

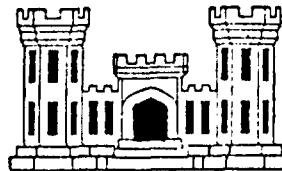
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OSWEGO RIVER BASIN

JAMESVILLE RESERVOIR DAM

ONONDAGA COUNTY, NEW YORK
INVENTORY NO.418

PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM



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Prepared by: TIPPETTS-ABBETT-McCARTHY-STRATTON

NEW YORK DISTRICT CORPS OF ENGINEERS

JULY 5, 1978

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TO: HONORABLE HUGH L. CAREY
GOVERNOR OF NEW YORK
ALBANY, NEW YORK 12224

1978 JUN -9 11 5:07

UNCLAS

Subj: Inspection of Jamesville Reservoir Dam

1. On 5 June 1978 engineers from the Consulting firm of Tippetts-Abbett-McCarthy-Stratton, under contract to the New York District, Corps of Engineers inspected the Jamesville Reservoir Dam, located in Onondaga County, New York (NYS I.D. No. 418) as part of the National Dam Safety Inspection Program.
2. Visual inspection revealed past movement and bulging of the downstream masonry face of the dam between the west abutment and gatehouse at the center of the dam extending from approximately 20-25 ft. below the crest to existing grade.
3. Several homes and two roadway embankments are located in the immediate downstream area of the dam and the potential for loss of life exists.
4. We consider this to represent an unsafe condition requiring immediate drawdown of the reservoir.

DISTR:

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CONTROLLER
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June 12, 1978

Mr. Anthony Barbero
Chief, Foundations and Materials Branch
Department of the Army
U. S. Army Engineer District, New York
26 Federal Plaza
New York, New York 10007

Re: MANEN-Ma
National Dam Inspection Program-Contract
Contract No. DACW 51-78-C-0024
Immediate Notice of Unsafe Condition
at Jamesville Dam

Dear Mr. Barbero:

This letter will confirm the conference telephone conversation between Mr. A. Iarrobino, Mr. J. Caspe, Mr. A. Dolcimascolo and myself on June 9, 1978, regarding the results of the Phase I inspection of Jamesville Dam (I.D. No. 418) in Onondaga County.

Jamesville Dam, a stone-masonry structure on Butternut Creek south of Jamesville, New York, was inspected by TAMS on June 6 and 7, 1978. The inspection revealed a hazardous condition with a potential for causing catastrophic failure of the dam. The condition consists of bulging of the downstream face of the masonry dam between the gatehouse, which is located near the center of the dam and abuts the downstream face, and the west abutment. The maximum bulging occurs at a distance of twenty to twenty-five feet below the top of the dam; in the affected area, relative horizontal displacements between adjacent courses of stone are as much as five inches. The horizontal joints between the course of stone have little or no mortar filling and appear to be open excessively.

TAMS

Mr. Anthony Barbero
U. S. Army Engineer District, New York

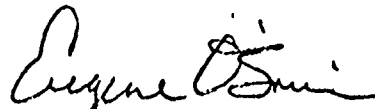
- 2 -

June 12, 1978

The degree to which the hazardous conditions represent an imminent danger cannot be accurately assessed; however, in view of the nature of the condition and the fact that failure of the dam could cause extensive property damage and loss of life, we recommend that the dam be considered as unsafe and in imminent danger of collapse. On this basis we have recommended that the reservoir be lowered immediately by open the three twelve inch gate valves located in the gatehouse.

Very truly yours,

TIPPETTS-ABBETT-McCARTHY-STRATTON



Eugene O'Brien
Partner

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233



Ogden Reid,
Commissioner

June 19, 1978

Mr. Anthony Barbero
Army Corps of Engineers
Foundations and Materials Section (Rm. 2043)
26 Federal Plaza
New York, NY 10007

Re: Jamesville Reservoir Dam
#396 Oswego W.S.

Dear Mr. Barbero:

Reference is made to your telegram of June 9, 1978 concerning Jamesville Reservoir Dam.

After receiving the telegram, this structure was inspected by the technical staff of the New York State Department of Transportation on June 13, 1978. On June 19, 1978 Mr. Edward M. Rowan of the Waterways Maintenance Section informed me that all three gates were open and the reservoir was being lowered. The size of each of the 3 drain pipes is only 12 inches in diameter, therefore, drawdown of the reservoir will require a considerable period of time.

After drawdown of the reservoir has been accomplished, additional investigations will be conducted by the Dept. of Transportation in order to determine the remedial work that is required.

Very truly yours,

George Koch
Supervisor, Dam Safety Program



1220 Washington Avenue, State Campus, Albany, New York 12232

June 23, 1978

Colonel Clark H. Benn
NY Army Corps of Engineers
26 Federal Plaza
New York, NY 10007

Re: Jamesville Reservoir Dam Inspection-Onondaga Co., NY
(NYS ID No. 418)

Dear Colonel Benn:

This is in response to your TWX of June 16, 1978 reporting an unsafe condition at Jamesville Reservoir requiring immediate drawdown. This Department has opened all discharge valves to provide maximum outflow. We have initiated plans to obtain cores of the dam's interior, and will make other tests and observations. The effect of the open discharge on the water level will be monitored.

Your office has agreed to furnish us with copies of the Tippetts Abbutt-McCarthy-Stratton (TAMS) Report early in the week of June 26. Upon receipt and review of the report, we request a meeting with members of your staff, your consulting engineer, and DEC to obtain your analysis and recommendations. The meeting will review DOT's proposed action plan to remove the concern of an unsafe condition.

I may be contacted at area code 518 - 457-4407 in Albany to schedule the meeting. I suggest we meet in Albany in order to obtain maximum participation. Please advise me of a suitable date for the meeting.

Sincerely yours,

JOSEPH R. STELLATO
Director of Waterways Maintenance

cc: J. A. Weiss, Chief, Engr. Division, NY Corps of Engineers
A. Barbero, NY Corps of Engineers
M. D. Graham, Off. of Transp. Oper., Rm. 504, Bldg. 5 - DOT
G. M. Briggs, Transp. Maint. Div., Rm. 219, Bldg. 5 - DOT
W. P. Hofmann, Tech. Serv. Subdiv., 2nd floor, Bldg. 7A - DOT
L. H. Moore, Soil Mech. Bur., Rm. 102, Bldg. 7 - DOT
H. Brock, Off. of Pub. Aff., Rm. 514, Bldg. 5 - DOT
J. M. Powers, Regional Director, Region 3 - DOT
L. Burns, Reg. Waterways Maint. Engr., Region 3 - DOT
G. Koch, NYS Dept. of Env. Conservation, 50 Wolf Road, Albany, NY

NANEN-F

11 July 1978

Commissioner William C. Hennessey
New York State Department of Transportation
1220 Washington Avenue, State Campus
Albany, New York 12226

Dear Mr. Hennessey:

Inclosed for your review and comments is Phase I inspection report for
Jamesville Reservoir Dam, Onondaga County, New York, I.D. No. 418.

Your review comments regarding the inclosed report are requested by
17 July 1978 after which date, should no comments be forthcoming the
report will be finalized as approved.

At the time of your reply the status of the investigation and results
obtained should be included.

Sincerely yours,

BARBERO/NANEN-F

Incl
as

J.A. WEISS
Chief, Engineering Division

cc: ✓
Barbero
Koch, NYS DEC (w/incl)

FAFINSKI/NANEN

WEISS/NANEN

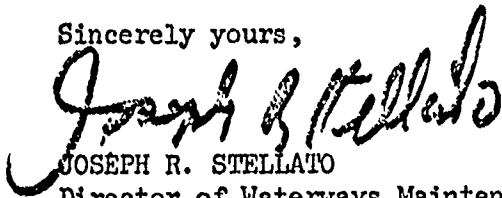
Mr. J. A. Weiss
July 17, 1978
Page 2

The department has initiated action to determine a unit hydrograph of the true flood potential of the basin.

As discussed at our meeting, the department will provide adequate action plans to meet the requirements of the study. We do plan to replace the existing 12" valves with new 24" valves.

I request your comments on our proposed plan of action and your current assessment of the Jamesville Reservoir.

Sincerely yours,



JOSEPH R. STELLATO
Director of Waterways Maintenance

cc: A. Barbero, NY Corps of Engineers
G. Koch, NYS Dept. of Env. Conservation, 50 Wolf Rd., Albany, NY
W. P. Hofmann, Tech. Serv. Subdiv., 2nd Fl., Bldg. 7A - DOT
G. M. Briggs, Transp. Maint. Div., Rm. 219, Bldg. 5 - DOT
M. D. Graham, Off. of Transp. Oper., Rm. 504, Bldg. 5 - DOT
J. M. Powers, Regional Director, Region 3 - DOT

NEW YORK STATE
DEPARTMENT OF TRANSPORTATION
William C. Hennessy, Commissioner



1220 Washington Avenue, State Campus, Albany, New York 12232

July 17, 1978

Mr. J. A. Weiss
Chief, Engineering Division
U.S. Army Engineer District, New York
26 Federal Plaza
New York, New York 10007

Dear Mr. Weiss:

I have received the Phase 1 inspection report for Jamesville Reservoir Dam, Onondaga County, New York, I.D. No. 418 on July 14, 1978. These constraints prevented me from furnishing comments by July 17 as requested. My comments on the report follow:

The final report appears to be essentially unchanged from the preliminary report earlier furnished to this Department. This report was discussed with you at a meeting in my office on July 6, 1978. You have been furnished with a summary of that meeting.

The hazardous assessment of the report is based on the belief that the dam is of masonry construction with tiers of stone. The department has obtained three vertical cores of the dam; one near the upstream face, one in the middle and one near the downstream face. The three cores each indicate that the dam is of concrete construction rather than masonry construction as assumed. We also plan to take a horizontal core to obtain additional information about the nature of the bulge. The information obtained from the three cores suggests that you review your assessment of this dam.

The level of the reservoir has been dropped approximately 11 ft. and we anticipate that the level will be approximately 15ft. lower by July 21. Cross-sections have been obtained at the bulge area and are being plotted at this time. I trust that the reduced level and the nature of the cores satisfy the concerns regarding the safety of the dam.

The department does plan to rehabilitate the dam and make corrective repairs as required. The scope of work will be based on the investigations we are making at this time.

NANEN-P

11 July 1978

Mr. George Koch
Supervisor, Dam Safety Section
New York State Department of
Environmental Conservation
Albany, New York 12233

Dear Mr. Koch:

Inclosed for your review and comments is Phase I inspection report for Jamesville Reservoir Dam, Onondaga County, New York, I.D. No. 418.

Your review comments regarding the inclosed report are requested by 17 July 1978 after which date, should no comments be forthcoming the report will be finalized as approved.

Sincerely yours,

TKB
BARBERO/NANEN-F

Incl
as

J.A. WEISS
Chief, Engineering Division

J
FAFINSKI/NANEN

cto
WEISS/NANEN

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7. AUTHOR(s) Eugene O'Brien, P.E.		6. PERFORMING ORG. REPORT NUMBER
9. PERFORMING ORGANIZATION NAME AND ADDRESS Tippetts-Abbott-McCarthy-Stratton ✓ 345 Park Avenue New York, New York 10021		8. CONTRACT OR GRANT NUMBER(s) DACW-51-78-C-0024 ✓
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18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Dam Safety Butternut Creek National Dam Safety Program Onondaga County Visual Inspection Jamesville Reservoir Dam Hydrology, Structural Stability		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This report provides information and analysis on the physical condition of the dam as of the report date. Information and analysis are based on visual inspection of the dam by the performing organization. Jamesville Reservoir Dam was found to be unsafe, emergency due to a bulge on the downstream face of the dam between the gatehouse and west abutment. Additionally the spillway is seriously inadequate.		

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OSWEGO RIVER BASIN

JAMESVILLE RESERVOIR DAM

ONONDAGA COUNTY, NEW YORK
INVENTORY NO.418

PHASE I INSPECTION REPORT NATIONAL DAM SAFETY PROGRAM



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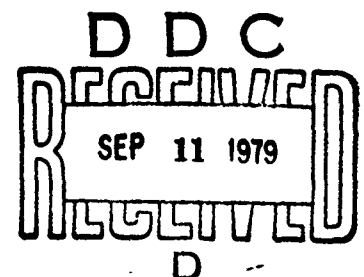
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NEW YORK DISTRICT CORPS OF ENGINEERS

JULY 5, 1978

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OSWEGO RIVER BASIN
JAMESVILLE DAM
INVENTORY NO. 418
PHASE I INSPECTION REPORT

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APPENDICES

A. DRAWINGS

Vicinity Map
Topographic Map
Jamesville Dam - Section (Figure 1)
Jamesville Dam - Elevation (Figure 2)
Jamesville Reservoir - Design Drawing
Jamesville Reservoir - 1874 As-Built Drawing

B. PHOTOGRAPHS

C. ENGINEERING DATA CHECKLIST

Excerpt from "Annual Report of the State Engineer
and Surveyor on the Canals of the State" dated
January 16, 1874.

D. VISUAL INSPECTION CHECKLIST

E. HYDROLOGIC DATA AND COMPUTATIONS

PHASE I REPORT
NATIONAL DAM SAFETY PROGRAM

Name of Dam: JAMESVILLE (I.D. NO. 418)
State Located: NEW YORK STATE
County Located: ONONDAGA COUNTY
Stream: BUTTERNUT CREEK
Date of Inspection: 6-7 JUNE 1978


ASSESSMENT

Visual inspection of the Jamesville Dam revealed a hazardous condition with a potential for causing catastrophic failure of the dam. The condition consists of "bulging" of the downstream face of the dam between the gatehouse, which is located near the center of the dam abutting the downstream face, and the west abutment. In the affected area, the relative horizontal displacement between adjacent courses of stone is as much as 5 inches. The horizontal joints between the courses of stone have little or no mortar filling and appear to be open excessively.

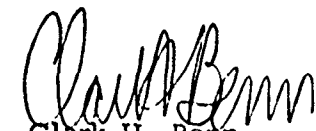
The degree to which the hazardous conditions represent an imminent danger cannot be accurately assessed; however, in view of the nature of the condition and the fact that failure of the dam could cause extensive property damage and loss of life, it is recommended that the dam be considered as unsafe and in imminent danger of collapse. On this basis it is further recommended that the reservoir be lowered immediately by opening the three 12-inch gate valves located in the gatehouse.

The total discharge capacity of the spillway without overtopping of the dam is approximately 8070 cfs. This is less than the Probable Maximum Flood of 35,200 cfs and also less than the Standard Project Flood of 21,000 cfs. Therefore, the spillway must be considered seriously inadequate relative to either of the design floods.

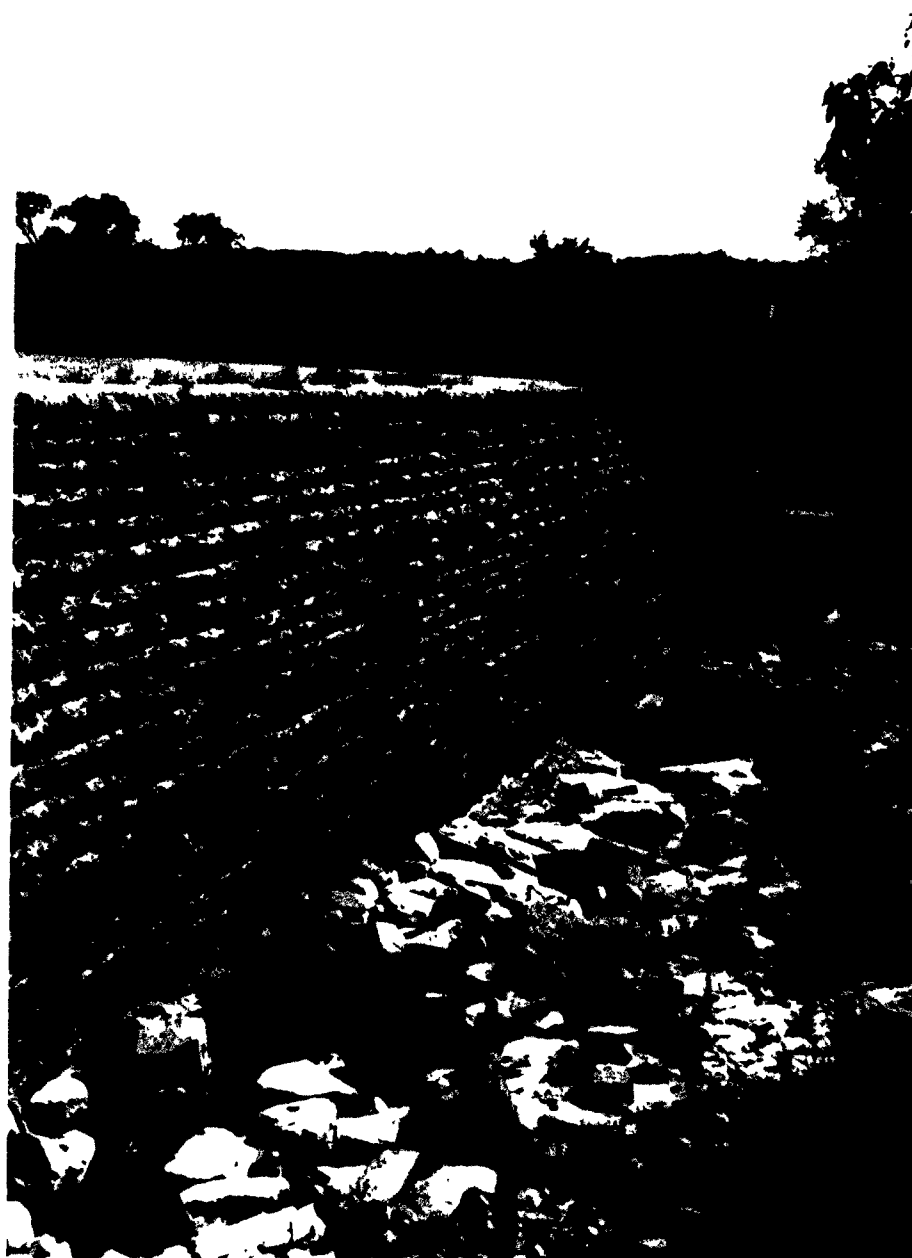
It is recommended that the true flood potential of the basin be evaluated by deriving a unit hydrograph from the actual runoff records and applying design rainfalls to this hydrograph to determine a design hydrograph which is representative of basin characteristics.


Eugene O'Brien, P.E.
New York No. 29823

Approved by:


Col. Clark H. Benn
New York District Engineer

Date 25 July 78



OVERVIEW OF MASONRY DAM

PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM
JAMESVILLE DAM, INVENTORY NO. 418
OSWEGO RIVER BASIN
ONONDAGA COUNTY, NEW YORK

SECTION 1 - PROJECT INFORMATION

1.1 GENERAL

a. Authority

The Phase I inspection reported herein was authorized by the DEPARTMENT OF THE ARMY, NEW YORK DISTRICT, CORPS OF ENGINEERS by letter dated 31 March 1978, in fulfillment of the requirements of the National Dam Inspection Act, Public Law 92-367, 8 August 1972.

b. Purpose of Inspection

The purpose of this inspection and report is to investigate and evaluate the existing conditions of subject dam in order to: identify deficiencies and hazardous conditions; determine if they constitute hazards to human life or property; and notify the State of New York of these results along with recommendations for remedial measures where necessary.

1.2 DESCRIPTION OF PROJECT

a. Description of the Dam and Appurtenant Structures

The Jamesville Reservoir is formed by a masonry stone gravity dam built across Butternut Creek.

The principal dimensions of the dam are:

Length	446 feet
Maximum height above foundation	48 feet
Top width	6 feet
Width at foundation	28 feet

The spillway is a 205-foot long ungated section of the dam on its eastern half. Its crest is approximately 5.6 feet below the top of the dam and its face is formed by the downstream masonry wall within a slope of 6 (V): 1 (H).

Flow from the reservoir is regulated at a gatehouse built on the downstream face near the center of the dam. Three 24-inch pipes are each controlled by a 12-inch gate valve. The outlet pipes discharge into a stilling well beneath the gatehouse structure.

b. Location

The dam is located on Butternut Creek approximately 0.75 miles south of Jamesville.

c. Size Classification

The dam is less than 100 feet high and impounds less than 50,000 acre-feet; therefore, it is considered to be an "intermediate" size dam.

d. Hazard Classification

The dam is in the "high" hazard potential category. Several homes on the banks of the downstream channel would be affected by a breach of the dam.

e. Ownership

The Jamesville Dam is owned and operated by the New York State Department of Transportation. Day-to-day operation and maintenance are managed by the Syracuse office.

f. Use of Dam

The impoundment is maintained to provide supplemental feed to the Erie Barge Canal.

g. Design and Construction History

The dam was designed and built by the Canal Commission in 1872-74.

h. Normal Operating Procedure

Water releases from the Jamesville Reservoir, either from the outlet pipes or over the spillway, flow into Butternut Creek. There is little operation of the valves which are usually set at about one-third open. There is no specified minimum release.

1.3

PERTINENT DATA

a. <u>Drainage Areas (square miles)</u>	46.9
b. <u>Discharge at Damsite (cfs)</u>	
Maximum known flood at damsite	3400
Total spillway capacity at maximum pool elevation	8070
c. <u>Elevation (ft above MSL)</u>	
Top of dam	645
Spillway crest	639.5 ±
Streambed at centerline of dam	597

d. Reservoir (miles)

Length of maximum pool 1.3

e. Storage (acre-feet)

Spillway crest 3900

Top of dam 6250

f. Reservoir Surface (acres)

Top of dam 291

Spillway crest 252

g. Dam

Type - Masonry stone

Length - 446 feet

Height - 48 feet

Top width - 6 feet

Side slopes - U/S 4 (V): 1 (H) and stepped

- D/S 6 (V): 1 (H)

Grout curtain - None

h. Spillway

Type - Masonry wall

Length of Weir - 205 feet

Crest elevation - 639.5 ±

Gates - Ungated

U/S Channel - None

D/S Channel - Highway embankment with crossing
consisting of embankment on concrete box
culvert.

i. Regulating Outlets

Three 24-inch pipes controlled by 12-inch manual gate valves
at gatehouse. Stilling well beneath gatehouse with weir at El. 601 ±.

SECTION 2 - ENGINEERING DATA

2.1 DESIGN

The dam was designed and built in 1872-1874 by the Canal Commission of New York. There are no design computations or specific memoranda available for the project.

The available information on the dam consists of two drawings. One design drawing, undated, shows a section of the dam. An as-built drawing dated 1874, entitled "Jamesville Reservoir" shows a section and elevation of the dam and a map of the reservoir. Changes from the preceding design drawing include moving the intake well farther upstream into the reservoir and placing an earth bank against the upstream face of the dam.

The upstream face and portions of the downstream face were gunited, reportedly in the late 1930's or early 1940's. The three 24-inch gate valves on the outlets were replaced with 12-inch gate valves, reportedly about 50 years ago.

2.2 CONSTRUCTION RECORDS

No detailed construction records are available; however, there is a narrative of foundation problems encountered in the "Annual Report of the State Engineer and Surveyor on the Canals of the State" dated January 16, 1874 (see Appendix).

There are no records available of post-construction modifications.

2.3 OPERATION RECORDS

There is no operations and maintenance manual for the project. No operation records are kept and maintenance is done as required.

2.4 EVALUATION OF DATA

Existing data were made readily available at the Syracuse office of the New York State Department of Transportation.

The available data reviewed are considered adequate for this Phase I inspection and evaluation of safety.

SECTION 3 - VISUAL INSPECTIONS

3.1 FINDINGS

a. General

A visual inspection of Jamesville Dam was made on Tuesday and Wednesday, June 6-7, 1978. At that time, the reservoir level was at approximately El. 639.3.

b. Masonry Dam

On the downstream face of the dam, most of the mortar between masonry blocks is missing and the horizontal joints between the courses of stone appear to be open excessively. The openings visible between blocks are up to 3 feet deep.

The gunite layer on the upstream face, 1.5 to 3 inches thick, shows excessive spalling.

On the downstream face of the dam there is an arch-shaped zone between the gatehouse and the west abutment where the masonry blocks have shifted in a downstream direction resulting in a "bulged out" appearance. It is reported that the "bulging" on the downstream face has always existed within the memory of Department of Transportation personnel. The point of maximum bulge is generally 20 to 25 feet below the top of the dam. At some locations, the relative displacement between adjacent courses of stone is up to 5 inches.

The crest of the dam is straight, indicating that the "bulging" is a local effect.

The "bulge" or deformation of the masonry dam is probably the result of the compression of the sand, gravel and boulder deposit which is reported to exist in the riverbed adjacent to the west abutment. A pictorial presentation of the foundation conditions is given on Figure 2. As the overburden compressed under the weight of the dam, the tiers of masonry blocks adjusted to the new configuration of the foundation by deflecting, as shown schematically on the drawing. Because the compressibility of the sand and gravel in the riverbed is less near the west abutment where the sloping berm provides maximum confinement, it is believed that the compression was more pronounced downstream in the zone confined by the lower part of the berm. The width of the latter zone would be narrow relative to the height of the masonry dam. As a result the higher tiers of the dam were able to adjust, with a negligible amount of sagging, by distributing their weight to the rock foundation near the gatehouse and to the confined zone near the west abutment. Consequently, the weight redistribution has reduced the contact pressures underneath the "arched tiers" resulting in a proportional decrease in frictional resistance against the forces which act on the upstream face of the dam. It is probable, therefore, that the arch-shaped zone of "bulging" has developed as a secondary effect of the foundation settlement.

Seepage on the face of the dam at the bulge reportedly increases when the reservoir level is above, or splashes over, the intact areas of gunite. The blocks toward the top of the dam remain dry.

One block on the face has a shear crack down the center because of partial loss of support resulting from an open joint below it.

The vines and shrubbery growing out of the dam face are reportedly cut every 3 years.

c. Spillway

The top two courses of stone in the spillway section are displaced downstream reportedly as a result of ice action and freezing and thawing. The maximum movement is 9 to 10 inches at about 135 to 140 feet from the east end of the spillway. The gap of up to 4 inches formed between the upstream and downstream stones on the crest of the spillway was filled with mortar. The stones were reportedly pinned down after the movement occurred.

Leakage from between the two top courses of stone on the spillway is visible on the downstream face.

d. Abutments

There is seepage emerging from the east abutment rock immediately adjacent to the dam. It is estimated to be flowing at the rate of 50 to 150 gpm.

Several hundred yards west of the dam is a low saddle area with an elevation estimated to be slightly lower than the crest of the dam.

e. Gatehouse and Valves

The gatehouse is on the downstream face of the dam near its center. It is visibly tilting away from the dam. Plumb bob measurements show that the north wall tilts 4 inches downstream in 11 feet of height at the west corner of the gatehouse.

Three 12-inch manual gate valves are housed within the gatehouse. They were only visible from the packing up because the floor boards were spiked down into the floor beams.

The following observations of the valves were made:

Valve No. 1 (east) - packing damp

Valve No. 2 (middle) - moderate leak at packing

Valve No. 3 (west) - slight leak at packing.

Close inspection of the valve stems indicated deterioration and metal loss at the lower threaded sections. The top threads appeared to be in good, lubricated condition. It was estimated that Valve Nos. 2 and 3 could not be opened more than three-quarters full, with Valve No. 1 being operable to a slightly greater extent. Should the valves be opened to these limits, however, it is questionable whether they could be reclosed because of the poor condition of the lower threads.

During the inspection, each valve was reportedly open approximately 4 inches. One week earlier they were closed down from about 6 inches open.

f. Reservoir

In the vicinity of the dam, there was no evidence of sloughing, potentially unstable slopes or other unusual conditions which would adversely affect the dam.

g. Downstream Channel

In the downstream channel, which is Butternut Creek, there is a highway embankment with a crossing consisting of an embankment on a concrete box culvert. Further downstream the channel is narrow with a highway crossing at Jamesville. There are several houses along the banks of the channel.

3.2 EVALUATION OF OBSERVATIONS

The condition of the downstream face of the dam ("bulging", relative displacement between adjacent stone courses, little or no mortar in joints) is considered to be hazardous with a potential for resulting in catastrophic failure.

SECTION 4 - OPERATION AND MAINTENANCE PROCEDURES

4.1 PROCEDURES

The minimum required water release at Jamesville Dam is not specified. The three 12-inch gate valves controlling 24-inch outlet pipes are usually set to approximately 4 inches open.

4.2 MAINTENANCE OF THE DAM

There is no operation and maintenance manual for this project.

The dam has been inspected once every two years since 1973 by the New York State Department of Transportation as part of a program for inspecting all their facilities. The 1973 report states that the "dam should be placed under contract for rehabilitation". The 1977 report cites the bulge in the dam, increased leakage on the west side, extensive openings in the joints between blocks, and that the brush be cut and roots removed from the face of the dam.

The shrubbery is reportedly cut from the face of the dam every three years.

4.3 MAINTENANCE OF OPERATING FACILITIES

The valves in the gatehouse appear to be operable in opening to about three-quarters full. However, closing them subsequently may not be possible due to deteriorated threads on the lower part of the stem on each valve.

There are no records on the intervals at which the valves are "exercised".

4.4 WARNING SYSTEMS IN EFFECT

There is no warning system in effect or in preparation.

4.5 EVALUATION

There appears to be nothing in the present operational or maintenance procedures which would adversely affect the safety of the project.

SECTION 5 - HYDRAULIC/HYDROLOGIC

5.1 DRAINAGE AREA CHARACTERISTICS

The drainage area of Butternut Creek contributing to the Jamesville Dam is 46.9 square miles. The basin is oriented in a general north/south direction and has an unusual length to width ratio of about four, being 13.6 miles long and averaging 3.4 miles in width. There is little natural storage in the basin. The elongated basin shape and the general west to east movement of rainstorms can be expected to produce relatively low peak discharges. The available runoff record indicates that this is the case.

5.2 SPILLWAY CAPACITY

The spillway is uncontrolled, with a flat crest 205 feet long and approximately 8 feet wide. No spillway discharge rating curves were available, therefore it was necessary to compute a rating table to a head of 6 feet, corresponding to the top of the dam. It was assumed that the spillway acts as a broad-crested weir and its computed capacity at a maximum head of 6 feet is 8070 cfs (170 cfs per square mile). The spillway rating curve is shown on Figure 1.

5.3 RESERVOIR CAPACITY

The total reservoir capacity at El. 639.5 is 170,000,000 cubic feet (1.27×10^9 gals. or 3,900 acre-feet). It is estimated that the reservoir capacity at El. 645.5 is about 6,250 acre-feet, and indicates a surcharge storage equivalent to 0.9 inch over the drainage basin.

5.4 FLOODS OF RECORD

A gaging station has been maintained since July 1958 at a point 2.2 miles upstream from the reservoir where the drainage area is 32.2 square miles. The maximum flood discharge recorded at the station was 2820 cfs on July 3, 1974. The corresponding discharge at the dam is estimated to be 3400 cfs. The table of annual peak discharges at the gaging station, shown in Figure 3, is indicative of the low peak discharges experienced during the period of record.

5.5

OVERTOPPING POTENTIAL

A Probable Maximum Flood for the Butternut Creek gaging station, 2.2 miles upstream of the Jamesville Dam, is given as 35,200 cfs peak discharge. ^{1/} This discharge, transposed to the dam site on the basis of the ratio of the square roots of the drainage areas becomes 42,000 cfs (896 cfs/square mile). The transposed PMF is 5.2 times the computed spillway discharge capacity.

A second criteria for evaluating a design flood is the Standard Project Flood (SPF) which is usually about one-half of the Probable Maximum Flood. An SPF of 21,000 cfs is 2.6 times the discharge capacity of the existing spillway.

5.6

EVALUATION

The estimated Probable Maximum Flood inflow of 42,000 cfs and the Standard Project Flood inflow of 21,000 cfs far exceed the spillway capacity and therefore the spillway must be considered inadequate relative to either of the design floods. However, it may be significant to note that the largest flood recorded since 1958 at the Butternut Creek gaging station, upstream of the dam, is only 2820 cfs peak discharge (July 3, 1974), and the mean annual flood for the years 1959 - 1974, inclusive, was only 1104 cfs. The corresponding flows at the dam site are about 20 percent more.

It is recommended that the true flood potential of the basin be evaluated by deriving a unit hydrograph from the actual runoff records and applying design rainfalls to this hydrograph to determine a design hydrograph which is representative of basin characteristics.

^{1/} Design Basis Floods for Nuclear Power Plants, Regulating Guide 1.59, U.S. Nuclear Regulatory Commission, Revision 2, August 1977.

SECTION 6 - STRUCTURAL STABILITY

6.1 EVALUATION OF STRUCTURAL STABILITY

a. Visual Observations

"Bulging" of the downstream face of the dam is clearly visible. There is a relative horizontal displacement between adjacent courses of stone of up to 5 inches. Most of the mortar between masonry blocks on the downstream face is missing, exposing openings between blocks up to 3 feet deep.

These conditions are considered hazardous; however, the degree to which they represent an imminent danger cannot be accurately assessed.

b. Design and Construction Data

There exists no design computations or other data regarding the structural stability of the dam.

A narrative of foundation problems during construction is found in the "Annual Report of the State Engineer and Surveyor on the Canals of the State", dated January 16, 1874.

c. Operating Records

There are no records of gate operation.

d. Post-Construction Changes

There are no recorded post-construction changes.

e. Seismic Stability

The dam is located in Seismic Zone No. 2; therefore, no seismic analyses would generally be warranted. However, in view of the condition of the dam and depending upon the alternative chosen to deal with the situation, the decision not to make a seismic analysis may require re-evaluation.

SECTION 7 - ASSESSMENT/RECOMMENDATIONS

7.1 DAM ASSESSMENT

a. Safety

Visual inspection of the Jamesville Dam revealed a hazardous condition with a potential for causing catastrophic failure of the dam. The condition consists of "bulging" of the downstream face of the dam between the gatehouse, which is located near the center of the dam abutting the downstream face, and the west abutment. In the affected area, the relative horizontal displacement between adjacent courses of stone is as much as 5 inches. The horizontal joints between the courses of stone have little or no mortar filling and appear to be open excessively.

The total discharge capacity of the spillway without overtopping of the dam is approximately 8070 cfs. This is less than the Probable Maximum Flood of 35,200 cfs and also less than the Standard Project Flood of 21,000 cfs. Therefore, the spillway must be considered inadequate relative to either of the design floods.

b. Urgency

The degree to which the hazardous conditions represent an imminent danger cannot be accurately assessed; however, in view of the nature of the condition and the fact that failure of the dam could cause extensive property damage and loss of life, it is recommended that the dam be considered as unsafe and in imminent danger of collapse. On this basis it is further recommended that the reservoir be lowered immediately by opening the three 12-inch gate valves located in the gatehouse.

c. Additional Investigations

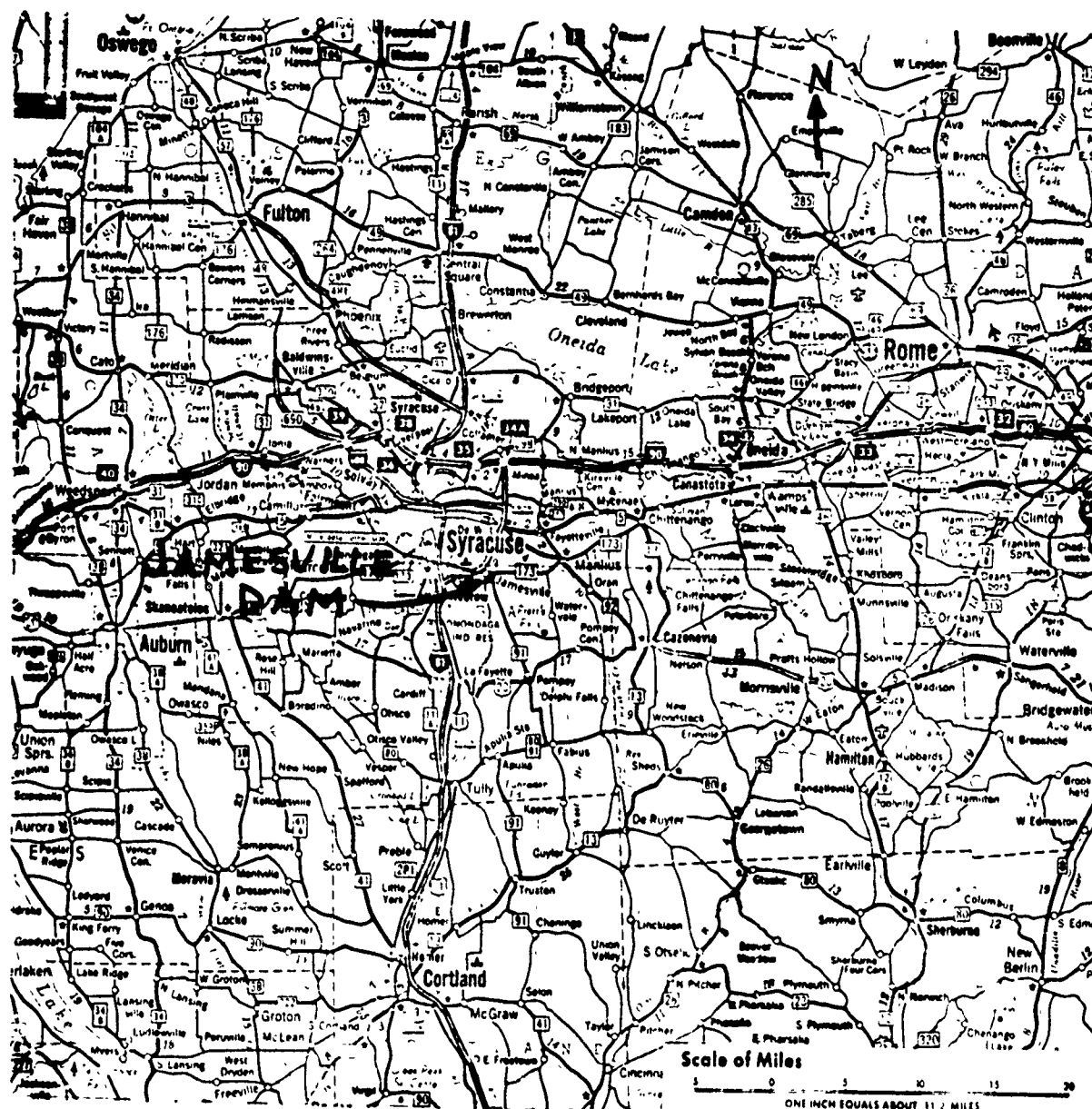
Although the reservoir is reportedly no longer necessary as a source of water for the Barge Canal, it has become a significant recreational facility in the area.

For this reason, it may be desirable to have additional investigations performed to determine the extent of rehabilitation required on the dam, if possible, or to recommend replacement alternatives.

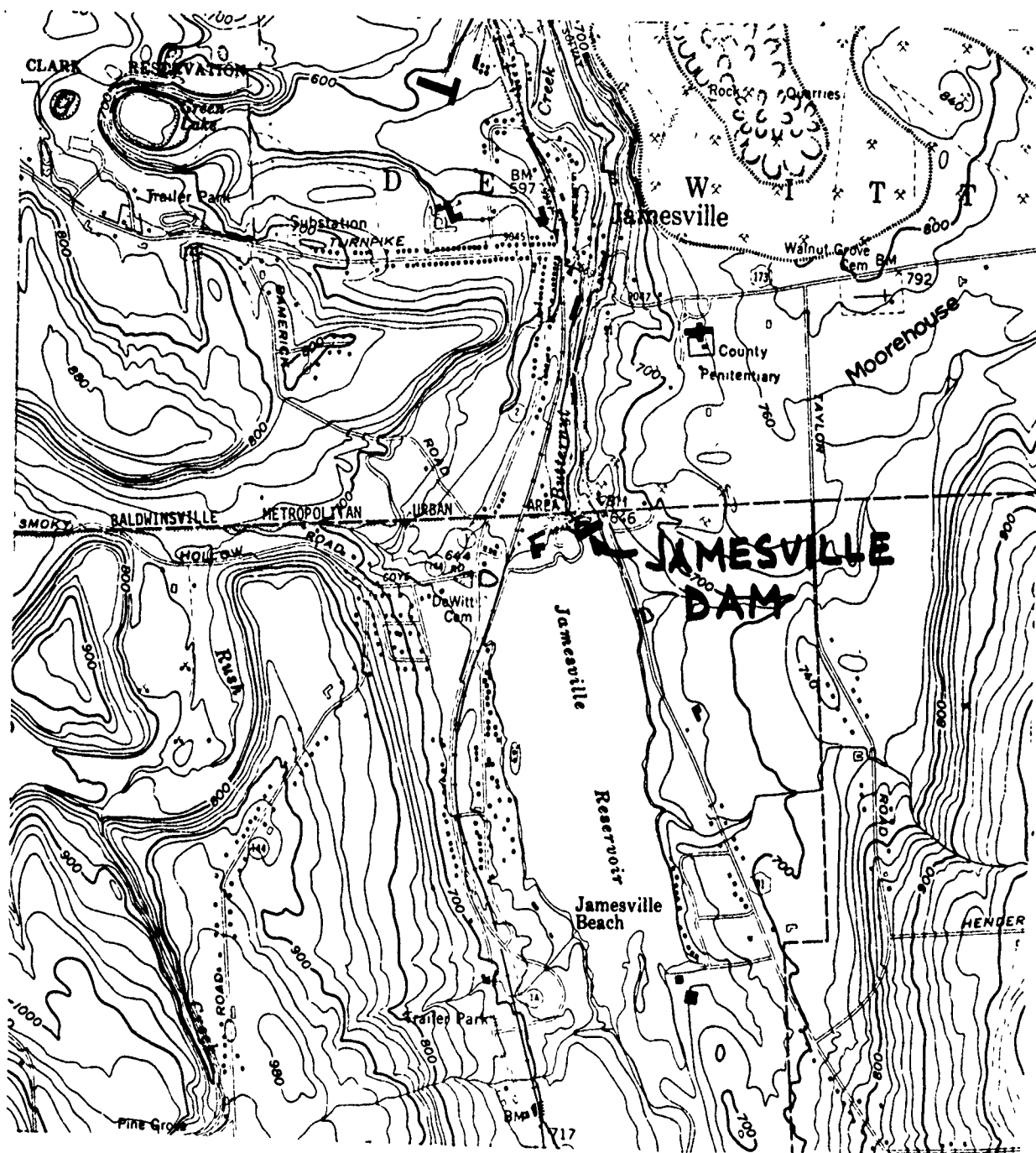
It is also recommended that the true flood potential of the basin be evaluated by deriving a unit hydrograph from the actual runoff records and applying design rainfalls to this hydrograph to determine a design hydrograph which is representative of basin characteristics.

DRAWINGS

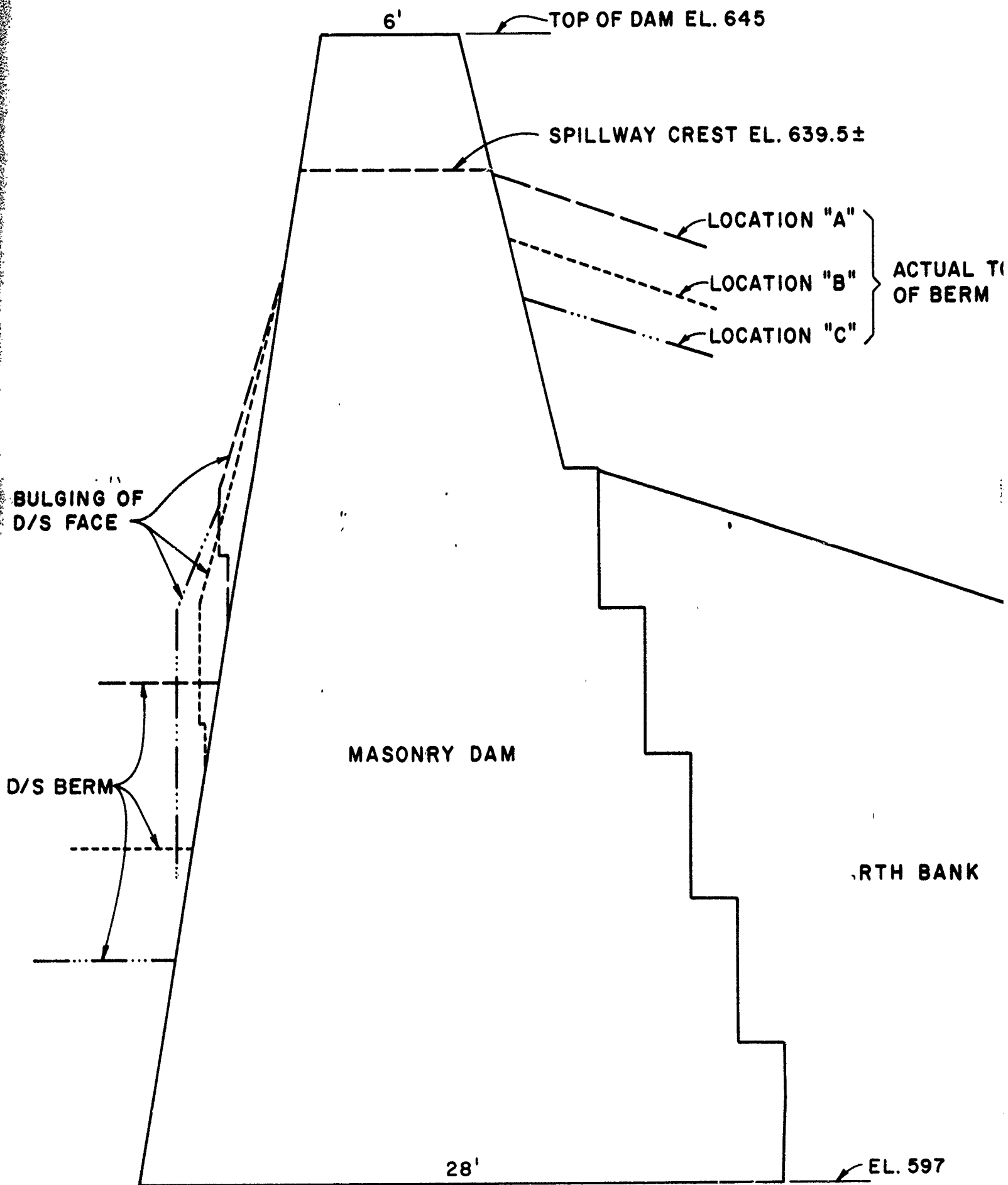
APPENDIX A



VICINITY MAP
JAMESVILLE DAM



TOPOGRAPHIC MAP & RESERVOIR
JAMESVILLE DAM



JAMESVILLE DAM

SECTION

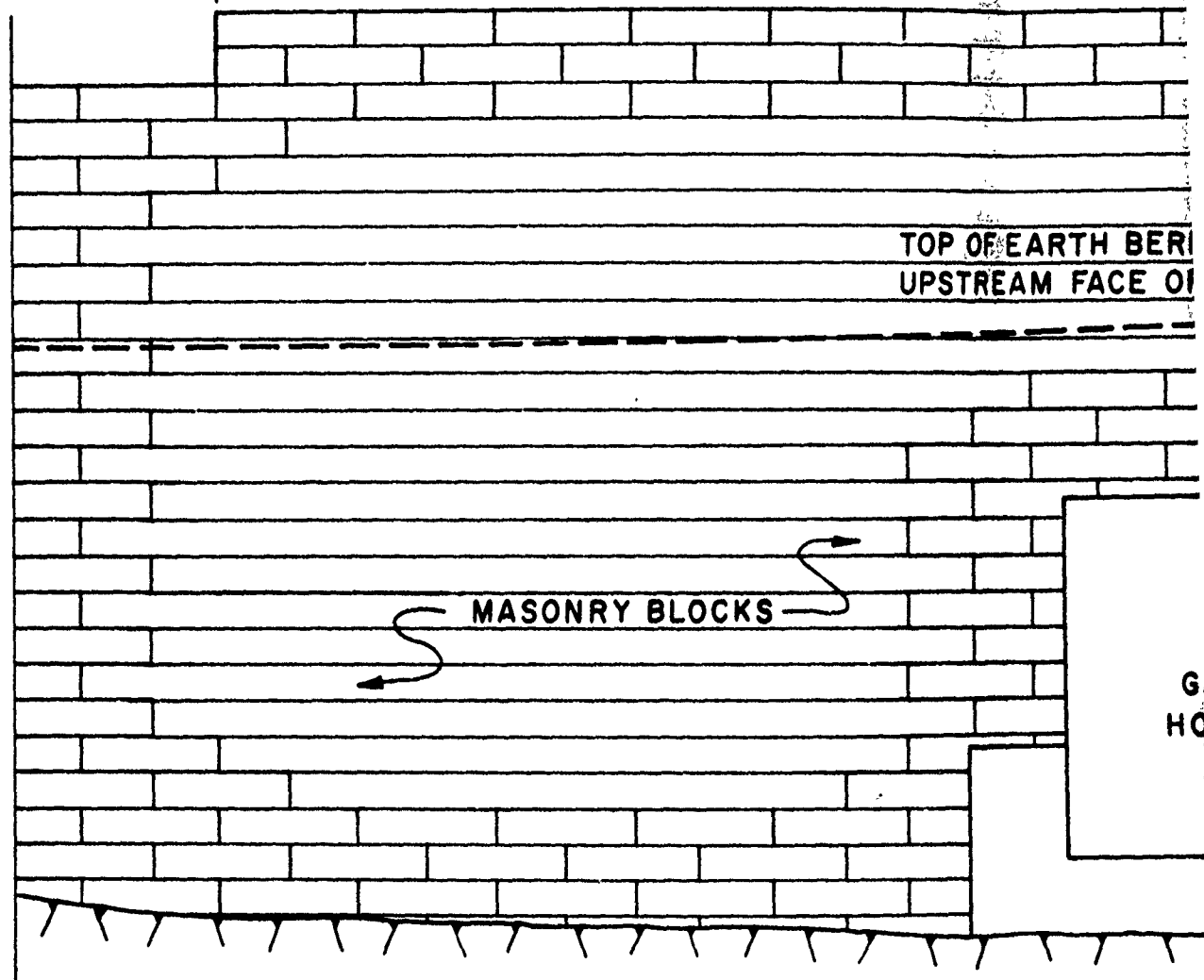
SCALE: 1" = 5'-0"

SEE ELEVATION FOR POSITION OF EACH SERIES OF MEASUREMENTS SHOWN ABOVE.
CROSS-SECTION OF DAM AND EARTH BANK FROM 1874 DRAWING.
SEE SUPPLEMENTARY NOTES FOR ACTUAL MEASUREMENTS.

FIG. 1

← EAST

← SPILLWAY →



G
HO

ROCK

JAMESVILLE
DOWNSTREAM

NOT

SEE SECTION FOR EXTENT OF BULGE AT EACH LOCATION.
ELEVATION OF DAM FROM 1874 DRAWING.

LOCATION "C"

LOCATION "B"

LOCATION "A"

ON
DAM

FE
SE

GENERAL SHAPE OF
BULGE ON DOWNSTREAM
FACE

DEFLECTION OF COURSES OF STONE
DUE TO DIFFERENTIAL SETTLEMENT
(PICTORIAL)

LE DAM
M ELEVATION
O SCALE

8

WEST →

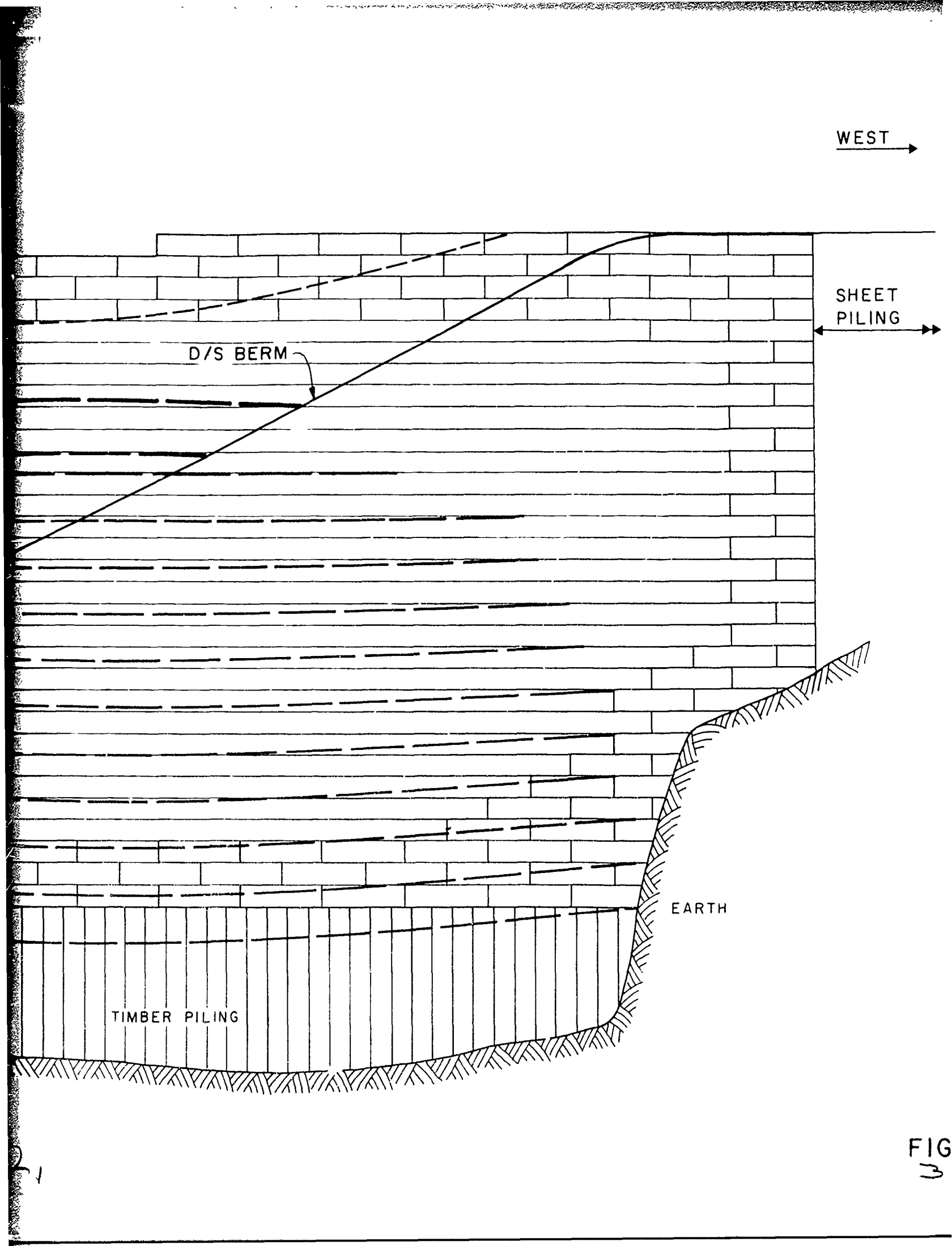
SHEET
PILING

D/S BERM

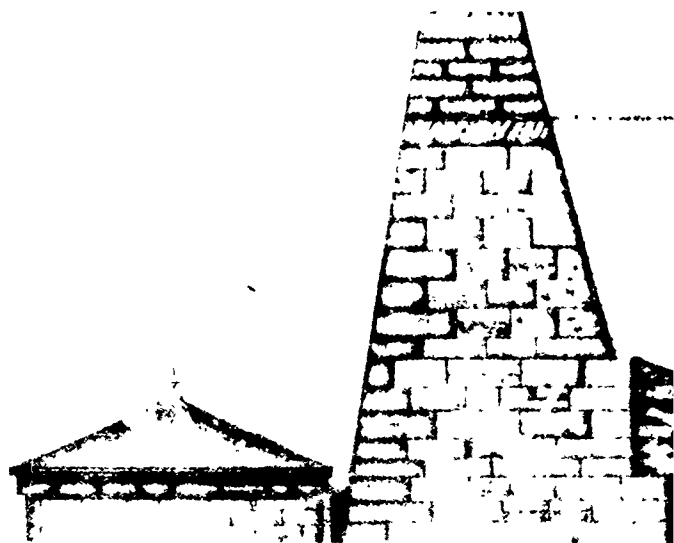
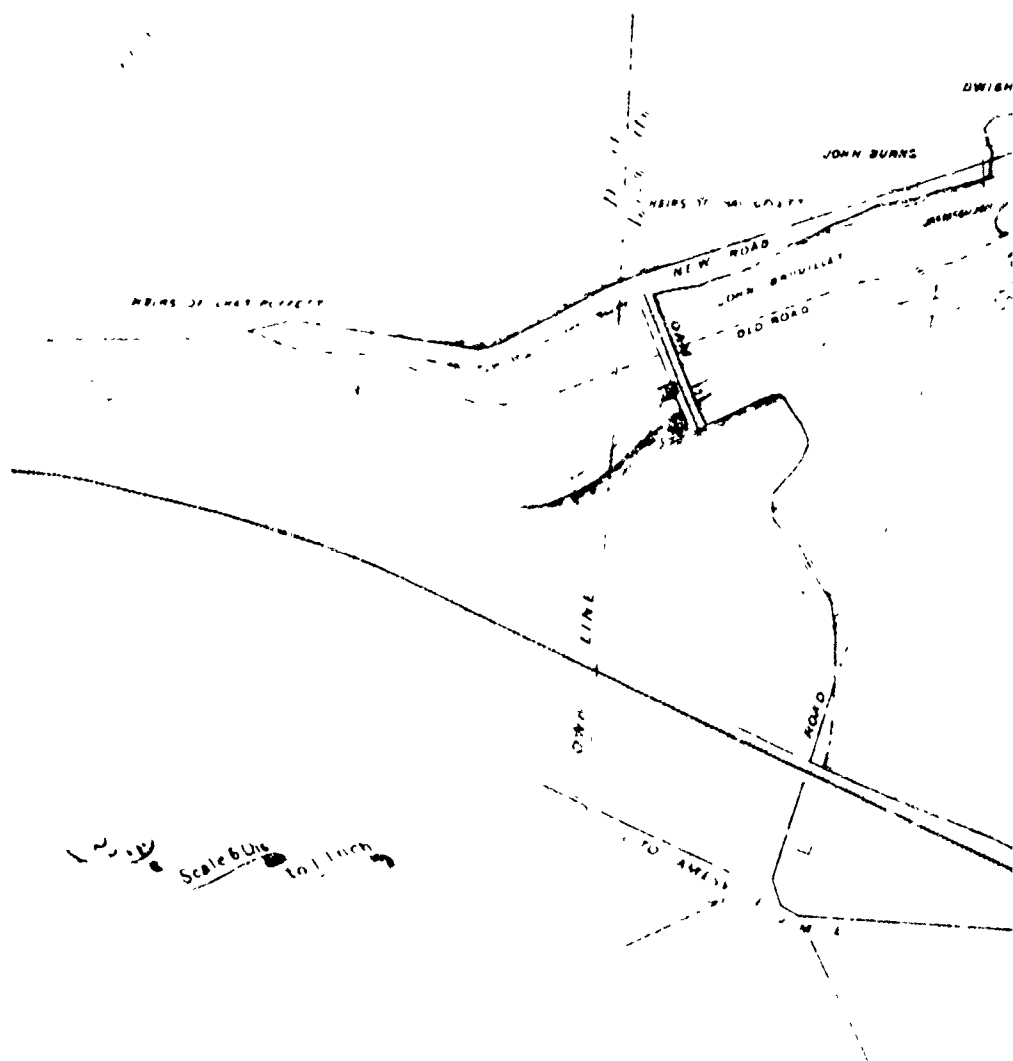
EARTH

TIMBER PILING

FIG
3



ELEVATION OF DAM



MAP OF RESERVOIR

ROAD

JOHN BURNS

O. M. WATKINS

BUTTERNUT CREEK

JOEL KINNEY

MILES D. AVERY

ROSWELL & RILEY SPANGARD

STEPHEN R. HUNGERFORD

ROAD

SYRACUSE BINGHAMTON AND NEW YORK RAIL ROAD

Area within the blue lines	292 ³⁰² / ₁₀₀₀	Acres
Area of Pond	252	"
Average depth	10 ⁴ / ₁₀	Feet
Area of drainage basin	30000	Acres
Capacity	170,000,000	Cubic feet

Will supply to the Canal 20000 Cubic feet of Water per minute for a period of sixty days during the dry season

CHICK

JOEL KINNEY

MILES D AVENY

ROSWELL & RILEY STANNARD

Arch within the blue lines 202 302 Area

Area of Pond	2.52	"
--------------	------	---

Average depth	10 f	Feet
10	10	10
20	20	20
30	30	30
40	40	40
50	50	50
60	60	60
70	70	70
80	80	80
90	90	90
100	100	100
110	110	110
120	120	120
130	130	130
140	140	140
150	150	150
160	160	160
170	170	170
180	180	180
190	190	190
200	200	200
210	210	210
220	220	220
230	230	230
240	240	240
250	250	250
260	260	260
270	270	270
280	280	280
290	290	290
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320	320	320
330	330	330
340	340	340
350	350	350
360	360	360
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390	390	390
400	400	400
410	410	410
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430	430	430
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490	490	490
500	500	500
510	510	510
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870	870	870
880	880	880
890	890	890
900	900	900
910	910	910
920	920	920
930	930	930
940	940	940
950	950	950
960	960	960
970	970	970
980	980	980
990	990	990
1000	1000	1000

Area of drainage basin	300000	Acres
------------------------	--------	-------

Capacity 170,000,000 Cubic feet

STERNEN R. NUMBERS

*Will supply to the Canal 20000 Cubic feet of Water per minute
for a period of sixty days during the dry Season*

RC40

SYRACUSE BINGHAMTON AND NEW YORK RAIL ROAD

SECTION OF DAM.

BENJAMIN T. STANTON

CHESTER

JAS. J. COOK

Note: The blue or Appropriation Line is run on an elevation of 12 Feet above the Spillway of the Dam, except along New Road which is included within the range.

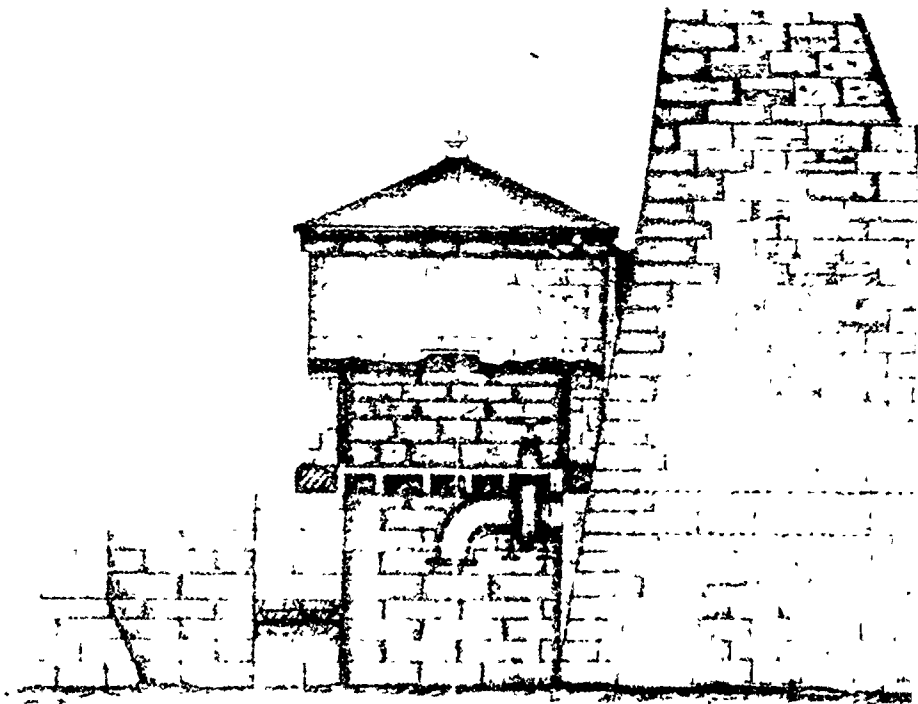
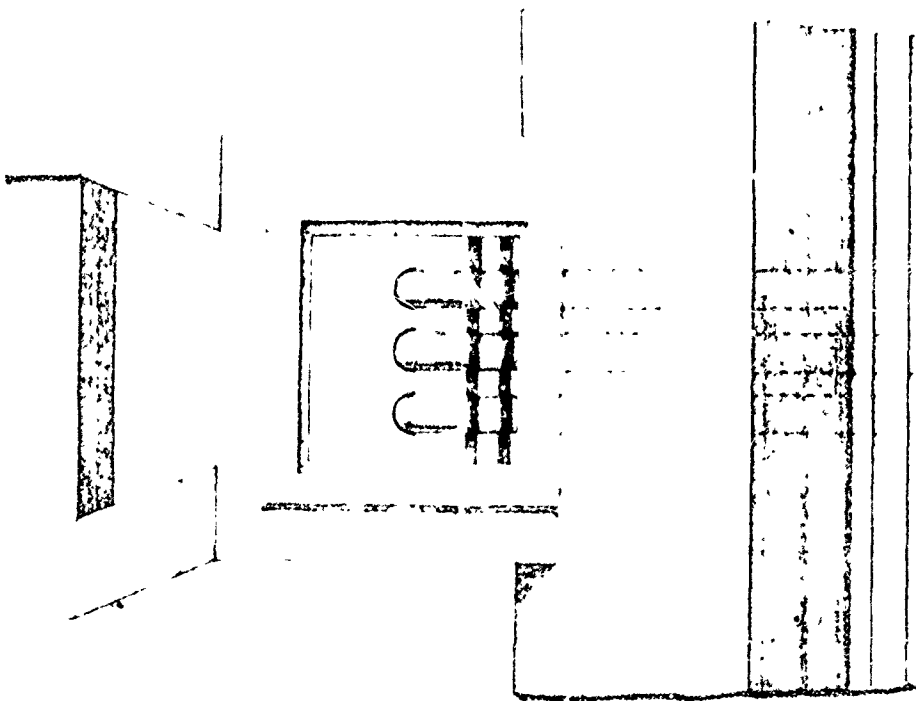
JAMES VIGOR IRVING

ON

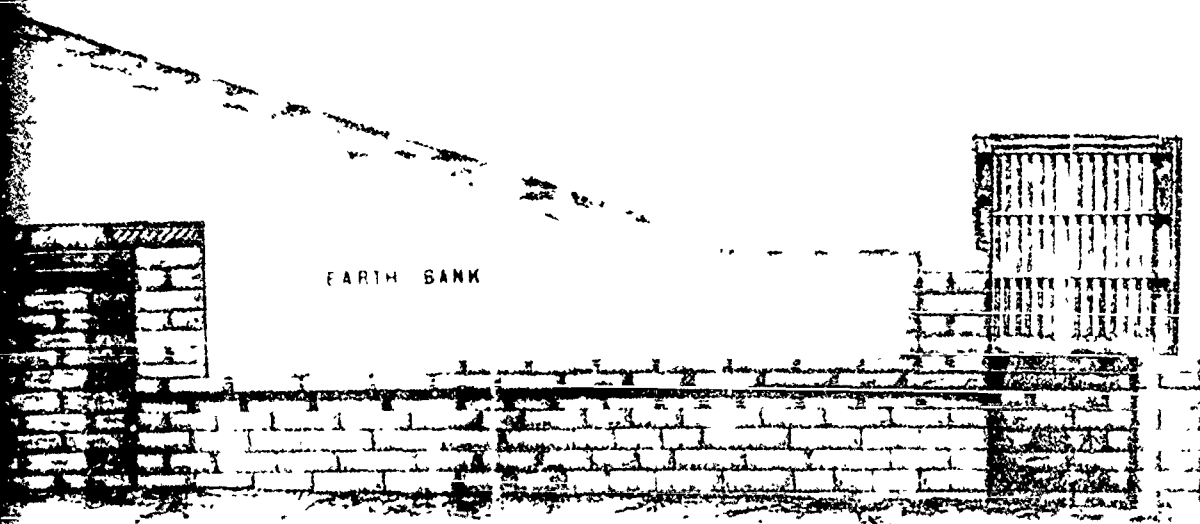
2

11/11/11

UP DAM



2.

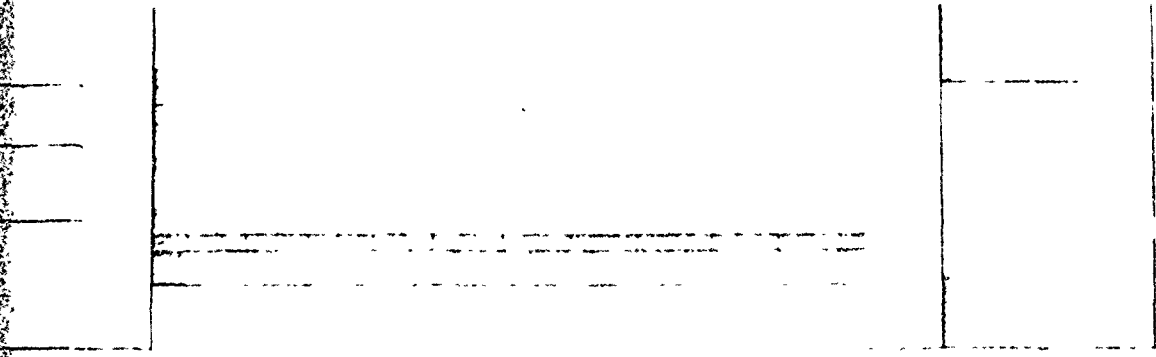
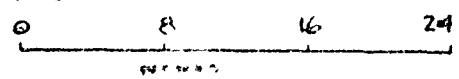


EARTH BANK

Howard S. ...
Division

Scale reduced
approx 20%

SCALE OF PLAN 8 FT TO 1 INCH



Construction complete
Completed in 1873 & 4

5

ON

Butternut Creek

R. W. Stroud

Canal Commissioner

Scale Jr.

Station Engineer

Thos. Goodsell

Resident Engineer

LITH OF WELD PARSONS & CO ALBANY N.Y.

Revised 1872 by W. W. Wright, Canal Comm.

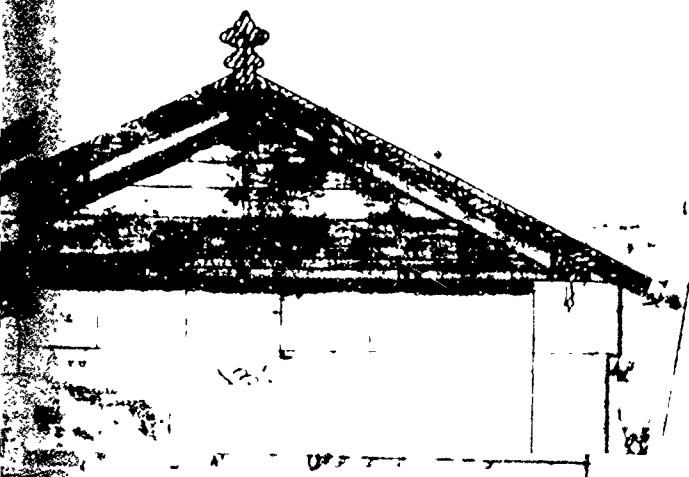
1878 by R. W. Stroud, Canal Commissioner

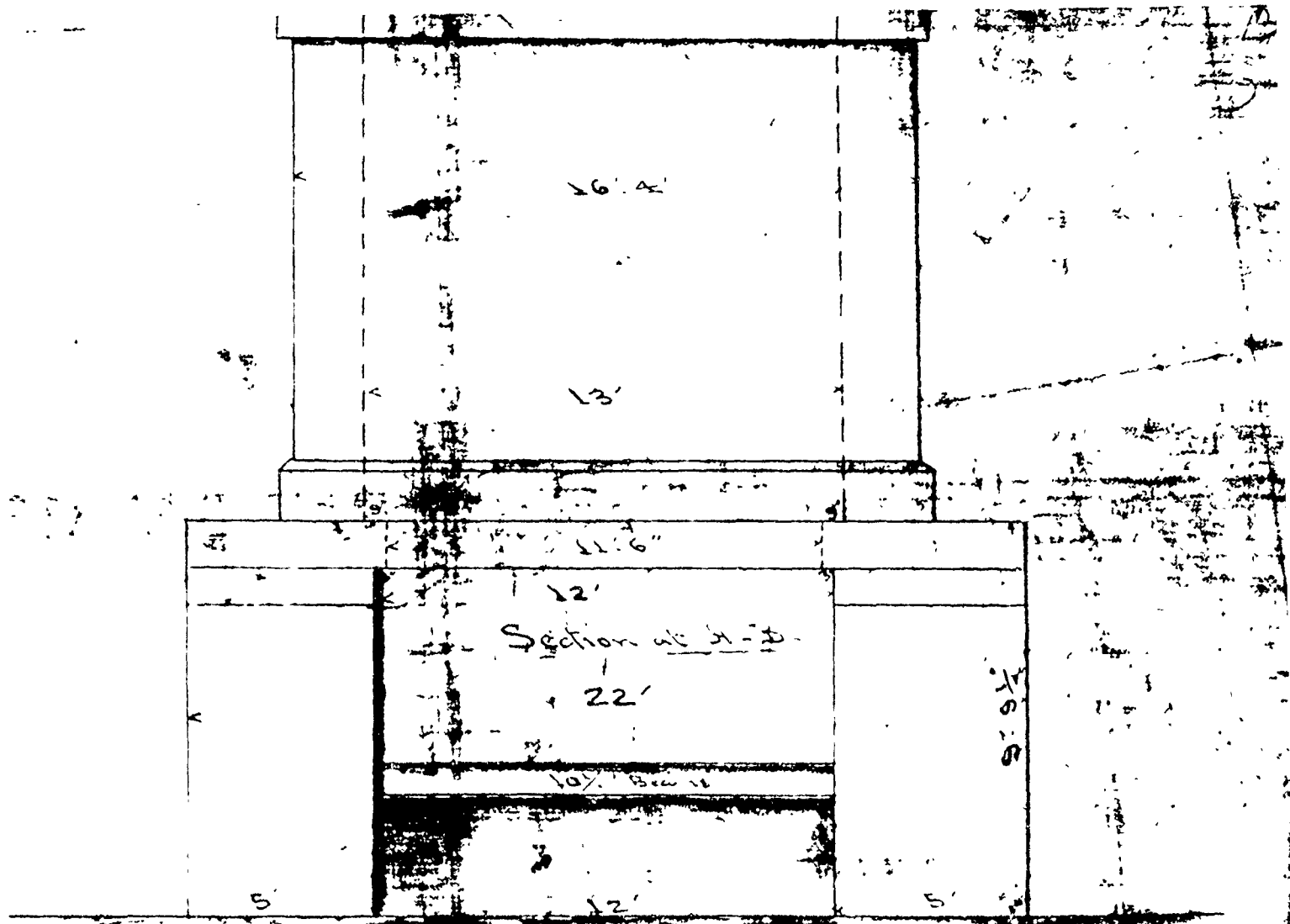
Jamesville Rese

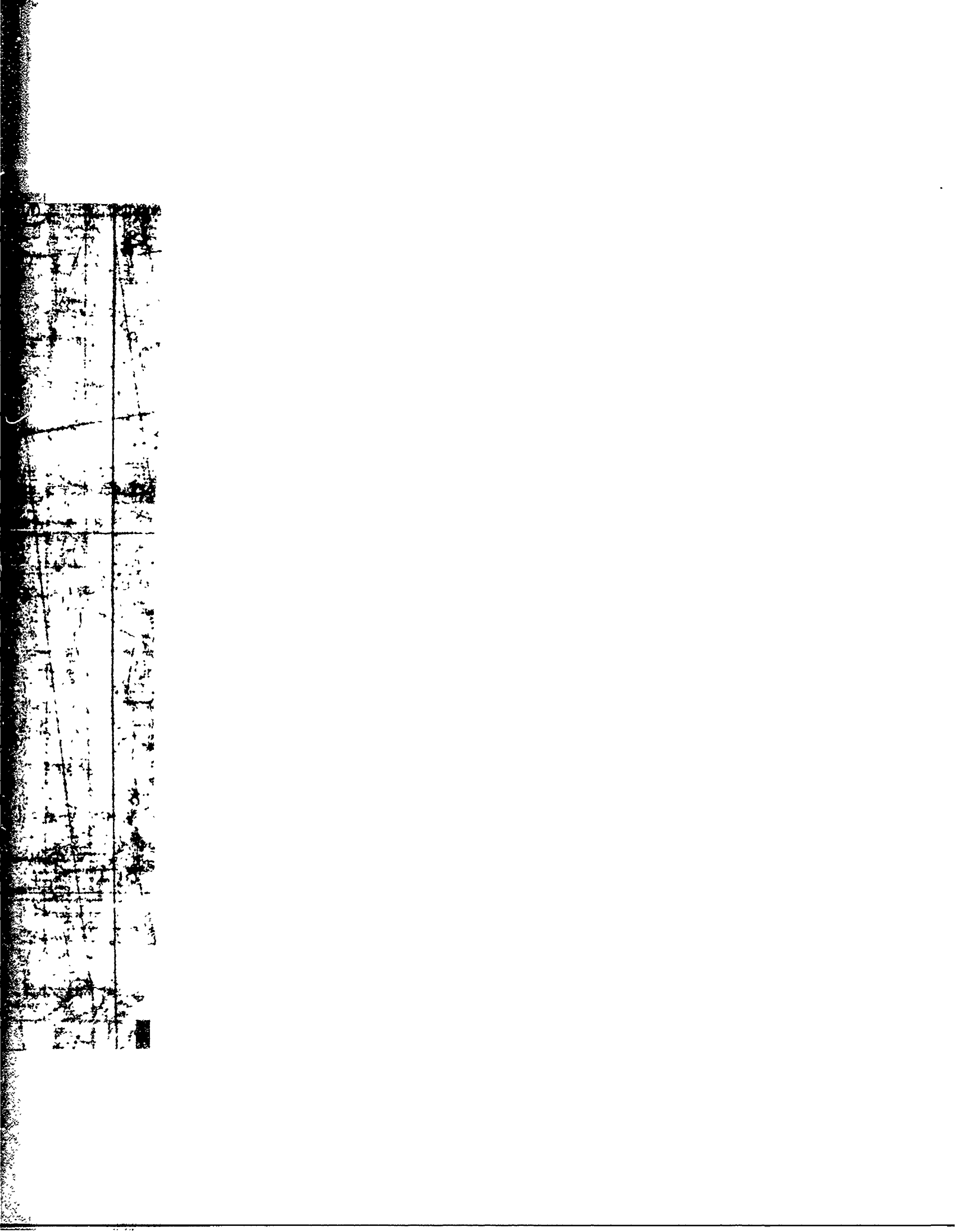
Plan of Dam. Well &
Scale 1/4" = 1'

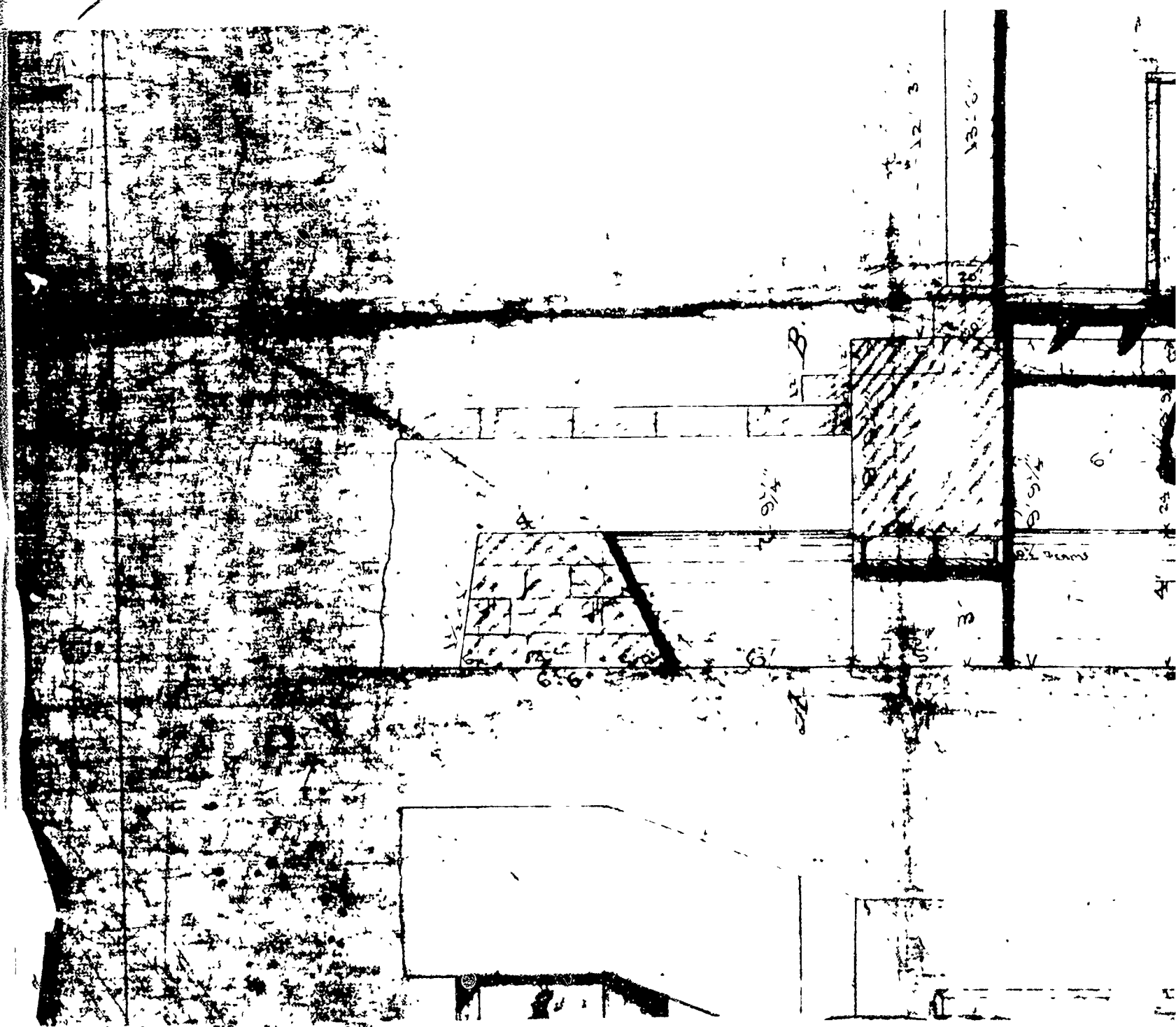


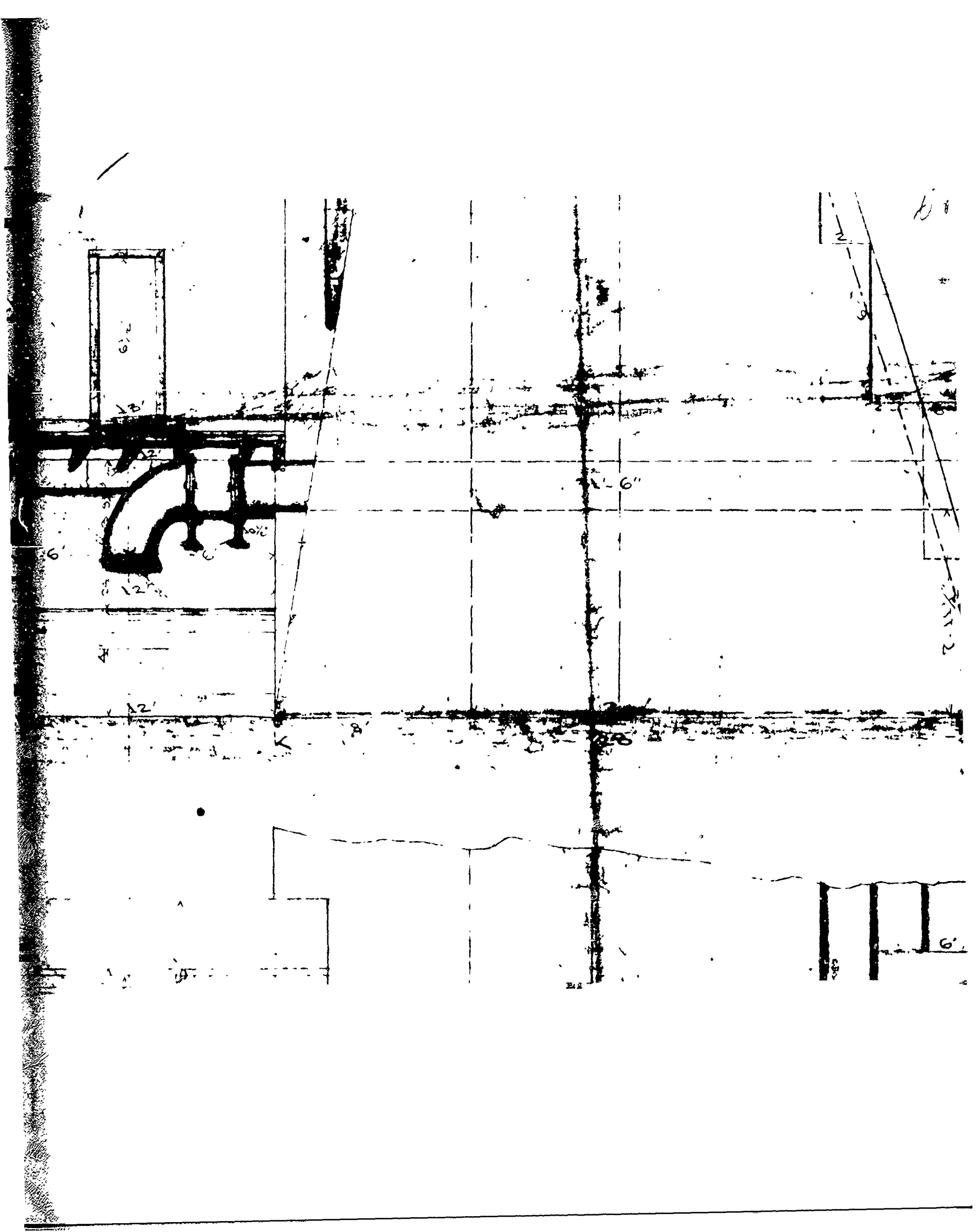
Servoit

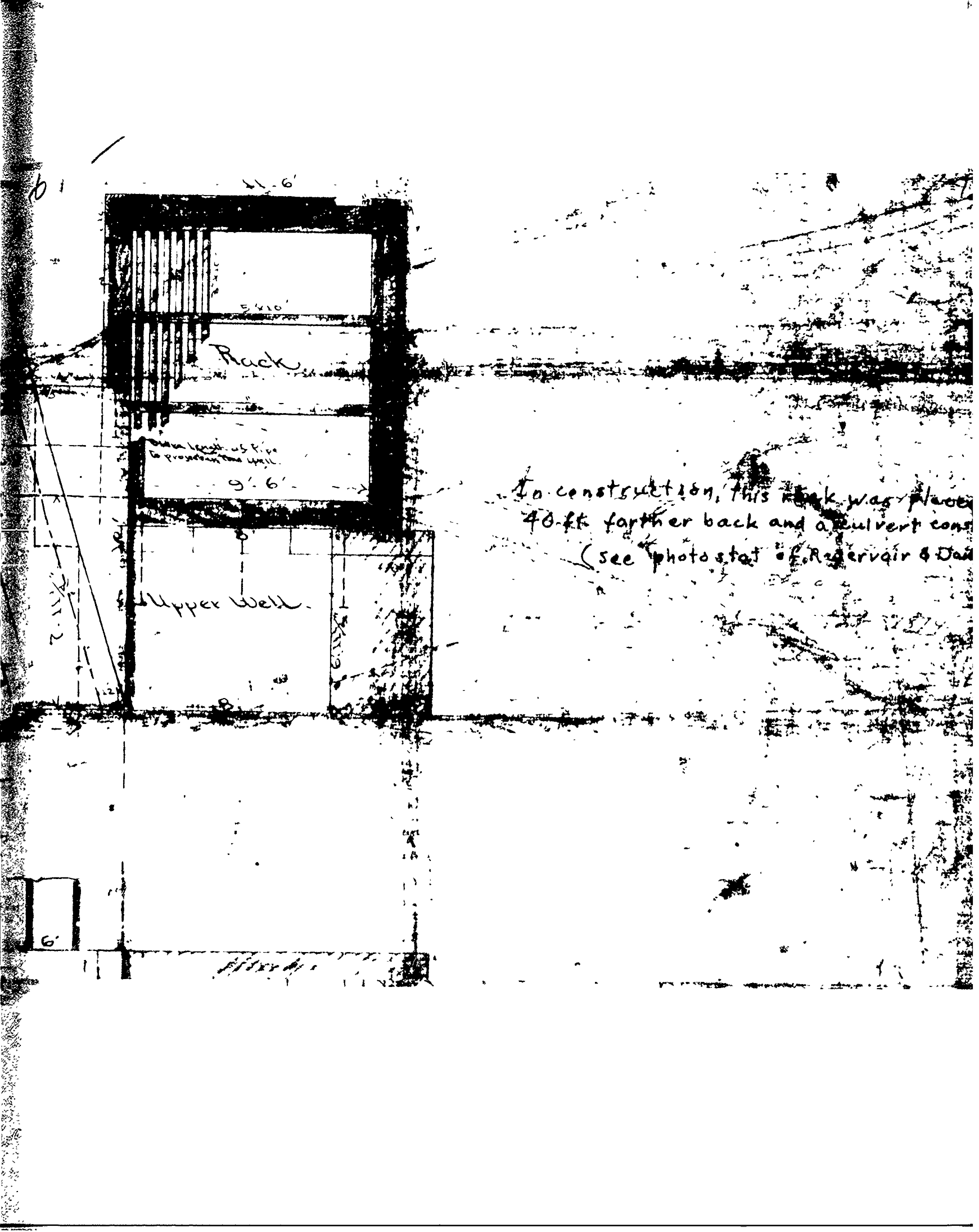












Rack

5' x 10'

9' x 6'

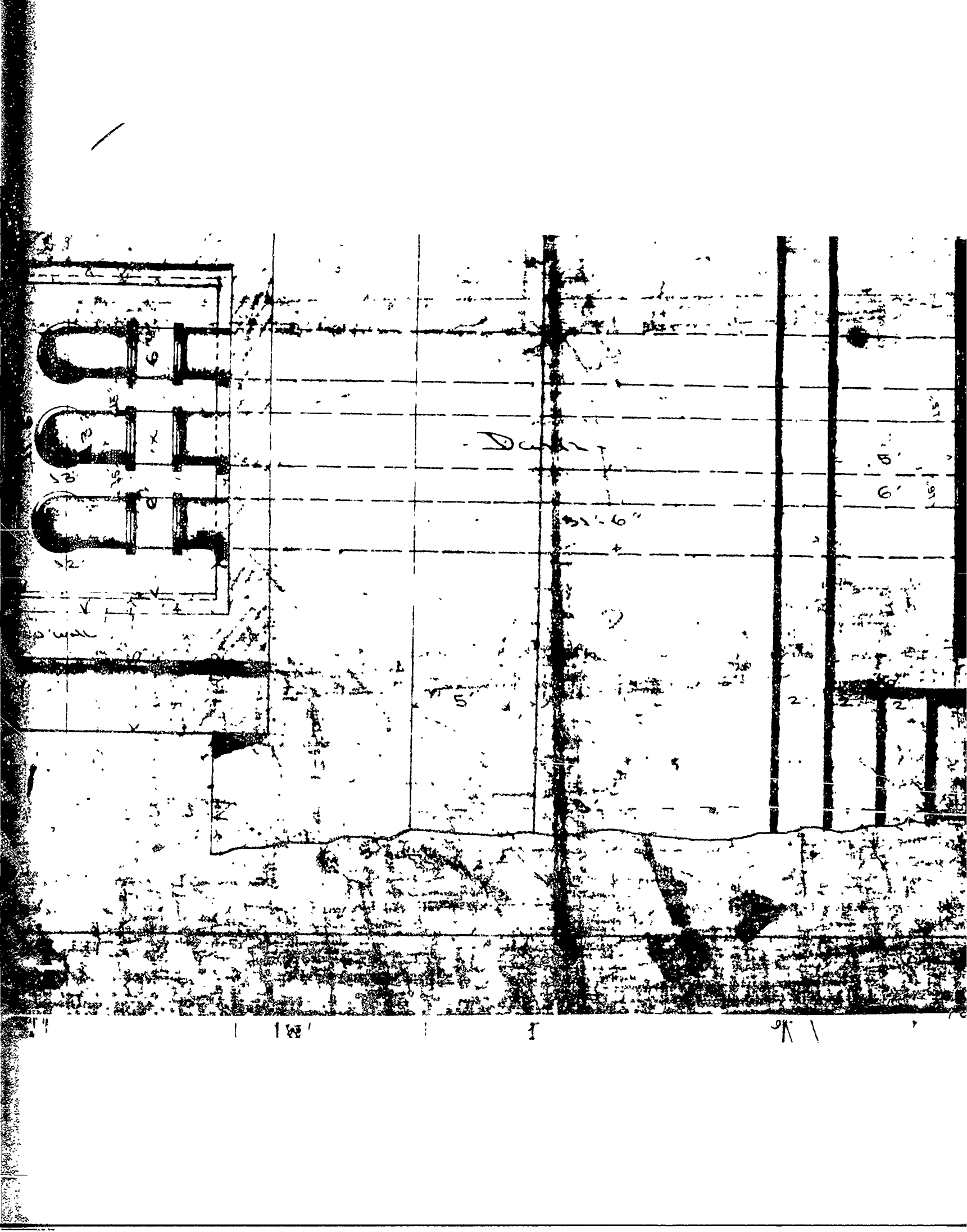
Upper Well

In construction, this rack was placed 40 ft farther back and a culvert constructed (see photostat of Reservoir & Dam)

6'







Upper Well
and
Rock
8'

12'

PHOTOGRAPHS

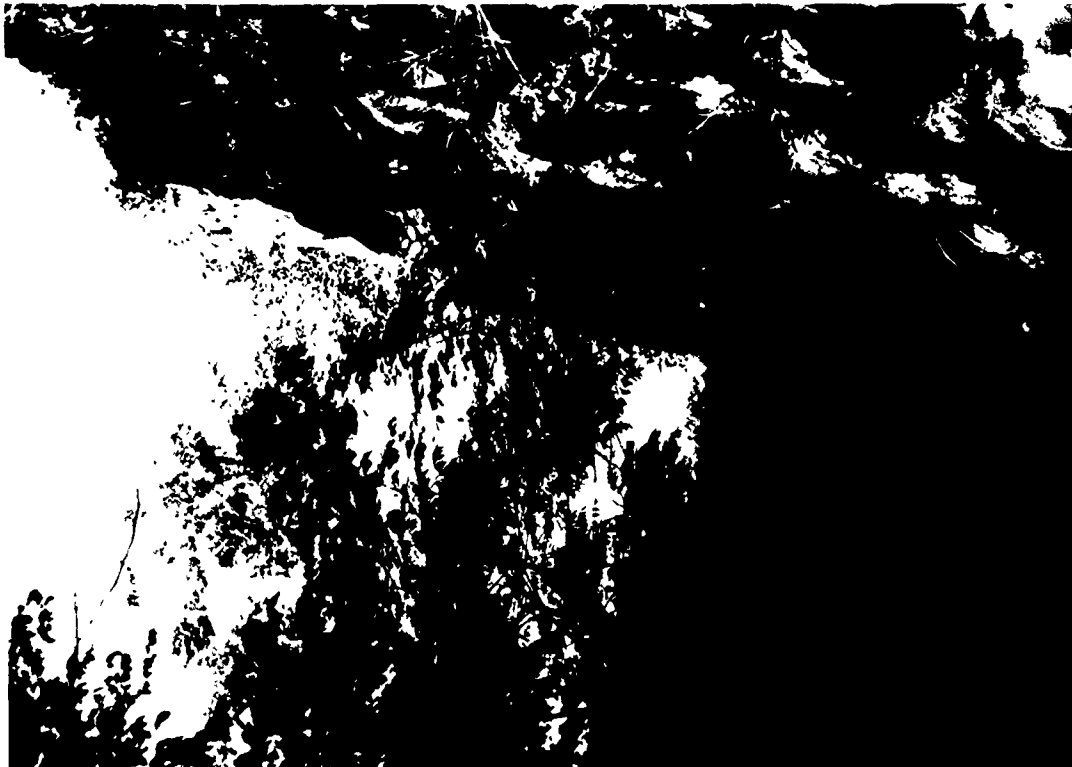
APPENDIX B



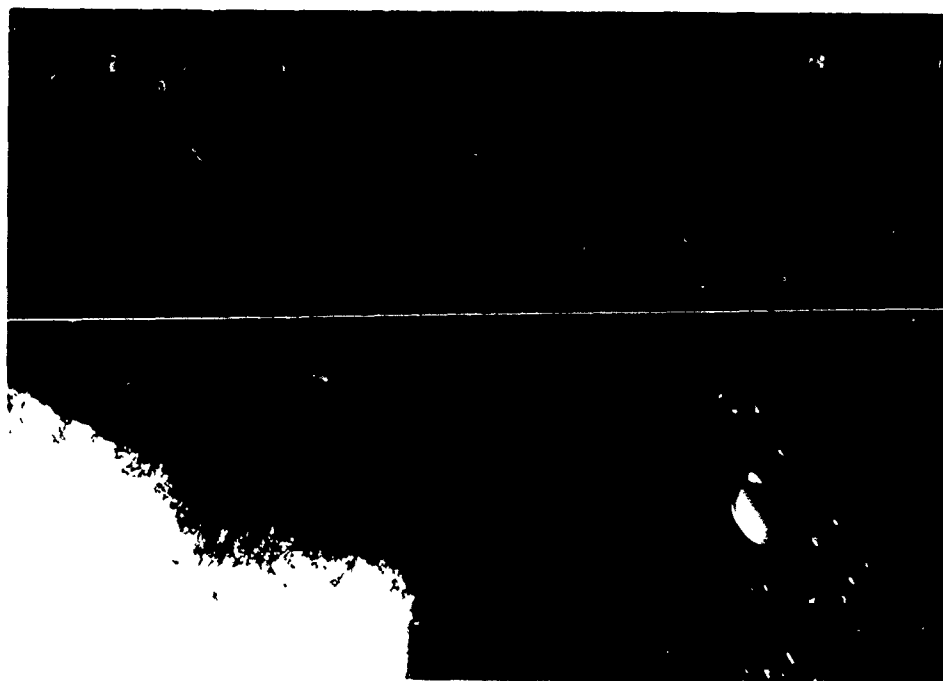
DOWNSTREAM FACE OF DAM, LOCATION A



DOWNSTREAM FACE OF DAM, LOCATION B



"BULGE" ON DOWNSTREAM FACE OF DAM



DOWNSTREAM FACE OF DAM, LOCATION C



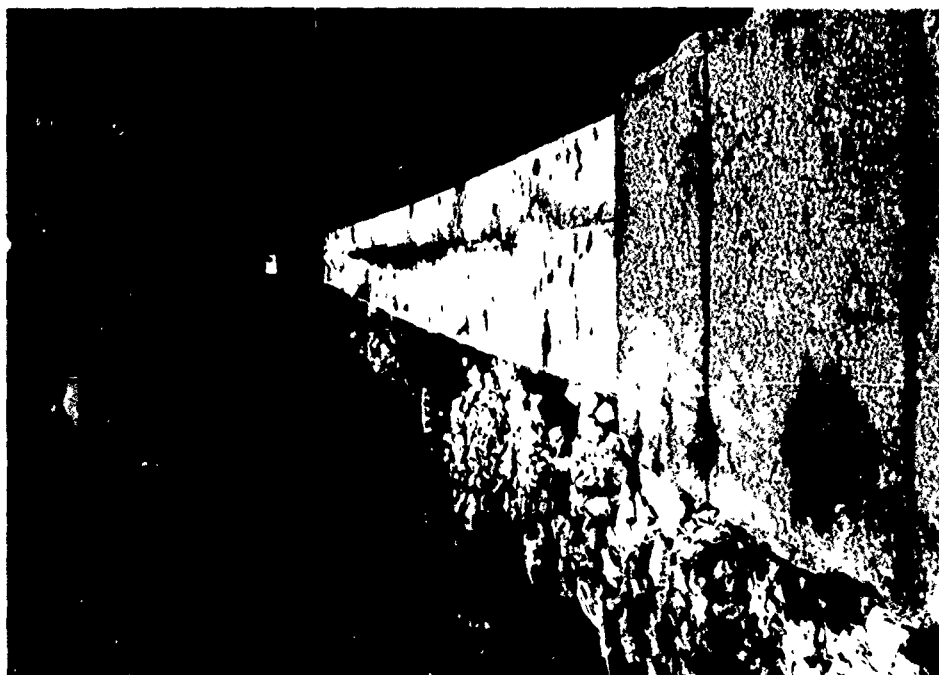
UPSTREAM FACE OF DAM
SHOWING SPALLING OF GUNITE



MASONRY BLOCK WITH SEPARATION CRACK.
NOTE CRACKS ARE IN BLOCK.



SEEPAGE AT EAST ABUTMENT



SHUTTER SHOWING DISPLACEMENT DOWNSTREAM
OF TOP COURSES OF STONE.



GATE VALVES IN GATE 10-31

ENGINEERING DATA CHECKLIST

APPENDIX C

CHECKLIST
ENGINEERING DATA
DESIGN, CONSTRUCTION, OPERATION
PHASE I

NAME OF DAM JAMESVILLE

ID # 418

ITEM	REMARKS
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AS-BUILT DRAWINGS	One As-Built Rendering showing Elevations of Masonry Dam, titled "JAMESVILLE RESERVOIR", circa 1874. One design drawing showing elevation of dam prior to modification, un-REGIONAL VICINITY MAP dated, circa 1870-1872
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USGS

CONSTRUCTION HISTORY Construction begun in 1872, completed in 1874.; narrative of foundation problems contained in N.Y.S. Engineer and Surveyor on the Canals of the State, Annual Report, dated Jan. 16, 1874.

TYPICAL SECTIONS OF DAM

Shown on 1874 drawing

OUTLETS-PLAN

Shown on 1874 drawing

-DETAILS

as above

-CONSTRAINTS

None cited

-DISCHARGE RATINGS

None available

RAINFALL/RESERVOIR RECORDS

ITEM	REMARKS
------	---------

DESIGN REPORTS

NONE AVAILABLE

GEOLOGY REPORTS

NONE AVAILABLE;

DESIGN COMPUTATIONS *NONE AVAILABLE*

HYDROLOGY & HYDRAULICS *NONE AVAILABLE*

DAM STABILITY *NONE*

SEEPAGE STUDIES

NONE AVAILABLE

MATERIALS INVESTIGATIONS *NONE*

BORING RECORDS *NONE*

LABORATORY *NONE*

FIELD *NONE*

POST-CONSTRUCTION SURVEYS OF DAM

NONE AVAILABLE

BORROW SOURCES

NO DATA AVAILABLE

ITEM	REMARKS
MONITORING SYSTEMS	NONE IN EFFECT

MODIFICATIONS 3-24" Gate valves originally installed were replaced with 12" Gate valves in approximately 1928 (50 years ago ±)

HIGH POOL RECORDS

None made. Recollection of 3 ft of water passing over spillway in 1955, as highest remembered pool level.

POST CONSTRUCTION ENGINEERING STUDIES AND REPORTS Guniting of masonry surface on parts of b/s and d/s face of dam.

PRIOR ACCIDENTS OR FAILURE OF DAM None rec'd.
DESCRIPTION
REPORTS

MAINTENANCE No O & M Manual; maintenance as
OPERATION ← clean. required
RECORDS No records

ITEM	REMARKS
------	---------

SPILLWAY PLAN

On 1874 drawing

SECTIONS

DETAILS

OPERATING EQUIPMENT *No details.*

PLANS & DETAILS

STATE OF NEW YORK.

No. 24.

IN ASSEMBLY,

January 10, 1874.

ANNUAL REPORT
OF THE STATE ENGINEER AND SURVEYOR ON THE
CANALS OF THE STATE.

OFFICE OF THE STATE ENGINEER AND SURVEYOR, }
ALBANY, January 13, 1874. }

Hon. JAMES W. HUSTED,

Speaker of the Assembly:

SIR — I have the honor herewith to transmit to the legislature
the annual report of my predecessor, on the canals of the state, for
the year ending September 30, 1873.

Yours respectfully,

S. H. SWEET,
State Engineer and Surveyor.

OFFICE OF THE STATE ENGINEER AND SURVEYOR, }
ALBANY, January 14, 1874. }

Hon. SYLVANUS H. SWEET,

State Engineer and Surveyor:

SIR — I herewith inclose the annual report of the state engineer
and surveyor, on the canals of the state, for the year ending Sep-
tember 30, 1873.

Yours respectfully,

WM. B. TAYLOR.

ERIE CANAL.

The following works, authorized by special laws, have been completed, and the contracts settled, viz.: Raising berme bank near lock 50; raising Geddes' road; removing portions of wall-bench on the Jordan level; removing portions of wall-bench on the Syracuse level; removing portion of wall-bench on long level; constructing overfall and paved waste at outlet of De Ruyter reservoir; improving Cowassan-crook channel; inserting wrought-iron needle-beams in iron bridges at Montezuma, Stevens' and Gutches' bridges at Port Byron, and bridge at Canaseraga; new road at Butternut Creek reservoir; constructing six hundred lineal feet of vertical wall at Durhamville; iron bridge at New Boston; renewing wood-work of Richmond and Crane brook aqueducts.

Good progress has been made upon the works still under contract, as will be seen by inspecting table No. 2.

The construction of Jamesville reservoir, situated on Butternut creek, was commenced by the canal commissioners last year, and work, which is now in progress, was resumed in June last. The last legislature appropriated \$30,000 for this work, which will all be expended previous to the first of January next. The dam of this reservoir is of stone, resting for the greater part on solid rock; and in uncovering the foundation for the west end of the dam, it was found that the rock dipped suddenly to an impracticable depth for the purposes of a foundation. The material overlying the rock is a loose, coarse gravel, interspersed with boulders, and through it water filtered in such quantities as not only proved wasteful, but also endangered the structure. An attempt to cut off the leakage by driving a close row of squared piling resulted in failure, owing to the presence of boulders, and it became necessary to sink the foundation down to a more water-tight strata, which, with extreme difficulty and at considerable expense in pumping, was reached at a depth of about fifteen feet. On the 12th of August, when the excavations were nearly completed, the heaviest rain-storms known at that season of the year deluged the valley of the Butternut creek, sweeping away works that were sufficient to guard against any ordinary flood, completely filling the foundation pit with debris, and compelling the work of weeks to be done over again.

For these reasons, and on account of the insufficient amount appropriated last winter, the completion of this reservoir must be deferred until another season.

The revised estimate of the cost, exclusive of land damages, is \$130,000, requiring a further appropriation of \$25,000.

Contracts have been let for removing the entire balance of the bench-wall on the towing-path side of the Jordan level, and sufficient funds provided to assure its completion next winter.

VISUAL INSPECTION CHECKLIST

APPENDIX D

VISUAL INSPECTION CHECKLIST

1. Basic Data

a. General

Name of Dam JAMESVILLE Hazard Category High

County Onondaga ID# 418

Stream Name Butternut Creek Tributary of —

Location Onondaga County Nearest Town (P.O.) Jamesville

Longitude 76° 4' E Latitude N42° 59' Other Directions —

Date of Insp. Jun 6-7, 1978 Weather Sunny Temperature 70+

b. Inspection Personnel K. Standig, Structural Engineer;
G. Gaydar, Mechanical Engineer; A.
Dalcimascolo, Geotechnical Engineer;
V. Khlopotenkova, Observer.

c. Persons Contacted L. Burns, Regional Waterways
Maintenance Engineer, Region 3, N.Y.S.
Department of Transportation. D. Adrich,
Asst. to Mr. Burns

d. History: Date Constructed Approx 1874

Present Owner N.Y.S. Dept of Transp.

Designed by —

Constructed by —

Recent History —

2. Technical Data

Type of Dam Stone Masonry Drainage Area 30,000 Acres

Height 48 ft Length 446' including spillway

Upstream Slope Stepped Downstream Slope 6(V): 1(H)

Crest Width 6 ft ± Freeboard at Spillway Crest 5.6 ft ±

3 24 inch pipes, each with
a 12 inch gate valve

Low Level Control: (Type and Size) _____

Valve Condition Could not be fully inspected

Emergency Spillway Type (Material) _____ Width 205 ft

Only one
Service Spillway
included in
masonry
dam

Side Slopes _____

Height (Crest to Top) 5.6 ft

Exit Slope _____

Exit Length _____

Ponded Surface Area _____ Acres

Capacity (Normal Level) _____ Acre Feet

Capacity Emergency Spillway Level _____ Acre Feet

3. Embankment

No Embankment Dam per se. Some

a. Crest _____

(1) Vertical Alignment _____

Fill placed in front of
masonry dam at west
abutment to restore
original ground surface

(2) Horizontal Alignment _____

(3) Longitudinal Surface Cracks _____

(4) Transverse Surface Cracks _____

(5) General Condition of Surface _____

(6) Miscellaneous _____

b. Upstream Slope _____

(1) Undesirable Growth or Debris _____

(2) Sloughing, Subsidence, or Depressions _____

(3) Slope Protection _____

(a) Condition of Riprap _____

(b) Durability of Individual Stones _____

(c) Adequacy of Slope Protection Against Waves and Runoff _____

(d) Gradation of Slope Protection - Localized Areas of Fine Material _____

(4) Surface Cracks _____

c. Downstream Slope _____

(1) Undesirable Growth or Debris _____

(2) Sloughing, Subsidence, or Depressions; Abnormal Bulges or Non-Uniformity

(3) Surface Cracks on Face of Slope

(4) Surface Cracks or Evidence of Heaving at Embankment Toe

(5) Wet or Saturated Areas or Other Evidence of Seepage on Face of Slope; Evidence of "Piping" or "Boils"

(6) Fill Contact with Outlet Structure

(7) Condition of Grass Slope Protection

d. Abutments

(1) Erosion of Contact of Embankment with Abutment from Surface Water Runoff, Upstream or Downstream

(2) Springs or Indications of Seepage Along Contact of Embankment with the Abutments

**(3) Springs or Indications of Seepage in Areas a Short Distance
Downstream of Embankment - Abutment Tie-in**

e. Area Downstream of Embankment, Including Tailrace Channel

(1) Localized Subsidence, Depressions, Sinkholes, Etc. _____

(2) Evidence of "Piping" or "Boils" _____

(3) Unusual Presence of Lush Growth, such as Swamp Grass, etc. _____

(4) Unusual Muddy Water in Downstream Channel _____

(5) Sloughing or Erosion _____

(6) Surface Cracks or Evidence of Heaving Beyond Embankment, Toe _____

(7) Stability of Tailrace Channel Sideslopes _____

(8) Condition of Tailrace Channel Riprap _____

(9) Adequacy of Slope Protection Against Waves, Currents and Surface
Runoff

(10) Miscellaneous _____

f. Drainage System _____

(1) Condition of Relief Wells, Drains and Appurtenances _____

(2) Unusual Increase or Decrease in Discharge from Relief Wells

4. Instrumentation

NO INSTRUMENTATION IN EFFECT

(1) Monumentation/Surveys _____

(2) Observation Wells None

(3) Weirs None

(4) Piezometers None

(Other)

5. Reservoir

a. Slopes Portions of reservoir slopes
visible from the dam show no signs
of distress, steep unstable slopes or
other adverse conditions

b. Sedimentation Apparently no sedimentation
near the D/S face of the dam

6. Spillways

Only one spillway, in masonry section
a. ~~Principal Spillways~~ ~~Inlet Condition~~ 205' long X 8'3" wide

~~Pipe Condition~~ Flat masonry sill

General Remarks (include information such as recently repaired,
potential for debris accumulation, special items of note, etc.)

Evidence of movement of upper two courses
of stone, including sill; max D/S movement of
approx 9" to 10" occurs approx 135-140' from east
end of spillway; 4" opening between U/S 39" wide

~~b. Emergency Spillways~~ ~~General Condition~~ Stone and D/S
60" wide stones which form sill; filled
with mortar; apparently result of ice
~~tree growth~~ pressure

Erosion _____

Other Observations _____

7. Structural (if required) See Attached Appendix

8. Downstream Channel

Butternut Creek

a. Condition (obstructions, debris, etc.) Highway embankment with crossing, consisting of embankment on a concrete box culvert (double box, with each box 6 to 8 ft wide). Hwy crossing at Jamesville.

b. Slopes Slopes of D/S channel are steep - valley is narrow north to Jamesville

c. Approximate No. Homes and Population Several homes in D/S channel would be affected by flood

d. General

A. Dolanias Co Co
TEAM CAPTAIN

STRUCTURAL INSPECTION CHECKLIST

PHASE I DAM INSPECTION

Masonry

1. ~~Concrete~~ Surfaces Most of mortar between stone masonry blocks is missing
2. Structural Cracking Bulging of the D/S face of Dam between gate house and west abutment. Max bulge approx 20-25 below top of dam; 4"-5" displacement of courses.
3. Movement - Horizontal and Vertical Alignment Horiz & Vert. alignment of crest of dam apparently OK. SEE ADDITIONAL NOTES
4. Junctions with Abutments or Embankments Bulge occurs near west abutment, which is an embankment placed to restore original ground
5. Drains - Foundation, Joint, Face None
6. Water Passages, Conduits, Sluices Could not be inspected; pipes and gate bodies are located below gate house floor which is marked down w. spikes
7. Seepage or Leakage Seepage through rock foundation at ~~east~~ abutment is "end run" around masonry structure; approx. 50 to 150 gpm. Some seepage (minor)
8. ~~Monolith joints~~ ~~Construction joints~~ Through dam masonry in area of bulging. Reported to be seepage around granite placed m/s face of dam above full term.
9. Foundation Limestone at east abutment and east of gatehouse. Reportedly on soil ("earth") at west abutment, with partial cutoff with timber piling in valley and at west abut.

10. Abutments Seepage through rock foundation at east abutment.

11. Control Gates Three 24 inch conduits with 12 inch gate valves - NOT USUALLY INSPECTED - only gate stems and tops of stuffing boxes seen

12. Approach and Outlet Channels Gatehouse tilting D/S
D/S tilt of N. wall - 4" in 11 ft at west corner; 2 1/4" at East corner.

13. Stilling Basin

14. Intake Structure Not inspected, under water

15. Settlement Horizontal joints between stone courses apparently open in area of bulging, could be result of differential settlement.

16. Stability

a. Overturning

b. Sliding

c. Seismic

17. Instrumentation NONE

a. Alignment

b. Uplift

c. Seismic

18. Miscellaneous

TAMS

Job No. 1487-10

Sheet 1 of

Project N.Y.S. Dam Inspection

Date

Subject Supplementary notes on

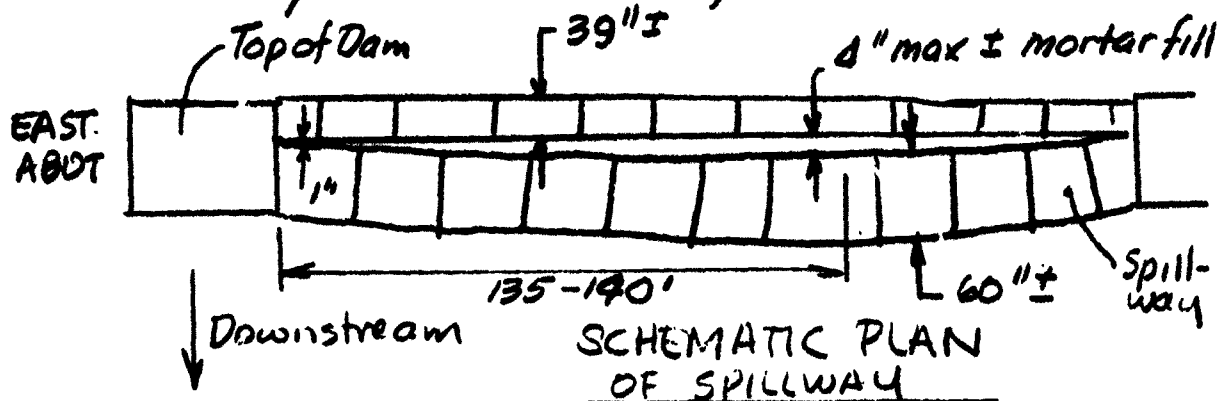
By ARD

JAMESVILLE DAM

Ch'k. by

June 6, 1978 — June 7, 1978

1. Back face of dam above the earth berm and portions of the front (D/S) face gunited in the 1930's or 1940's. Guniting is cracked and spalled in many areas; seepage on face of dam between gatehouse and west abutment worsens, reportedly, when water level is above or splashes over top of guniting.
2. Top two courses of stone in spillway section are displaced downstream, reportedly as a result of ice action and freezing and thawing.



Max downstream (D/S) movement of downstream stones approximately 9"-10" occurs 135-140 ft west of East limit of spillway. Gap between U/S and D/S stones filled with mortar; stones were reported to be pinned in place after movement.

3. Bulging occurs on downstream face of masonry dam between gatehouse and west abutment. Point of maximum bulge generally 20 to 25 ft below top of dam. Measurement made at three locations as follows:

TAMS

Job No. 1487-10

Project N.Y.S. Dam Inspections

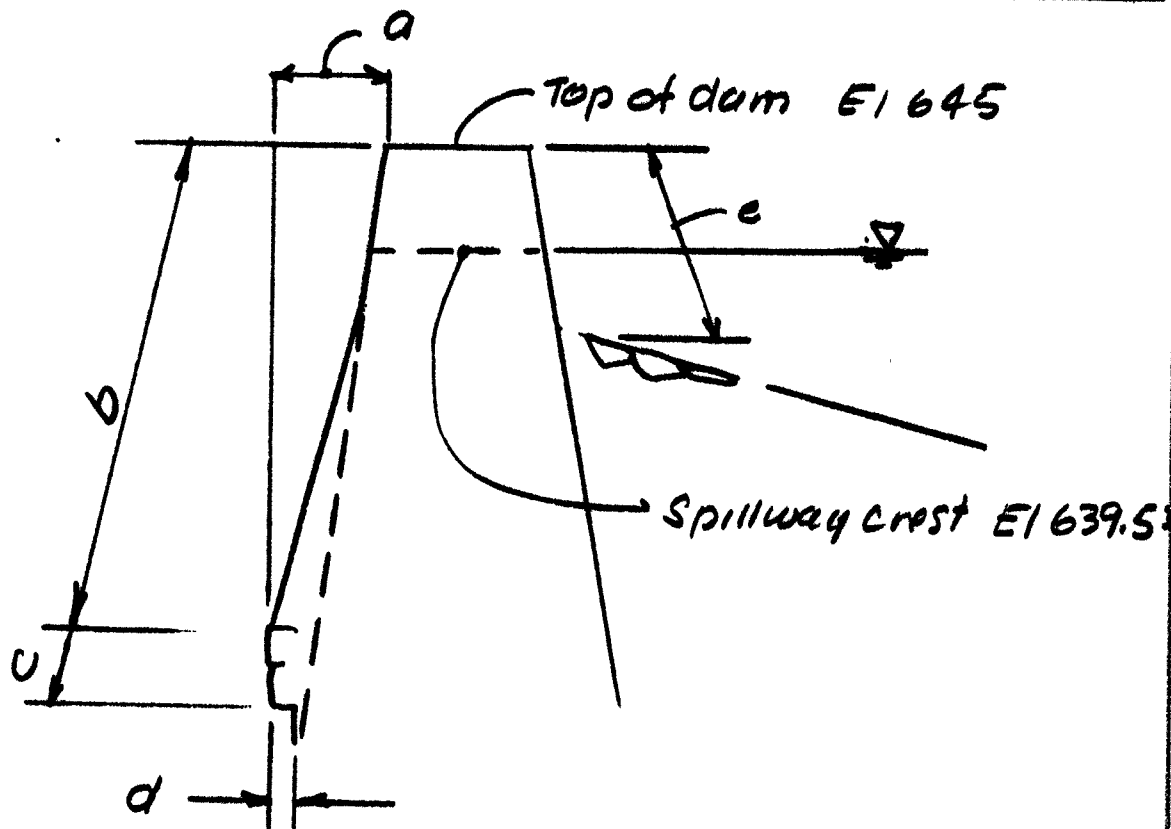
Subject Supplementary notes on
JAMESVILLE DAM

Sheet 2 of

Date

By ARD

Ch'k. by



Location:

Designated on Photo by:

a, Downstream offset to
point of max. Bulge:

b, Distance from top of dam:

c, " " " " " " " " :

d, Max. Horiz. displacement
between adjacent

courses of stone:

e, Distance from top of dam
to u/s berm:

Distance east of west end
of masonry dam:

A	B	C
1 finger	2 fingers	3 fingers
53 1/2"	64"	74 1/2"
19.2'	24.0'	24.0'
22.0'	29.0'	—
5"	4"	—
6.0'	8.4'	11.0'
94'	124'	146'

TAMS

Job No. 1487-10

Sheet 3 of

Project NYS Dam Inspection

Date

Subject Supplementary notes on
JAMESVILLE DAM

By ARD

Ch'k. by

4. Additional measurements to the surface of the upstream berm;

Location	Distance below: Top of Dam at <u>E1645</u>	Spillway Crest <u>E1639.5'</u>
West side of Gatehouse	11.5'	
West side of spillway	18.7'	
Center of Spillway		13.7'

5. Gatehouse:

Gates: Visible in gatehouse are stems, guides and upper ends of stuffing boxes of three 12 inch gates. At time of inspection gates were open approximately 4 inches. There was some leakage from the stuffing box of the central gate. Outlet conduits and valve rollers could not be inspected as they are located below a planed floor which is spiked to the floor beams.

Gatehouse structure: The gatehouse tilts downstream (North). Plumb bob measurements indicate the north wall tilts 4 inches D/S in 11 ft height at the west corner and 2' 4 inches in 11 ft height at the east corner.

6. The dam has been inspected once every two years since 1973 as part of NYS DOT program of inspecting all their facilities. The 1973 report states that "dam should be placed under contract for rehabilitation." The 1977 report cites, bulge + increase in leakage at west side, large holes in stone joints, cut brush and remove roots.

TAMS

Job No. 1487-10

Sheet 4 of _____

Project NYS Dam Inspection

Date _____

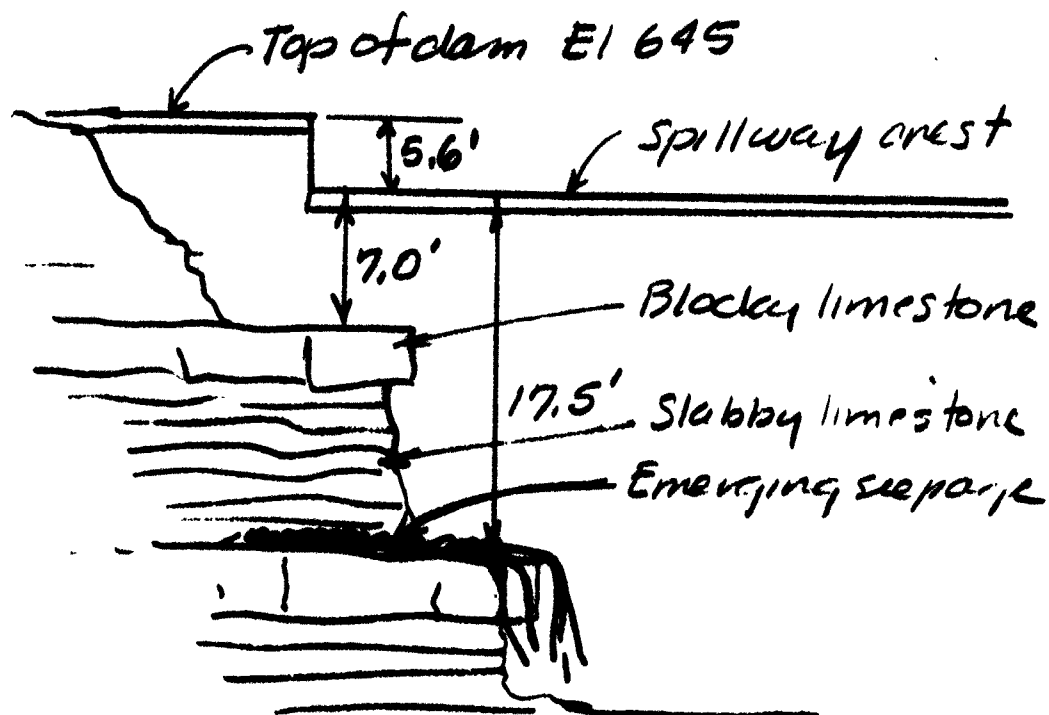
Subject Supplementary notes on
JAMESVILLE DAM

By Arp

Ch'k. by _____

[from face of dam].

7. There is seepage emerging from the east abutment rock, immediately adjacent to the dam.

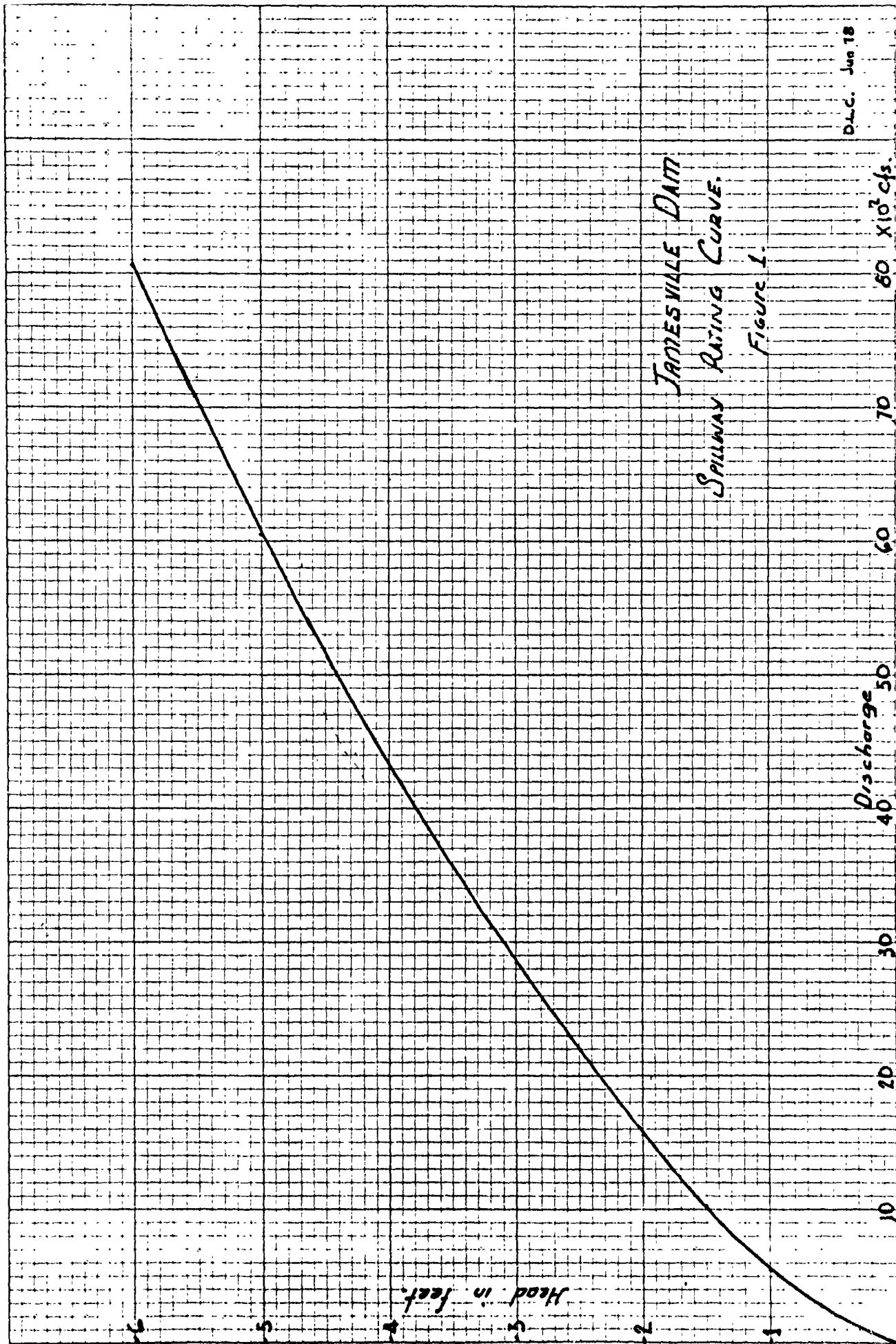


ELEVATION LOOKING UPSTREAM
AT EAST ABUTMENT

8. There is evidence of FeO_2 staining on lower portion of the dam under the spillway.
9. There is a low area saddle west of the dam - The approx. elevation is $639.5 + 4.0' = \text{El } 643.5 \pm$.

HYDROLOGIC DATA AND COMPUTATIONS

APPENDIX E



TAMS

Job No. 1487-10

Sheet 1 of

Project INSPECTION JAMESVILLE DAM

Date 17 May

Subject SPILLWAY CAPACITY RATING

By d/c

Ch'k. by

Length \approx 205' Width \approx 8.0'

H = head (ft)	C	Q (cfs)
1.0	2.68	550
1.5	2.69	1010
2.0	2.70	1570
3.0	2.66	2830
4.0	2.65	4350
5.0	2.64	6050
6.0	2.68	8070

IAMS

Job No. 1487-10

Sheet _____ of _____

Project Inspection - Jamesville Dam.

Date June 27, 1978

Subject Floods of Record. at Butternut
Creek Gaging Station

By D.L.C.

Ch'k. by _____

Date.	Peak Discharge. cfs.
1959 Jan 22	1190
1960 Mar 30	1200
61 Feb 25	1170
62 Mar 12	853
63 Mar 26	836
64 Mar 5	1260
1965 Feb 8	490
66 Feb 13	666
67 July 11	836
68 June 26	565
69 Jan 30	649
1970 Apr 2	898
71 Mar 15	970
72 Jun 21	1120
73 Dec 6	770
74 Jul 3	2820
1975 Sep 26	1700
76 Apr 16	1440
77 Mar 13	1550

Figure 3.