and water. The left embankment is landscaped and has several trees planted by the city along the road that transverses the crest of the dam. Some trees were recently cut down on the upstream slope of the embankment.

3.1.3 Appurtenant Structures: The intake structure was submerged which inhibited visual observation. The discharge outlet below the pump station appeared in good condition.

3.1.4 Principal Spillway: The spillway is in good condition, including the wooden flashboards. The discharge channel is in good condition except for some damage to two concrete panels on the right portion of the channel due to settlement.

3.1.5 Emergency Spillway: Tall grass and coniferous trees were growing in the emergency spillway.

3.1.6 Reservoir Area: The reservoir area had some minor erosion upstream of the dam due to wave action. Small recently cut trees were floating near the riprap on the upstream slope.

3.1.7 Downstream Channel: The downstream channels for the drawdown outlet and principal spillway appear in good condition. The dicharge channel of the emergency spillway is overgrown with tall grass and coniferous trees.

3.2 Evaluation: Overall the dam appears to be in good condition. The inspection revealed certain preventive maintenance items which should be schedule as part of an annual maintenance program. These are:

a. Improve access to right embankment to allow vehicle access.

b. Include right embankment in regular maintenance.

c. Repair erosion of right embankment.

d. Remove trees in upstream riprap.

e. Remove tree growth from embankment and emergency spillway.

SECTION 4

OPERATIONAL PROCEDURES

4.1 Procedures: The Diascund Reservoir provides raw water for filtration plants operated by the city of Newport News, Virginia. During dry periods and high demand periods water is withdrawn up to 30 million gallons per day from the reservoir to supplement the water supply. The reservoir is normally maintained between elevations 20.0 feet m.s.l. and 26.0 feet m.s.l.; however, this is not always possible. Excess flow is automatically passed over the spillway. Two 4 by 6 foot sluice gates can be operated to drain the reservoir.

4.2 Maintenance of Dam: A routine maintenance program has not been established for the Diascund Reservoir Dam, although some periodic maintenance has occurred. Large trees have been removed recently from the embankment's upstream slope protection.

4.3 Warning System: At the present time, there is no warning system or evacuation plan in operation.

4.4 Evaluation: The dam does not require an elaborate operational and maintenance procedure. However, an annual maintenance and inspection program should be initiated to help detect and control problems that may occur.

SECTION 5

HYDRAULIC/HYDROLOGIC DESIGN

5.1 Design: There are no original hydraulic or hydrologic design data available for the Diascund Dam.

5.2 Hydrologic Records: None were available.

5.3 Flood Experience: The maximum observed flood reached was approximately 1 foot high in the principal spillway or elevation 27.0.

5.4 Flood Potential: The Probable Maximum Flood (PMF), 1/2 PMF, and 100-Year Flood were developed and routed through the reservoir by use of the HEC-1DB computer program (Reference 1, Appendix V) and appropriate unit hydrograph, precipitation, and storage-outflow data. Clark's Tc and R coefficients for the local drainage area were estimated from basin characteristics. The rainfall applied to the developed unit hydrograph was obtained from the U.S. Weather Bureau Publications (Reference 2 and 3, Appendix V). Losses were estimated at an initial loss of 1 inch and a constant loss thereafter of 0.15 inch/hour.

5.5 Reservoir Regulation: Pertinent dam and reservoir data are shown in Table 1.1.

Regulated releases from Diascund Reservoir supplement raw water demands to filtration plants owned by the city of Newport News, Virginia. Two 20-inch reinforced concrete pipes allow water to discharge at an invert elevation 31.0 through the dam and flow into a 42-inch pipe that supplies Harwood's Mill Reservoir and Lee Hall Reservoir with raw water. The maximum withdrawal of water for filtration is 30 million gallons per day. Water also flows past the dam over the principal spillway and the emergency spillway in the event water in the reservoir rises above the crests of the spillways.

The storage curve supplied by the owners was extended above the top of the flashboards. Rating curves were developed for the principal spillway, emergency spillway, non-overflow section of dam, and drawdown outlet. In routing hydrographs through the reservoir, it is assumed that the initial pool level was at the principal spillway crest (top of flashboards).

5.6 Overtopping Potential: The probable rise of the reservoir and other pertinent information on reservoir performance is shown in the following table:

Table 5.1 RESERVOIR PERFORMANCE

Item	Normal Flow	Hydrograph 100-Year 1/	Hydrograph 1/2 PMF	Hydrograph PMF 2/
Peak flow, c.f.s.				
Inflow	44	16,384	35,513	71,026
Outflow	44	11,374	35,376	70,900
Maximum elevation, ft., m.s.l.	26.0	30.1	33.41	35.90
Principal spillway (el 26.0)				
Depth of flow, ft.	-	4.1	7.41	9.9
Duration, hours	-	5.8	12.0	12.4
Velocity, f.p.s.	-	6.7	9.0	10.4
Emergency Spillway (el 28.0)				
Depth of flow, ft.	-	2.1	5.41	7.9
Duration, hours	-	14.0	18.0	22.0
Velocity, f.p.s.	-	4.3	7.0	8.4
Non-overflow section (el 34.82)				
Depth of flow, ft.	-	-	-	1.1
Duration, hours	-	-	-	4.0
Velocity, f.p.s.	-	-	-	3.1
Tailwater elevation, ft., m.s.l.	3.0±	-	-	-

1/ The 100-Year Flood (1 percent Exceedence Frequency Flood) has one chance in 100 of being exceeded in any given year.

2/ The Probable Maximum Flood is an estimate of flood discharges that may be expected from the most severe combination of critical meteorologic and hydrologic conditions that are reasonably possible in the region.

5.7 Reservoir Emptying Potential: Two 4-foot by 6-foot sluice gates are available for dewatering the reservoir to elevation 1.0. The low level opening through the dam will permit withdrawal of about 1,389 c.f.s. with reservoir level at the crest of the principal spillway and essentially dewater the reservoir in less than 7 days.

5.8 Evaluation: Based on the size (intermediate) and hazard classification (high) the recommended Spillway Design Flood appropriate to this dam is the PMF. The principal spillway and emergency spillway will pass 72 percent of the PMF without overtopping the dam. The PMF will overtop the dam for a duration of 4 hours and reach a maximum of 1.1 feet over the top of the dam.

Conclusions pertain to present day conditions and the effect of future development on the hydrology has not been considered.

SECTION 6

STRUCTURAL STABILITY

6.1 Foundation and Abutments: The dam is located in the Atlantic Coastal Plain of Southeastern Virginia. The area soils generally consist of Pliocene-Holocene Columbia Group deposits overlying the Yorktown Formation of the Miocene series. The profile of the foundation varies considerably. Based on the as-built elevations and the test borings, the dam foundation is keyed into the Yorktown Formation. The abutments are keyed into the overlying soils. Profiles of the foundation are shown on Drawings 2 and 3, Appendix I. The boring logs are in Appendix IV.

6.2 Embankment: Based on the profiles shown on Drawing 4, Appendix I, the embankment consist of sandy soil with a core material keyed into the foundation. Available data does not specify the characteristics of the embankment materials.

6.3 Stability: No stability calculations were available.

6.4 Seismic Stability: The dam is located in Seismic Zone 1. Therefore, according to the Recommended Guidelines for Safety Inspection of Dams, the dam is considered to have no hazard from earthquakes provided static stability conditions are satisfactory and conventional safety margins exist.

6.5 Evaluation: The visual inspection revealed no evidence of instability or stress of the embankment. Therefore, based on the inspection and as-built drawings, the dam appears stable.

SECTION 7

ASSESSMENT, RECOMMENDATIONS/REMEDIAL MEASURES

7.1 Assessment: The Diascund Reservoir Dam, as observed 14 December 1978, appears sound without indication of instability or unsafe operation. Available engineering data was limited to as-built drawings and test borings. The visual inspection uncovered no apparent problems that threaten the integrity of the dam. There is no regular maintenance program. The operational procedures provide measures to drain the lake.

Reference 4, Appendix V, recommends a Spillway Design Flood equivalent of the PMF. Since the principal spillway and emergency spillway pass only 72 percent of the PMF, the spillways are considered inadequate, but not seriously inadequate since 50 percent of the PMF is passed without overtopping.

Based on the visual inspection and review of existing records, there are no apparent problems that require immediate action.

7.2 Recommendations/Remedial Measures: There is no immediate need for remedial measures. However, the following actions are suggested and should be initiated within 12 months. These measures are suggested for monitoring and maintenance purposes only.

a. Improve access to right embankment to allow vehicle access.

b. Include right embankment in regular maintenance.

c. Repair erosion of right embankment.

d. Remove trees in upstream riprap.

e. Remove tree growth from embankment and emergency spillway.

APPENDIX I

MAPS AND DRAWINGS

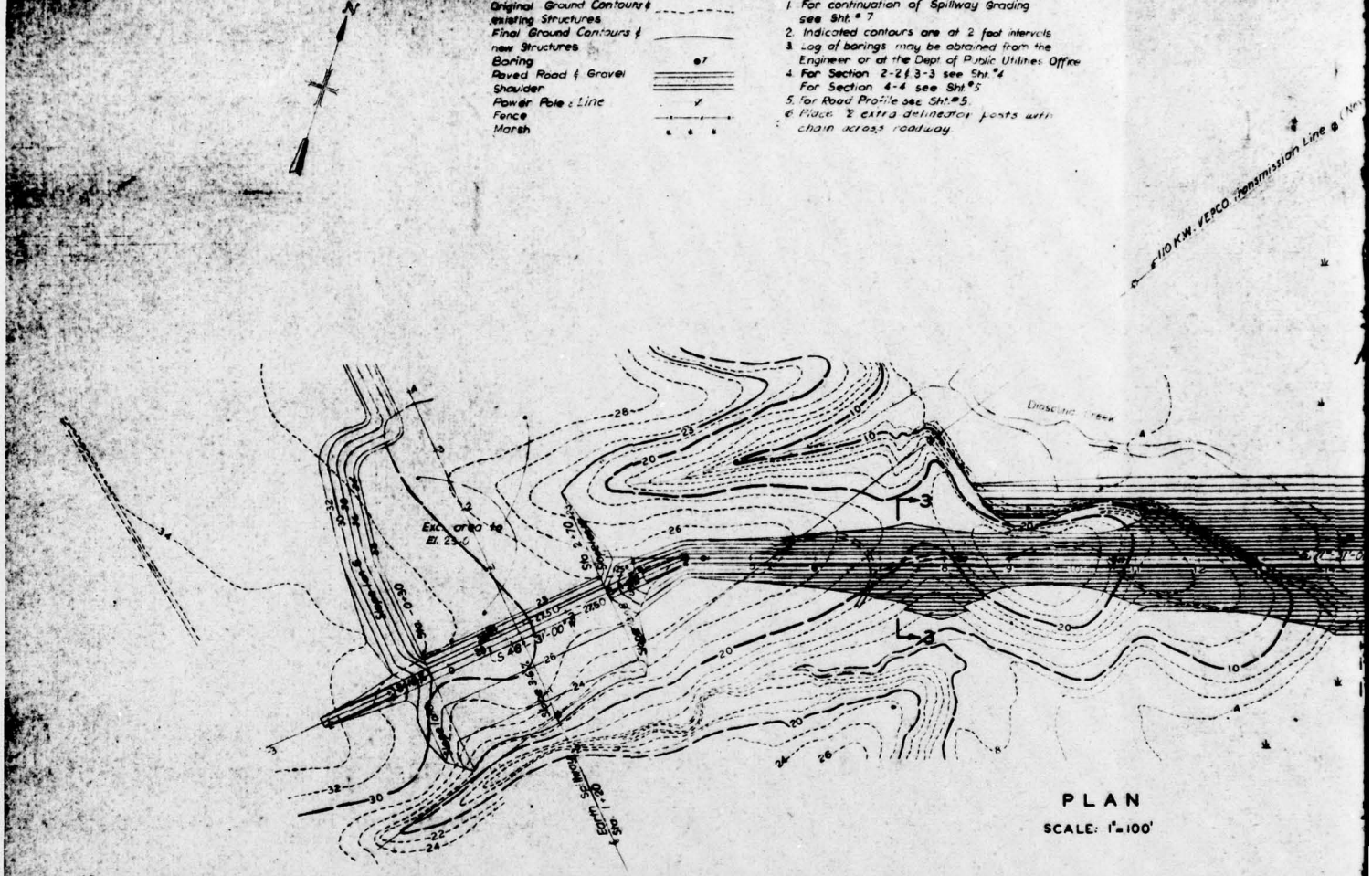

LIMIT OF DRAINAGE AREA
DIASCUND RESERVOIR DAM
KING WILLIAM CO
NEW KENT CO
KING AND QUEEN CO
JAMES CITY CO
CHARLES CITY CO
PRINCE GEORGE CO
SURRY CO
YORK CO
GLOUCESTER CO
CHICKAHOMINY RIVER WILDLIFE MANAGEMENT AREA
COLONIAL NAT HIST PK
CAMP PEARY NAVAL RES
CAMP WALLACE MIL RES
CHIPPOKES PLANTATION STATE PARK
COBHAM BAY
Jamestown Island
Hog Point
Williamsburg
Jamestown NHS
Barrets Point
Dancing Point
Swanns Point
King William
Whites Shop
King and Queen Court House
Truhart
Coldwater
Church View
Little Plymouth
Mascot
Shanghai
Fork Shop
Elsom
Glenns
Shackleford
Shackleford Fork
Cologne
Mattaponi
West Point
Hockley
Port Richmond
Sweet Hall
Cohoke
Lanesville
Palls
Tunstall
Lester Manor
Tallysville
Browns Corner
New Kent
Eltham
Plum Point
Barhamsville
Providence Forge
Windsor Shades
Mountcastle
Adkins Store
Ruthville
Binns Hall
Holdcroft
Chickahominy Haven
Diascund
Toano
Norge
Croaker
Christensons Corner
Bardows Corner
Lightfoot
Ewell
Centerville
Five Forks
Rustic
Upper Brandon
Brandon
Charles City
New Hope
Claremont
Burrowsville
Gressitt
Light
Plain View
Signpine
Pinetta
Allmondsville
Capahosic
Queens Lake
York Terrace
Grove
Power Plant
VIRGINIA
QUADRANGLE LOCATION
SCALE IN MILES

LEGEND

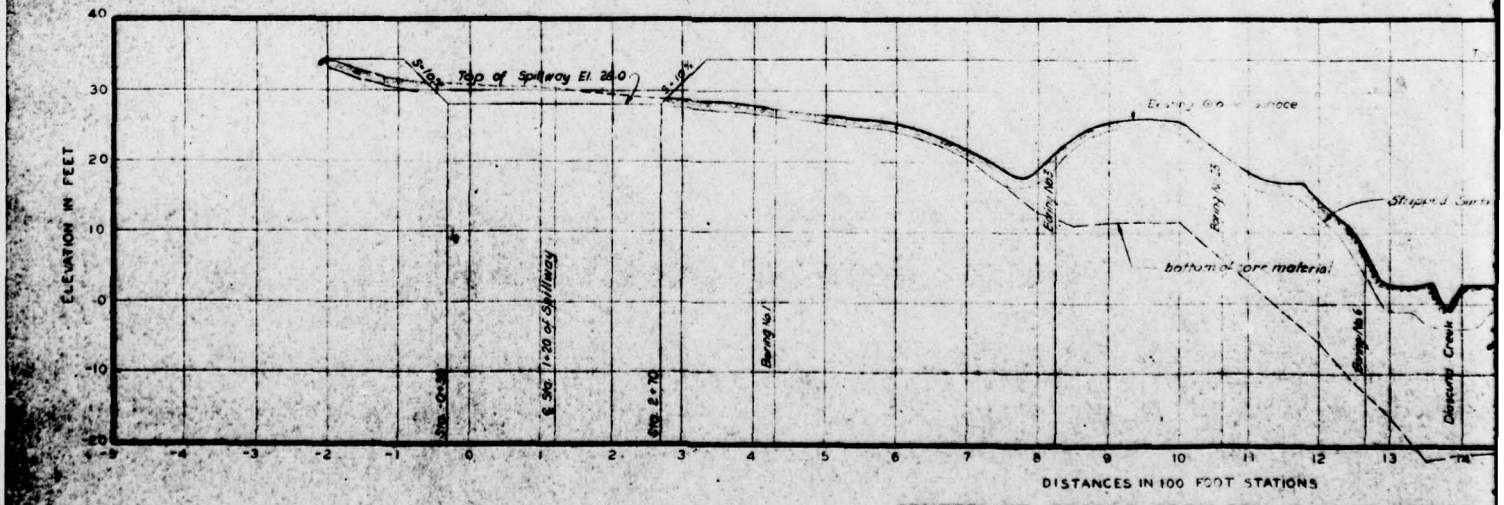
Original Ground Contours & existing Structures
Final Ground Contours & new Structures
Boring ⊕7
Paved Road & Gravel Shoulder
Power Pole & Line
Fence
Marsh

NOTES

1. For continuation of Spillway Grading see Sht. # 7
2. Indicated contours are at 2 foot intervals
3. Log of borings may be obtained from the Engineer or at the Dept of Public Utilities Office
4. For Section 2-2 & 3-3 see Sht #4
   For Section 4-4 see Sht #5
5. for Road Profile see Sht. #5
6. Place 2 extra delineator posts with chain across roadway



PLAN
SCALE: 1"=100'



CENTERLINE PROFILE FROM STA. -2+10 TO STA. 26+

SCALES: HORIZ. 1"=100', VERT. 1"=10'

NOTES

- continuation of Spillway Grading
- Sht. # 7
- dicated contours are at 2 foot intervals
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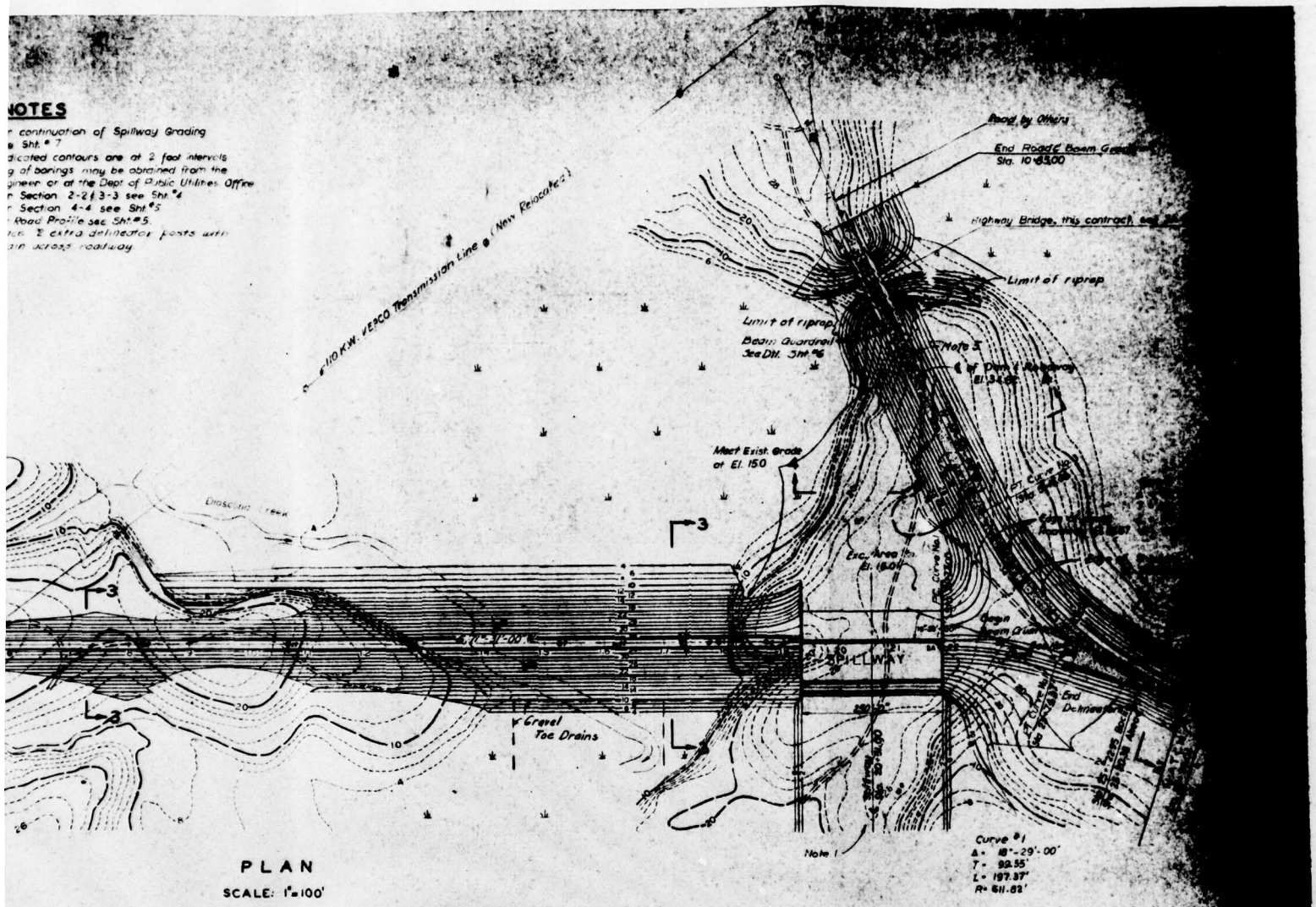

PLAN

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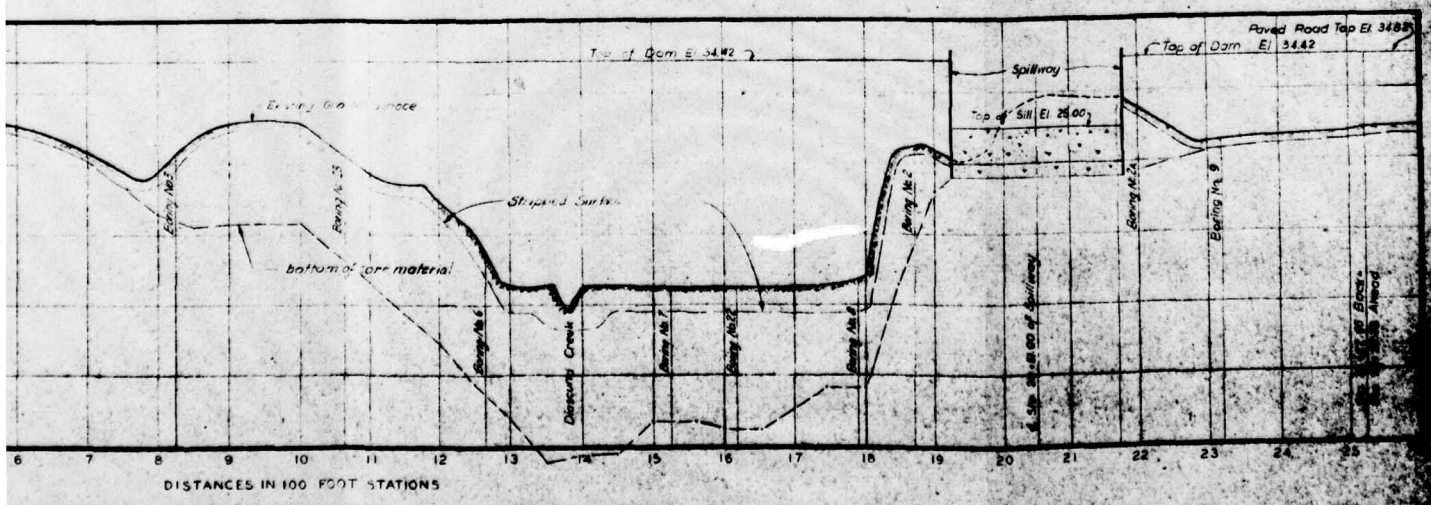
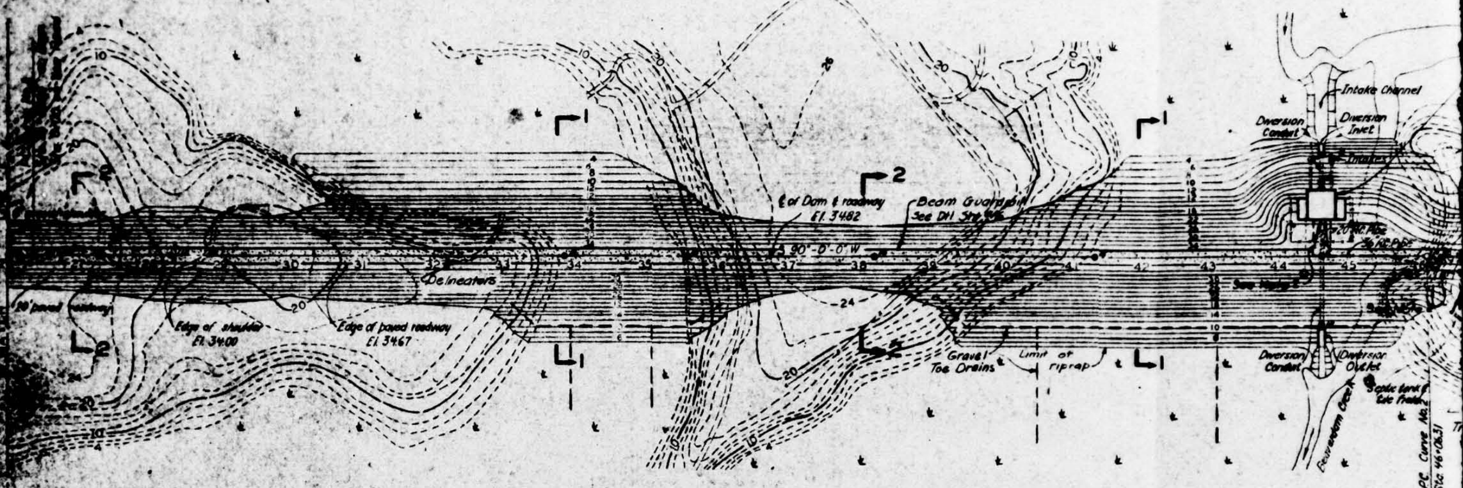


CENTERLINE PROFILE FROM STA. -2+10 TO STA. 26+00

SCALES: HORIZ. 1"=100', VERT. 1"=10'

'45



Intake Channel
Diversion Conduit
Diversion Inlet
Intakes
℄ of Dam & roadway El. 34.82
Beam Guardrail See Dtl Sht. 16
S 90°-0'-0" W
Delineators
20' paved roadway
Edge of shoulder El. 34.00
Edge of paved roadway El. 34.67
Gravel Toe Drains
Limit of riprap
Diversion Conduit
Diversion Outlet
Beaverdam Creek
PC Curve No. 2 Sta. 46+08.31

LEGEND

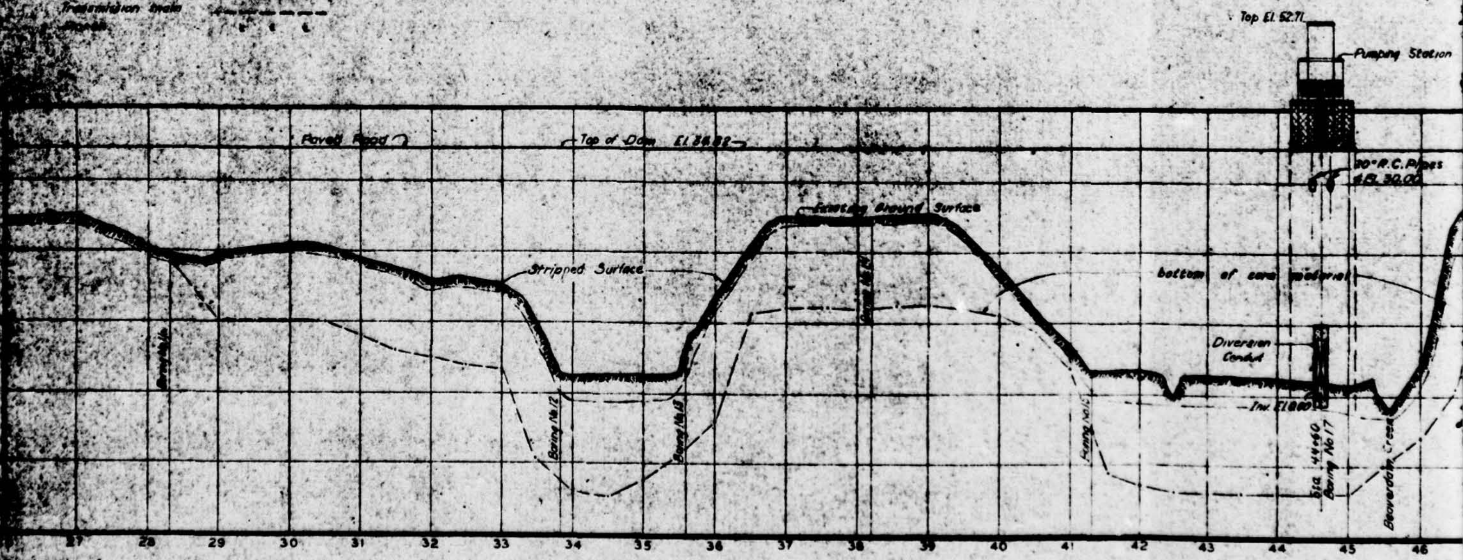
- Original ground contours & existing structures
- Final ground contours & new structures
- Boring
- Paved road & gravel shoulder
- Manhole
- Power pole & line
- Transmission main

NOTES

1. For location details of structures adjacent to Pumping Station see Sht.# 10 for Gen'l Section through Pumping Station see Sht. # 11
2. All transmission main piping by others
3. Indicated contours are at 2 foot intervals
4. Log of borings may be obtained from the Engineer or at the Dept. of Public Utilities Office
5. For Section 1-1 & 2-2, see Sht # 4

PLAN

SCALE 1"=100'



Top El. 52.71
Pumping Station
Paved Road
Top of Dam El. 34.82
20" R.C. Pipes @ El. 30.00
Existing Ground Surface
Stripped Surface
bottom of core material
Diversion Conduit
Inv. El. 8.00
Boring No. 12
Boring No. 13
Boring No. 15
Sta. 44+40 Boring No. 17
Beaverdam Creek
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46

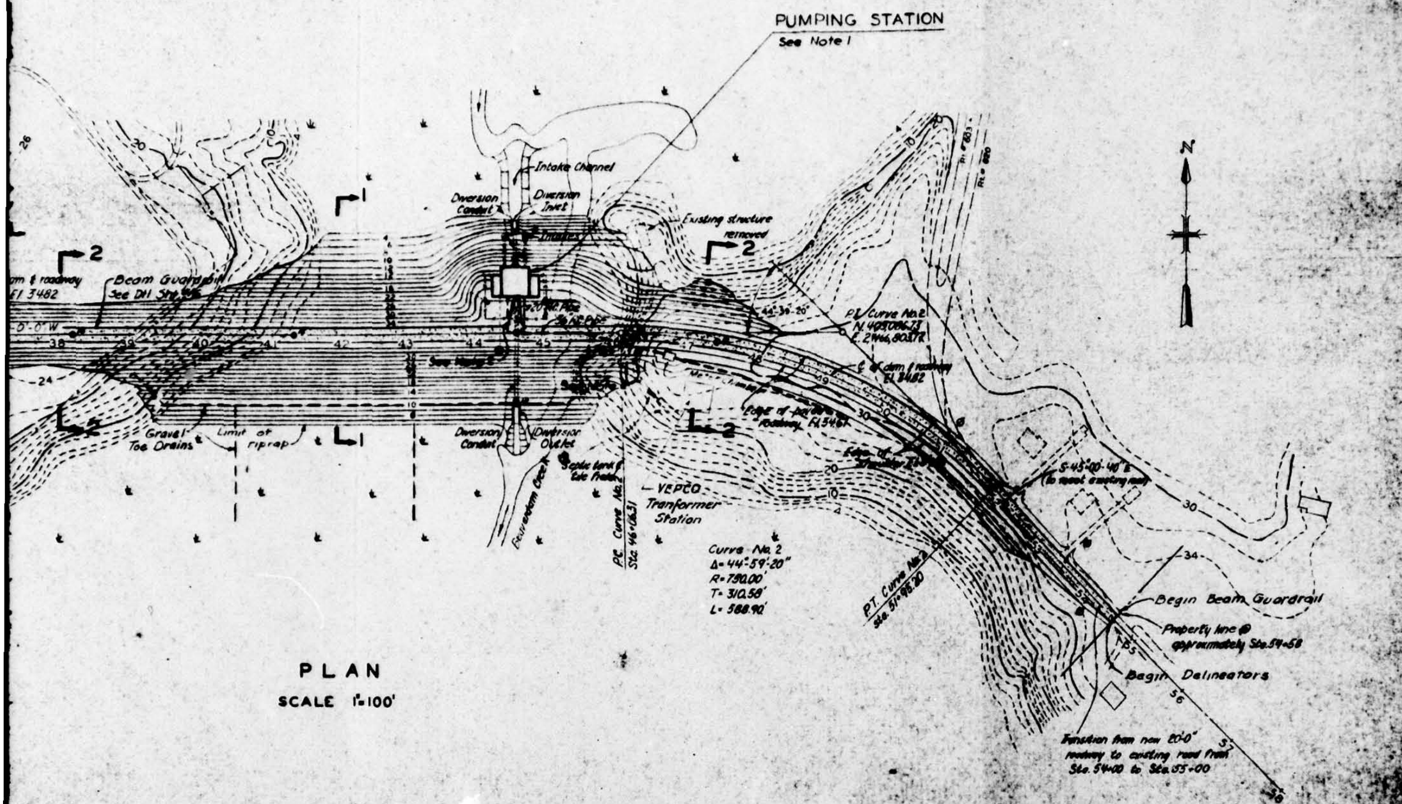
DISTANCES IN 100 FOOT STATIONS

CENTERLINE PROFILE FROM STA. 26+00 TO STA. 58+0

SCALES: HORIZ. 1"= 100', VERT. 1"= 10'

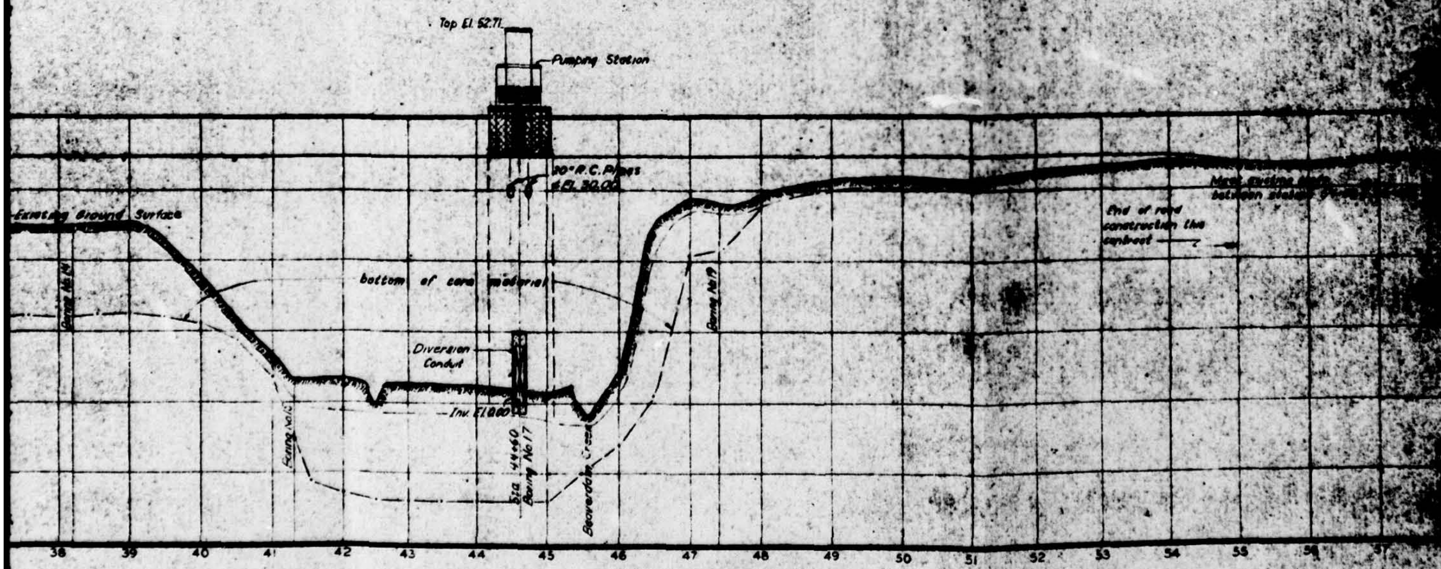
CHECKED A.R.L.

CITY OF NEWPORT NEWS, VA.
DEPARTMENT OF PUBLIC UTILITIES
DIASCUND WATER PROJECT
DIASCUND DAM



PLAN

SCALE 1"=100'



CENTERLINE PROFILE FROM STA. 26+00 TO STA. 58+00

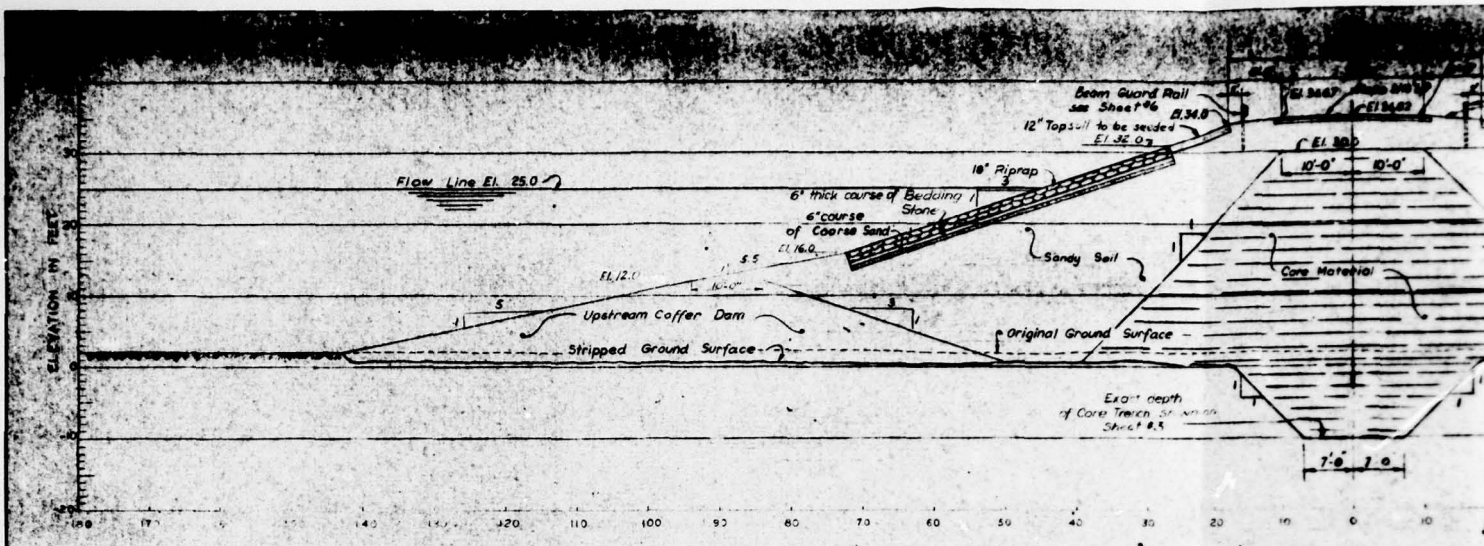
SCALES: HORIZ. 1"= 100', VERT. 1"= 10'

"AS BUILT"

CITY OF NEWPORT NEWS, VA.
DEPARTMENT OF PUBLIC UTILITIES
DIASCUND WATER PROJECT
DIASCUND DAM

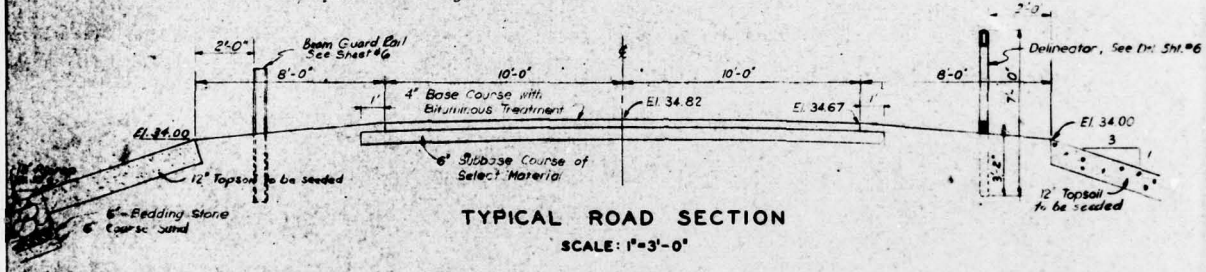
DAM
PLAN AND CENTERLINE PROFILE

CONT

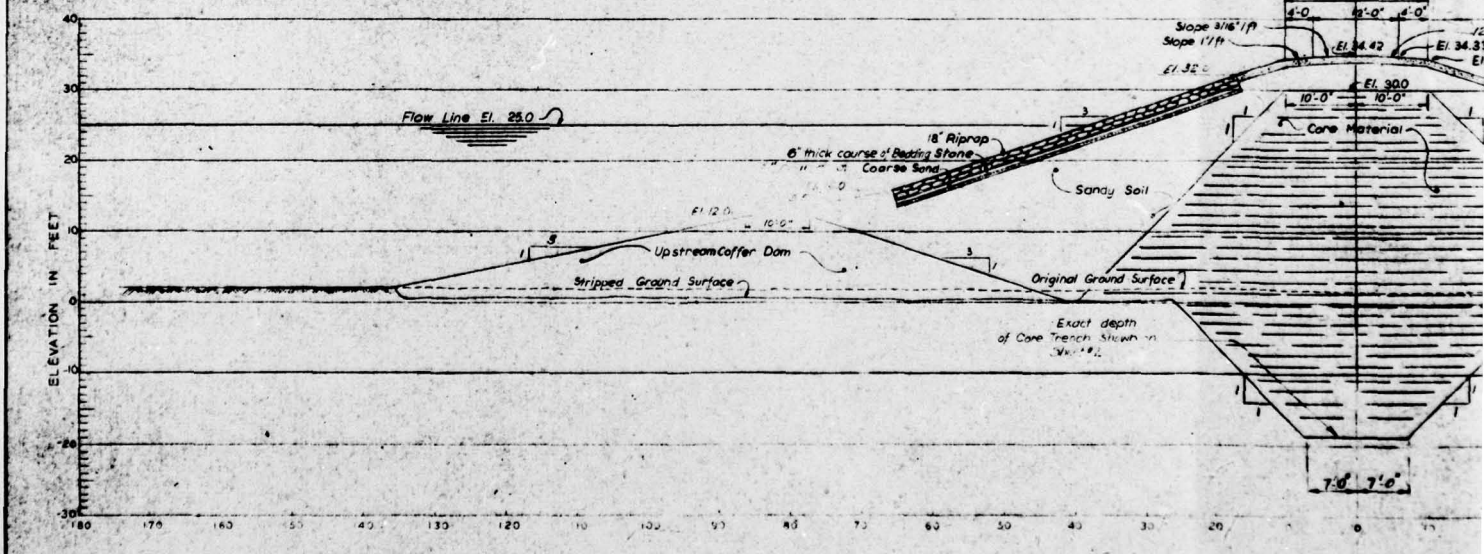


SECTION 1-1
SCALE 1"=10'-0"

NOTE: Details for Typical Road Section adapted from Va. Dept. of Highways "Road Designs and Standards"

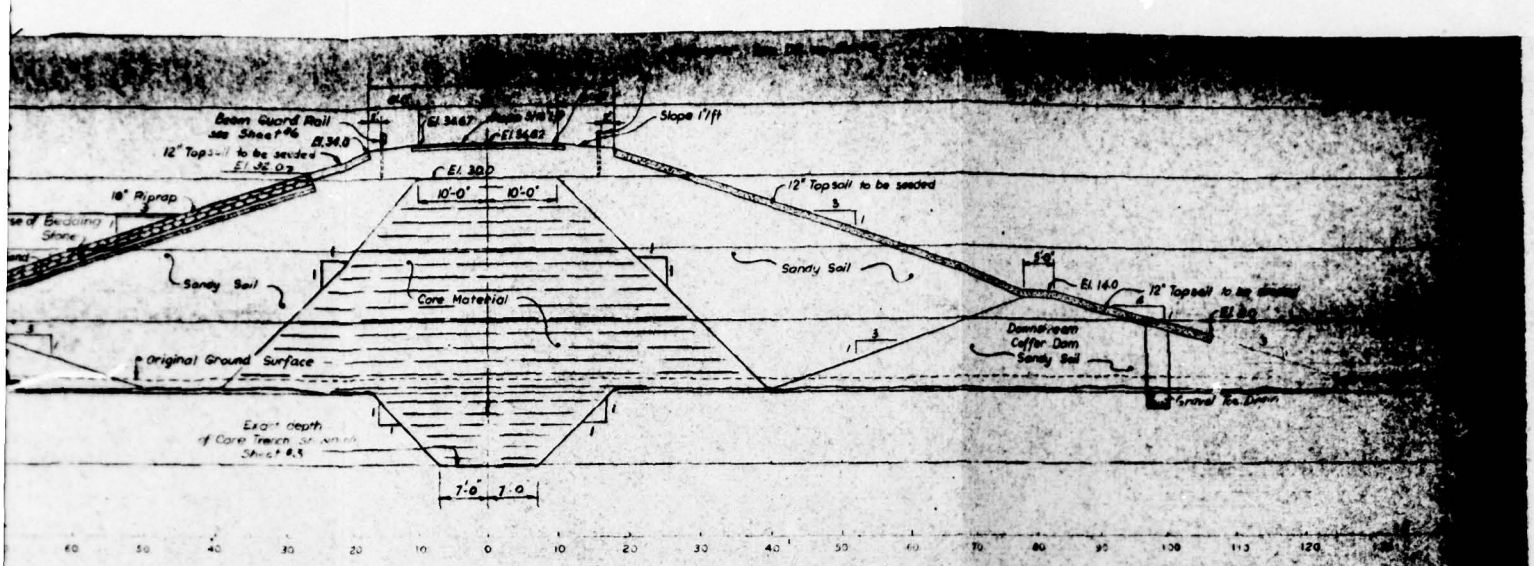


TYPICAL ROAD SECTION
SCALE: 1"=3'-0"

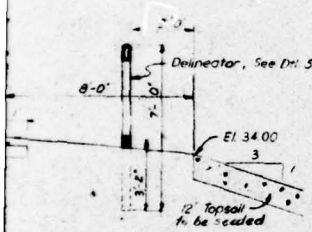


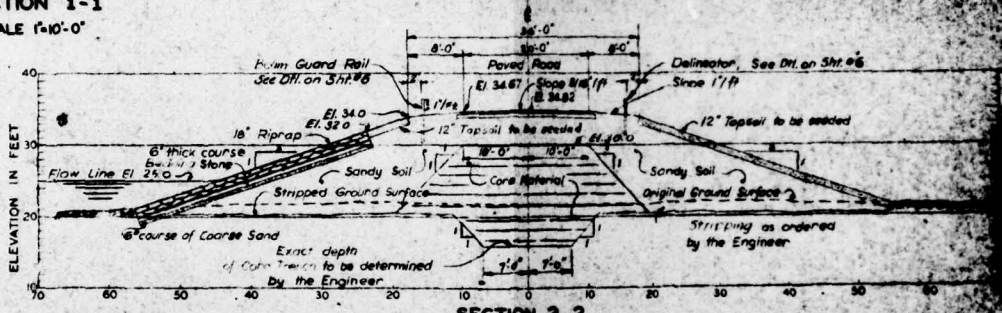
SECTION 3-3
SCALE 1"=10'-0"

MALCOLM PIRNIE ENGINEERS | DESIGNED R.E.A.M.D. DRAWN I.B. CHECKED A.E.L. | CITY OF NEWPORT NEWS, VA.

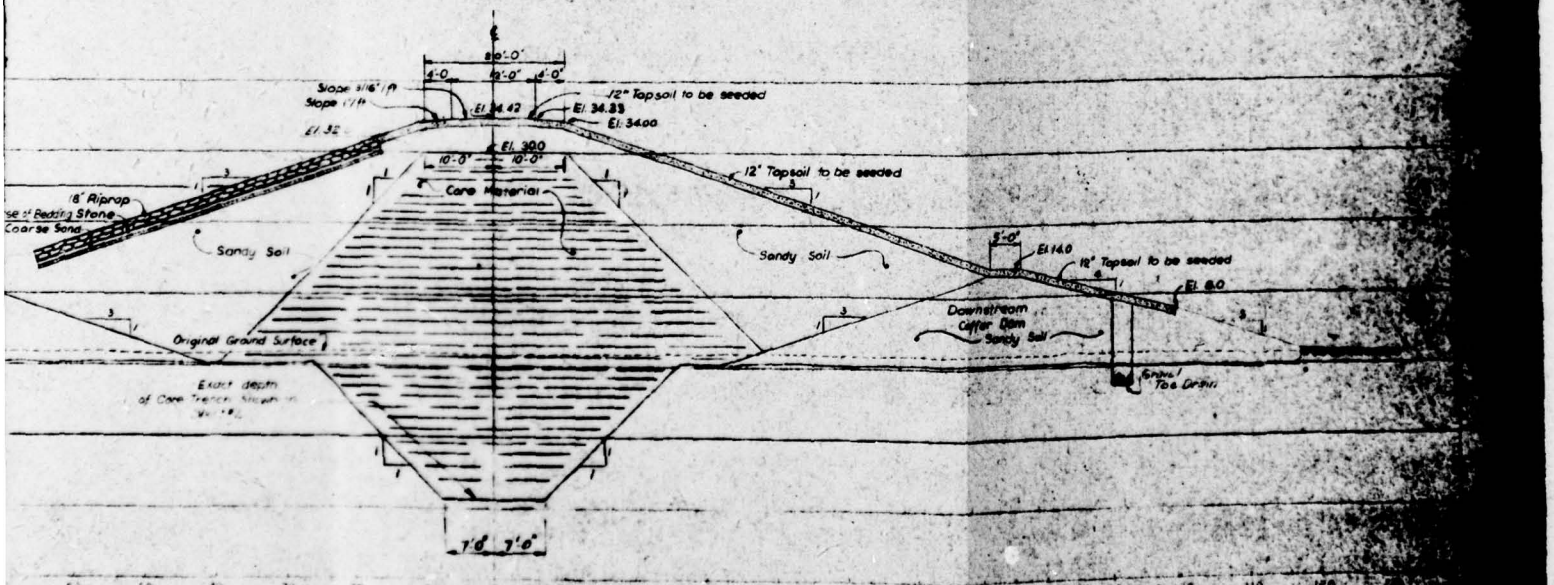


SECTION 1-1
SCALE 1"=10'-0"





SECTION 2-2
SCALE 1"=10'-0"



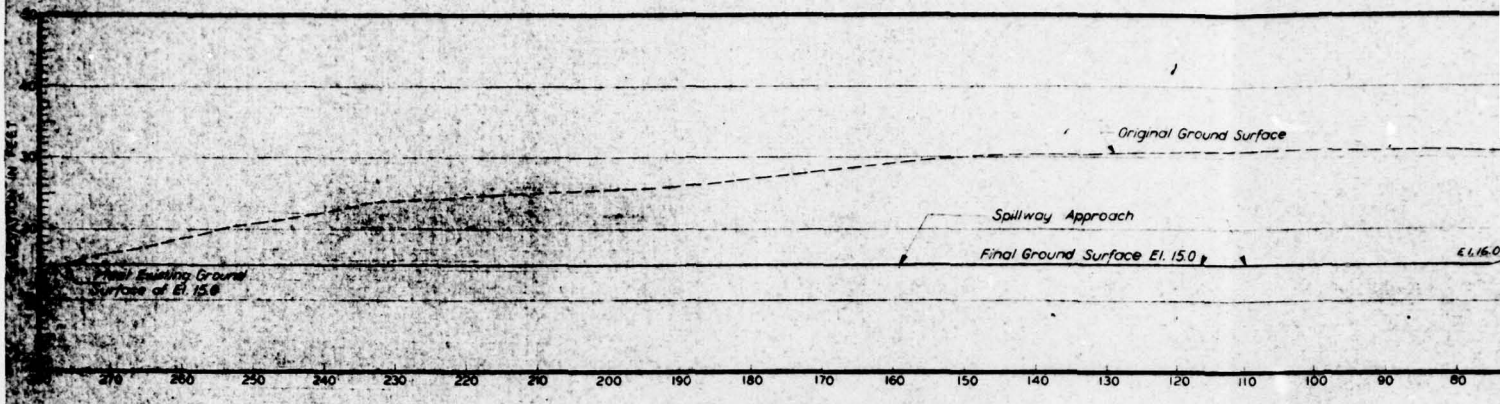
SECTION 3-3
SCALE 1"=10'-0"

Note: Delineator Spacing on straight road [illegible]
on curves 100' intervals.

"AS BUI[illegible]

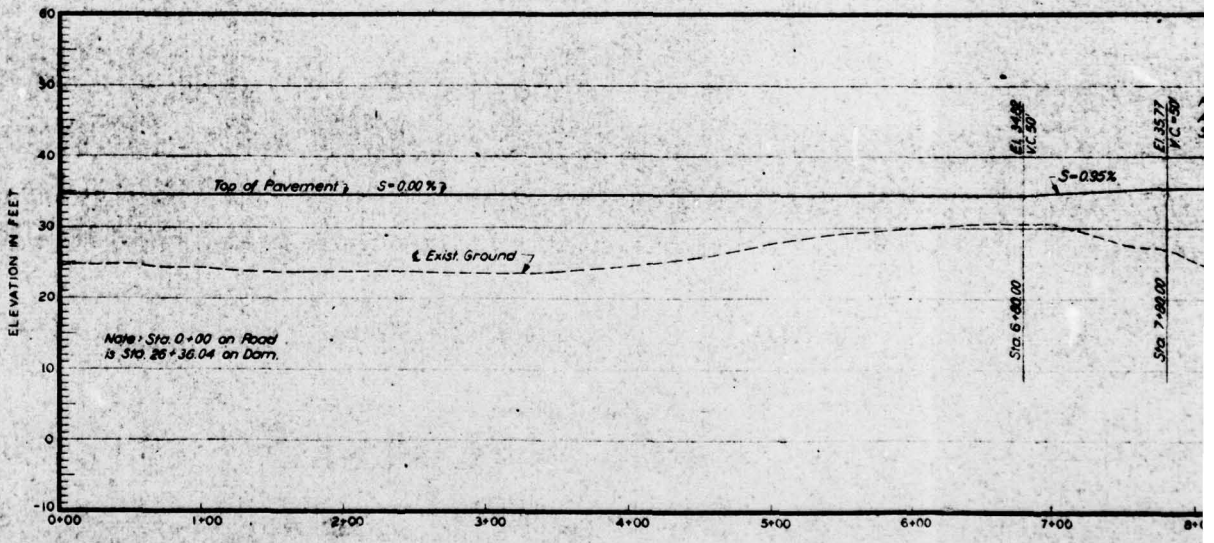
CITY OF NEWPORT NEWS, VA.
DEPARTMENT OF PUBLIC WORKS
DIAGRAM [illegible]

DAM
SECTIONS AND DETAIL
SCALE



SECTION 4-4

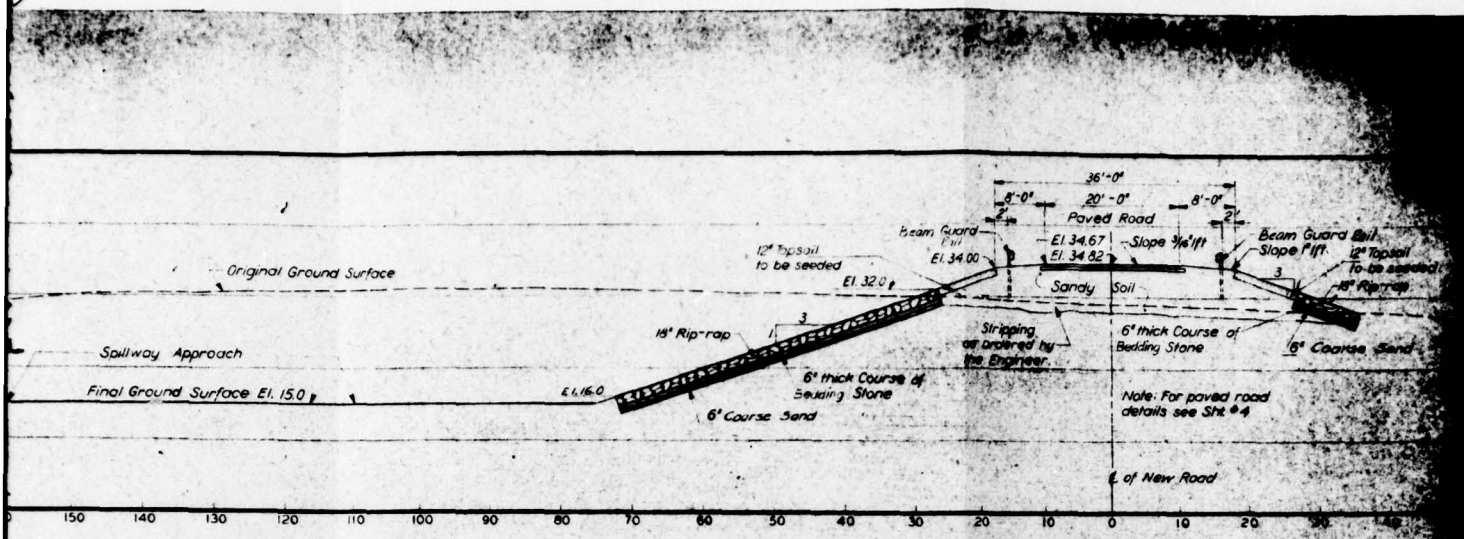
SCALE: 1" = 10'-0"



ROAD PROFILE

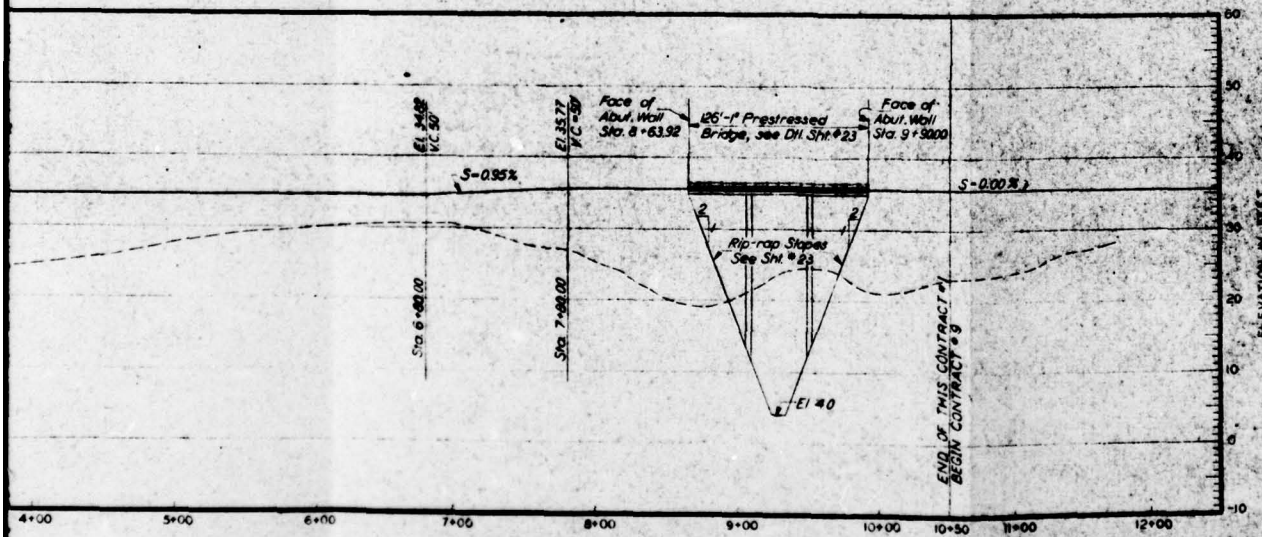
SCALES: HORIZ. 1"=50', VERT. 1"=10'-0"

BAILEY-COLES PYRNE ENGINEERS	DESIGNED H.D. DRAWN J.B. CHECKED A.P.L.		CITY OF NEWPORT NEWS, VA. DEPARTMENT OF PUBLIC UTILITIES DIASCUND WATER PROJECT DIA[illegible] DAM



SECTION 4-4

SCALE: 1" = 10'-0"



ROAD PROFILE

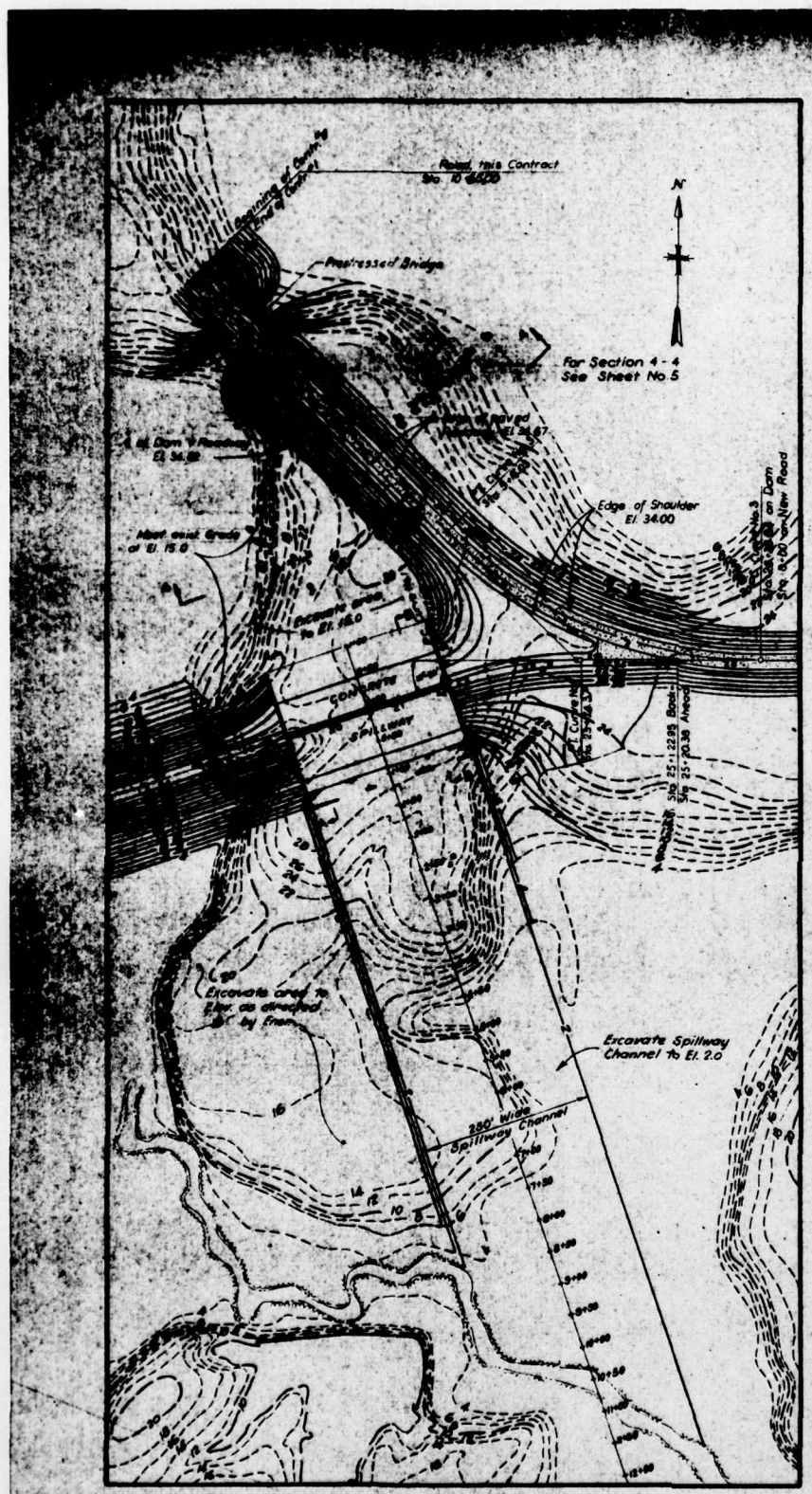
SCALES: HORIZ. 1"=50', VERT 1"=10'-0"

"AS BUILT"

CITY OF NEWPORT NEWS, VA.
DEPARTMENT OF PUBLIC UTILITIES
DIASCUND WATER PROJECT
DIASCUND DAM

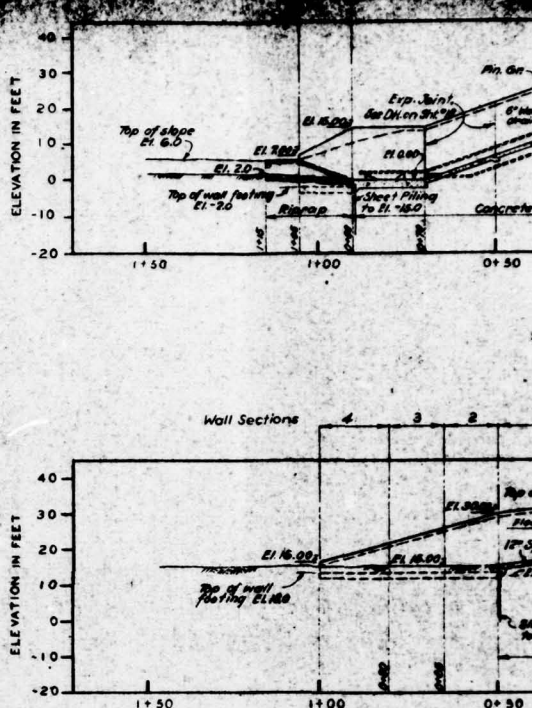
DAM
SECTION & ROAD PROFILE

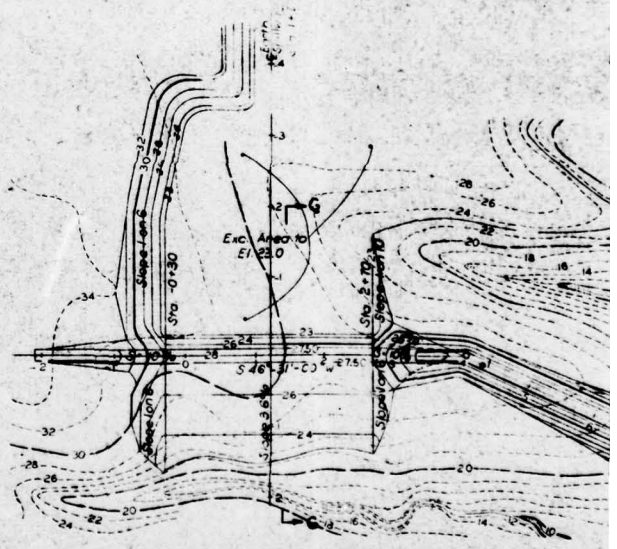
CONTRACT



PLAN OF MAIN SPILLWAY

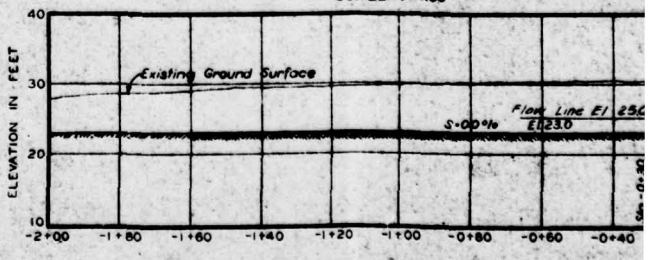
SCALE: 1"=100'





PLAN OF EMERGENCY SPILLWAY

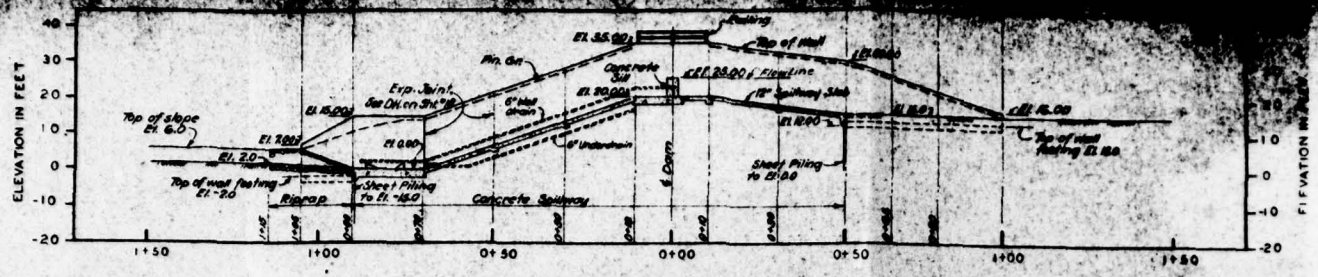
SCALE: 1"=100'



SCA

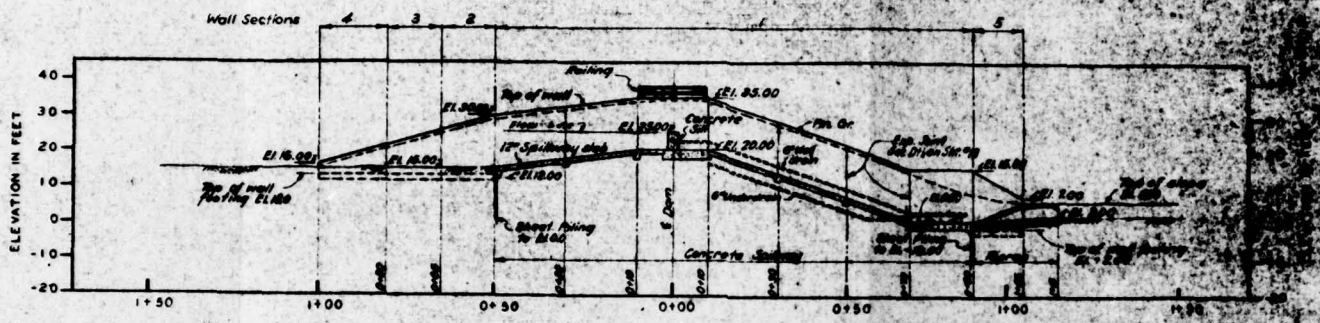
DESIGNED G.S.B. DRAWN S.R. CHECKED A.P.L.

CITY OF NEWPORT NEWS, VA.
DEPARTMENT OF PUBLIC UTILITIES



SECTION A-A

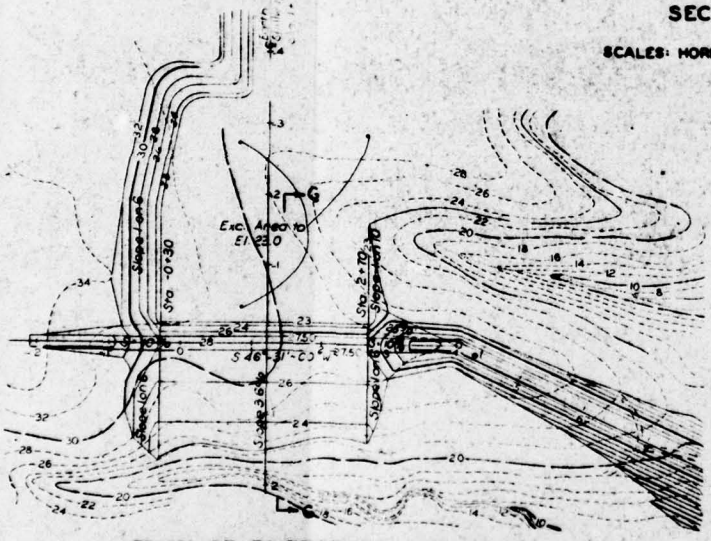
SCALES: HORIZ. 1"=20', VERT. 1"=20'



SECTION B-B

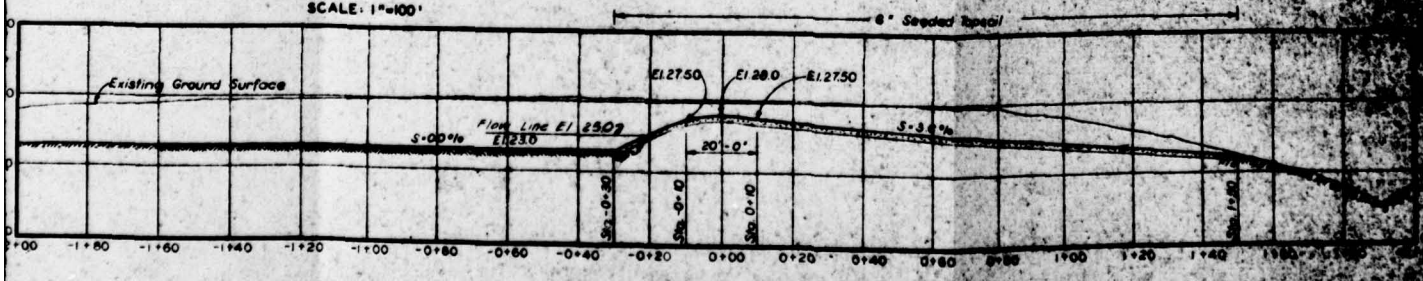
SCALES: HORIZ. 1"=20', VERT. 1"=20'

NOTE: For Details of Wall Sections Through Sec. Sh. No. See Location of Bearings



PLAN OF EMERGENCY SPILLWAY

SCALE: 1"=100'



SECTION G-G

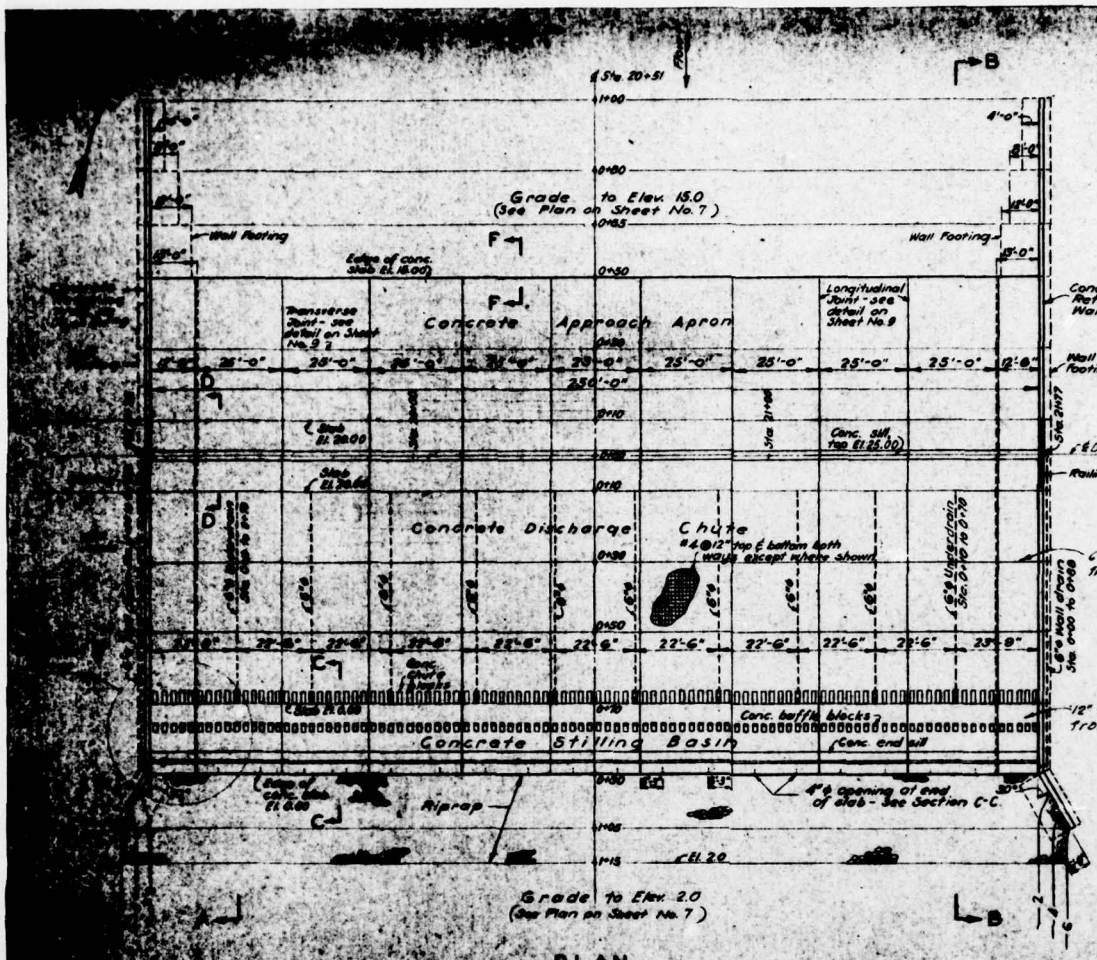
SCALES: HORIZ. 1"=20', VERT. 1"=10'

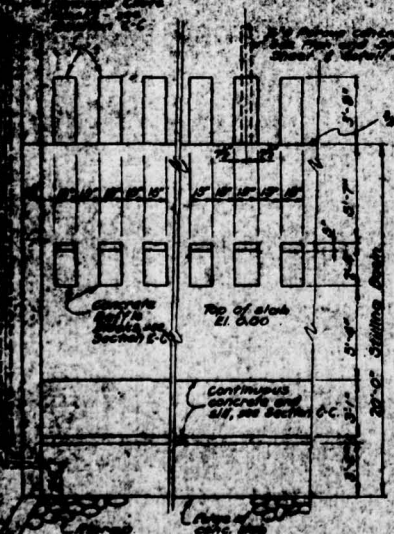
AS BUILT

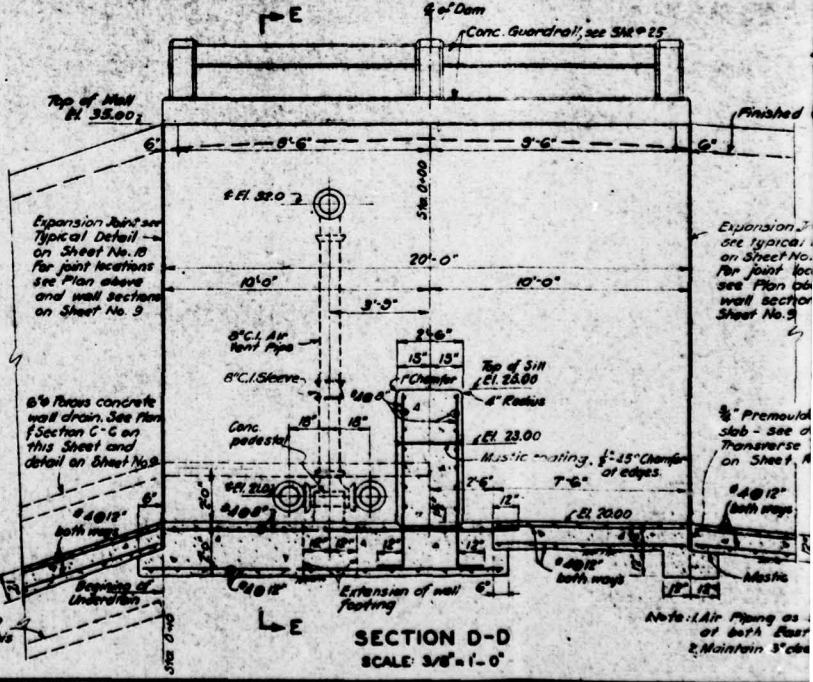
CITY OF NEWPORT NEWS, VA.
DEPARTMENT OF PUBLIC UTILITIES
[illegible] WATER PROJECT

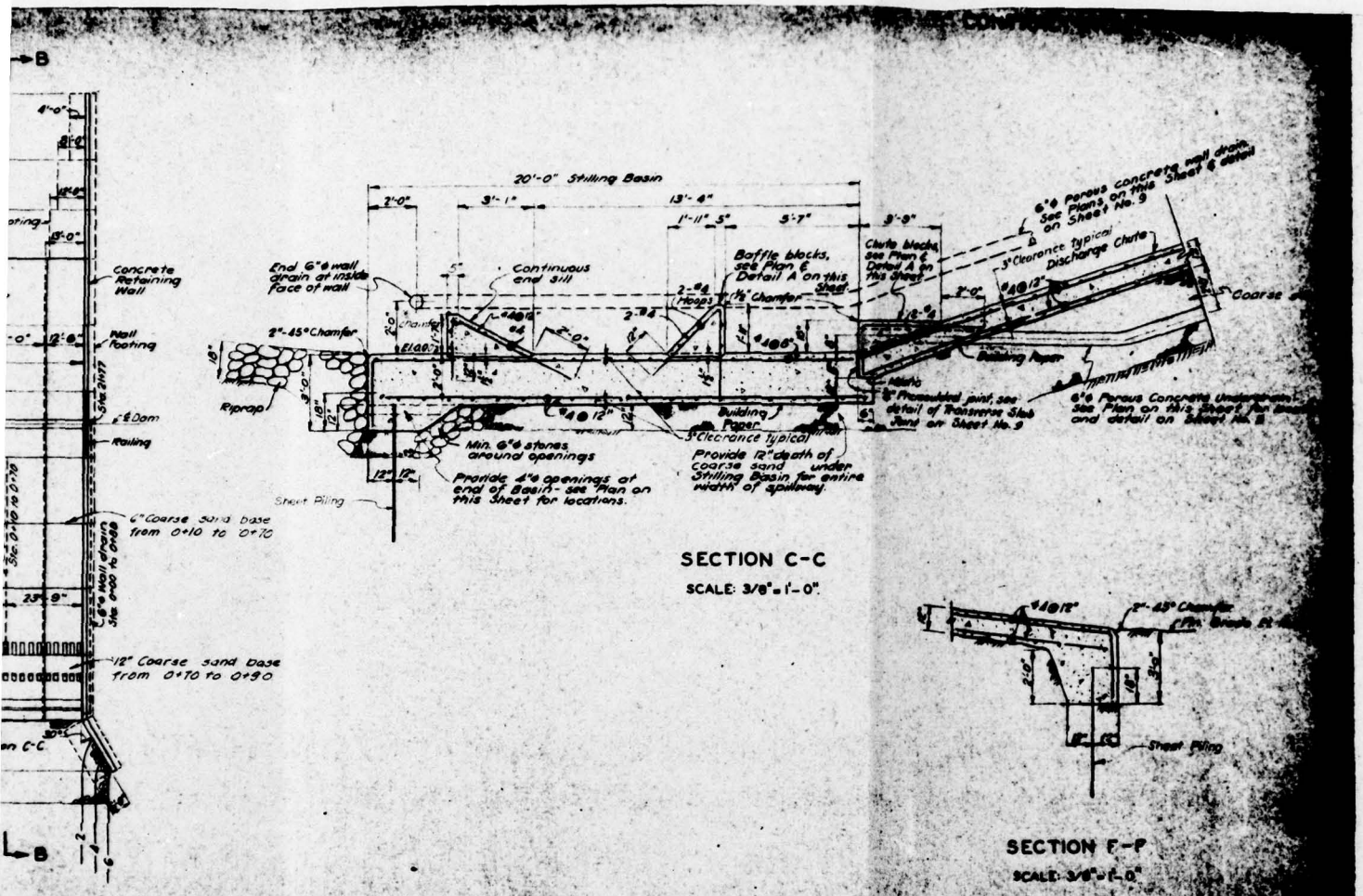
DAM - SPILLWAYS
PLANS AND SECTIONS

CONTRACT [illegible]


Grade to Elev. 15.0
(See Plan on Sheet No. 7)
Wall Footing
Concrete Approach Apron
Transverse Joint - see detail on Sheet No. 9
Longitudinal Joint - see detail on Sheet No. 9
Concrete Retaining Wall
Wall Footing
Sta. 21+00
Conc. Sill Top El. 25.00
℄ Dam
Railing
Concrete Discharge Chute
#4@12" top & bottom both ways except where shown
6" Coarse sand base from 0+10 to 0+70
12" Coarse sand base from 0+70 to 0+90
Conc. baffle blocks
Conc. end sill
Concrete Stilling Basin
4"ϕ opening at end of slab - See Section C-C.
Riprap
Grade to Elev. 2.0
(See Plan on Sheet No. 7)
PLAN
SCALE: 1"=20'
End 6"ϕ wall drain at inside face of wall
2"-45° Chamfer
Riprap
Sheet Piling
Min. 6"ϕ stone around open
Provide 4"ϕ end of Basin this Sheet


6"ϕ Porous concrete underdrain. See Plan & Section C-C on this Sheet & detail on Sheet No. 9
¾" Premoulded Exp. Joint - see Section C-C.
Top of slab El. 0.00
Concrete Baffle Blocks, see Section C-C
Continuous concrete end sill, see Section C-C
Riprap
Edge of conc. slab
DETAIL "A"
SCALE: 1/8"=1'-0"

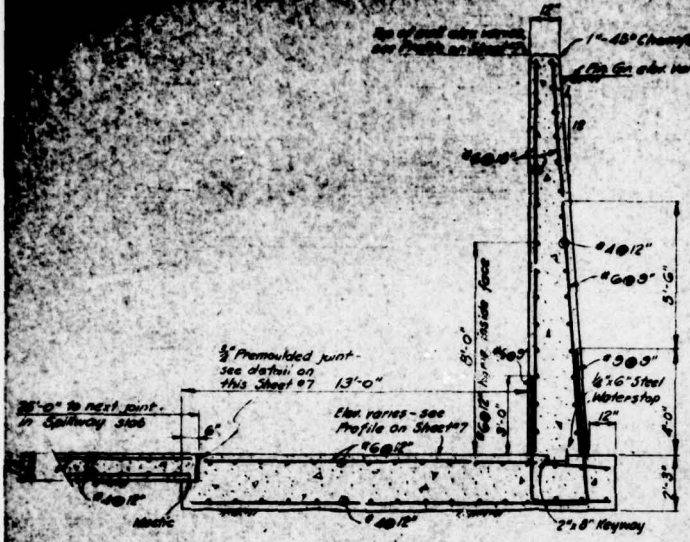

℄ Dam
Conc. Guardrail, see Sht. No. 25
Top of Wall El. 35.00
Finished
Sta. 0+00
℄ El. 32.0
Expansion Joint see Typical Detail on Sheet No. 18 For joint locations see Plan above and wall sections on Sheet No. 9
20'-0"
10'-0"
3'-9"
8"C.I. Air Vent Pipe
8"C.I. Sleeve
Top of Sill El. 20.00
℄ Chamfer
4" Radius
6"ϕ Porous concrete wall drain. See Plan & Section C-C on this Sheet and detail on Sheet No. 9
Conc. pedestal
El. 23.00
Mastic coating. ¾"-45° Chamfer at edges.
El. 21.00
El. 20.00
#4@15" both ways
#4@12" both ways
Beginning of Underdrain
Extension of wall footing
Mastic
Note: 1. Air Piping as ... of both Faces
2. Maintain 3" clear
SECTION D-D
SCALE: 3/8"=1'-0"



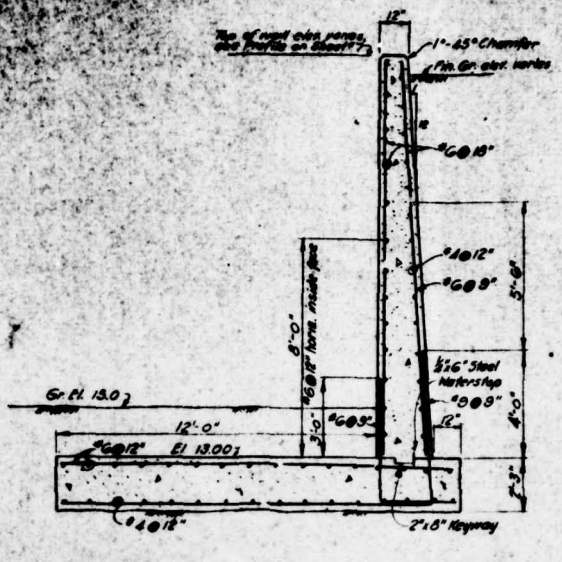
CITY OF NEWPORT NEWS, VA.
DEPARTMENT OF PUBLIC UTILITIES
DEEPGUND WATER PROJECT

DAM - MAIN SPILLWAY
PLANS, SECTIONS AND DETAILS

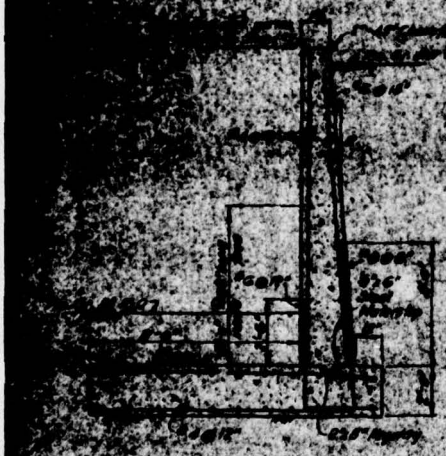
CONTRACT NO.



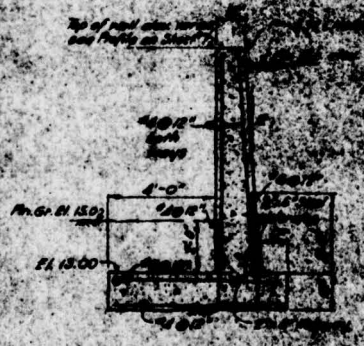
SECTION 1



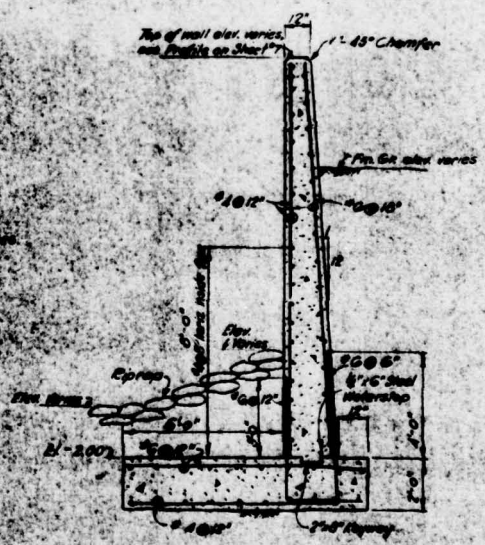
SECTION 2



SECTION 3



SECTION 4

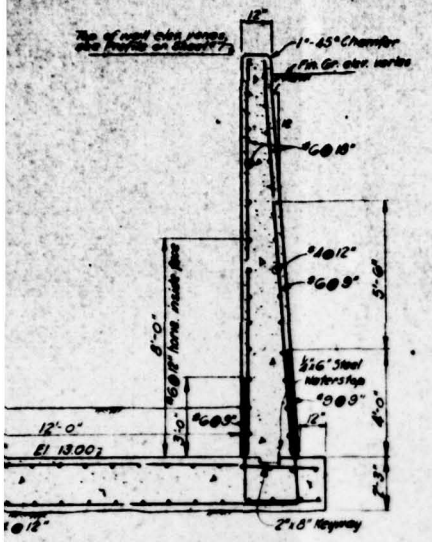


SECTION 5

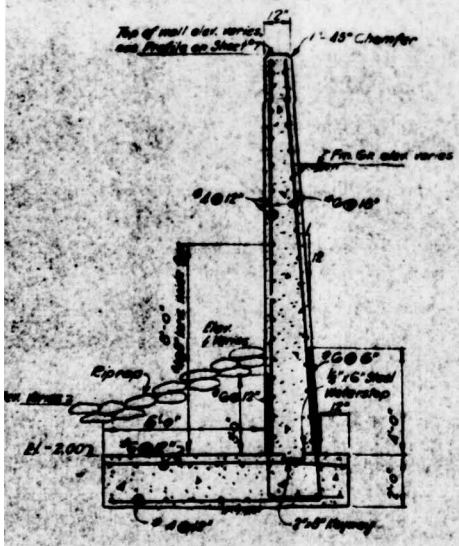
Notes:
1 - Provide 3" clearance for all reinforcing steel.
2 - Provide ½" per foot slope for horizontal tops of all walls.
3 - See Plan & Profiles on Sheet 6 & 7 for elevations, locations and other information.
4 - See Sheet No. 18 for vertical joints in walls. For joint locations see Section A-A & B-B on Sheet No. 7. Continue every other horizontal reinforcing bars through vertical joints.

SPILLWAY RETAINING WALL SECTIONS

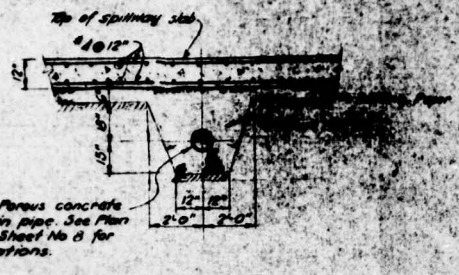
[illegible]	DESIGNED A.H. DRAWN E.H. CHECKED H.D.		CITY OF NEWPORT NEWS, VA. DEPARTMENT OF PUBLIC UTILITIES DIASCUND WATER PROJECT



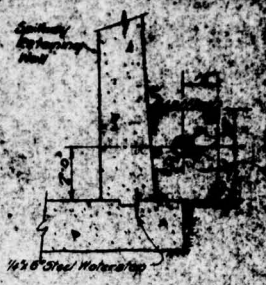
SECTION 2



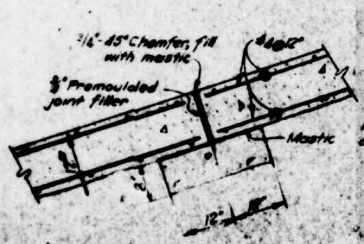
SECTION 5



DETAIL OF UNDERDRAIN

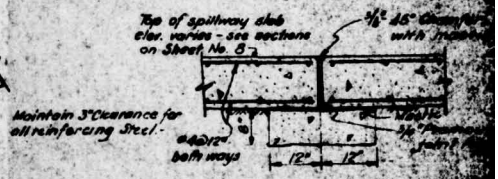


DETAIL OF WALL DRAIN



TRANSVERSE SLAB JOINT

SCALE: 3/4"=1'-0"

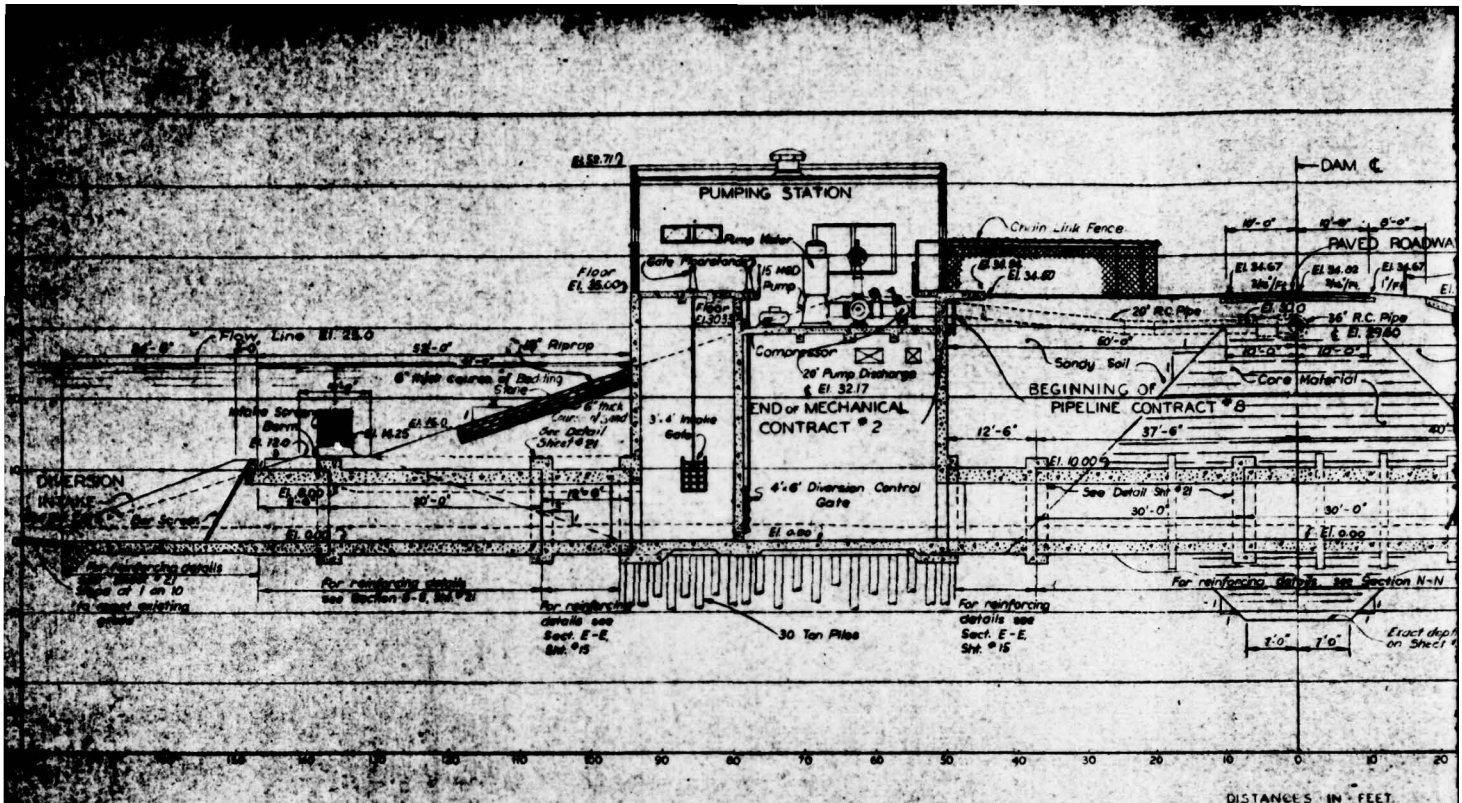


LONGITUDINAL SLAB JOINT

SCALE: 3/4"=1'-0"

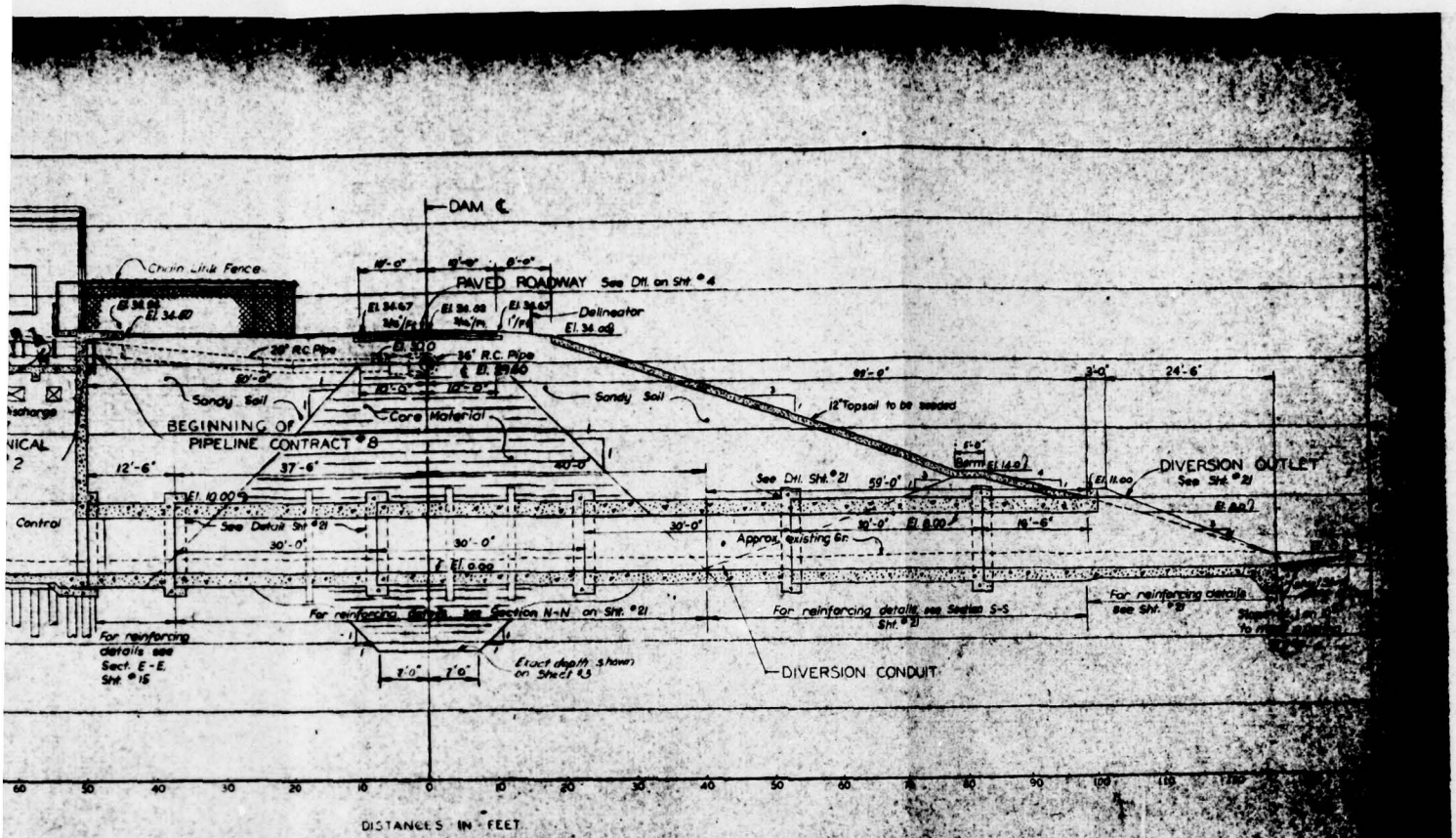
...ol.
...of walls.
...locations
...nt locations
...every other
...l joints
TIONS

	CITY OF NEWPORT NEWS, VA. DEPARTMENT OF PUBLIC UTILITIES DIASCUND WATER PROJECT	DAM - MAIN SPILLWAY PART	



GENERAL SECTION THROUGH PUMPING
STA. 44+60
SCALE 1"=10'-0"

[illegible] ENGINEERS [illegible] NEWPORT NEWS, VA.	DESIGNED R.S.A.B. DRAWN I.S. CHECKED A.P.L.		CITY OF NEWPORT NEWS, VA. DEPARTMENT OF PUBLIC UTILITIES DISMUKES WATER PROJECT



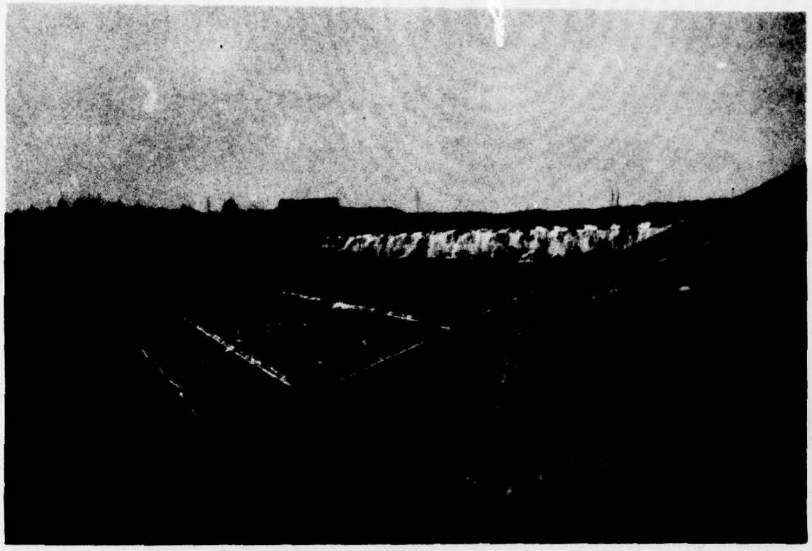
GENERAL SECTION THROUGH PUMPING STATION
STA. 44+60
SCALE: 1"=10'-0"

"AS BUI

CITY OF NEWPORT NEWS, VA. DEPARTMENT OF PUBLIC UTILITIES DASCUNDLE WATER PROJECT	PUMPING STATION TYPICAL SECTION	CONTRACT NO. SHEET

APPENDIX II

PHOTOGRAPHS

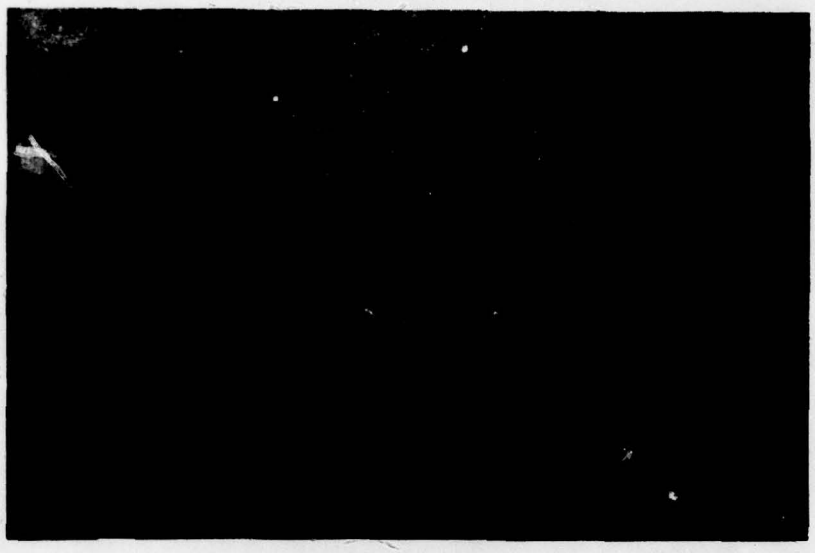


UNGATED SPILLWAY AND STILLING BASIN

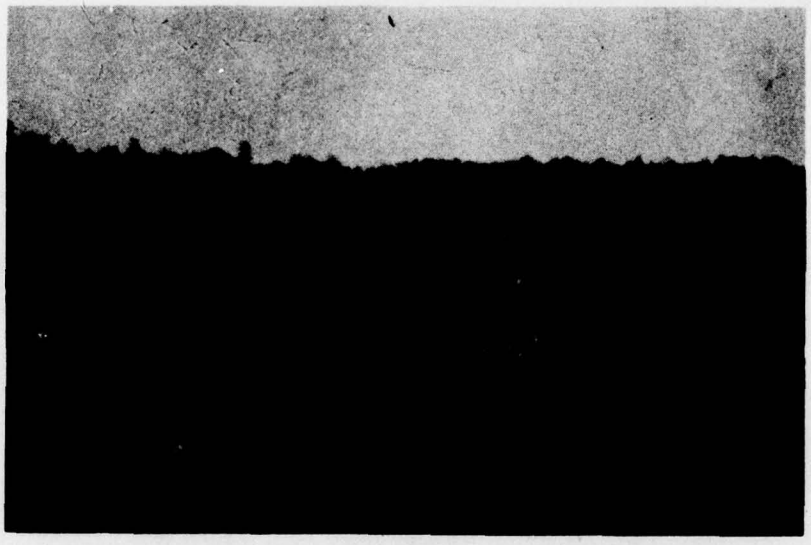
EMERGENCY SPILLWAY

UPSTREAM SLOPE OF EMBANKMENT WITH RIPRAP

DOWNSTREAM SLOPE OF LEFT EMBANKMENT



ROAD AND PUMP STATION ON LEFT EMBANKMENT



DOWNSTREAM CHANNEL AND FLOOD PLAIN OF UNGATED SPILLWAY

OUTLET CHANNEL BELOW PUMP STATION

EROSION OF DOWNSTREAM RIGHT EMBANKMENT LEFT OF EMERGENCY SPILLWAY

APPENDIX III

FIELD OBSERVATIONS

APPENDIX III

PHASE I - FIELD OBSERVATIONS

Name of Dam: Diascund Reservoir Dam (VA 12703)
County: New Kent State: Virginia
Coordinates: Lat. 3725.8 Long. 7654.0
Date of Inspection: 14 December 1978
Weather: Fair
Temperature: 45° F
Pool Elevation at Time of Inspection: 26.0+ m.s.l.
Tailwater at Time of Inspection: 3.0± m.s.l.

Norfolk District Inspection Personnel:

Jim Robinson, Hydrology
Jeff Irving, Coordinator
Dave Pezza, Soils

Other attendees:

Charlie Crowder, Utility Engineer
Ed Lett, Reservoir and Watershed Supervisor
Danny Pitts, Pump Station Operator

1. GENERAL: At the time of the inspection, the level of the water in the reservoir was 26.0±.

2. EMBANKMENT: Vehicle access to the right embankment was non-existent due to wet conditions. Only one person was able to walk 1/2 mile through mud and water to inspect the embankment. The face of this portion of the embankment and emergency spillway were covered with tall grass and coniferous trees up to 12-inches in diameter. The area immediately downstream of the emergency spillway was heavily vegetated with the same type of trees.

The left embankment is landscaped and has several trees along the road that transverses the crest of the dam. The trees were planted by the city.

2.1 Surface Cracks: The slopes, crest, and abutment contacts were inspected and no cracks were found. However, the face of the right embankment was covered with thick vegetation inhibiting a thorough investigation.

2.2 Unusual Movement: No unusual movement of the dam was noted. The vegetation inhibited observations.

2.3 Sloughing or Erosion: No sloughing was noted. A portion of the downstream right embankment abuting the left of the emergency spillway has eroded (see photos) and should be repaired.

2.4 Alignment: The vertical and horizontal alignment of the dam did not deviate from the as-built drawings.

2.5 Riprap: No riprap failures were found on the upstream face of the dam. Small trees less than 2-inches in diameter were growing in the upstream slope protection on the right embankment and should be removed.

2.6 Junctions: No problems were observed at the junctions of the embankment and abutments, and spillway and dam.

2.7 Seepage: No seepage was observed.

2.8 Foundation Drains: Drains were not observable, but the downstream area was unusually wet. According to Danny Pitts, Pump Station Operation, the wetness is due to discharge from toe drains.

3. Water Works:

3.1 Intake Structure: The intake structure at the pump station is submerged below the normal pool elevation.

3.2 Outlet Works: Two 20-inch reinforced concrete pipes at elevation 31.0 furnish raw water through the dam to a 42-inch raw water pipe that supplements Lee Hall Reservoir and Harwood's Mill Reservoir when needed. The pipes are buried underground and could not be observed.

4. Spillways:

4.1 Principal: A stilling basin extends from the toe of the dam to approximately 20 feet downstream. The discharge channel is in good condition except for some damage to two concrete panels on the right portion of the channel due to settlement. Baffle blocks and chute blocks are placed across the basin to dissipate energy and protect the immediate downstream area. The channel is about 5 feet deep and 50 feet wide with immediate flood plain flat and wide. The tailwater was approximately 3.0 feet m.s.l.

4.2 Emergency: An earthfill side channel located on the extreme right portion of the embankment has never been used. Trees have grown on the crest and in the downstream area of the discharge channel.

5. Reservoir: The area surrounding the upstream reservoir consists of mild slopes with some wooded terrain and some open fields. No observations of sediment could be made. The water was clear with little debris. Recently cut trees from upstream face of dam are floating in reservoir but pose no problems because of their small size.

6. Downstream Channel: Two channels, one below the principal spillway and one below the drawdown outlet were observed. The channel below the principal spillway was flowing and the surrounding terrain was flat. The channel below the drawdown outlet was ponded with little or no apparent seepage discharge from two 4-foot by 6-foot sluice gates below the pump station. The reason for the pond or the amount of flow could not be determined because of swamp conditions downstream.

7. Instrumentation: A gage in the pump station provides the reservoir elevation.

APPENDIX IV

TEST BORINGS

FROEHLING & ROBERTSON, INC.

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SINCE F&R 1881

Richmond, Virginia
April 4, 1960

BRANCH LABORATORIES
NORFOLK, CHARLOTTE, RALEIGH
WASHINGTON, BALTIMORE

MAIN OFFICE & LABORATORIES
814 WEST CARY STREET
RICHMOND, VIRGINIA

No. R-1431-1

Report of: Soil Borings

Made for: Malcolm Pirnie Engineers
25 West 43rd. St.
New York 36, N.Y.

Project: Proposed Diascund Creek Dam

Location: 1 Mile North of Route 60 at Diascund Creek

Date Made: March 1960

Upon authorization from Malcolm Pirnie Engineers, test borings were made at site of proposed Diascund Creek Dam.

The test borings were made by means of wash and auger boring and the penetration resistance of the soil was determined by means of the Standard Penetration test at each change in strata or at five foot intervals, whichever occurs first. In the Standard Penetration test a 140 lb. hammer dropping 30" is used to drive a 2" O.D. 1.375"I.D. Split Spoon Sampler 1 foot into the soil. The results of the tests are shown in the following boring logs.

Where double numbers are used in reporting the auger probes, two borings were made to obtain sufficient samples for laboratory testing.

Respectfully,

FROEHLING & ROBERTSON, INC.

W. H. Vogelsang

W. H. Vogelsang, Director
Foundation Investigation

LHV/dw

Form 30-24

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WASHINGTON, BALTIMORE

MAIN OFFICE & LABORATORIES
814 WEST CARY STREET
RICHMOND, VIRGINIA

Report No. R-1430-3

TEST BORING LOG

Made for: Malcolm Pirnie Engineers

Project: Proposed Dinwoody Creek Dam

Location: 1 Mile North of Route 60 at Dinwoody Creek

All borings are plotted to scale of 1 in. = 6 ft. using _____ as a fixed datum

No. 1

Elevation 27.4

Sta. 4+30 C

Depth	Soil Status	Blows*
0.0	Topsoil	
0.5	Brown Clay	9
9.0	Brown & Gray Clay Fairly Plastic	9
11.5	Brown Fine Sand Wet	
13.5	Brown & Gray Clay, Medium Plastic, Moist	5
17.5	Very Fine Brown Sand, Very Wet	3
20.0	Semi-Consolidated Sand, Some Clay & Wood, Wet	14
25.0	Boring Terminated Water Table - 7.9	

No. 2

Elevation 22.3

Sta. 16+70 L

Depth	Soil Status	Blows*
0.0	Topsoil	
1.0	Brown Fine Grain Clayey Sand, Moist	12
7.0	Multicolored Fine Sand with Very Little Clay, getting a little wet at 11.0'	12
16.5	Gray Silty Clay, Moist	7 10
25.0	Boring Terminated Water Table - 17.7	11

No. 2-A

Elevation 28.9

Sta. 17+00

Depth	Soil Status	Blows*
0.0	Topsoil	
0.5	Brown Clay	
3.0	Medium Compact Fine Brown Sand Trace of Clay, Moist	19
		17
12.5	Fine Grain Multicolor Clayey Sand, Wet	7
16.5	Fine Grain Gray Silty Sand, Moist	11
23.0	Fine Grain Brown Silty Sand, Wet	7
25.0	Boring Terminated Water Table - 12.0	

*No. of blows, 140 lb. hammer, 30 in. fall, required to drive 2 in. O.D., 1.375 in. I.D. Sampler one foot.

Form 30-S4

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MAIN OFFICE & LABORATORIES
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RICHMOND, VIRGINIA

Report No. R-1430-3

TEST BORING LOG

Made for: Malcolm Pirnie Engineers

Project: Proposed Dissecund Creek Dam

Location: 2 Mile North of Route 70 at Dissecund Creek

All borings are plotted to scale of 1 in. = 6 ft. using _____ as a fixed datum

No. 3

Elevation 20.3

Sta. 9+24 ±

Depth	Soil Status	Blows
0.0		
1.0	Topsoil	
	Brown Sand with Very Little Clay	8
6.0		
		12
	Brown Very Fine Silty Sand. Moist	
		8
19.0		
		7
	Gray Very Fine Silty Sand. Moist	
29.0		10
	Boring Terminated Water Table - 9.5	

No. 4

Elevation 30.2

Sta. 20+32 ± ft. 200'

Depth	Soil Status	Blows
0.0		
1.0	Topsoil	
	Brown Silty Clay	
2.5		
		16
	Brown & Gray Clayey Sand	
		21
		6
17.0		
	Gray Clayey Silty Sand	7
		11
25.0		13
	Boring Terminated Water Table - 11.0	

No. 5

Elevation 34.8

Sta. 21+6 ± ft. 250'

Depth	Soil Status	Blows
0.0		
0.5	Topsoil	
	Fine Brown Sand with little Clay getting wet at 8.0'	17
		20
10.0		
	Brown Clayey Sand. Wet	
		13
18.5		
	Gray Silty Sand. Moist	10
25.0		10
	Boring Terminated Water Table - 11.0	

Note: All blows 140 lb. hammer 30 in. Fall, required to drive 2 in. O.D., 1.375 in. I.D. Sampler one foot.

Form SO-34

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WASHINGTON, BALTIMORE

MAIN OFFICE & LABORATORIES
814 WEST CARY STREET
RICHMOND, VIRGINIA

Report No. [illegible]-1430-3

TEST BORING LOG

Made for: Malcolm Pirnie Engineers

Project: Improved Pleasant Creek [illegible]

Location: 1 mile north of route 60 at Pleasant Creek

All borings are plotted to scale of 1 in. = [illegible] ft. using [illegible] as a fixed datum

No. 6
Elevation 5.5
Sta. 12+76 [illegible]

Depth	Soil Status	Blows*
0.0	[illegible]	
0.5	[illegible]	
	Yellowish Sandy Clay, Highly Plastic	6
		9
9.0		10
	Blue grey Silty and, Very Fine Grain	
		9
		11
26.0		12
	Boring Terminated Water Table - 2.5	

No. 7
Elevation 2.1
Sta. 14+25 [illegible]

Depth	Soil Status	Blows*
0.0		
	Swamp Muck	
		4
7.5		
	Brown and Wood	
10.5		4
	White Fine Grain Sand, Wet	
		11
19.0		
	Blue Silty Sand, Medium Harnet	10
26.0		11
	Boring Terminated Water Table - 0.0	

No. 7-A
Elevation 2.7
Sta. 14+53 [illegible] 7.5'

Depth	Soil Status	Blows*
0.0	[illegible]	
	[illegible]	4
3.0	Light Blue Sandy Clay, Med. Plastic	
		3
	Light Blue Sand, Fine Grain	
		7
		11
		20
26.0		13
	Boring Terminated Water Table - 1.0	

*No. of blows, 140 lb. hammer, 30 in. fall, required to drive 2 in. O.D. [illegible] in. I.D. [illegible]

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MAIN OFFICE & LABORATORIES
814 WEST CARY STREET
RICHMOND, VIRGINIA

Report No. R-1430-3

TEST BORING LOG

Made for: Raleigh Firnie Engineers

Project: Proposed Pisgcund Creek Dam

Location: 1 Mile North of Route 60 at Pisgcund Creek

All borings are plotted to scale of 1 in. = 6 ft. using _____ as a fixed datum

No. 8

Elevation 2.2
Sta. 17+00 C

Depth	Soil Status	Blows
0.0		
1.0	Topsoil	
	Light Blue Silty Sandy Clay Medium Plastic	6
8.0		
	Blue Silty Clayey Sand. Sand Fine Grain, Little Plastic	12
16.0		14
	Blue Green Clayey Sand	
		20
26.0		1"
	Boring Terminated Water Table 0.9	

No. 9

Elevation 22.8
Sta. 17+00 C

Depth	Soil Status	Blows
0.0		
0.5	Topsoil	
	Brown Sandy Silty	
2.5	Brown Fine Grain Sand, getting wet at 4.0'	13
6.5		
7.5	Note (1)	
	Multicolored Clay	5
12.0		
	Dark Brown Silty Clay, Some Fine Sand. Some Wood	9
17.5		
	Grey Medium Sand with Trace Small Gravels & Trace of Wood Wet.	19
25.0		20
	Boring Terminated Water Table 9.2	
	Note (1) Brown Fine Grain Clayey Sand, Wet	

No. 10

Elevation 23.5
Sta. 17+40 Rd. C

Depth	Soil Status	Blows
0.0		
1.0	Topsoil	
2.0	Brown Sandy Clay	
	Grayish Brown Clayey Sand, Very Fine Grain	13
		6
12.0		
	Gray Clayey Sand, Fine Grain	3
		19
22.0		
	Blue Grey Clayey Sand, Fine Grain	20
	Boring Terminated No Water Table. Boring Caved in 14.0'	

Form SO-24

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RICHMOND, VIRGINIA

Report No. F-1437-3

TEST BORING LOG

Made for: Raleigh Permit Engineers

Project: Proposed Rocky Creek Dam

Location: 1 mile North of Route 50 at Rocky Creek

All borings are plotted to scale of 1 in. = 6 ft. using ____ as a fixed datum

No. 11

Elevation 19.1

Depth	Soil Status	Blows*
0.0	Topsoil	
0.5	Multicolor Silty Sand, Trace of Clay	15
6.1	Note (1)	
7.5	Tan Silty Clay	6
12.0	Gray Micaceous Silty Clay	7
19.0	Brown Micaceous Silty Clay & Wood Fragments (Peat)	7
25.0		9 12
	Boring Terminated Water Table 12.5	
	Note (1) Tan Silty Sand, Fine Grained	

No. 11-A

Elevation 19.1

Depth	Soil Status	Blows*
0.0	Topsoil	
0.5	Multicolor Silty Sand, Trace of Clay	
6.0	Note (1)	
7.5	Tan Silty Clay	
12.0	Gray Micaceous Silty Clay	
19.0	Brown Micaceous Silty Clay & Wood Fragments (Peat)	
27.5	Blue Gray Silty Sand, Fine Grain	7
	Boring Terminated Water Table 12.5	
	Note (1) Tan Silty Sand, Fine Grain	
	Total Auger Probes to 25.0'	

No. 12

Elevation 7.5

Depth	Soil Status	Blows*
0.0	Topsoil	
0.5	Tan Silty Sand, Sand Fine Grain, Poorly Graded, Some Interbedded Streaks of Micaceous Matter	5 12
13.0	Gray Sandy Clay, Clay Medium Micaceous Clay Decreasing with Depth until a Strata becomes a Clayey Sand.	17 8
25.0		9
	Boring Terminated Water Table 5.5	

*Blows required to drive 2 in. O.D., 1.375 in. I.D. Sampler one foot.

Form SO-24

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RICHMOND, VIRGINIA

Report No. R-143-3

TEST BORING LOG

Made for: Malcolm Pirnie Engineers

Project: Proposed Diascund Creek Dam

Location: 2 Mile North of Route 60 at Diascund Creek

All borings are plotted to scale of 1 in. = 6 ft. using _____ as a fixed datum

No. 13

Elevation 7.2
Sta. 35+50 ℄

Depth	Soil Status	Blows*
0.0	Topsoil	
0.5	Brown Sand. Moist	
4.0		5
	Brown Clayey Sand turning Grey at 5.0'	5
12.5	Note (1)	
13.4		22
	Grey Sand with Some Silt, Fine Grain	19
22.9	Grey Sandy Silt with	
25.9	Some Clay	27
	Boring Terminated Water Table 4.5	
	Note (1) Dark Brown Sandy Clay	

No. 14

Elevation 8.9
Sta. 37+50 ℄

Depth	Soil Status	Blows*
0.0	Topsoil	
	Fine Grain Brown Sand. Moist	6
5.0	Medium Coarse Brown Sand. Wet	3
12.0		12
	Blue Silty Sand. Moist	12
25.0		14
	Boring Terminated No Water Table Benched	

No. 15

Elevation 2.5
Sta. 41+50 ℄

Depth	Soil Status	Blows*
0.0	Topsoil	
	Fine Grain Multicolored Sand	15
9.0	Grey Sandy Silt. Wet	2
13.0	Grey Silty Sand. Fine Grain	9
		12
26.0		12
	Boring Terminated Water Table 9.0	

Form 10-54

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814 WEST CARY STREET
RICHMOND, VIRGINIA

Report No. R-1439-3

TEST BORING LOG

Made for: Malcolm Pirnie Engineers

Project: Proposed Dissemond Creek Dam

Location: 1 Mile North of Route 60 at Dissemond Creek

All borings are plotted to scale of 1 in. = 6 ft. using _____ as a fixed datum

No. 16

Elevation 2.6
Sta. 44+60 Lt. 100'

Depth	Soil Status	Blows*
0.0		
	Fine Grain Gray Sand. Wet	
		10
10.0		
	Medium Coarse Sand & Gravel. Wet	2
13.0		
	Gray Sandy Silt, Medium Compact. Moist	8
		15
26.0		12
	Boring Terminated Water Table 0.0	

No. 17

Elevation 7.5
Sta. 44+60 Lt. 100'

Depth	Soil Status	Blows*
0.0		
	Swampy Muck	
3.5		
	Fine Grain Gray Sand with Wood	4
		5
15.0		12
	Fine Silty Sand. Moist	
		10
26.0		13
	Boring Terminated Water Table 7.1	

No. 18

Elevation 7.3
Sta. 44+60 Rt. 100'

Depth	Soil Status	Blows*
0.0		
	Sandy Silty Swampy Muck. Wet	
		5
9.5		
	Fine Silty Sand. Moist	11
		8
		12
26.0		14
	Boring Terminated Water Table 7.4	

*No. of blows, 140 lb. hammer, 30 in. fall, required to drive 2 in. O.D., 1.375 in. I.D. Sampler one foot.

Form RO-31

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MAIN OFFICE & LABORATORIES
814 WEST CARY STREET
RICHMOND, VIRGINIA

Report No. B-1430-3

TEST BORING LOG

Made for: Raleigh Piraie Engineers

Project: Proposed Pleasant Creek Dam

Location: 1 Mile North of Route 60 at Pleasant Creek

All borings are plotted to scale of 1 in. = 6 ft. using _____ as a fixed datum

No. 19

Elevation 29.3

Sta. 4+42.1

Depth	Soil Status	Blows*
0.0	Topsoil	
0.5		
	Fine Brown Sand, Dry	22
7.5		
	Multicolored Sand, Trace of Silt, Dry	33
		20
17.0	Multicolored Very Fine Silty Sand with Very Little Clay.	18
22.0	Moist	
	Green Very Fine Sand with Very Little Clay	16
29.0		
	Boring Terminated Water Table 22.9	

No. 20

Elevation 2.6

Sta. 4+42.1 O. 60'

Depth	Soil Status	Blows*
0.0		
	Stone Dust	
3.0		
	Grey Sandy Silt, Wet	2
8.0		
	Grey Fine Grain Sand, Wet	4
19.5		
		9
	Grey Sandy Silt, Moist	
		11
		12
		15
		11
		15
		15

No. 20 con't

Elevation _____

Depth	Soil Status	Blows*
31.0		14
	Boring Terminated Water Table 0.0	

*No. of blows, 140 lb. hammer, 30 in. fall, required to drive 2 in. O.D., 1.375 in. I.D. Sampler one foot.

Form 10-2v

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RICHMOND, VIRGINIA

Report No. R-1430-3

TEST BORING LOG

Made for: Raleigh Zinnia Engineers

Project: Proposed Diamond Creek Dam

Location: 1 Mile North of Route 50 at Diamond Creek

All borings are plotted to scale of 1 in. = 5 ft. using _____ as a fixed datum

No. 21

Elevation 342
Sta. 1+61 Rt. 30°

Depth	Soil Status	Blows*
0.0		
	Swampy Muck.	
4.0		
		5
	Gray Fine Grain Sand & Wood	
		7
		7
		14
		11
20.0		
	Blue Silty Sand, Medium Compact.	13
30.0		14"
	Spring Terminated Water Table-0.5	

No. 22

Elevation 346
Sta. 1+61 Rt. 5°

Depth	Soil Status	Blows*
0.0		
	Sandy Clay	
3.5		
		12
	Fine Fine Grain Sand With Wood.	
		11
		9
17.5		
	Blue Silty Sand, Medium Compact.	14
23.0		14
	Spring Terminated Water Table-0.0	

No. 23

Elevation 342.6
Sta. 10+03

Depth	Soil Status	Blows*
0.0		
1.6	Topsoil	
	Soft White Sand, Roots of Clay.	
		9
11.0		1
	Soft Sandy Silty Clay.	
		5
17.0		
	Dark Gray Sandy Silt.	12
		50
	Auger Terminated at Water Table	

*No. of blows, 140 lb. hammer, 30 in. Fall, required to drive 2 in. O.D., 1.375 in. I.D. Sampler one foot.

Form 2034

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WASHINGTON, BALTIMORE

MAIN OFFICE & LABORATORIES
814 WEST CARY STREET
RICHMOND, VIRGINIA

Report No. R-1437-3

TEST BORING LOG

Made for: Malcolm Pirnie Engineers

Project: Proposed Diascund Creek Dam

Location: 1 Mile North of Route 60 at Diascund Creek

All borings are plotted to scale of 1 in. = 6 ft. using _____ as a fixed datum

No. 24 **Elevation** 14.2 **Sta.** 6+36 **Ft.** 110'

Depth	Soil Status	Blows*
0.0	Topsoil	
1.0	Soft White Sand	9
11.0	Soft White Sand, Spots of Clay	12
		14
12.0	Dark Gray Silty Sand	5
20.0	Boring Terminated Water Table at Reached	10

No. _____ **Elevation** _____

Depth	Soil Status	Blows*

No. _____ **Elevation** _____

Depth	Soil Status	Blows*

*No. of blows, 140 lb. hammer, 30 in. fall, required to drive 2 in. O.D., 1.375 in. I.D. Sampler one foot.

APPENDIX V

REFERENCES

1. HEC-1DB Flood Hydrograph Package, (Hydrologic Engineering Center, U. S. Army Corps of Engineers, July 1978).

2. "Seasonal Variation of the Probable Maximum Precipitation East of the 105th Meridian," Hydrometeorological Report No. 33, (U. S. Weather Bureau, April 1956).

3. "Rainfall Frequency Atlas of the United States," Technical Paper No. 40, (U. S. Weather Bureau, May 1961).

4. "Recommended Guidelines for Safety Inspection of Dams," Office of the Chief of Engineers, Department of the Army, Washington, D. C.