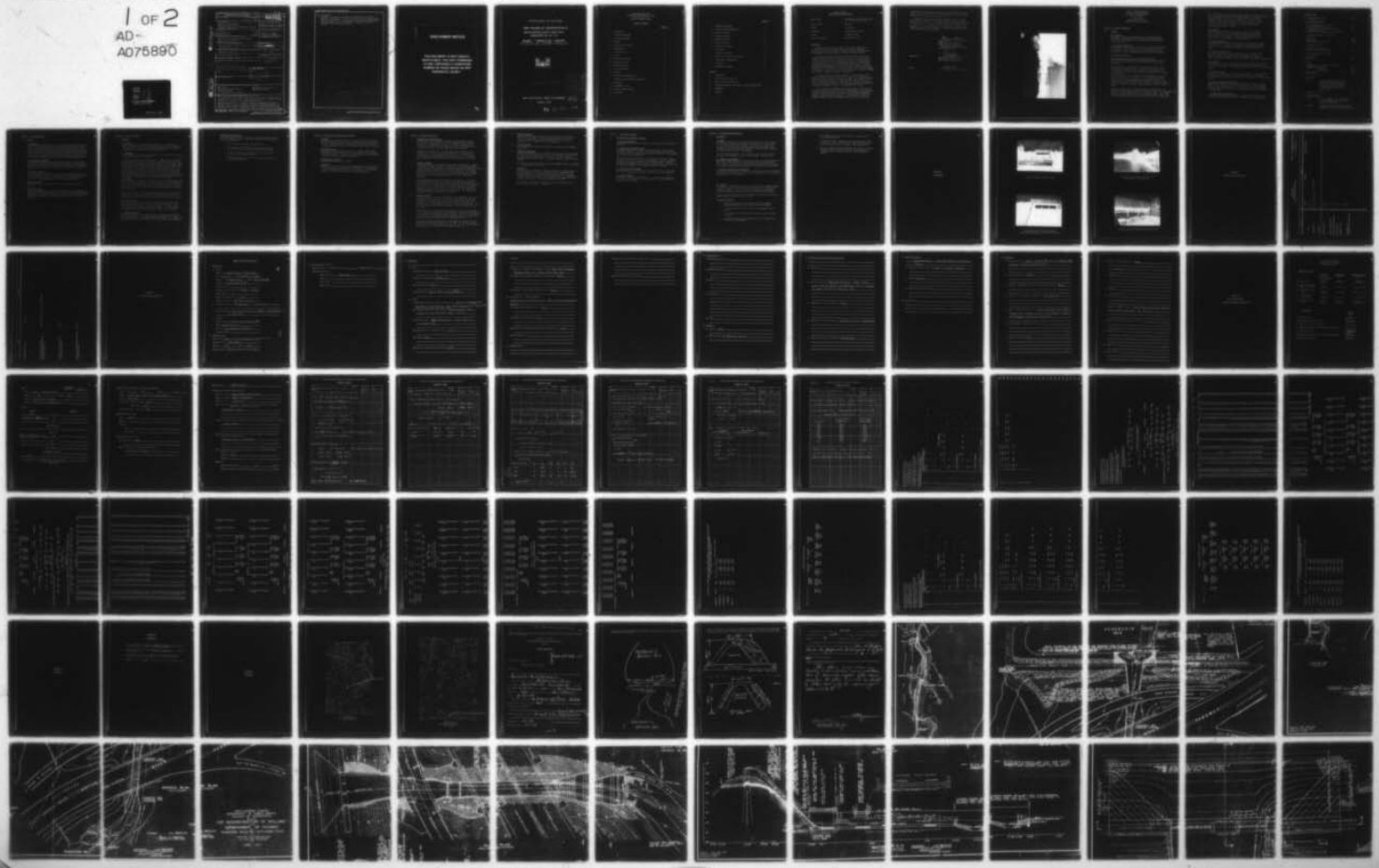
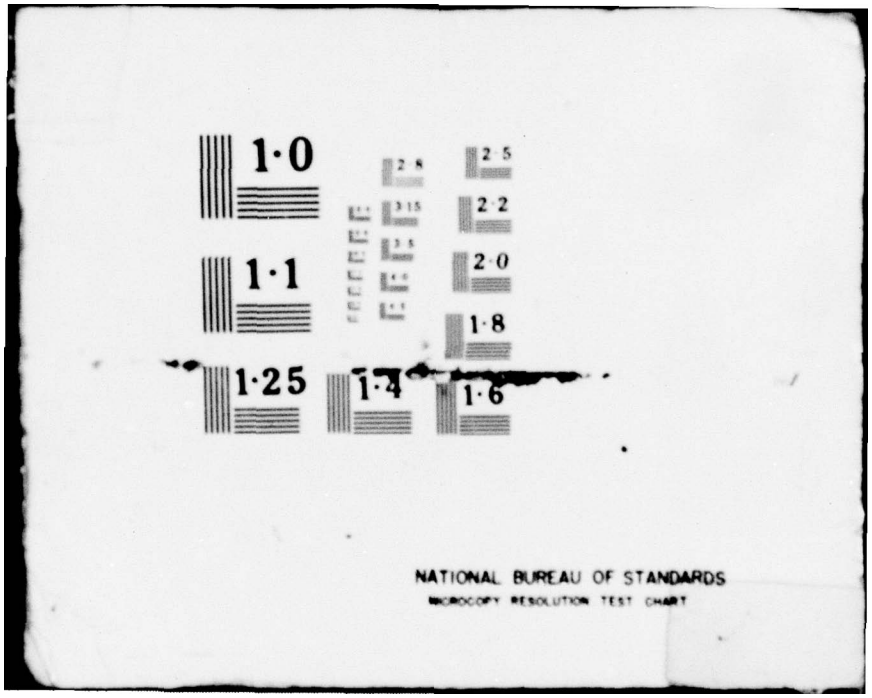
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19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Dam Safety
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Visual Inspection
Hydrology, Structural Stability
New Rochelle Reservoir No. 3
Westchester County

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.

New Rochelle Reservoir No. 3 did not reveal any conditions which pose an immediate threat to life or property. Additional studies recommended. It has been determined that the embankment would be overtopped for all storms exceeding 35% of the PMF. Significantly dangerous water surface levels could

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20. (Continued)
be reached downstream of the dam if the embankment is completely breached. Consequently, the dam is assessed as unsafe, non-emergency (SEE REPORT ASSESSMENT). An emergency operation plan, warning system, and surveillance should be implemented as remedial measures are completed. Minor deficiencies exist.

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HUTCHINSON RIVER BASIN

NEW ROCHELLE RESERVOIR NO. 3

WESTCHESTER COUNTY, NEW YORK
INVENTORY NO. N.Y. 110

PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM



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NEW YORK DISTRICT CORPS OF ENGINEERS

MARCH, 1979

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HUTCHINSON RIVER BASIN
NEW ROCHELLE RESERVOIR NO. 3 DAM
I.D. No. N.Y. 110
Phase I Inspection Report

TABLE OF CONTENTS

		PAGE NO.
-	ASSESSMENT	
-	OVERVIEW PHOTOGRAPH	
1	PROJECT INFORMATION	1
1.1	GENERAL	1
1.2	DESCRIPTION OF PROJECT	1
1.3	PERTINENT DATA	3
2	ENGINEERING DATA	4
2.1	DESIGN	4
2.2	CONSTRUCTION RECORDS	4
2.3	OPERATION RECORD	4
2.4	EVALUATION OF DATA	4
3	VISUAL INSPECTION	5
3.1	FINDINGS	5
3.2	EVALUATION OF OBSERVATIONS	6
4	OPERATION AND MAINTENANCE PROCEDURES	7
4.1	PROCEDURE	7
4.2	MAINTENANCE OF DAM	7
4.3	WARNING SYSTEM IN EFFECT	7
4.4	EVALUATION	7

PAGE NO.

5 HYDROLOGIC/HYDRAULIC 8

5.1 DRAINAGE AREA CHARACTERISTICS 8

5.2 ANALYSIS CRITERIA 8

5.3 SPILLWAY CAPACITY 8

5.4 RESERVOIR CAPACITY 9

5.5 FLOODS OF RECORD 9

5.6 OVERTOPPING POTENTIAL 9

5.7 EVALUATION 9

6 STRUCTURAL STABILITY 10

6.1 EVALUATION OF STRUCTURAL STABILITY 10

7 ASSESSMENT/RECOMMENDATIONS 11

7.1 ASSESSMENT 11

7.2 RECOMMENDED MEASURES 11

APPENDIX

A. PHOTOGRAPHS

B. ENGINEERING DATA CHECKLIST

C. VISUAL INSPECTION CHECKLIST

D. HYDROLOGIC/HYDRAULIC ENGINEERING DATA AND COMPUTATIONS

E. REFERENCES

F. DRAWINGS

PHASE 1 REPORT
NATIONAL DAM SAFETY PROGRAM

Name of Dam:	New Rochelle Reservoir No. 3 Dam I.D. No. NY 110 (#215-1336)
State Located:	New York
County:	Westchester
Watershed:	Hutchinson River Basin
Stream:	Hutchinson River
Date of Inspection:	November 16, 1978

ASSESSMENT

Examination of available documents and a visual inspection of the dam did not reveal conditions which constitute an immediate hazard to human life or property. However, additional studies should be undertaken to further evaluate conditions affecting the dam.

Additional hydrologic investigations are required to more accurately determine the site specific characteristics of the watershed. Using the Corps of Engineer's Screening Criteria for initial review of spillway adequacy, it has been determined that the embankment would be overtopped for all storms exceeding approximately 35% of the PMF (Probable Maximum Flood). A flood wave analysis, assuming a complete breaching of the embankment, indicates that water surface levels downstream of the dam could reach levels which would pose significant danger to residents. The spillway is, therefore, adjudged as seriously inadequate and the dam is assessed as unsafe, non-emergency.

The classification of "unsafe" applied to a dam because a seriously inadequate spillway is not meant to connote the same degree of emergency as would be associated with an "unsafe" classification applied for a structural deficiency. It does mean that there appears to be a serious deficiency in spillway capacity and if a severe storm were to occur, overtopping and failure of the dam could take place, significantly increasing the hazard to loss of life downstream of the dam.

It is, therefore recommended that within 3 months of the date of notification of the owners, a hydrologic investigation of the structure should be undertaken to determine the appropriate mitigating measures to be taken. Within 18 months of the date of notification, appropriate remedial measures should be completed. In the interim, a detailed emergency operation plan and warning system should be developed and

around-the-clock surveillance should be provided during periods of unusually heavy precipitation. In addition, all stoplogs should be removed to provide increased spillway capacity.

There are also several minor deficiencies on this structure which should be corrected. The trees and brush on the embankment should be cut and the gully on the downstream face should be filled in. The gunite on the spillway should be patched. Finally, the reservoir drain control rod should be repaired and the drain made operational. These actions should be taken within 6 months of the date of notification of the owner.

George Koch
Chief, Dam Safety Section
New York State Department
of Environmental Conservation
NY License No. 45937

Approved By:

Col. Clark H. Benn
New York District Engineer

Date: 4 Sept 79



OVERVIEW

NEW ROCHELLE RESERVIOR No. 3 (N.Y. 110)

PHASE 1 INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM
NEW ROCHELLE RESERVOIR No. 3
I.D. No. NY 110
(#215-1336)
HUTCHINSON RIVER BASIN
WESTCHESTER COUNTY, NEW YORK

SECTION 1: PROJECT INFORMATION

1.1 GENERAL

a. Authority

The Phase 1 Inspection reported herein was authorized by the Department of the Army, New York District, Corps of Engineers, to fulfill the requirements of the National Dam Inspection Act, Public Law 92-367.

b. Purpose of Inspection

This inspection was conducted to evaluate the existing conditions of the dam, to identify deficiencies and hazardous conditions, to determine if these deficiencies constitute hazards to life and property, and to recommend remedial measures where required.

1.2 DESCRIPTION OF PROJECT

a. Description of the Dam and Appurtenant Structures

The New Rochelle Reservoir No. 3 Dam consists of an earth embankment with a concrete chute spillway passing through the center of the dike.

The embankment is approximately 30 feet high and 450 feet long. The crest is about 6 feet wide. The plans indicate that a core wall extends the length of the embankment. The upstream slope is 1 vertical on 2 1/2 horizontal. The downstream slope is 1 vertical on 2 horizontal.

The spillway, which is in the center of the embankment, was reconstructed in 1949. It now consists of a concrete chute spillway, 34 feet wide. A three span bridge carrying a bridle path, runs along the crest of the dam and crosses the spillway channel. Two pointed nosed piers are located in the spillway. There are provisions for up to two feet of concrete stoplogs on each of the two outside spans.

Beyond the rounded crest, the spillway chute proceeds down on a 1 vertical on 1 1/2 horizontal slope to the stream channel. The downstreme slope consists of stone paving covered with 3 inches of gunite. The channel, which is concrete lined in this area, then passes under a ramp, under the Hutchinson River Parkway, and then into the natural stream channel.

A 42 inch diameter cast iron drain pipe is shown on the plans. The pipe outlets near the base of the spillway channel. A inclined valve control rod extends from a point on the upstream slope out into the reservoir. This valve rod may be presumed to control a 24 inch valve which is at the inlet to the drain pipe. While the 42 inch pipe has a plug at the inlet end, it is not known whether this could be easily removed. Therefore, the inlet to the drain is controlled by the 24 inch inlet.

b. Location

The New Rochelle Reservoir No. 3 Dam is located on the southern end of the reservoir. The boundary line separating the City of New Rochelle from the Town of Eastchester runs through the dam. Reservoir No. 3 is the middle of the three reservoirs which are within a mile of one another on the Hutchinson River.

c. Size Classification

This dam is 31.5 feet high and the reservoir has a storage capacity of 230 acre feet. Therefore, the dam is in the small size category as defined by the Recommended Guidelines for Safety Inspection of Dams.

d. Hazard Classification

The dam is classified as "high" hazard due to the presence of the Hutchinson River Parkway immediately downstream of the dam. In addition, there are a number of homes downstream of the dam, and a number of homes beyond the point where the stream passes under the parkway.

e. Ownership

This dam is now owned by Westchester County and under the jurisdiction of the County Department of Parks, Recreation and Conservation. Mr. John Fava (914-682-2616) is the Director of Park Facilities for Westchester County.

f. Purpose of Dam

The dam was originally constructed to provide water to be used by the New Rochelle Water Company. The dam was turned over to the county around 1920 and is now used to maintain the water surface for recreational purposes.

g. Design and Construction History

Based on the records available, the dam was built in 1908 by the New Rochelle Water Company. After Westchester County took over the dam, extensive renovations were made to the spillway in 1949. The changes made were based on plans prepared by the Westchester County Department of Public Works.

. Normal Operating Procedures

Water flows over an ungated spillway. The level of the reservoir may be varied by 2 feet by the addition or removal of concrete stoplogs.

1.3 PERTINENT DATA

a. Drainage Area (acres)		1826
b. Discharge at Dam (cfs)		
Total (Spillway with no stoplogs) at Maximum High Water		1815
Spillway with 2 ft. of stoplogs in place at Maximum High Water		1357
Reservoir Drain at Spillway Crest Elevation		37
c. Elevations (Based on USGS Datum)		
Top of dam		130.5
Spillway Crest		123.0
Invert Reservoir Drain Inlet		101.8
d. Reservoir (acres)		
Surface Area at top of dam		47.4
Surface Area at spillway crest		27.5
e. Storage Capacity (acre-feet)		
Top of Dam		498
Spillway Crest		220
f. Dam		
Embankment Type: Earthfill with corewall		
Embankment Length (ft)		450
Slopes (V : H)	Upstream	1: 2.5
	Downstream	1:2
Crest Elevation		130.5
Crest Width (ft)		6
g. Spillway		
Type:	Concrete chute with two piers supporting small bridge crossing spillway in center of channel. Provisions for up to 2 feet of concrete stoplogs under the two outside spans.	
Length: (ft)	Weir	34.0
h. Reservoir Drain		
Type:	42 inch diameter cast iron pipe with a 24 inch diameter pipe and valve controlling the inlet.	
Control:	Mechanically operated valve with stem extending up to point on upstream slope.	

SECTION 2: ENGINEERING DATA

2.1 DESIGN

a. Geology

The New Rochelle Reservoir No. 3 Dam is located in the Manhattan Hills section of the New England Uplands physiographic province of New York State. This province consists of low hilly terrain of gentle relief. The bedrock in the area, formed during the Cambrian and Ordovician eras has been intensely metamorphosed, heavily injected and re-crystallized. Shale, slate, schist, gneiss and quartzite are among the types of rock in this area. The surficial soils are the result of glaciations during the Cenozoic Era, the last of which was the Wisconsin glaciation.

b. Subsurface Information

No records from subsurface investigations which may have been made at the time of construction of this dam were available. The only information which was available was from the 1915 New York State Conservation Commission inspection report which states that the dam is founded on rock.

2.2 CONSTRUCTION RECORDS

No construction records were available from the original construction of this structure. However, the spillway was extensively rehabilitated in 1949 and a complete set of the contract plans, prepared by the Westchester County Department of Public Works, were available.

2.3 OPERATING RECORDS

There were no operating or water level records available for this structure.

2.4 EVALUATION OF DATA

The data presented in this report was obtained from the Department of Environmental Conservation files. While only limited data was available concerning the subsurface conditions, overall, the information available appears to be adequate and reliable for the purpose of the Phase 1 inspection.

SECTION 3: VISUAL INSPECTION

3.1 FINDINGS

a. General

Visual inspection of the New Rochelle Reservoir No. 3 Dam was conducted on November 16, 1978. The weather was clear and the temperature was around 40° F. Water was flowing over the spillway at a depth of approximately 6 inches at the time of the inspection.

b. Embankment

The embankment was in satisfactory condition. There were no indications of sloughing, subsidence, or movement.

The upstream face was covered with riprap. A number of small trees were growing through the riprap on this face. A bridle path crossed along the crest of the dam and so there was no vegitation on the crest. Light brush and vines were growing on the eastern end of the downstream slope. A small gully up to 2 feet deep running along the edge of the eastern spillway wall has been formed by surface runoff from the crest. About half the area to the west of the spillway was covered with grass. The grass had been mowed and the section was in good condition except for a path which had been worn into the slope. The area on the downstream slope nearest the west abutment was overgrown with large trees and brush. There was a low area beyond the western end of the embankment.

c. Spillway

The spillway was in satisfactory condition. It was reconstructed in 1949 and a bridge for the bridle path was added across the top sometime after 1972. The concrete surfaces were in good condition with the exception of one area on the downstream slope of the spillway channel. A layer of gunite had peeled off of a section which was approximately 10 feet long and 10 feet wide.

There are provisions for stoplogs under two of the three spans of the bridge. At the time of the inspection, three concrete stoplogs (1 foot total) were in place under the western span and 4 logs (1.4 feet) in under the eastern span. All of the logs in place were in good condition.

d. Reservoir Drain

Visual observations of the reservoir drain were limited to inspection of the outlet and the valve control rod on the upstream slope. The drain outlets at the base of the spillway channel. A log was lodged in the semi-circular opening for the drain outlet. The valve control rod was bent and the frame supporting the rod was in need of repair.

e. Downstream Channel

The channel beyond the end of the spillway is lined with concrete for several hundred feet. The channel passes under bridges for a bridle path, a highway ramp, and the Hutchinson River Parkway before re-entering the natural channel. The concrete in the channel was in good condition.

3.2 EVALUATION OF OBSERVATIONS

Visual observations did not reveal any serious problems which would affect the immediate safety of the dam. However, the following deficiencies were noted:

a. Trees and brush growing on dam should be cut.

b. The section on the spillway where the gunite has come off should be repaired before it deteriorates further.

c. The gully adjacent to the eastern wall of the spillway should be filled in and regraded.

d. The reservoir drain control rod should be repaired and the drain made operational.

SECTION 4: OPERATION AND MAINTENANCE PROCEDURES

4.1 PROCEDURE

The normal water surface elevation is at the crest of the spillway. The water surface may be varied by the addition or removal of up to 2 feet of concrete stoplogs. The reservoir provides 278 acre-feet of storage between the crest of the spillway and the top of the dam.

4.2 MAINTENANCE OF DAM

The spillway was reconstructed in 1949. It appears that routine maintenance such as mowing the grass is performed on this structure at regular intervals. However, the brush and trees which are growing on the dam in several locations should be cut.

4.3 WARNING SYSTEM IN EFFECT

No apparent warning system is present.

4.4 EVALUATION

All brush and trees growing on the dam embankment should be cut and a regular inspection and maintenance program should be implemented to keep the embankment relatively clear. In addition, the reservoir drain should be made operational and checked periodically.

SECTION 5: HYDROLOGIC/HYDRAULIC

5.1 DRAINAGE AREA CHARACTERISTICS

Delineation of the contributing watershed to New Rochelle Reservoir No. 3 was made using the USGS 7.5 minute quadrangle sheet for Mount Vernon, N.Y. The watershed consists of a heavily developed urban area and a lightly wooded area, some of which has been developed into a residential section. Relief ranges from flat to moderate.

New Rochelle Reservoir No. 1 is less than a mile upstream of this structure, so the drainage area for Reservoir No. 3 encompasses the drainage area for the upstream reservoir as well. The size of the rectangularly shaped drainage area for Reservoir No. 3 is 1826 acres, which includes the 1292 acres which form the watershed for Reservoir No. 1.

5.2 ANALYSIS CRITERIA

No hydrologic/hydraulic information was available regarding the original design for this dam. Therefore, the analysis of the spillway capacity of the dam was performed using the Corps of Engineers HEC-1 (Dam Break Version) computer program; incorporating the "Snyder Synthetic Unit Hydrograph Method" and the "Modified Puls" flood routing procedure. The spillway design flood selected for analysis was the Probable Maximum Flood (PMF) in accordance with recommended guidelines of the U.S. Army Corps of Engineers.

The watershed was divided into two areas for the analysis. The first portion was the 1292 acres which form the watershed for Reservoir No. 1. The second portion was the remaining 534 acres which are downstream of Reservoir No. 1. A hydrograph was developed and routed to the Reservoir No. 3 Dam for each of these areas. The routed hydrographs were then combined to arrive at the total outflow at this dam. The analysis was performed assuming that Reservoir No. 1 Dam does not fail even though the masonry portion of the dam is overtopped.

5.3 SPILLWAY CAPACITY

The chute spillway, located in the center of the embankment, has a crest 4 feet wide and 34 feet long. This length is reduced by two concrete piers each 1.5 feet wide which support the bridge for the bridle path. Stoplogs which can be placed across two of the spans and the steel superstructure for the bridge further reduce the spillway capacity. There is a drop of 24 feet between the spillway crest and the invert of the exit channel.

Hydraulically, the spillway was analyzed using a discharge coefficient, C, of 3.4 for weir flow and 0.6 for orifice flow. Due to the constrictions in the channel, the spillway length was reduced to 29 feet for the purposes of the analysis. The computed spillway discharge capacity, without stoplogs, when the water reaches the top of the dam is 1815 cfs.

The spillway without stoplogs does not have sufficient capacity for the peak outflow from either the PMF or 1/2 the PMF. For the PMF, the peak inflow is 5115 cfs and the peak outflow is 5194 cfs. For 1/2 the PMF, the peak inflow is 2557 cfs and the peak outflow is 2556 cfs.

5.4 RESERVOIR CAPACITY

Normal reservoir capacity when the water surface is at the spillway crest is 220 acre-feet. Surcharge storage capacity to the top of the dam is an additional 239 acre-feet, which is equivalent to a runoff depth of 1.6 inches over the drainage area.

5.5 FLOODS OF RECORD

No information was available regarding the occurrence of the maximum known flood.

5.6 OVERTOPPING POTENTIAL

Analysis using the PMF and 1/2 the PMF indicates that the spillway does not have sufficient discharge capacity. For a PMF peak outflow of 5194 cfs, the service spillway capacity of 1815 is only 35%. Hence, the embankment would be overtopped to a computed depth of 1.73 feet for this outflow.

For the peak outflow from the 1/2 PMF, the embankment would be overtopped to a computed depth of 0.60 feet.

5.7 EVALUATION

Using the Corps of Engineer's screening criteria for initial review of spillway adequacy, it has been determined that the embankment would be overtopped by all storms exceeding approximately 35% of the PMF. A flood wave analysis, assuming complete breaching of the embankment, indicates that water surface levels downstream of the dam could reach levels which would pose a significant danger to residents.

The spillway is, therefore, adjudged as seriously inadequate and the dam is assessed as unsafe, non-emergency.

SECTION 6: STRUCTURAL STABILITY

6.1 EVALUATION OF STRUCTURAL STABILITY

a. Visual Observations

Visual observations of the structure did not reveal any sign of major distress.

b. Design and Construction Data

No design computations or other data were available concerning the structural stability of the dam. The contract plans from the 1949 reconstruction of the spillway were available and sheets from these plans have been included in Appendix F.

The 1949 plans indicate that the structure has a core wall. This was in existence prior to 1949 and it is assumed that this wall was built as part of the original construction of the dam in 1908. The 1915 Conservation Commission reports indicate that the wall is concrete, but no additional information concerning the wall was available.

c. Post Construction Changes

Major modifications were made to this structure in 1949. These were the only post construction changes for which records were available.

d. Seismic Stabiltiy

This dam is located in Seismic Zone No. 1. Since the dam appears to be stable and the seismic coefficient is small, a seismic stability analysis is not warranted.

SECTION 7: ASSESSMENT/RECOMMENDATIONS

7.1 ASSESSMENT

a. Safety

The Phase 1 inspection for New Rochelle Reservoir No. 3 revealed that the spillway is seriously inadequate and outflows from either the PMF or 1/2 the PMF would overtop the dam. This overtopping could cause breaching of the dam and the resulting floodwave would significantly increase the hazard to downstream residents. For this reason, the dam has been assessed as unsafe, non-emergency.

The remaining deficiencies on this structure, such as trees and brush growing on the embankment, are not serious enough to pose a hazard.

b. Adequacy of Information

There was a limited amount of information available for the preparation of this report. The data available was adequate with the exception of a lack of detailed descriptions of subsurface and foundation conditions and of information regarding the dimensions and composition of the core wall.

c. Need for Additional Investigations

Since the spillway was rated as seriously inadequate, additional hydrologic investigations are required to more accurately determine the site-specific characteristics of the watershed.

d. Urgency

The additional investigations which are needed should be commenced within 3 months of the date of notification of the owner that the spillway is seriously inadequate. Within 18 months of the date of notification, appropriate remedial mitigating measures should have been completed.

The minor deficiencies outlined in the next section should be corrected within 6 months of the date of notification.

7.2 RECOMMENDED MEASURES

a. After the hydrological investigation has been completed, mitigating measures for the spillway can be determined.

b. All trees and brush on both faces of the embankment should be cut.

c. The section on the spillway where gunite has come off should be patched.

d. The gully adjacent to the eastern wall of the spillway should be filled in and regraded.

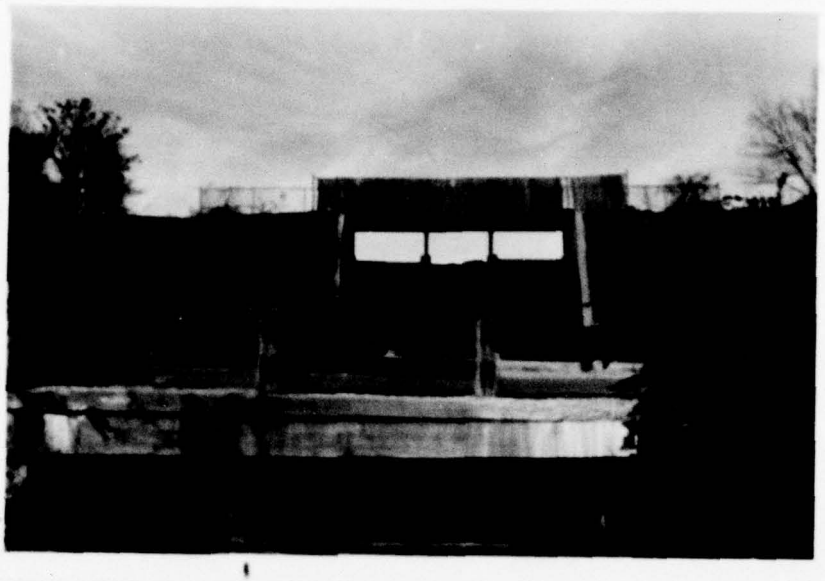
e. The reservoir drain control rod should be repaired and the drain made operational.

f. A detailed emergency operation plan and warning system should be developed. Also, around-the-clock surveillance should be provided during periods of unusually heavy precipitation.

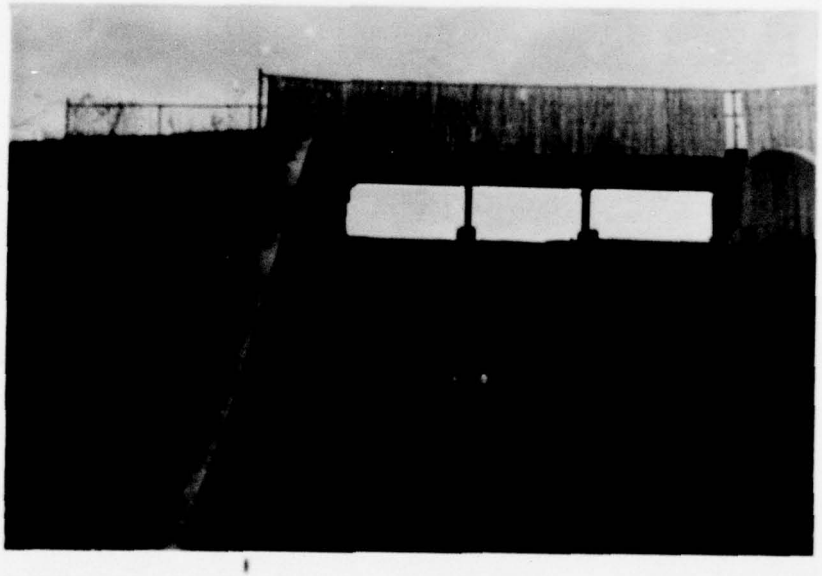
g. Until the remedial mitigating measures rectifying the seriously inadequate status of the spillway have been completed, all stoplogs should be removed to provide increased spillway capacity.

APPENDIX A

PHOTOGRAPHS



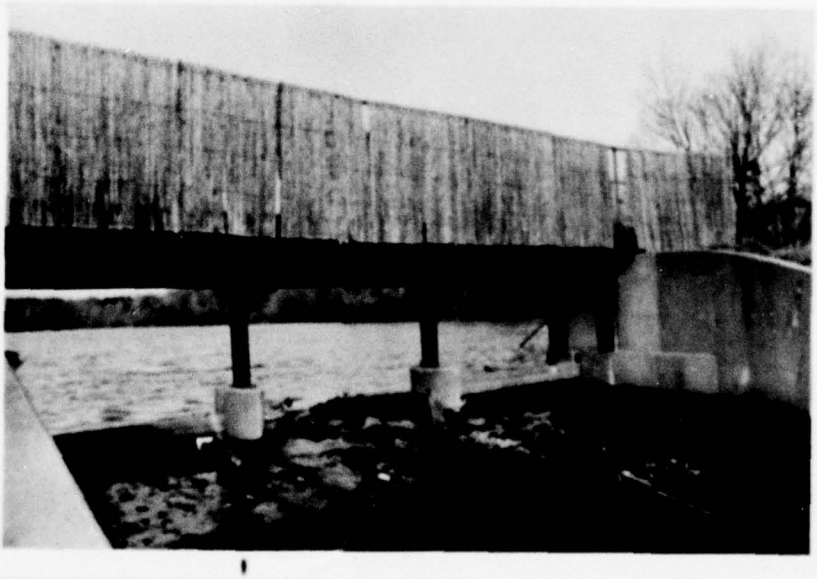
SPILLWAY CHANNEL LOOKING UPSTREAM



DOWNSTREAM SLOPE OF SPILLWAY CHANNEL
SHOWING SECTION WHERE LAYER OF GUNITE IS MISSING



UPSTREAM SLOPE OF DAM WITH VALVE CONTROL
ROD EXTENDING INTO RESERVOIR



SPILLWAY CREST WITH CONCRETE STOP LOGS IN PLACE

APPENDIX B

ENGINEERING DATA CHECKLIST

Check List
Engineering Data
Design Construction Operation

Name of Dam NEW ROCHELLE RES. 3

I.D. # N.Y. 110

Item	Remarks		
	Plans	Details	Typical Sections
Dam	NONE		
Spillway(s)	1949 RECONSTRUCTION PLANS		
Outlet(s)	" " "		
Design Reports	NONE		
Design Computations			
Discharge Rating Curves			
Dam Stability			
Seepage Studies			
Subsurface and Materials Investigations			

Item	Remarks
Construction History	NONE
Surveys, Modifications, Post-Construction Engineering Studies and Reports	1949 RECONSTRUCTION PLANS
Accidents or Failure of Dam Description, Reports	NONE
Operation and Maintenance Records Operation Manual	NONE

APPENDIX C

VISUAL INSPECTION CHECKLIST

VISUAL INSPECTION CHECKLIST

1) Basic Data

a. General

Name of Dam NEW ROCHELLE RES. No. 3

I.D. # N.Y. 110 (215-1336 LONG ISLAND)

Location: Town EASTCHESTER County WESTCHESTER

Stream Name HUTCHINSON RIVER

Tributary of _____

Longitude (W), Latitude (N) 73° 48.1' 40° 56.7'

Hazard Category C

Date(s) of Inspection 11/16/78

Weather Conditions 40° PARTLY SUNNY

b. Inspection Personnel R. WARRENDER W. LYNICH

c. Persons Contacted JOHN FAVA, DIRECTOR OF PARKS WESTCHESTER Co.
914-682-2616

d. History:

Date Constructed 1892 RECONSTRUCTED 1949

Owner WESTCHESTER Co.

Designer WESTCHESTER Co. DPW

Constructed by _____

2) Technical Data

Type of Dam EARTH WITH CONCRETE CHUTE OGEE SPILLWAY

Drainage Area 1826 ACRES

Height 31.5' Length 450'

Upstream Slope 1 ON 2½ Downstream Slope 1 ON 2

2) Technical Data (Cont'd.)

External Drains: on Downstream Face _____ @ Downstream Toe _____

Internal Components:

Impervious Core CORE WALL

Drains _____

Cutoff Type _____

Grout Curtain _____

3) Embankment

a. Crest

(1) Vertical Alignment SATISFACTORY

(2) Horizontal Alignment SATISFACTORY

(3) Surface Cracks NONE

(4) Miscellaneous BRIDLE PATH CROSSES ALONG CREST

b. Slopes

(1) Undesirable Growth or Debris, Animal Burrows TREES ON UPSTREAM SLOPE BRUSH & VINES ON BOTH SLOPES - SMALL ANIMAL BURROW HOLES 5' ABOVE TOE 20-30' EAST OF EAST SPILLWAY WALL

(2) Sloughing, Subsidence or Depressions ERODED WALKING PATH 1' DEEP & 3' WIDE FROM CREST DOWN TO W.S.

(3) Slope Protection ~~NONE~~ STONE BLOCK - COVERS MOST OF UPSTREAM FACE

(4) Surface Cracks or Movement at Toe NONE

(5) Seepage NONE

(6) Condition Around Outlet Structure N/A

c. Abutments

(1) Erosion at Embankment and Abutment Contact EAST SIDE OF CHANNEL MATERIAL DOWN 0-3' BELOW TOP OF EAST WALL

(2) Seepage along Contact of Embankment and Abutment NONE

(3) Seepage at toe or along downstream face NONE

d. Downstream Area - below embankment

UNDERPASS WITH STREAM OUTLET - FLOWS UNDER HUTCH. RIVER PARKWAY

(1) Subsidence, Depressions, etc. NONE

(2) Seepage, unusual growth NONE

(3) Evidence of surface movement beyond embankment toe NONE

(4) Miscellaneous

e. Drainage System

(1) Condition of relief wells, drains, etc. _____

_____

_____

_____

_____

(2) Discharge from Drainage System _____

_____

_____

4) Instrumentation

(1) Monumentation/Surveys

(2) Observation Wells

(3) Weirs

(4) Piezometers

(5) Other

5) Reservoir

a. Slopes OKAY

b. Sedimentation NO PROBLEMS EVIDENT

6) Spillway(s) (including tail race channel)

a. General

b. Principle Spillway CONCRETE & GUNITE OGEE CHUTE GOOD CONDITION EXCEPT FOR ONE AREA 10'x10' WHERE A LAYER OF GUNITE HAD COME OFF.

c. Emergency or Auxiliary Spillway NONE

d. Condition of Tail race channel CONCRETE FLUME - SATISFACTORY

e. Stability of Channel side/slopes SATISFACTORY

7) Downstream Channel

CONCRETE FLUME UNDER RAMP ROAD & HUTCHINSON PARKWAY

a. Condition (debris, etc.) 6" LOG IN CONCRETE CHANNEL

b. Slopes VERTICAL

c. Approximate number of homes

8) Miscellaneous

9) Structural

a. Concrete Surfaces GOOD EXCEPT FOR 10'x10' AREA WHERE A LAYER OF GUNITE HAD COME OFF.

b. Structural Cracking NONE

c. Movement - Horizontal & Vertical Alignment (Settlement) NONE

d. Junctions with Abutments or Embankments SATISFACTORY

e. Drains - Foundation, Joint, Face SMALL DRAINAGE PIPES PASS THROUGH THE CONCRETE WALLS OF THE CHANNEL. THESE ARE PROBABLY FOR HIGHWAY DRAINAGE.

f. Water passages, conduits, sluices

g. Seepage or Leakage NONE

h. Joints - Construction, etc. GOOD

i. Foundation

j. Abutments

k. Control Gates

l. Approach & Outlet Channels HEAVY BLOCKS - PLACED WELL UP TO CONCRETE ABUTMENT AT SPILLWAY

m. Energy Dissipators (plunge pool, etc.)

n. Intake Structures

o. Stability

p. Miscellaneous

APPENDIX D

HYDROLOGIC/HYDRAULIC

ENGINEERING DATA AND COMPUTATIONS

CHECK LIST FOR DAMS
HYDROLOGIC AND HYDRAULIC
ENGINEERING DATA

AREA-CAPACITY DATA:

	Elevation (ft.) USGS DATUM	Surface Area (acres)	Storage Capacity (acre-ft.)
1) Top of Dam	130.5	47.4	498
2) Design High Water (Max. Design Pool)	N/A		
3) Auxiliary Spillway Crest	N/A		
4) Pool Level with Flashboards	N/A		
5) Service Spillway Crest	123.0	27.6	220

DISCHARGES

	Volume (cfs)
1) Average Daily	N/A
2) Spillway @ Maximum High Water	1814.8
3) Spillway @ Design High Water	
4) Spillway @ Auxiliary Spillway Crest Elevation	
5) Low Level Outlet	~~42~~ 37.3
6) Total (of all facilities) @ Maximum High Water	1814.8
7) Maximum Known Flood	N/A

CREST:

USGS DATUM ELEVATION: 130.5

Type: LEVEL GRASSED EARTH

Width: 6 Length: 450

Spillover SPILLWAY CHANNEL

Location CENTER OF EMBANKMENT

SPILLWAY:

PRINCIPAL		EMERGENCY
123.0	Elevation	
CONCRETE ~~OGEE~~ CHUTE	Type	
	Width	
	Type of Control	
✓	Uncontrolled	
	Controlled:	
PROVISIONS FOR STOP LOGS ON PORTION OF SPILLWAY	Type (Flashboards; gate)	
	Number	
	Size/Length	
	Invert Material	
	Anticipated Length of operating service	
70'	Chute Length	
0	Height Between Spillway Crest & Approach Channel Invert (Weir Flow)	

OUTLET STRUCTURES/EMERGENCY DRAWDOWN FACILITIES:

Type: Gate √ Sluice _____ Conduit _____ Penstock _____

Shape : CONTROL ROD COMES TO UPSTREAM SLOPE

Size: 24" GATE

Elevations: Entrance Invert 102

Exit Invert 100

Tailrace Channel: Elevation 100

HYDROMETEROLOGICAL GAGES:

Type : N/A

Location: _____

Records:

Date - _____

Max. Reading - _____

FLOOD WATER CONTROL SYSTEM:

Warning System: NONE

_____

Method of Controlled Releases (mechanisms):

PIPE WITH 24" GATE

_____

DRAINAGE AREA: 1826 ACRES

DRAINAGE BASIN RUNOFF CHARACTERISTICS:

Land Use - Type: URBAN & HEAVILY DEVELOPED

Terrain - Relief: FLAT TO MODERATE

Surface - Soil: SAND - SILT

Runoff Potential (existing or planned extensive alterations to existing (surface or subsurface conditions)

MODERATE TO HIGH

Potential Sedimentation problem areas (natural or man-made; present or future)

NONE OBVIOUS

Potential Backwater problem areas for levels at maximum storage capacity including surcharge storage:

POSSIBLE FLOODING OF PARKWAY

Dikes - Floodwalls (overflow & non-overflow) - Low reaches along the Reservoir perimeter:

Location: NONE

Elevation: _____

Reservoir:

Length @ Maximum Pool .5 (Miles)

Length of Shoreline (@ Spillway Crest) _____ (Miles)

GA-17 (4/70) NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

PROJECT GRID

JOB	SHEET NO.	CHECKED BY	DATE
NEW ROCHELLE RESERVOIR No. 3	1		
SUBJECT		**COMPUTED BY**	**DATE**
HYDROLOGIC / HYDRAULIC COMPUTATIONS		RLW	3/20/79

DRAINAGE AREA = 1826 ACRES = 2.85 SQ. MI.

LAKE SURFACE AREA = 27.55 ACRES

ELEVATION: USGS (1956) = 123

SNYDER SYNTHETIC UNIT HYDROGRAPH:

$L = 3.60$ miles $\quad L_{CA} = 1.59$ miles

$C_t \Rightarrow$ USE 2.0

$t_p = C_t (L \cdot L_{CA})^{.3} = 3.37$ hours

$t_r = \frac{t_p}{5.5} = .61$ hours (USE $\frac{1}{2}$ hr hydrograph $= t_R$)

$t_{pR} = t_p + .25(t_R - t_r) = 3.34$ hours

HR #33 PMP RAINFALL

ZONE 1 NEAR ZONE 6 PMP RAIN = 22" (200 mi² - 24 hr)

6 HR 112% 24 HR 133%

12 HR 123% 48 HR 142%

TRSPC: $T.F. = 1 - \frac{30.08}{(2.85)^{11.78}} = .750$

LOSS DATA: INITAL = 1.0"

CONTINUOUS = .1"

% of D.A. IMPERVIOUS = 7%

BASE FLOW = 2 cfs / SQ MILE $\quad 2 \times 2.85 = 4$ cfs

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PROJECT GRID

JOB			SHEET NO.	CHECKED BY	DATE
NEW ROCHELLE RESERVOIR No. 3			2		
SUBJECT				COMPUTED BY	DATE
HYDROLOGY / HYDRAULIC COMPUTATIONS				RLW	3/20/79

CONIC METHOD - GENERATION OF VALUES:

NORMAL RESERVOIR LEVEL (USGS SHEET) 123.0 ELEV

SURFACE AREA 27.55 ACRES

VOLUME = $\frac{h(A)}{3} = \frac{(31.5)(27.55)}{3} = 289.3$ ACRE-FT

APEX OF CONE: ELEV 99.0

CONIC METHOD (AREA-VOLUME) $A = \pi R^2$ $VOL = \frac{\pi}{3} R^2 h$

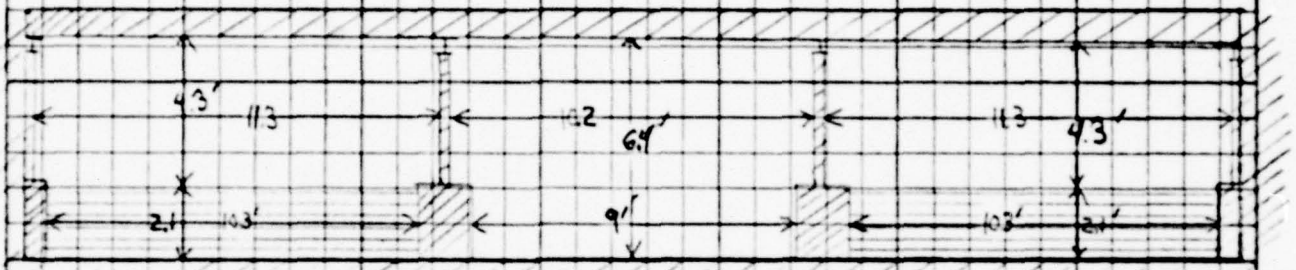
ELEV. (U.S.G.S DATUM)	RADIUS	AREA (ACRES)	h	VOL (AC-FT)
130.5	811.13 FT	47.45	31.5	498
123.0	618 FT	27.55	24	220

GA-17 (4/70) NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

PROJECT GRID

JOB	SHEET NO.	CHECKED BY	DATE
NEW ROCHELLE RESERVOIR No. 3	3		
SUBJECT		**COMPUTED BY**	**DATE**
HYDROLOGY / HYDRAULIC COMPUTATIONS		RLW	3/21/79

CAPACITY WITH NO STOP LOGS IN PLACE



ASSUME $H_e = 2.1'$ AND $P = 1'$

USING FIG 249 $P/H_o = .476$ $\therefore C_o = 3.79$

$L = L' - 2(NK_p + K_a)H_o$

$K_p = 0.0$ FOR POINTED NOSE PIERS

$K_A = .10$ ROUNDED ABUT.

ASSUMING CONCRETE PIER CONTINUOUS TO BRIDGE BEAM

$L = (10.3 + 9 + 10.3) - 2[2(0.0) + .10]H_e$

$= 29.6 - .2H_e$

	ELEVATION (USGS)	H	L	H/H_o	C/C_o	C	Q
SPILLWAY CREST	123.0	0	29.6	0	—	—	0
TOP OF STOP LOGS	125.1	2.1	29.18	1	1.0	3.79	336.5
BOTTOM OF BEAM	129.4	6.4	28.4	.34	.89	3.37	1549.6

$Q = CLH^{3/2}$

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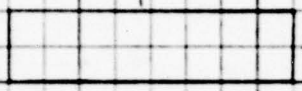
PROJECT GRID

JOB	SHEET NO.	CHECKED BY	DATE
NEW ROCHELLE RESERVOIR No. 3	4		
SUBJECT		**COMPUTED BY**	**DATE**
HYDROLOGY / HYDRAULIC COMPUTATIONS		RLW	4/4/-9

CAPACITY OF SPILLWAY WITH STOP LOGS IN PLACE
WATER LEVEL AT BOTTOM OF BEAM - ELEV. 129.4

BREAK SPILLWAY INTO SECTIONS

1. CENTER SECTION - LOWER

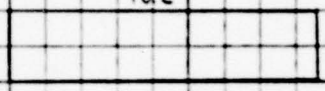


$Q = cLH^{3/2}$

$L = L' - 2(NK_p + K_a)H_o$
$= 9 - 2(0+0)6$
$= 9$

$Q = 3.4(9)(6.1)^{3/2} = 461 cfs$

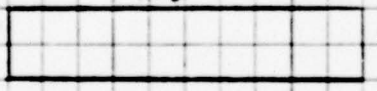
2. CENTER SECTION - UPPER



$L = 10.2 - 2(0+.2)4.4$
$= 8.4$

$Q = 3.4(8.4)(4.4)^{1.5} = 263.6 cfs$

3. & 4. TWO OUTSIDE SECTIONS - UPPER



$L = 11.3 - 2(0+.1)(4.3)$
$= 10.44'$

$Q = 3.4(10.44)(4.3)^{3/2} = (326.3)(2) = 633.0 cfs$

TOTAL CAPACITY $Q = 461 + 263.6 + 633.0 = 1357.6 cfs$

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PROJECT GRID

JOB	SHEET NO.	CHECKED BY	DATE
NEW ROCHELLE RESERVOIR No. 3	5		
SUBJECT		COMPUTED BY	DATE
HYDROLOGY / HYDRAULIC COMPUTATIONS		RLW	4/4/79

CAPACITY OF SPILLWAY WITH NO STOP LOGS IN PLACE

WATER LEVEL AT TOP OF DAM - ELEV. 130.5

SUBMERGED ORIFICE

$Q = C a \sqrt{2gh} = (.6)(181.76)\sqrt{2(32.2)(4.3)} = 1814.8$ cfs

$a = 181.76$ $g = 32.2$

$c = .60$ $h = 4.3$

DRAIN CAPACITY - WATER AT SPILLWAY CREST

$q = A\sqrt{\frac{2gH}{1 + K_e + K_b + K_p + K_g - K_s}} = 3.14\sqrt{\frac{2(32.2)(22.2)}{1 + .2 + 0 + .0459(19.3) + .05}} = 37.34$ cfs

$A = \pi(1.0)^2 = 3.14$ ft²

$g = 32.2$

$H = 22.2$

$K_e = .2$ $K_p = .0459$

$K_b = 0$ $L = 19.3$

$K_g = .05$

00-15-1 (3/78)
Formerly GA-17

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

PROJECT GRID

JOB	SHEET NO.	CHECKED BY	DATE
NEW ROCHELLE RESERVOIR No. 3	6		
SUBJECT		COMPUTED BY	DATE
HYDROLOGY / HYDRAULIC COMPUTATIONS		RLW	6/29/79

INFORMATION OBTAINED FROM CORPS OF ENGINEER'S HUTCHINSON RIVER BASIN STUDY

STORAGE DATA - FROM TOPOGRAPHIC MAP PREPARED BY HARRIS-TOUMS ASSOCIATES

ELEVATION	SURFACE AREA (ACRES)	STORAGE (ACRE-FT)
123	25.1	0
124	26.9	26.0
125	28.7	53.8
126	30.6	83.4
127	32.4	114.9
128	34.2	148.2
129.2	36.4	190.6
130	37.9	220.3
131	39.7	259.1

THESE VALUES ASSUME ZERO STORAGE BELOW SPILLWAY CREST. ACTUAL STORAGE BELOW THIS POINT IS ABOUT 220 ACRE-FT. (BASED ON OUR ESTIMATE).

```
**********
FLOOD HYDROGRAPH PACKAGE (HEC-1)
DAM SAFETY VERSION      JULY 1978
  LAST MODIFICATION  26 FEB 79
  MODIFIED FOR HONEYWELL APR 79
**********

**********
THIS PROGRAM IS CURRENTLY BEING MODIFIED
TO RUN ON THE OGS HONEYWELL SYSTEM

PLEASE REPORT ANY UNUSUAL OPERATING PROBLEMS
TO MIKE TILLSON (RM. 423) PH: 7-5666
**********
    1               A1NEW ROCHELLE RESERVOIR NO 3
    2               A2PMF WITH RATIOS NO BREACH 3
    3               A DATE
    4               B    150       1       0       0       0       0       0       0       0       0
    5               B1     5

    6               J      1       2       1

    7               J1    .5       1

    8               K      0       1                                               1

    9               K1                                      INFLOW HYDROGRAPH

   10               M      1       1    2.02               2.02       0                       1

   11               P      0      22     112     123     133     142

   12               T                                                       1      .1

   13               W   3.34      .6

   14               X      3       3       1

   15               K      0       2                                       1

   16               K1  INFLOW HYDROGRAPH 2

   17               M      1       1     .83                                               1

   18               P      0      22     112     123     133     142

   19               T                                                       1      .1

   20               W   1.94      .92

   21               X      3       3       1

   22               K      2                                               1

   23               K1  COMBINE HYDROGRAPHS

   24               K      1       2                                       1

   25               K1 COMBINE HYDROGRAPH AT DAM 3 - NO BREACH

   26               X      0       0
```

```
28        Y4   123   125.1   129.4   130.5
29        Y5     0     336    1550    1815
30        SA  25.1    26.9    28.7    30.6    32.4    34.2    36.4    37.9    39.7
31        SE   123     124     125     126     127     128   129.2     130     131
32        SS   123
33        SD 130.5   3.087     1.5     421
34        K     99
35        A
36        A
37        A
38        A
39        A
```

```
**********
FLOOD HYDROGRAPH PACKAGE (HEC-1)
DAM SAFETY VERSION      JULY 1978
  LAST MODIFICATION  26 FEB 79
  MODIFIED FOR HONEYWELL APR 79
**********

**********
THIS PROGRAM IS CURRENTLY BEING MODIFIED
TO RUN ON THE OGS HONEYWELL SYSTEM

PLEASE REPORT ANY UNUSUAL OPERATING PROBLEMS
TO MIKE TILLSON (RM. 423) PH: 7-5666
**********

RUN  DATE 06/28/79
                    NEW ROCHELLE RESERVOIR NO 3
                    PMF WITH RATIOS NO BREACH 3
                    DATE 6/28/79

                                  JOB SPECIFICATION
 NQ      NHR     NMIN     IDAY      IHR     IMIN    METRC     IPLT     IPRT   NSTAN
150        1        0        0        0        0        0        0        0        0
                          JOPER      NWT    LROPT    TRACE
                              5        0        0        0


                          MULTI-PLAN ANALYSES TO BE PERFORMED
                              NPLAN= 1 NRTIO= 2 LRTIO= 1
          RTIOS=   0.50   1.00


**********          **********          **********          **********          **********

                          SUB-AREA RUNOFF COMPUTATION

                                  INFLOW HYDROGRAPH
                ISTAQ   ICOMP   IECON   ITAPE    JPLT    JPRT   INAME  ISTAGE   IAUTO
                    1       0       0       0       0       0       1       0       0

                                HYDROGRAPH DATA
            IHYDG    IUHG   TAREA    SNAP   TRSDA   TRSPC   RATIO   ISNOW   ISAME   LOCAL
                1       1    2.02      0.    2.02      0.      0.       0       1       0

                                  PRECIP DATA
                      SPFE     PMS      R6     R12     R24     R48     R72     R96
                      0.     22.00  112.00  123.00  133.00  142.00    0.      0.
TRSPC COMPUTED BY THE PROGRAM IS 0.800

                                  LOSS DATA
          LROPT   STRKR   DLTKR   RTIOL   ERAIN   STRKS   RTIOK   STRTL   CNSTL   ALSMX   RTIMP
              0      0.      0.    1.00      0.      0.    1.00    1.00    0.10      0.      0.

                              UNIT HYDROGRAPH DATA
                          TP=  3.34    CP=0.60    NTA=  0

                                RECESSION DATA
                      STRTQ=    3.00    QRCSN=    3.00    RTIOR= 1.00
APPROXIMATE CLARK COEFFICIENTS FROM GIVEN SNYDER CP AND TP ARE TC= 3.88 AND R= 3.28 INTERVALS
```

						END-OF-PERIOD FLOW						
MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q	MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q
1.01	1.00	1	0.01	0.	0.01	3.	1.04	4.00	76	0.	0.	0.	3.
1.01	2.00	2	0.01	0.	0.01	3.	1.04	5.00	77	0.	0.	0.	3.
1.01	3.00	3	0.01	0.	0.01	3.	1.04	6.00	78	0.	0.	0.	3.
1.01	4.00	4	0.01	0.	0.01	3.	1.04	7.00	79	0.	0.	0.	3.
1.01	5.00	5	0.01	0.	0.01	3.	1.04	8.00	80	0.	0.	0.	3.
1.01	6.00	6	0.01	0.	0.01	3.	1.04	9.00	81	0.	0.	0.	3.
1.01	7.00	7	0.02	0.	0.02	3.	1.04	10.00	82	0.	0.	0.	3.
1.01	8.00	8	0.02	0.	0.02	3.	1.04	11.00	83	0.	0.	0.	3.
1.01	9.00	9	0.02	0.	0.02	3.	1.04	12.00	84	0.	0.	0.	3.
1.01	10.00	10	0.02	0.	0.02	3.	1.04	13.00	85	0.	0.	0.	3.
1.01	11.00	11	0.02	0.	0.02	3.	1.04	14.00	86	0.	0.	0.	3.
1.01	12.00	12	0.02	0.	0.02	3.	1.04	15.00	87	0.	0.	0.	3.
1.01	13.00	13	0.13	0.	0.13	3.	1.04	16.00	88	0.	0.	0.	3.
1.01	14.00	14	0.16	0.	0.16	3.	1.04	17.00	89	0.	0.	0.	3.
1.01	15.00	15	0.20	0.	0.20	3.	1.04	18.00	90	0.	0.	0.	3.
1.01	16.00	16	0.51	0.14	0.36	8.	1.04	19.00	91	0.	0.	0.	3.
1.01	17.00	17	0.19	0.09	0.10	22.	1.04	20.00	92	0.	0.	0.	3.
1.01	18.00	18	0.15	0.05	0.10	43.	1.04	21.00	93	0.	0.	0.	3.
1.01	19.00	19	0.01	0.	0.01	58.	1.04	22.00	94	0.	0.	0.	3.
1.01	20.00	20	0.01	0.	0.01	60.	1.04	23.00	95	0.	0.	0.	3.
1.01	21.00	21	0.01	0.	0.01	51.	1.05	0.	96	0.	0.	0.	3.
1.01	22.00	22	0.01	0.	0.01	39.	1.05	1.00	97	0.	0.	0.	3.
1.01	23.00	23	0.01	0.	0.01	30.	1.05	2.00	98	0.	0.	0.	3.
1.02	0.	24	0.01	0.	0.01	23.	1.05	3.00	99	0.	0.	0.	3.
1.02	1.00	25	0.12	0.02	0.10	18.	1.05	4.00	100	0.	0.	0.	3.
1.02	2.00	26	0.12	0.02	0.10	16.	1.05	5.00	101	0.	0.	0.	3.
1.02	3.00	27	0.12	0.02	0.10	17.	1.05	6.00	102	0.	0.	0.	3.
1.02	4.00	28	0.12	0.02	0.10	19.	1.05	7.00	103	0.	0.	0.	3.
1.02	5.00	29	0.12	0.02	0.10	20.	1.05	8.00	104	0.	0.	0.	3.
1.02	6.00	30	0.12	0.02	0.10	22.	1.05	9.00	105	0.	0.	0.	3.
1.02	7.00	31	0.32	0.22	0.10	29.	1.05	10.00	106	0.	0.	0.	3.
1.02	8.00	32	0.32	0.22	0.10	53.	1.05	11.00	107	0.	0.	0.	3.
1.02	9.00	33	0.32	0.22	0.10	95.	1.05	12.00	108	0.	0.	0.	3.
1.02	10.00	34	0.32	0.22	0.10	142.	1.05	13.00	109	0.	0.	0.	3.
1.02	11.00	35	0.32	0.22	0.10	182.	1.05	14.00	110	0.	0.	0.	3.
1.02	12.00	36	0.32	0.22	0.10	211.	1.05	15.00	111	0.	0.	0.	3.
1.02	13.00	37	1.97	1.87	0.10	285.	1.05	16.00	112	0.	0.	0.	3.
1.02	14.00	38	2.37	2.27	0.10	501.	1.05	17.00	113	0.	0.	0.	3.
1.02	15.00	39	2.96	2.86	0.10	902.	1.05	18.00	114	0.	0.	0.	3.
1.02	16.00	40	7.49	7.39	0.10	1575.	1.05	19.00	115	0.	0.	0.	3.
1.02	17.00	41	2.76	2.66	0.10	2472.	1.05	20.00	116	0.	0.	0.	3.
1.02	18.00	42	2.17	2.07	0.10	3262.	1.05	21.00	117	0.	0.	0.	3.
1.02	19.00	43	0.18	0.08	0.10	3576.	1.05	22.00	118	0.	0.	0.	3.
1.02	20.00	44	0.18	0.08	0.10	3290.	1.05	23.00	119	0.	0.	0.	3.
1.02	21.00	45	0.18	0.08	0.10	2678.	1.06	0.	120	0.	0.	0.	3.
1.02	22.00	46	0.18	0.08	0.10	2049.	1.06	1.00	121	0.	0.	0.	3.
1.02	23.00	47	0.18	0.08	0.10	1534.	1.06	2.00	122	0.	0.	0.	3.
1.03	0.	48	0.18	0.08	0.10	1155.	1.06	3.00	123	0.	0.	0.	3.
1.03	1.00	49	0.	0.	0.	874.	1.06	4.00	124	0.	0.	0.	3.
1.03	2.00	50	0.	0.	0.	660.	1.06	5.00	125	0.	0.	0.	3.
1.03	3.00	51	0.	0.	0.	494.	1.06	6.00	126	0.	0.	0.	3.
1.03	4.00	52	0.	0.	0.	366.	1.06	7.00	127	0.	0.	0.	3.
1.03	5.00	53	0.	0.	0.	270.	1.06	8.00	128	0.	0.	0.	3.
1.03	6.00	54	0.	0.	0.	199.	1.06	9.00	129	0.	0.	0.	3.
1.03	7.00	55	0.	0.	0.	147.	1.06	10.00	130	0.	0.	0.	3.
1.03	8.00	56	0.	0.	0.	108.	1.06	11.00	131	0.	0.	0.	3.
1.03	9.00	57	0.	0.	0.	78.	1.06	12.00	132	0.	0.	0.	3.
1.03	10.00	58	0.	0.	0.	55.	1.06	13.00	133	0.	0.	0.	3.
1.03	11.00	59	0.	0.	0.	37.	1.06	14.00	134	0.	0.	0.	3.
1.03	12.00	60	0.	0.	0.	18.	1.06	15.00	135	0.	0.	0.	3.

1.03	15.00		0.	0.	0.	4.	1.06	18.00	138	0.	0.	0.	3.
1.03	16.00	64	0.	0.	0.	4.	1.06	19.00	139	0.	0.	0.	3.
1.03	17.00	65	0.	0.	0.	4.	1.06	20.00	140	0.	0.	0.	3.
1.03	18.00	66	0.	0.	0.	3.	1.06	21.00	141	0.	0.	0.	3.
1.03	19.00	67	0.	0.	0.	3.	1.06	22.00	142	0.	0.	0.	3.
1.03	20.00	68	0.	0.	0.	3.	1.06	23.00	143	0.	0.	0.	3.
1.03	21.00	69	0.	0.	0.	3.	1.07	0.	144	0.	0.	0.	3.
1.03	22.00	70	0.	0.	0.	3.	1.07	1.00	145	0.	0.	0.	3.
1.03	23.00	71	0.	0.	0.	3.	1.07	2.00	146	0.	0.	0.	3.
1.04	0.	72	0.	0.	0.	3.	1.07	3.00	147	0.	0.	0.	3.
1.04	1.00	73	0.	0.	0.	3.	1.07	4.00	148	0.	0.	0.	3.
1.04	2.00	74	0.	0.	0.	3.	1.07	5.00	149	0.	0.	0.	3.
1.04	3.00	75	0.	0.	0.	3.	1.07	6.00	150	0.	0.	0.	3.
									SUM	24.99	21.29	3.71	28070.
										(635.)(	541.)(	94.)(	794.85)

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	3576.	2848.	1126.	387.	28066.
CMS	101.	81.	32.	11.	795.
INCHES		13.12	20.74	21.36	21.54
MM		333.17	526.70	542.63	547.14
AC-FT		1412.	2233.	2300.	2319.
THOUS CU M		1742.	2754.	2837.	2861.

HYDROGRAPH AT STA 1 FOR PLAN 1, RTIO 1

2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	4.	11.	21.	29.	30.
25.	20.	15.	11.	9.	8.	8.	9.	10.	11.
15.	27.	47.	71.	91.	106.	143.	250.	451.	788.
1236.	1631.	1788.	1645.	1339.	1025.	767.	577.	437.	330.
247.	183.	135.	99.	73.	54.	39.	27.	19.	9.
5.	3.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	1788.	1424.	563.	193.	14033.
CMS	51.	40.	16.	5.	397.
INCHES		6.56	10.37	10.68	10.77
MM		166.58	263.35	271.32	273.57
AC-FT		706.	1116.	1150.	1160.
THOUS CU M		871.	1377.	1419.	1431.

HYDROGRAPH AT STA 1 FOR PLAN 1, RTIO 2

3.	3.	3.	3.	3.	3.	3.	3.	3.	3.
3.	3.	3.	3.	3.	8.	22.	43.	58.	60.
51.	39.	30.	23.	18.	16.	17.	19.	20.	22.
29.	53.	95.	142.	182.	211.	285.	501.	902.	1575.
2472.	3262.	3576.	3290.	2678.	2049.	1534.	1155.	874.	660.
494.	366.	270.	199.	147.	108.	78.	55.	37.	18.
10.	5.	4.	4.	4.	3.	3.	3.	3.	3.
3.	3.	3.	3.	3.	3.	3.	3.	3.	3.
3.	3.	3.	3.	3.	3.	3.	3.	3.	3.
3.	3.	3.	3.	3.	3.	3.	3.	3.	3.
3.	3.	3.	3.	3.	3.	3.	3.	3.	3.

			3.	3.	3.	3.	3.	3.	3.
31..	.		3.	3.	3.	3.	3.	3.	3.
3.	3.	3.	3.	3.	3.	3.	3.	3.	3.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	3576.	2848.	1126.	387.	28066.
CMS	101.	81.	32.	11.	795.
INCHES		13.12	20.74	21.36	21.54
MM		333.17	526.70	542.63	547.14
AC-FT		1412.	2233.	2300.	2319.
THOUS CU M		1742.	2754.	2837.	2861.

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SUB-AREA RUNOFF COMPUTATION

INFLOW HYDROGRAPH 2

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
2	0	0	0	0	0	1	0	0

HYDROGRAPH DATA

IHYDG	IUHG	TAREA	SNAP	TRSDA	TRSPC	RATIO	ISNOW	ISAME	LOCAL
1	1	0.83	0.	0.83	0.	0.	0	1	0

PRECIP DATA

SPFE	PMS	R6	R12	R24	R48	R72	R96
0.	22.00	112.00	123.00	133.00	142.00	0.	0.

TRSPC COMPUTED BY THE PROGRAM IS 0.800

LOSS DATA

LROPT	STRKR	DLTKR	RTIOL	ERAIN	STRKS	RTIOK	STRTL	CNSTL	ALSMX	RTIMP
0	0.	0.	1.00	0.	0.	1.00	1.00	0.10	0.	0.

UNIT HYDROGRAPH DATA
TP= 1.94 CP=0.52 NTA= 0

RECESSION DATA
STRTQ= 3.00 QRCSN= 3.00 RTIOR= 1.00

APPROXIMATE CLARK COEFFICIENTS FROM GIVEN SNYDER CP AND TP ARE TC= 2.17 AND R= 2.23 INTERVALS

UNIT HYDROGRAPH 13 END-OF-PERIOD ORDINATES, LAG= 1.95 HOURS, CP= 0.52 VOL= 1.00

43.	122.	132.	87.	55.	35.	22.	14.	9.	6.
4.	2.	1.							

0

END-OF-PERIOD FLOW

MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q	MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q
1.01	1.00	1	0.01	0.	0.01	3.	1.04	4.00	76	0.	0.	0.	3.
1.01	2.00	2	0.01	0.	0.01	3.	1.04	5.00	77	0.	0.	0.	3.
1.01	3.00	3	0.01	0.	0.01	3.	1.04	6.00	78	0.	0.	0.	3.
1.01	4.00	4	0.01	0.	0.01	3.	1.04	7.00	79	0.	0.	0.	3.
1.01	5.00	5	0.01	0.	0.01	3.	1.04	8.00	80	0.	0.	0.	3.
1.01	6.00	6	0.01	0.	0.01	3.	1.04	9.00	81	0.	0.	0.	3.
1.01	7.00	7	0.02	0.	0.02	3.	1.04	10.00	82	0.	0.	0.	3.
1.01	8.00	8	0.02	0.	0.02	3.	1.04	11.00	83	0.	0.	0.	3.
1.01	9.00	9	0.02	0.	0.02	3.	1.04	12.00	84	0.	0.	0.	3.
1.01	10.00	10	0.02	0.	0.02	3.	1.04	13.00	85	0.	0.	0.	3.
1.01	11.00	11	0.02	0.	0.02	3.	1.04	14.00	86	0.	0.	0.	3.
1.01	12.00	12	0.02	0.	0.02	3.	1.04	15.00	87	0.	0.	0.	3.
1.01	13.00	13	0.13	0.	0.13	3.	1.04	16.00	88	0.	0.	0.	3.
1.01	14.00	14	0.16	0.	0.16	3.	1.04	17.00	89	0.	0.	0.	3.
1.01	15.00	15	0.20	0.	0.20	3.	1.04	18.00	90	0.	0.	0.	3.
1.01	16.00	16	0.51	0.16	0.36	3.	1.04	19.00	91	0.	0.	0.	3.

1.01	18.00	18	0.15	0.05	0.10	35.	1.04	21.00	93	0.	0.	0.	3.
1.01	19.00	19	0.01	0.	0.01	33.	1.04	22.00	94	0.	0.	0.	3.
1.01	20.00	20	0.01	0.	0.01	25.	1.04	23.00	95	0.	0.	0.	3.
1.01	21.00	21	0.01	0.	0.01	17.	1.05	0.	96	0.	0.	0.	3.
1.01	22.00	22	0.01	0.	0.01	12.	1.05	1.00	97	0.	0.	0.	3.
1.01	23.00	23	0.01	0.	0.01	9.	1.05	2.00	98	0.	0.	0.	3.
1.02	0.	24	0.01	0.	0.01	7.	1.05	3.00	99	0.	0.	0.	3.
1.02	1.00	25	0.12	0.02	0.10	6.	1.05	4.00	100	0.	0.	0.	3.
1.02	2.00	26	0.12	0.02	0.10	7.	1.05	5.00	101	0.	0.	0.	3.
1.02	3.00	27	0.12	0.02	0.10	9.	1.05	6.00	102	0.	0.	0.	3.
1.02	4.00	28	0.12	0.02	0.10	10.	1.05	7.00	103	0.	0.	0.	3.
1.02	5.00	29	0.12	0.02	0.10	11.	1.05	8.00	104	0.	0.	0.	3.
1.02	6.00	30	0.12	0.02	0.10	11.	1.05	9.00	105	0.	0.	0.	3.
1.02	7.00	31	0.32	0.22	0.10	21.	1.05	10.00	106	0.	0.	0.	3.
1.02	8.00	32	0.32	0.22	0.10	46.	1.05	11.00	107	0.	0.	0.	3.
1.02	9.00	33	0.32	0.22	0.10	73.	1.05	12.00	108	0.	0.	0.	3.
1.02	10.00	34	0.32	0.22	0.10	91.	1.05	13.00	109	0.	0.	0.	3.
1.02	11.00	35	0.32	0.22	0.10	102.	1.05	14.00	110	0.	0.	0.	3.
1.02	12.00	36	0.32	0.22	0.10	110.	1.05	15.00	111	0.	0.	0.	3.
1.02	13.00	37	1.97	1.87	0.10	186.	1.05	16.00	112	0.	0.	0.	3.
1.02	14.00	38	2.37	2.27	0.10	407.	1.05	17.00	113	0.	0.	0.	3.
1.02	15.00	39	2.96	2.86	0.10	701.	1.05	18.00	114	0.	0.	0.	3.
1.02	16.00	40	7.49	7.39	0.10	1166.	1.05	19.00	115	0.	0.	0.	3.
1.02	17.00	41	2.76	2.66	0.10	1720.	1.05	20.00	116	0.	0.	0.	3.
1.02	18.00	42	2.17	2.07	0.10	1846.	1.05	21.00	117	0.	0.	0.	3.
1.02	19.00	43	0.18	0.08	0.10	1539.	1.05	22.00	118	0.	0.	0.	3.
1.02	20.00	44	0.18	0.08	0.10	1109.	1.05	23.00	119	0.	0.	0.	3.
1.02	21.00	45	0.18	0.08	0.10	725.	1.06	0.	120	0.	0.	0.	3.
1.02	22.00	46	0.18	0.08	0.10	476.	1.06	1.00	121	0.	0.	0.	3.
1.02	23.00	47	0.18	0.08	0.10	317.	1.06	2.00	122	0.	0.	0.	3.
1.03	0.	48	0.18	0.08	0.10	217.	1.06	3.00	123	0.	0.	0.	3.
1.03	1.00	49	0.	0.	0.	150.	1.06	4.00	124	0.	0.	0.	3.
1.03	2.00	50	0.	0.	0.	99.	1.06	5.00	125	0.	0.	0.	3.
1.03	3.00	51	0.	0.	0.	62.	1.06	6.00	126	0.	0.	0.	3.
1.03	4.00	52	0.	0.	0.	38.	1.06	7.00	127	0.	0.	0.	3.
1.03	5.00	53	0.	0.	0.	18.	1.06	8.00	128	0.	0.	0.	3.
1.03	6.00	54	0.	0.	0.	10.	1.06	9.00	129	0.	0.	0.	3.
1.03	7.00	55	0.	0.	0.	6.	1.06	10.00	130	0.	0.	0.	3.
1.03	8.00	56	0.	0.	0.	5.	1.06	11.00	131	0.	0.	0.	3.
1.03	9.00	57	0.	0.	0.	4.	1.06	12.00	132	0.	0.	0.	3.
1.03	10.00	58	0.	0.	0.	4.	1.06	13.00	133	0.	0.	0.	3.
1.03	11.00	59	0.	0.	0.	3.	1.06	14.00	134	0.	0.	0.	3.
1.03	12.00	60	0.	0.	0.	3.	1.06	15.00	135	0.	0.	0.	3.
1.03	13.00	61	0.	0.	0.	3.	1.06	16.00	136	0.	0.	0.	3.
1.03	14.00	62	0.	0.	0.	3.	1.06	17.00	137	0.	0.	0.	3.
1.03	15.00	63	0.	0.	0.	3.	1.06	18.00	138	0.	0.	0.	3.
1.03	16.00	64	0.	0.	0.	3.	1.06	19.00	139	0.	0.	0.	3.
1.03	17.00	65	0.	0.	0.	3.	1.06	20.00	140	0.	0.	0.	3.
1.03	18.00	66	0.	0.	0.	3.	1.06	21.00	141	0.	0.	0.	3.
1.03	19.00	67	0.	0.	0.	3.	1.06	22.00	142	0.	0.	0.	3.
1.03	20.00	68	0.	0.	0.	3.	1.06	23.00	143	0.	0.	0.	3.
1.03	21.00	69	0.	0.	0.	3.	1.07	0.	144	0.	0.	0.	3.
1.03	22.00	70	0.	0.	0.	3.	1.07	1.00	145	0.	0.	0.	3.
1.03	23.00	71	0.	0.	0.	3.	1.07	2.00	146	0.	0.	0.	3.
1.04	0.	72	0.	0.	0.	3.	1.07	3.00	147	0.	0.	0.	3.
1.04	1.00	73	0.	0.	0.	3.	1.07	4.00	148	0.	0.	0.	3.
1.04	2.00	74	0.	0.	0.	3.	1.07	5.00	149	0.	0.	0.	3.
1.04	3.00	75	0.	0.	0.	3.	1.07	6.00	150	0.	0.	0.	3.
									SUM	24.99	21.29	3.71	11794.
										(635.)	(541.)	(94.)	(333.97)

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	1846.	1349.	468.	161.	11789.

AC-FT		669.	928.	955.	974.				
THOUS CU M		825.	1145.	1178.	1202.				

HYDROGRAPH AT STA 2 FOR PLAN 1, RTIO 1

2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	5.	12.	17.	16.	12.
8.	6.	4.	3.	3.	4.	5.	5.	5.	6.
10.	23.	37.	46.	51.	55.	93.	204.	350.	583.
860.	923.	770.	554.	362.	238.	159.	109.	75.	49.
31.	19.	9.	5.	3.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	923.	674.	234.	80.	5894.
CMS	26.	19.	7.	2.	167.
INCHES		7.56	10.49	10.79	11.01
MM		191.97	266.38	274.18	279.66
AC-FT		334.	464.	478.	487.
THOUS CU M		412.	572.	589.	601.

HYDROGRAPH AT STA 2 FOR PLAN 1, RTIO 2

3.	3.	3.	3.	3.	3.	3.	3.	3.	3.
3.	3.	3.	3.	3.	9.	24.	35.	33.	25.
17.	12.	9.	7.	6.	7.	9.	10.	11.	11.
21.	46.	73.	91.	102.	110.	186.	407.	701.	1166.
1720.	1846.	1539.	1109.	725.	476.	317.	217.	150.	99.
62.	38.	18.	10.	6.	5.	4.	4.	3.	3.
3.	3.	3.	3.	3.	3.	3.	3.	3.	3.
3.	3.	3.	3.	3.	3.	3.	3.	3.	3.
3.	3.	3.	3.	3.	3.	3.	3.	3.	3.
3.	3.	3.	3.	3.	3.	3.	3.	3.	3.
3.	3.	3.	3.	3.	3.	3.	3.	3.	3.
3.	3.	3.	3.	3.	3.	3.	3.	3.	3.
3.	3.	3.	3.	3.	3.	3.	3.	3.	3.
3.	3.	3.	3.	3.	3.	3.	3.	3.	3.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	1846.	1349.	468.	161.	11789.
CMS	52.	38.	13.	5.	334.
INCHES		15.12	20.98	21.59	22.02
MM		383.94	532.77	548.37	559.33
AC-FT		669.	928.	955.	974.
THOUS CU M		825.	1145.	1178.	1202.

********** ********** ********** ********** **********

COMBINE HYDROGRAPHS

COMBINE HYDROGRAPHS

SUM OF 2 HYDROGRAPHS AT PLAN 1 RTIO 1

3.	3.	3.	3.	3.	3.	3.	3.	3.	3.
3.	3.	3.	3.	3.	8.	23.	39.	45.	42.
34.	26.	19.	15.	12.	12.	13.	14.	16.	17.
25.	50.	84.	116.	142.	160.	235.	454.	801.	1371.
2096.	2554.	2557.	2199.	1702.	1262.	926.	686.	512.	380.
278.	202.	144.	105.	76.	56.	41.	29.	20.	10.
6.	4.	4.	3.	3.	3.	3.	3.	3.	3.
3.	3.	3.	3.	3.	3.	3.	3.	3.	3.
3.	3.	3.	3.	3.	3.	3.	3.	3.	3.
3.	3.	3.	3.	3.	3.	3.	3.	3.	3.
3.	3.	3.	3.	3.	3.	3.	3.	3.	3.
3.	3.	3.	3.	3.	3.	3.	3.	3.	3.
3.	3.	3.	3.	3.	3.	3.	3.	3.	3.
3.	3.	3.	3.	3.	3.	3.	3.	3.	3.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	2557.	2071.	796.	274.	19927.
CMS	72.	59.	23.	8.	564.
INCHES		6.76	10.39	10.71	10.84
MM		171.68	263.85	272.15	275.34
AC-FT		1027.	1578.	1628.	1647.
THOUS CU M		1267.	1947.	2008.	2031.

SUM OF 2 HYDROGRAPHS AT PLAN 1 RTIO 2

6.	6.	6.	6.	6.	6.	6.	6.	6.	6.
6.	6.	6.	6.	6.	17.	46.	77.	91.	84.
68.	51.	38.	29.	24.	23.	26.	29.	31.	33.
50.	99.	168.	233.	284.	321.	471.	908.	1603.	2741.
4192.	5108.	5115.	4398.	3403.	2525.	1851.	1372.	1024.	759.
556.	404.	288.	209.	152.	113.	82.	58.	40.	21.
13.	8.	7.	7.	7.	6.	6.	6.	6.	6.
6.	6.	6.	6.	6.	6.	6.	6.	6.	6.
6.	6.	6.	6.	6.	6.	6.	6.	6.	6.
6.	6.	6.	6.	6.	6.	6.	6.	6.	6.
6.	6.	6.	6.	6.	6.	6.	6.	6.	6.
6.	6.	6.	6.	6.	6.	6.	6.	6.	6.
6.	6.	6.	6.	6.	6.	6.	6.	6.	6.
6.	6.	6.	6.	6.	6.	6.	6.	6.	6.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	5115.	4142.	1591.	547.	39854.
CMS	145.	117.	45.	15.	1129.
INCHES		13.52	20.78	21.43	21.68
MM		343.35	527.71	544.30	550.69
AC-FT		2054.	3156.	3256.	3294.
THOUS CU M		2533.	3893.	4016.	4063.

•••••••••• •••••••••• •••••••••• •••••••••• ••••••••••

HYDROGRAPH ROUTING

COMBINE HYDROGRAPH AT DAM 3 - NO BREACH

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
2	1	0	0	0	0	1	0	0

0.	0.	0.	1	1	0	0		0

NSTPS	NSTOL	LAG	AMSKK	X	TSK	STORA	ISPRAT
0	0	0	0.	0.	0.	-123.	-1

STAGE	123.00	125.10	129.40	130.50				
FLOW	0.	336.00	1550.00	1815.00				
SURFACE AREA=	25.	27.	29.	31.	32.	34.	36.	38.	40.
CAPACITY=	0.	26.	54.	83.	115.	148.	191.	220.	259.
ELEVATION=	123.	124.	125.	126.	127.	128.	129.	130.	131.

CREL	SPWID	COOW	EXPW	ELEVL	COOL	CAREA	EXPL
123.0	0.	0.	0.	0.	0.	0.	0.

DAM DATA

TOPEL	COOD	EXPD	DAMWID
130.5	3.1	1.5	421.

STATION 2, PLAN 1, RATIO 1

END-OF-PERIOD HYDROGRAPH ORDINATES

OUTFLOW

1.	2.	2.	3.	3.	3.	3.	3.	3.	3.
3.	3.	3.	3.	3.	4.	9.	18.	28.	35.
36.	33.	29.	24.	20.	16.	15.	14.	15.	19.
18.	26.	43.	66.	92.	116.	148.	225.	399.	779.
1273.	1754.	2556.	2331.	1896.	1684.	1418.	1111.	844.	629.
462.	336.	275.	217.	167.	127.	96.	71.	52.	37.
25.	17.	12.	8.	6.	5.	4.	4.	3.	3.
3.	3.	3.	3.	3.	3.	3.	3.	3.	3.
3.	3.	3.	3.	3.	3.	3.	3.	3.	3.
3.	3.	3.	3.	3.	3.	3.	3.	3.	3.
3.	3.	3.	3.	3.	3.	3.	3.	3.	3.
3.	3.	3.	3.	3.	3.	3.	3.	3.	3.
3.	3.	3.	3.	3.	3.	3.	3.	3.	3.
3.	3.	3.	3.	3.	3.	3.	3.	3.	3.
3.	3.	3.	3.	3.	3.	3.	3.	3.	3.

STORAGE

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	1.	1.	3.	4.	5.
6.	5.	5.	4.	3.	3.	2.	2.	2.	2.
3.	4.	7.	11.	15.	19.	24.	37.	63.	104.
163.	230.	263.	258.	244.	219.	181.	143.	112.	88.
70.	57.	46.	36.	27.	21.	15.	11.	8.	6.
4.	3.	2.	1.	1.	1.	1.	1.	1.	1.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

STAGE

123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0
123.0	123.0	123.0	123.0	123.0	123.0	123.1	123.1	123.2	123.2
123.2	123.2	123.2	123.1	123.1	123.1	123.1	123.1	123.1	123.1

123.2	123.1	123.1	123.1	123.0	123.0	123.0	123.0	123.0	123.0
123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0
123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0
123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0
123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0
123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0
123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0
123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0
123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0

PEAK OUTFLOW IS 2556. AT TIME 43.00 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	2556.	1928.	792.	274.	19924.
CMS	72.	55.	22.	8.	564.
INCHES		6.29	10.36	10.71	10.84
MM		159.81	262.57	272.15	275.30
AC-FT		956.	1570.	1628.	1647.
THOUS CU M		1179.	1937.	2008.	2031.

STATION 2, PLAN 1, RATIO 2

END-OF-PERIOD HYDROGRAPH ORDINATES

OUTFLOW

2.	4.	5.	5.	6.	6.	6.	6.	6.	6.
6.	6.	6.	6.	6.	8.	18.	36.	56.	69.
72.	67.	58.	48.	39.	33.	29.	29.	29.	30.
35.	51.	85.	131.	181.	228.	292.	495.	908.	1545.
3389.	5194.	5074.	4611.	3598.	2734.	2055.	1733.	1502.	1200.
921.	685.	498.	356.	283.	226.	176.	134.	100.	72.
49.	33.	23.	16.	12.	10.	8.	7.	7.	6.
6.	6.	6.	6.	6.	6.	6.	6.	6.	6.
6.	6.	6.	6.	6.	6.	6.	6.	6.	6.
6.	6.	6.	6.	6.	6.	6.	6.	6.	6.
6.	6.	6.	6.	6.	6.	6.	6.	6.	6.
6.	6.	6.	6.	6.	6.	6.	6.	6.	6.
6.	6.	6.	6.	6.	6.	6.	6.	6.	6.
6.	6.	6.	6.	6.	6.	6.	6.	6.	6.

STORAGE

0.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	3.	6.	9.	11.
11.	11.	9.	8.	6.	5.	5.	5.	5.	5.
6.	8.	14.	21.	30.	38.	49.	73.	119.	197.
280.	309.	308.	300.	284.	267.	250.	226.	192.	154.
120.	94.	74.	59.	47.	37.	29.	22.	16.	11.
8.	5.	4.	3.	2.	2.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.

STAGE

123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0
123.0	123.0	123.0	123.0	123.0	123.1	123.1	123.2	123.3	123.4
123.4	123.4	123.4	123.3	123.2	123.2	123.2	123.2	123.2	123.2
123.2	123.3	123.5	123.8	124.1	124.4	124.8	125.7	127.1	129.4

123.3	123.2	123.1	123.1	123.1	123.1	123.1	123.0	123.0	123.0
123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0
123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0
123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0
123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0
123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0
123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0
123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0
123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0	123.0

PEAK OUTFLOW IS 5194. AT TIME 42.00 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	5194.	4001.	1584.	547.	39848.
CMS	147.	113.	45.	15.	1128.
INCHES		13.06	20.68	21.43	21.68
MM		331.72	525.34	544.31	550.61
AC-FT		1984.	3142.	3256.	3293.
THOUS CU M		2447.	3876.	4016.	4062.

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PEAK FLOW AND STORAGE (END OF PERIOD) SUMMARY FORMULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND (CUBIC METERS PER SECOND)
AREA IN SQUARE MILES (SQUARE KILOMETERS)

OPERATION	STATION	AREA	PLAN	RATIOS APPLIED TO FLOWS RATIO 1 0.50	 RATIO 2 1.00
HYDROGRAPH AT	1	2.02	1	1788.	3576.
	(	0.00)	(	50.63)(	101.25)(
HYDROGRAPH AT	2	0.83	1	923.	1846.
	(	0.00)	(	26.14)(	52.27)(
2 COMBINED		2.85	1	2557.	5115.
	(	0.00)	(	72.42)(	144.84)(
ROUTED TO	2	2.85	1	2556.	5194.
	(	0.00)	(	72.37)(	147.08)(

SUMMARY OF DAM SAFETY ANALYSIS

PLAN 1 .....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	123.00	123.00	130.50
STORAGE	0.	0.	239.
OUTFLOW	0.	0.	1815.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
0.50	131.10	0.60	263.	2556.	3.00	43.00	0.
1.00	132.23	1.73	309.	5194.	7.00	42.00	0.

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**********
FLOOD HYDROGRAPH PACKAGE (HEC-1)
DAM SAFETY VERSION      JULY 1978
  LAST MODIFICATION  26 FEB 79
  MODIFIED FOR HONEYWELL APR 79
**********

**********
THIS PROGRAM IS CURRENTLY BEING MODIFIED
TO RUN ON THE DGS HONEYWELL SYSTEM

PLEASE REPORT ANY UNUSUAL OPERATING PROBLEMS
TO MIKE TILLSON (RM. 423) PH: 7-5666
**********
    1              AINEW ROCHELLE RESERVOIR NO 3
    2              A PMF WITH RATIOS WITH BREACH
    3              A DATE
    4              B    150       1       0       0       0       0       0       0   :   0       0
    5              B1     5
    6              J      1       2       1
    7              J1    .5       1
    8              K      0       1                                               1
    9              K1                                   INFLOW HYDROGRAPH
   10              M      1       1    2.02               2.02       0                           1
   11              P      0      22     112     123     133     142
   12              T                                                       1      .1
   13              W   3.34      .6
   14              X      3       3       1
   15              K      0       2                                               1
   16              K1   INFLOW HYDROGRAPH 2
   17              M      1       1     .83                                                   1
   18              P      0      22     112     123     133     142
   19              T                                                       1      .1
   20              W   1.94     .52
   21              X      3       3       1
   22              K      2                                               1
   23              K1   COMBINE HYDROGRAPHS
   24              K      1       2                                               1
   25              K1 COMBINE HYDROGRAPH AT DAM 3 WITH BREAK
   26              K      0       0       0       1       1
```

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27          Y1                                                  -148     -1
28          Y4   123   125.1   129.4   130.5
29          Y5     0     336    1550    1815
30          $A  25.1    26.9    28.7    30.6    32.4    34.2    36.4    37.9    39.7
31          $E   123     124     125     126     127     128   129.2     130     131
32          $$   123
33          $D 130.5   3.087     1.5     421
34          $8    20      .5      99       2     123   130.5
35          K      1    4040                                      1
36          K1 LOCATION TOE DAM 3
37          Y                                  1       1
38          Y1     1
39          Y6   .05     .05     .05      96     135      40     .69
40          Y7     0     125     250     110     850     110    1030      96    1060      96
41          Y7  1250     110    1650     122    2050     135
42          K      1    7540                                      1
43          K1 LOCATION CREST DAM  2
44          Y                                  1       1
45          Y1     1
46          Y6   .05     .05     .05      95     130    3500   ,0003
47          Y7     0     110     100     100     200     100     250      95     350      95
48          Y7   450     100     500     105     550     110
49          K      1    7590                                      1
50          K1 LOCATION TOE DAM  2
51          Y                                  1       1
52          Y1     1
53          Y6   .05     .05     .05      86     120      50     .18
54          Y7     0     100     100     100     190      90     190      86     200      86
55          Y7   200      90     300      90     500     500
56          K      1   10790                                      1
57          K1 LOCATION FLAT SECTION
58          Y                                  1       1
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60        Y6   .05      .05      .05      61       100      3200     .008
61        Y7   0        90       200      80       400      70       900      61       1000     61
62        Y7   1400     70       1700     90       2000     100
63        K    1        11790                                         1
64        K1 LOCATION NARROW SECTION
65        Y                                 1        1
66        Y1   1
67        Y6   .05      .05      .05      60       90       1000     .001
68        Y7   0        90       40       80       110      70       200      60       440      60
69        Y7   600      70       700      75       800      80
70        K    99
71        A
72        A
73        A
74        A
75        A
```

SUMMARY OF DAM SAFETY ANALYSIS

PLAN 1 .....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	123.00	123.00	130.50
STORAGE	0.	0.	239.
OUTFLOW	0.	0.	1815.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
0.50	131.09	0.59	262.	10685.	1.52	46.00	43.00
1.00	131.66	1.16	286.	10685.	1.96	43.00	41.00

PLAN 1 STATION 4040

RATIO	MAXIMUM FLOW,CFS	MAXIMUM STAGE,FT	TIME HOURS
0.50	10674.	99.2	46.00
1.00	10686.	99.3	43.00

PLAN 1 STATION 7540

RATIO	MAXIMUM FLOW,CFS	MAXIMUM STAGE,FT	TIME HOURS
0.50	5705.	105.1	46.00
1.00	9451.	107.7	43.00

PLAN 1 STATION 7590

RATIO	MAXIMUM FLOW,CFS	MAXIMUM STAGE,FT	TIME HOURS
0.50	5696.	91.8	46.00
1.00	9452.	92.7	43.00

PLAN 1 STATION 10790

RATIO	MAXIMUM FLOW,CFS	MAXIMUM STAGE,FT	TIME HOURS
0.50	5947.	65.0	47.00
1.00	8941.	65.7	43.00

PLAN 1 STATION 11790

RATIO	MAXIMUM FLOW,CFS	MAXIMUM STAGE,FT	TIME HOURS
0.50	6052.	66.6	47.00
1.00	8653.	68.0	43.00

PEAK FLOW AND STORAGE (END OF PERIOD) SUMMARY FORMULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND (CUBIC METERS PER SECOND)
AREA IN SQUARE MILES (SQUARE KILOMETERS)

OPERATION	STATION	AREA	PLAN	RATIOS APPLIED TO FLOWS RATIO 1 0.50	 RATIO 2 1.00
HYDROGRAPH AT	1	2.02	1	1788.	3576.
	(	0.00)	(	50.63)(	101.25)(
HYDROGRAPH AT	2	0.83	1	923.	1846.
	(	0.00)	(	26.14)(	52.27)(
2 COMBINED		2.85	1	2557.	5115.
	(	0.00)	(	72.42)(	144.84)(
ROUTED TO	2	2.85	1	10685.	10685.
	(	0.00)	(	302.57)(	302.57)(
ROUTED TO	4040	2.85	1	10674.	10686.
	(	0.00)	(	302.26)(	302.61)(
ROUTED TO	7540	2.85	1	5705.	9451.
	(	0.00)	(	161.54)(	267.62)(
ROUTED TO	7590	2.85	1	5696.	9452.
	(	0.00)	(	161.30)(	267.64)(
ROUTED TO	10790	2.85	1	5947.	8941.
	(	0.00)	(	168.39)(	253.18)(
ROUTED TO	11790	2.85	1	6052.	8653.
	(	0.00)	(	171.36)(	245.02)(

APPENDIX E

REFERENCES

APPENDIX E

REFERENCES

1) U.S. Department of Commerce, Technical Paper No. 40, Rainfall Frequency Atlas of the United States, May 1961.

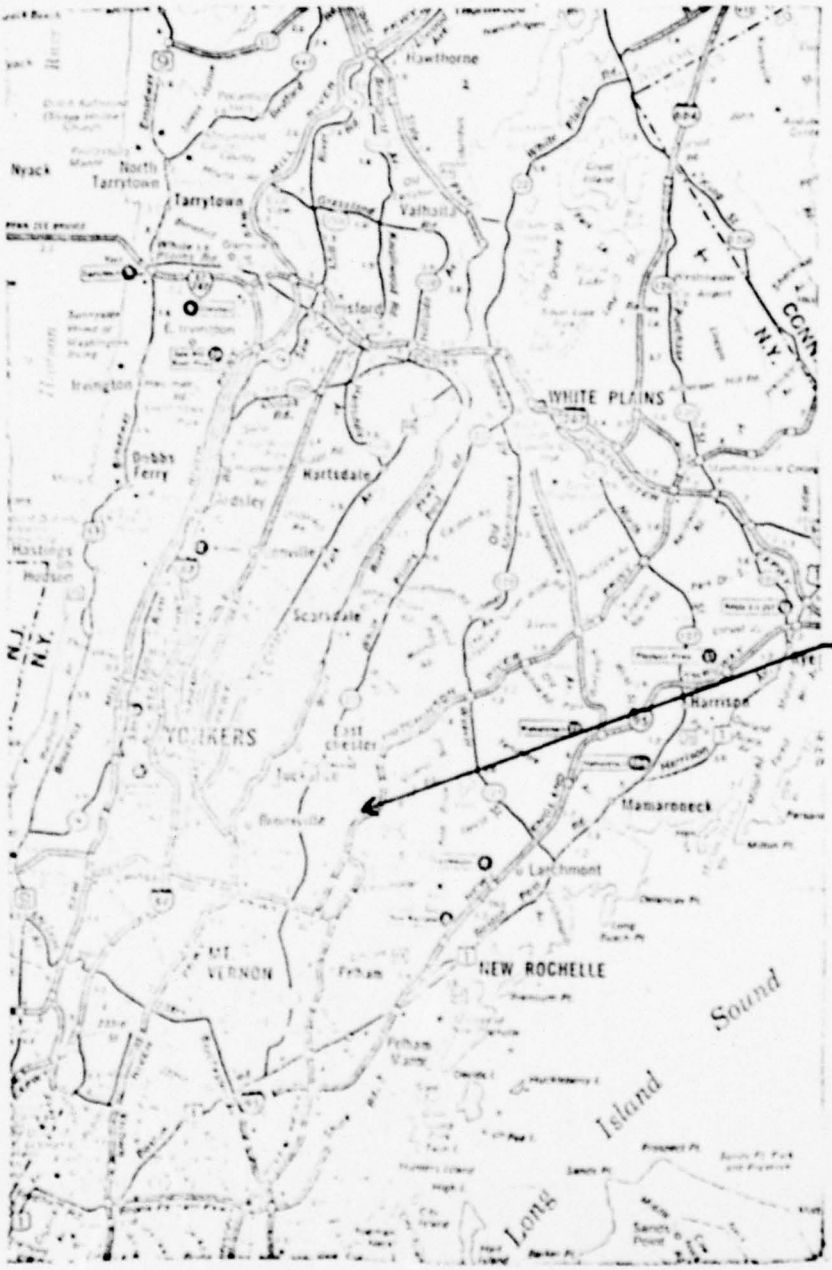
2) H.W. King and E.F. Brater, Handbook of Hydraulics, 5th edition, McGraw-Hill, 1963.

3) University of the State of New York, Geology of New York, Education Leaflet 20, Reprinted 1973.

4) Elwyn E. Seelye, Design, 3rd edition, John Wiley and Sons, Inc., 1960.

APPENDIX F

DRAWINGS



VICINITY MAP
NEW ROCHELLE RESERVOIR
No. 3 DAM



TOPOGRAPHIC MAP
NEW ROCHELLE RESERVOIR
No. 3 DAM

NRew 215 - 1336 Long Island Sound

Form IW-1. 11-6-14-1000 (16-1025)

Acc. 382

(NOTICE: After filling out one of these forms as completely as possible for each dam in your district, return it at once to the Conservation Commission, Albany.)

STATE OF NEW YORK

CONSERVATION COMMISSION

ALBANY

DAM REPORT

June 22nd, 1915.
(Date)

CONSERVATION COMMISSION,

DIVISION OF INLAND WATERS.

GENTLEMEN:

I have the honor to make the following report in relation to the structure known as the Reservoir No 3 New Rochelle Water Co Dam.

This dam is situated upon the Hutchinson River
(Give name of stream)
in the Town of East Chester, Westchester County,
about 3-4 miles from the ~~Village~~ or City of New Rochelle
(State distance)
The distance up stream from the dam, to the No 1 dam,
(Up or down)
(Give name of nearest important stream or of a bridge)
is about 1/2 mile.
(State distance)

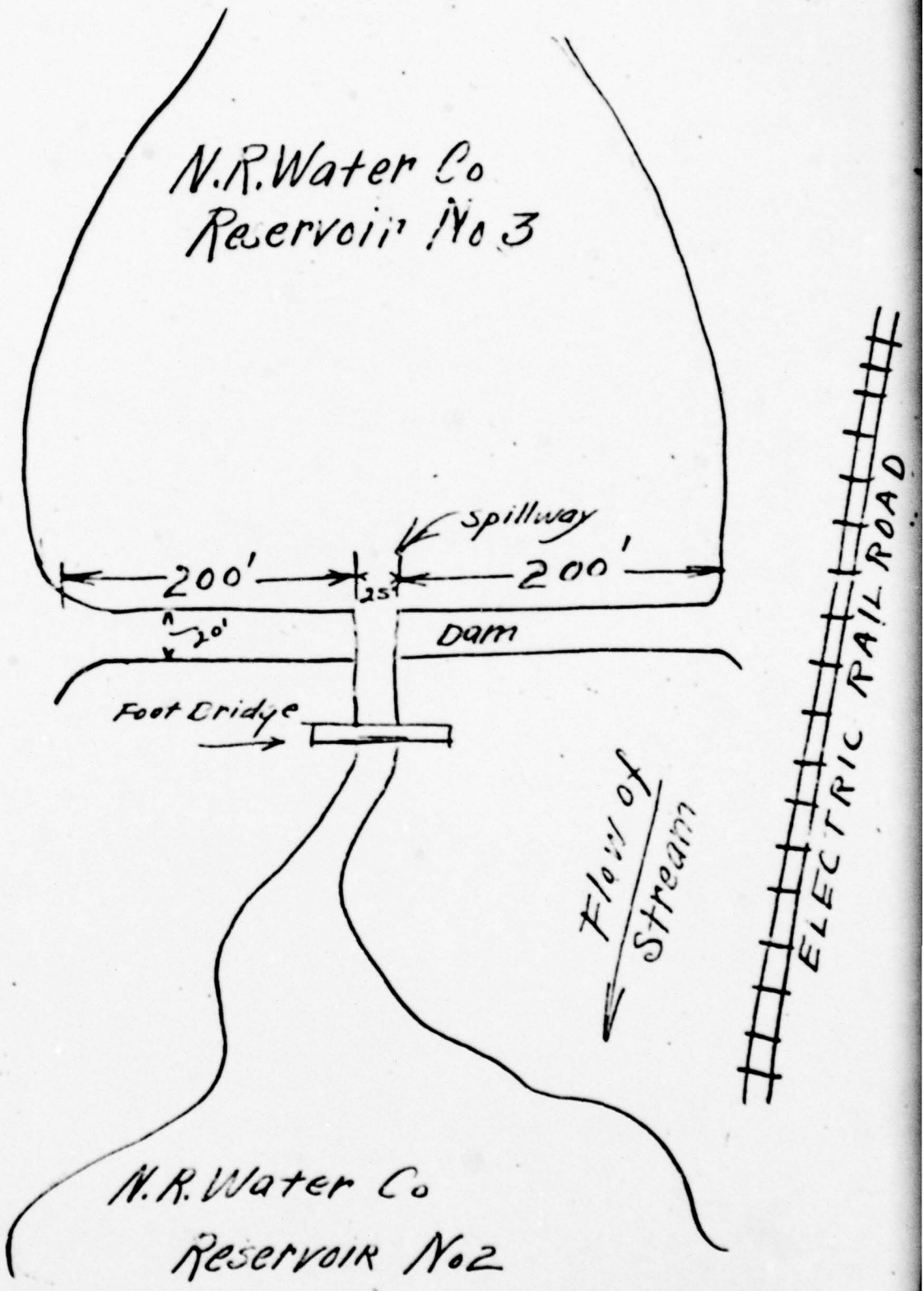
The dam is now owned by N. R. Water Co / Pelin Estate
(Give name and address in full)
and was built in or about the year 1908, and was extensively repaired or reconstructed during the year ——.

As it now stands, the spillway portion of this dam is built of Concrete Gravel + 4"x10" Timber
(State whether of masonry, concrete or timber)
and the other portions are built of Concrete & Earth to fill + banks
(State whether of masonry, concrete, earth or timber, with or without rock fill)

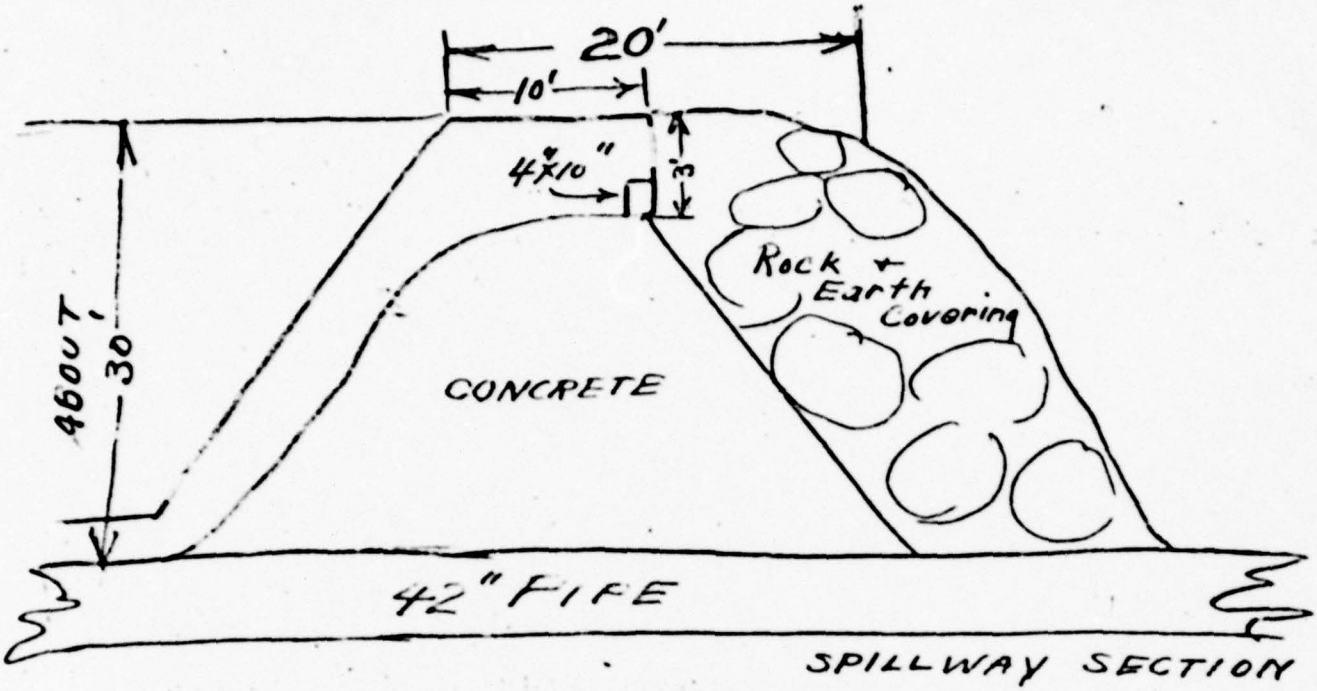
As nearly as I can learn, the character of the foundation bed under the spillway portion of the dam is Rock and under the remaining portions such foundation bed is Rock.

215 B

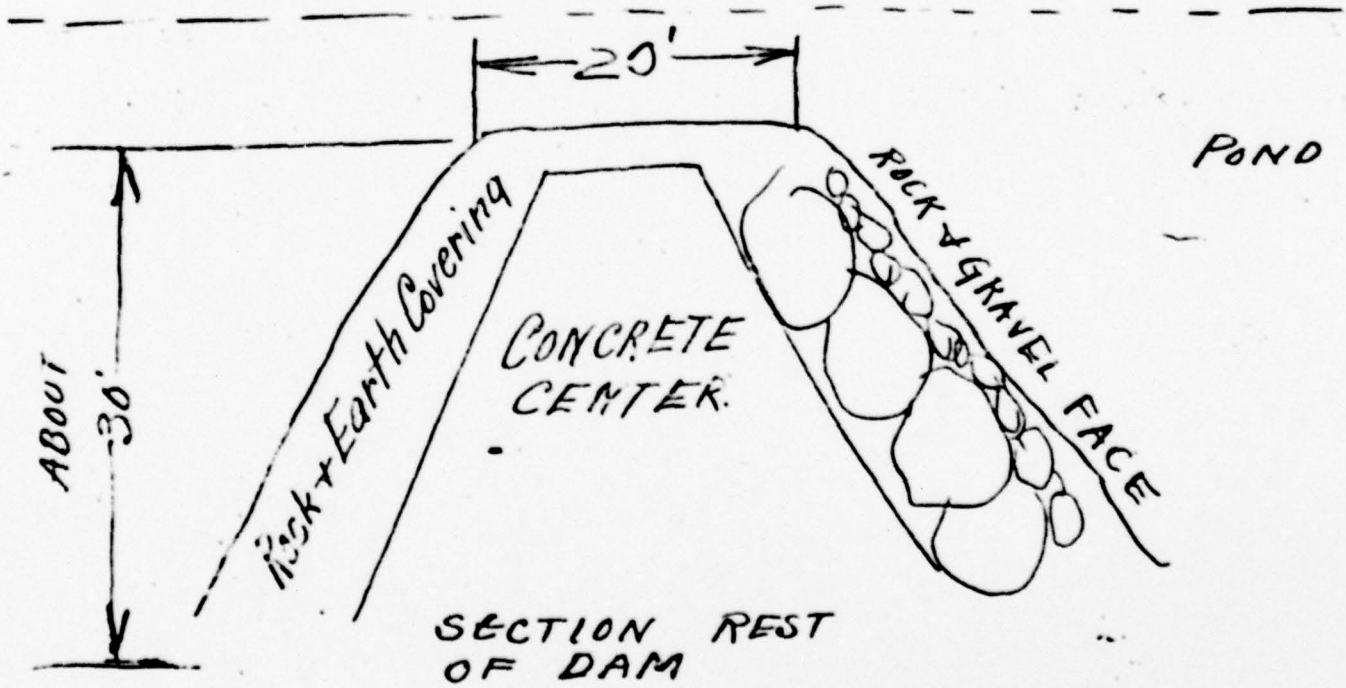
(In the space below, make a third sketch showing the general plan of the dam, and its approximate position in relation to buildings or other conspicuous objects in the vicinity.)



(In the space below, make one sketch showing the form and dimensions of a cross section through the spillway or waste-weir of this dam, and a second sketch showing the same information for a cross section through the other portion of the dam. Show particularly the greatest height of the dam above the stream bed, its thickness at the top, and thickness at the bottom, as nearly as you can learn.)



SPILLWAY SECTION



SECTION REST OF DAM

The total length of this dam is 450 feet. The spillway or waste-weir portion, is about 25 feet long, and the crest of the spillway is about 3 feet below the top of the dam.

The number, size and location of discharge pipes, waste pipes or gates which may be used for drawing off the water from behind the dam, are as follows: Two 12" pipes and a 24" pipe all leading into a 42" pipe

At the time of this inspection the water level above the dam was 2 ft. 6 in. ~~above~~ below the crest of the spillway.

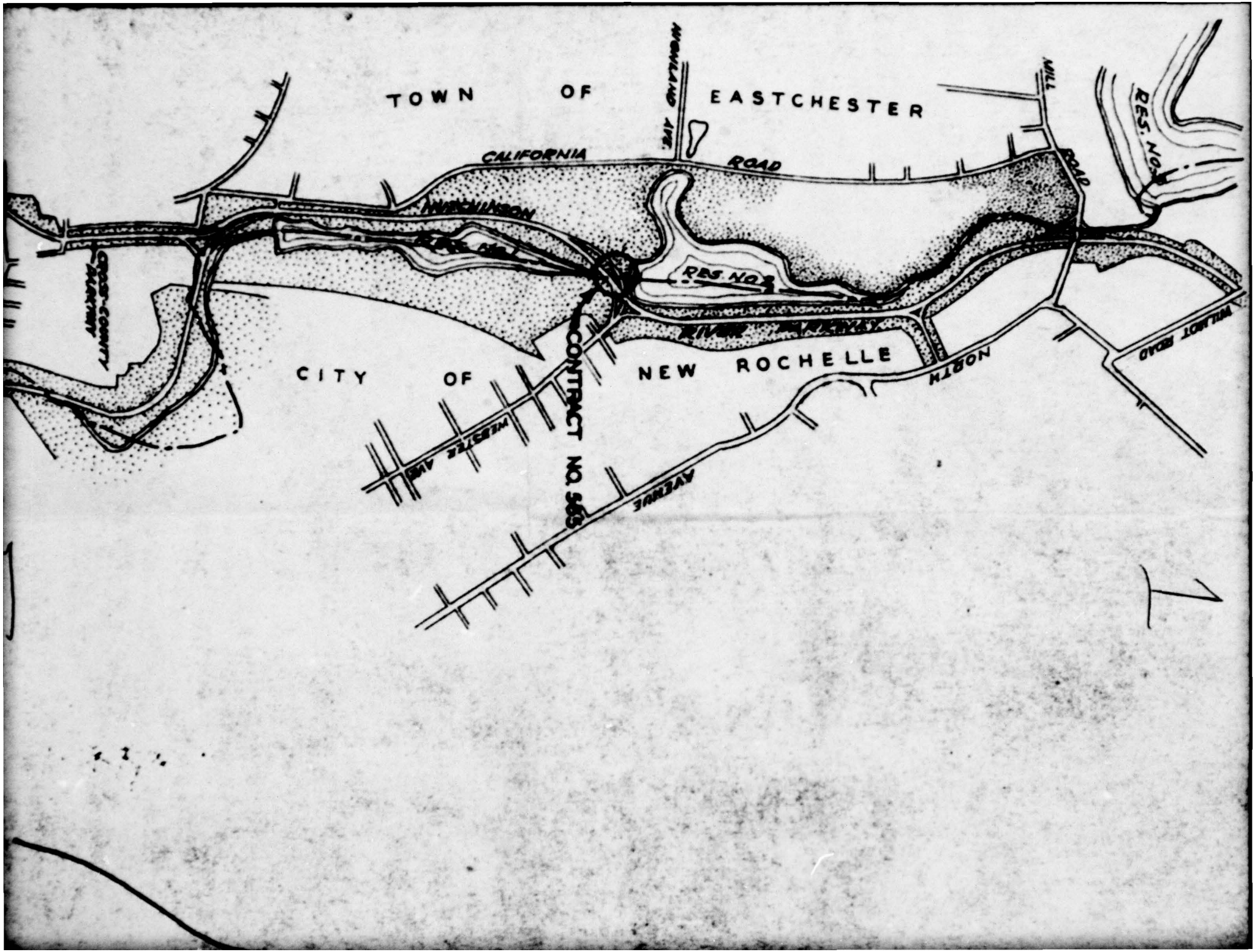
(State briefly, in the space below, whether, in your judgment, this dam is in good condition, or bad condition, describing particularly any leaks or cracks which you may have observed.)

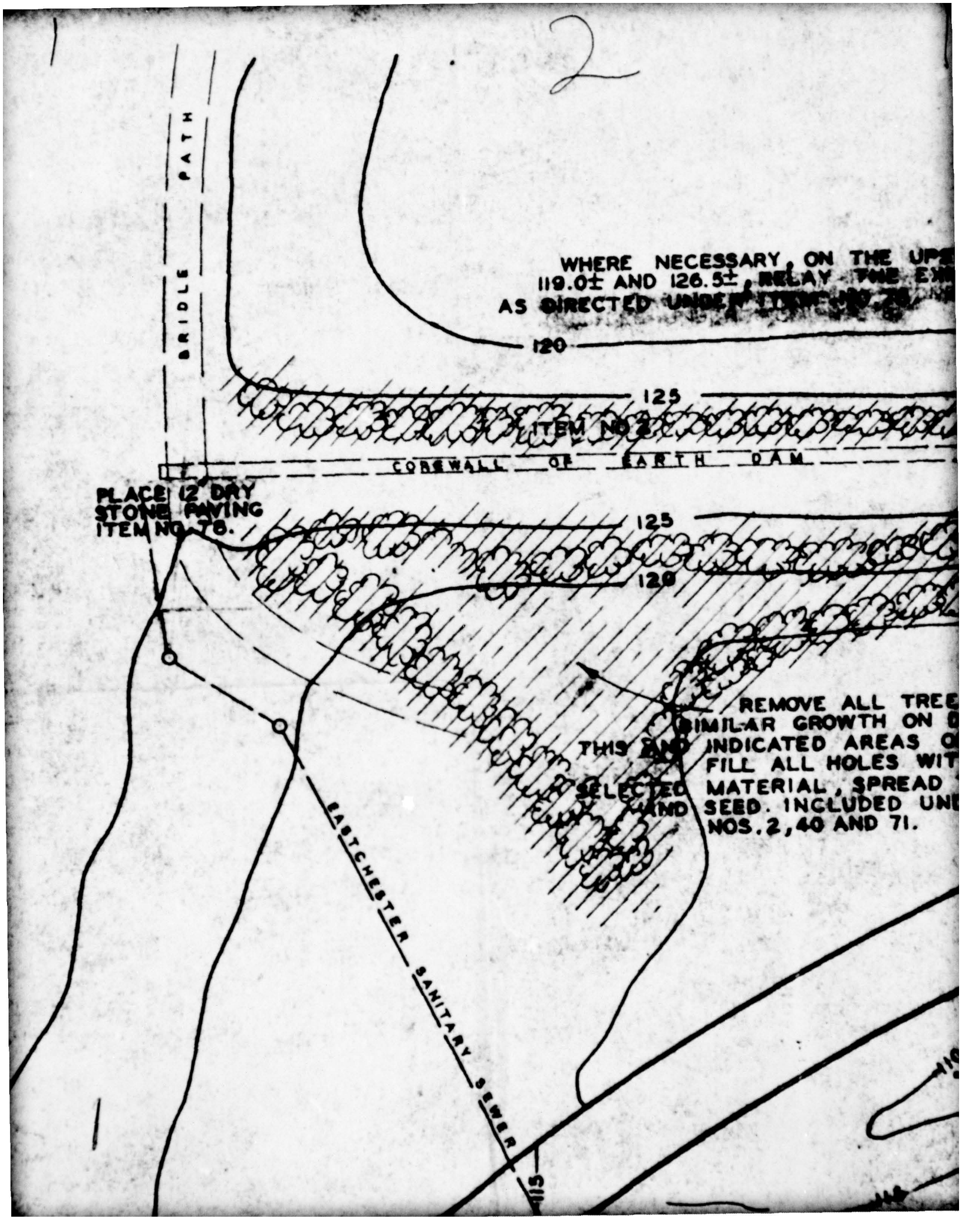
This dam was also in Excellent condition and well taken care of. Should a rupture of the dam occurr the flow would no doubt be taken care of by the reservoir just below it (No 2)

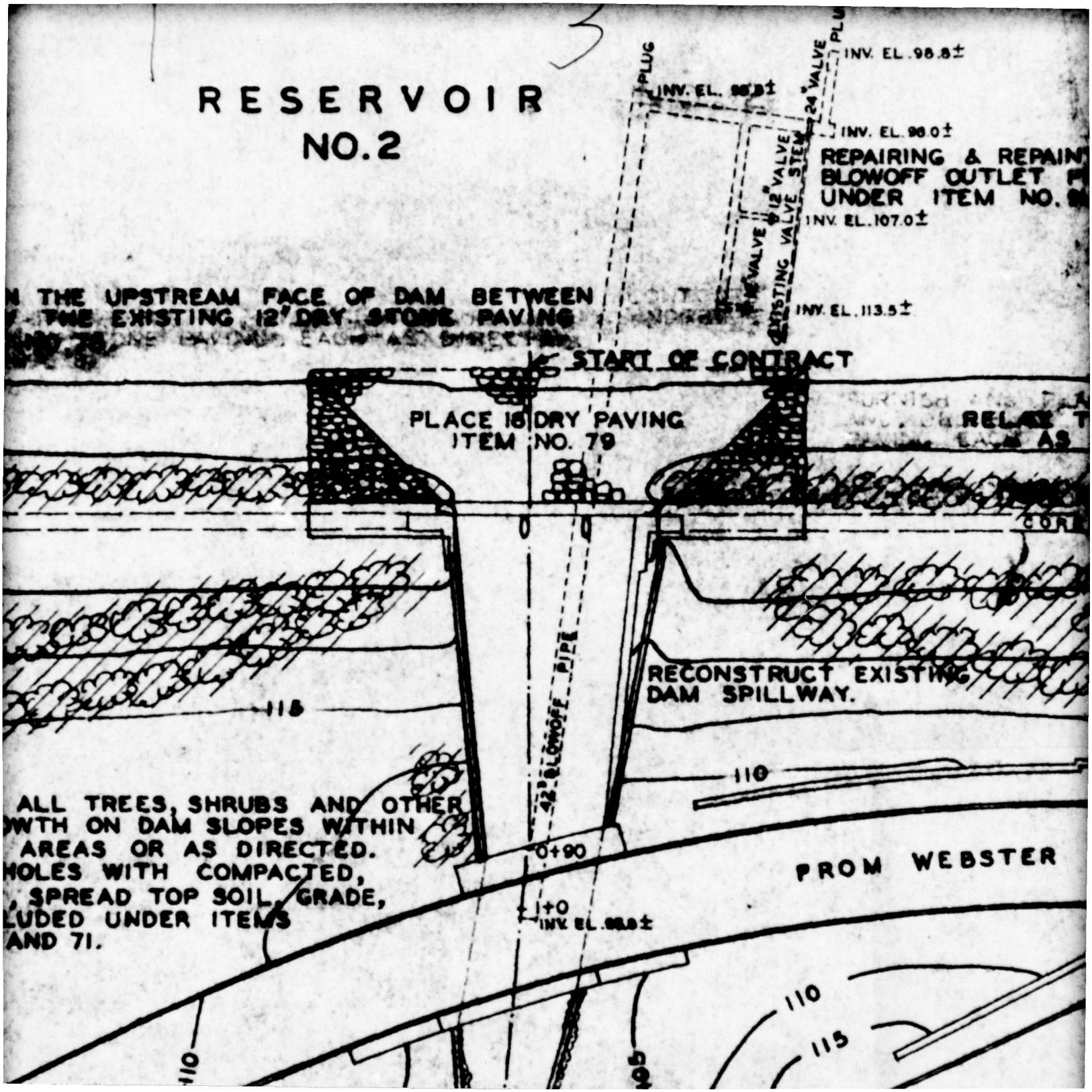
Reported by L D Seymour
(Signature)

Box 178
(Address—Street and number, P. O. Box or R. F. D. route)

Wolcott N.Y.
(Name of place)


TOWN OF EASTCHESTER
HIGHLAND AVE.
CALIFORNIA ROAD
MILL ROAD
RES. NO.
RES NO 2
CROSS-COUNTY PARKWAY
CITY OF NEW ROCHELLE
CONTRACT NO. 565
WESTTE AVE
NORTH AVENUE
WILMOT ROAD

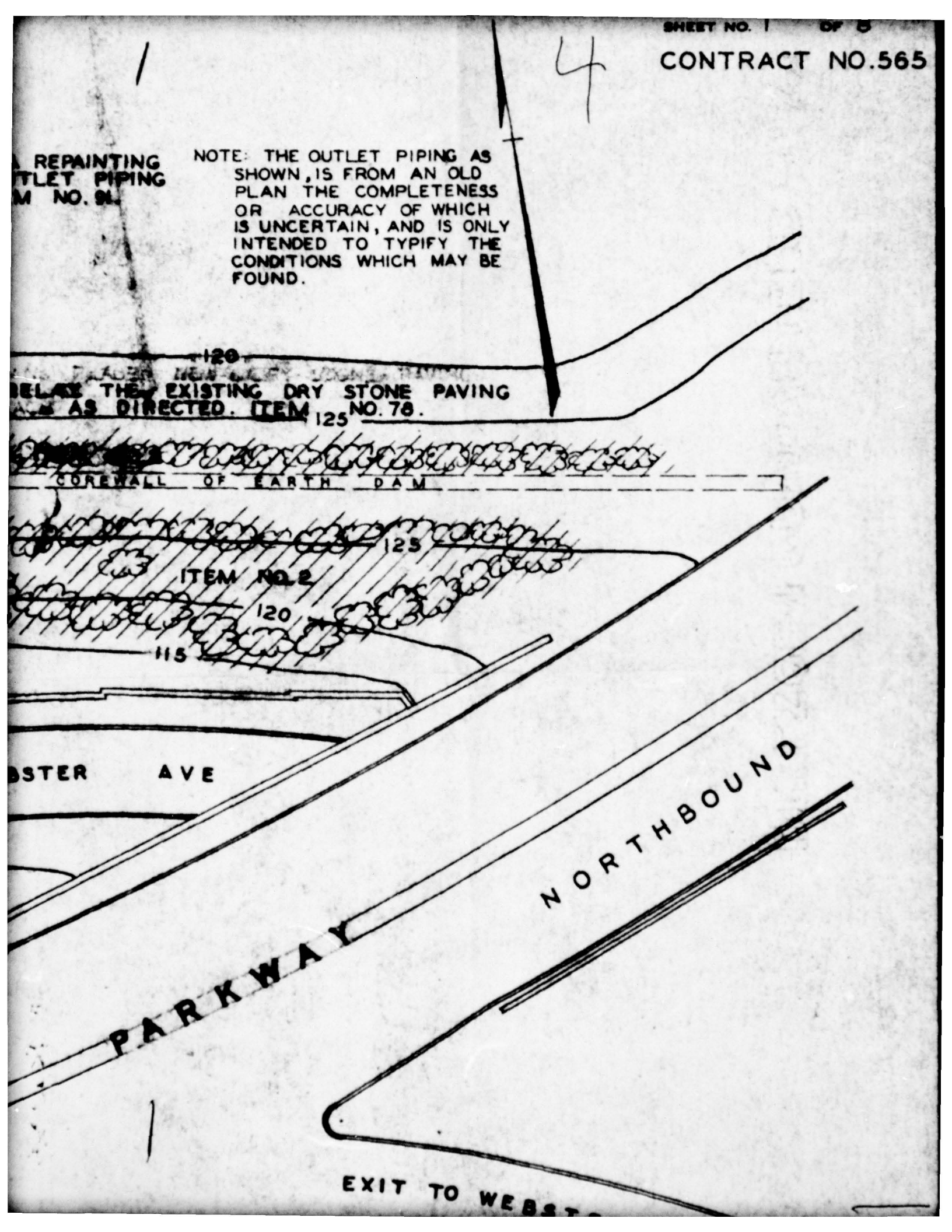

BRIDLE PATH
WHERE NECESSARY, ON THE UPS
119.0± AND 126.5±, RELAY THE EX
AS DIRECTED UNDER ITEM NO. 78.
120
125
ITEM NO. 2
CORE WALL OF EARTH DAM
PLACE 12" DRY STONE PAVING ITEM NO. 78.
125
120
REMOVE ALL TREE
SIMILAR GROWTH ON
THIS AND INDICATED AREAS O
FILL ALL HOLES WIT
SELECTED MATERIAL, SPREAD
AND SEED. INCLUDED UN
NOS. 2, 40 AND 71.
EASTCHESTER SANITARY SEWER

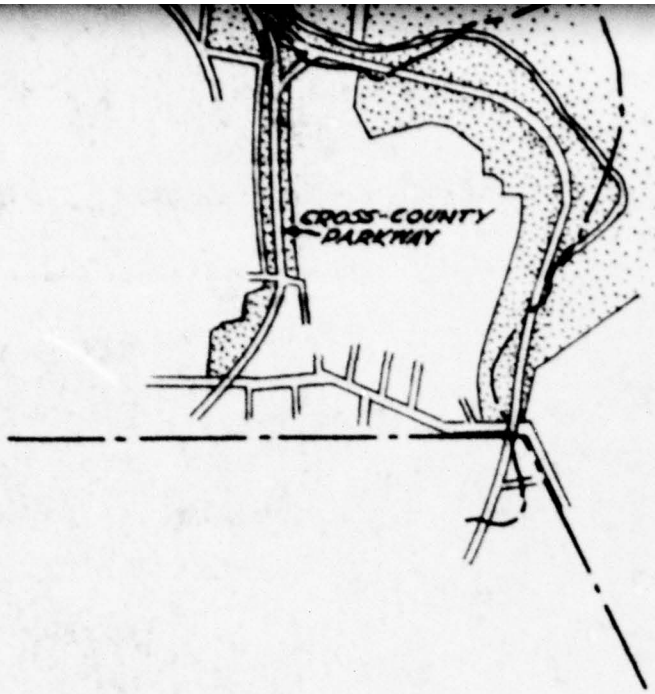

RESERVOIR
NO.2
PLUG
INV. EL. 98.8±
INV. EL. 98.0±
24" VALVE
12" VALVE
EXISTING VALVE STEM
INV. EL. 107.0±
REPAIRING & REPAIN
BLOWOFF OUTLET
UNDER ITEM NO.
THE UPSTREAM FACE OF DAM BETWEEN
THE EXISTING 12' DRY STONE PAVING
INV. EL. 113.5±
START OF CONTRACT
PLACE 18' DRY PAVING
ITEM NO. 79
RECONSTRUCT EXISTING
DAM SPILLWAY.
42" BLOWOFF PIPE
115
110
0+90
1+0
INV. EL. 98.0±
FROM WEBSTER
ALL TREES, SHRUBS AND OTHER
OWTH ON DAM SLOPES WITHIN
AREAS OR AS DIRECTED.
HOLES WITH COMPACTED,
, SPREAD TOP SOIL, GRADE,
LUDED UNDER ITEMS
AND 71.
110
95
110
115

CONTRACT NO.565

A REPAINTING
TLET PIPING
M NO. 91.

NOTE: THE OUTLET PIPING AS SHOWN, IS FROM AN OLD PLAN THE COMPLETENESS OR ACCURACY OF WHICH IS UNCERTAIN, AND IS ONLY INTENDED TO TYPIFY THE CONDITIONS WHICH MAY BE FOUND.





1

5

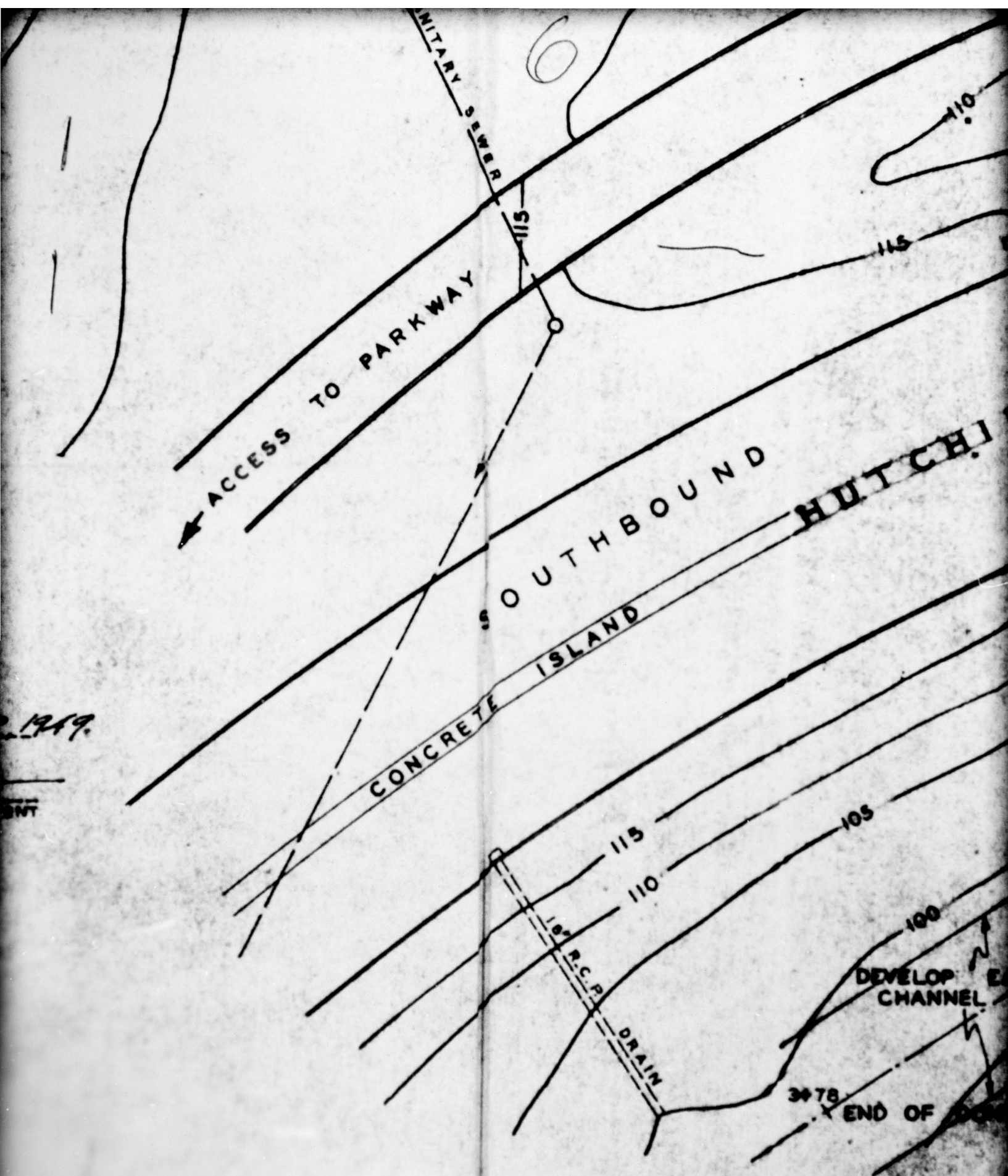
LOCATION MAP

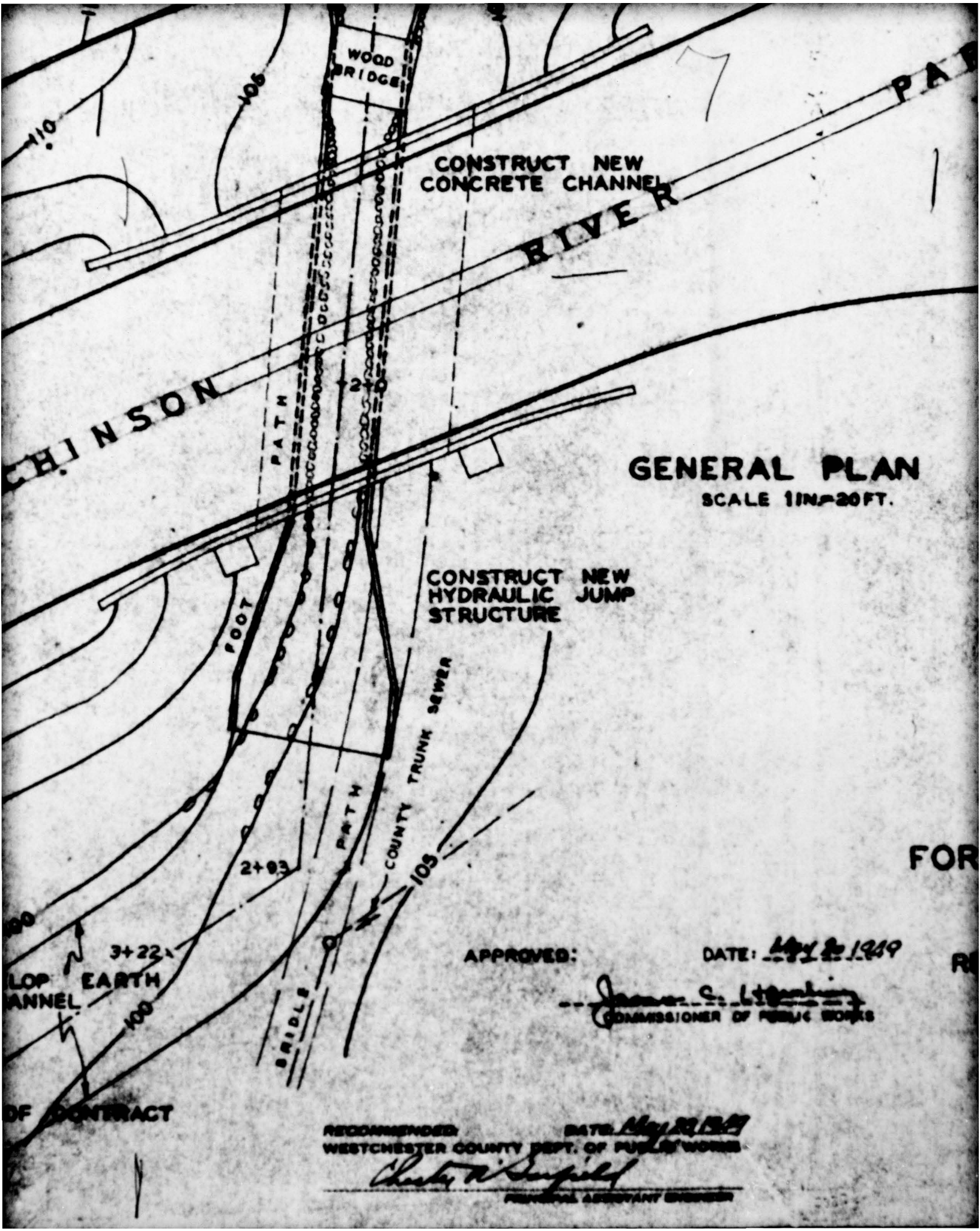
1 INCH=1000 FEET

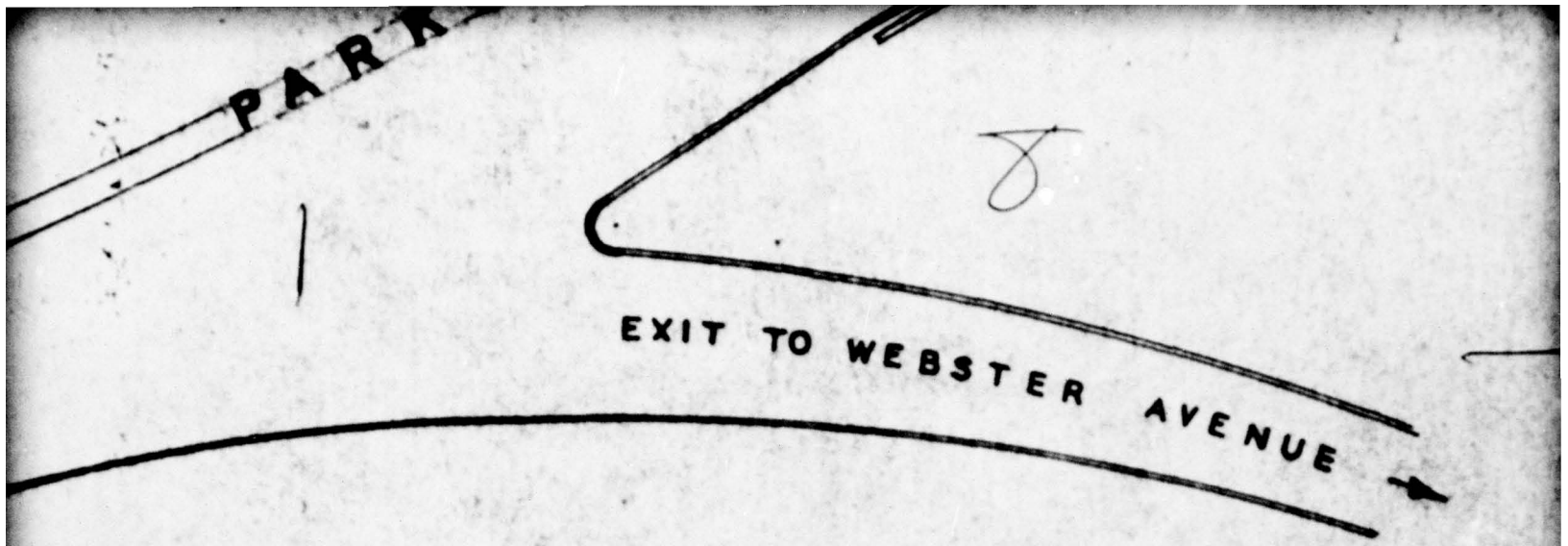
APPROVED FOR: DATE: May 20
WESTCHESTER COUNTY PARK COMMISSION

GENERAL SUPERINTENDENT

MADE BY C.J.S. Mar. 1949.
TRACED BY C.J.S. Apr. 1949.
CHECKED BY J.W.M.


6
SANITARY SEWER
115
110
115
ACCESS TO PARKWAY
SOUTHBOUND
HUTCH
CONCRETE ISLAND
115
110
105
100
18" R.C.P.
DRAIN
DEVELOP
CHANNEL
3+78
END OF
RESERVOIR NO. 1

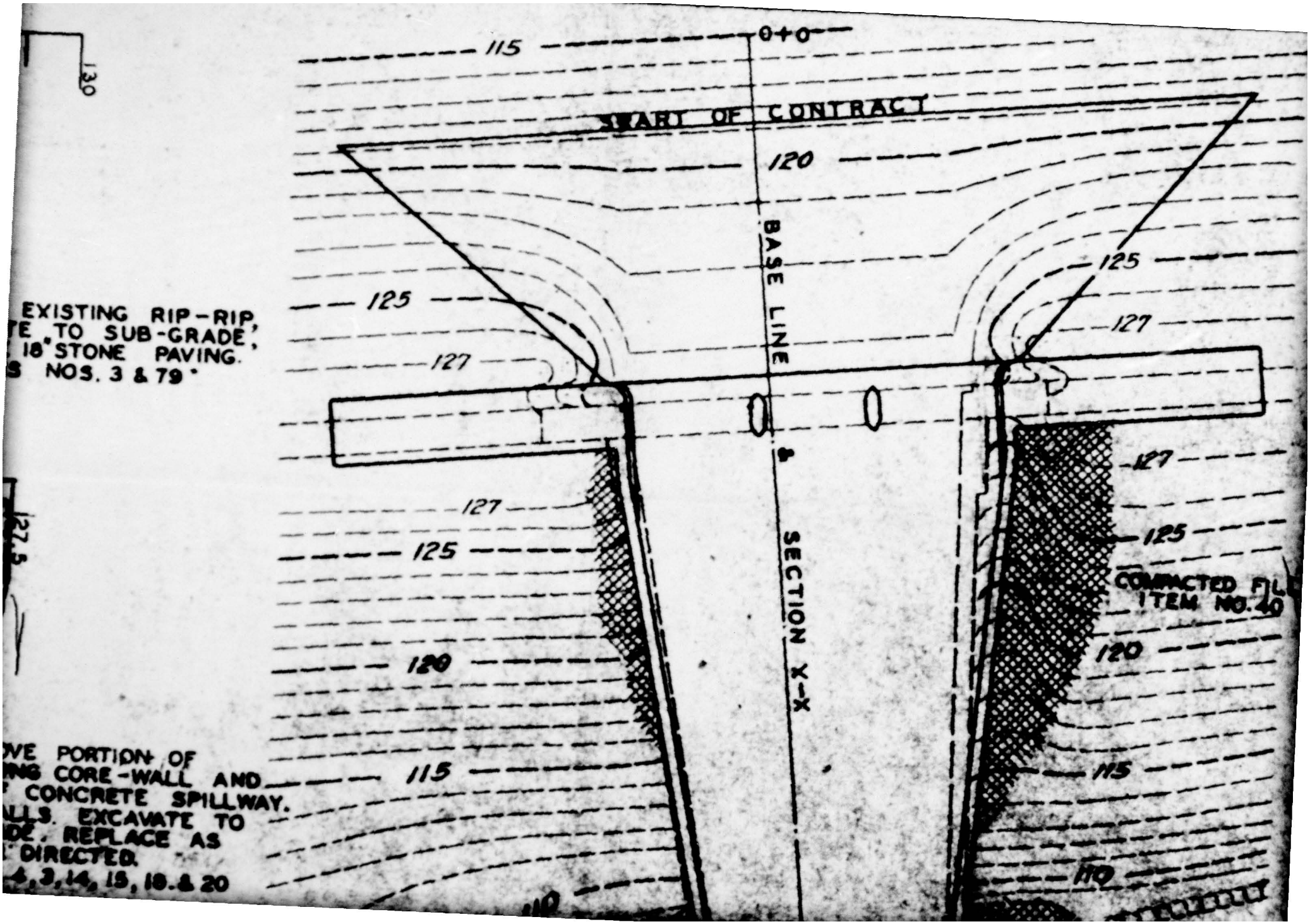

WOOD BRIDGE
110
105
CONSTRUCT NEW CONCRETE CHANNEL
RIVER
CHINSON
PATH
2+
GENERAL PLAN
SCALE 1 IN.= 20 FT.
CONSTRUCT NEW HYDRAULIC JUMP STRUCTURE
FOOT
COUNTY TRUNK SEWER
PATH
2+93
105
3+22
LOP EARTH
ANNEL
100
BRIDLE
OF CONTRACT
APPROVED:
DATE: May 2 1949
COMMISSIONER OF PUBLIC WORKS
RECOMMENDED:
DATE: May 20 1949
WESTCHESTER COUNTY DEPT. OF PUBLIC WORKS
PRINCIPAL ASSISTANT ENGINEER

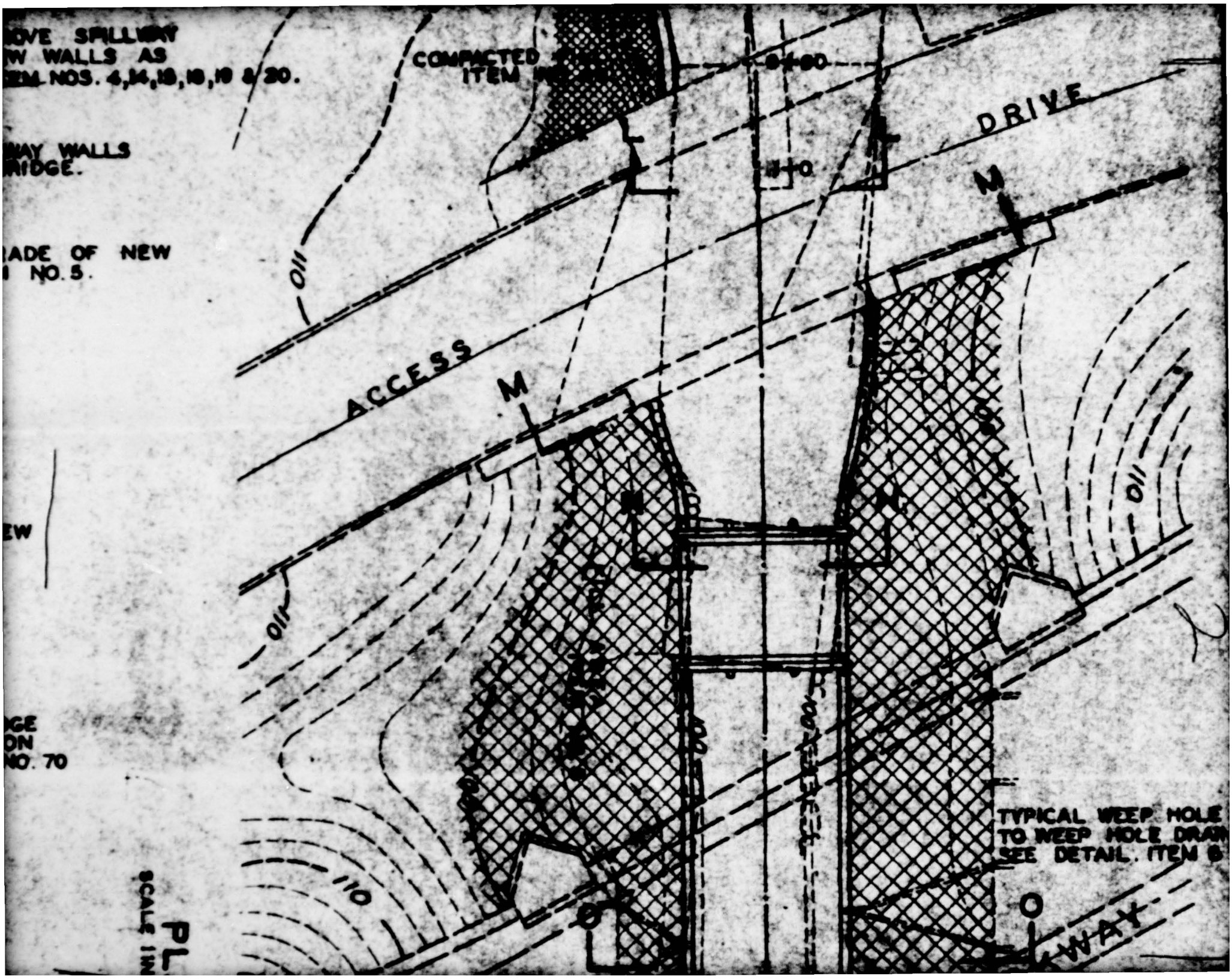


AL PLAN
LE 1IN.=20FT.

WESTCHESTER COUNTY
DEPARTMENT OF PUBLIC WORKS
DIVISION OF ENGINEERING
PLANS
FOR RECONSTRUCTION OF SPILLWAY
AND
IMPROVEMENT OF CHANNEL
AT
RESERVOIRS NO.2 & NO.1 - HUTCHINSON RIVER
IN
TOWN OF EASTCHESTER AND
CITY OF NEW ROCHELLE
N.Y.

APRIL 1949


130
EXISTING RIP-RIP
TE TO SUB-GRADE,
18" STONE PAVING.
S NOS. 3 & 79.
VE PORTION OF
NG CORE-WALL AND
CONCRETE SPILLWAY.
LLS. EXCAVATE TO
DE, REPLACE AS
DIRECTED.
4, 3, 14, 15, 18 & 20
115
0+0
START OF CONTRACT
120
125
127
BASE LINE
SECTION X-X
COMPACTED FILL
ITEM NO. 40
110

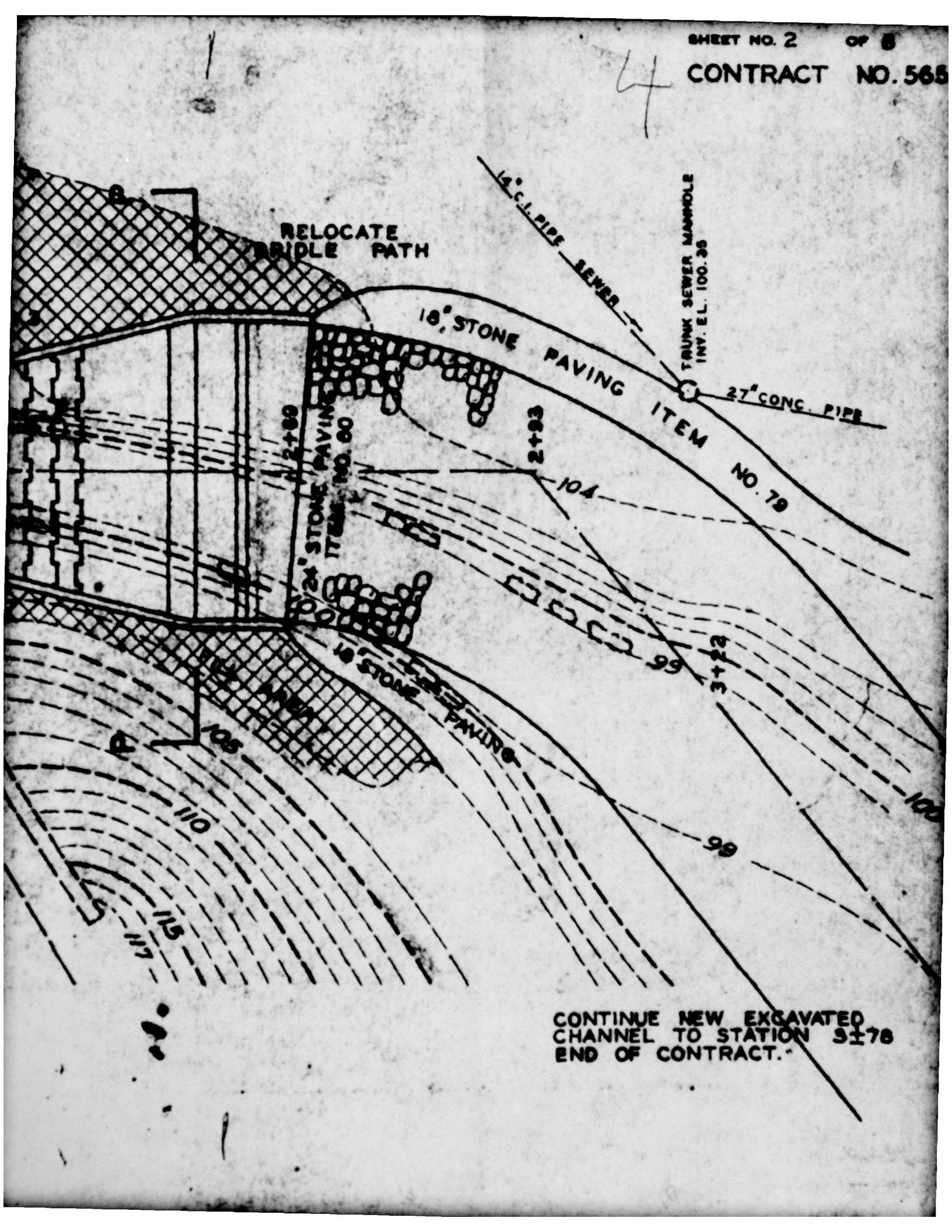

OVE SPILLWAY
W WALLS AS
ITEM NOS. 4,14,18,18,18 & 20.
WAY WALLS
RIDGE.
ADE OF NEW
NO. 5.
EW
GE
ON
NO. 70
COMPACTED
ITEM
DRIVE
ACCESS
M
M
110
110
110
110
TYPICAL WEEP HOLE
TO WEEP HOLE DRAIN
SEE DETAIL. ITEM 6
WAY

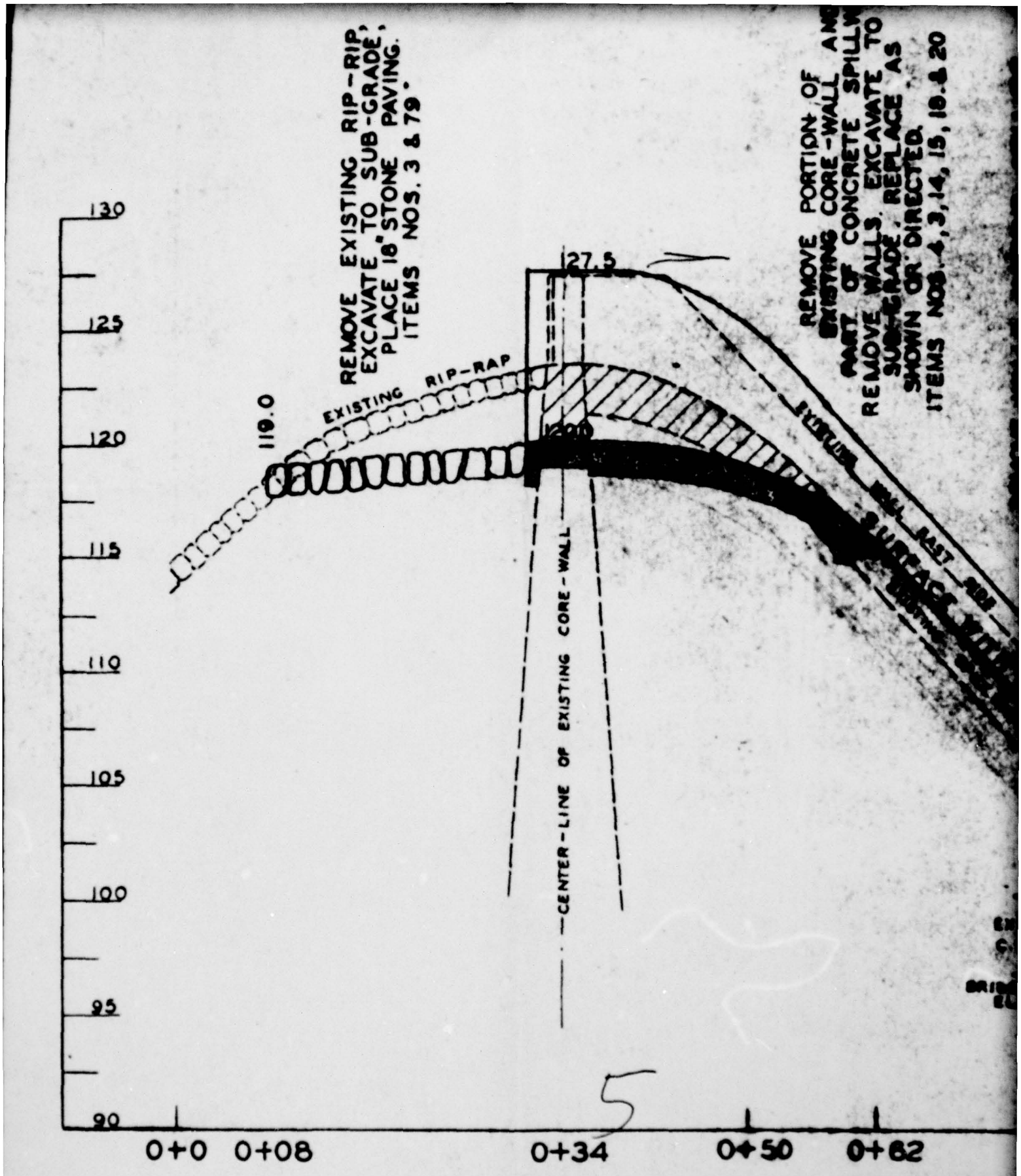
PLAN

SCALE 1 IN. = 10 FEET.

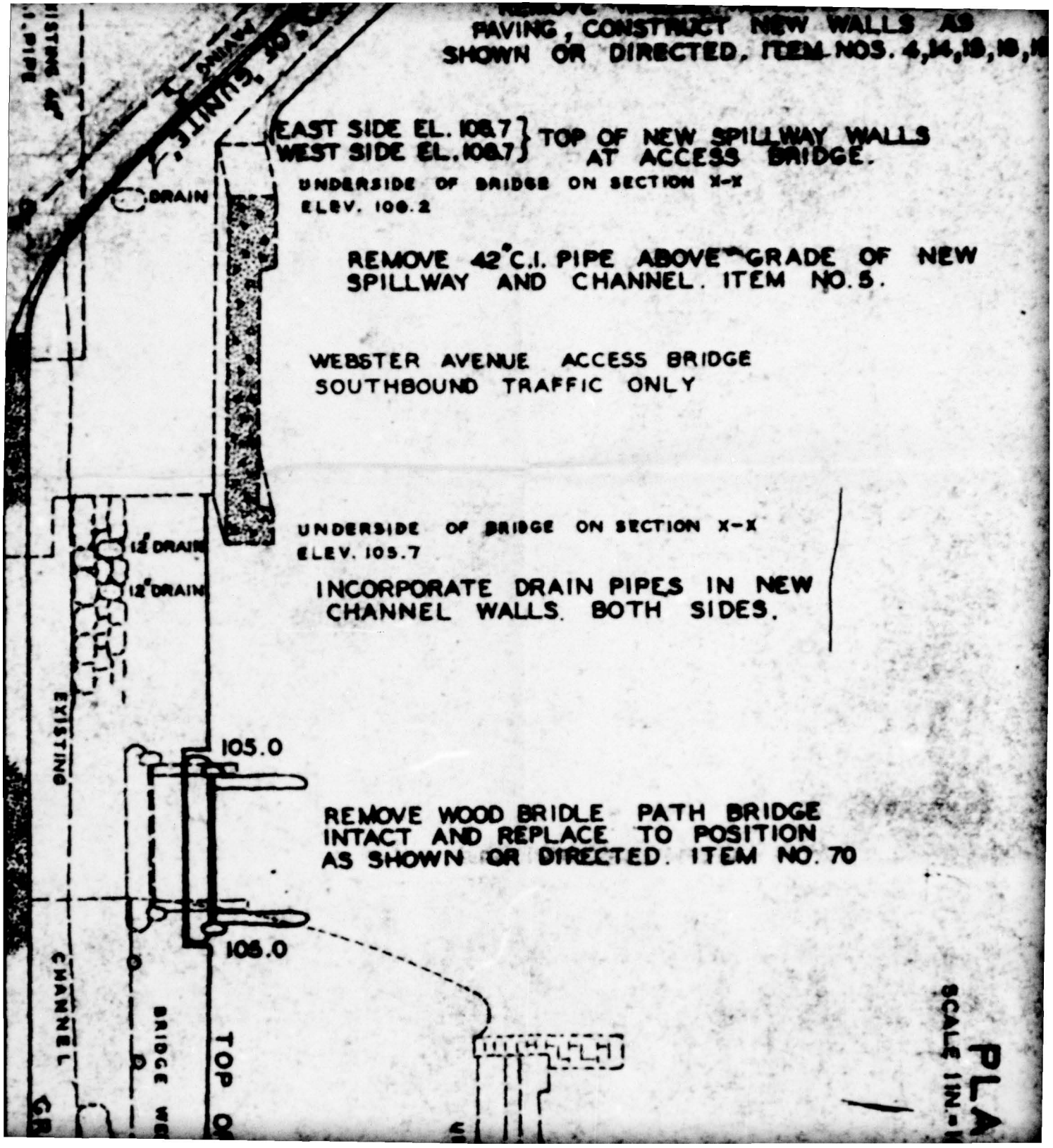
NOTE: ON

CONTRACT NO. 565





MADE BY CJS Apr. 1949
TRACED BY J.S. & C.J.S.
CHECKED BY J.H.M.


PAVING, CONSTRUCT NEW WALLS AS
SHOWN OR DIRECTED, ITEM NOS. 4,14,18,19,
EAST SIDE EL. 108.7
WEST SIDE EL. 108.7
TOP OF NEW SPILLWAY WALLS
AT ACCESS BRIDGE.
UNDERSIDE OF BRIDGE ON SECTION X-X
ELEV. 108.2
DRAIN
REMOVE 42" C.I. PIPE ABOVE GRADE OF NEW
SPILLWAY AND CHANNEL. ITEM NO. 5.
WEBSTER AVENUE ACCESS BRIDGE
SOUTHBOUND TRAFFIC ONLY
UNDERSIDE OF BRIDGE ON SECTION X-X
ELEV. 105.7
12" DRAIN
12" DRAIN
INCORPORATE DRAIN PIPES IN NEW
CHANNEL WALLS. BOTH SIDES.
EXISTING
105.0
REMOVE WOOD BRIDLE PATH BRIDGE
INTACT AND REPLACE TO POSITION
AS SHOWN OR DIRECTED. ITEM NO. 70
108.0
CHANNEL
TOP
PLA
SCALE 1IN.-

N

FEET.

NOTE: ON THIS PL
STRUCTURE
PROPOSED

HUTCHINSON RIVER PARKWAY

SOUTHBOUND

NORTHBOUND

NDERSIDE OF BRIDGE ON SECTION X-X ELEV. 115.8

CONCRETE CHANNEL WAL
BY RUSTIC FENCE (SEE
SOUTHERLY END. ITEM

104.0

F NEW CHANNEL WALLS

EP HOLES

SPRINGING LINE OF BRIDGE EL. 101.8

BOTTOM

ADE 0.50 %

97.31

97.25

95.25

BRIDGE FOOTINGS ELEV. 94.8

2+0

2+28

2+50

N X-X

1 IN. = 5 FEET.

1 IN. = 10 FEET.

RECOMMENDED:

DATE: May 20, 1949.

WESTCHESTER COUNTY DEPT. OF PUBLIC WORKS

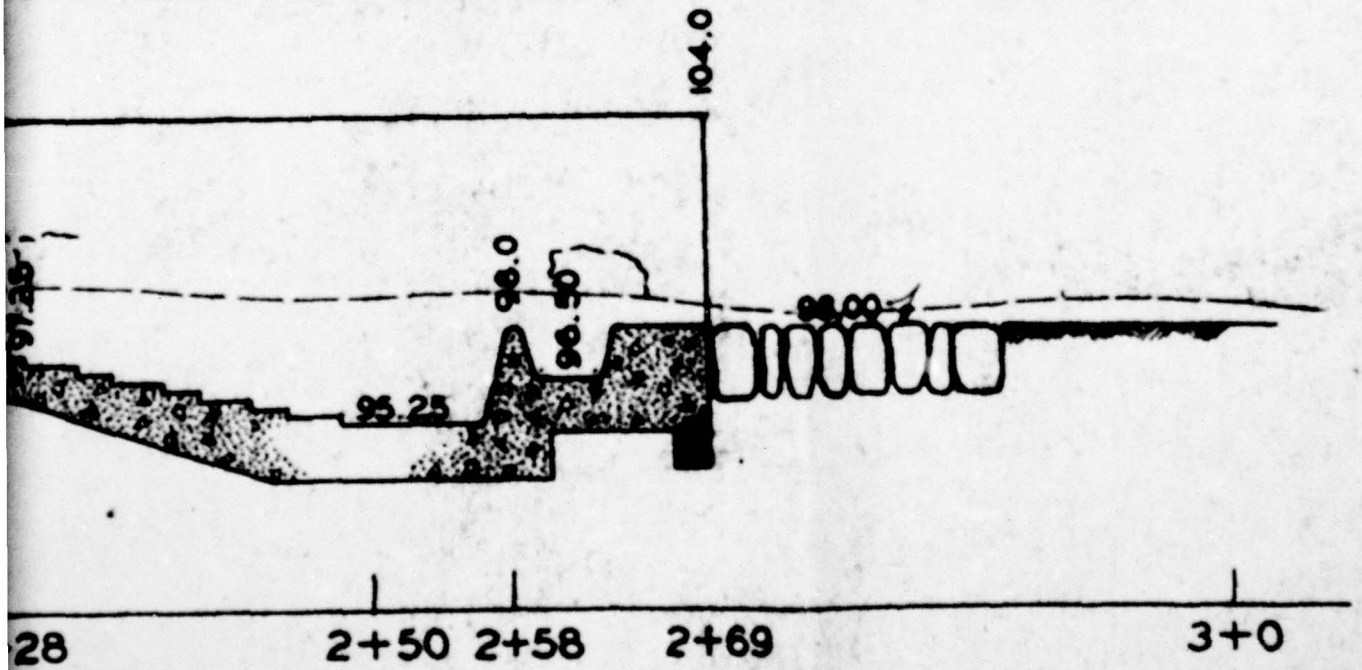
Charles A. Barfield

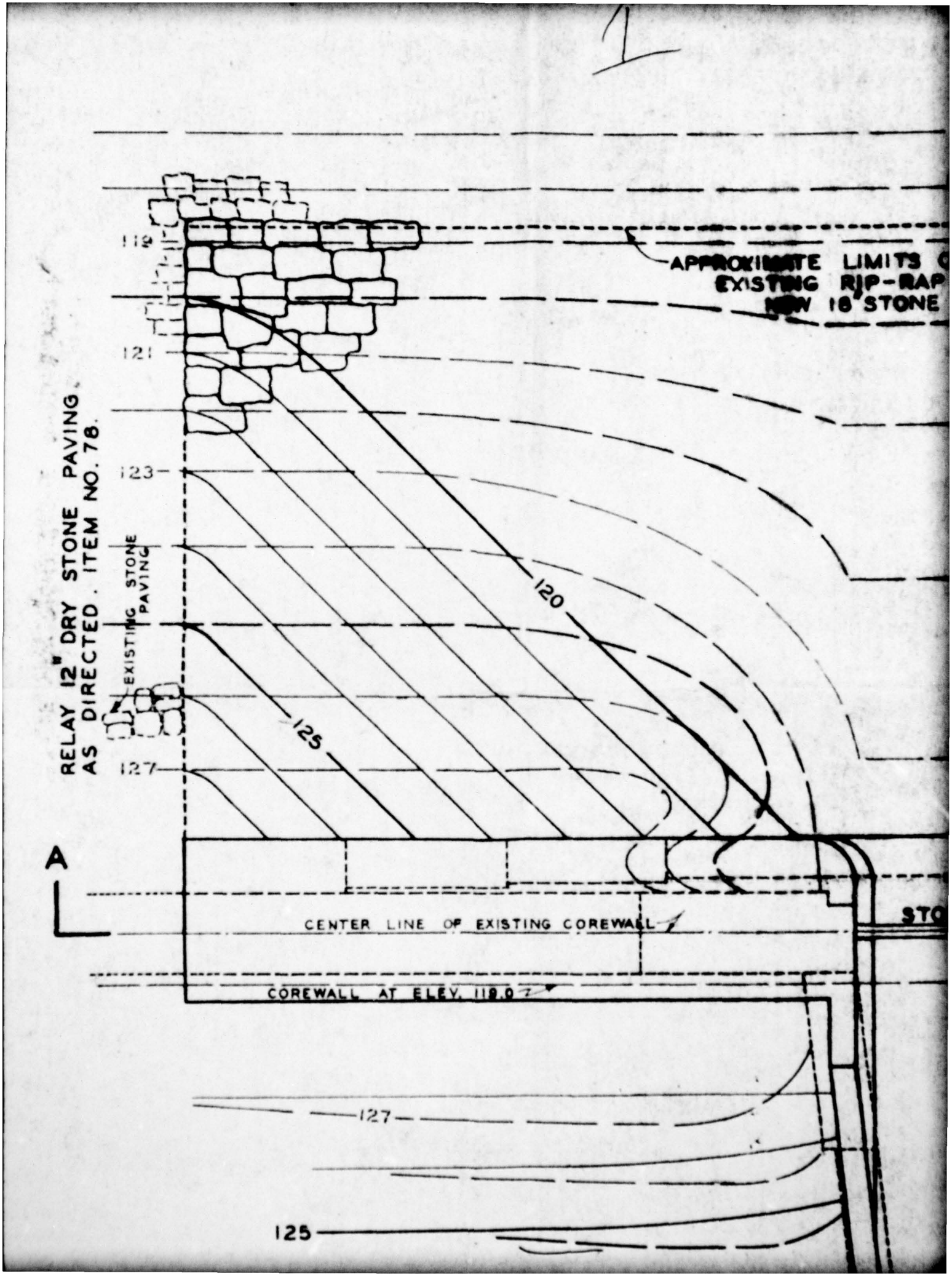
PRINCIPAL ASSISTANT ENGINEER

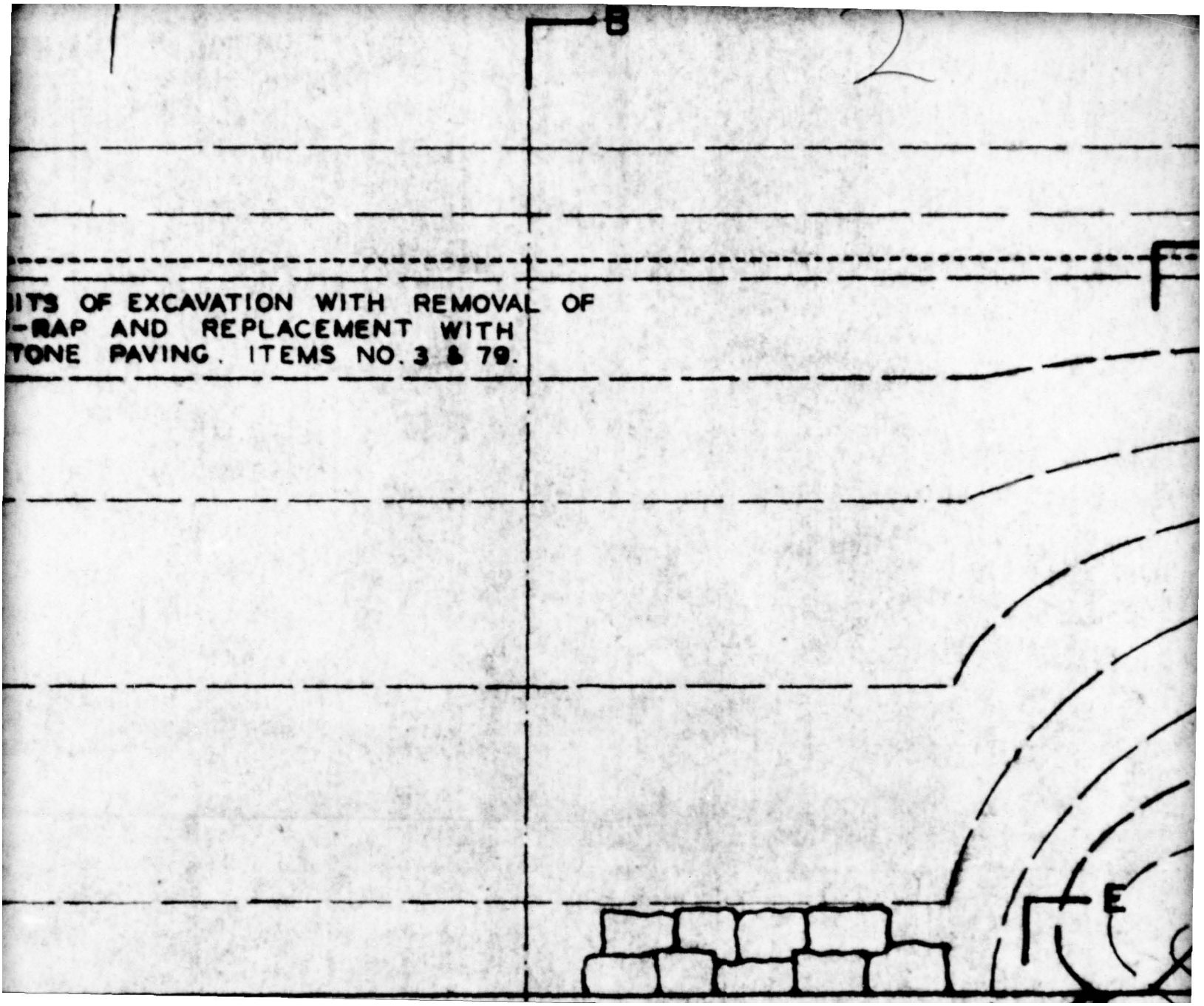
END OF CONTRACT.

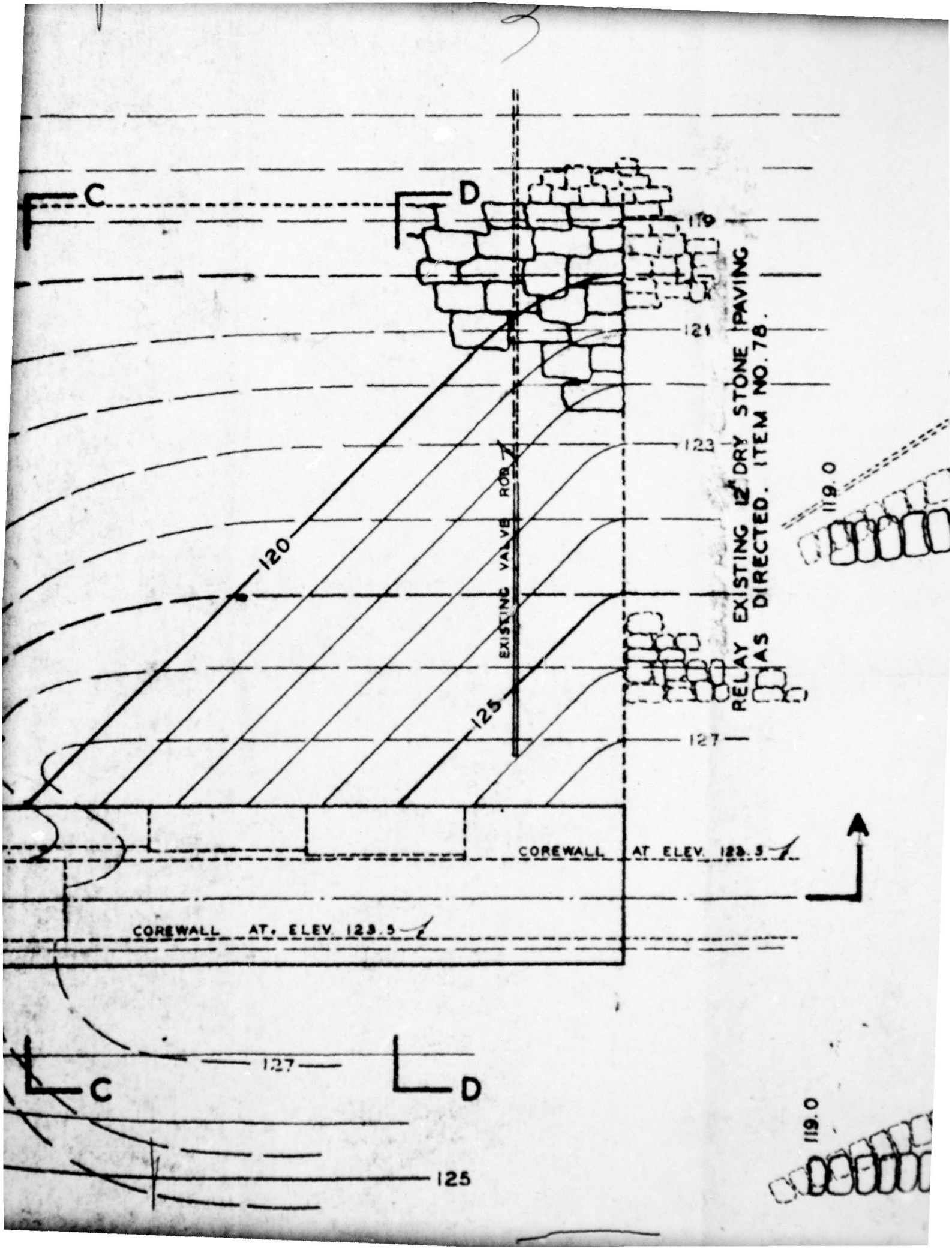
NOTE: ON THIS PLAN, IN GENERAL, DASH LINES SHOW EXISTING STRUCTURES AND TOPOGRAPHY, SOLID LINES DENOTE PROPOSED WORK INCLUDED UNDER THIS CONTRACT.

CONCRETE CHANNEL WALLS, BOTH SIDES, TO BE SURMOUNTED BY RUSTIC FENCE (SEE DETAIL), FROM ACCESS BRIDGE TO SOUTHERLY END. ITEM NO. 73-A.




119
121
123
127
125
120
APPROXIMATE LIMITS O
EXISTING RIP-RAP
NEW 18" STONE
RELAY 12" DRY STONE PAVING
AS DIRECTED. ITEM NO. 78.
EXISTING STONE PAVING
A
CENTER LINE OF EXISTING COREWALL
COREWALL AT ELEV. 119.0
STO
127
125

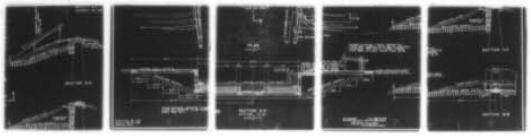

B
ITS OF EXCAVATION WITH REMOVAL OF
-RAP AND REPLACEMENT WITH
TONE PAVING. ITEMS NO. 3 & 79.
E


C
D
119
121
123
120
125
127
EXISTING VALVE ROD
RELAY EXISTING 12" DRY STONE PAVING AS DIRECTED. ITEM NO. 78.
119.0
COREWALL AT ELEV. 123.5
COREWALL AT ELEV. 123.5
C
D
127
125
119.0

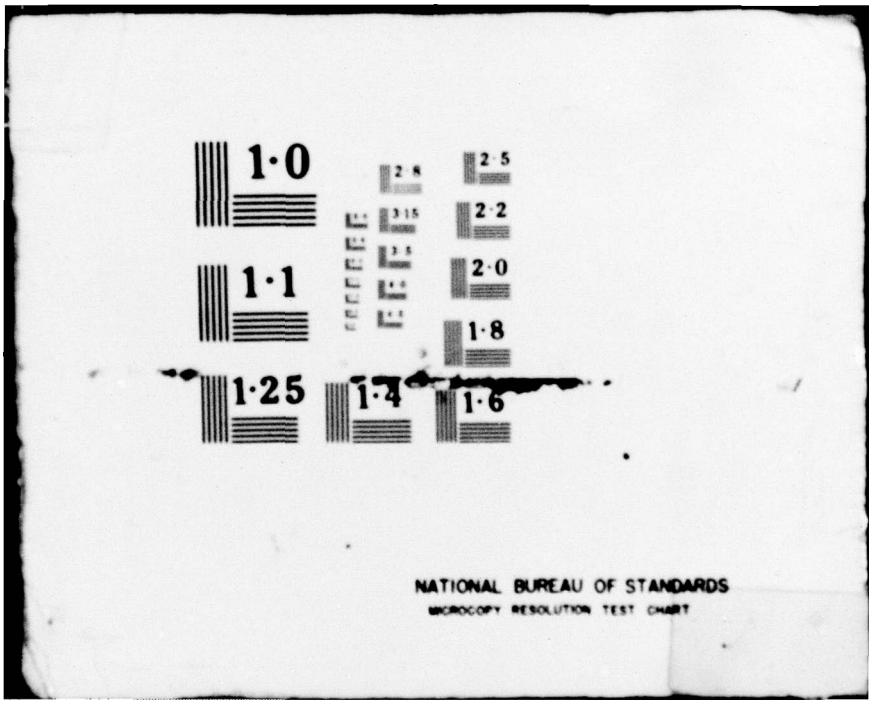
AD-A075 890 NEW YORK STATE DEPT OF ENVIRONMENTAL CONSERVATION ALBANY F/G 13/2
NATIONAL DAM SAFETY PROGRAM. NEW ROCHELLE RESERVOIR NUMBER 3 DA--ETC(U)
SEP 79 G KOCH DACW51-79-C-0001

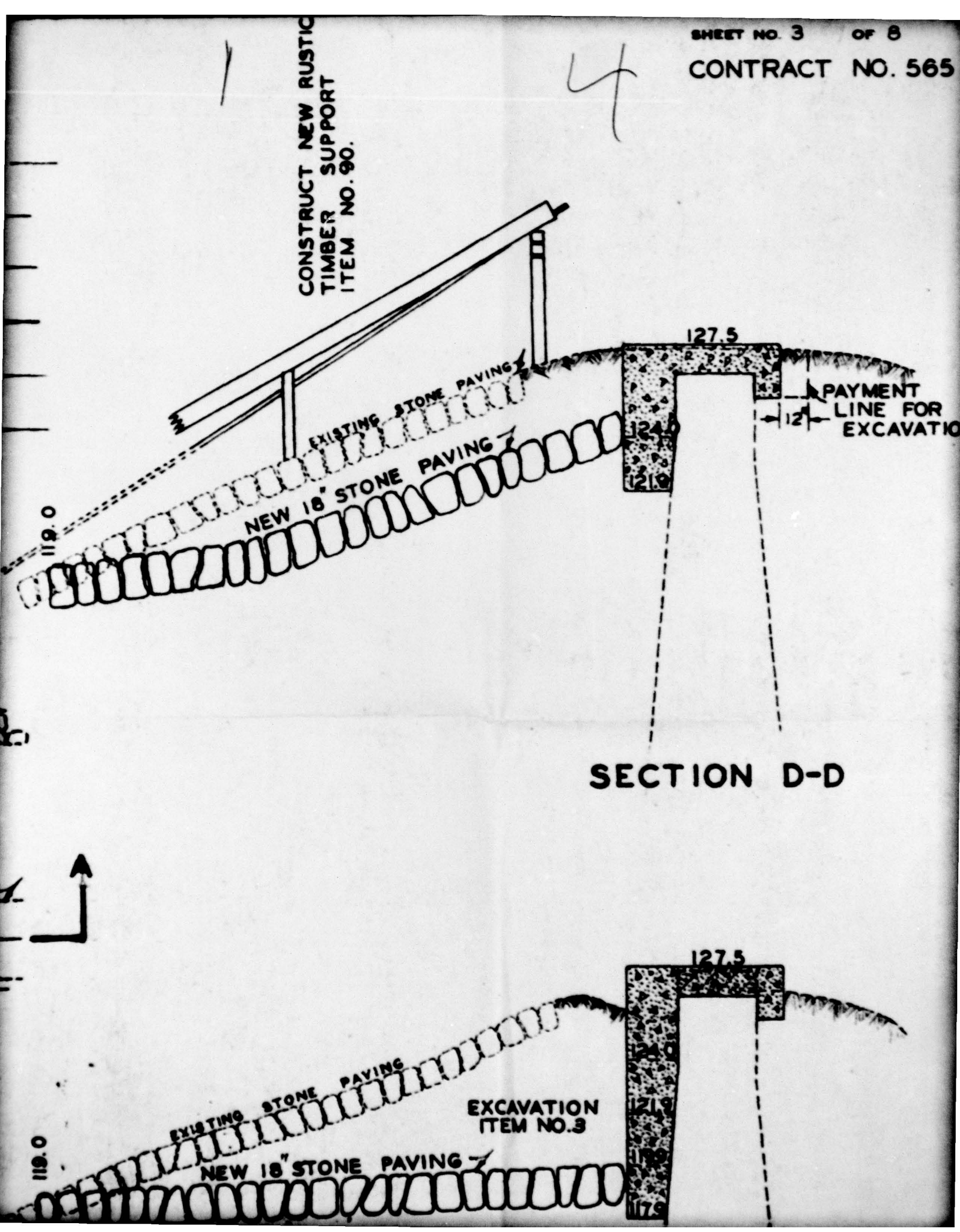
UNCLASSIFIED NL

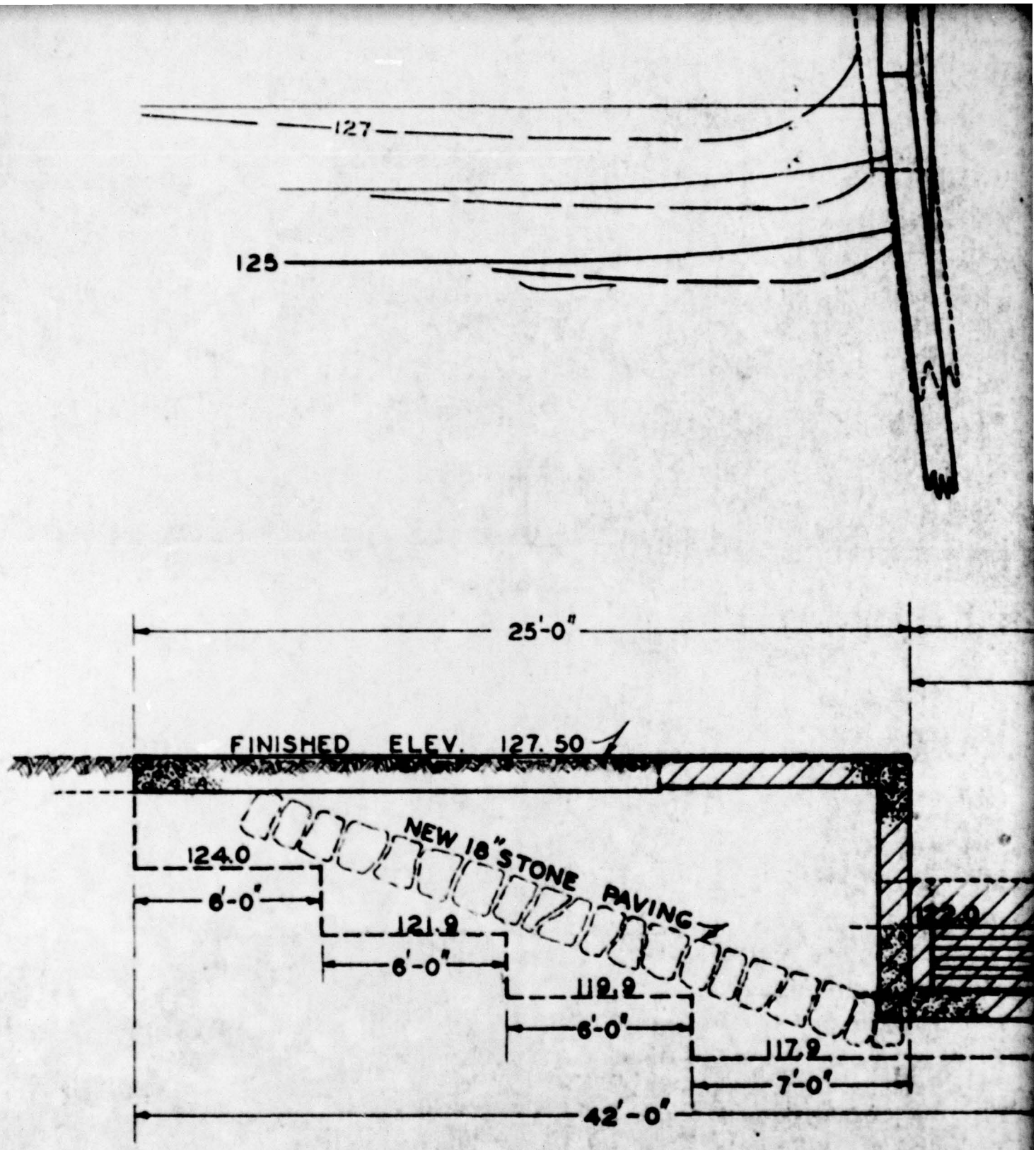
2 OF 2
AD-
A075890



END
DATE
FILMED
11-79
DDC


1·0
1·1
1·25
1·4
1·6
2·8
3·15
3·5
2·5
2·2
2·0
1·8
NATIONAL BUREAU OF STANDARDS
MICROCOPY RESOLUTION TEST CHART

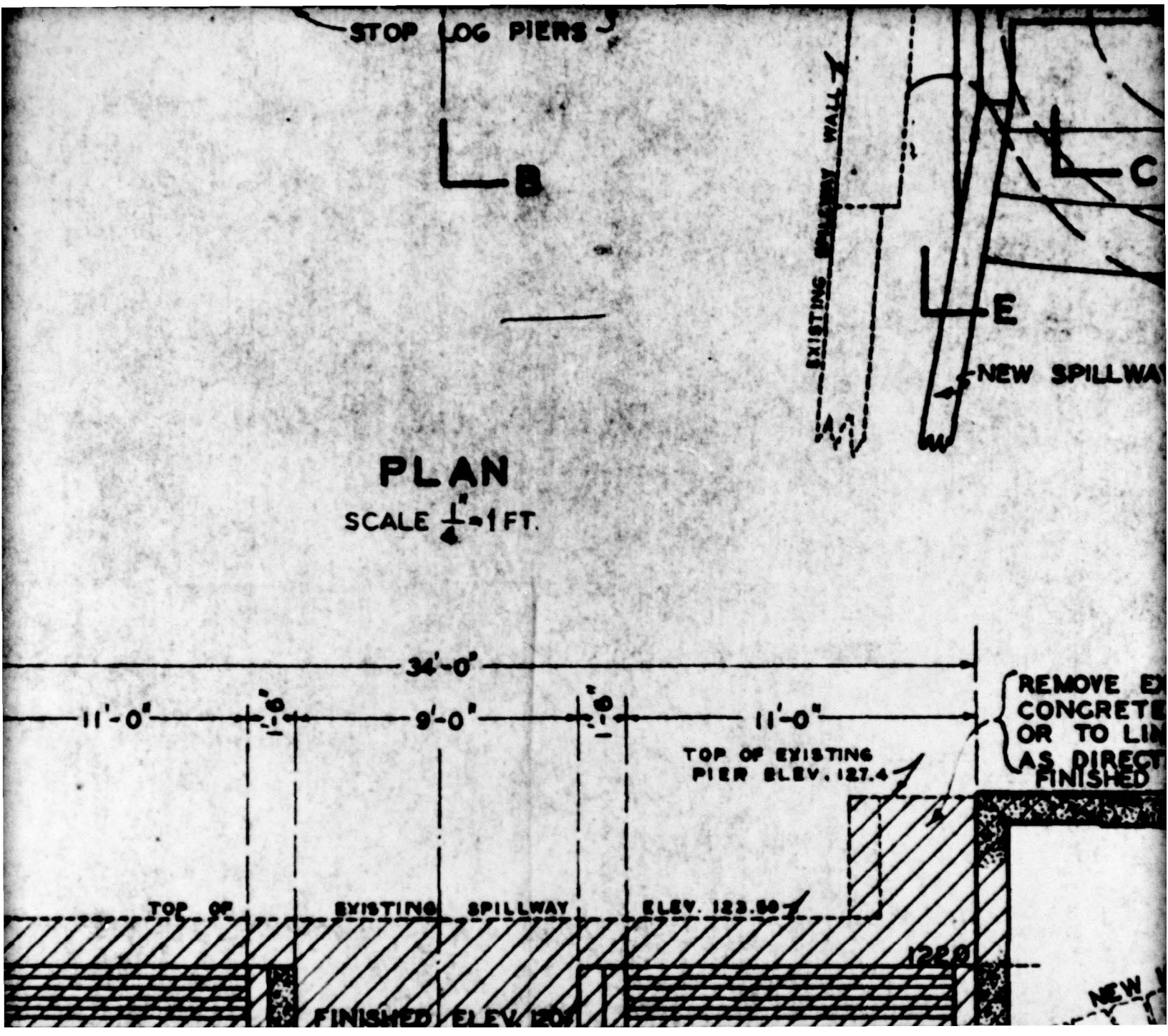

CONSTRUCT NEW RUSTIC TIMBER SUPPORT ITEM NO. 90.
127.5
PAYMENT LINE FOR EXCAVATIO
12'
124.0
121.9
EXISTING STONE PAVING
NEW 18" STONE PAVING
119.0
SECTION D-D
127.5
124.0
121.9
119.0
117.9
EXISTING STONE PAVING
EXCAVATION ITEM NO.3
NEW 18" STONE PAVING

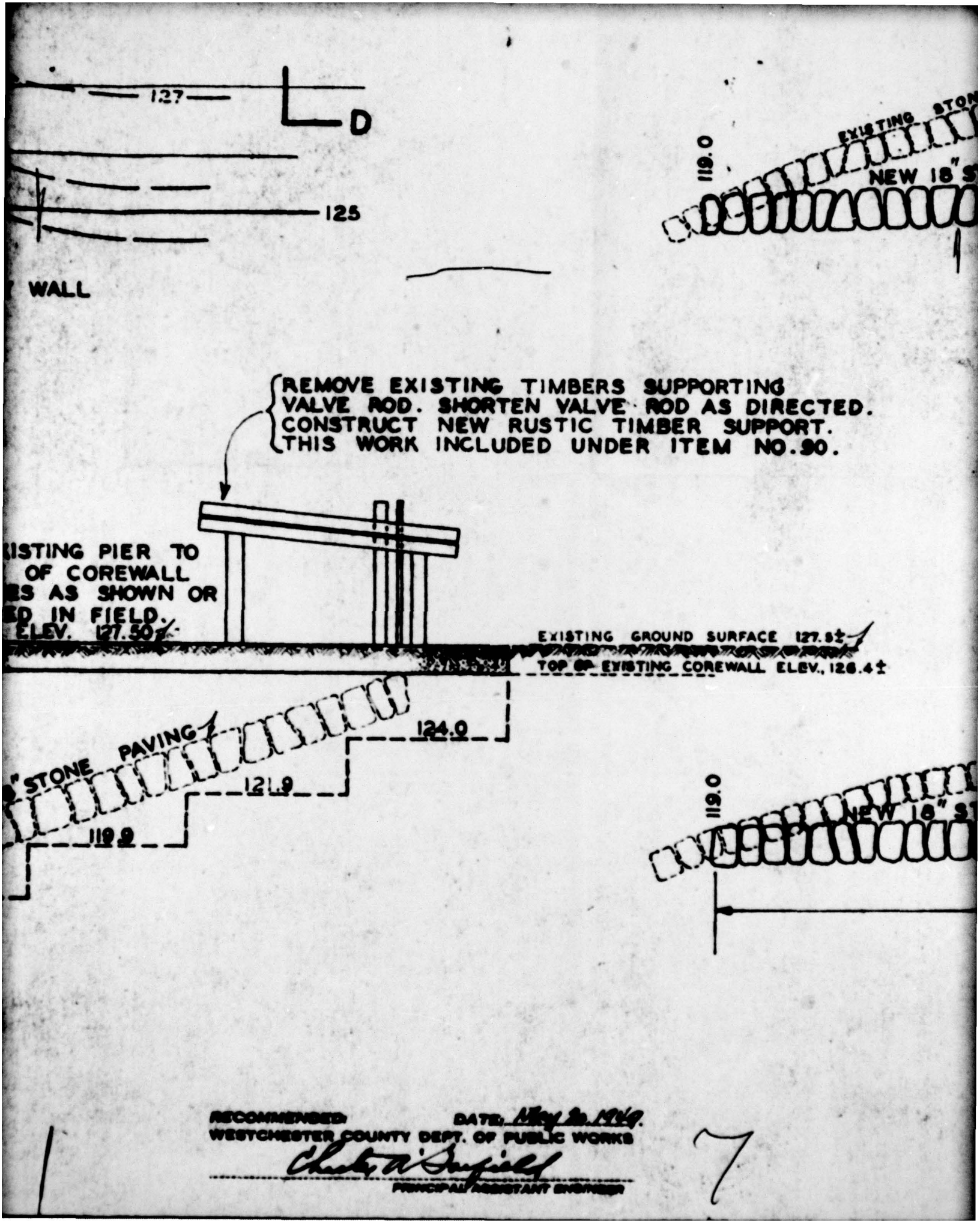


CROSS HATCHING INDICATES MINIMU
LIMITS OF CONCRETE TO BE REMOV
UNDER ITEM NO. 4.

MADE BY CdeS Apr 1949
TRACED BY CdeS Apr 1949
CHECKED BY [illegible]

5


STOP LOG PIERS
B
C
E
EXISTING MASONRY WALL
NEW SPILLWAY
PLAN
SCALE 1/4"=1 FT.
34'-0"
11'-0"
9'-0"
11'-0"
TOP OF EXISTING PIER ELEV. 127.4
REMOVE EX
CONCRETE
OR TO LIN
AS DIRECT
FINISHED
TOP OF
EXISTING SPILLWAY
ELEV. 123.50
122.0
NEW
FINISHED ELEV. 120



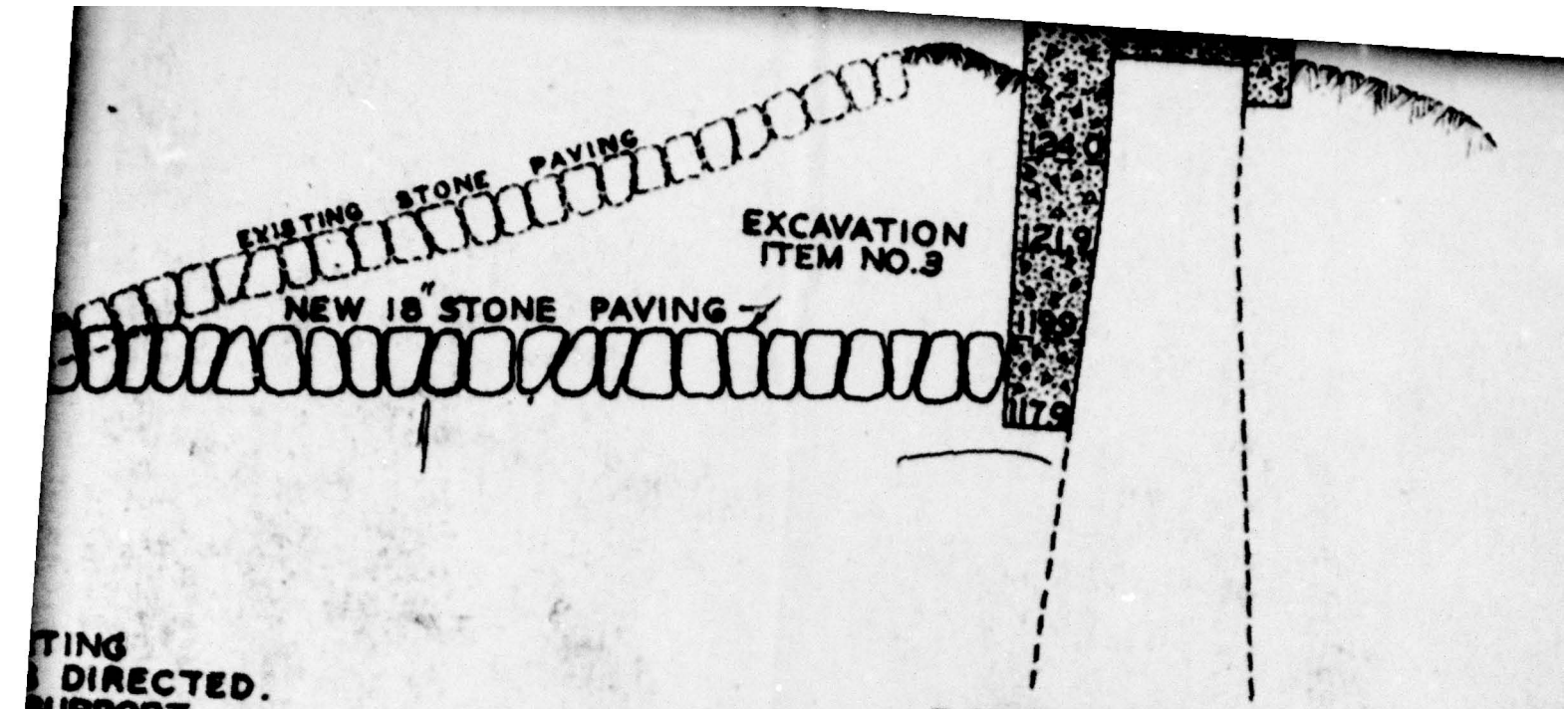
RECOMMENDED DATE: May 20, 1949.

WESTCHESTER COUNTY DEPT. OF PUBLIC WORKS

Charles A. Sanford

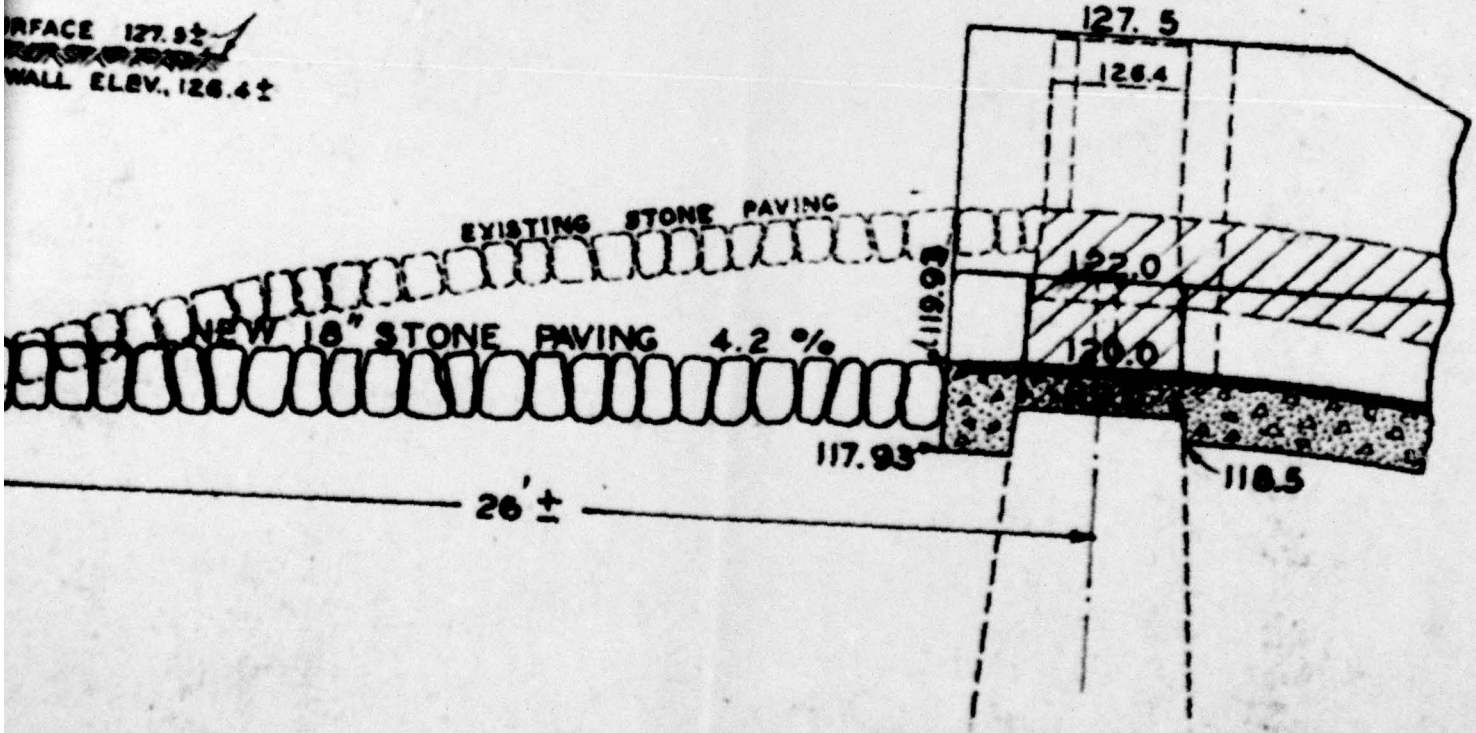
PRINCIPAL ASSISTANT ENGINEER

7



TING
DIRECTED.
SUPPORT.
NO. 90.

SECTION C-C



SECTION B-B

8

