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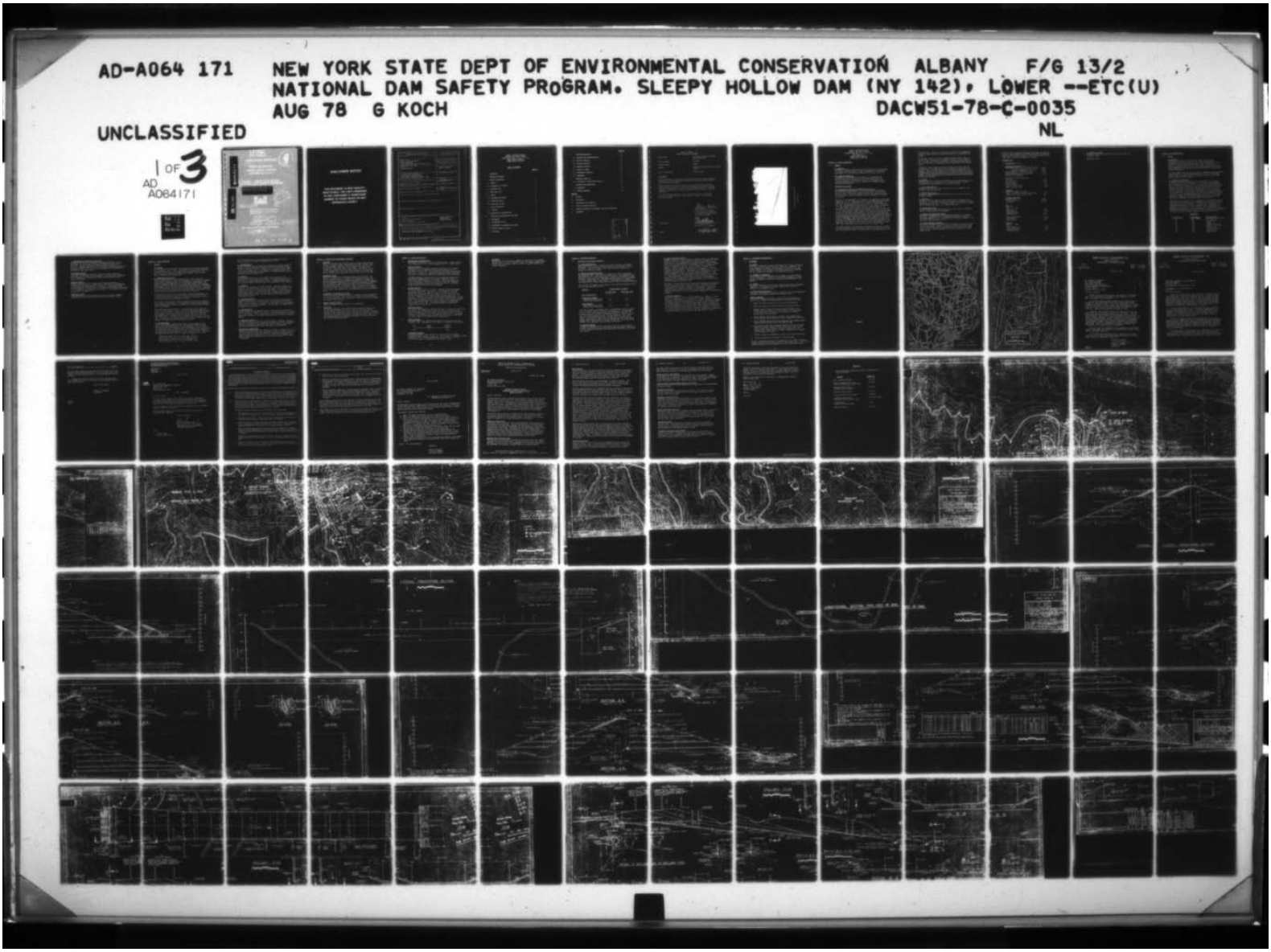

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LOWER HUDSON RIVER BASIN

SLEEPY HOLLOW DAM

GREENE COUNTY, NEW YORK

INVENTORY NO. N.Y. 142

(9) B.S.

(6) PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM.

Sleepy Hollow Dam (NY 142), Lower Hudson River Basin, Greene County, New York. Phase I Inspection Report.

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NEW YORK DISTRICT CORPS OF ENGINEERS

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Sleepy Hollow Dam
Greene County
Murderers Creek

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.

Sleepy Hollow Dam was judged to be safe.

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PHASE 1 INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM
SLEEPY HOLLOW DAM, I.D. No. N.Y. 142
LOWER HUDSON WATERSHED
GREENE COUNTY, NEW YORK

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PHASE I REPORT
NATIONAL DAM SAFETY PROGRAM

Name of Dam:	Sleepy Hollow (I.D. No. NY-142 Lower Hudson W.S.)
State Located:	New York
County Located:	Greene
Stream:	Murderers Creek (tributary of Hudson River)
Date if Inspection:	July 13, 1978

ASSESSMENT

Sleepy Hollow Dam is composed of an earth embankment and a concrete spillway structure, the visual inspection of which did not reveal conditions that are considered to be unsafe.

Due to change in ownership, the dam has been neglected until recently. Maintenance work is now progressing satisfactorily. The maintenance work required is described in Section 7 "Assessment/Recommendations". The dam, spillway and appurtenant structures exhibit no evidence of distress or instability.

The total discharge capacity of the spillway is inadequate to pass the Probable Maximum Flood (PMF). The spillway is capable of discharging one half the PMF.

George Koch

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

Approved By:

Clark H. Benn

Col. Clark H. Benn
New York District Engineer

Date:

22 September 1978

Overview of Sleepy Hollow Dam

Looking East

PHASE 1 INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM
SLEEPY HOLLOW DAM, I.D. No. N.Y. 142
DEC #209D-3977
LOWER HUDSON WATERSHED
GREENE 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

The purpose of this inspection and report is to investigate and evaluate the existing conditions of the subject dam in order to identify deficiencies and hazardous conditions; determine if they constitute hazards to human life or property and recommend remedial measures where necessary.

1.2 DESCRIPTION OF PROJECT

a. Description of the Dam and Appurtenant Structures

The Sleepy Hollow Dam consists of a 753 foot long earth embankment and a 80 foot long ogee type concrete spillway with a 390 foot long spillway chute. One 48 inch diameter concrete pressure pipe serves as low level outlet; the flow through the pipe is regulated by a sloping sluice gate.

The crest of the embankment is 24 feet wide, the upstream and downstream slopes are 1 on 2.5. The maximum height of the embankment above the old stream bed, which is located east of the center of the embankment, is 82.5 feet. The downstream slope and the crest are covered with grass while the upstream slope is protected by a 3' thick layer of riprap and a 1' thick layer of filter material between top of dam and El. 60. Horizontal finger drains extend to the upstream face which is lined with a 2 foot thick layer of filter material from El. 60 to the original grade at toe. The horizontal finger drains on the downstream side extend from the face of the dam to the chimney drain, which lies on the downstream side of the axis. The horizontal finger drains were designed for reduction of pore water pressure during construction and the upstream finger drains to aid in embankment stabilization during rapid drawdown. Water is collected by 8" diameter pipes from the chimney drain and discharged at the toe of the dam. There is a rock toe drain on the downstream side of the embankment. The top width of the cutoff trench varies between 20 and 35 feet. The bottom width of the cutoff trench is at least 5 feet.

The ungated spillway is constructed of reinforced concrete and the ogee and chute sections of the spillway are flanked by two vertical side walls also of reinforced concrete. The elevation of the spillway crest is 70.0

feet above M.S.L. which is 12.5 feet below the crest of the embankment. A 390 foot chute runs from the ogee section down to the submerged flip buckets.

The low-level outlet is a 48 inch diameter concrete pressure pipe, the flow of which is controlled by a sloping sluice gate at the upstream toe of the dam. The gate is connected to a control mechanism placed at the top of the dam, via adjustable stem guides imbedded in the upstream slope.

According to plans, there are four 8" PCV pipes which draw water from the reservoir to the pump house that is situated on the west side of spillway. One 8" PCV pipe carries the water from the pump house to the treatment plant and the treated water is distributed through 6" PCV pipes, a section of which returns toward the pump house along an adjacent path. However, the maintenance people do not know if the construction proceeded according to the plans.

b. Location

Sleepy Hollow Dam is located on the Murderers Creek, approximately 4,000 feet upstream from its confluence with the Hudson River. The dam is situated within the boundaries of the Village of Athens.

c. Size Classification

The dam is 82.5 feet high and is classified as an "intermediate" dam (between 40 and 100 feet high).

d. Hazard Classification

The dam is classified as high hazard because of its location within the village of Athens.

e. Ownership

The dam is currently owned by Sleepy Hollow Holding Corporation and operated by F.L. Hoffman Construction Corporation, 98 Columbia Turnpike, Rennselaer, New York 12144. The original owner of the dam was Mr. Stephen Fair of Sleepy Hollow Lake, Inc., Catskill New York.

f. Purpose of the Dam

The dam provides recreational facilities and water supply for property owners of Sleepy Hollow Lake Development.

g. Design and Construction History

The dam and its appurtenant structures were designed by E. D'Appolonia Consulting Engineers in 1971 and constructed by Greene County Pulp and Lumber Company in 1972. No construction records are available. The dam was put into operation in 1973.

h. Normal Operating Procedures

Water can be released form the reservoir either by the low level outlet or over the spillway. However, no water is normally released through the low level outlet and the level and quality of water in the stream below the dam is governed primarily by the tidal fluctuations in the Hudson River.

Water can also be released through the water supply system with its multi-level capabilities of drawing water from the reservoir. Quantity of water varying between 0.175-0.2 mgd is drawn by the water supply intake system depending on demand

1.3 PERTINENT DATA

a. Drainage Area (sq. mi)	13.3
b. Discharge at Dam Site (cfs)	
Maximum known Flood (1974) 3½' above spillway	1850
Spillway at Design Pool (El. 80.5)	10,900
Spillway at Maximum Pool (El. 82.5)	14,100
Maximum Capacity of low level Outlets	350
Total Discharge, Max. Pool (El. 82.5)	14,450
Average Daily Discharge	0.3
c. Elevation (ft. above MSL-Datum)	
Top of Dam	82.5
Max. Design Pool	80.5
Spillway Crest	70.0
Tailrace Channel	-3.6
Invert low level Outlet	5.15
Invert low level inlet	15.0
d. Reservoir	
Length of maximum Pool, miles	2.5
Length of Shoreline (Spillway Crest) miles	17.0
Surface area (Spillway Crest) acres	324
e. Storage, (Acre-feet)	
Spillway Crest	8,400
Maximum Design Pool	12,500
Top of Dam	13,500
f. Dam	
Embankment	
Type: Earth	
Length (ft.)	753.0
Upstream slope	1:2.5
Downstream slope	1:2.5
Impervions Core	None
Crest Elevation, ft.	82.5
Crest Width, ft.	24.0
Grout curtain	None
g. Spillway	
Type: Ogee	
Length, ft.	79.83
Crest Elevation MSL	70.0
Upstream Channel	65.0
Downstream Channel	60.0

h. Regulating Outlets

Upstream - a gate valve controls the flow to the 4 feet low level inlet pipe.

Downstream - None.

SECTION 2: ENGINEERING DATA

2.1 DESIGN

a. Geology

The Sleepy Hollow Dam is located in the Hudson Mohawk Lowlands physiographic province of New York State. These lowlands were developed by erosion along outcrop belts of weak rock between the more competent Catskills and the Taconic Hills. Most of the province is of low elevation and relief. It is underlain primarily by Ordovician shales exposed by southward and westward stripping-off of Silurian and Devonian limestones.

The design report indicates the following four geomorphological development phases pertinent to the engineering geology of the site: the bedrock forming phase, the glacial till forming phase, the Glacial Lake Albany phase and the post-glacial phase.

b. Subsurface Investigation

An extensive subsurface investigation was conducted in the vicinity of the dam site by Soil Testing Services Inc. of Albany N.Y. and Empire Soil Investigation, Inc. of Groton N.Y., during the Spring and Fall of 1971. In addition to borings and test pits, testing included vane shear, permeability, grain size analysis, and piezometer installations. In general, the soils at the dam site consist of a thin layer of topsoil and colluvium and/or alluvium over brown varved clay over blue varved clay over glacial till over bedrock. The bedrock is principally graywacke and phyllite. The graywacke was observed in an outcrop formation near the west abutment. Subsurface exploration profiles have been included in Appendix A. Embankment construction material was clay obtained from the spillway excavation and a borrow area west of the site.

Piezometers were installed prior to construction to determine the groundwater conditions at the dam site. Piezometer data indicates that the groundwater encountered in the clay is erratic and discontinuous, with perched conditions during periods of precipitation. Groundwater was observed in the glacial till at Elevation 32, and in the bedrock at approximately Elevation 40. Mr. Michael Taylor of D'Appolonia consulting Engineers has supplied the following information concerning these piezometers. A location plan and piezometer readings are included in Appendix A.

PIEZOMETERS

Piezometer No.	Tip Elevation	Material at Tip
1A	36.4 damaged	Br. Varved Clay under Dam
1B	18.8	Till Under Dam
2	38.5	Chimney Drain
3A	14.57	Blocked
3B	38.8	Compacted Shale Fill
4A	38.8	Impervious Core Material
4B	13.9	Till Under Dam
5A	42.8	Compacted Shale Fill
5B	7.6	Till Under Dam
6	10.0	Chimney Drain

c. Embankments and Appurtenant Structures

The dam was designed by E. D'Appolonia Consulting Engineers, Inc. of Pittsburgh, Pa. Thirty-three drawings were prepared for the dam construction. Selected drawings have been included in Appendix A. A copy of the complete drawings with the specifications hydraulic/hydrologic and design reports are on file in the NYS Department of Environmental Conservation, Dam Safety Section.

2.2 CONSTRUCTION RECORDS

No information regarding construction has been located, except the contractor, Greene County Pulp and Lumber Co., and the year of completion, 1973. Apparently all construction information was misplaced during change of ownership.

2.3 OPERATION RECORDS

Rainfall, pool level, flow of drains and piezometer information is currently being recorded on a weekly basis. No records of gate operation or discharges have been recorded. No operation or maintenance manual has been prepared. Maintenance work is currently progressing satisfactorily on all elements of the dam, under the direction of F.L. Hoffman Construction Corporation of Rensselaer N.Y.

2.4 EVALUATION OF DATA

The information concerning analysis and design of the dam is adequate. Information relating to the construction phase is extremely limited.

SECTION 3: VISUAL INSPECTION

3.1 FINDINGS

a. General

Visual inspection of the Sleepy Hollow Dam and the surrounding watershed was conducted on July 13, 1978. The weather was clear and the temperature was approximately 80° F. This inspection was conducted during a dry period in which intermittent thunder-storms occurred. The lake level was 6 inches below the spillway crest.

b. Embankment and Abutments

The earth embankment, which was completed late in 1973, shows only minor signs of distress. Some minor distortion of the horizontal alignment of the crest was observed which can be attributed to settlement of the recently constructed embankment as an additional 18 inches of fill was placed to account for foundation and internal settlement of the embankment. No detrimental affects could be discerned from this settlement. In addition, minor surface erosion was observed on the downstream face of the slope and certain sections of the paved surface drainage gutters. Maintenance forces were correcting these problems at the time of the inspection.

No indication of instability in the slopes of the dam was observed. Insufficient quantities of riprap were evident in the plunge pool below the low level outlet pipe, particularly along the west slope of the pool and directly beneath the discharge of the pipe.

No evidence of uncontrolled seepage was observed on the slopes around the outlet conduit, or abutments. No problems were observed at the abutment where the embankment is keyed into bedrock at the west abutment and earth at the east abutment.

The downstream area below the toe is in good condition with some minor erosion of outlet channel slopes. These areas were being repaired at the time of the inspection. In the vicinity of the downstream slope near the east abutment, a stabilization berm was used to insure the stability of the abutment slope. Standing water was observed near the toe of this stability berm. No flow could be seen from this flat lying poorly drained area. This condition is possibly the result of leaking in the 6 or 8 inch diameter PVC water lines which transverse this area.

c. Drainage System

Four 6 inch diameter corrugated metal pipes collect seepage from the chimney drain and discharge the flow into the riprap lined toe drain. The eastern most pipe was found to have approximately 1 inch of clay in the pipe bottom, which is believed to have been deposited by sediment from the plunge pool during periods of high tide. Clear flow was observed on the south side of the pipe emerging slightly below the invert. The clear flow observed during the inspection from the 4 pipes was as follows:

Western most pipe: flow 2 to 3 gpm, pipe 1/8 full
Second pipe from west: Flow 5 to 10 gpm, pipe ¼ full
Pipe adjacent to reservoir drain: No observed flow
Eastern most pipe: Flow 1 to 3 gpm, adjacent to pipe

All flows observed were clear and maintenance personnel stated that little fluctuation in flow was observed by their staff.

d. Instrumentation

Twelve piezometers were installed after construction to monitor possible changes in seepage patterns between the upstream and downstream areas adjacent to the core material. Number 1-A is not operational and number 7 can not be located. All other piezometers are monitored weekly and their overall performance is satisfactory. No seepage problems could be discerned from the piezometer data.

e. Reservoir

Some sloughing and erosion of the slopes along the reservoir were observed due to run-off and lake lowering. These fine grained silt and clay soils are highly susceptable to erosion. Sedimentation may also be a concern because of this erosion, but no problems have been reported.

f. Spillway

In general, the spillway is in good condition. Some minor cracking and spalling of the concrete walls and the ogee section were observed. Maintenance forces were at work correcting these areas. At the vertical construction joint in the center of the ogee section, slight seepage was evident approximately 1 foot below the crest. Recaulking of the joint will eliminate this problem. Spillway slabs and walls should also be recaulked as required.

g. Downstream Channels

The outlet channels of the spillway and low-level outlet need additional riprap to control erosion of side slopes. Some debris and small tree growth was also evident on the slopes. The tree growth was a considerable distance south of the dam and removal is not required. All debris should be removed in the channels.

h. Downstream Face

Surface drainage of the downstream face is controlled by 2-10 feet wide benches located at elevations 25.0 and 50.0 which are graded to drain toward the 3 paved gutters. Two of these gutters have been undermined by surface erosion and cracking of the concrete was observed due to loss of foundation support.

i. Regulating Outlets

The low-level outlet conduit was in good condition. Additional riprap is required on the plunge pool to prevent scour beneath the pipe. Maintenance work was in progress on the sloping gate valve to provide a water-tight seal and facilitate operation with a new pedestal lift assembly.

3.2 EVALUATION OF OBSERVATIONS

Although some problem areas were observed, the Phase I inspection did not reveal any condition which would significantly affect the safety of the dam or would require an investigation program. Deficiencies described above require regular observation as well as maintenance and improvement work. Remedial measures for improving these conditions are described in Section 7 "Assessment".

SECTION 4: OPERATION AND MAINTENANCE PROCEDURES

4.1 PROCEDURES

There is no minimum required water release at Sleepy Hollow Dam and no water is usually supplied downstream of the dam. However, water can be discharged through the 48 inch diameter low-level outlet or through the 8 inch water supply intake system. The maximum flow through the concrete pipe and the water supply pipe are 350 cfs and 0.03 cfs respectively. The rate of flow through the concrete pipe is set by a sloping sluice gate with controls at the crest of the dam.

4.2 MAINTENANCE OF DAM

There is no operation and maintenance manual for the project. The project is visited daily, at present, by maintenance personnel but will be reduced to one visit per week upon completion of repair work. The following maintenance work was in progress at the time of inspection: Cutting of grass on exposed portions of dam and downstream area below toe, regrading of eroded slopes and ditches, top soil installation, reseeding and mulching, tree removal, repair of pedestal lift assembly on the sluice gate. Joint sealant and repair material for the spillway was on order. (See Appendix A for correspondence concerning maintenance work).

4.3 MAINTENANCE OF OPERATING FACILITIES

The sluice gate is inoperable because of breakdown of control mechanism at the top of the dam. The sluice gate is partly open and releases 0.3 cfs (175,000 gallons/day) into the stream. Several unsuccessful attempts were made to close the gate.

4.4 WARNING SYSTEM IN EFFECT

There is no warning system in effect or in preparation.

4.5 EVALUATION

The control mechanism of the low-level outlet should be repaired and the gate made operational as soon as possible. The paved surface drainage system, construction joint in the ogee spillway and the cracked sections of the spillway chute need to be repaired. Plunge pool and side slopes below the outlet pipe should be properly riprapped. When all of the aforementioned work is completed, maintenance of the Sleepy Hollow Dam will be considered adequate.

SECTION 5: HYDRAULIC/HYDROLOGIC

5.1 DRAINAGE AREA CHARACTERISTICS

The Sleepy Hollow Lake is located on Murderers Creek, a small tributary of the Hudson River, with a total drainage area of 13.3 square miles.

5.2 ANALYSIS CRITERIA

The analysis of the floodwater retarding capability of this dam was performed using the "Dimensionless Hydrograph" method of the Soil Conservation Service (SCS). The SCS method establishes the hydrograph peak inflow. A short-cut, approximation method of flood routing was then used to determine the reservoir storage/peak outflow conditions.

A probable maximum 6 hour rainfall of 22.6 inches was selected using the Rainfall Frequency Atlas of the United States-TP-40 (Ref. 7). Direct runoff was estimated at 19.5 inches. A SCS curve number (cn) of 79 was selected to account for the soil and land use development within the watershed. The time of concentration of 13.4 hours was estimated using the SCS design report summary.

5.3 SPILLWAY CAPACITY

The uncontrolled spillway is 79 feet 10 inches in width, and composed of an ogee section and a chute section. The maximum head possible between the crest of the ogee and the top of the dam is 12.5 feet. The designer assumed the value of c equal to 3.8 for all heads. This does not reflect the actual condition when the head varies from 0 to 12.5 feet. Therefore, to estimate the discharge characteristics, it was assumed that the spillway would act as a weir with coefficients increasing from 3.35 to 3.99 between heads of 1 and 9 feet, with a coefficient of 4.09 for heads above 9 feet. The computed capacity at maximum head, (top of dam) is 14,100 cfs. The spillway capacity at design pool (elevation 80.5) is 10,900 cfs.

5.4 RESERVOIR CAPACITY

The length of the reservoir at spillway crest is 2.5 miles with a shoreline of 17 miles. The surface area at spillway crest is 324 acres and the reservoir capacity is 8,400 acre-feet. The reservoir capacity at the top of the dam is estimated to be 13,500 acre-feet, resulting in a surcharge storage of 5,100 acre-feet above the spillway crest, which is equivalent to a runoff depth of 7.2 inches over the drainage area.

5.5 FLOODS OF RECORD

The higest water level recorded since completion of Sleepy Hollow Dam occurred in 1974. The record of this level at the dam site is as follows:

Date	Elev. (feet)	Discharge (cfs)
1974	73.5	1800

5.6 OVERTOPPING POTENTIAL

The maximum capacity of the spillway is 14,100 cfs and the Probable maximum Flood peak outflow is 19,800 cfs. The spillway is, therefore, capable of handling half of Probable Maximum Flood inflow which is 9,900 cfs. The PMF would result in overtopping of the dam by 1.1 feet.

5.7 EVALUATION

The capacity of the spillway is adequate to pass half of the Probable Maximum Flood, but it is inadequate to pass the Probable Maximum Flood. The spillway can, however, pass 70 percent of Probable Maximum Flood without overtopping.

SECTION 6: STRUCTURAL STABILITY

6.1 Evaluation of Structural Stability

a. Visual Observations

Visual observations did not indicate any signs of distress in the earth embankment or the spillway which would influence the structural stability of the dam. Minor soil erosion and concrete spalling problems can be remedied by maintenance forces.

b. Design and Construction Data

The Engineering Report prepared by E. D'Appolonia Consulting Engineers, dated December 1971, included extensive design data. The embankment design specified a cut-off trench, chimney drain, vertical relief wells, toe drain, horizontal finger drains and a upstream drainage blanket with finger drains to control seepage during rapid drawdown. Piezometers were installed in the drains and the natural slopes near the dam to monitor pore water pressures.

The following is a summary of the results of the stability analyses for the most critical embankment sections:

CONDITION	MINIMUM FACTOR OF SAFETY	
	Upstream Slope	Downstream Slope
End of Construction	1.3	1.3
Steady-State Seepage		
Deep Failure Taking Crest	1.7	1.8
Shallow Failure/Sloughing	1.3	1.3
Rapid Drawdown		
Deep Failure Taking Crest	1.2	1.8
Shallow Failure/Sloughing	1.3	1.3

The natural slopes on the eastern end of the embankment consist of varved clay. The design required flaring of the eastern end of the embankment to form a stabilization berm upstream and downstream of the dam. The stabilization berm is underlain by pervious material to prevent the build up of pore water pressure and drain the berm foundation. The natural slopes in the butressed areas have a minimum factor of safety of 1.4. Natural slopes beyond the butress on the upstream side of the dam may be unstable after rapid drawdown. However, failures well away from the dam abutment do not represent a serious hazard to the dam.

c. Operating Records

Information regarding operation and repairs since the recent change in ownership are available at the Sleepy Hollow Lake Development Headquarters. No major operational problems which would affect the stability of the dam were reported.

d. Post Construction Changes

Available construction data consisted of several pieces of correspondence including minutes of a field inspection conducted on December 19, 1972. The top portion of the embankment material was changed from compacted brown clay to a shale material with a maximum size of 3 inches. Revised plans were submitted to NYS Soil Mechanics Bureau and the change was approved. Complete information on this construction change is not currently available and will be submitted in the future if it can be obtained from the designers. The minutes of the December 14, 1972 field inspection indicated that 1.) The shale material was apparently compacted adequately but there were numerous oversized pieces, 2.) the clay core material was being placed well above optimum moisture content, 3.) there were pieces of frozen material in the clay core and 4.) compaction control tests were not being conducted. These problems were brought to the inspector's attention but there is no record of any corrective measures which were taken.

The results of the readings indicate that there have been no significant changes in the water levels since construction. The bottom elevation of the piezometers should be determined so that problem areas can be pinpointed by any significant changes in the readings. A report concerning remedial measures for the dam and spillway was prepared by D'Appolonia on July 30, 1976 and is included in Appendix A for informational purposes.

e. Seismic Stability

The dam is located in Zone 1 of seismic probability. There is a thrust fault in the immediate vicinity of the dam. Little information is available on the activity or condition of the fault. No signs of movement or distress, which could be attributed to the fault, were observed during the visual inspection. The fault is being investigated in relation to the proposed construction of nuclear power plants along the Hudson River. If this investigation shows that the fault could influence the stability of the dam, additional investigations should be conducted at the dam site. If the fault does not pose a threat to the dam, no additional investigation is warranted because of the minimal seismic coefficients in Zone 1.

SECTION 7: ASSESSMENT/RECOMMENDATIONS

7.1 ASSESSMENT

a. Safety

The Phase 1 Inspection of Sleepy Hollow Dam did not indicate conditions which constitute an immediate hazard to human life or property. The earth embankment and spillway are considered to be stable. The dam project, however, has a number of deficiencies which, if not remedied, have the potential of developing into hazardous conditions.

b. Adequacy of Information

The information and data available were adequate for the performance of this investigation. However, there are some inadequacies in information with regard to construction, operation and maintenance of the project.

c. Urgency

The control mechanism of the low-level outlet system should be repaired immediately. The undermined concrete drainage swales should be repaired in the immediate future.

d. Additional Investigation

Additional investigations to assess the safety of the dam and appurtenant structures do not appear necessary at the present time.

7.2 REMEDIAL MEASURES

The following remedial measures, in addition to those mentioned in section 7.1-c, should be undertaken during this construction season.

1. Repair the leaking construction joint in the ogee spillway.

2. Repair the spalled and cracked sections of the spillway chute.

3. Regrade, topsoil and seed as required the side slopes of the channel below the plunge pool of the outlet pipe. Place riprap in this plunge pool and along the side slopes of the channel particularly on the west slope.

4. Replace missing baffle plates on outlets of the chimney drains and periodically and systematically monitor seepage from the drains.

5. Monitor observed seepage on the east slope above the reservoir drain channel near the toe of slope of the stability berm.

6. The drainage swales where undermined should be repaired as follows: remove all concrete, regrade to drain toward swale, place filter cloth on grade, place a layer of riprap on filter cloth. The average size of stone should be 6 inches in diameter with a minimum layer thickness of 8 inches.

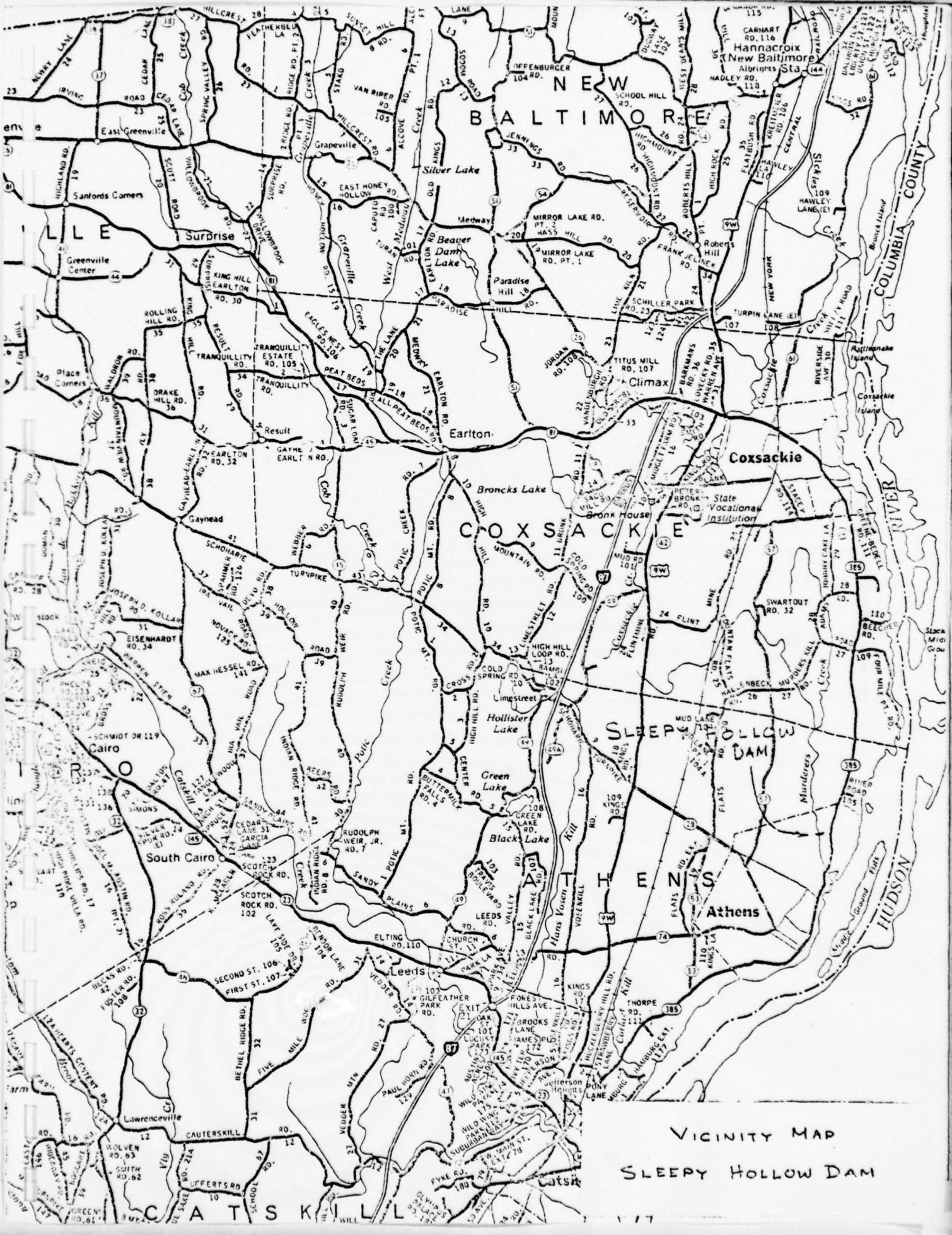
7. Periodic flushing of piezometers to assure their continued operation.

8. Periodically monitor the alignment of the stem guides.

The above recommendations were also transmitted to Mr. Hoffman, President, Hoffman Construction Corporation through a letter dated July 25, 1978 so that remedial measures could be undertaken during this construction season.

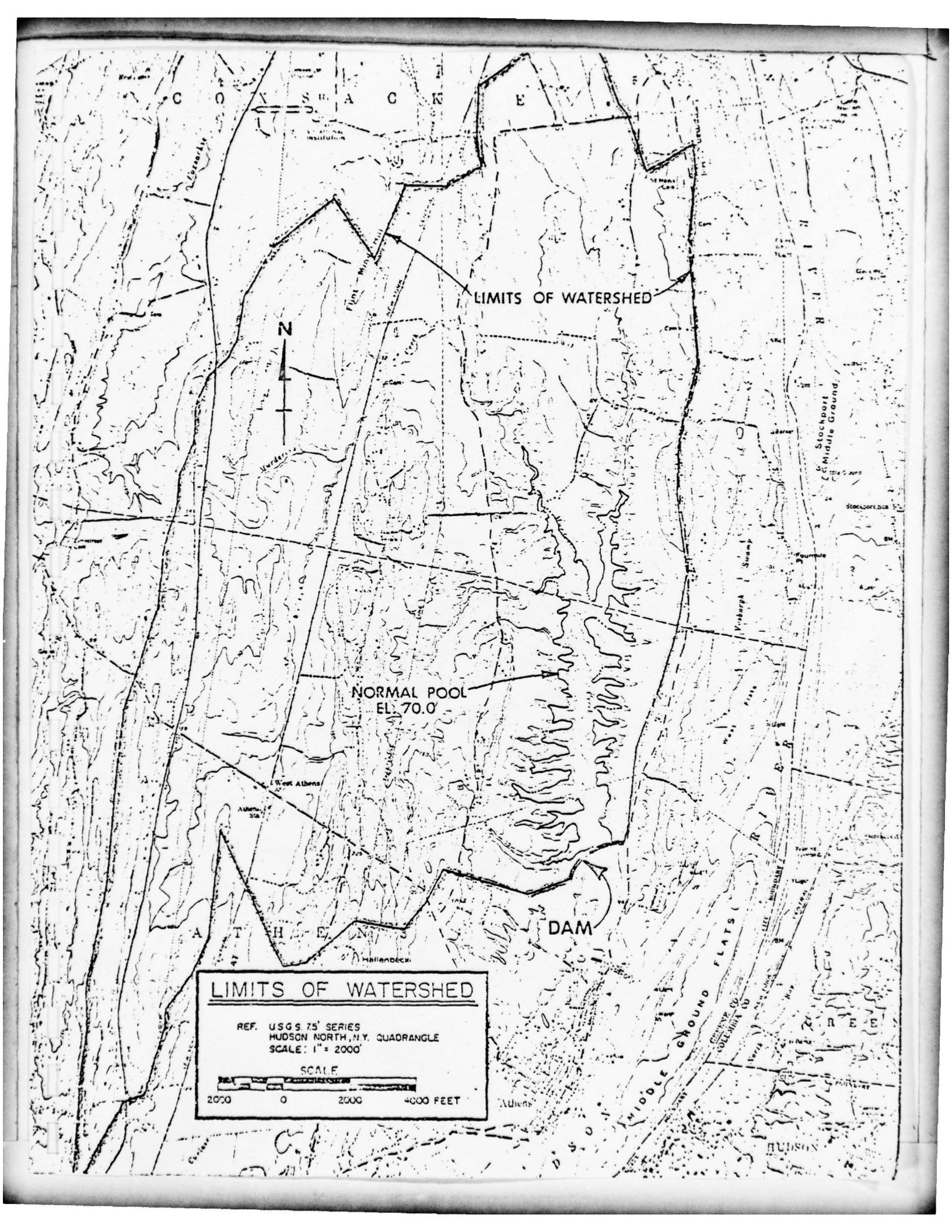
DRAWINGS

APPENDIX A



VICINITY MAP

SLEEPY HOLLOW DAM


LIMITS OF WATERSHED
N
NORMAL POOL
EL. 70.0'
DAM
LIMITS OF WATERSHED
REF. USGS 7.5' SERIES
HUDSON NORTH, N.Y. QUADRANGLE
SCALE: 1" = 2000'
SCALE
2000 0 2000 4000 FEET

SLEEPY HOLLOW MANAGEMENT, INC.

SLEEPY HOLLOW LAKE

LAND DEVELOPERS AND CONSTRUCTION MANAGERS

P. O. BOX 93
OR
RT. 385, R. D. BOX 125
ATHENS, N. Y. 12015

COXSACKIE (518) 731-8184
ALBANY (518) 756-9525
CATSKILL (518) 945-2880

July 30, 1978

Mr. Robert P. McCarty
Sr. Civil Engineer
Dam Safety Section
New York State Department
of Environmental Conservation
50 Wolf Road
Albany, New York 12233

Dear Mr. McCarty:

Thank you very much for your time spent in reviewing with us the methods of maintenance and inspection on the dam. We found it very helpful.

As of this time, we have completed the riprap in the plunge pool and performed some of the riprap work downstream of the sluice drain. The other materials have been ordered for repair of the concrete and drain swales. Please also see letter of the inspection report from INA and our letter to them indicating work performed to date.

Item #6 - The seepage coming from the hillside on the east slope may in fact be related to a waterline. When we performed the hydro-seeding on the dam, we noted a loss of water through the 8" pipe - many thousands of gallons greater than actually consumed. Such a loss could only have occurred through a broken line; however, we were unable to determine the location at that time. We will hopefully during this coming week be able to determine the exact location and repair same. The valve feeding this branch has again been closed and we are monitoring the condition.

We will keep you informed of our progress in the other repair items and look forward to reviewing your formal report when it becomes available.

If we have any problems we will take you up on your verbal offer to call any time we need information or assistance, and we do appreciate that offer.

Very truly yours,

Frank L. Hoffman,
President

FLH:et
Encl.

SLEEPY HOLLOW MANAGEMENT, INC.

SLEEPY HOLLOW LAKE

LAND DEVELOPERS AND CONSTRUCTION MANAGERS

P. O. BOX 93
OR
RT. 385, R. D. BOX 125
ATHENS, N. Y. 12015

COXSACKIE (518) 731-8184
ALBANY (518) 756-9525
CATSKILL (518) 945-2880

July 30, 1978

Insurance Company of North America
1600 Arch Street
P.O. Box 7728
Philadelphia, Pennsylvania 19101

Attention: Mr. John Gonzalez

Dear Mr. Gonzalez:

Thank you very much for your efforts in connection with the inspection of the dam at Sleepy Hollow. We have lacked some knowledge of what was required and the methods of maintaining the dam structure. Much of the information we had was contradictory and confusing. We also had an additional inspection shortly after you from the New York State Department of Environmental Conservation. The combination of information received has been extremely helpful.

In your paragraph 78.2 you indicated you had attached a Corps of Engineers publication. This was inadvertently not included in the mailing to us. We would appreciate a copy of what you referred to. We are also including with this letter a copy of the letter received from Encon, which is preliminary to their formal report.

As of the present time, we have completed all of the grass cutting, regrading, top soil installation and reseeding and mulching. Most of the trees have been removed from the shoreline, material has been ordered to repair the spillway. Preliminary work was done on repairing some of the leaks and should be completed shortly. We will keep you informed as to our repair work.

The Department of Environmental Conservation advised us not to repair the concrete swales that have become undermined and eroded but rather to replace them with swale drains constructed of a filter cloth and riprap. (Please note item

three.) They indicated that they felt we would have less problem observing deterioration of the swales and a much easier job maintaining them by using the method they indicated.

Unless you have a conflict, we will proceed with their method as it will be easier to reconstruct than repair the concrete.

Very truly yours,

Frank L. Hoffman,
President

FLH:et
Encl.

INSURANCE COMPANY OF NORTH AMERICA
LIFE INSURANCE COMPANY OF NORTH AMERICA
PACIFIC EMPLOYERS GROUP

1600 ARCH STREET
P.O. BOX 7728
PHILADELPHIA
PENNSYLVANIA 19101
(215) 241 4000

July 27, 1978

INA CORPORATION

Mr. Frank Hoffman
Sleepy Hollow Management Corporation
Sleepy Hollow Lake
P.O. Box 93
Athens, New York 12015

Re: CTL 057288

Dear Mr. Hoffman:

On July 7, 1978, I made a visit to your lake to make an observation for underwriting purposes. As a result of this visit, I am submitting the attached suggestions which I discussed with you. These suggestions should receive your immediate attention and consideration.

I wish to thank you and your staff for the cooperation that was extended during the course of this visit.

Will you please advise us or confirm the actions you plan to take regarding these suggestions.

Very truly yours,

John Gonzalez
Regional Construction Specialist
Loss Control Division

JG/jd

cc: Fred S. James
Boston Service Office

INA

SUGGESTIONS

NAME	LOCATION
Sleepy Hollow Holding Corporation	Athens, New York

PLEASE READ CAREFULLY

Due to your application for insurance, this Company has undertaken an observation of your premises, equipment, operations (whichever is pertinent to the type of insurance applied for). It must be understood that our observations are for the exclusive purpose of making an underwriting determination. The suggestions enumerated below, whether furnished gratuitously or pursuant to policy provisions, *do not* constitute a safety inspection and in no way supplant your duty to provide a safe place of employment. Our limited visit or visits do not purport to be as thorough as the day to day observations of your supervisory and executive employees or the safety inspection provided by a safety engineering service. The Company and its employees assume no authority to implement its suggestions which are shared with you.

78-1 The yearly structure inspection of the dam on the Sleepy Hollow Development property shops will be completed as soon as practical during the year. The inspection cycle should not be allowed to become too long or minor easily corrected deficiencies will become major expense items. While easily corrected items are put off in an effort to optimize the maintenance funds you may be unwittingly creating costly repairs.

78-2 Included with this correspondence is a Army Corp of Engineers publication that provides information as the care of levees. For all intents and purposes it may be applied to your structure. I have attempted to underline items that are applicable to your situation or were noticed during my visit. The person in charge of maintaining the structure should be familiar with its contents.

Specifically noted as existing on the structures were the following:

A. Trees growing in the rip rap at the lake shore. These should be removed before they become too large and their removal presents a structural maintenance item.

B. Presence of ruts, animal & insect burrows on the downstream face of the structure. These should be backfilled, compacted, graded, and reseeded.

C. Presence of areas of improper drainage on terraces along the face of the structure. Standing water drains over the face of the dam rather than running the swales established for that purpose. This creates excessive erosion.

D. Swales of insufficient horizontal length allow the flowing water to gather momentum and burrow underneath the swale creating hidden erosion and a maintenance problem in the form of broken swales and erosion ruts. Swales should be extended as required.

E. Improperly maintained areas adjacent to the spillway walls. Areas not properly graded and ground cover not properly cared for. This encourages erosion in these areas.

F. Caulking of spillway joints is required. The existing condition has been in effect for at least one year. There is only so long that minor maintenance can be postponed before it becomes a major repair.

CP-4287 Printed in U.S.A. 4/75

NAME:	LOCATION:
Sleepy Hollow Holding Corporation	Athens, New York

G. Reparations as required to spalled concrete areas along curvature at the spillway crest have yet to be performed.

H. Presence of seeping water in spillway weir. Condition should be investigated and an attempt to stop the seepage into the lake side face of the weir should be undertaken. If no repair is decided upon at this time the alternatives for a repair at a later date should be investigated. It is difficult to evaluate corrective actions after the condition has deteriorated to the state of an emergency.

I. Grass of excessive length and not being picked up when mowed. Such a condition prevents grass covered by mown grass from growing properly and will kill it in many instances. This creates erosion, hiding of the erosion, excessive backfilling and seeding requirements, much wasted effort and deterioration of the structure. Grass should be cut as indicated in the attachment on the care of levees.

The preceeding conditions noted were discussed with Herb the maintenance foreman. They at this point would not be the cause for a complete structural failure. They are however areas on which you must focus your attentions now. Maintaining the structure on a continual basis with your own labor force is decidedly cheaper than instituting major repairs under emergency conditions at a later date.

78-3 When opening the hydrant at the base of the dam the water should be diverted by hose directly into the existing water flow as opposed to being left open to run on the ground. Doing this creates soil erosion and increased maintenance costs.

July 25, 1978

Mr. Frank L. Hoffman, Jr., President
F.L. Hoffman Construction Corp.
98 Columbia Turnpike
Rensselaer, NY 12144

RE: Inspection of Sleepy Hollow Dam
#209D-3977 Lower Hudson W.S.

Dear Mr. Hoffman:

In accordance with your request, we are transmitting to you written recommendations of the remedial measures discussed with you during our site inspection of the dam on July 13, 1978. This letter precedes the final report so that you may initiate those measures during this construction season.

The remedial measures are as follows:

1. Repair the leaking construction joint in the ogee spillway.
2. Repair the spalled and cracked sections of the spillway chute.
3. Replace the undermined concrete drainage swales with a layer of filter cloth (Typar or Mirafi 140) beneath a layer of durable stone riprap, with a minimum thickness of 8 inches. The average size of stone should be approximately 6 inches in diameter. Grade to drain toward the swale as required. Do not permit the filter cloth to be exposed to sunlight as the material will deteriorate under ultraviolet rays.
4. Place riprap in plunge pool beneath 48 inch reservoir drain pipe and along the side slopes of the pool particularly on the west slope.
5. Replace missing baffle plates on outlets of the chimney drains, and periodically and systematically monitor seepage from the drains. A weir constructed below the eastern-most drain will be helpful in observing the flow. If any discoloration or change in quantity of seepage develops, please notify us immediately.
6. Monitor observed seepage on the east slope above the reservoir drain channel. This seepage may be related to the water supply lines which traverse this slope.

Thank you for your cooperation.

Sincerely,

Robert P. McCarty
Sr. Civil Engineer
Dam Safety Section

D'APPOLONIA

CONSULTING ENGINEERS, INC.

Michael J. Taylor
PROJECT MANAGER

July 30, 1976

Project No. 75-823

Mr. Raymond Hosterman
Hosterman Development Company, Inc.
Sleepy Hollow Lake
P.O. Box 93
Athens, New York 12015

Review of Remedial Measures
Sleepy Hollow Lake Dam and Spillway
Athens, New York

Dear Mr. Hosterman:

In the D'APPOLONIA report entitled "Dam Inspection, Sleepy Hollow Lake Dam and Spillway," dated February 1976, several remedial measures were recommended to improve the condition of the structure and minimize the rate of further deterioration. Arrangements for accomplishing most of these measures were apparently made by Hosterman Development Company, using a local contractor. As per your request, I reviewed the remedial work on July 15, 1976. This letter presents the results of that review and delineates remaining items of work required to provide general conformance to our original recommendations.

The various items of work are discussed in the order presented in Table II of the above referenced report. Reiteration of the reasons for these recommended measures are not presented herein. Reference to the previous report is suggested for further discussions in this regard.

Repair of Erosion Scars

In general, repair of erosion scars on the embankments and abutments has been adequately accomplished. Cross grading and newly constructed swales at the top of the slopes should prevent the concentration of large flows on previously eroded areas. Vegetation has been established on many of the repaired areas, but is sparse or nonexistent on other repaired areas. Erosion has begun again adjacent the spillway walls. If vegetation cannot be established in these or other areas prior to erosion, jute matting or other soil retention devices should be applied. Seeded areas should be properly maintained until adequate growth has been established.

Regrading and Drainage Control

The regrading on benches and at the base of the stabilization fill appears adequate to prevent standing water. As discussed below, new catch basins and down drain paved gutters are recommended at the upstream intersection of the embankment and abutment to properly drain the regraded benches.

Paved Gutters

The paved gutters at the eastern intersection of the embankment and stabilization fill have been properly repaired or extended and sealed along the edges. The gutter remains undermined in some areas, apparently due to animal burrowing. It is recommended that several holes be punched along the gutter and a wet sand-cement slurry mixture be poured or pumped under the gutter. The burrowing animals should be discouraged from returning.

The easternmost paved gutter on the embankment is properly repaired. However, a catch basin on the bench at El. 25 has not been constructed since no water apparently drains along this bench to the gutter. The existing situation is acceptable provided current grading is maintained.

The other existing gutter on the embankment has been repaired for the majority of its length and catch basins installed on both benches. The gutter from the upper to lower bench terminates approximately two feet higher in elevation than the catch basin on the lower bench. A small vertical concrete headwall should be constructed to connect the terminating gutter and the basin.

The paved gutters on the east abutment were not constructed. The as-built topography in this area is not as per the original plans, thereby precluding construction in accordance with the plans. The benches from the embankment have, however, been extended along this abutment and eventually drain into the spillway. Paving of these benches does not appear prudent or a requirement for proper drainage control. However, water collected on these benches will not be conveyed to the spillway without significantly increasing the bench slope or collecting and removing the water at an intermediate point. Increasing the slope of the benches would result in undercutting of the adjacent hillside. A paved gutter is therefore recommended at the intersection of the embankment and the abutment to remove water collecting on the bends. The gutter should extend from the bench at El. 43 to the toe of the dam. Collection basins at each bench are also recommended. This area has shown a past tendency to erosion and is a reasonable spot for a gutter. The new gutter would not be as long as the gutter previously required at the abutment benches.

Paved gutters along the east side of the spillway have not been installed. Existing gutters and cutoff walls have been properly repaired. The requirement for gutters in this area has been supplemented by cross-hill grading and swales uphill from this area. The lack of significant erosion during the recent storm indicates the constructed drainage system may be adequate. Small erosion has reappeared adjacent to the wall where vegetation has not been reestablished. The erosion appears to be minor and should be stopped by a good vegetation growth. If vegetation stops this erosion, paved gutters will not be required. Monitoring of the area and future maintenance is recommended as required.

Outlet Drain Repair

The four outlet drains at the toe of the embankment have been extended and properly repaired. Two of the drain pipes require flap gates. Siltation around the drains appears to be reoccurring. A hand placed, rock headwall around each drain is recommended to minimize the potential for further siltation.

IMPERIAL COUNTY

The paved gutters along the toe of the dam at these outlet pipes has not been installed. The riprap in the area is adequate to prevent erosion and allow proper functioning of the drains provided siltation is prevented.

Repair of Outlet Gate Leakage

The leakage from the outlet gate has apparently not been repaired. Repair is evidently not contemplated. Our previous report discussed the consequences of not repairing the leaks and indicated that repair is not essential to the proper functioning of the dam. Eventual repair may be advisable.

Patch of Exposed Steel Retainer Ring in Outlet Pipe

This item of work has not been completed, but is apparently to be accomplished in the near future.

Re-Level of Dam Crest

The dam crest has been re-leveled and is adequate. Fill should be placed in a like manner on the eastern side of the spillway to bring the fill to the top of the spillway wall.

Reseeding Unvegetated Areas

Reseeding has apparently been accomplished in all areas where vegetation was previously not established. The success of this seeding is adequate in some areas, but appears only partially successful in other areas. Consultation with a local nurseryman or the local Soil Conservation Service is recommended to determine if different fertilization, liming or seed mixtures is required to establish proper seed growth.

Outlet Works Stem Protection

The outlets works stem is not adequately protected against damage by lake ice. A mound of riprap should be placed around the stem. Also, riprap should be placed in the area of discontinuity in the upstream slope protection adjacent and to the east of the stem guide. It is our understanding that the contractor plans to accomplish this during collection of rocks around the site roads during road repair.

Instrument Reading

The piezometers should be read and recorded on at least a three-month interval basis. The temperature and depth of flow in the drain pipe and at the outlet pipe discharge should also be recorded. Annual review of these readings by a dams engineer should be made.

Continued Maintenance and Inspection

As with any structure, Sleepy Hollow Lake Dam and Spillway should be properly maintained. Maintenance was discussed in our previous report. The remedial work accomplished or recommend will not eliminate the requirement for continued upkeep and repair on the structure.

IDAHO

As part of maintenance, continuous inspections by on-site personnel and periodic (annual or biannual) inspections by a dams engineer are recommended. As per our previous discussions, I recently presented a paper on the combined effort for inspection and maintenance of dams. A copy is enclosed for your review and information.

Should you have questions on information or recommendations presented herein, please call.

Very truly yours,

Michael J. Taylor, P.E.
Project Manager

MJT:mjk

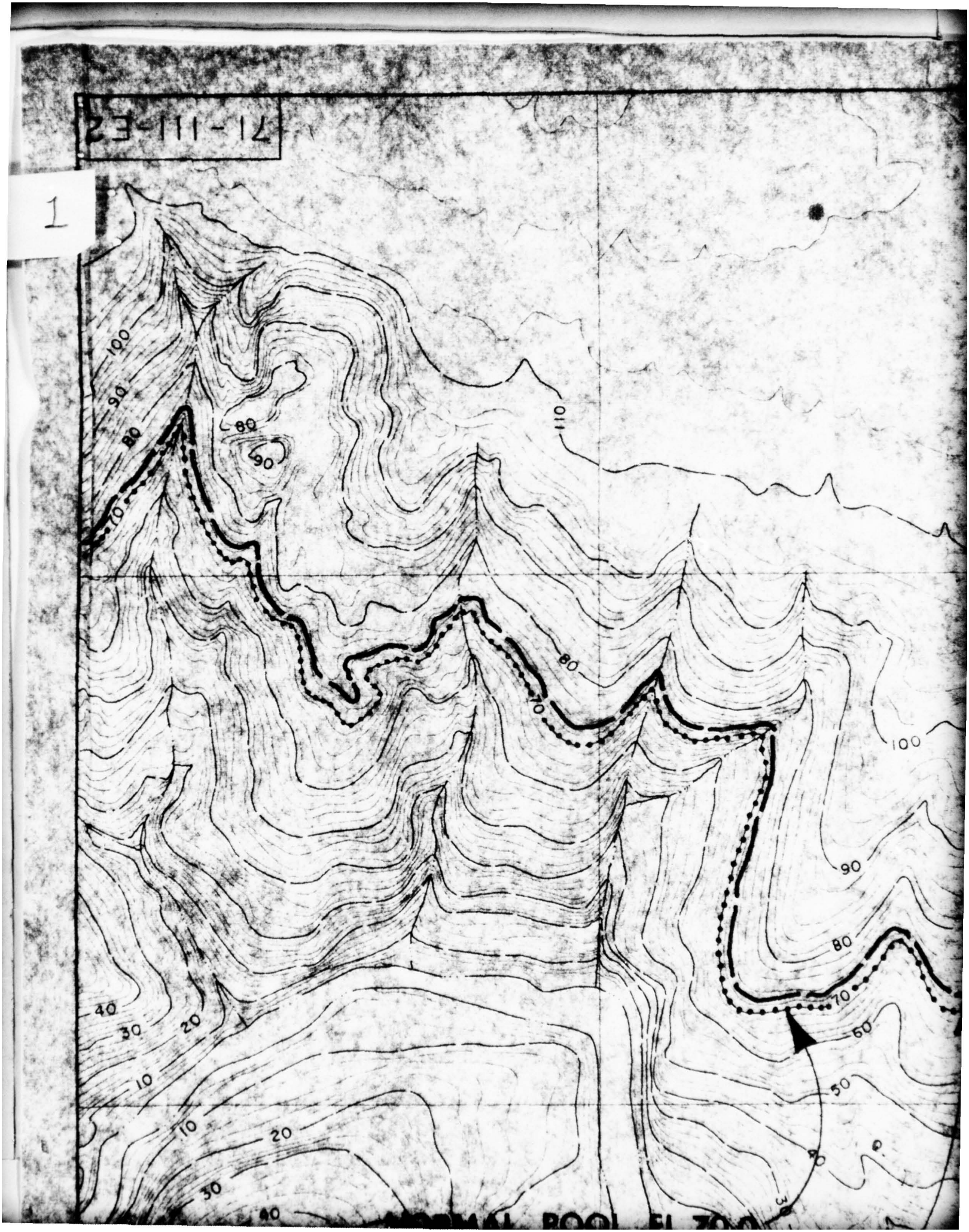
Enclosure

IDAHO PRODUCTION

Appendix A

List of drawings included for the Phase I Investigation of Sleepy Hollow Dam

DRAWINGS	DRAWING No.
Plan of Dam and Spillways	71-111-E2
Typical Transverse Section and longitudinal section at axis of dam	71-111-E4
Tranverse Section @ Dam station 1+55, 2+75 and 4+18	71-111-E5
Spillway Plan and Profile	71-11-E8
Plan and Profile of Outlet Works	71-111-E12
Subsurface Investigation Subsurface Sections Sheets 1 thru 3	71-111-E14 thru E16
Piezometer Data Location Plan and Readings	———
Stability Analysis	71-111-C29


23-111-14
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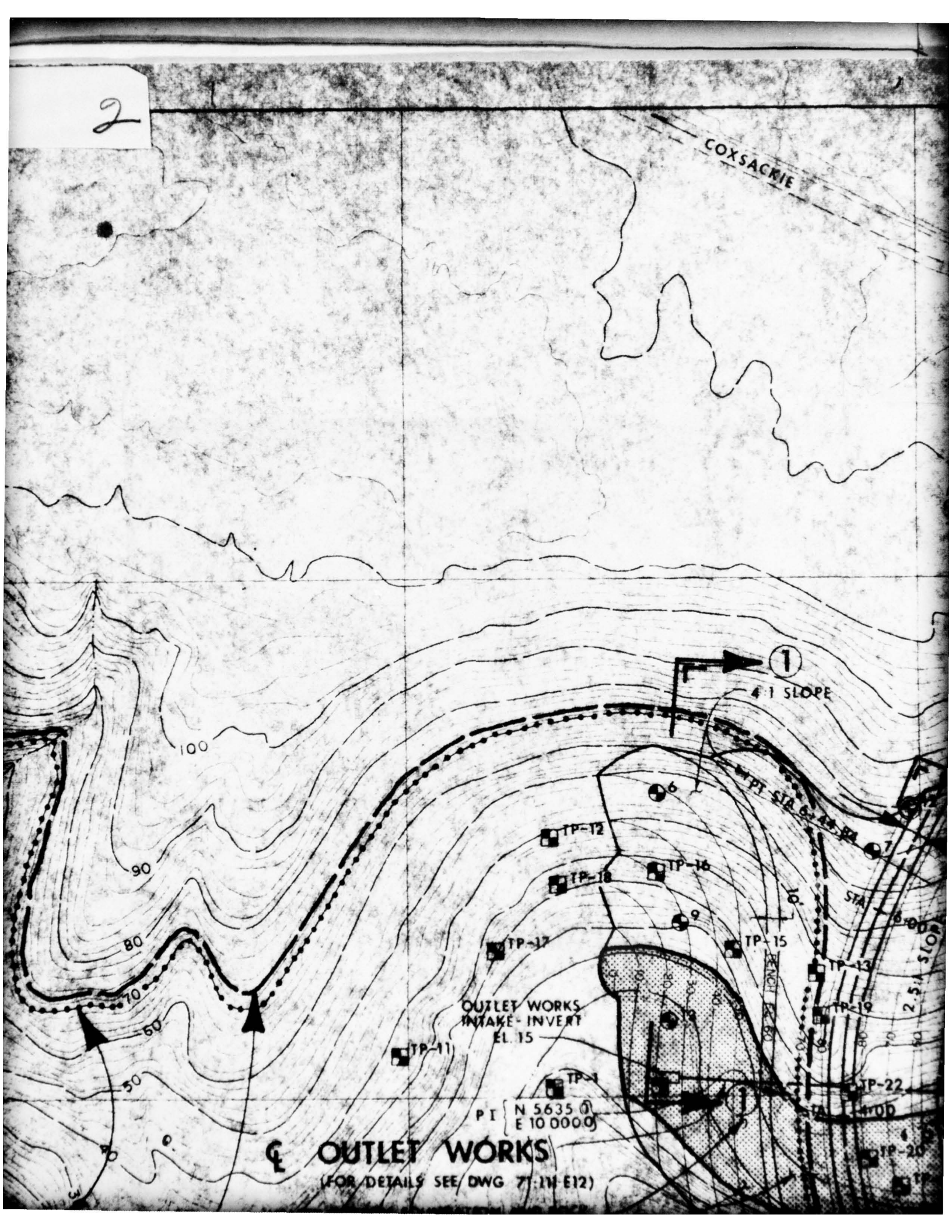
2
COXSACKIE
1
4:1 SLOPE
100
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80
70
60
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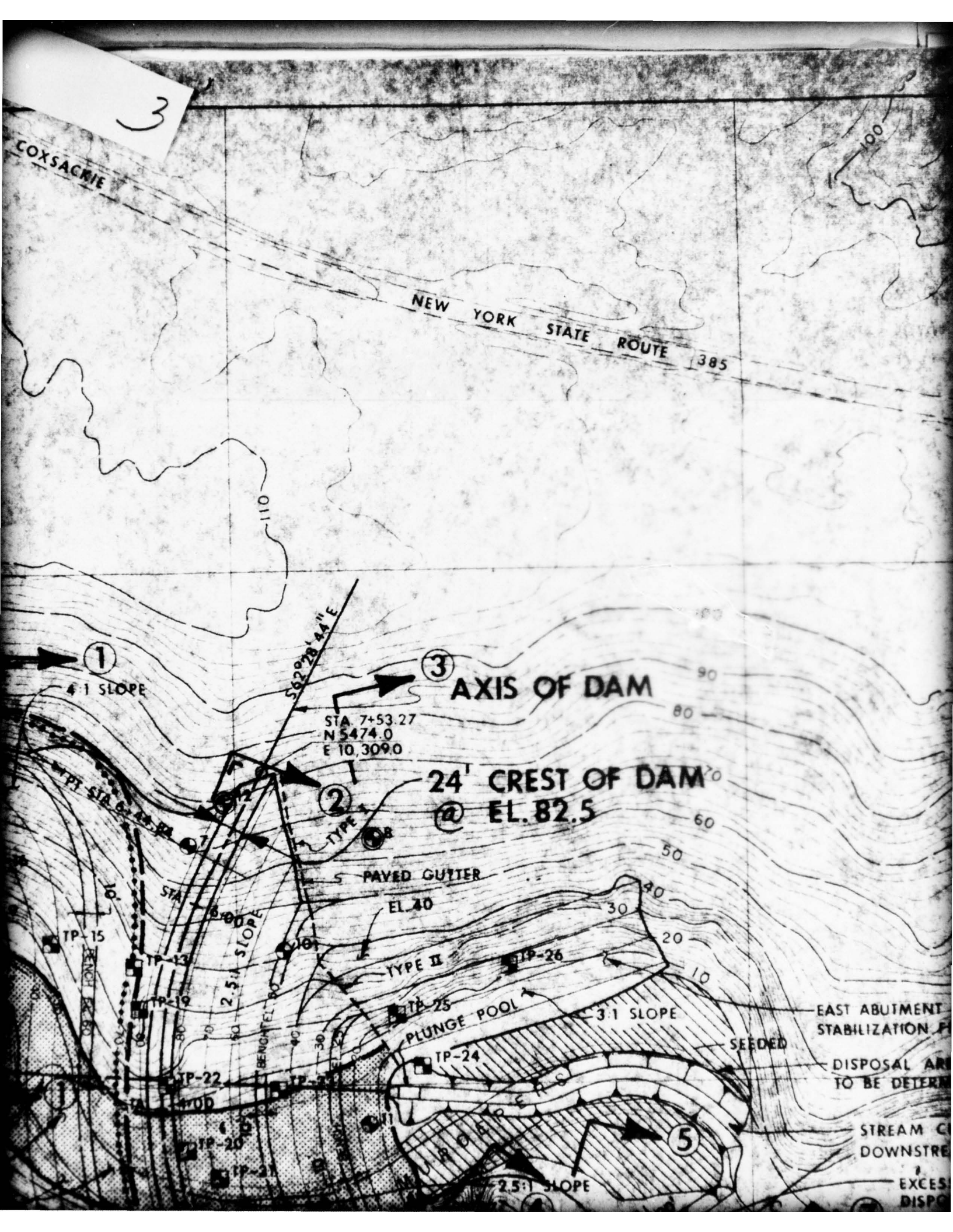
TP-12
TP-18
TP-16
TP-17
TP-15
TP-13
TP-19
TP-11
TP-1
TP-22
TP-20
OUTLET WORKS
INTAKE - INVERT
EL. 15
PT { N 5635 0
E 10 0000
℄ OUTLET WORKS
(FOR DETAILS SEE DWG 71-114-E12)


3
COXSACKIE
NEW YORK STATE ROUTE 385
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4:1 SLOPE
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3
AXIS OF DAM
STA 7+53.27
N 5474.0
E 10,309.0
2
24' CREST OF DAM
@ EL. 82.5
TYPE I
PAVED GUTTER
EL 40
TYPE II
PT STA 6+48.82
STA 6+00
16'
TP-15
TP-13
TP-19
TP-22
TP-20
TP-21
TP-26
TP-25
TP-24
2.5:1 SLOPE
BENCH EL 80
PLUNGE POOL
3:1 SLOPE
SEEDED
EAST ABUTMENT
STABILIZATION
DISPOSAL AR
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STREAM C
DOWNSTRE
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ROCK
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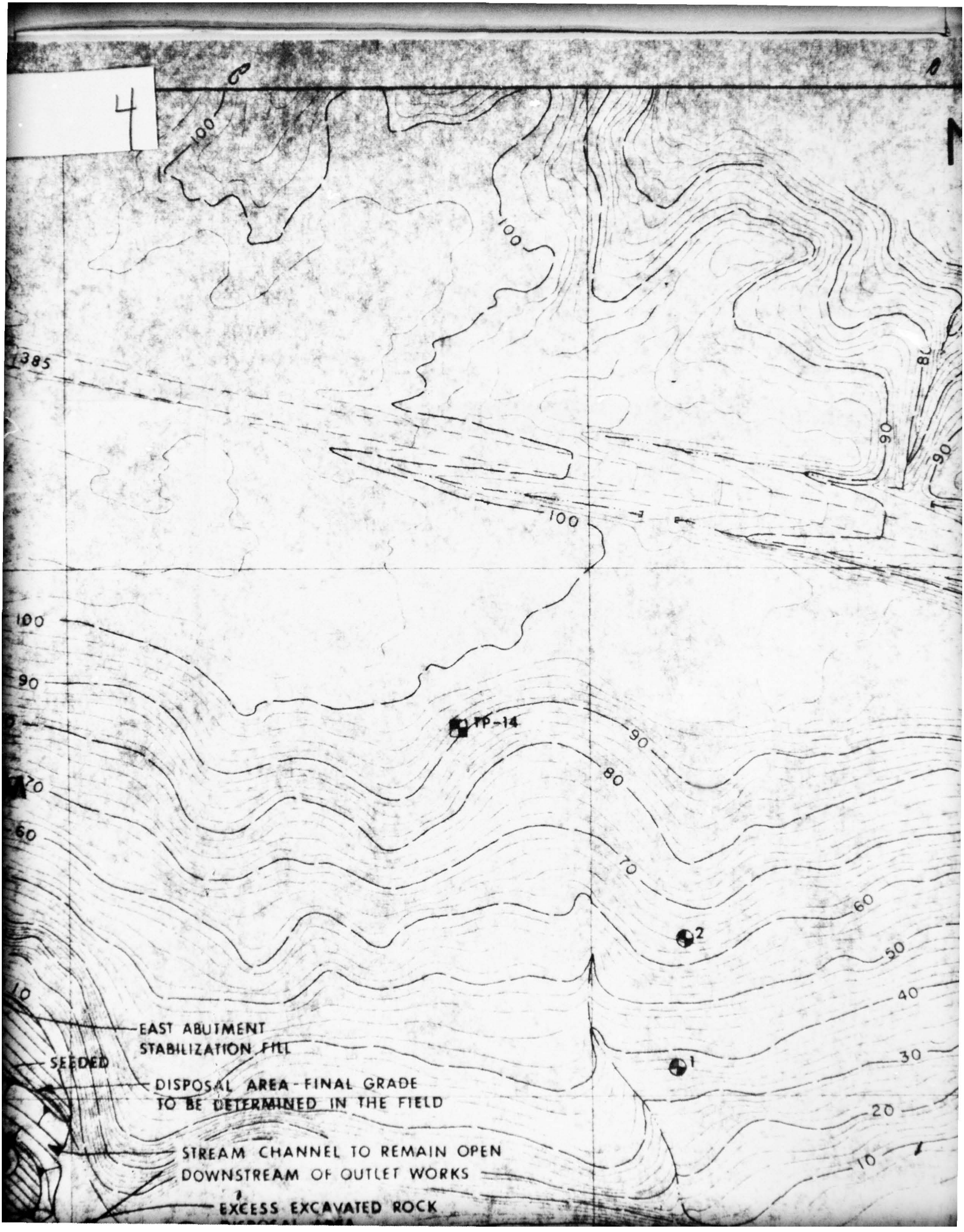
2.5:1 SLOPE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TP-14
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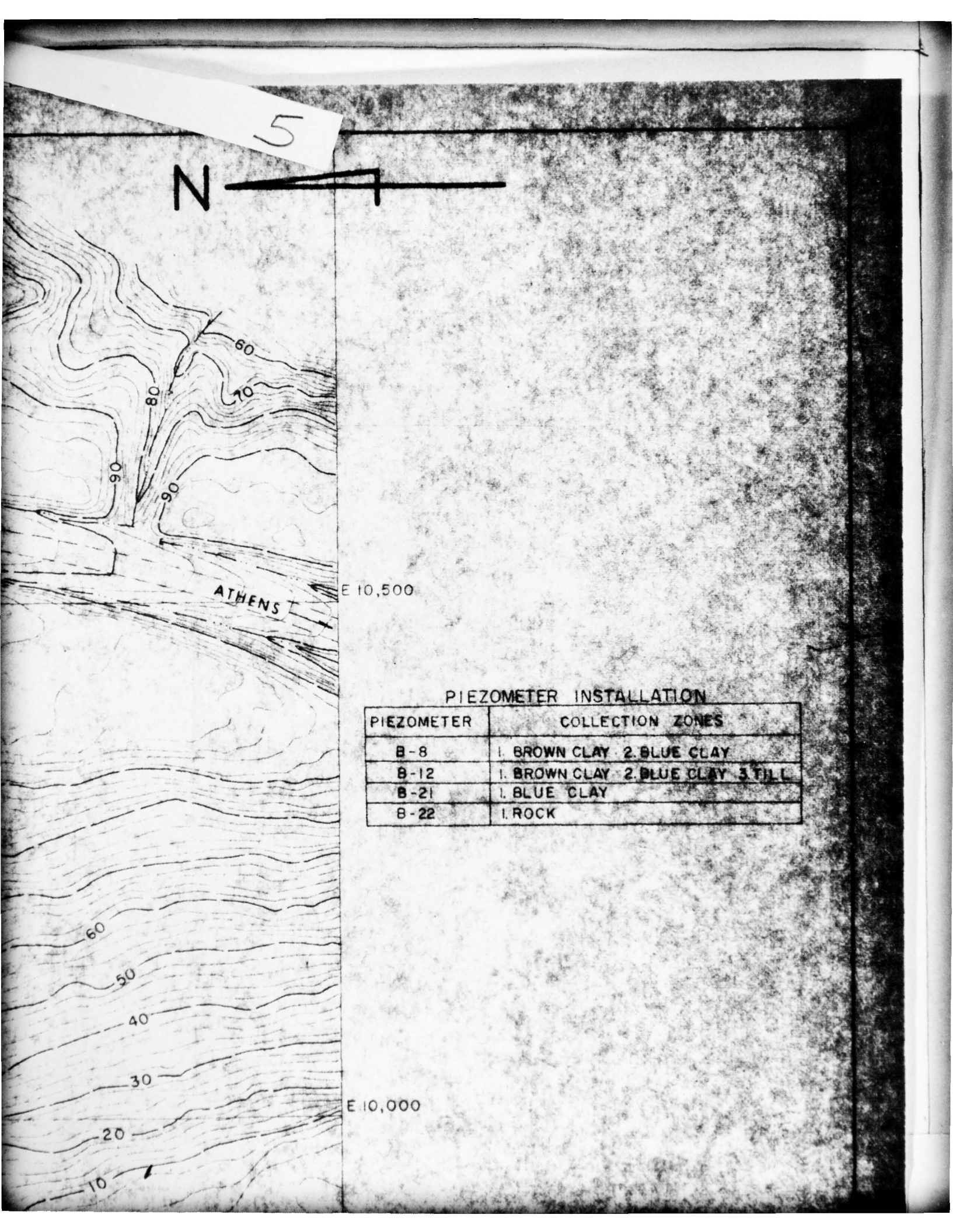
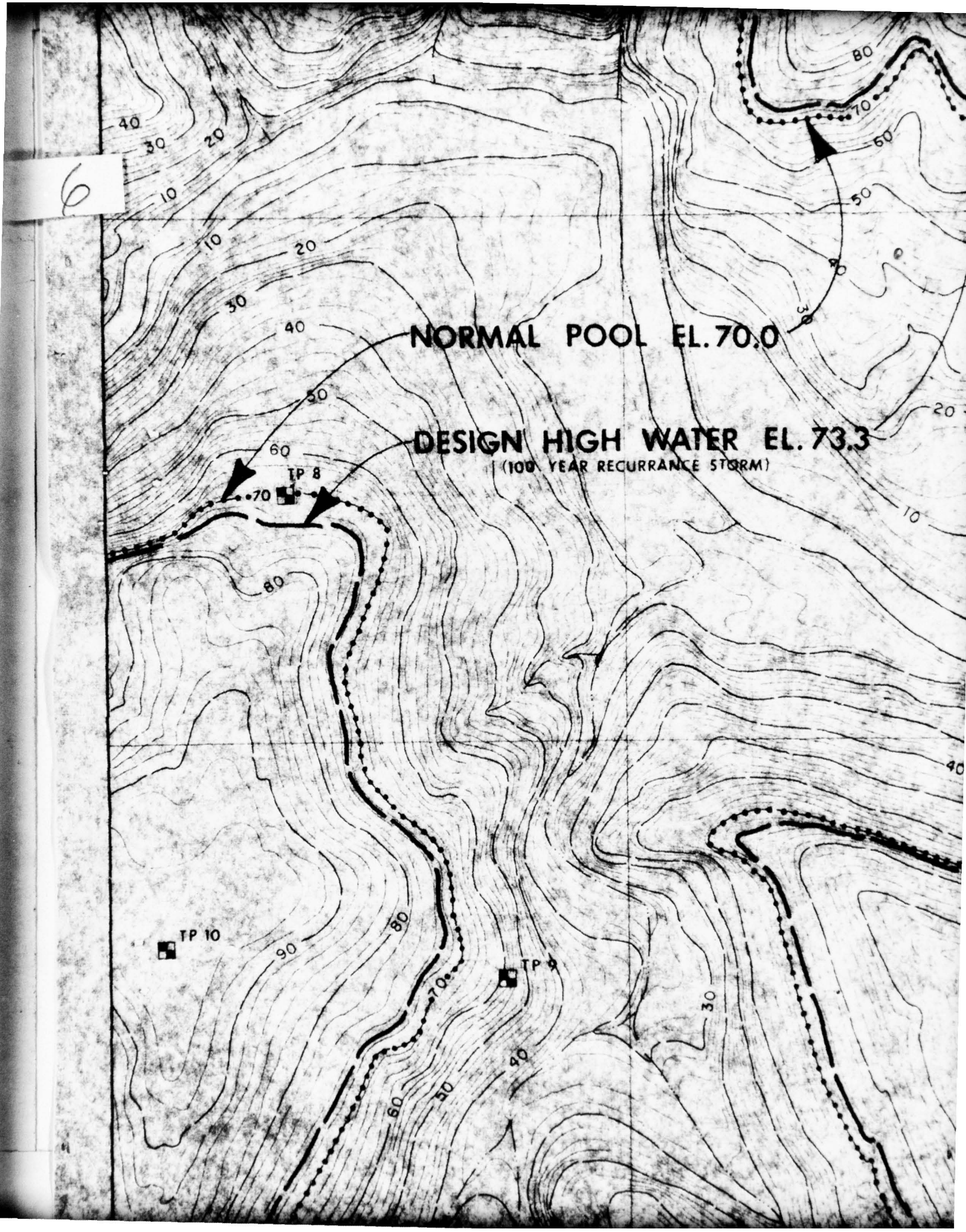
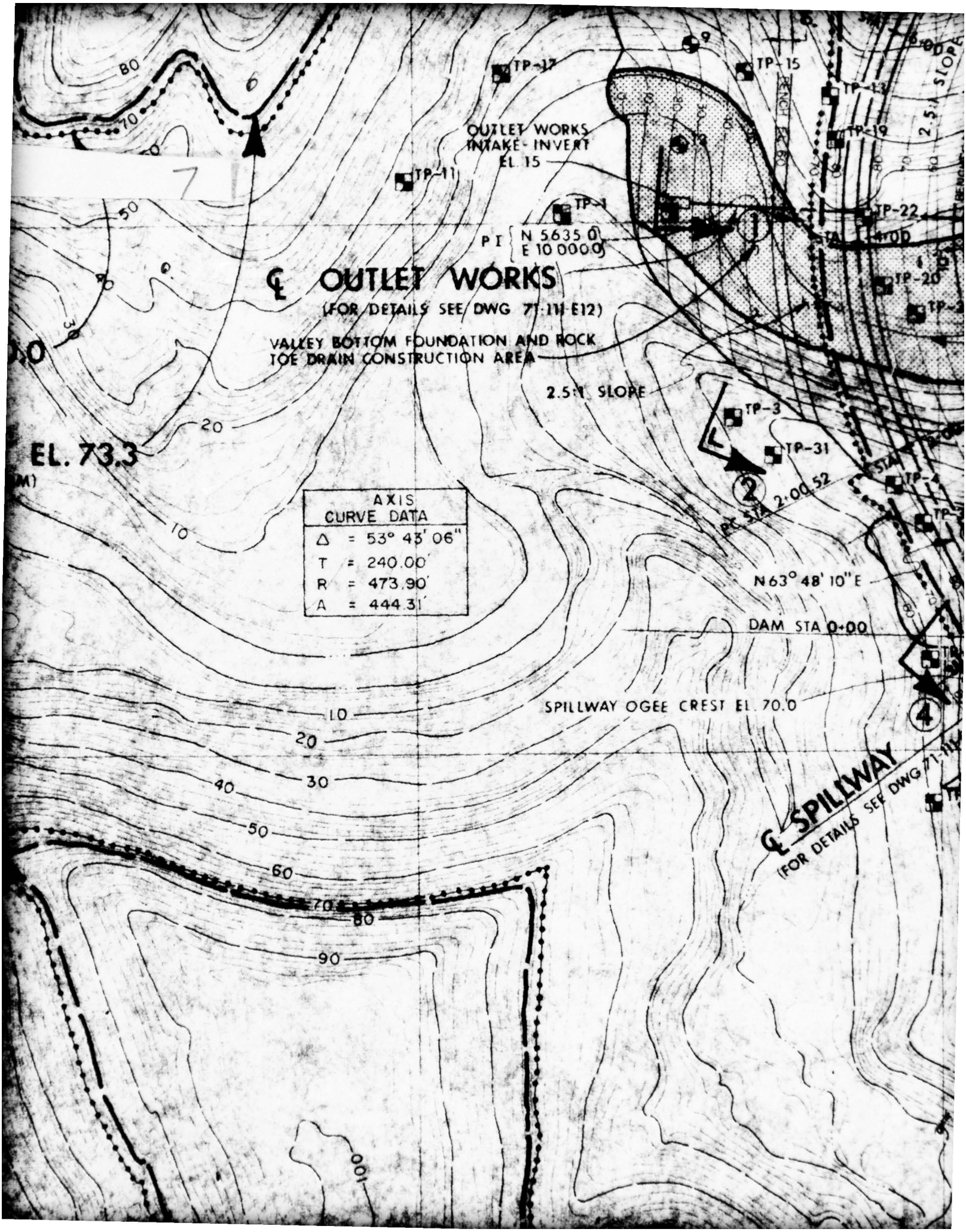
2
1
EAST ABUTMENT
STABILIZATION FILL
SEEDED
DISPOSAL AREA - FINAL GRADE
TO BE DETERMINED IN THE FIELD
STREAM CHANNEL TO REMAIN OPEN
DOWNSTREAM OF OUTLET WORKS
EXCESS EXCAVATED ROCK

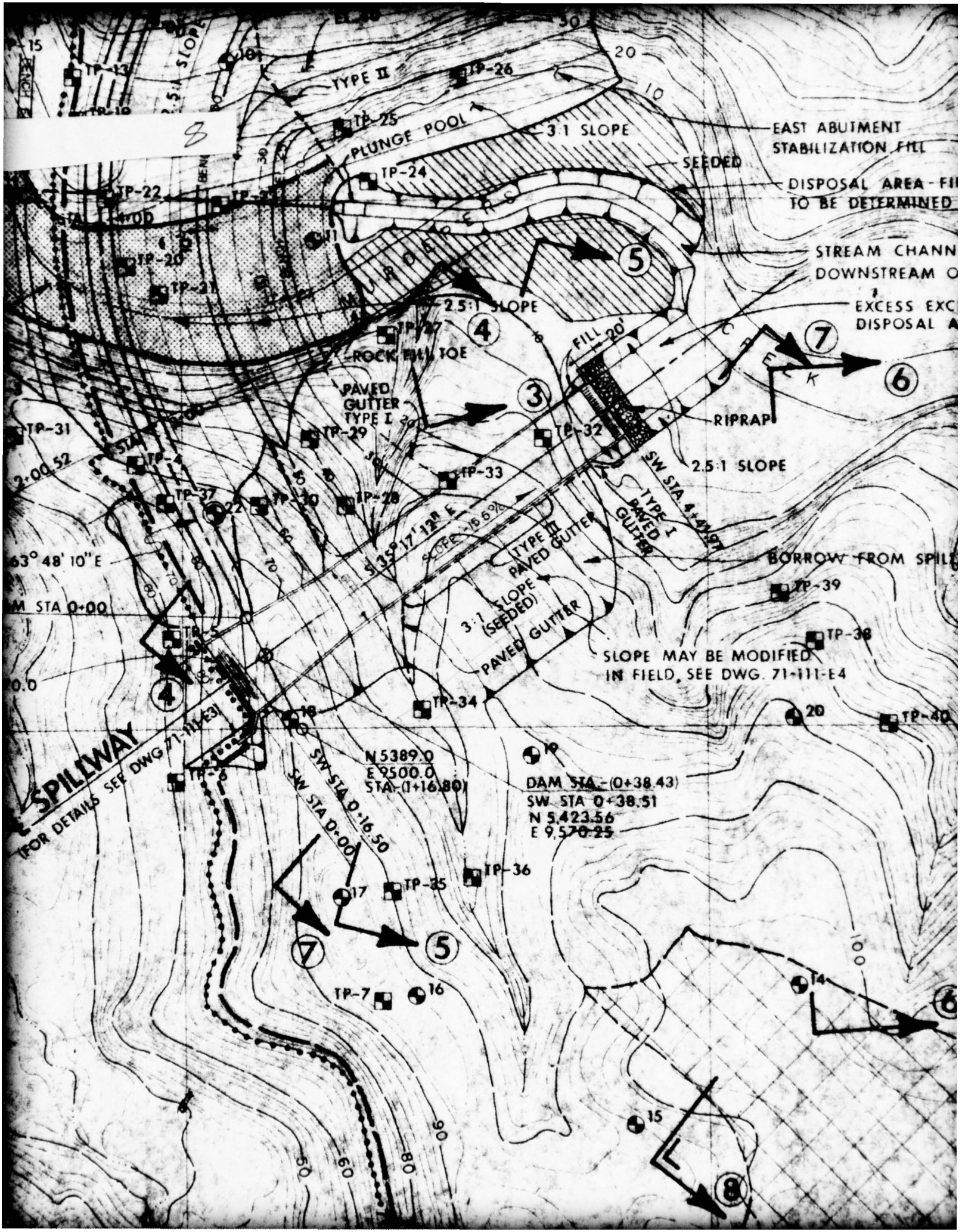


PIEZOMETER INSTALLATION

PIEZOMETER	COLLECTION ZONES
B-8	1. BROWN CLAY 2. BLUE CLAY
B-12	1. BROWN CLAY 2. BLUE CLAY 3. TILL
B-21	1. BLUE CLAY
B-22	1. ROCK


NORMAL POOL EL. 70.0
DESIGN HIGH WATER EL. 73.3
(100 YEAR RECURRANCE STORM)
TP 8
TP 9
TP 10


TP-17
TP-15
TP-13
TP-19
TP-22
TP-20
TP-11
TP-1
TP-3
TP-31
TP-4
OUTLET WORKS INTAKE - INVERT EL. 15
P I { N 5635.0 E 10 000.0
℄ OUTLET WORKS
(FOR DETAILS SEE DWG 71-111-E12)
VALLEY BOTTOM FOUNDATION AND ROCK TOE DRAIN CONSTRUCTION AREA
2.5:1 SLOPE
EL. 73.3
AXIS CURVE DATA
Δ = 53° 43' 06"
T = 240.00'
R = 473.90'
A = 444.31'
PC STA 2+00.52
N63° 48' 10" E
DAM STA 0+00
SPILLWAY OGEE CREST EL. 70.0
℄ SPILLWAY
(FOR DETAILS SEE DWG 71-111


TYPE II
PLUNGE POOL
3:1 SLOPE
EAST ABUTMENT
STABILIZATION FILL
SEEDED
DISPOSAL AREA - FI
TO BE DETERMINED
STREAM CHANN
DOWNSTREAM O
EXCESS EXC
DISPOSAL A
2.5:1 SLOPE
ROCK FILL TOE
FILL
RIPRAP
PAVED GUTTER TYPE I
TYPE III PAVED GUTTER
TYPE I PAVED GUTTER
SW STA 4+49.97
2.5:1 SLOPE
BORROW FROM SPILL
3:1 SLOPE (SEEDED)
SLOPE MAY BE MODIFIED IN FIELD, SEE DWG. 71-111-E4
SPILLWAY
(FOR DETAILS SEE DWG 71-111-E3)
N 5389.0
E 9500.0
STA-(1+16.80)
SW STA 0+16.50
SW STA 0+00
DAM STA.-(0+38.43)
SW STA 0+38.51
N 5,423.56
E 9,570.25
TP-13
TP-26
TP-25
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TP-20
TP-21
TP-27
TP-31
TP-29
TP-32
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TP-4
TP-37
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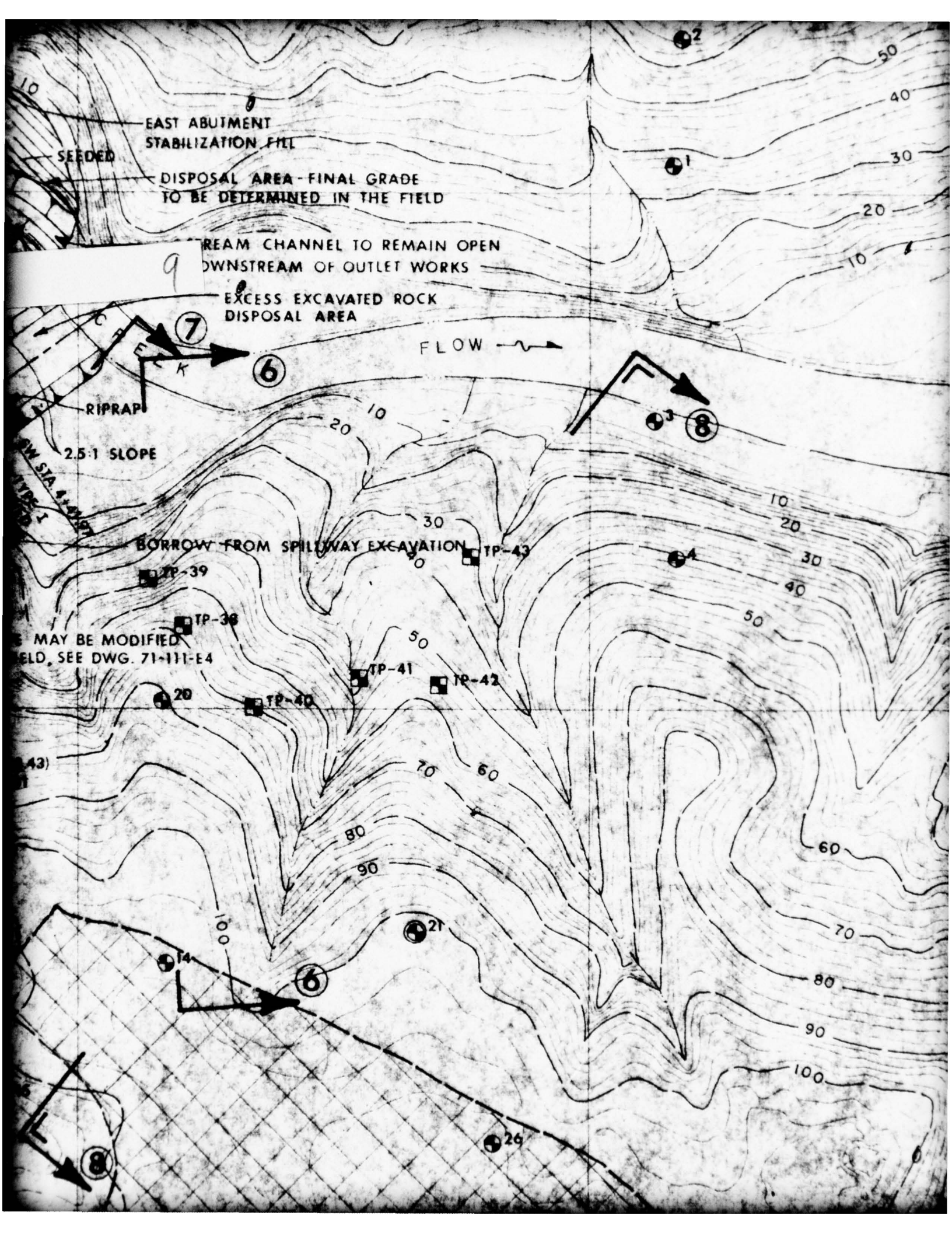
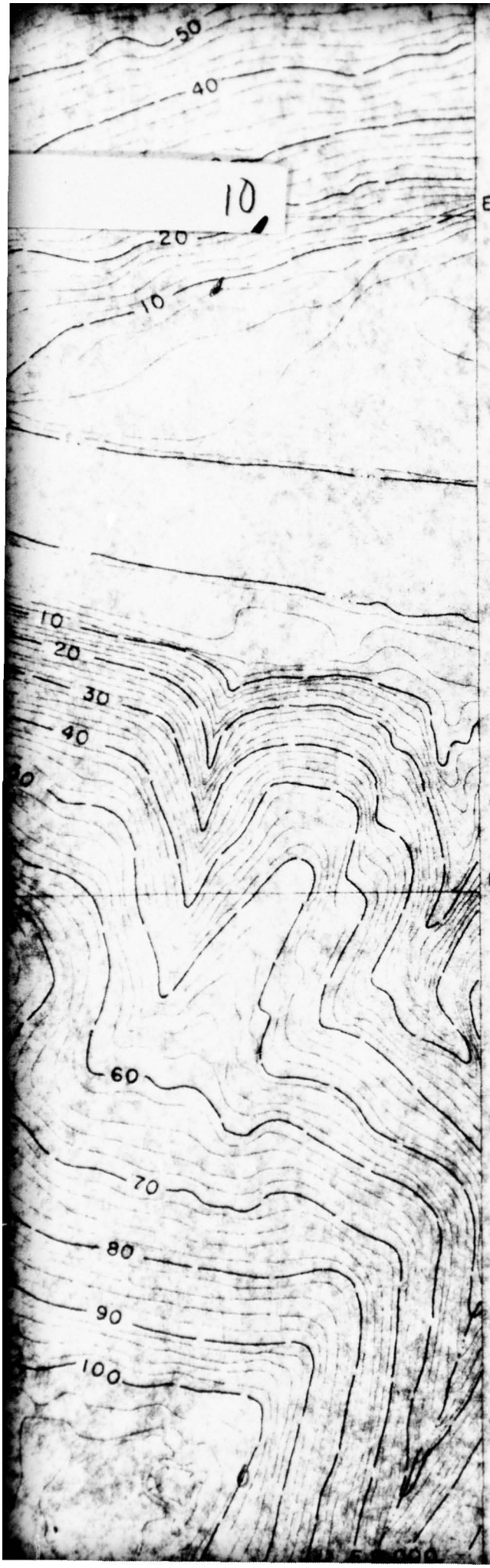
TP-34
TP-40
TP-5
TP-6
TP-35
TP-36
TP-7


EAST ABUTMENT
STABILIZATION FILL
SEEDED
DISPOSAL AREA - FINAL GRADE
TO BE DETERMINED IN THE FIELD
REAM CHANNEL TO REMAIN OPEN
OWNSTREAM OF OUTLET WORKS
EXCESS EXCAVATED ROCK
DISPOSAL AREA
FLOW
RIPRAP
2.5:1 SLOPE
BORROW FROM SPILLWAY EXCAVATION
TP-43
TP-39
TP-38
TP-41
TP-42
TP-40
MAY BE MODIFIED
ELD, SEE DWG. 71-111-E4
10
20
30
40
50
60
70
80
90
100



NOTE: CONTOUR INTERVAL EQUALS 2 FEET

NOTES:

1. FOR SECTIONS 1 - 1 THROUGH 8 - 8 , SEE DWGS. 71-111-E14 THROUGH E16.
2. FOR PLAN OF INTERNAL DRAINAGE SYSTEM , SEE DWG 71-111-E32.
3. FOR DIVERSION DIKES SEE DWG 71-111-E33

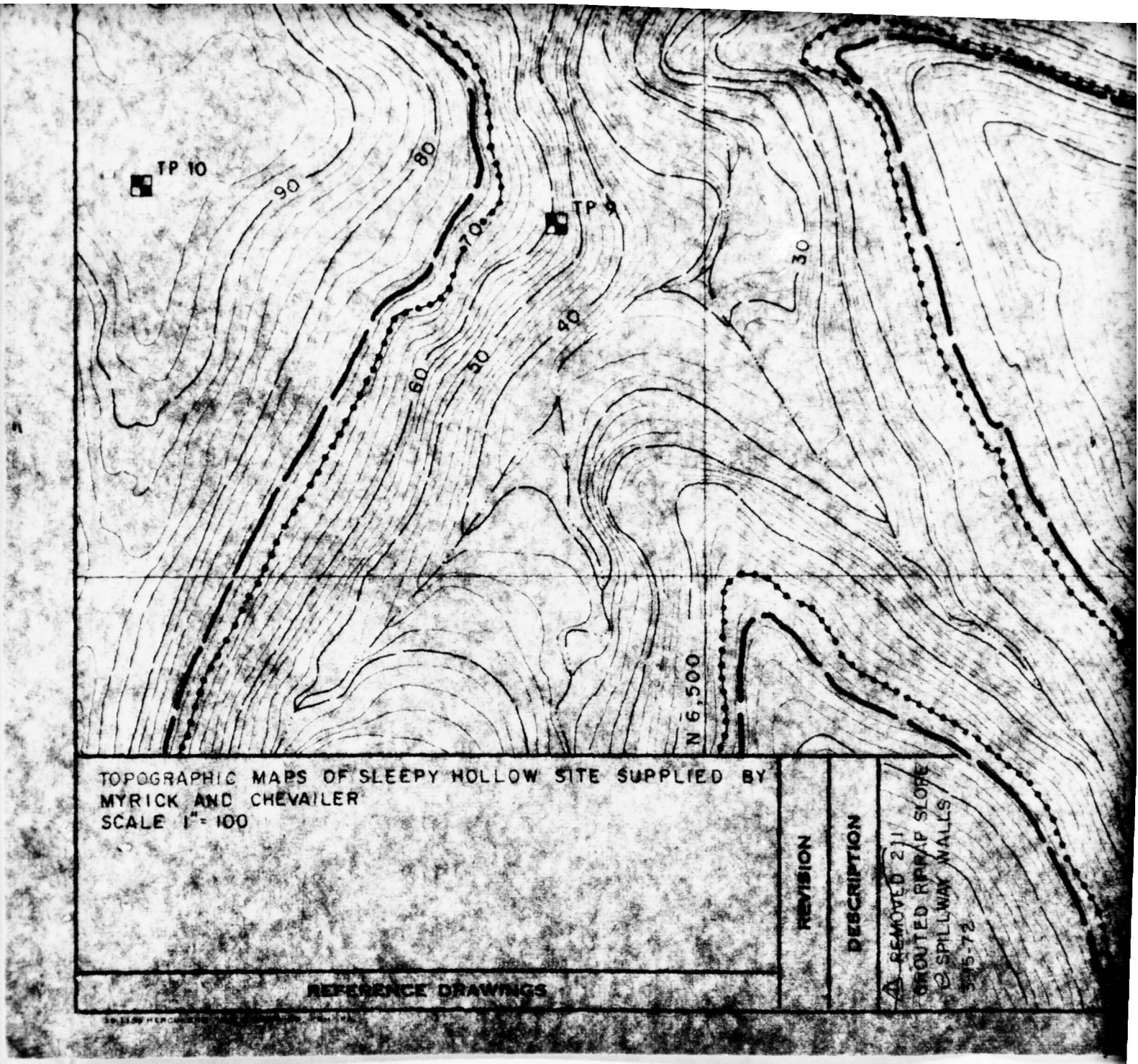
LEGEND

- BORING
- BORING IN WHICH PIEZOMETER WAS INSTALLED.
- TEST PIT

SCALE

100 0 100 200 FEET

SLEEPY HOLLOW LAKE, INC.



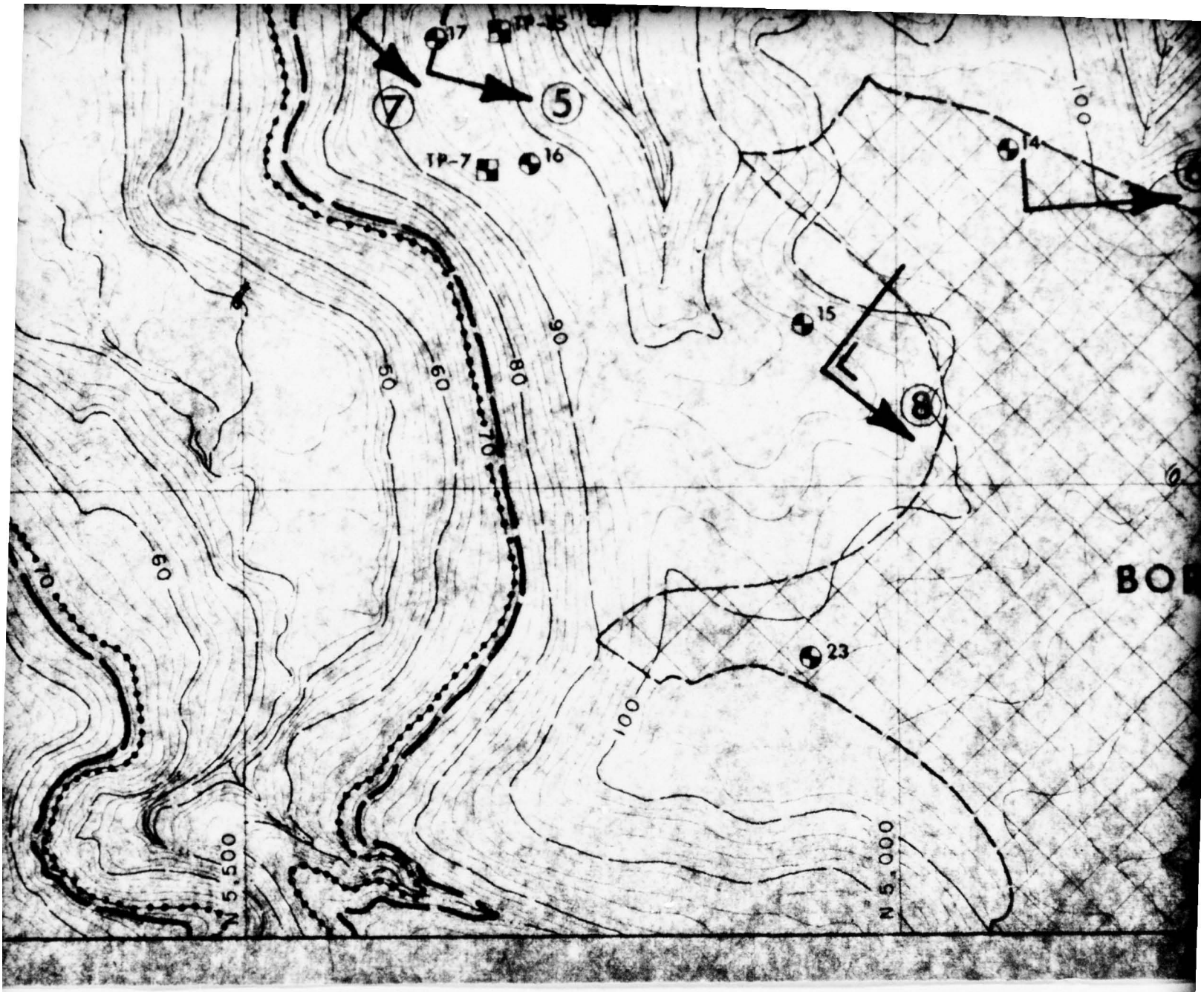
TOPOGRAPHIC MAPS OF SLEEPY HOLLOW SITE SUPPLIED BY MYRICK AND CHEVAILER
SCALE 1" = 100

REFERENCE DRAWINGS

REVISION	DESCRIPTION
4	REMOVED 211 GROUTED RIPRAP SLOPE @ SPILLWAY WALLS 5-5-72

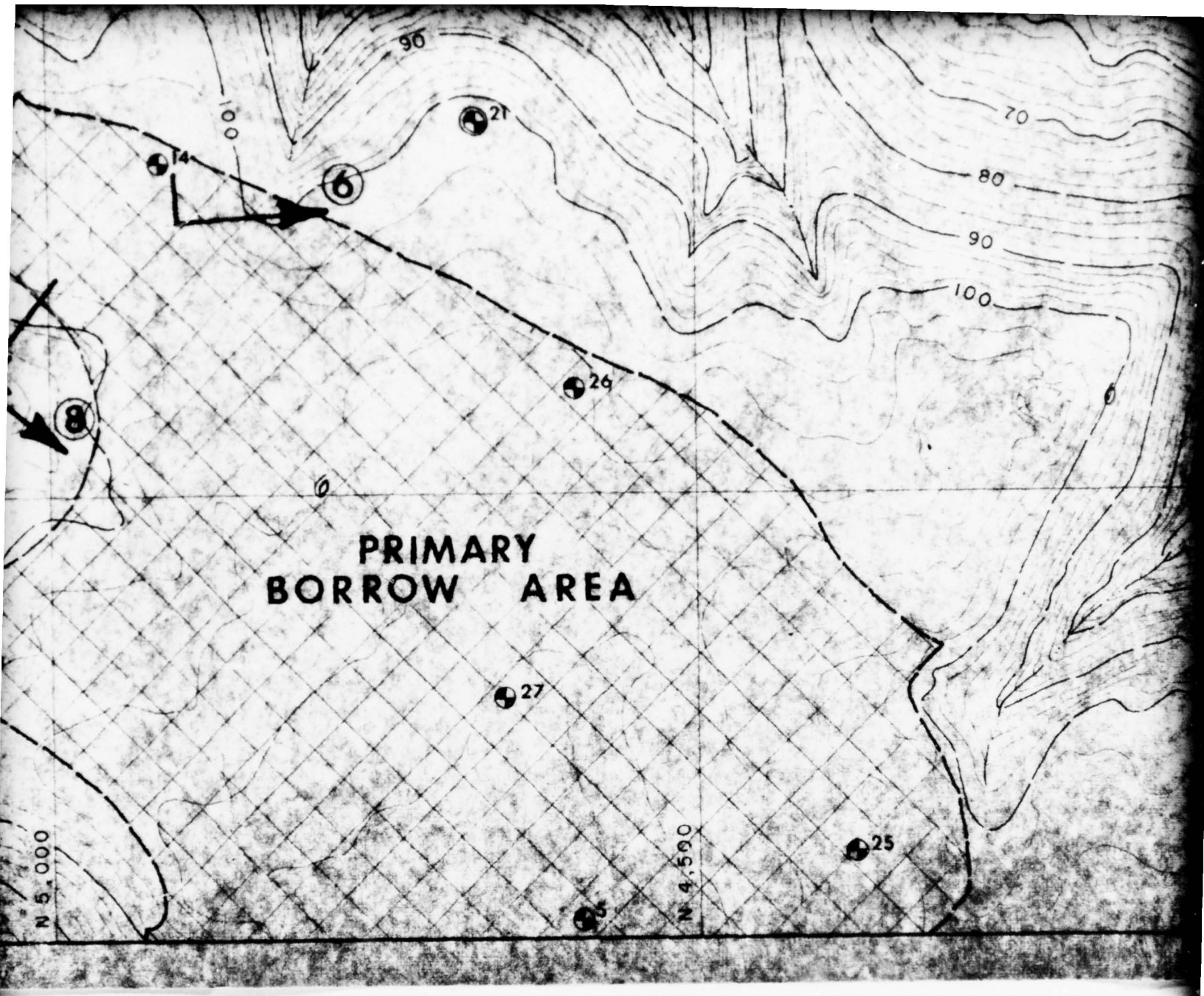
30
90
100
70
80
90
N 6,000
70
80
90
60
REVISION
DESCRIPTION
A REMOVED 211 GROUTED RIPRAP SLOPE @ SPILLWAY WALLS
3-15-72

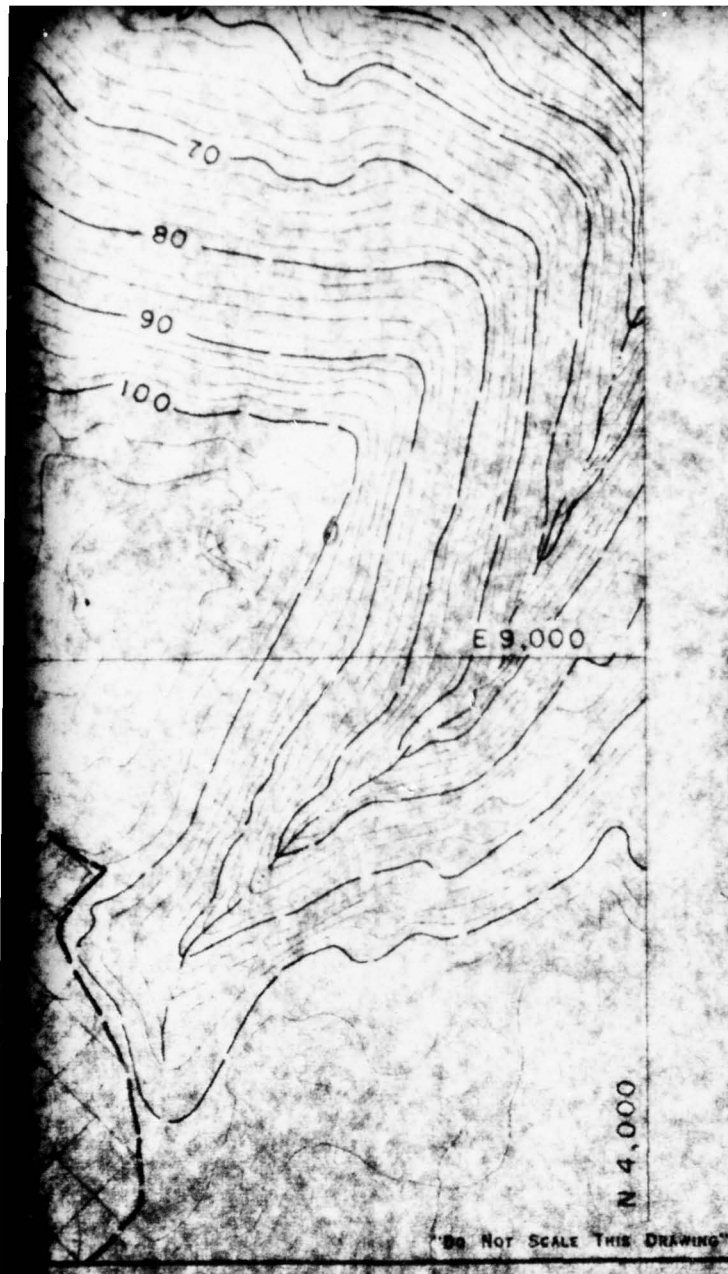
12



1

13


90
100
70
80
90
100
21
14
6
24
8
6
PRIMARY
BORROW AREA
27
25
5
N 5,000
N 4,500



WAS INSTALLED.

TEST PIT

SCALE

100 0 100 200 FEET

SLEEPY HOLLOW LAKE, INC.

GREENE COUNTY, N.Y.

E. D'APPOLONIA CONSULTING ENGINEERS, INC.

10 DUFF ROAD PITTSBURGH, PA. 15235	MR 5228 CHESTERTON, IND. 46304

SLEEPY HOLLOW LAKE

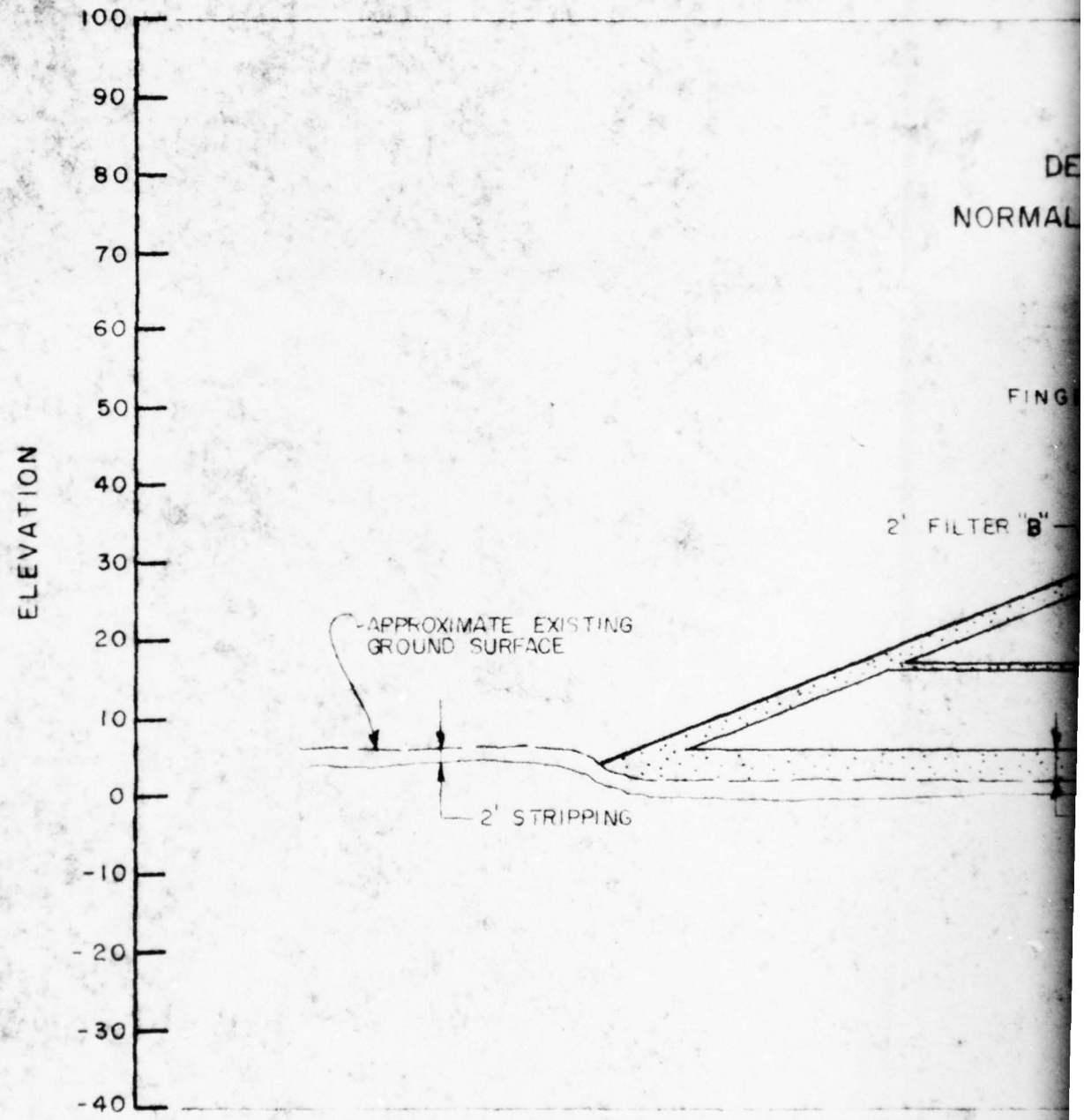
GREENE COUNTY, N.Y.

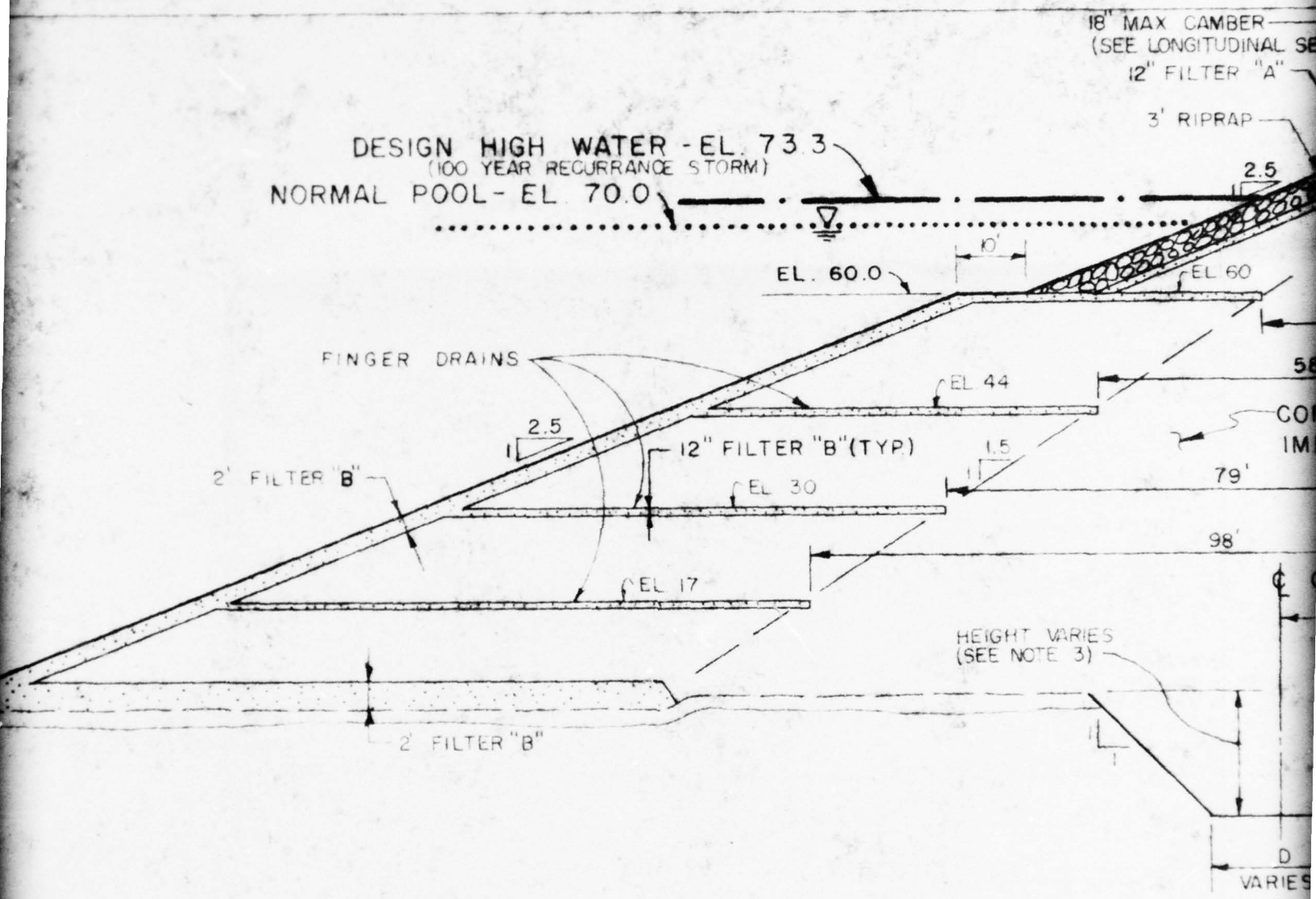
PLAN OF DAM AND SPILLWAYS

DRAWN BY	NF	11-19-71	DRAWING NO.
CHECKED BY	NHS MJT	12-24-71	71-111-E2

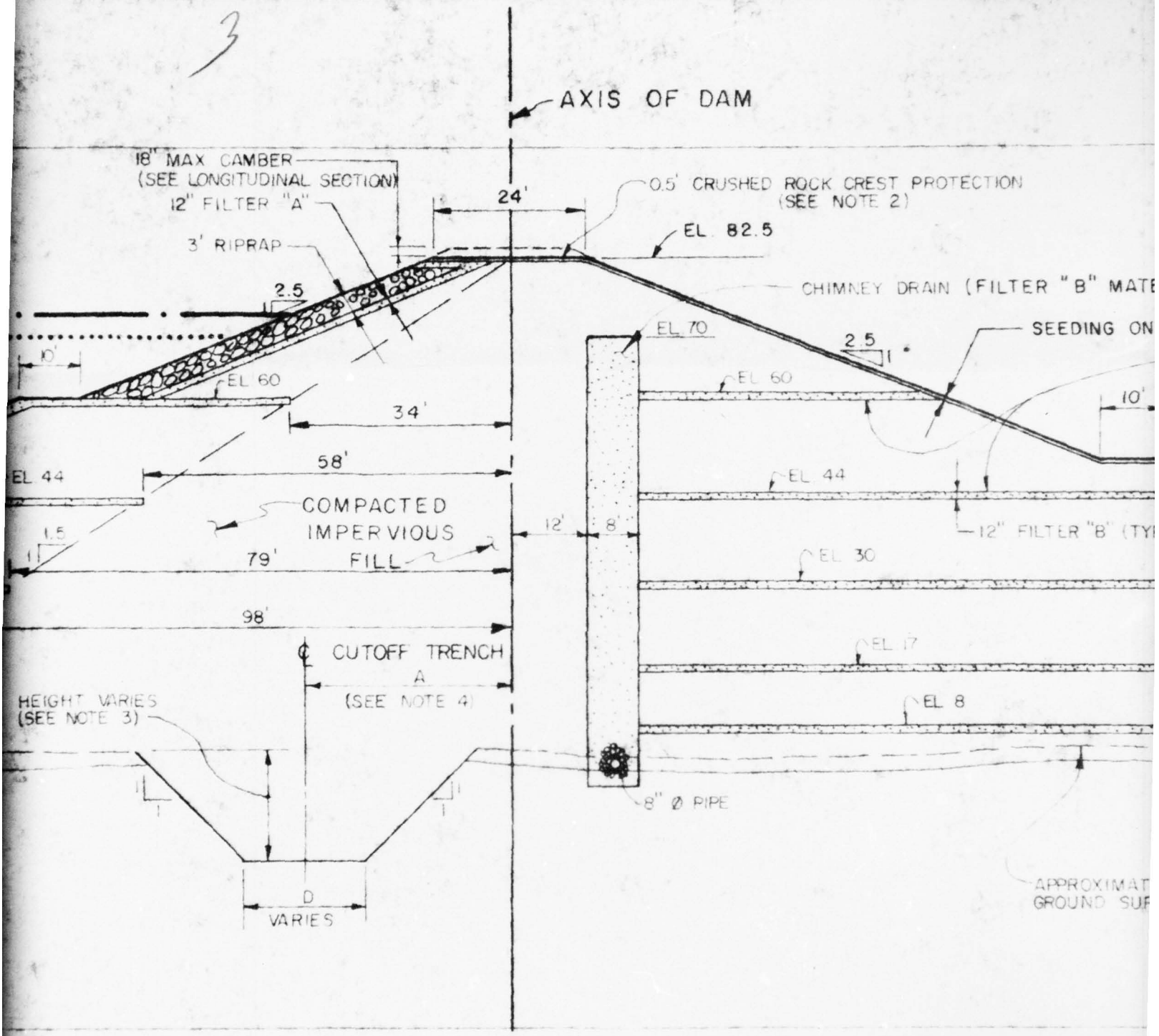
"DO NOT SCALE THIS DRAWING"

15


100
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
-40
ELEVATION
DE
NORMAL
FING
2' FILTER "B"
APPROXIMATE EXISTING
GROUND SURFACE
2' STRIPPING


18" MAX CAMBER
(SEE LONGITUDINAL SE
12" FILTER "A"
3' RIPRAP
DESIGN HIGH WATER - EL. 73.3
(100 YEAR RECURRANCE STORM)
NORMAL POOL - EL. 70.0
2.5
10'
EL. 60.0
EL 60
FINGER DRAINS
EL 44
2.5
12" FILTER "B"(TYP)
1.5
2' FILTER "B"
EL 30
79'
98'
EL 17
HEIGHT VARIES
(SEE NOTE 3)
2' FILTER "B"
D
VARIES

TYPICAL



TYPICAL TRANSVERSE SECTION

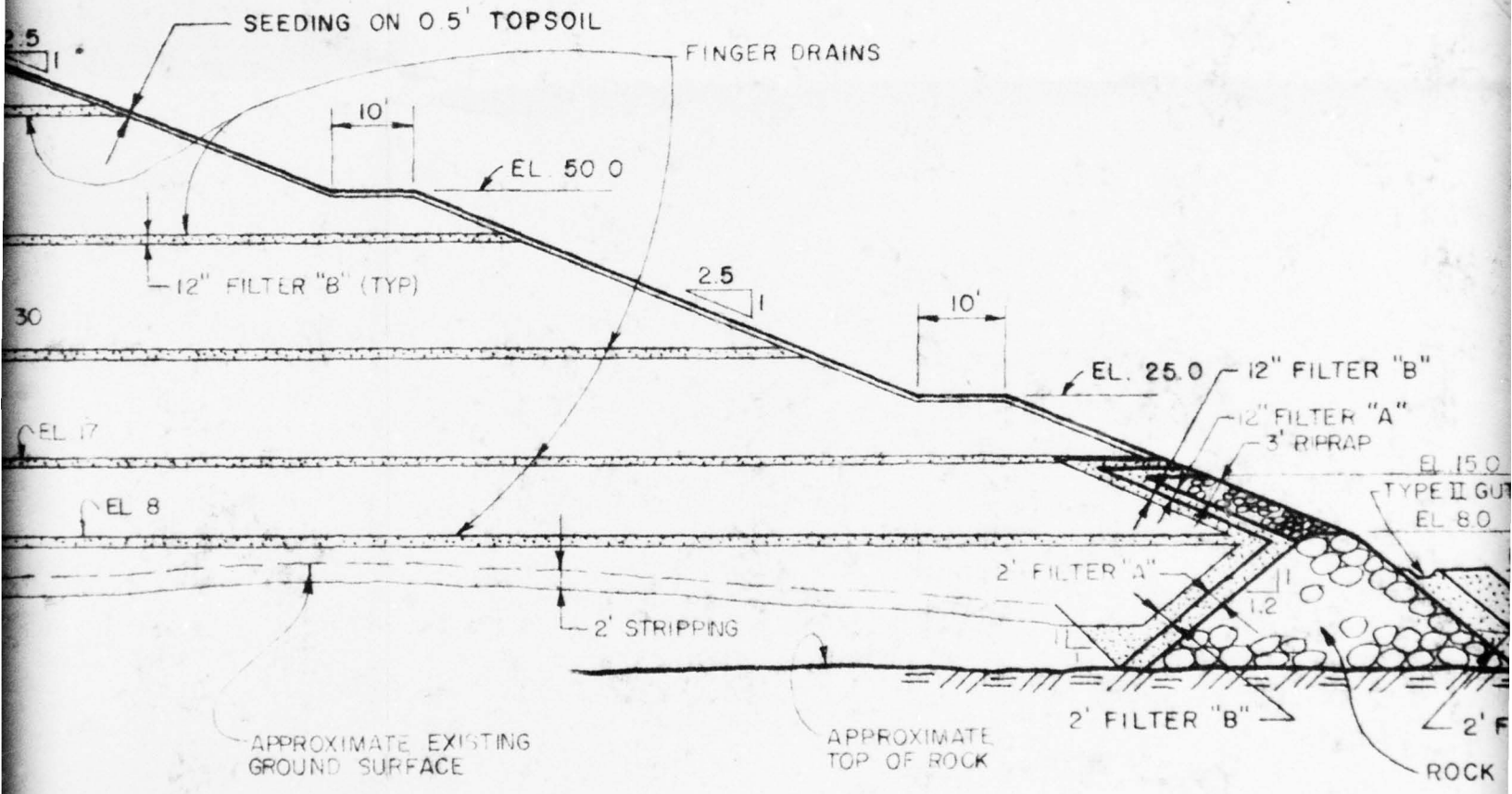
SCALE

20 0 20 40 FEET

4

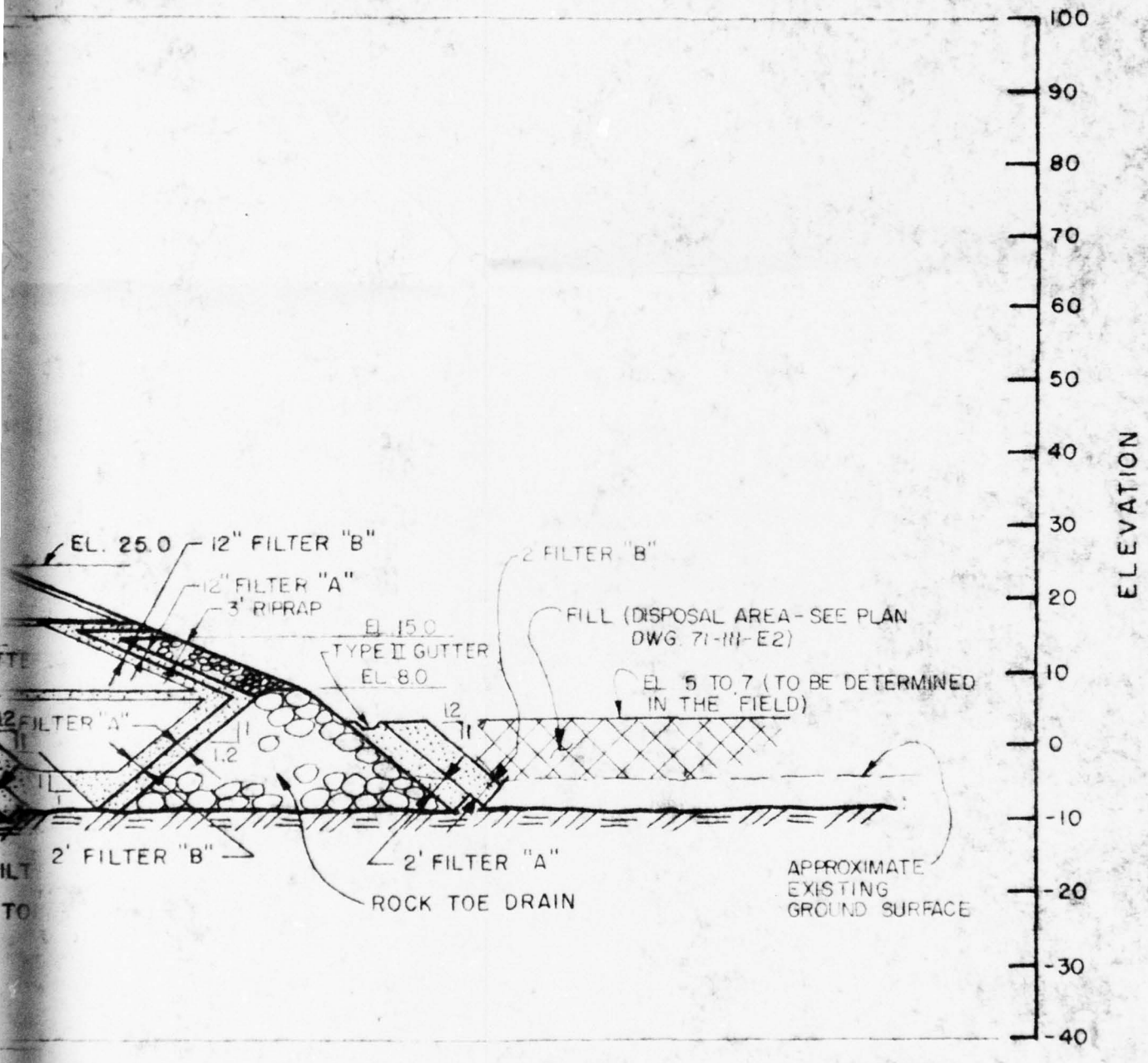
REST PROTECTION
TE 2)

NEY DRAIN (FILTER "B" MATERIAL)



NOTES

1. THE DESIGN STRIPPING UNDER THE EMBANKMENT IS 2 FEET. UNSUITABLE MATERIAL TO BE REMOVED WILL BE AS DI
2. THE CREST PROTECTION SHALL BE PLACED IN 2 STAGES. FIR 3" DISC PLOWED INTO THE CREST OF THE DAM. SECOND STA ON THE PRIOR DISCED MATERIAL
3. THE DEPTH OF THE CUTOFF TRENCH VARIES, SEE LONGITUDI
4. FOR DIMENSIONS A, THRU Q SEE DWG 74-111-56

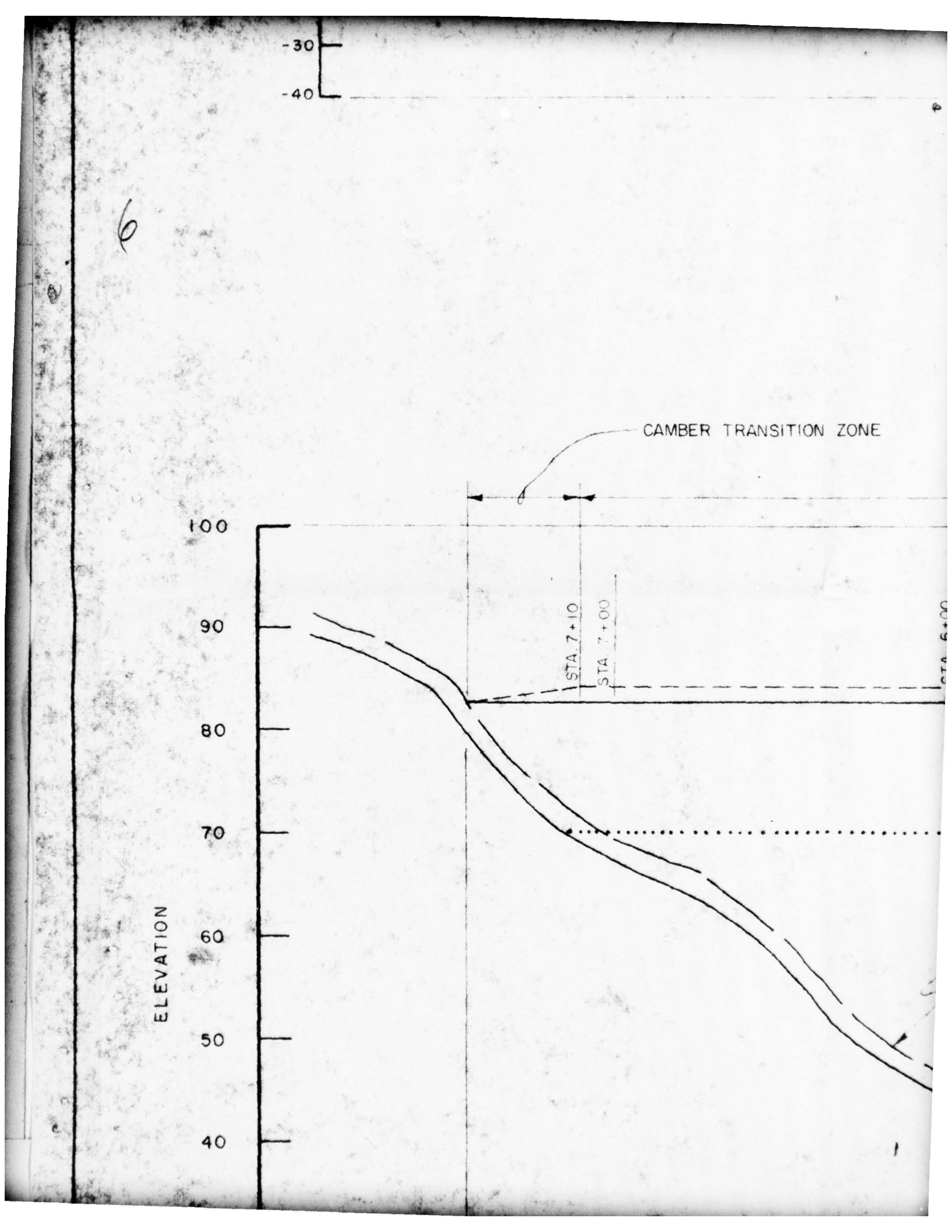


DER THE EMBANKMENT IS 2 FEET. ACTUAL DEPTH OF
TO BE REMOVED WILL BE AS DIRECTED BY THE ENGINEER.

SHALL BE PLACED IN 2 STAGES. FIRST STAGE SHALL BE
E CREST OF THE DAM. SECOND STAGE SHALL BE 3" PLACED
MATERIAL

OFF TRENCH VARIES, SEE LONGITUDINAL SECTION BELOW

SEE DWG. 71-111-E5.

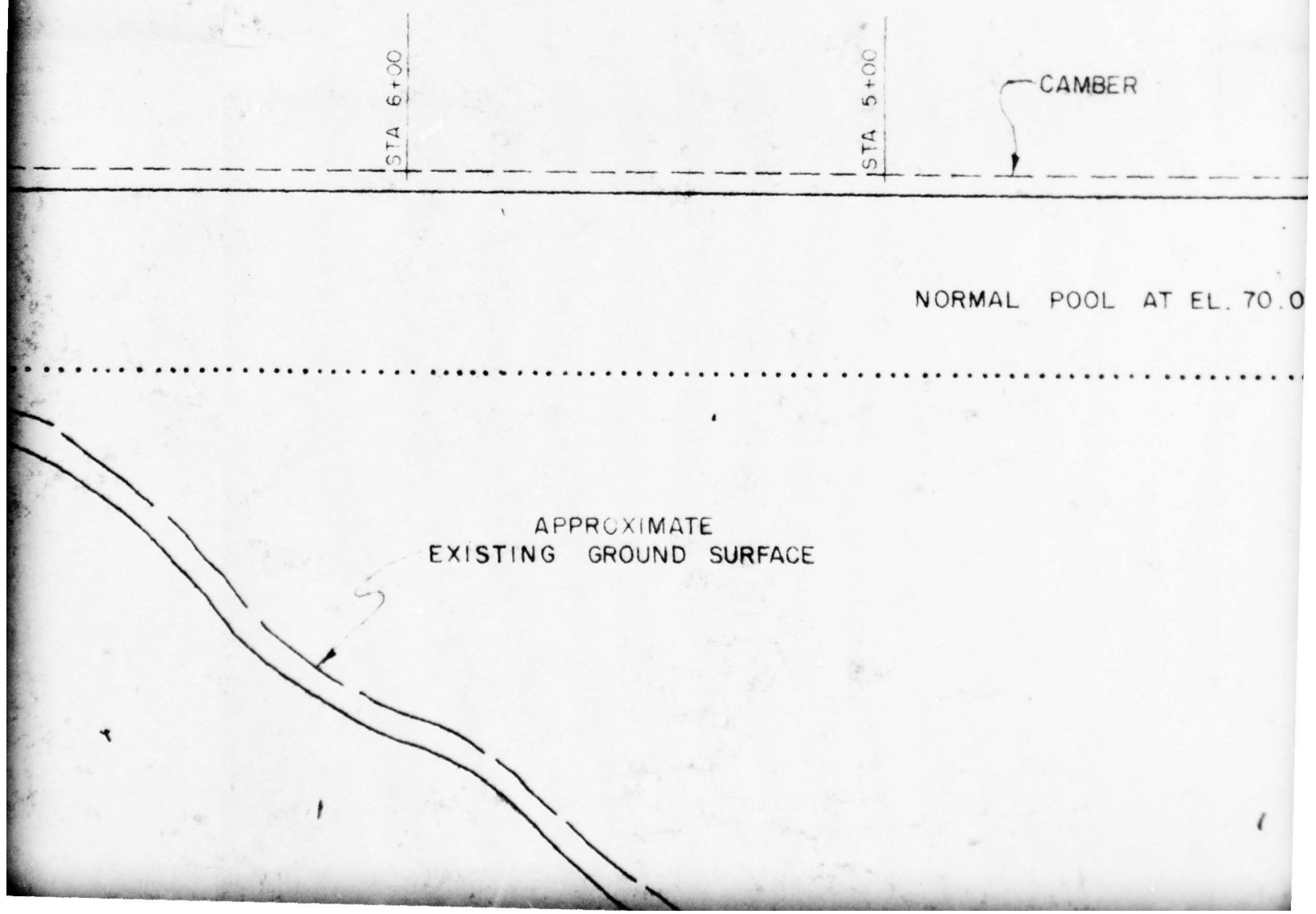

-30
-40
6
CAMBER TRANSITION ZONE
100
90
80
70
60
50
40
ELEVATION
STA. 7+10
STA 7+00

TYPICAL

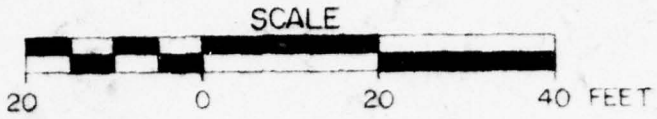
20

BER TRANSITION ZONE

18" THICK CAM



TYPICAL TRANSVERSE SECTION



18" THICK CAMBER

CAMBER

STA 4+00

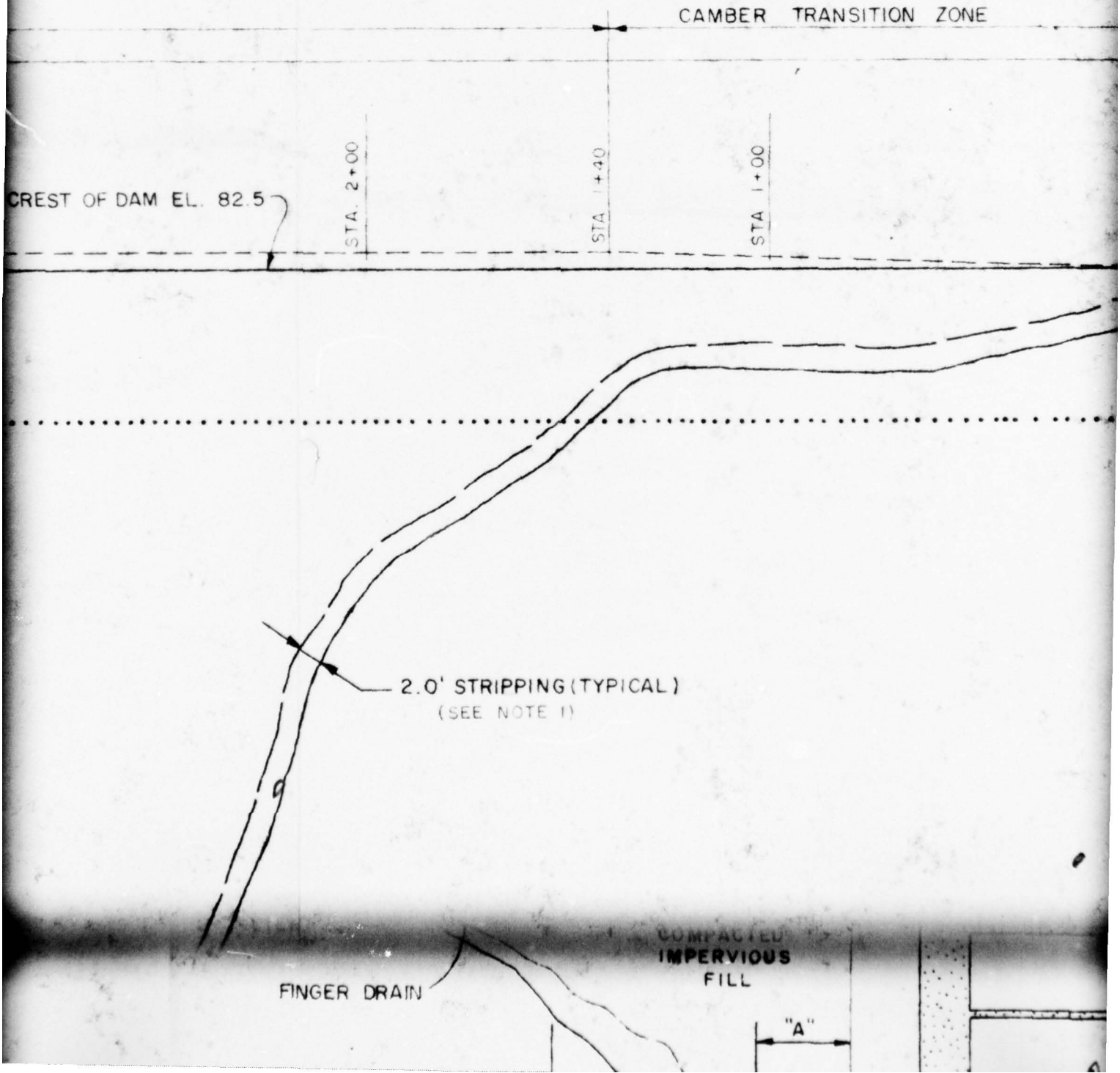
STA 3+00

CREST OF DAM EL. 82.5

NORMAL POOL AT EL. 70.0

NOTES

1. THE DESIGN STRIPPING UNDER THE EMBANKMENT IS 2 FEET. UNSUITABLE MATERIAL TO BE REMOVED WILL BE AS D
2. THE CREST PROTECTION SHALL BE PLACED IN 2 STAGES. FIR 3" DISC PLOWED INTO THE CREST OF THE DAM. SECOND STA ON THE PRIOR DISCED MATERIAL
3. THE DEPTH OF THE CUTOFF TRENCH VARIES, SEE LONGITUDI
4. FOR DIMENSIONS A THRU D SEE DWG. 71-111-E5.
5. ELEVATIONS SHOWN FOR FILTER "B" DRAINS IN DOWNSTREA AND MAY BE RELOCATED AS DIRECTED BY THE ENGINEER
6. FOR ROCK FILL, FILTER TYPES A, B, C GRADATION, SEE THE SPECIFICATIONS.



-30

-40

10

KMENT IS 2 FEET. ACTUAL DEPTH OF
D WILL BE AS DIRECTED BY THE ENGINEER.

IN 2 STAGES. FIRST STAGE SHALL BE
DAM. SECOND STAGE SHALL BE 3" PLACED

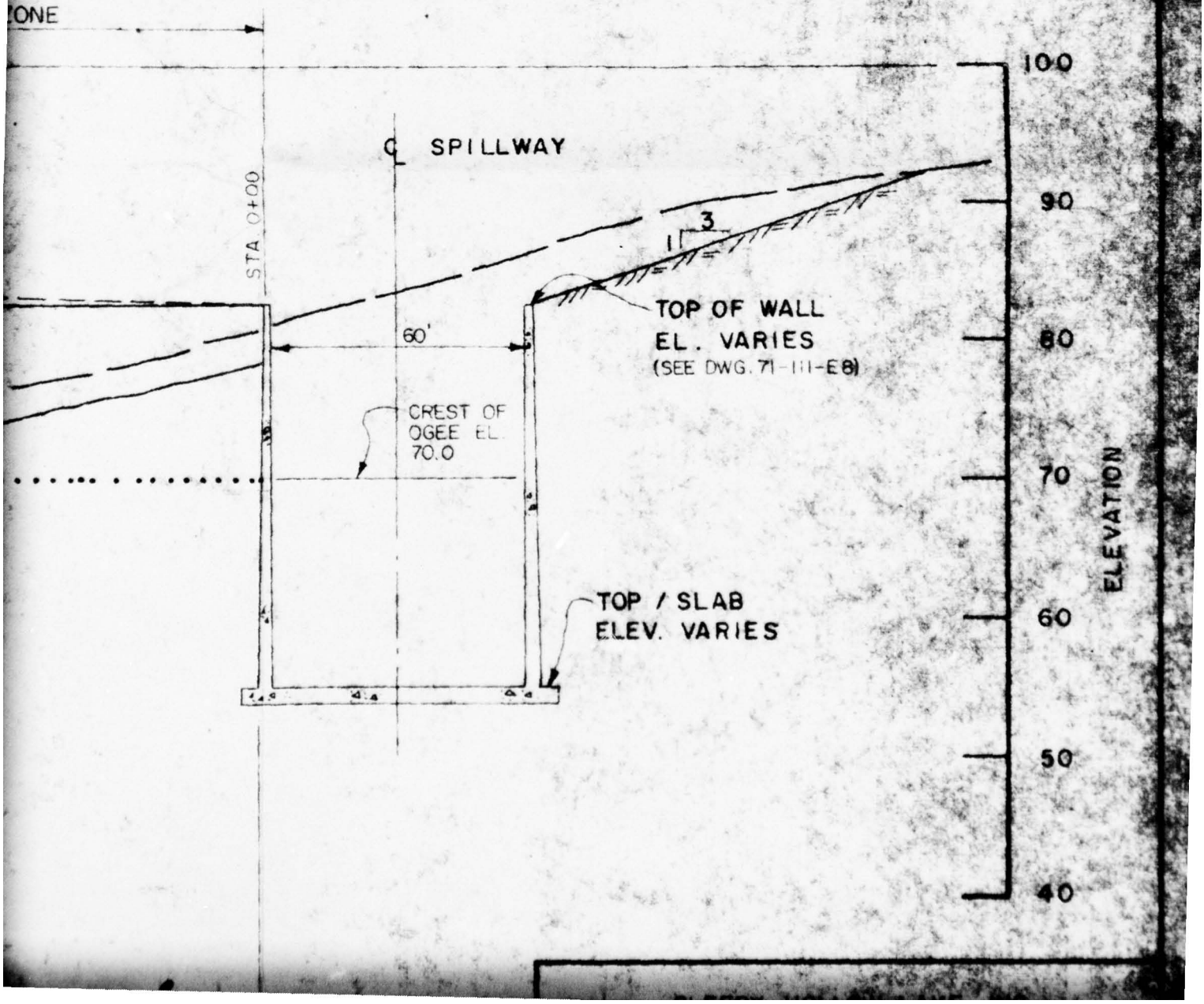
ES, SEE LONGITUDINAL SECTION BELOW

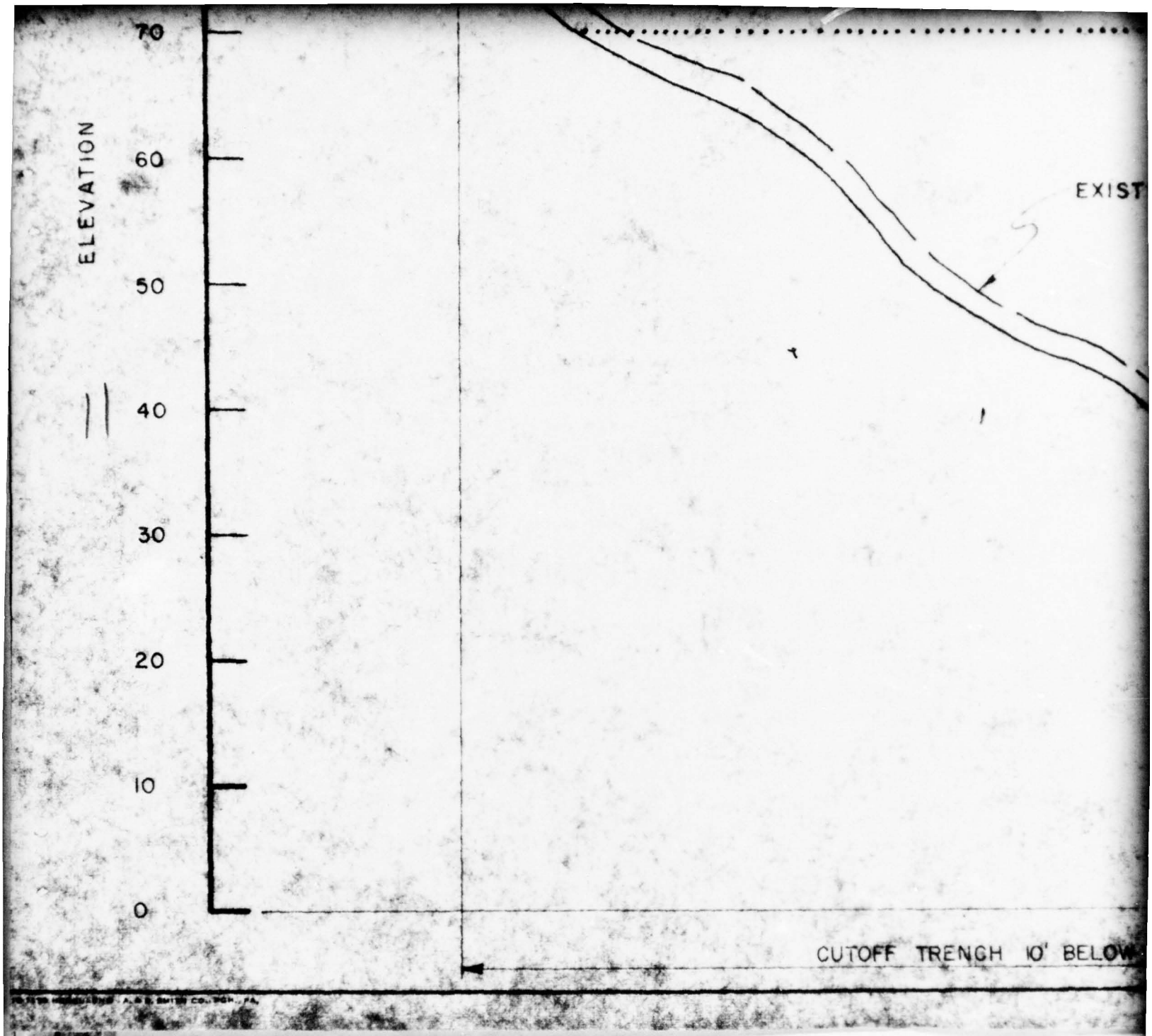
II-E5.

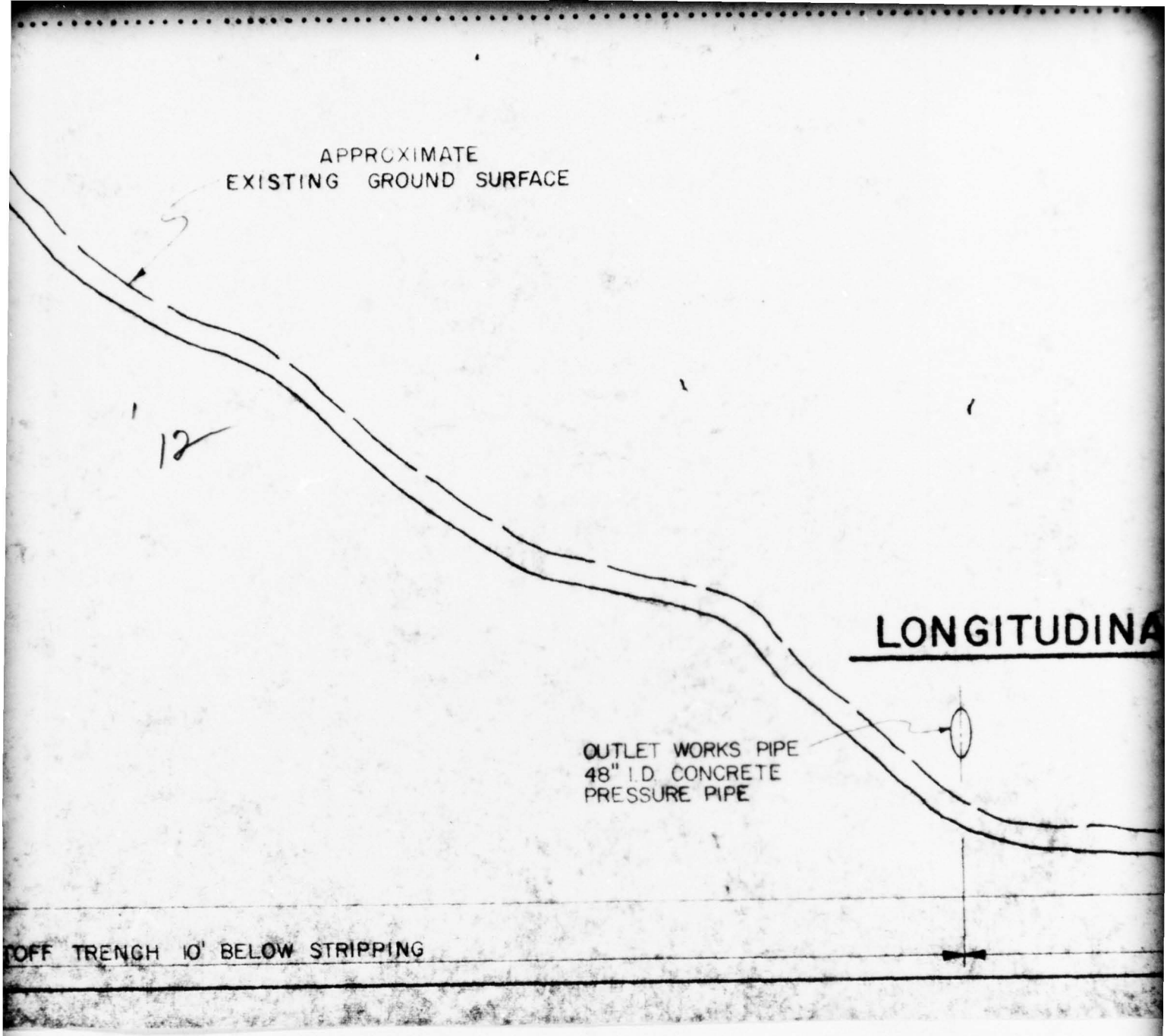
NS IN DOWNSTREAM SLOPE ARE APPROXIMATE
THE ENGINEER

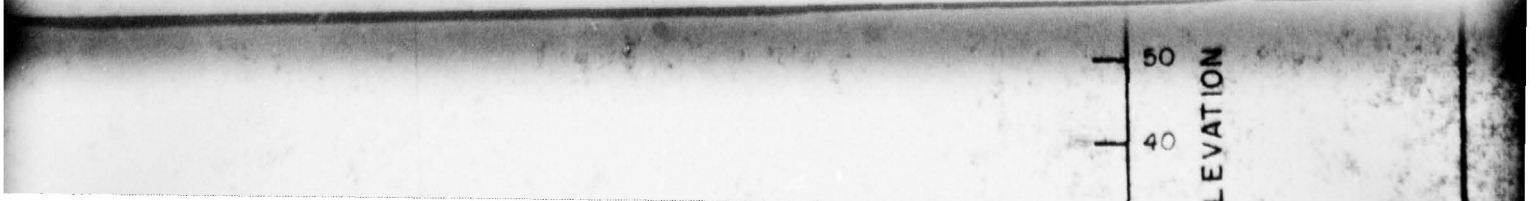
DATION, SEE THE

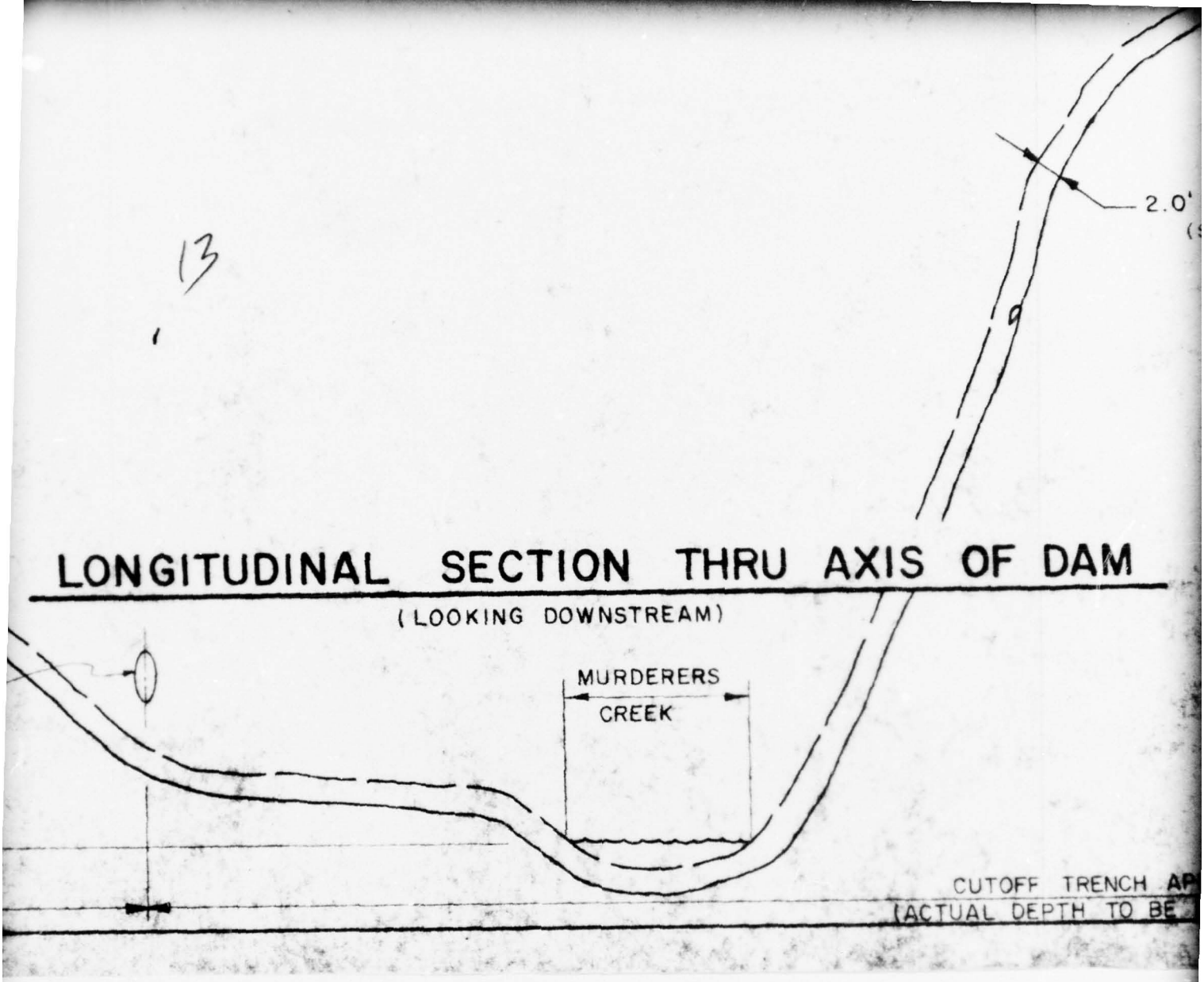
ZONE




70
60
50
40
30
20
10
0
ELEVATION
EXIST
CUTOFF TRENCH 10' BELOW

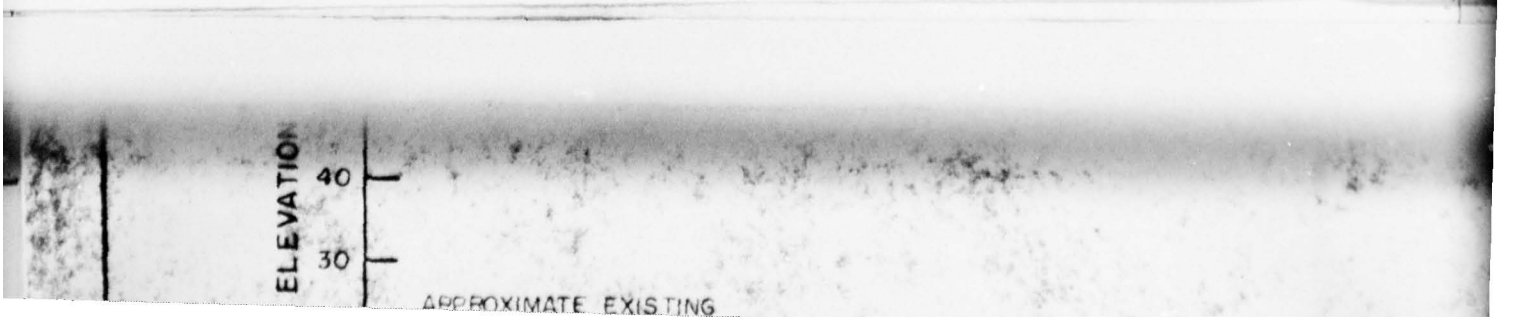

APPROXIMATE
EXISTING GROUND SURFACE
12
LONGITUDINA
OUTLET WORKS PIPE
48" I.D. CONCRETE
PRESSURE PIPE
OFF TRENCH 10' BELOW STRIPPING


50
40
ELEVATION



LONGITUDINAL SECTION THRU AXIS OF DAM

(LOOKING DOWNSTREAM)



2.0' STRIPPING (TYPICAL)
(SEE NOTE 1)

14

XIS OF DAM

HORIZONTAL SCALE

30 0 30 60 FEET

VERTICAL SCALE

10 0 10 20 FEET

CUTOFF TRENCH APPROXIMATE 5' INTO ROCK
(ACTUAL DEPTH TO BE DETERMINED BY ENGINEER)

"Do

2' FILTER "B"

2.5
1

12' FIL
EL

1.5
1

EL 30

60

50

40

15

SLEEPY HOLLOW LAKE, INC.

GREENE COUNTY, N.Y.

E. D'APPOLONIA CONSULTING ENGINEERS, INC.

10 DUFF ROAD PITTSBURGH, PA. 15235	MR 522B CHESTERTON, IND. 46304

SLEEPY HOLLOW LAKE

GREENE COUNTY, N.Y.

TYPICAL TRANSVERSE SECTION
AND LONGITUDINAL SECTION AT AXIS OF DAM

DRAWN BY	NF RC	12-8-71	DRAWING NO.
CHECKED BY	Bausch	12-30-71	71-111-E4

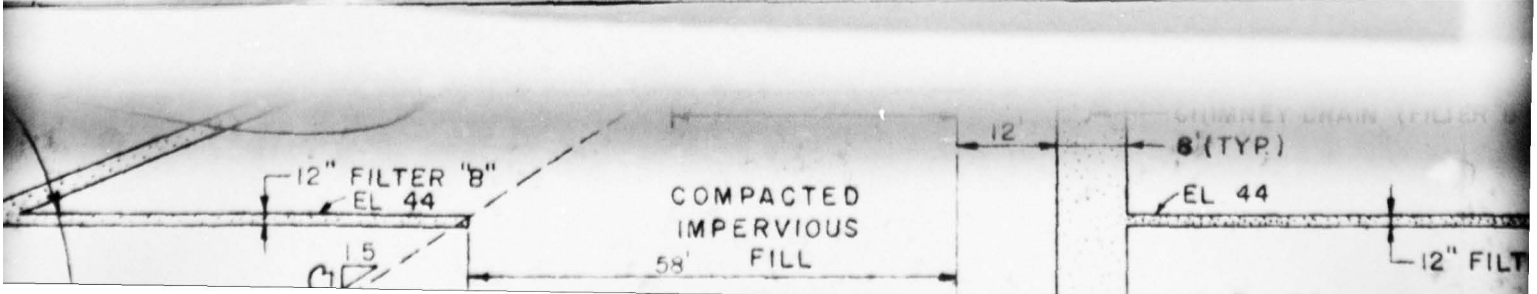
RIZONTAL SCALE

0 30 60 FEET

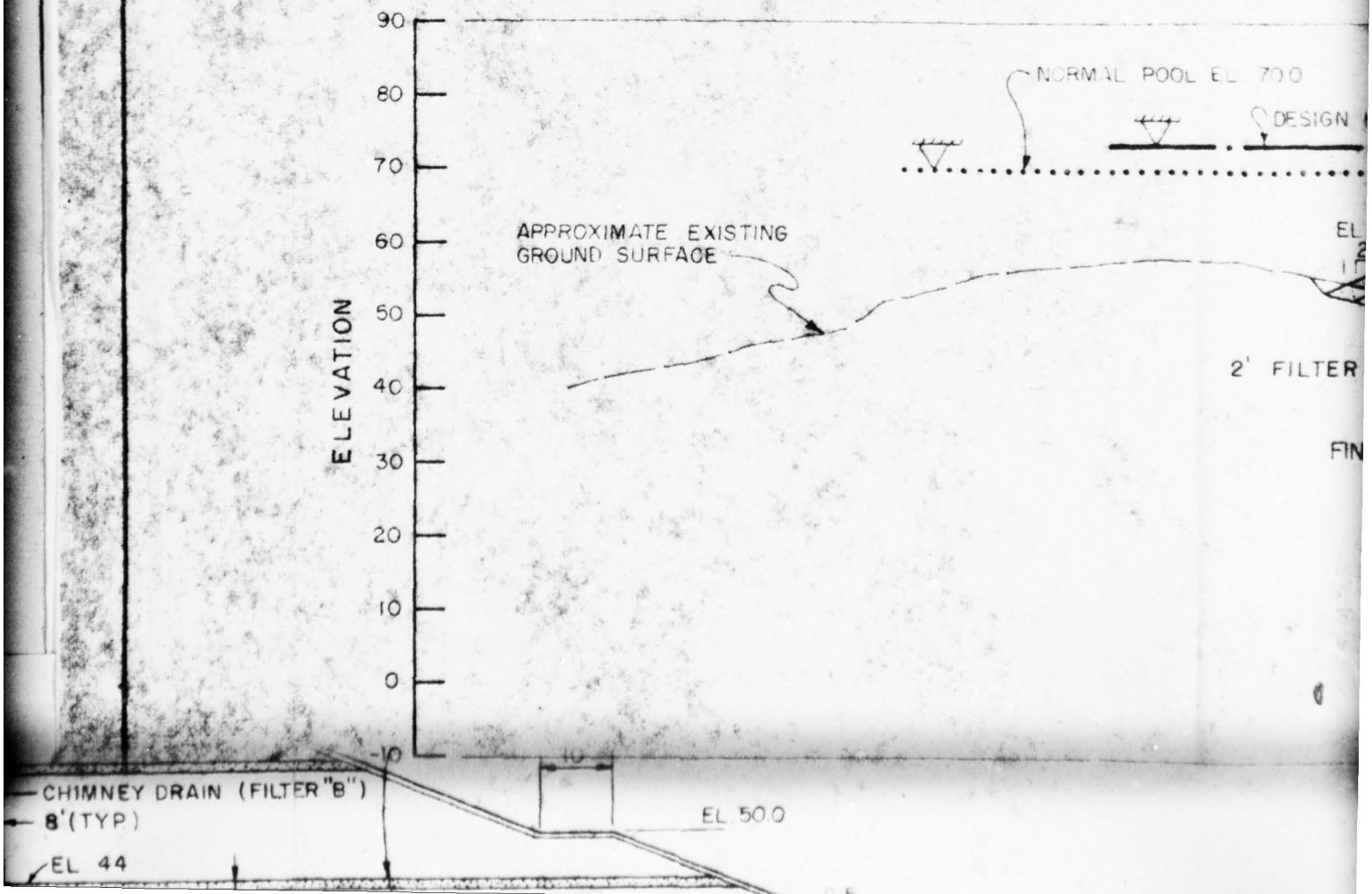
ERTICAL SCALE

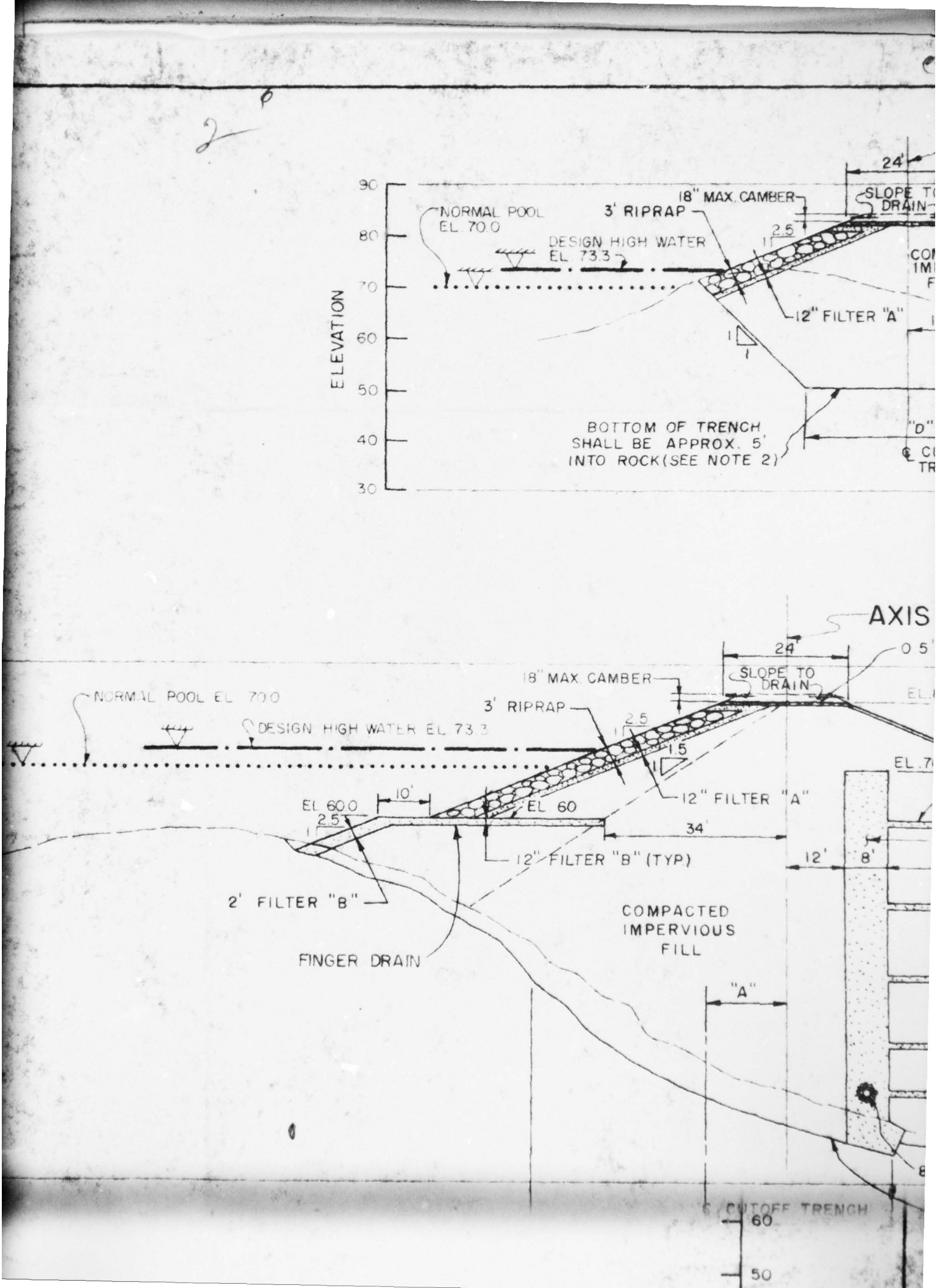
0 10 20 FEET

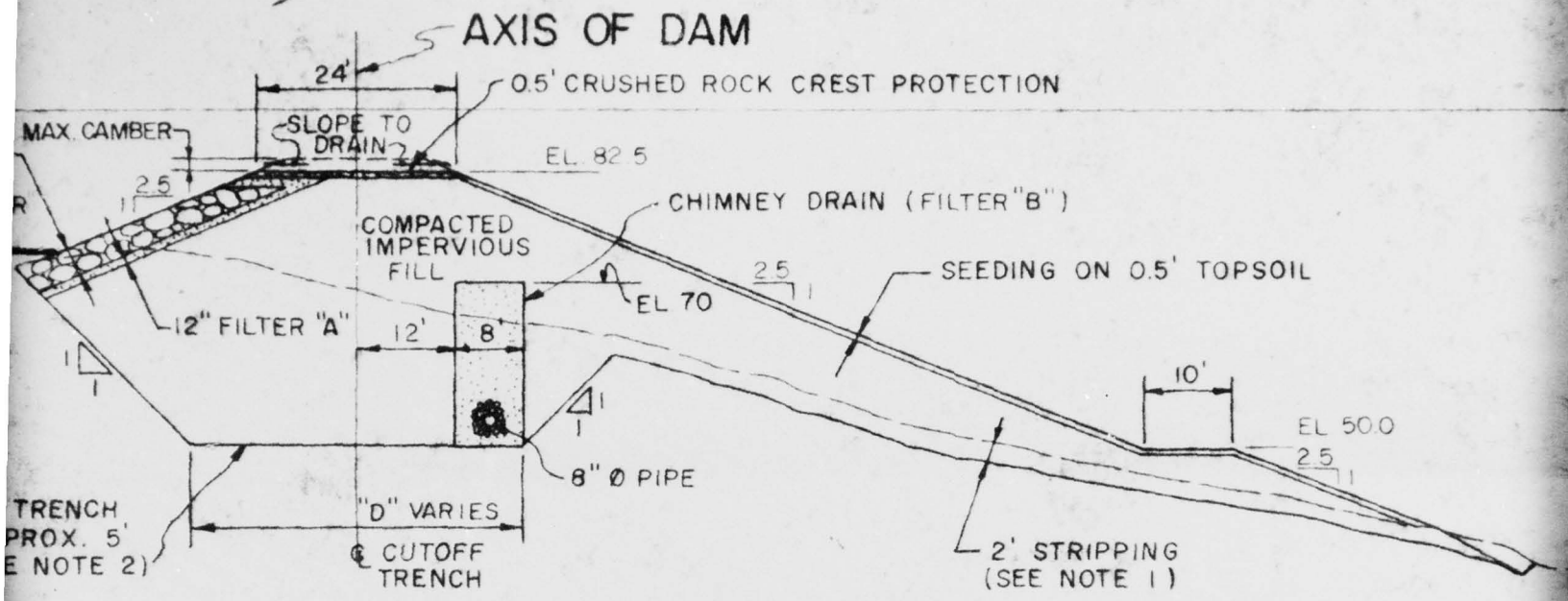
"DO NOT SCALE THIS DRAWING"



53-111-17

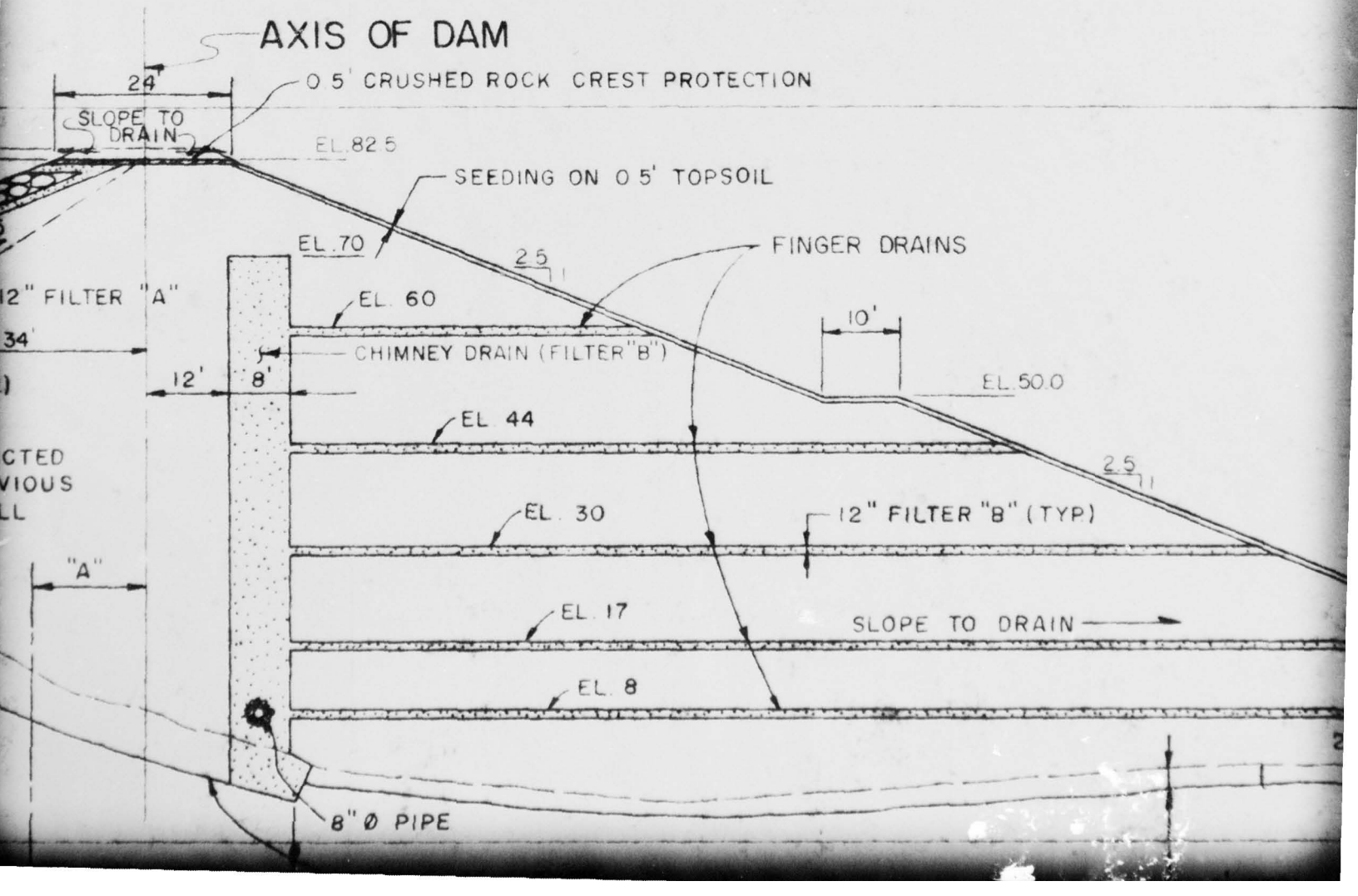

90
80
70
60
50
40
30
20
10
0
-10
ELEVATION
NORMAL POOL EL 70.0
DESIGN
APPROXIMATE EXISTING
GROUND SURFACE
2' FILTER
CHIMNEY DRAIN (FILTER "B")
8' (TYP)
EL 44
EL 50.0


ELEVATION
90
80
70
60
50
40
30
NORMAL POOL EL. 70.0
DESIGN HIGH WATER EL. 73.3
3' RIPRAP
18" MAX. CAMBER
24'
SLOPE TO DRAIN
2.5
1
1
12" FILTER "A"
BOTTOM OF TRENCH SHALL BE APPROX. 5' INTO ROCK (SEE NOTE 2)
"D"
AXIS
NORMAL POOL EL. 70.0
DESIGN HIGH WATER EL. 73.3
3' RIPRAP
18" MAX. CAMBER
24'
SLOPE TO DRAIN
2.5
1.5
EL. 60.0
10'
EL. 60
12" FILTER "A"
34'
12" FILTER "B" (TYP.)
12'
8'
2' FILTER "B"
FINGER DRAIN
COMPACTED IMPERVIOUS FILL
"A"
℄ CUTOFF TRENCH
60
50



SECTION A-A

(DAM STA. 1 + 55)

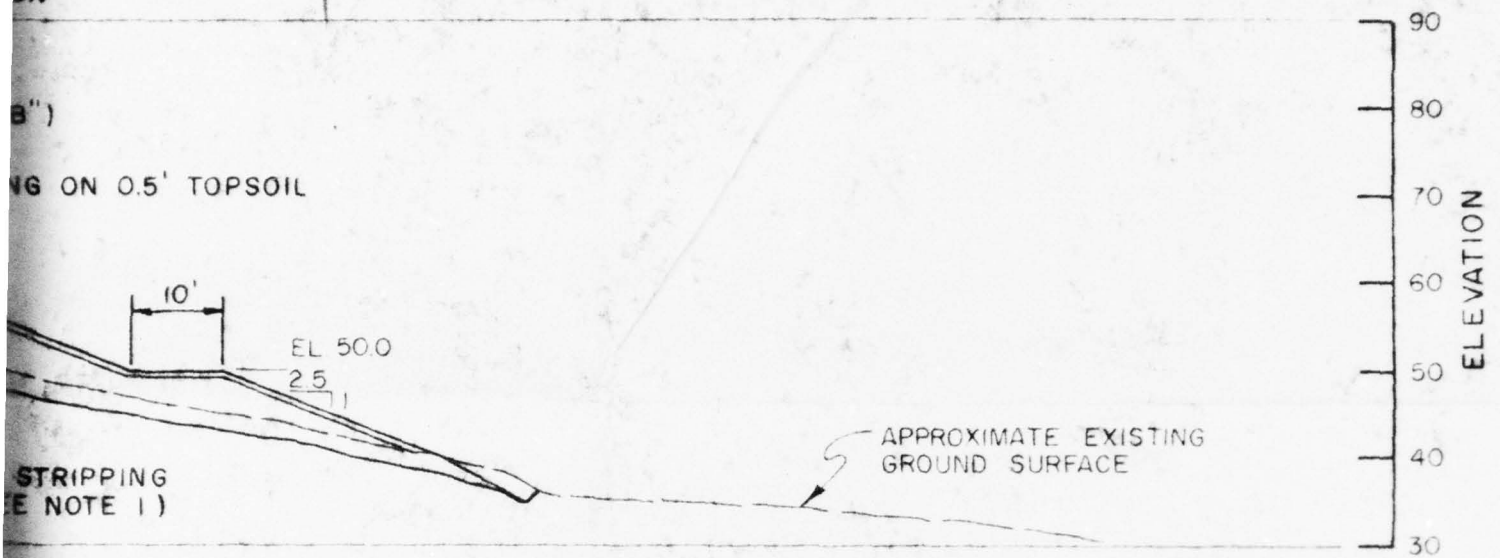


4

ON

B")

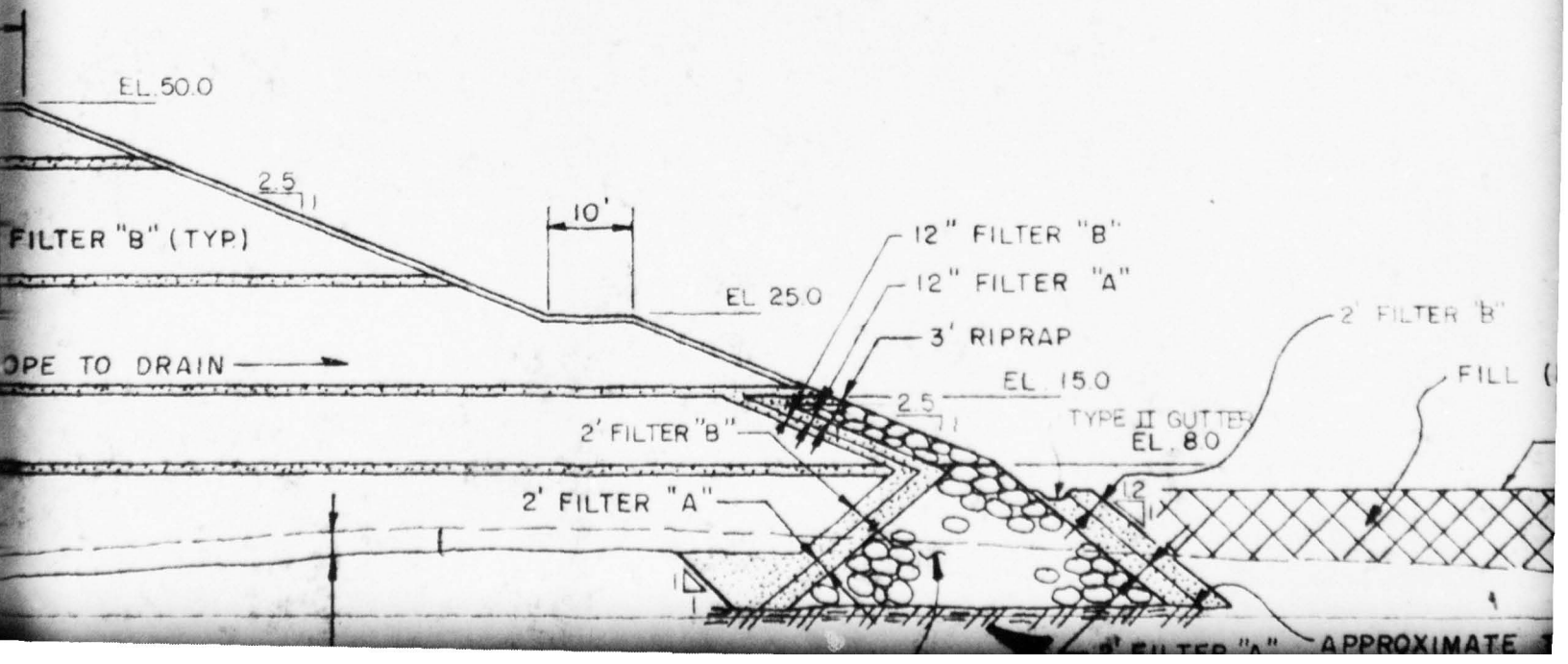
NG ON 0.5' TOPSOIL

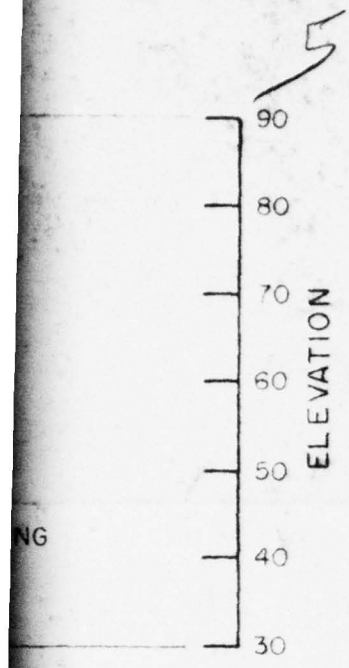


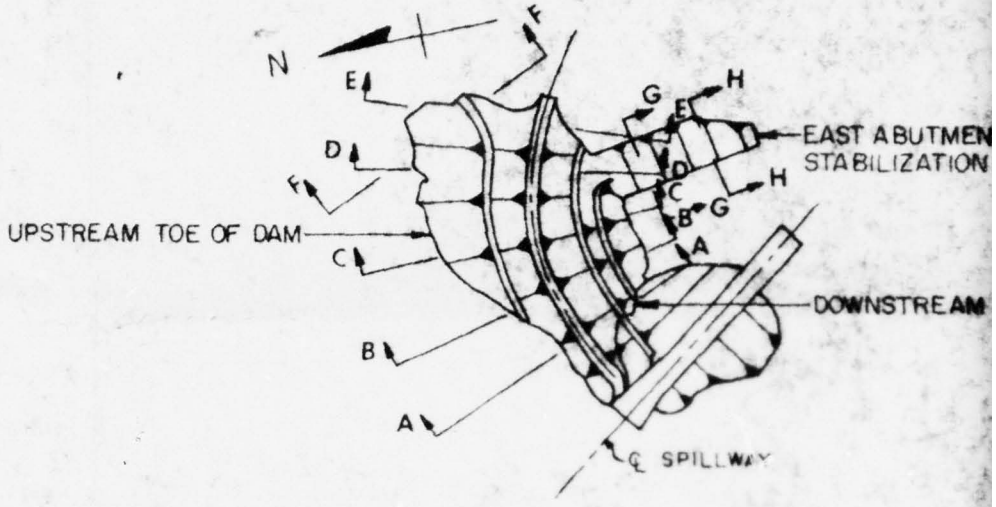
A-A

55)

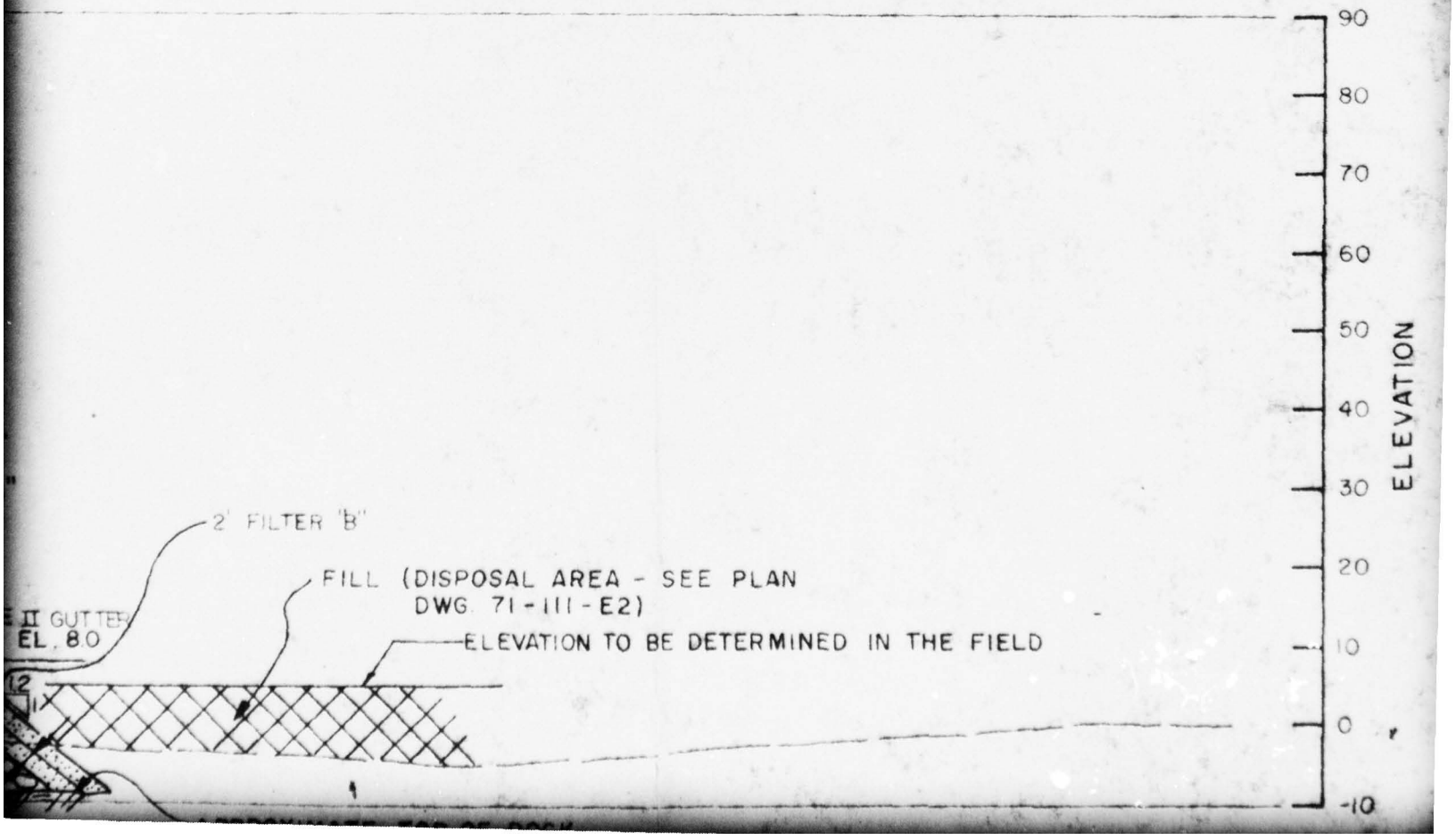
DRAINS







KEY PLAN
SCALE: 1" = 400'



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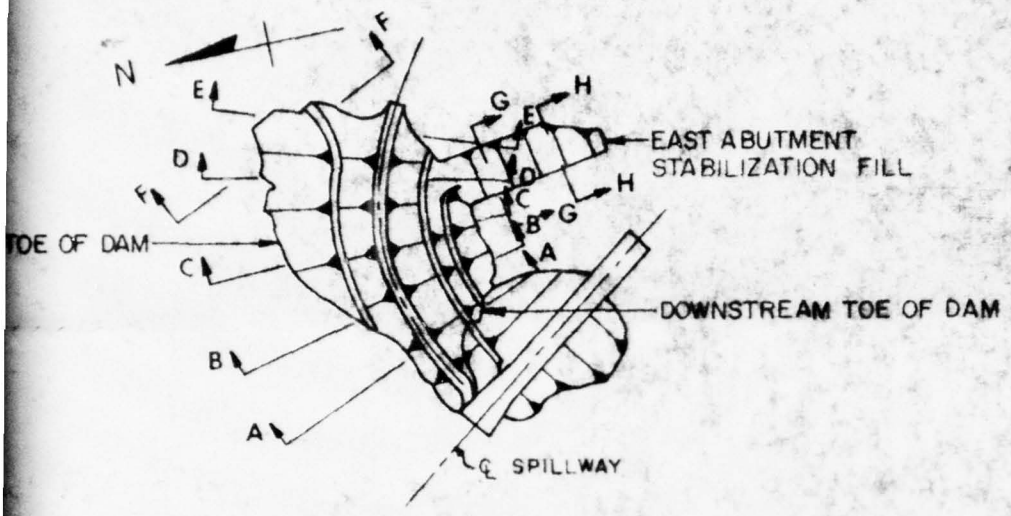
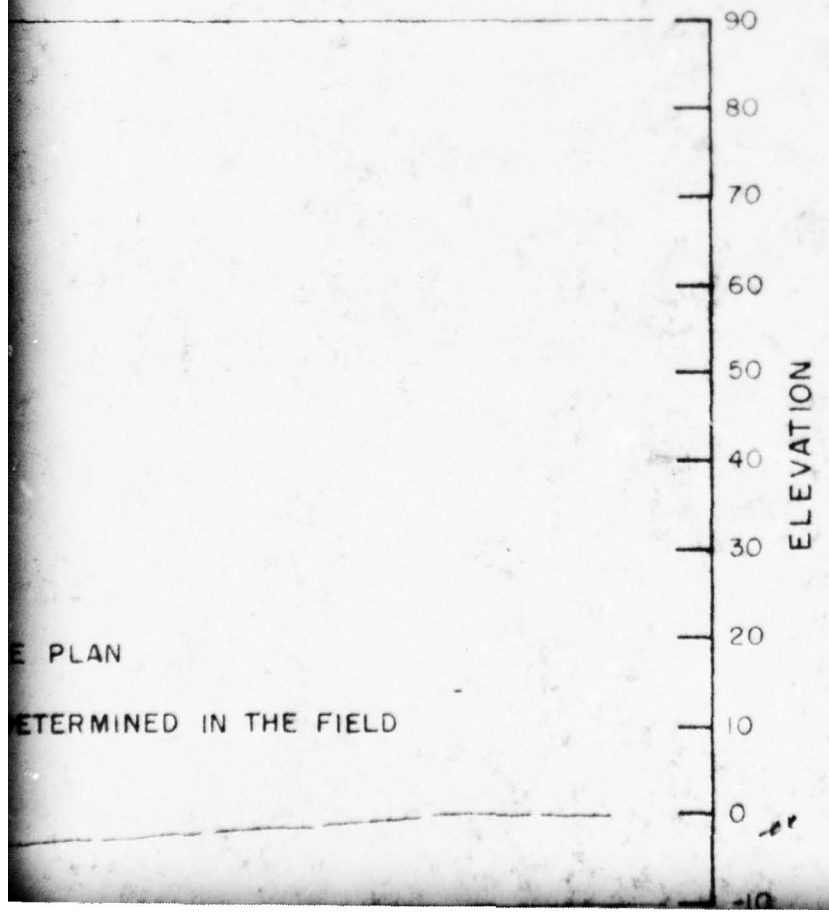


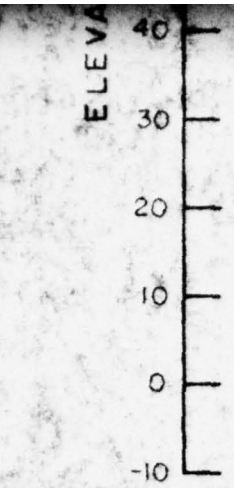
KEY PLAN

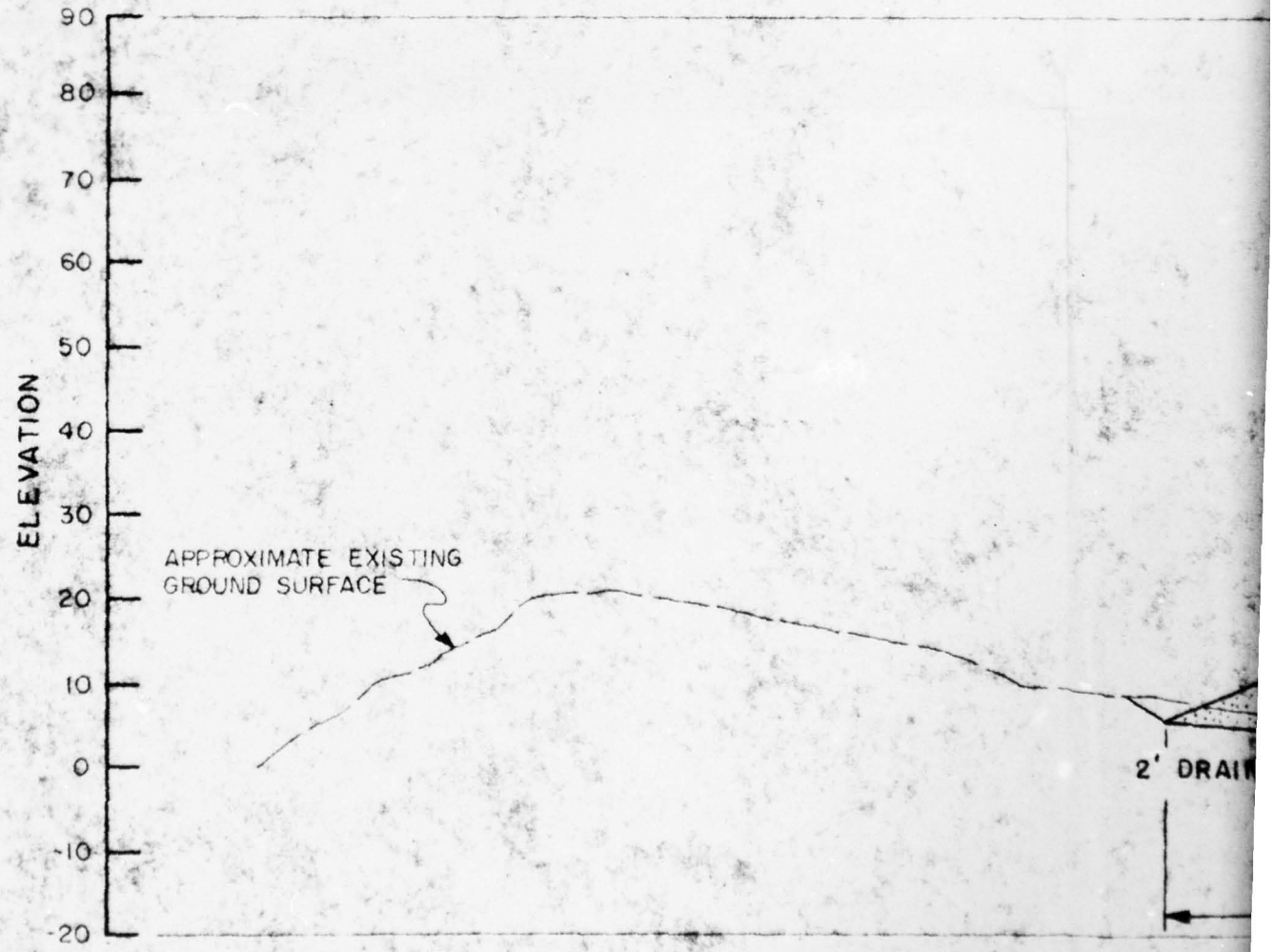
SCALE: 1" = 400'



E PLAN

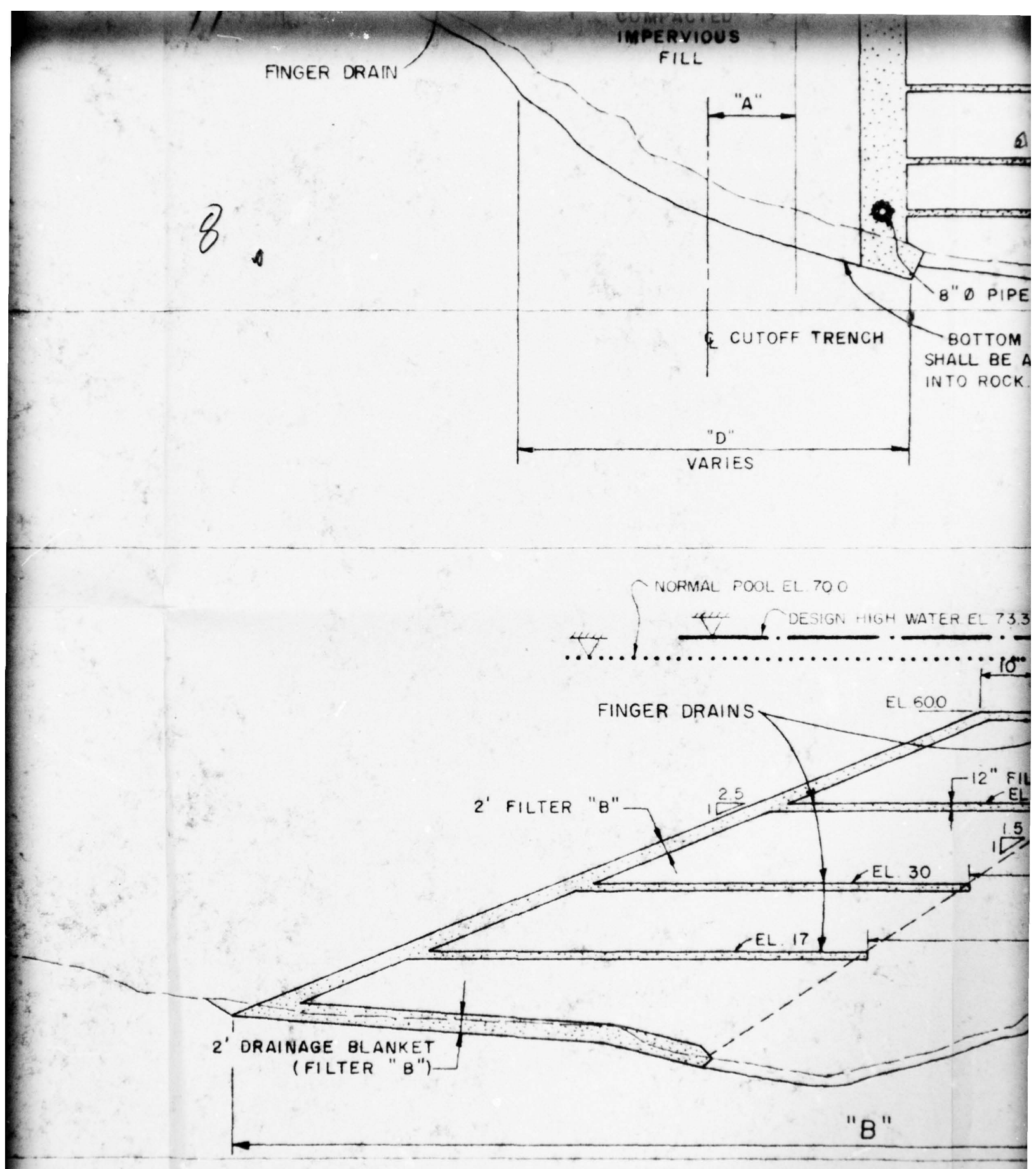
ETERMINED IN THE FIELD





NOTES:

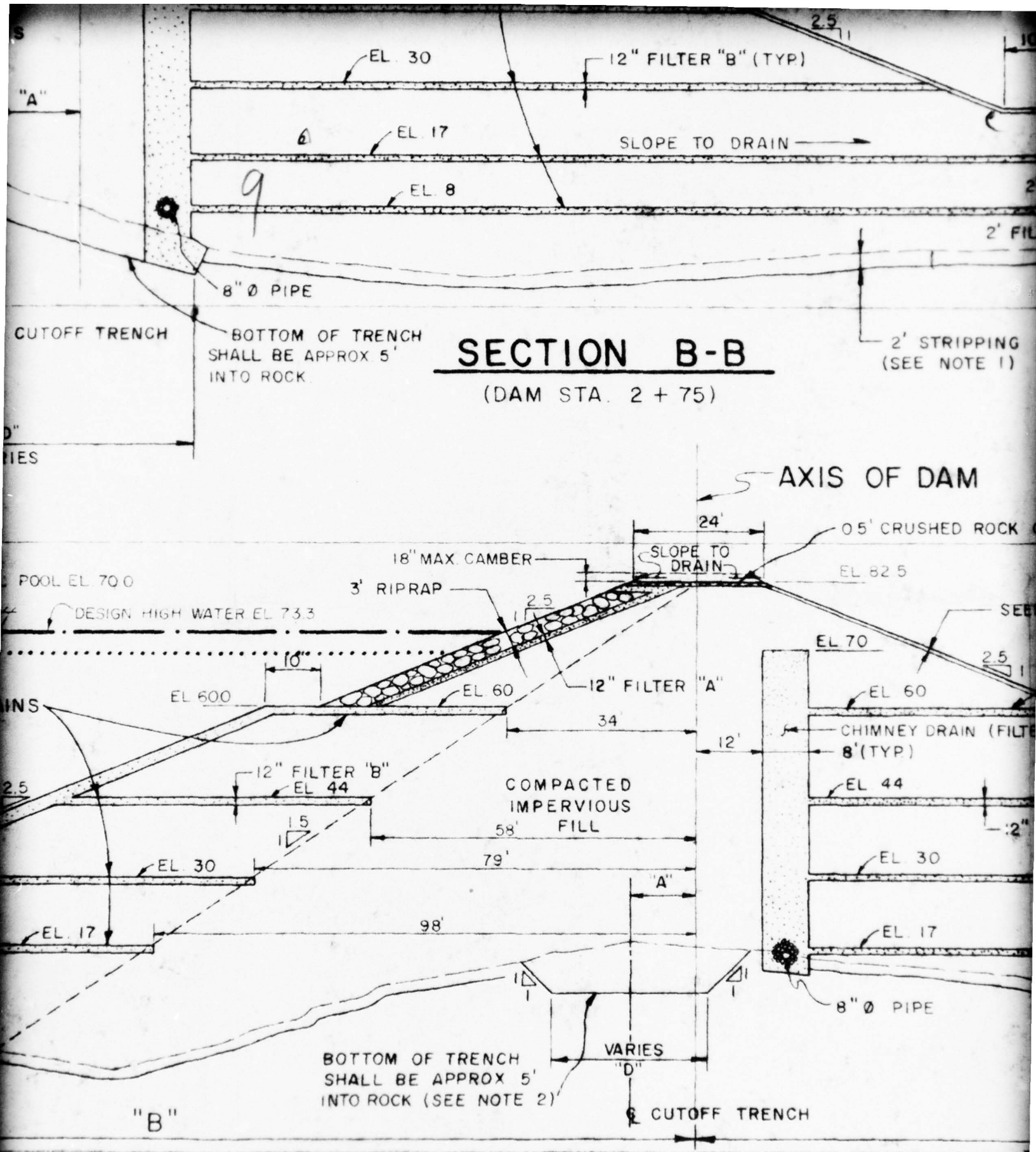
1. THE DESIGN STRIPPING DEPTH UNDER THE EMBANKMENT IS 2 FEET. ACTUAL DEPTH OF UNSUITABLE MATERIAL TO BE REMOVED WILL BE AS DIRECTED BY THE ENGINEER.
2. ACTUAL DEPTH OF CUTOFF TRENCH TO BE DETERMINED BY THE



ENT IS 2 FEET
OVED WILL BE AS

ED BY THE

TABLE

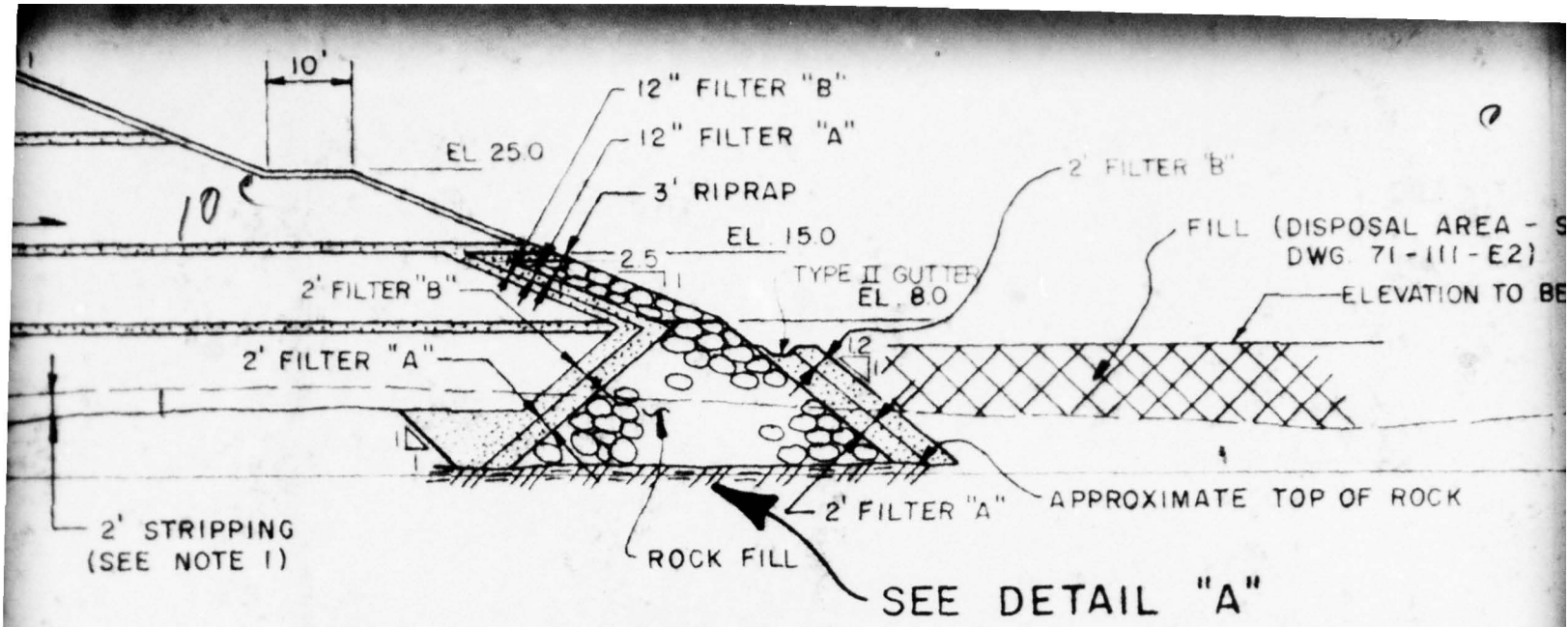


SECTION B-B

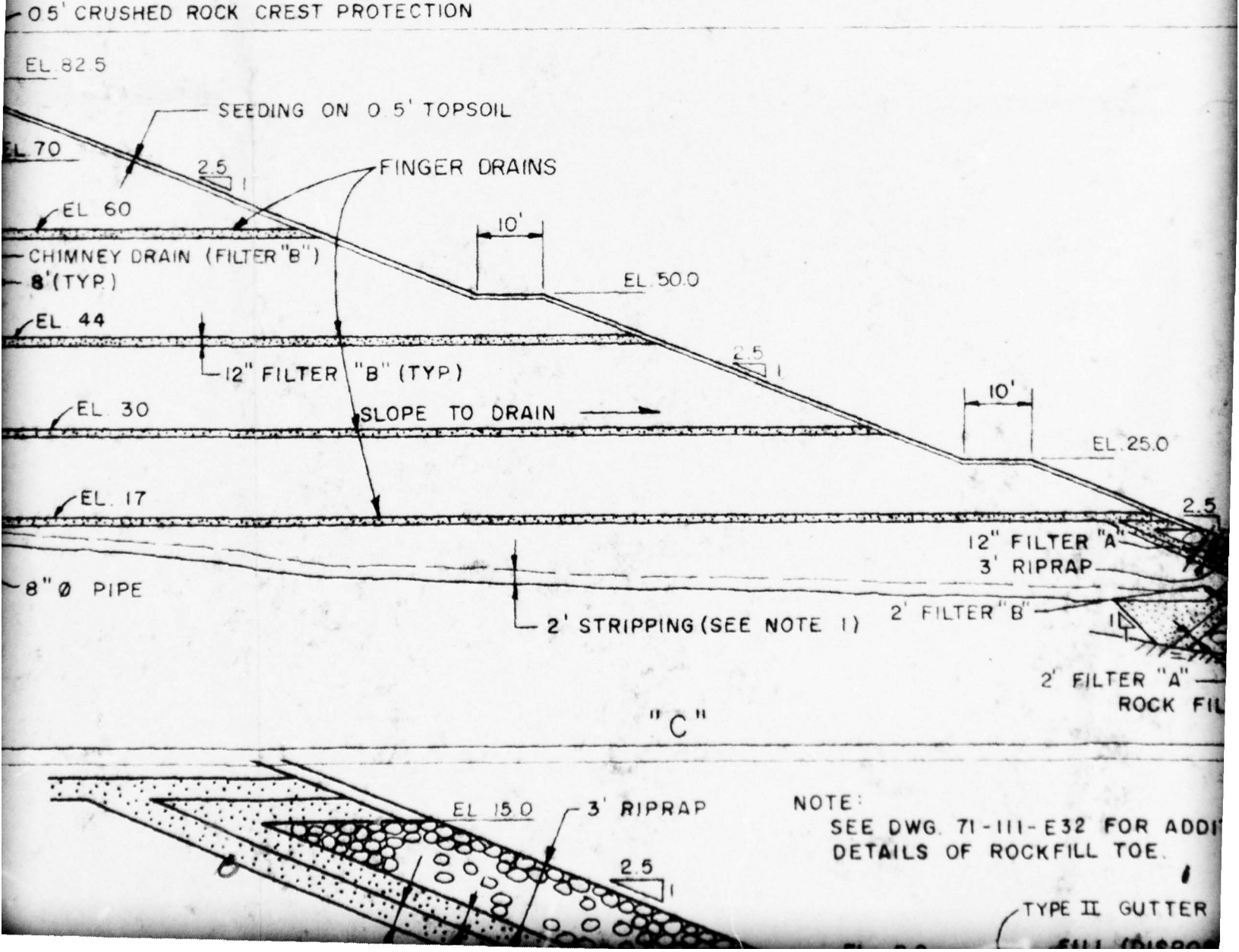
(DAM STA. 2 + 75)

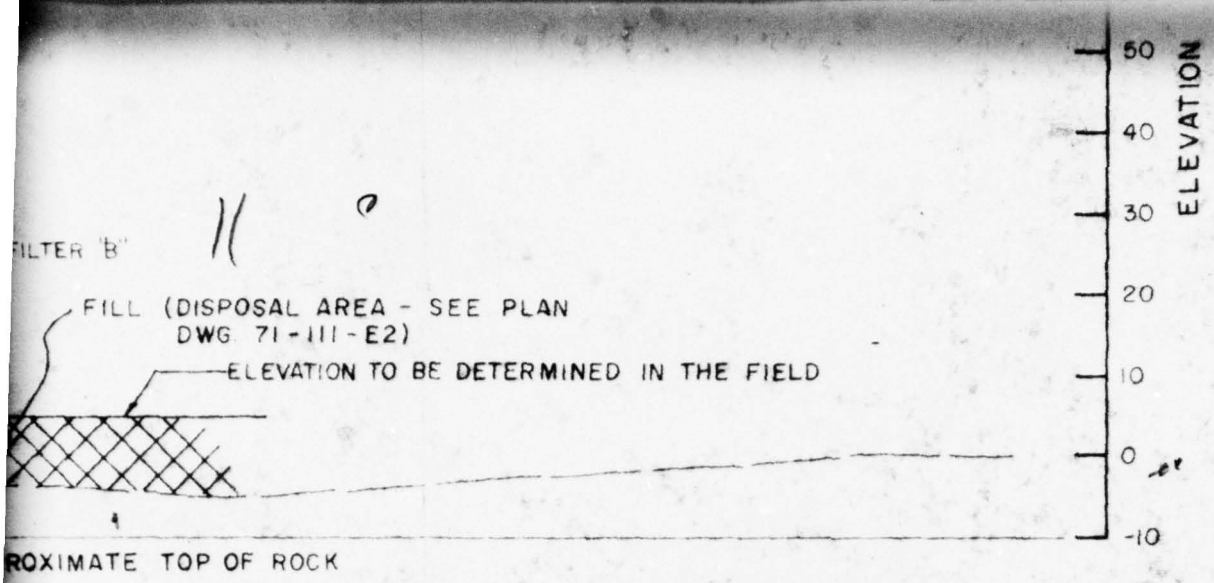
SECTION C-C

(DAM STA. 4 + 18)


10'
12" FILTER "B"
12" FILTER "A"
3' RIPRAP
EL 25.0
EL 15.0
2.5
2' FILTER "B"
TYPE II GUTTER
EL. 8.0
2' FILTER "B"
FILL (DISPOSAL AREA - S
DWG. 71-111-E2)
ELEVATION TO BE
2' FILTER "A"
2' STRIPPING
(SEE NOTE 1)
ROCK FILL
2' FILTER "A"
APPROXIMATE TOP OF ROCK
SEE DETAIL "A"

S OF DAM

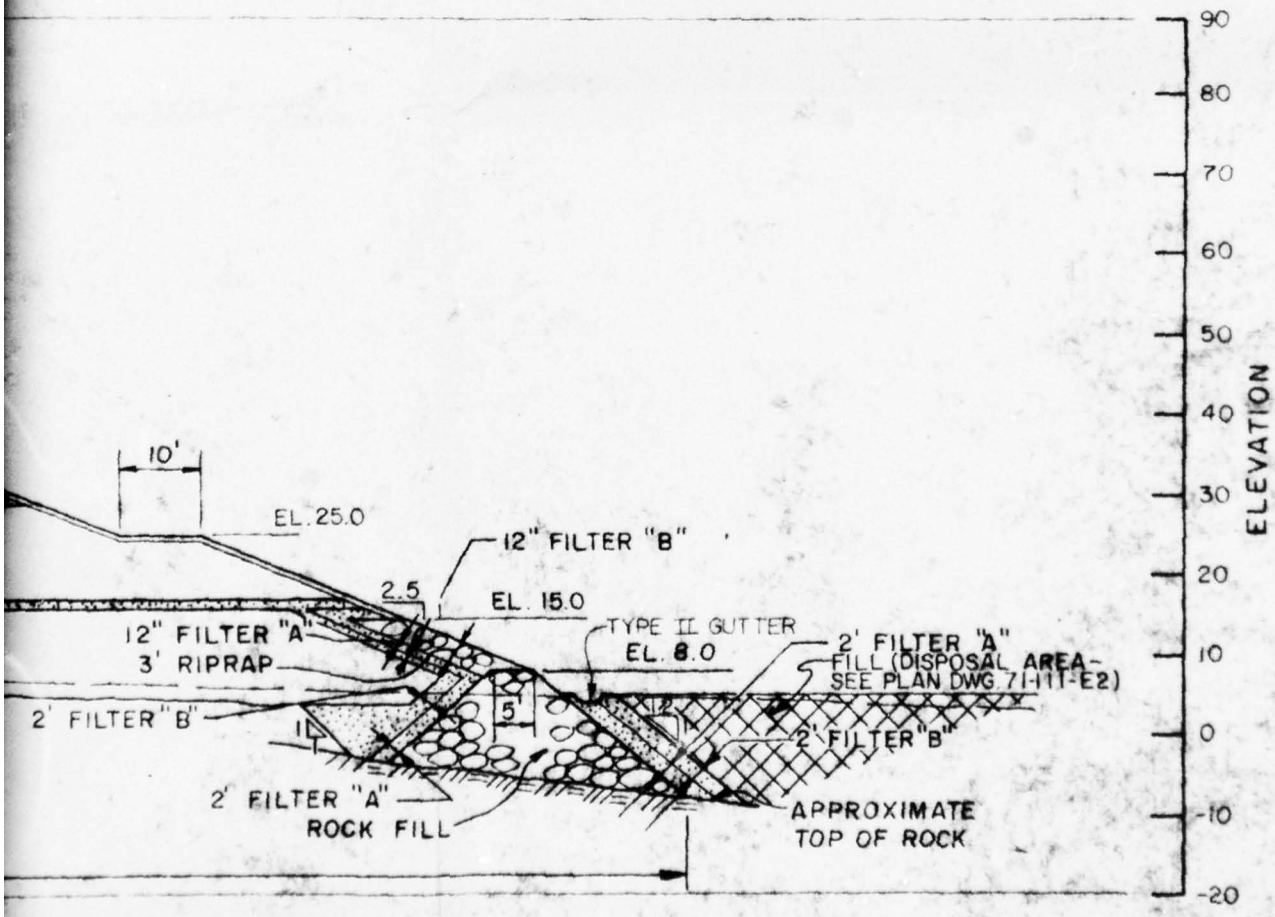

0.5' CRUSHED ROCK CREST PROTECTION
EL. 82.5
SEEDING ON 0.5' TOPSOIL
EL. 70
2.5
FINGER DRAINS
EL. 60
10'
CHIMNEY DRAIN (FILTER "B")
8' (TYP.)
EL. 50.0
EL. 44
12" FILTER "B" (TYP)
2.5
EL. 30
SLOPE TO DRAIN
10'
EL. 25.0
EL. 17
2.5
12" FILTER "A"
3' RIPRAP
8" Ø PIPE
2' STRIPPING (SEE NOTE 1)
2' FILTER "B"
2' FILTER "A"
ROCK FIL
"C"
EL 15.0
3' RIPRAP
2.5
NOTE:
SEE DWG. 71-111-E32 FOR ADDI
DETAILS OF ROCKFILL TOE.
TYPE II GUTTER



FILTER 'B'

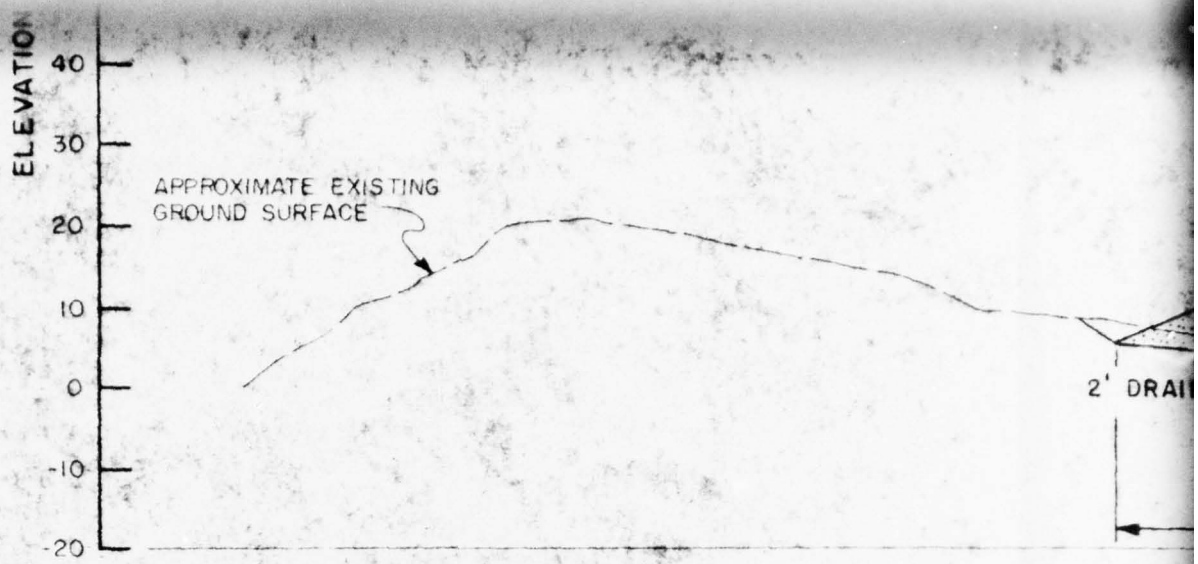
ROXIMATE TOP OF ROCK

IL "A"



DWG. 71-111-E32 FOR ADDITIONAL
ILS OF ROCKFILL TOE.

SLEEPY HOLLOW LAKE, INC.



NOTES:

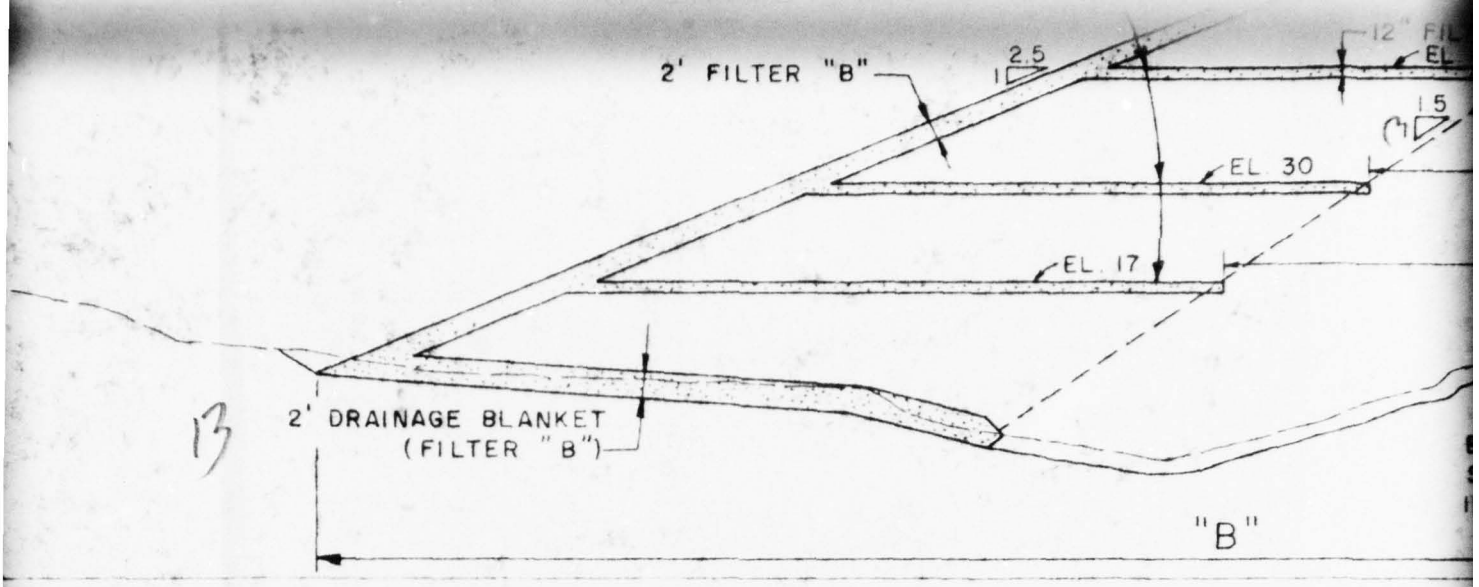
1. THE DESIGN STRIPPING DEPTH UNDER THE EMBANKMENT IS 2 FEET. ACTUAL DEPTH OF UNSUITABLE MATERIAL TO BE REMOVED WILL BE AS DIRECTED BY THE ENGINEER.
2. ACTUAL DEPTH OF CUTOFF TRENCH TO BE DETERMINED BY THE ENGINEER AT TIME OF CONSTRUCTION.
3. ELEVATIONS SHOWN FOR FILTER "B" DRAINS IN DOWNSTREAM SLOPE ARE APPROXIMATE AND MAY BE RELOCATED AS DIRECTED BY THE ENGINEER.
4. FOR ROCK FILL, FILTER TYPES A, B AND C GRADATION, SEE SPECIFICATIONS.
5. FOR DETAIL OF DRAIN PIPE IN CHIMNEY DRAIN, SEE DWG. 71-111-E32

REVISION	DESCRIPTION

REFERENCE DRAWINGS

REF.
* TOE OF FIELD
** TOE OF

© 1971 PENNSYLVANIA G. S. SMITH CO., POHL, PA.



13

ENT IS 2 FEET
OVED WILL BE AS

IED BY THE

REAM SLOPE
TED BY THE

, SEE

G. 71-111-E32.

TABLE A

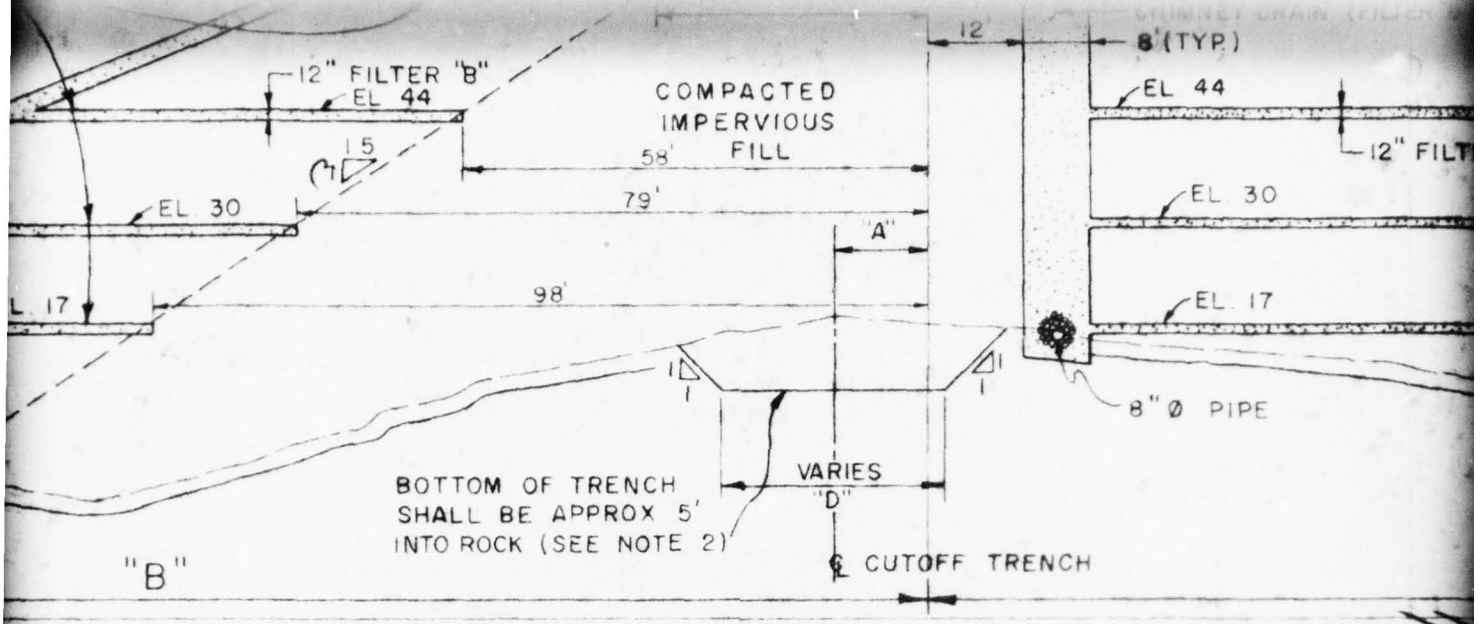
STATION	A	B	C *	D	STATION
0 + 00	0.0	48.3	13.3	20.0	4 + 00
0 + 50	0.0	83.3	23.3	30.0	4 + 50
1 + 00	0.0	73.3	40.8	40.0	5 + 00
1 + 50	5.0	73.3	123.3	50.0	5 + 50
2 + 00	10.0	43.3	237.5	60.0	6 + 00
2 + 50	14.0	68.3	237.5	68.0	6 + 50
3 + 00	23.0	113.3	237.5	50.0	7 + 00
3 + 50	20.0	178.3	237.5	45.0	7 + 50

REF.

* TOE OF ROCKFILL @ EL.-8.0 FOR DESIGN PURPOSES. WILL VARY DUE TO FIELD CONDITIONS.

** TOE OF INTERFACE, EAST ABUTMENT, DOES NOT INCLUDE STABILIZATION FILL.

DESCRIPTION



SECTION C-C

(DAM STA 4+18)

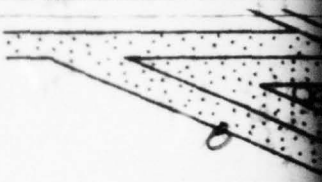
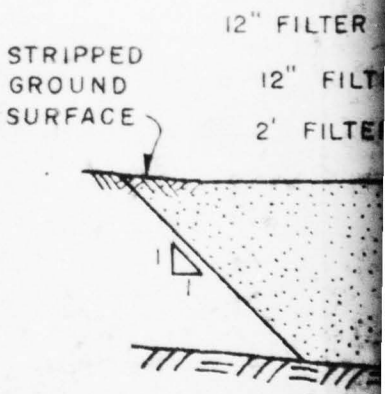


TABLE A

*	D	STATION	A	B	C *	D
	20.0	4 + 00	17.0	198.3	237.5	35.0
	30.0	4 + 50	10.0	220.8	237.5	30.0
	40.0	5 + 00	4.0	238.3	220.7 **	28.0
	50.0	5 + 50	4.0	270	180.8 **	28.0
	60.0	6 + 00	4.0	290	143.3 **	28.0
	68.0	6 + 50	4.0	260	113.3 **	28.0
	50.0	7 + 00	2.0	28.3	58.3 **	24.0
	45.0	7 + 50	0.0	—	13.3 **	20.0



Y DUE TO

LIZATION FILL

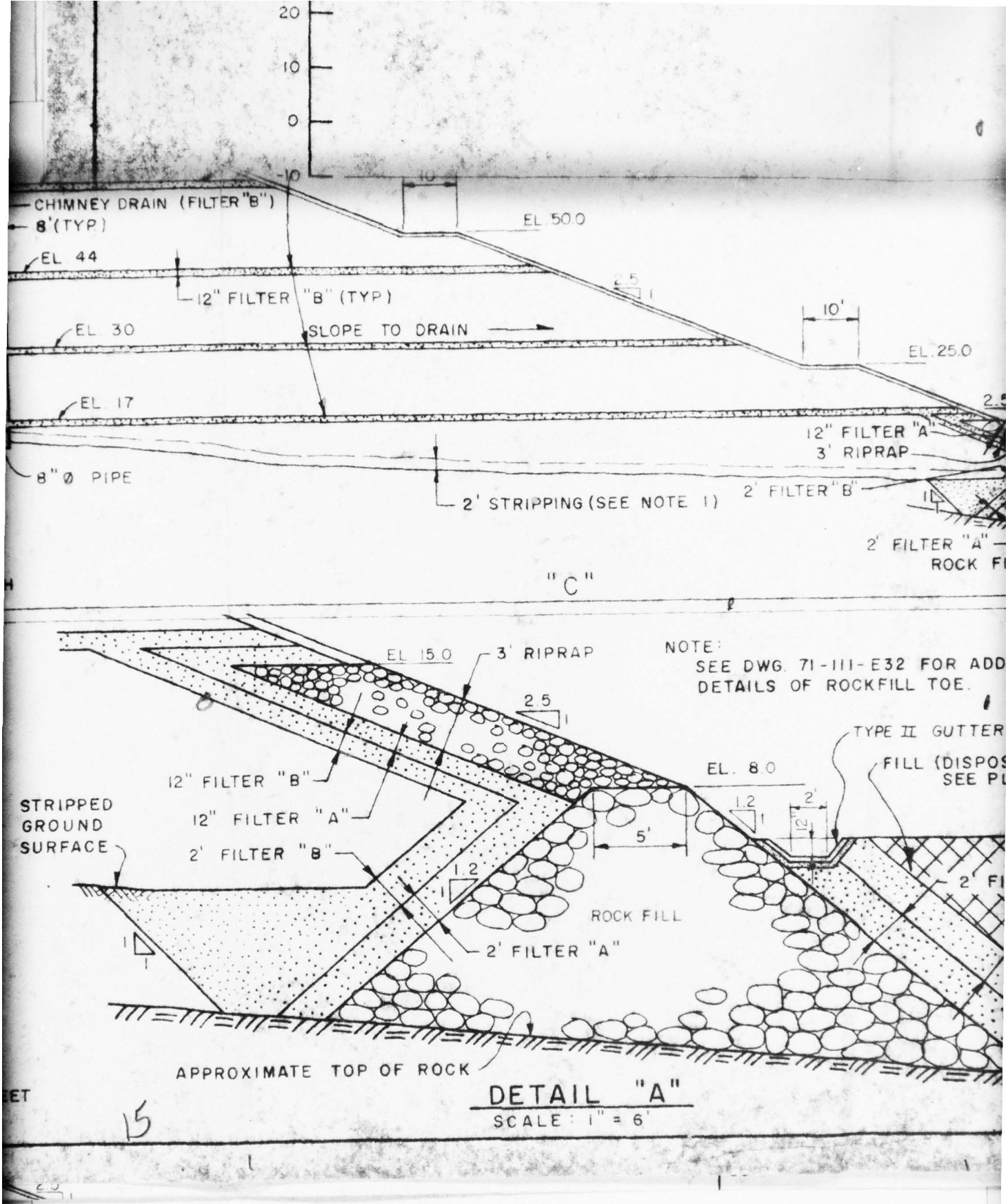
14

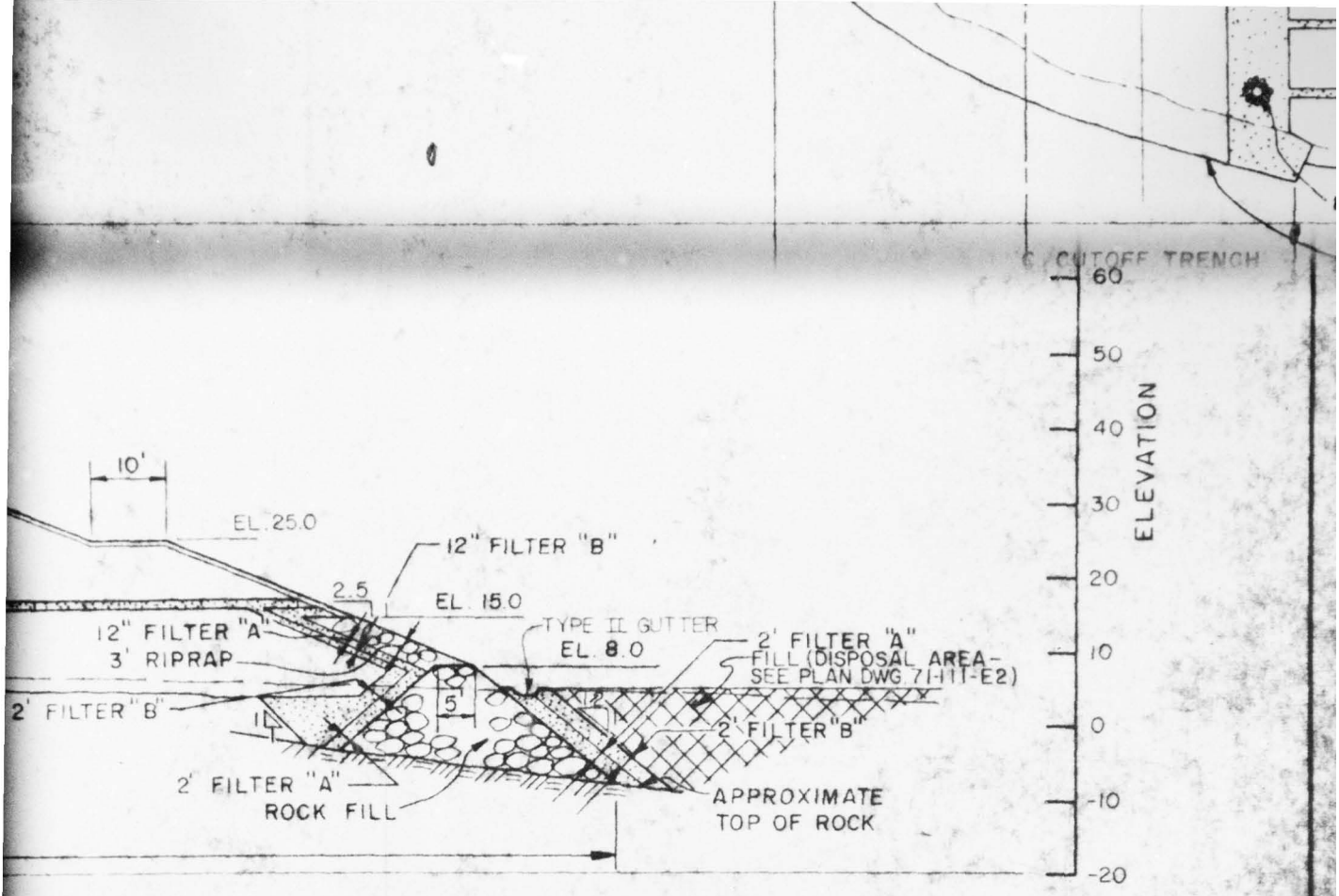
SCALE

20 0 20 40 FEET

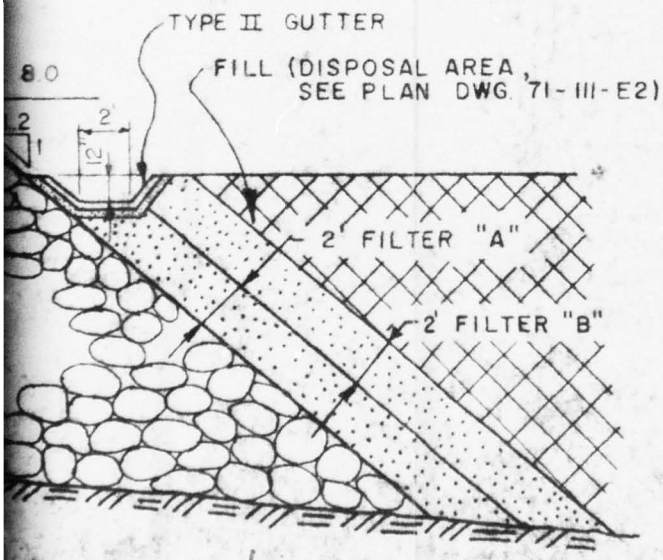
APPROXIM

8" Ø PIPE


20
10
0
-10
10
CHIMNEY DRAIN (FILTER "B")
8' (TYP)
EL 50.0
EL 44
12" FILTER "B" (TYP)
2.5
1
10'
EL 30
SLOPE TO DRAIN
EL. 25.0
EL 17
12" FILTER "A"
3' RIPRAP
8" Ø PIPE
2' FILTER "B"
2' STRIPPING (SEE NOTE 1)
2' FILTER "A"
ROCK FI
"C"
EL 15.0
3' RIPRAP
NOTE:
SEE DWG. 71-111-E32 FOR ADD
DETAILS OF ROCKFILL TOE.
2.5
1
TYPE II GUTTER
EL. 8.0
FILL (DISPOS
SEE PL
12" FILTER "B"
12" FILTER "A"
STRIPPED
GROUND
SURFACE
2' FILTER "B"
1.2
1
2'
12"
5'
1.2
1
ROCK FILL
2' FI
1
1
2' FILTER "A"
APPROXIMATE TOP OF ROCK
DETAIL "A"
SCALE: 1" = 6'



DWG. 71-111-E32 FOR ADDITIONAL
ILS OF ROCKFILL TOE.



"DO NOT SCALE THIS DRAWING"

16

SLEEPY HOLLOW LAKE, INC.

GREENE COUNTY, N.Y.

E. D'APPOLONIA CONSULTING ENGINEERS, INC.

10 DUFF ROAD PITTSBURGH, PA. 15235	MR 522B CHESTERTON, IND. 46304

SLEEPY HOLLOW LAKE

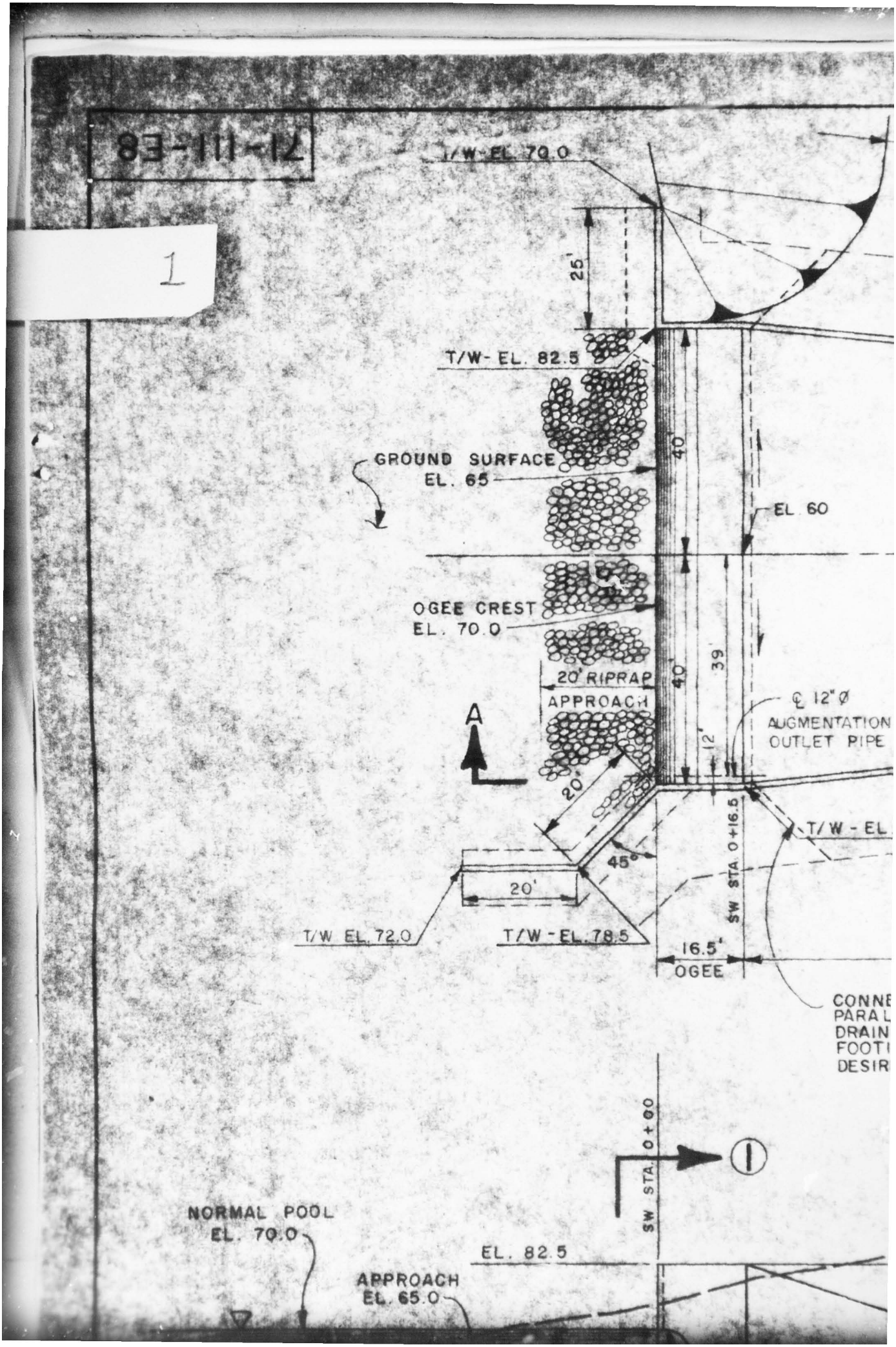
GREENE COUNTY, N.Y.

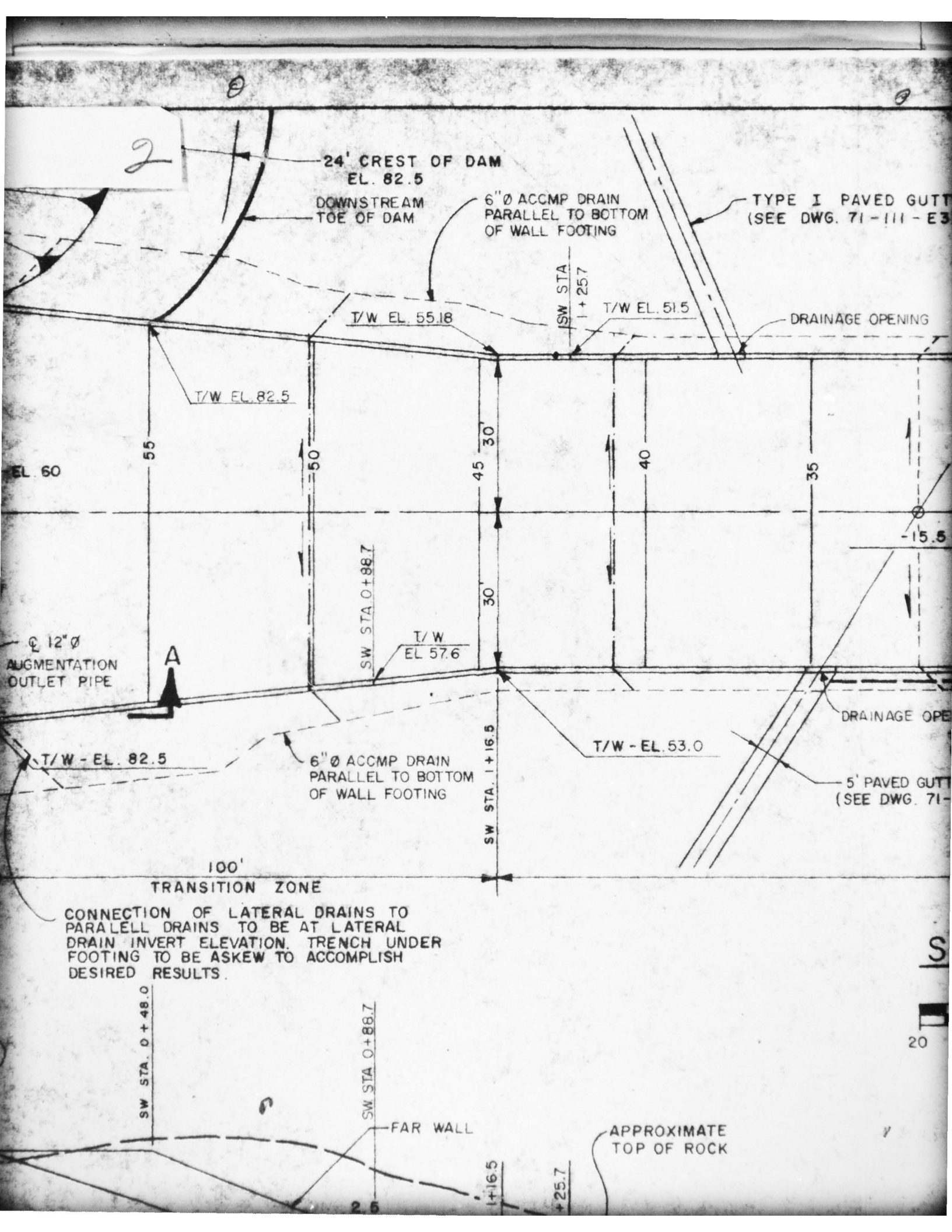
TRANSVERSE SECTION @ DAM
STATION 1+55, 2+75 AND 4+18

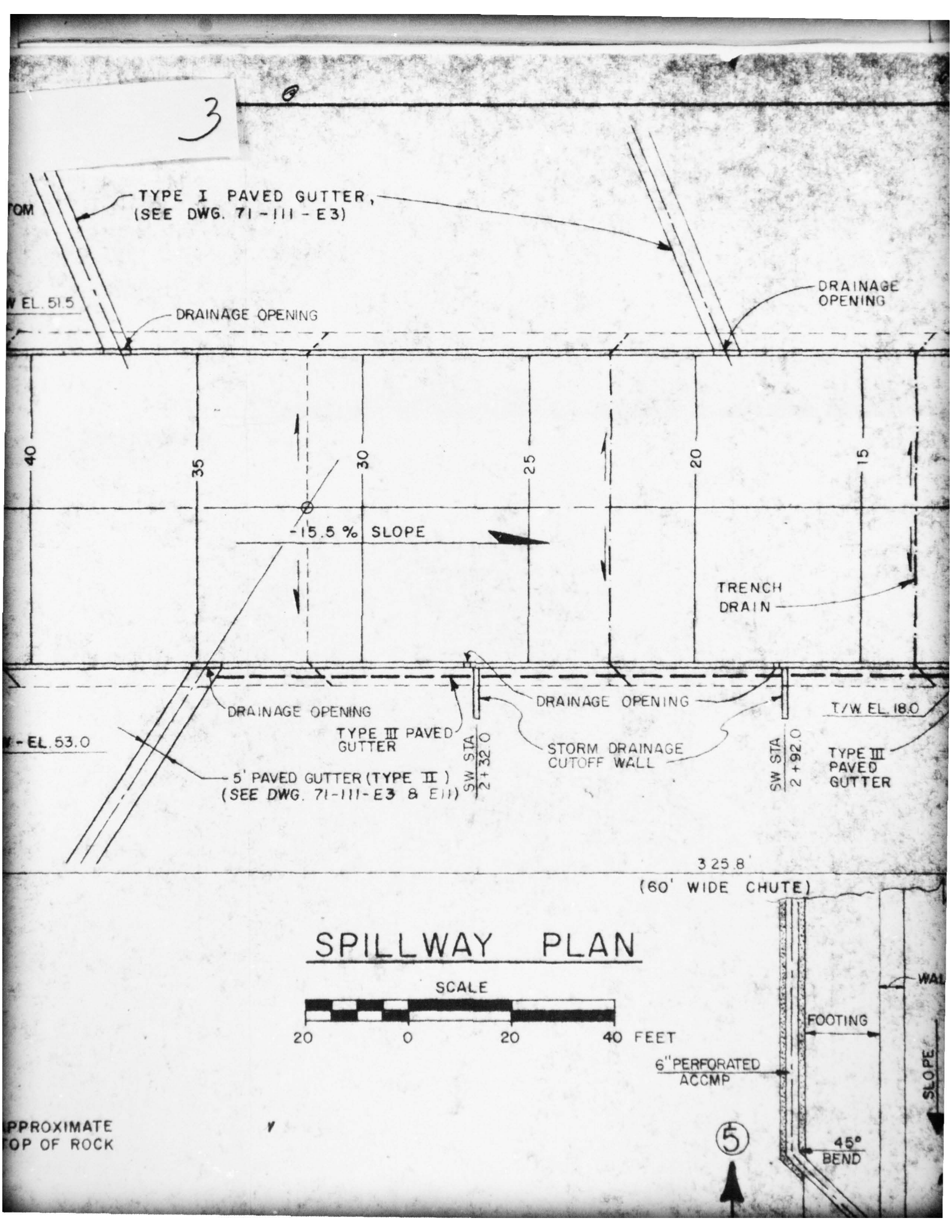
DRAWN BY	RGN	12-8-71	DRAWING NO.
CHECKED BY	WHB WB	12-29-71	71-111-E5

83-111-12

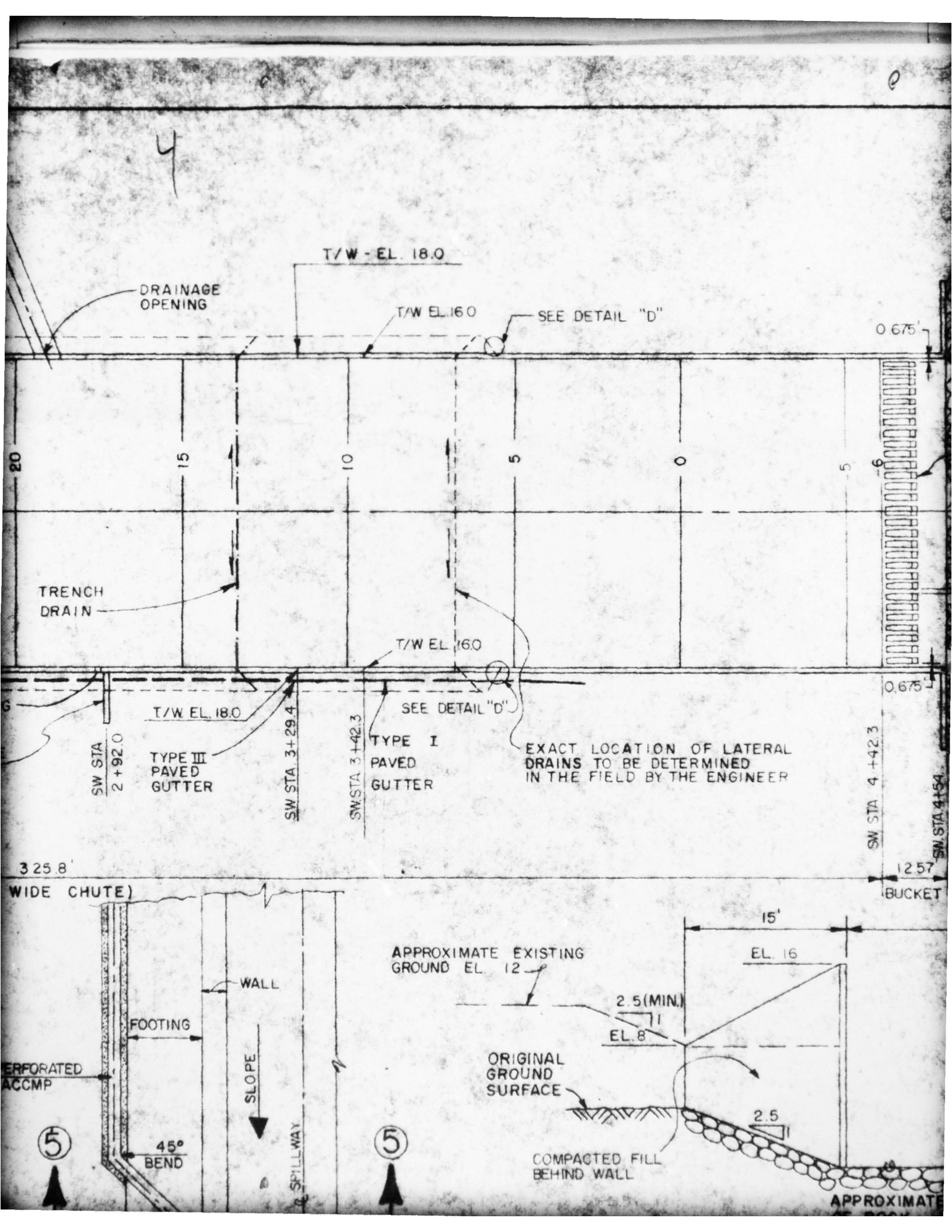
1

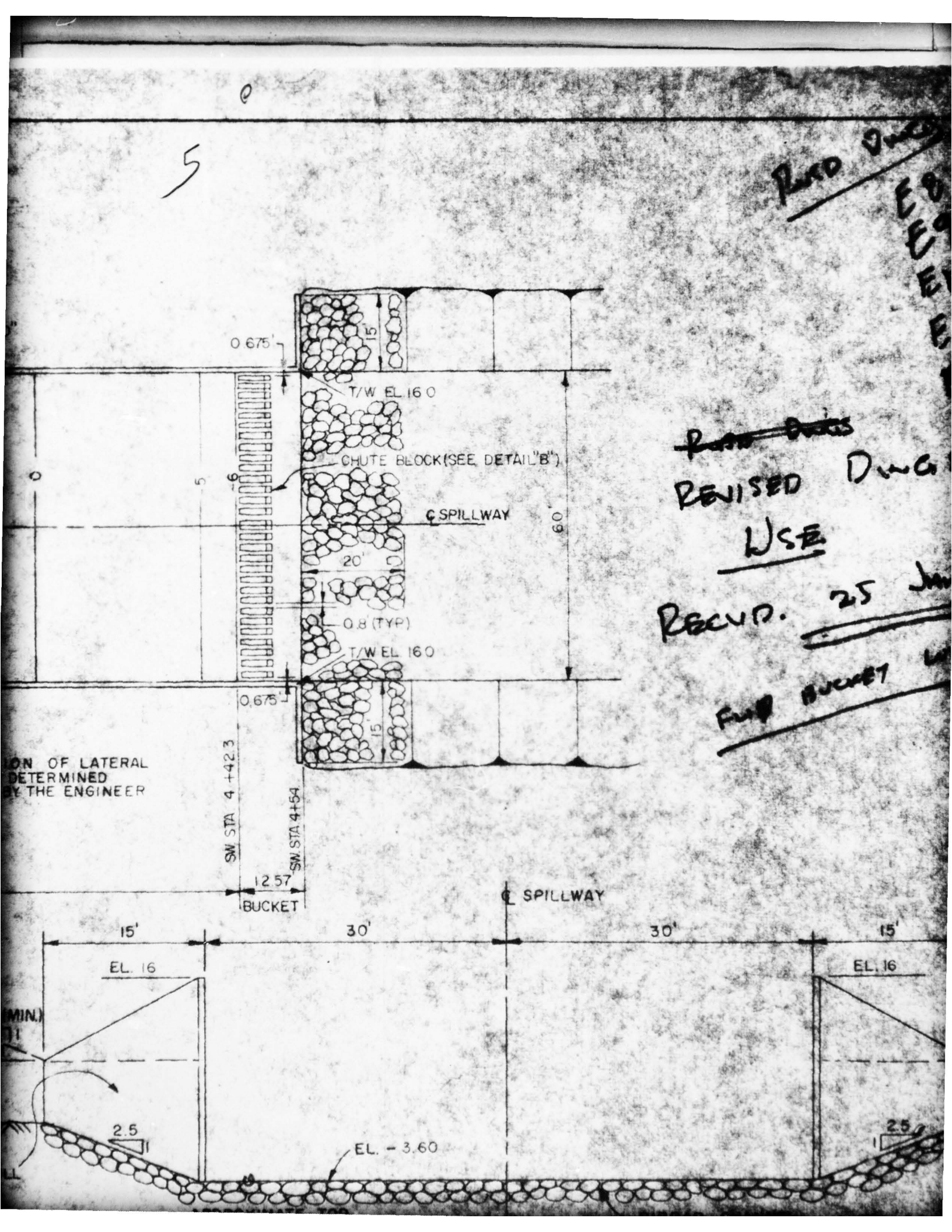

T/W-EL. 70.0
25'
T/W-EL. 82.5
GROUND SURFACE
EL. 65
40'
EL. 60
OGEE CREST
EL. 70.0
20' RIPRAP
APPROACH
40'
39'
℄ 12"Ø
AUGMENTATION
OUTLET PIPE
A
12'
20'
T/W - EL
45°
20'
SW STA. 0+16.5
T/W EL. 72.0
T/W-EL. 78.5
16.5'
OGEE
CONNE
PARAL
DRAIN
FOOTI
DESIR
SW STA. 0+00
1
NORMAL POOL
EL. 70.0
EL. 82.5
APPROACH
EL. 65.0

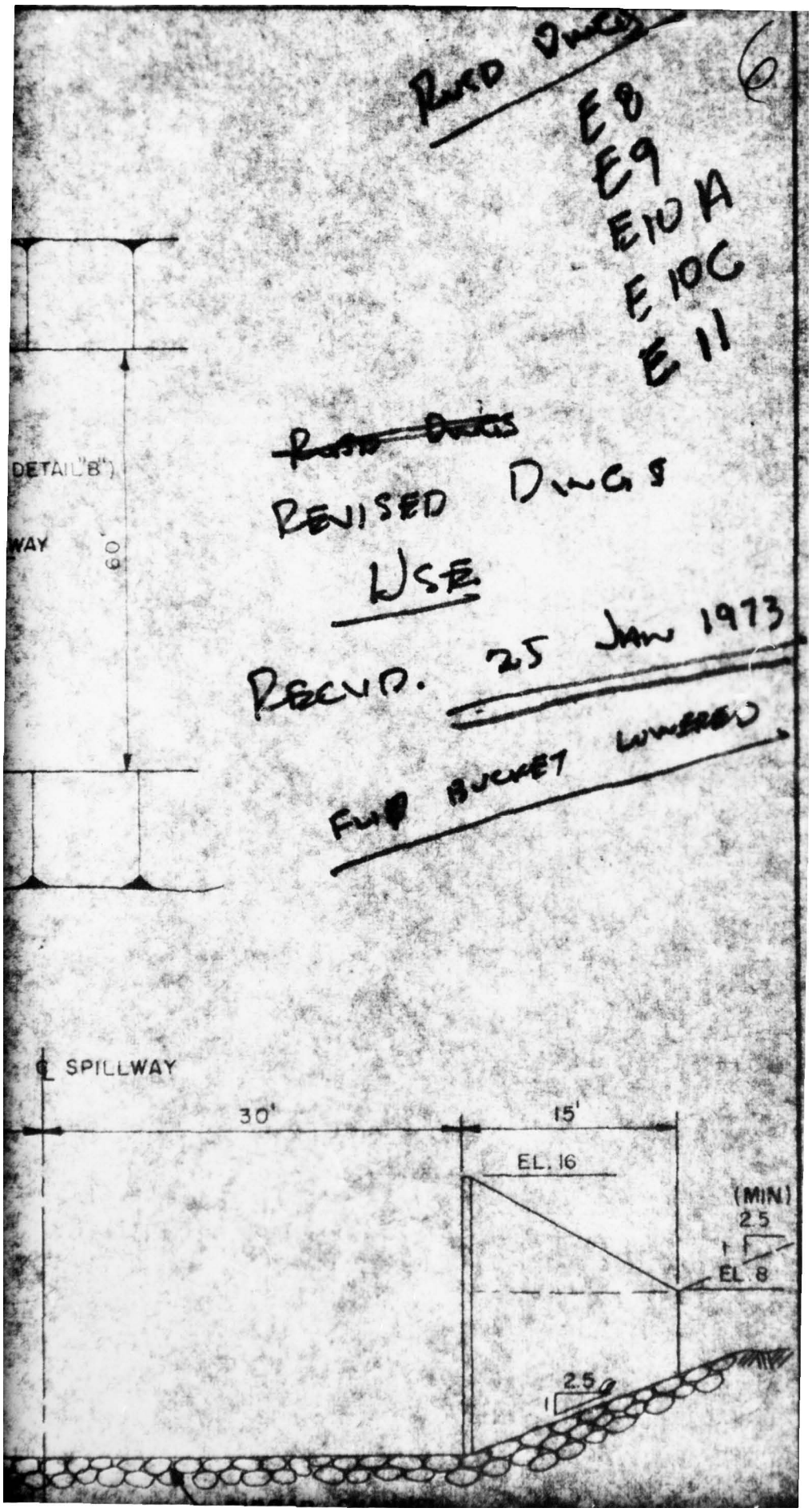

24' CREST OF DAM
EL. 82.5
DOWNSTREAM
TOE OF DAM
6"Ø ACCMP DRAIN
PARALLEL TO BOTTOM
OF WALL FOOTING
TYPE I PAVED GUTT
(SEE DWG. 71-111-E3
SW STA
1 + 25.7
T/W EL. 55.18
T/W EL. 51.5
DRAINAGE OPENING
T/W EL. 82.5
55
50
45
30'
40
35
EL. 60
15.5
SW STA 0+88.7
30'
℄ 12"Ø
AUGMENTATION
OUTLET PIPE
A
T/W
EL 57.6
DRAINAGE OPE
T/W - EL. 82.5
6"Ø ACCMP DRAIN
PARALLEL TO BOTTOM
OF WALL FOOTING
SW STA. 1 + 16.5
T/W - EL. 53.0
5' PAVED GUTT
(SEE DWG. 71-
100'
TRANSITION ZONE
CONNECTION OF LATERAL DRAINS TO
PARALELL DRAINS TO BE AT LATERAL
DRAIN INVERT ELEVATION. TRENCH UNDER
FOOTING TO BE ASKEW TO ACCOMPLISH
DESIRED RESULTS.
SW STA. 0 + 48.0
SW STA 0+88.7
FAR WALL
APPROXIMATE
TOP OF ROCK
1+16.5
+25.7
2.5

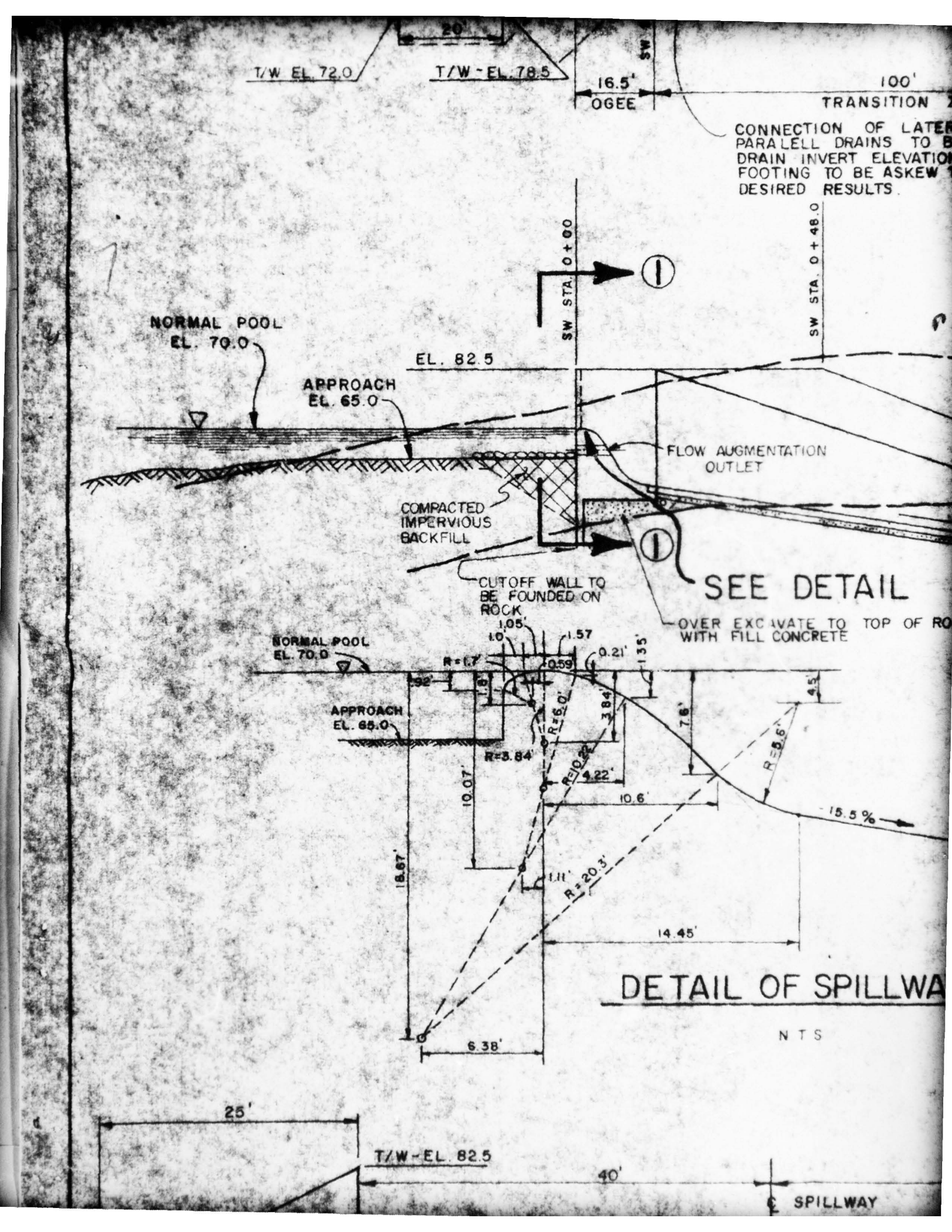


SPILLWAY PLAN


T/W - EL. 18.0
DRAINAGE OPENING
T/W EL. 16.0
SEE DETAIL "D"
0.675'
20
15
10
5
0
5
6
TRENCH DRAIN
T/W EL. 16.0
SEE DETAIL "D"
0.675'
T/W EL. 18.0
SW STA 2+92.0
TYPE III PAVED GUTTER
SW STA 3+29.4
SW STA 3+42.3
TYPE I PAVED GUTTER
EXACT LOCATION OF LATERAL DRAINS TO BE DETERMINED IN THE FIELD BY THE ENGINEER
SW STA 4+42.3
SW STA 4+54
325.8'
125.7'
BUCKET
WIDE CHUTE)
WALL
FOOTING
SLOPE
ERFORATED ACCMP
45° BEND
SPILLWAY
5
5
APPROXIMATE EXISTING GROUND EL. 12
15'
EL. 16
2.5(MIN.) 1
EL. 8
ORIGINAL GROUND SURFACE
2.5
1
COMPACTED FILL BEHIND WALL
APPROXIMATE

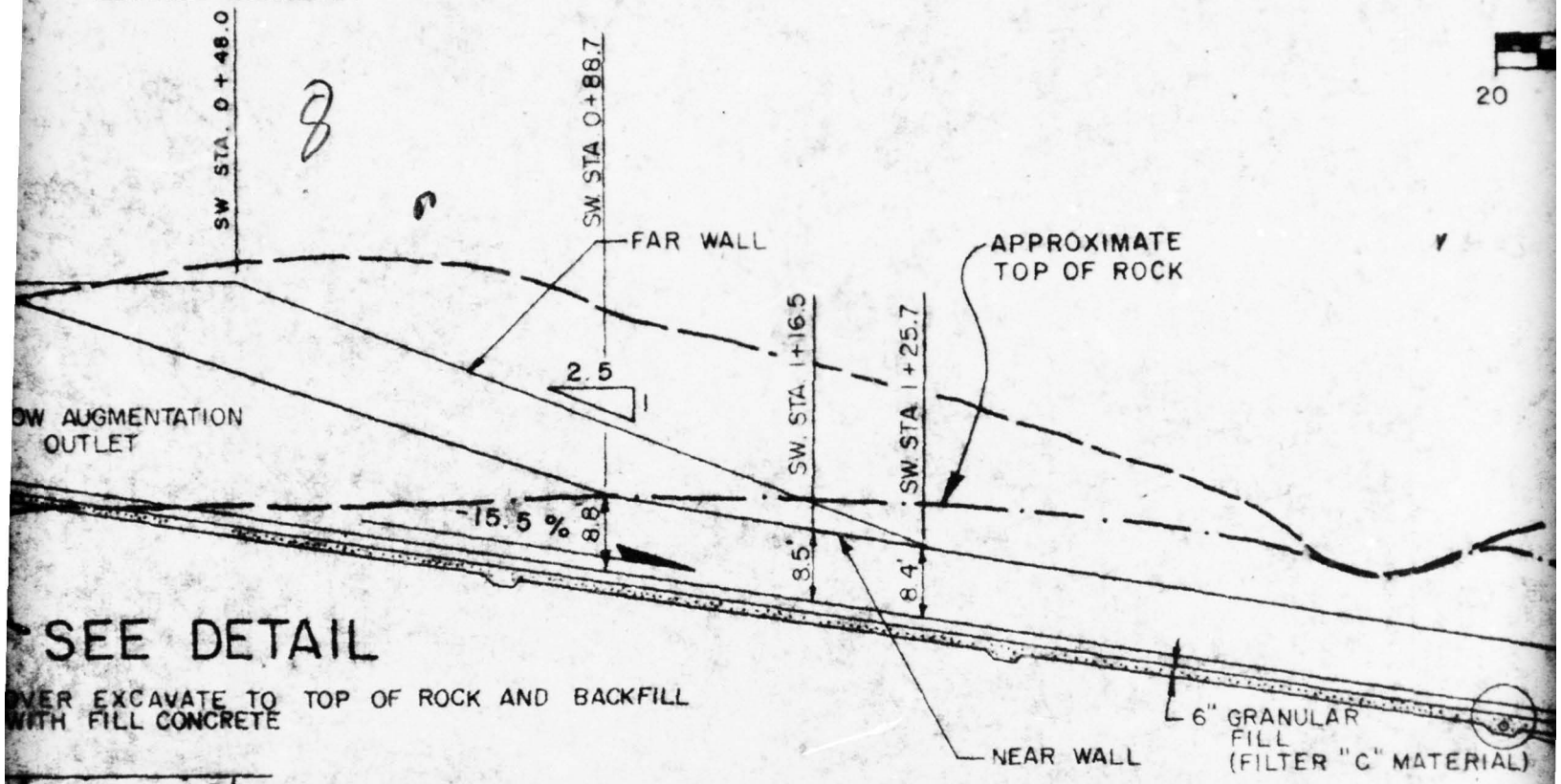

0.675'
15'
T/W EL. 16.0
CHUTE BLOCK (SEE DETAIL "B")
℄ SPILLWAY
60'
20'
0.8' (TYP)
T/W EL. 16.0
0.675'
15'
SW STA 4+42.3
SW STA 4+54
12.57'
BUCKET
℄ SPILLWAY
15'
30'
30'
15'
EL. 16
EL. 16
2.5
1
2.5
1
EL. - 3.60

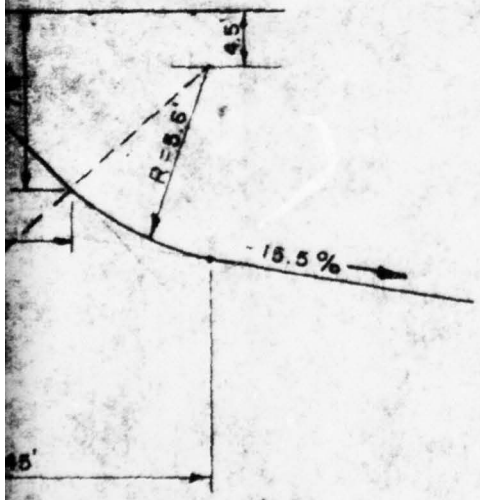

Road Dwgs
E8
E9
E10A
E10C
E11
6
Revised Dwgs
USE
Recvd. 25 JAN 1973
Flip Bucket Lowered
DETAIL "B"
WAY
60'
℄ SPILLWAY
30'
15'
EL. 16
(MIN)
2.5
1
EL. 8
2.5
1


20'
T/W EL. 72.0
T/W - EL. 78.5
16.5'
OGEE
100'
TRANSITION
CONNECTION OF LATER
PARALELL DRAINS TO B
DRAIN INVERT ELEVATIO
FOOTING TO BE ASKEW
DESIRED RESULTS.
SW STA. 0+00
SW STA. 0+48.0
NORMAL POOL
EL. 70.0
EL. 82.5
APPROACH
EL. 65.0
FLOW AUGMENTATION
OUTLET
COMPACTED
IMPERVIOUS
BACKFILL
CUTOFF WALL TO
BE FOUNDED ON
ROCK
SEE DETAIL
OVER EXCAVATE TO TOP OF RO
WITH FILL CONCRETE
NORMAL POOL
EL. 70.0
APPROACH
EL. 65.0
1.05'
1.0'
1.57
0.21'
0.59
R=1.7'
1.35'
4.5'
7.6'
3.84'
R=5.0'
R=3.84'
R=0.22'
4.22'
10.07'
10.6'
R=5.6'
15.5%
18.67'
1.11'
R=20.3'
14.45'
6.38'
DETAIL OF SPILLWA
N T S
25'
T/W - EL. 82.5
40'
℄ SPILLWAY

100'
TRANSITION ZONE

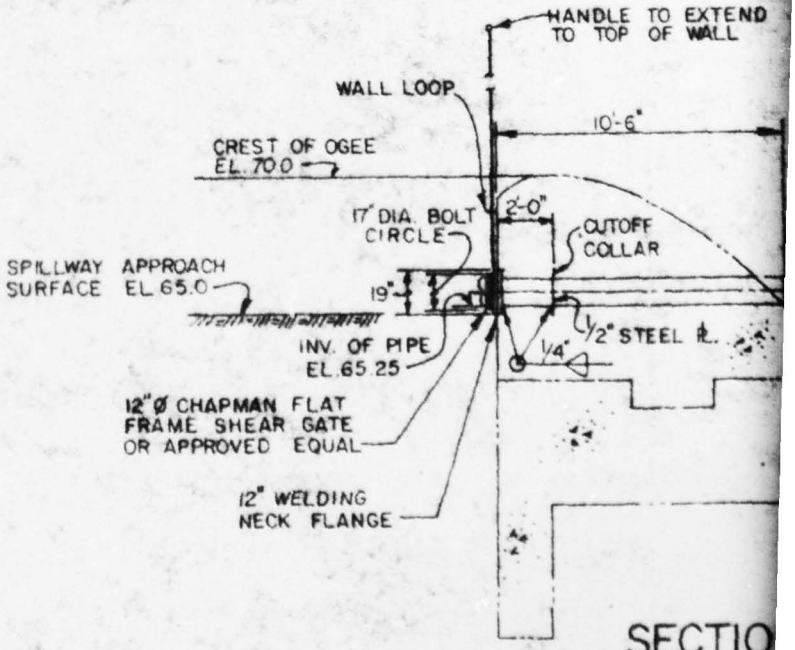
CONNECTION OF LATERAL DRAINS TO PARALELL DRAINS TO BE AT LATERAL DRAIN INVERT ELEVATION. TRENCH UNDER FOOTING TO BE ASKEW TO ACCOMPLISH DESIRED RESULTS.





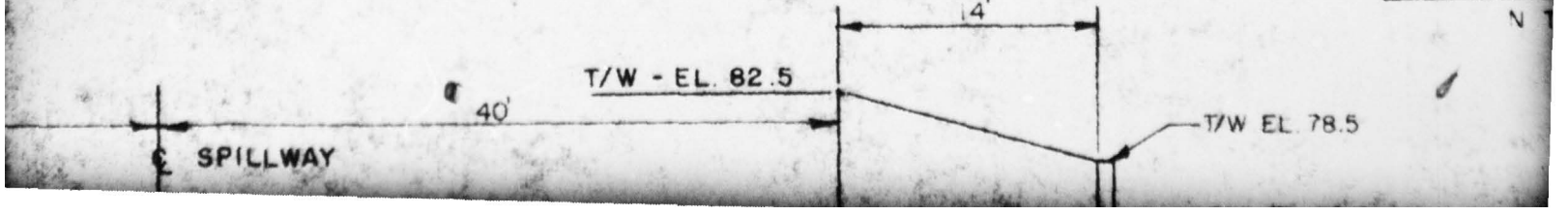
TAIL OF SPILLWAY OGEE

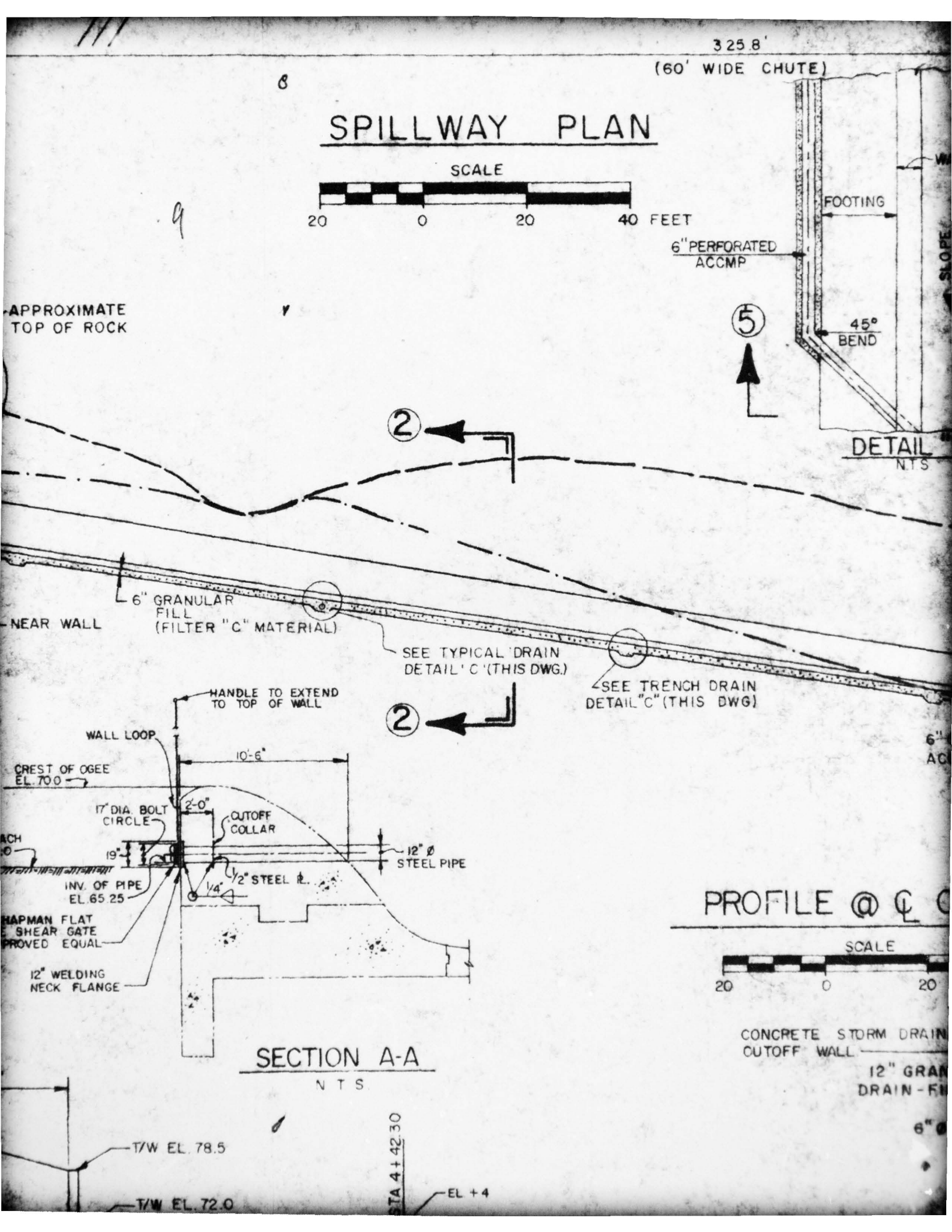
N T S

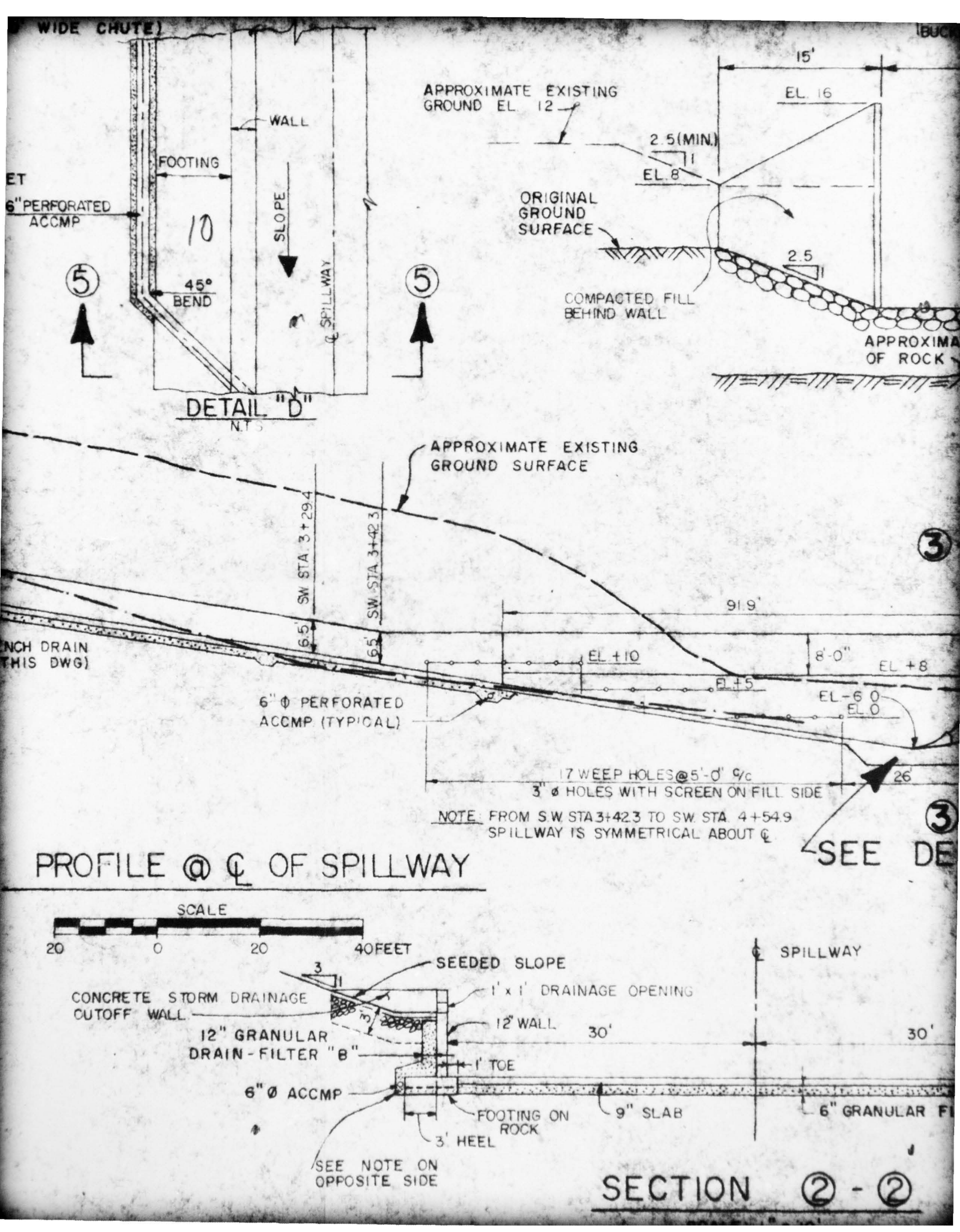


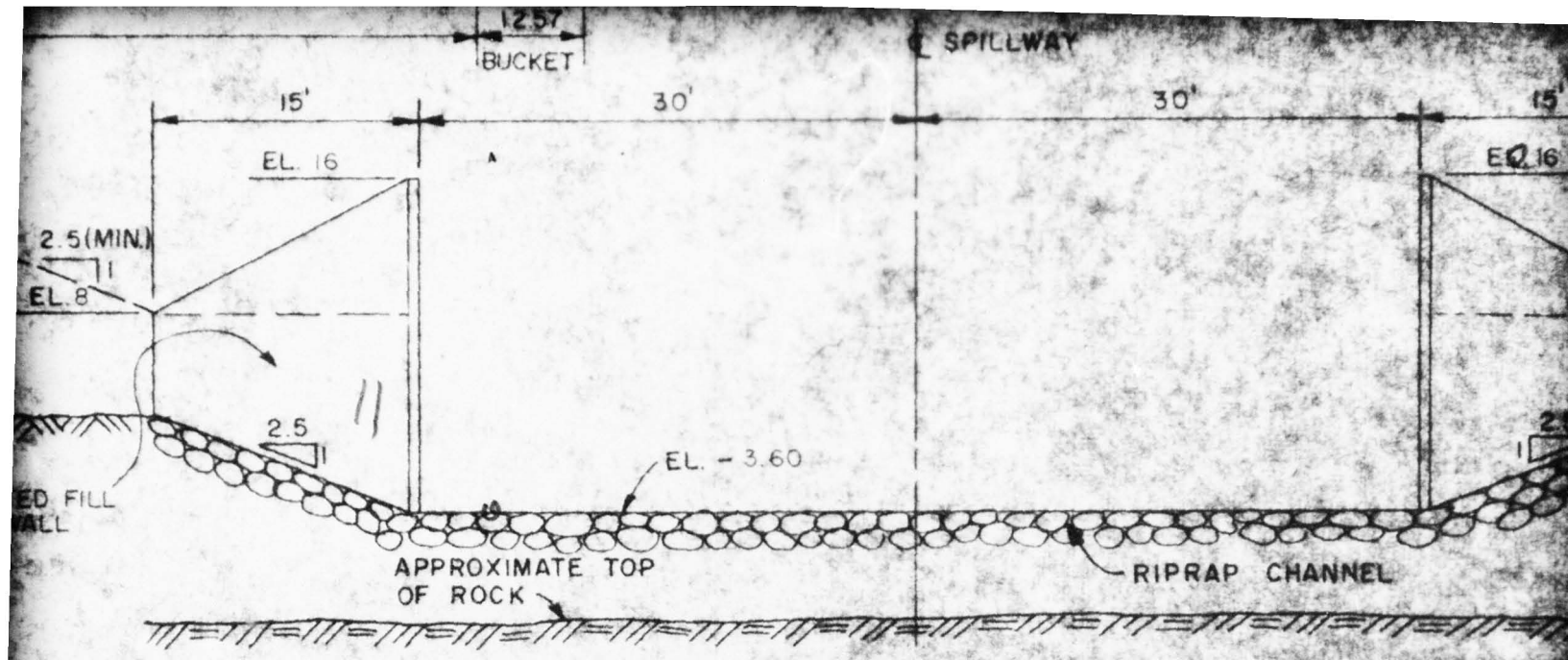
SECTIO

N



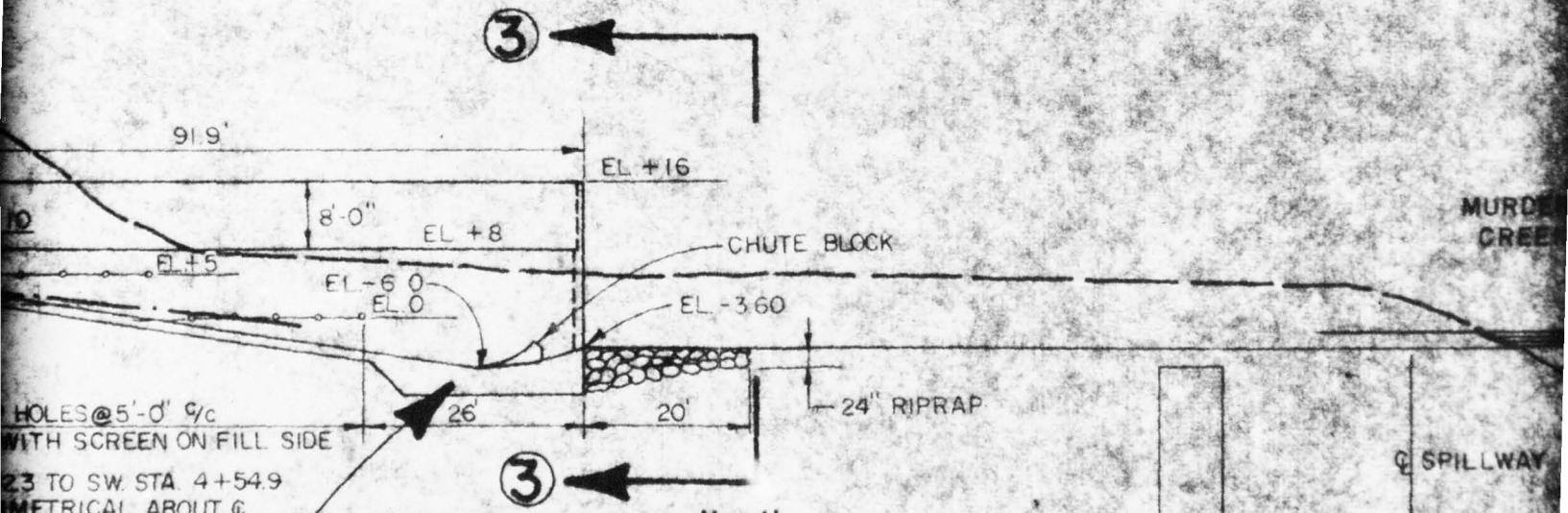

325.8'
(60' WIDE CHUTE)
SPILLWAY PLAN
SCALE
20 0 20 40 FEET
FOOTING
6" PERFORATED ACCMP
45° BEND
DETAIL
N.T.S
APPROXIMATE TOP OF ROCK
6" GRANULAR FILL (FILTER "C" MATERIAL)
NEAR WALL
SEE TYPICAL DRAIN DETAIL 'C' (THIS DWG.)
SEE TRENCH DRAIN DETAIL "C" (THIS DWG)
HANDLE TO EXTEND TO TOP OF WALL
WALL LOOP
10'-6"
CREST OF OGEE EL. 700
17" DIA. BOLT CIRCLE
2'-0"
CUTOFF COLLAR
19"
12" Ø STEEL PIPE
1/2" STEEL PL.
1/4"
INV. OF PIPE EL. 65.25
APMAN FLAT SHEAR GATE PROVED EQUAL
12" WELDING NECK FLANGE
SECTION A-A
N T S
PROFILE @ ℄
SCALE
20 0 20
CONCRETE STORM DRAIN CUTOFF WALL
T/W EL. 78.5
T/W EL. 72.0
STA 4+42.30
EL +4

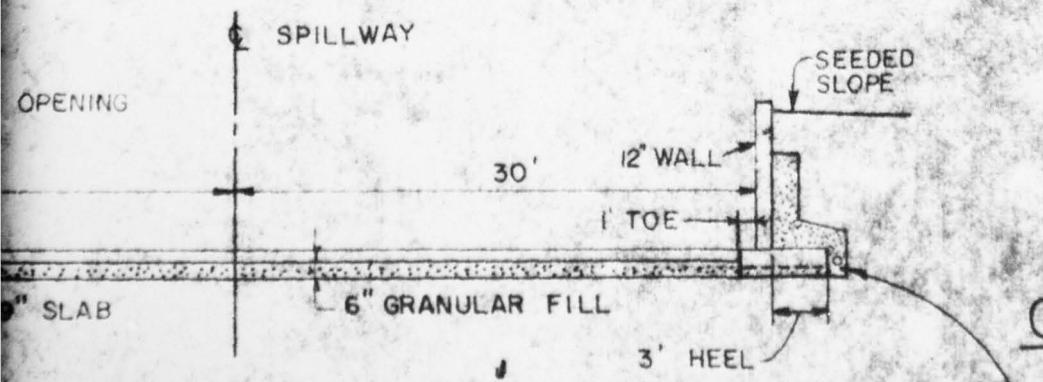

WIDE CHUTE)
WALL
FOOTING
ET
6"PERFORATED ACCMP
10
SLOPE
45° BEND
℄ SPILLWAY
5
5
DETAIL "D"
N.T.S.
APPROXIMATE EXISTING GROUND EL. 12
15'
EL. 16
2.5(MIN.)
1
EL. 8'
ORIGINAL GROUND SURFACE
2.5
1
COMPACTED FILL BEHIND WALL
APPROXIMA
OF ROCK
APPROXIMATE EXISTING GROUND SURFACE
SW STA. 3+29.4
SW STA. 3+42.3
6.5'
6.5'
91.9'
3
NCH DRAIN
THIS DWG)
EL +10
8'-0"
EL +8
EL +5
EL -6.0
EL 0
6" Ø PERFORATED ACCMP (TYPICAL)
17 WEEP HOLES @ 5'-0" c/c
3" ø HOLES WITH SCREEN ON FILL SIDE
26'
3
NOTE: FROM S.W. STA 3+42.3 TO SW. STA. 4+54.9 SPILLWAY IS SYMMETRICAL ABOUT ℄
SEE DE
PROFILE @ ℄ OF SPILLWAY
SCALE
20 0 20 40 FEET
3
1
SEEDED SLOPE
℄ SPILLWAY
CONCRETE STORM DRAINAGE CUTOFF WALL
1' x 1' DRAINAGE OPENING
3'
12" WALL
30'
30'
12" GRANULAR DRAIN-FILTER "B"
1' TOE
6"Ø ACCMP
FOOTING ON ROCK
9" SLAB
6" GRANULAR FI
3' HEEL
SEE NOTE ON OPPOSITE SIDE
SECTION ② - ②

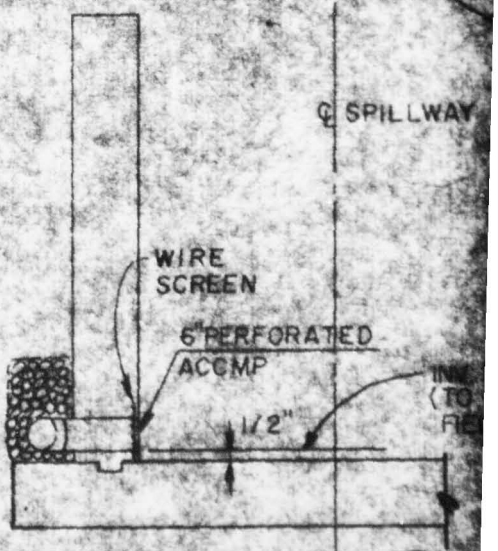


SECTION ③ - ③

SCALE: 1" = 10'





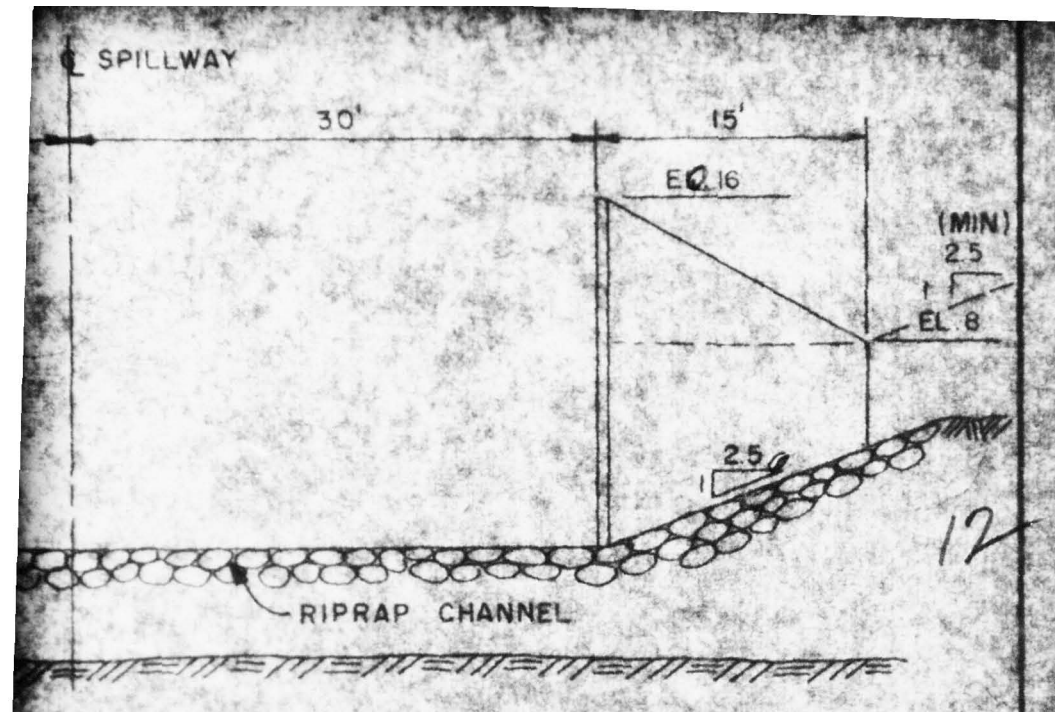


SECTION ⑤ - ⑤

GRAVEL DRAIN OUTL

SCALE

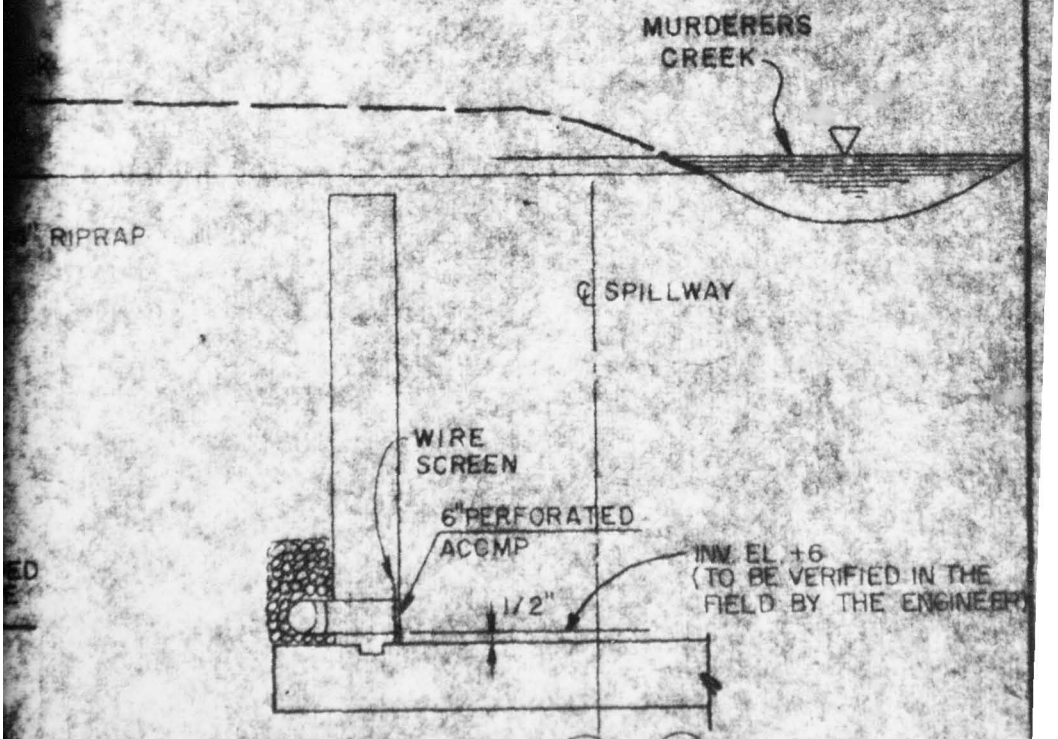
TRENCHES FOR TRANSVERSE
TRENCH DRAINS AND LATERAL



12

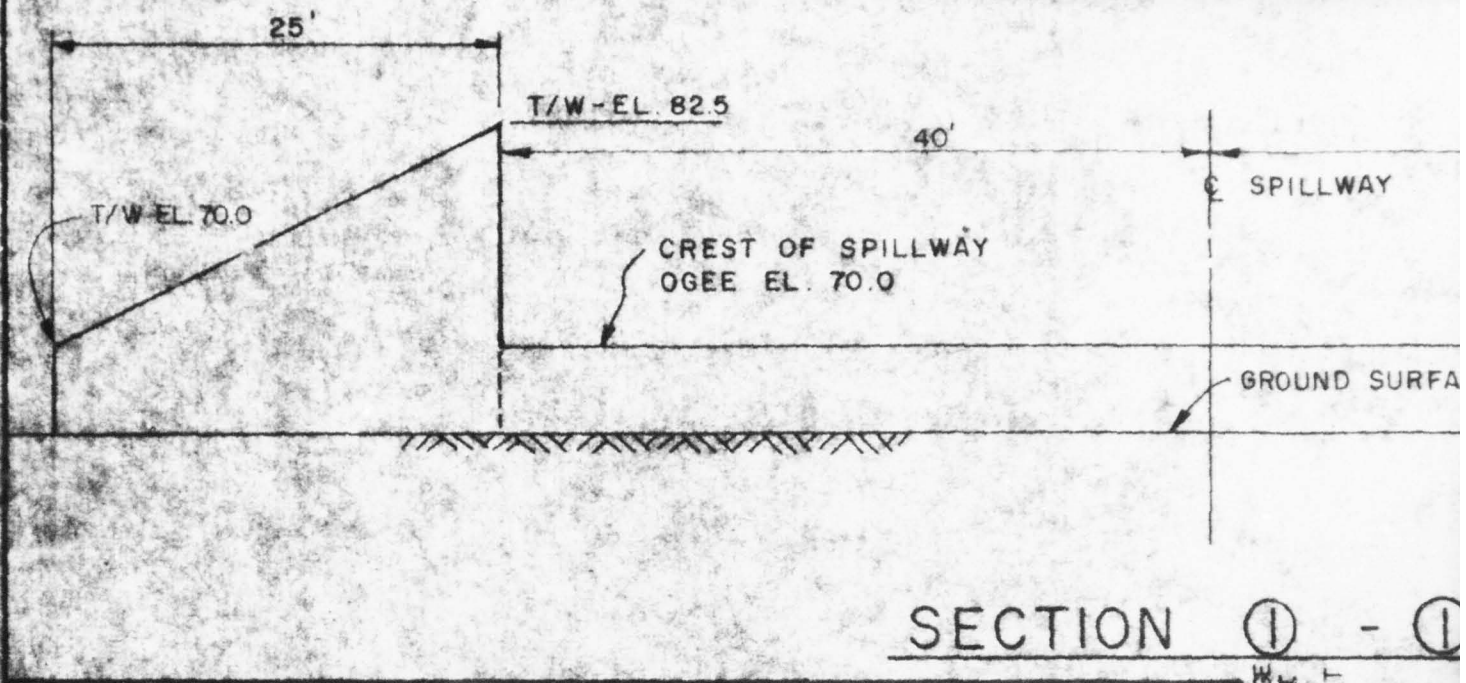
N ③ - ③

E: 1" = 10'



SECTION ⑤ - ⑤
GRAVEL DRAIN OUTLET

SCALE 3/8" = 1'-0"

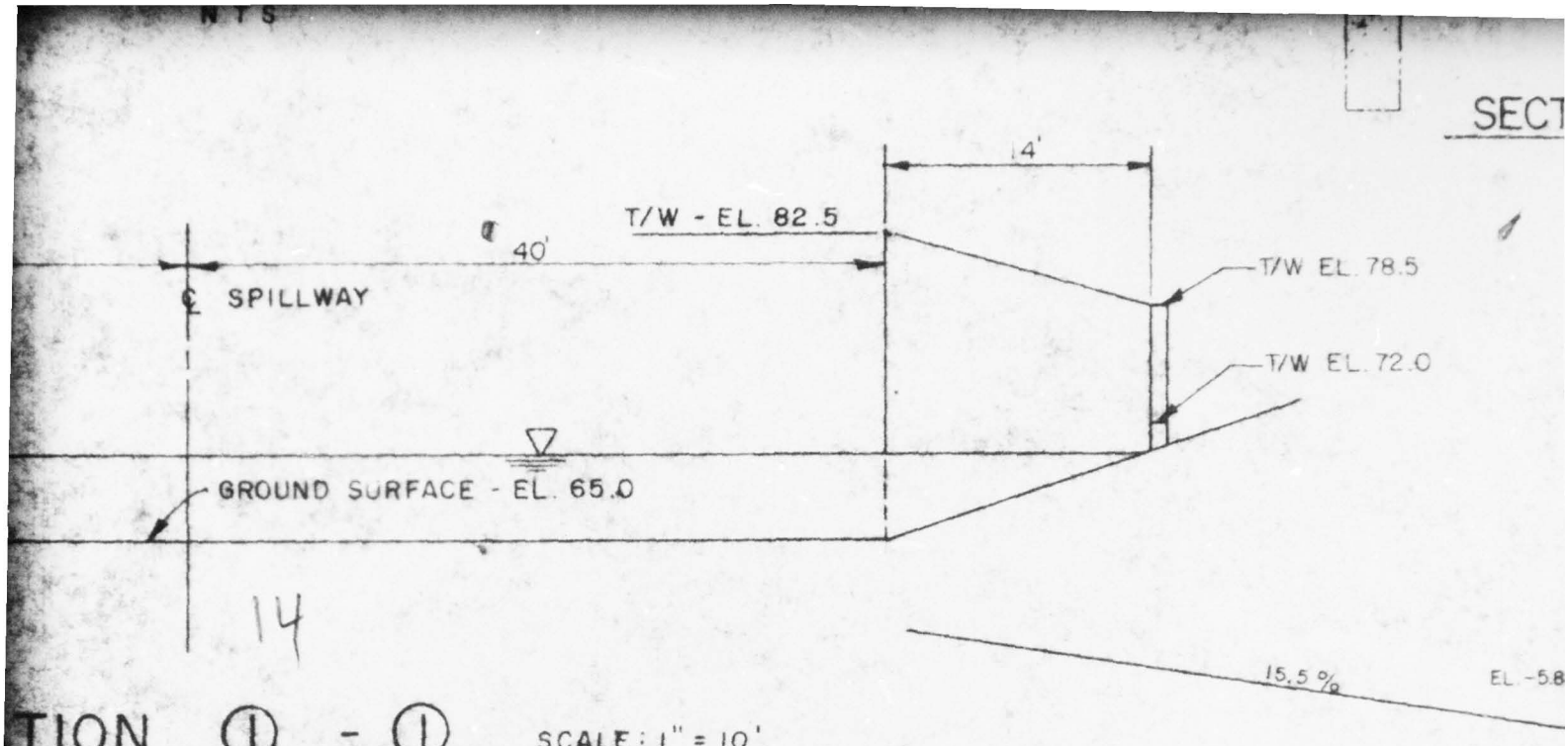


SECTION (1) - (1)

13

REFERENCE DRAWINGS

REVISION	DESCRIPTION
1	REMOVED GROUTED RIPRAP AND REVISED SPILLWAY WALL HEIGHT 2-24-72
2	ADDED STORM DRAINAGE CUTOFF WALLS, TYPE III PAVED GUTTER AND AUGMENTATION OUTLET PIPE 3-17-72
3	REVISED SPILLWAY UNDERDRAINS AND



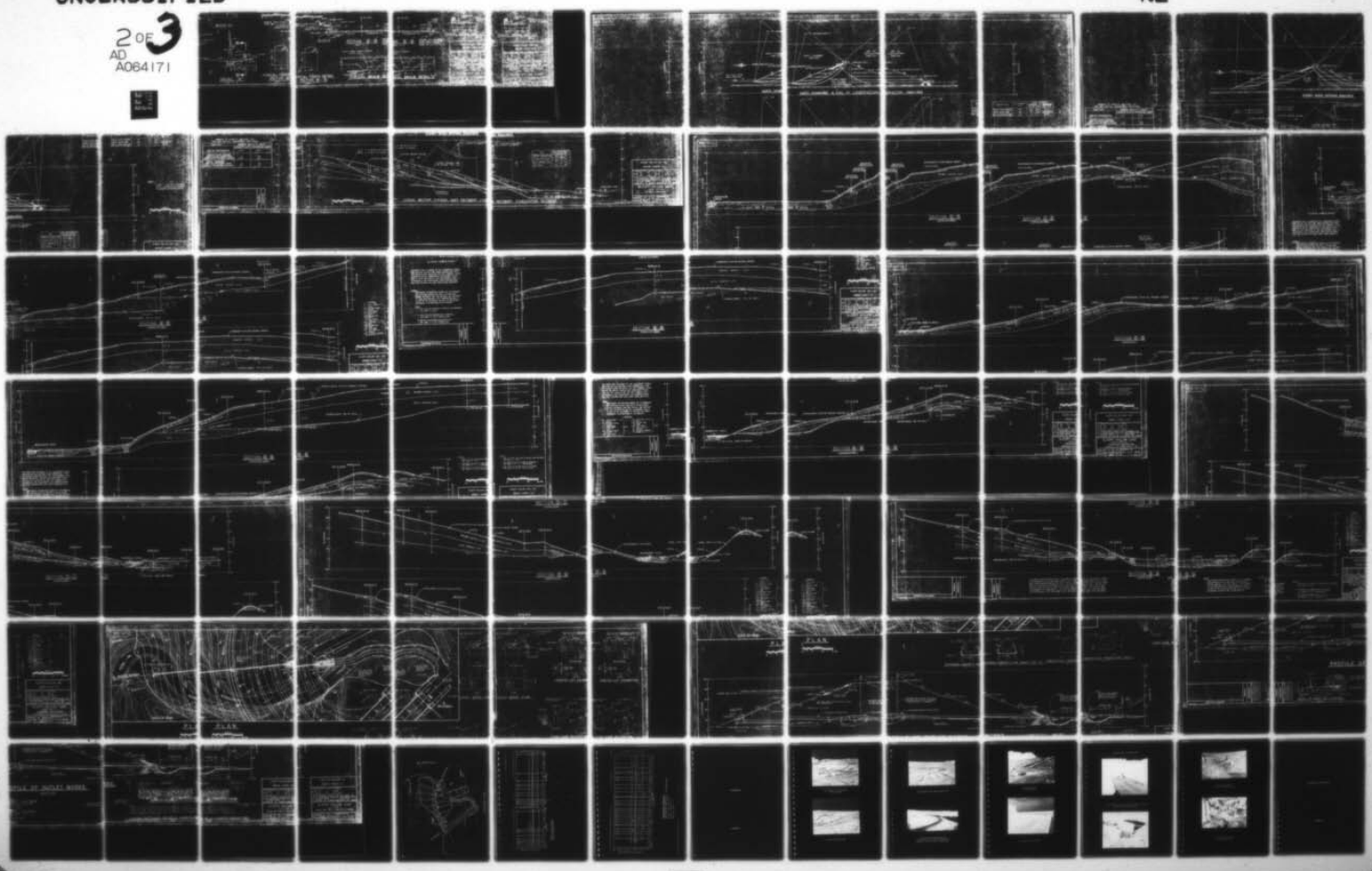
SECT

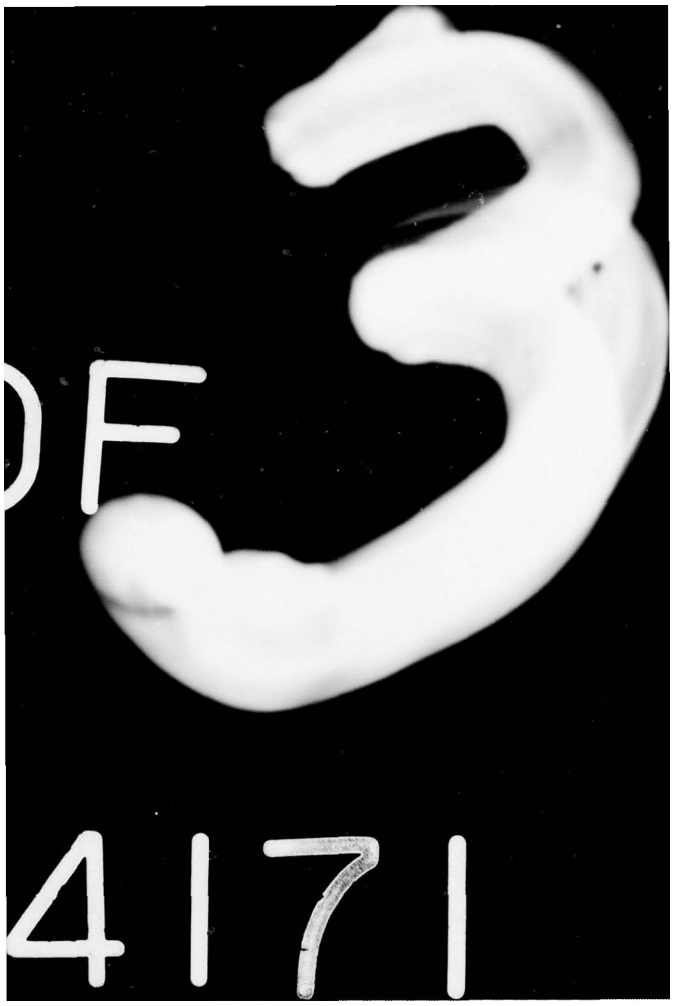
TION (1) - (1) SCALE: 1" = 10'

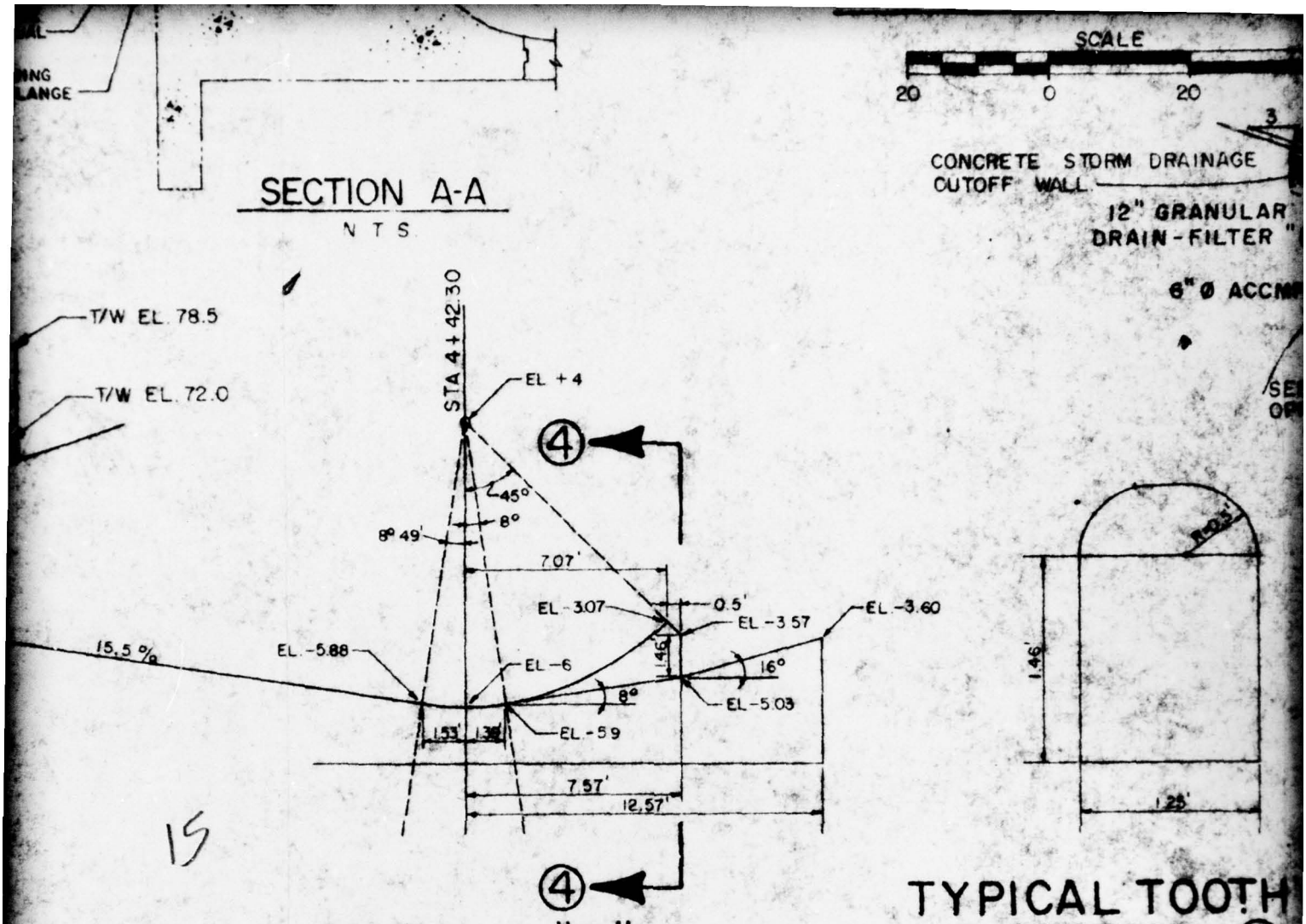
	DESCRIPTION
1	REMOVED GROUTED RIPRAP AND REVISED SPILLWAY WALL HEIGHT 2-24-72
2	ADDED STORM DRAINAGE CUTOFF WALLS, TYPE III PAVED GUTTER AND AUGMENTATION OUTLET PIPE 3-17-72
3	REVISED SPILLWAY UNDERDRAINS AND REVISED DEPTH OF SPILLWAY CUTOFF WALL AT STA. 0+00 8-31-72
4	REVISED SPILLWAY STATIONS & ELEVATIONS AS PER 12.9' SPILLWAY EXTENSION AND FILL CONCRETE AT SPILLWAY OGEE AND REVISED BACKFILL ARRANGEMENT AT SPILLWAY BUCKET AREA. 11-20-72

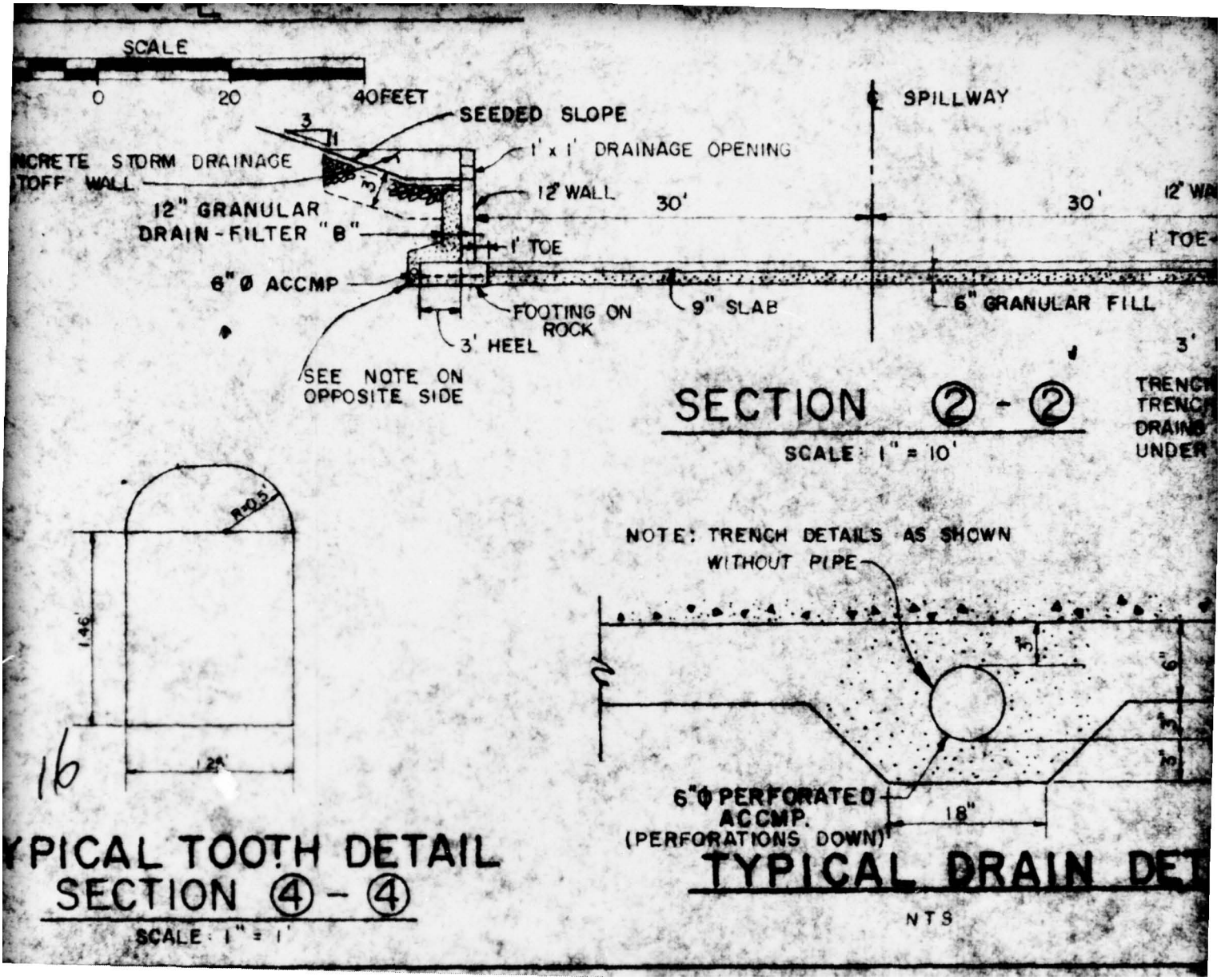
AD-A064 171 NEW YORK STATE DEPT OF ENVIRONMENTAL CONSERVATION ALBANY F/G 13/2
NATIONAL DAM SAFETY PROGRAM. SLEEPY HOLLOW DAM (NY 142), LOWER --ETC(U)
AUG 78 G KOCH DACW51-78-C-0035
UNCLASSIFIED NL

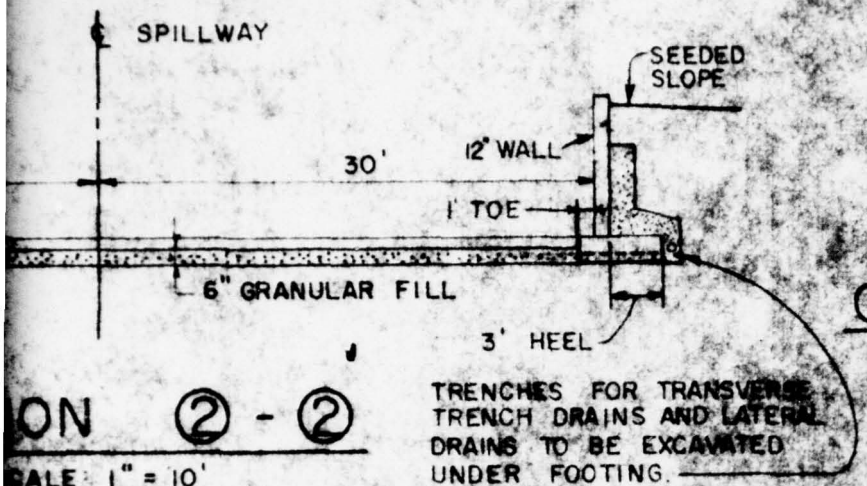
2 OF 3
AD
A064171




OF
3
4171


SCALE
20 0 20
CONCRETE STORM DRAINAGE CUTOFF WALL
12" GRANULAR DRAIN-FILTER
6"Ø ACCM
SECTION A-A
N T S
T/W EL. 78.5
T/W EL. 72.0
STA 4+42.30
EL +4
45°
8°
8° 49'
7.07'
EL -3.07
0.5'
EL -3.57
EL -3.60
15.5 %
EL -5.88
EL -6
1.46'
16°
8°
EL -5.03
EL -5.9
1.53'
1.38'
7.57'
12.57'
R 0.5'
1.46'
1.25'
15
DETAIL "B"
SCALE: 1" = 5'
TYPICAL TOOTH SECTION ④
SCALE: 1" = 1'


SCALE
0
20
40FEET
SEEDED SLOPE
3
1
NCRETE STORM DRAINAGE
TOFF WALL
12" GRANULAR
DRAIN-FILTER "B"
1' x 1' DRAINAGE OPENING
12" WALL
1' TOE
6"Ø ACCMP
FOOTING ON
ROCK
3' HEEL
SEE NOTE ON
OPPOSITE SIDE
℄ SPILLWAY
30'
30'
12" WA
1' TOE
9" SLAB
6" GRANULAR FILL
3'
TRENCH
TRENCH
DRAIN
UNDER
SECTION ② - ②
SCALE: 1" = 10'
R=0.5'
1.46'
1.25'
16
NOTE: TRENCH DETAILS AS SHOWN
WITHOUT PIPE
6"Ø PERFORATED
ACCMP.
(PERFORATIONS DOWN)
18"
YPICAL TOOTH DETAIL
SECTION ④ - ④
SCALE: 1" = 1'
TYPICAL DRAIN DET
NTS



ON ② - ②

SCALE 1" = 10'

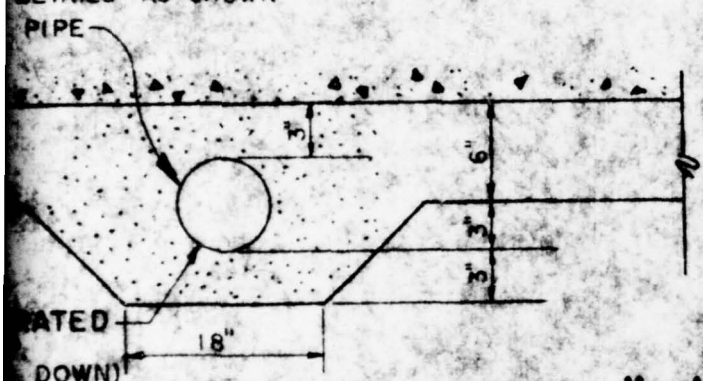
TRENCHES FOR TRANSVERSE TRENCH DRAINS AND LATERAL DRAINS TO BE EXCAVATED UNDER FOOTING.

SECTION ⑤-⑤

GRAVEL DRAIN OUTLET

SCALE

DETAILS AS SHOWN



ATED

DOWN)

CAL DRAIN DETAIL "C"

NTS

17

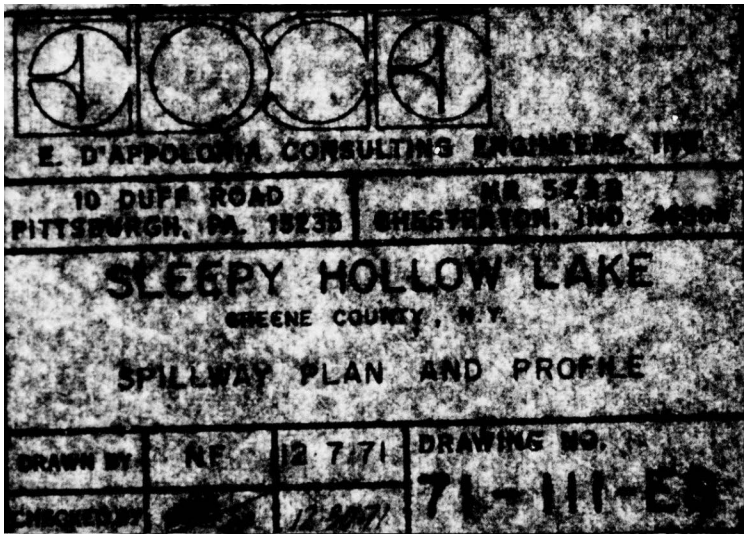
SLEEPY HOLLOW

GREENE COUNTY

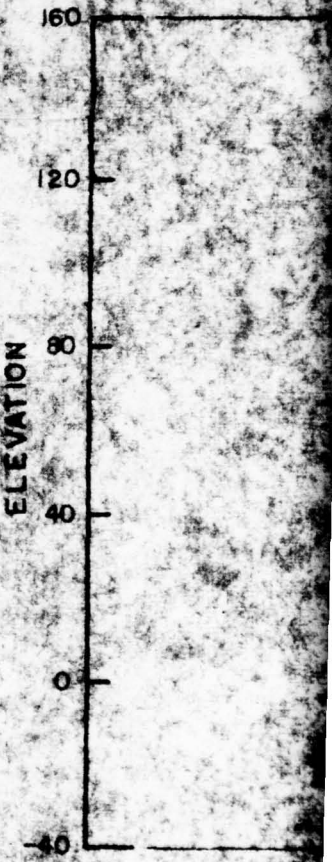
SPILLWAY PLAN AND PRO

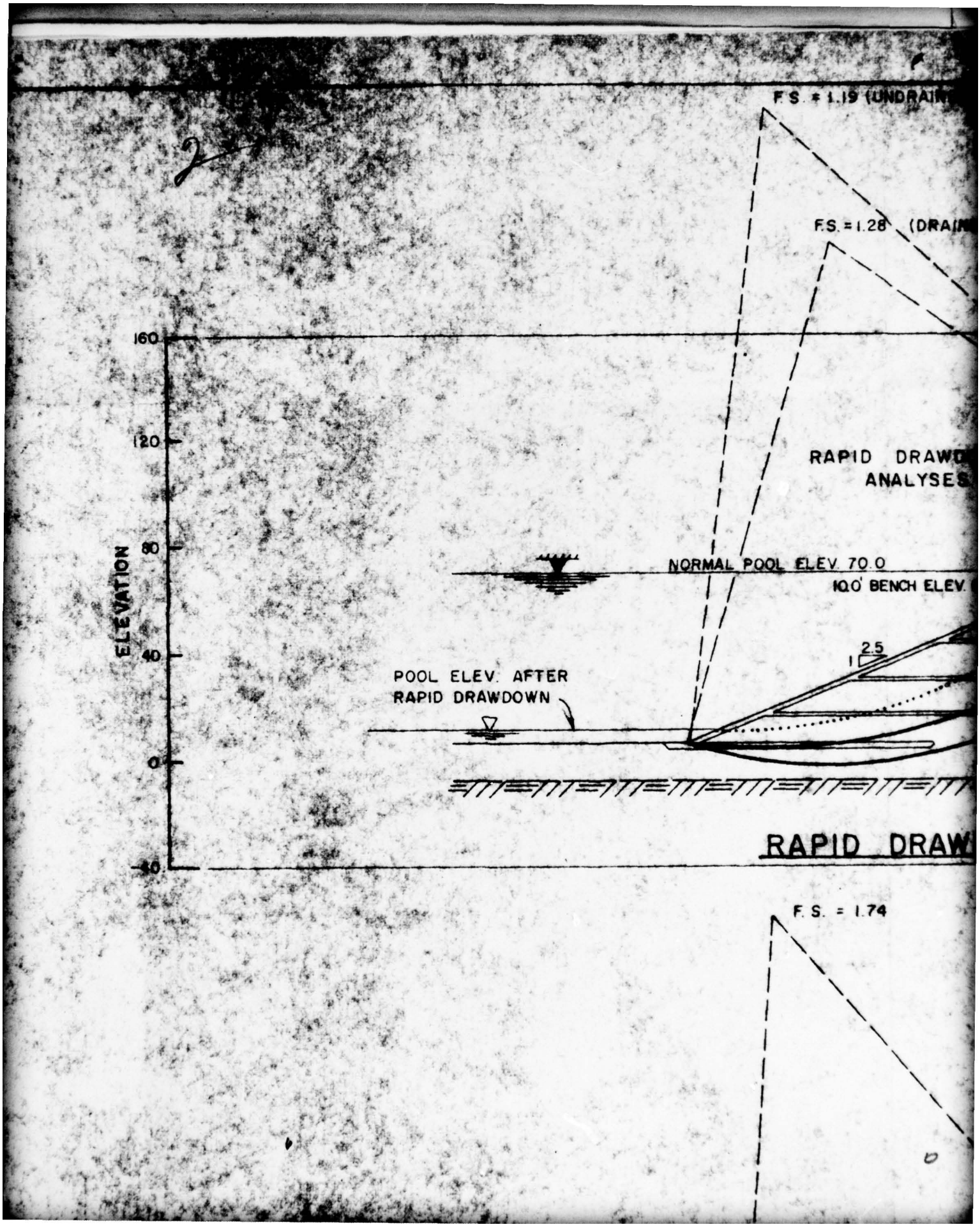
DRAWING

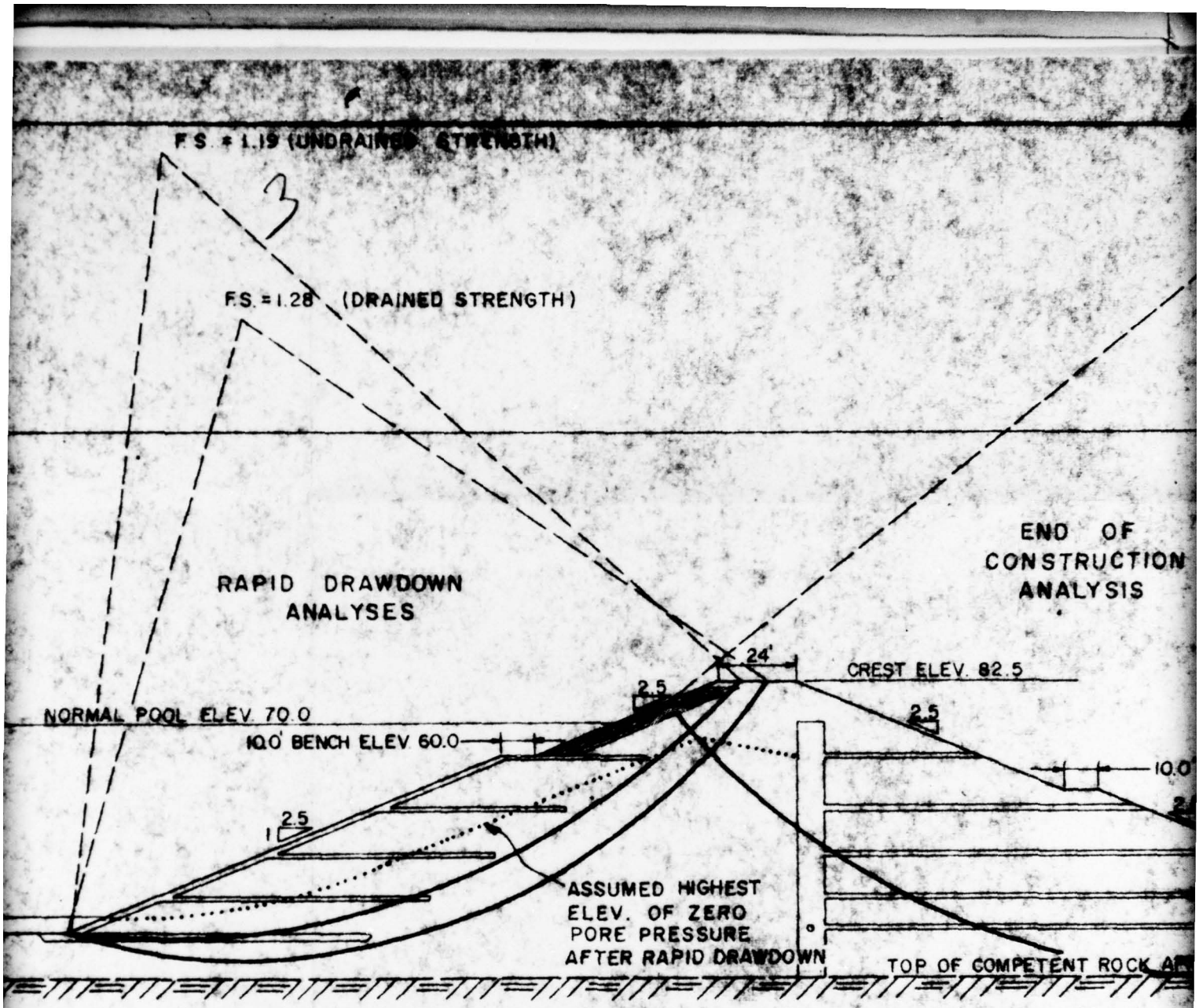
71


E. D'APPOLONIA CONSULTING ENGINEERS, INC.
10 DUFF ROAD
PITTSBURGH, PA. 15235
SLEEPY HOLLOW LAKE
GREENE COUNTY, N.Y.
SPILLWAY PLAN AND PROFILE
DRAWN BY
RF
12 7/71
DRAWING NO.
71-111-E3

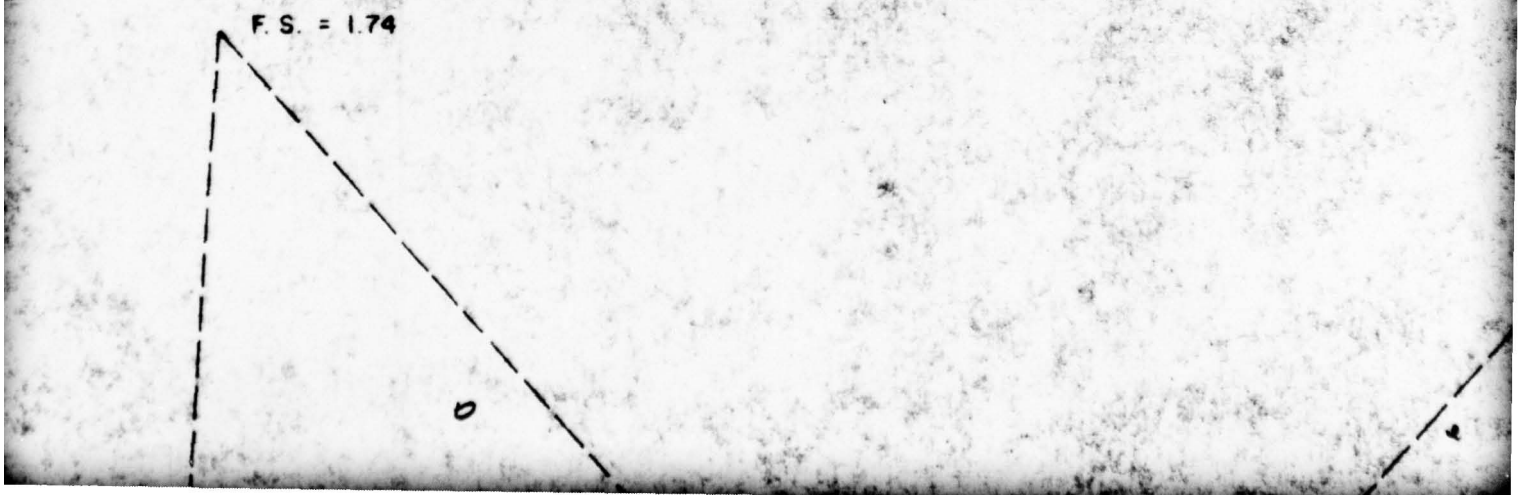
623-111-12

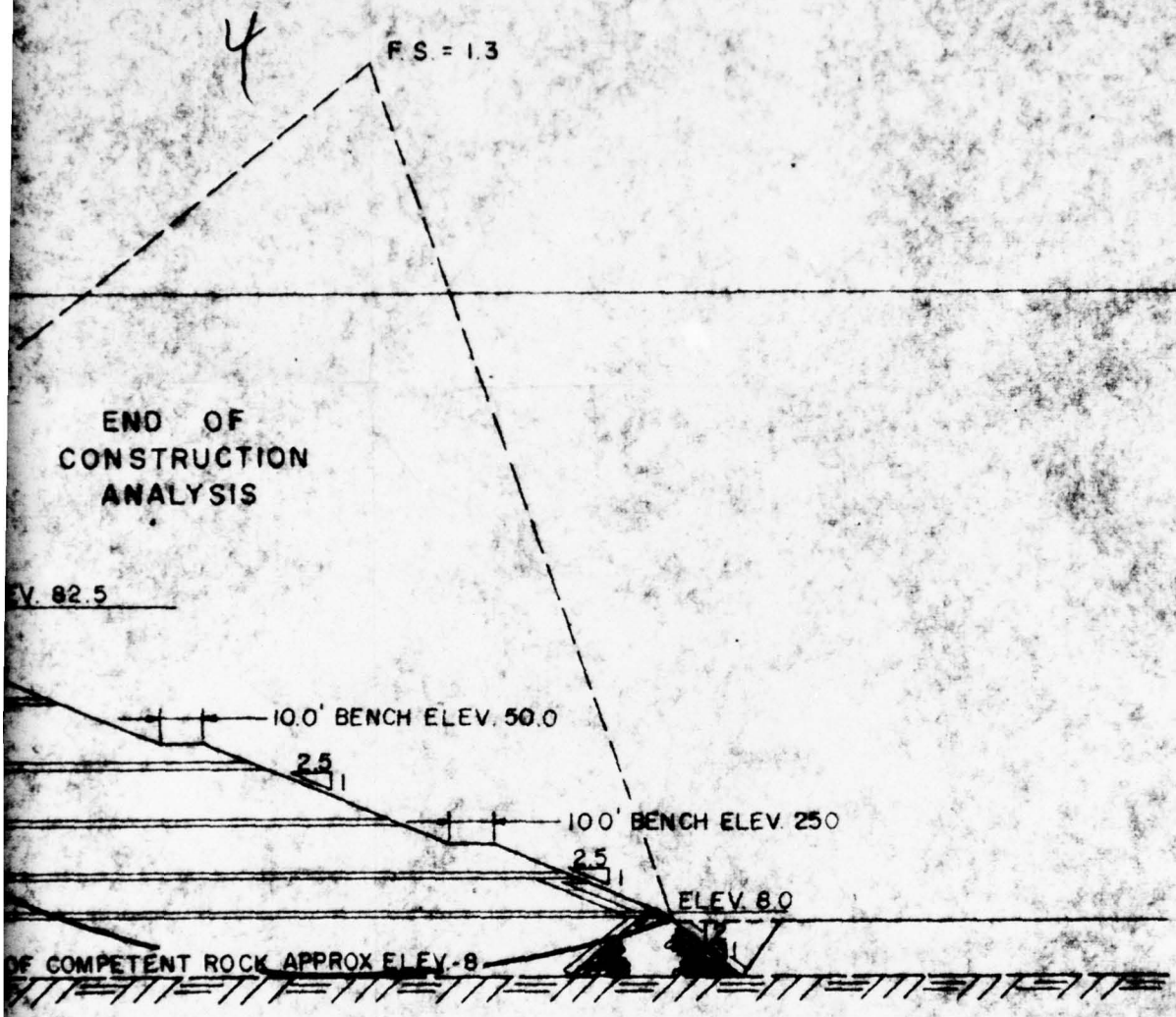



F.S. = 1.19 (UNDRAIN
F.S. = 1.28 (DRAIN
RAPID DRAWD
ANALYSES
160
120
80
40
0
-40
ELEVATION
NORMAL POOL ELEV. 70.0
100' BENCH ELEV.
2.5
1
POOL ELEV. AFTER
RAPID DRAWDOWN
RAPID DRAW
F.S. = 1.74

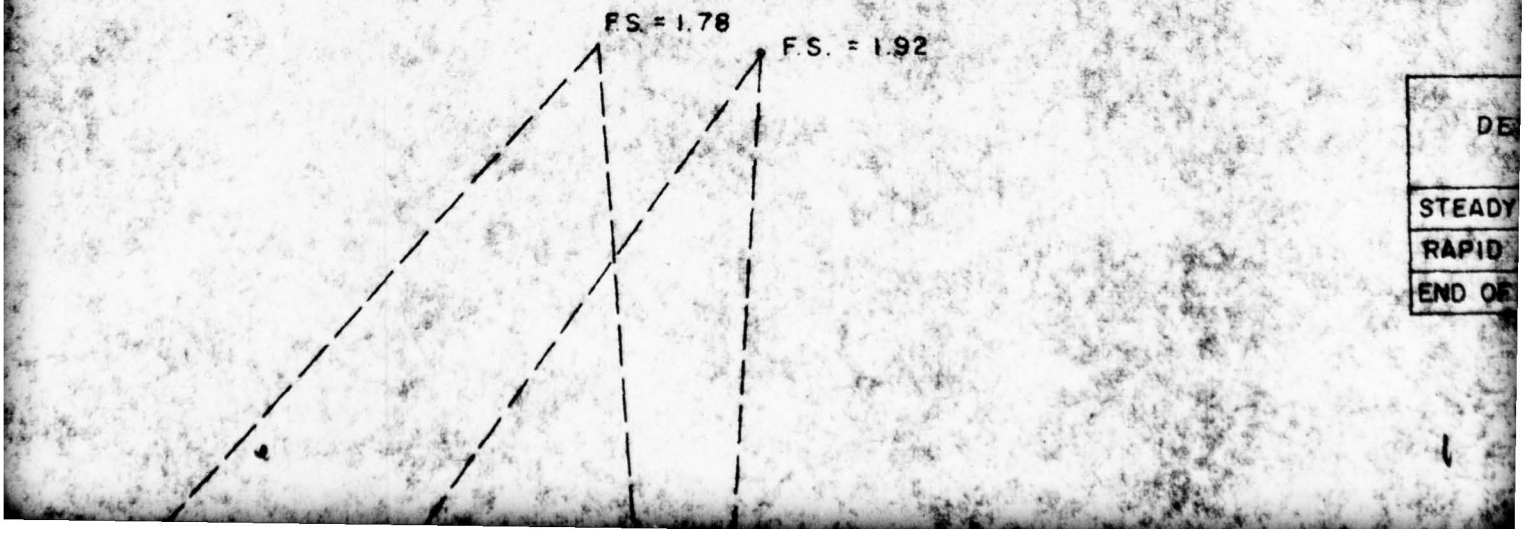


RAPID DRAWDOWN & END OF CONSTRUCTION



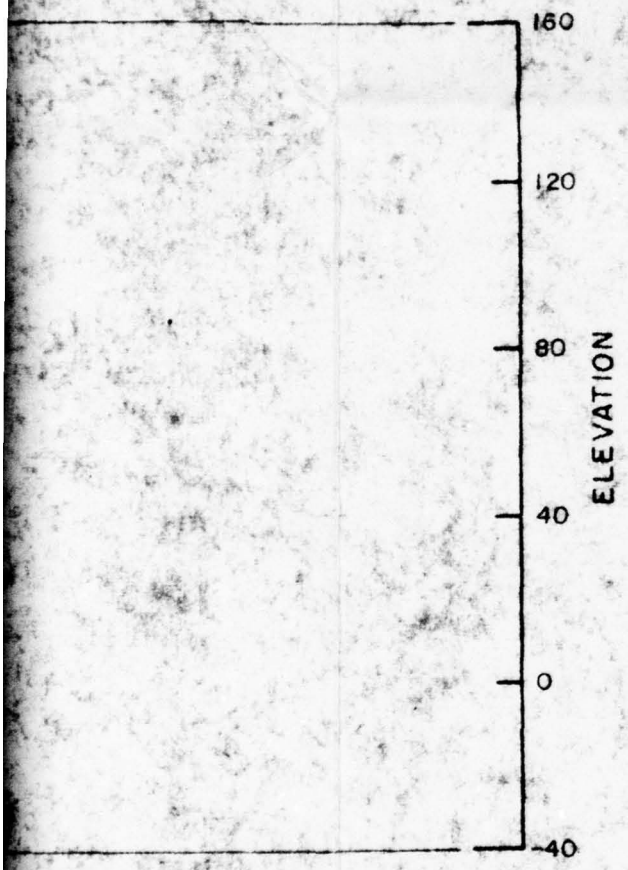


STRUCTION ANALYSES



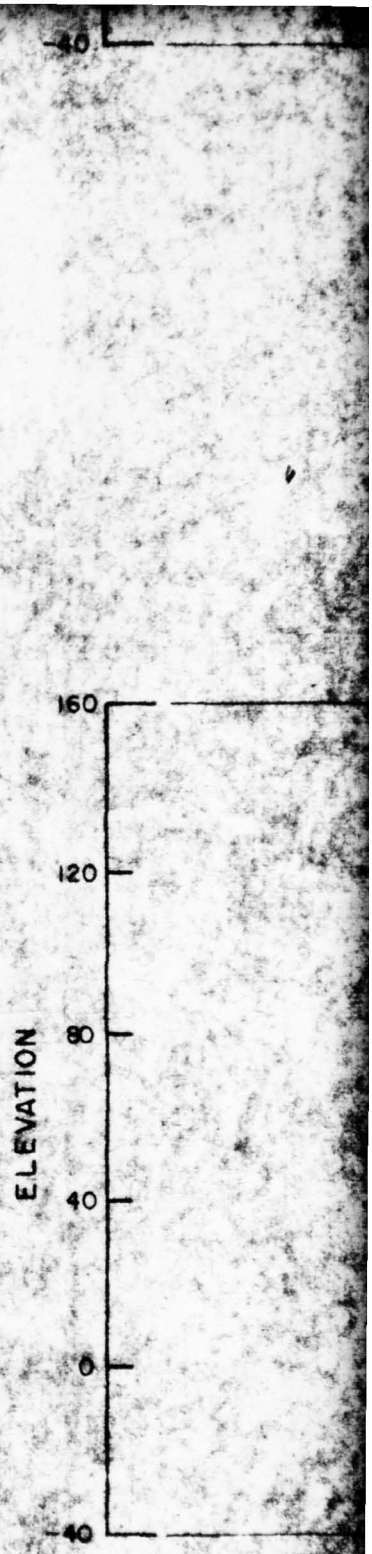
DE
STEADY
RAPID
END OF

5



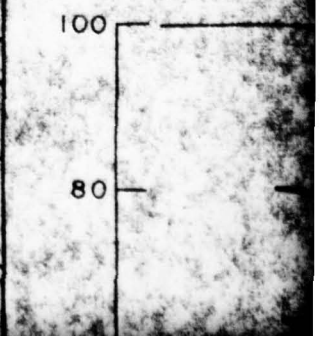
DESCRIPTION	UNIT WEIGHT, PCF	SHEAR STRENGTH		
		DRAINED		UNDRAINED
		$\bar{C}$, PSF	$\phi°$	S_u, PSF
STEADY STATE SEEPAGE	125	100	28	—
RAPID DRAWDOWN	125	100	28	SEE DWG E27
END OF CONSTRUCTION	125	—	—	1600

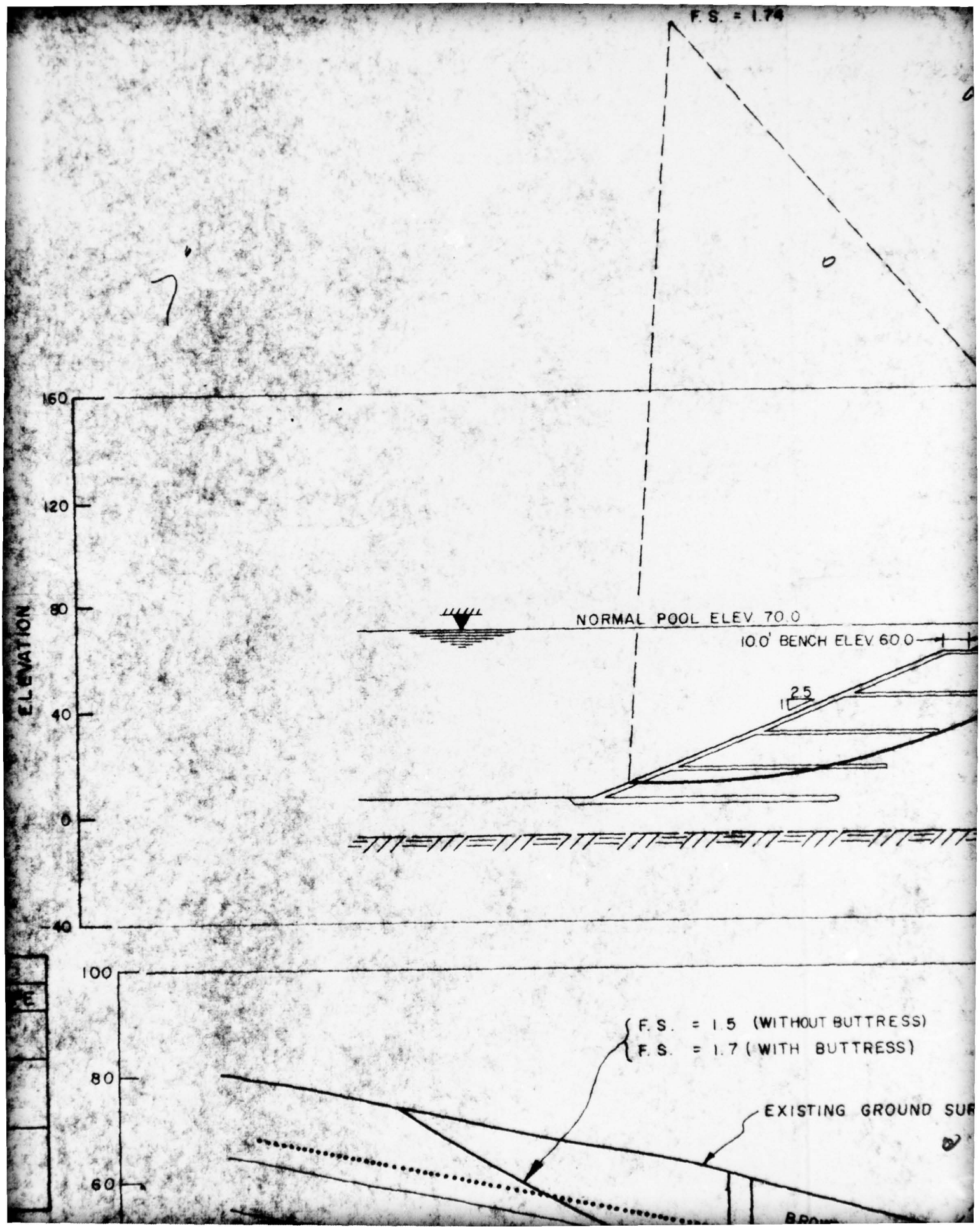
6

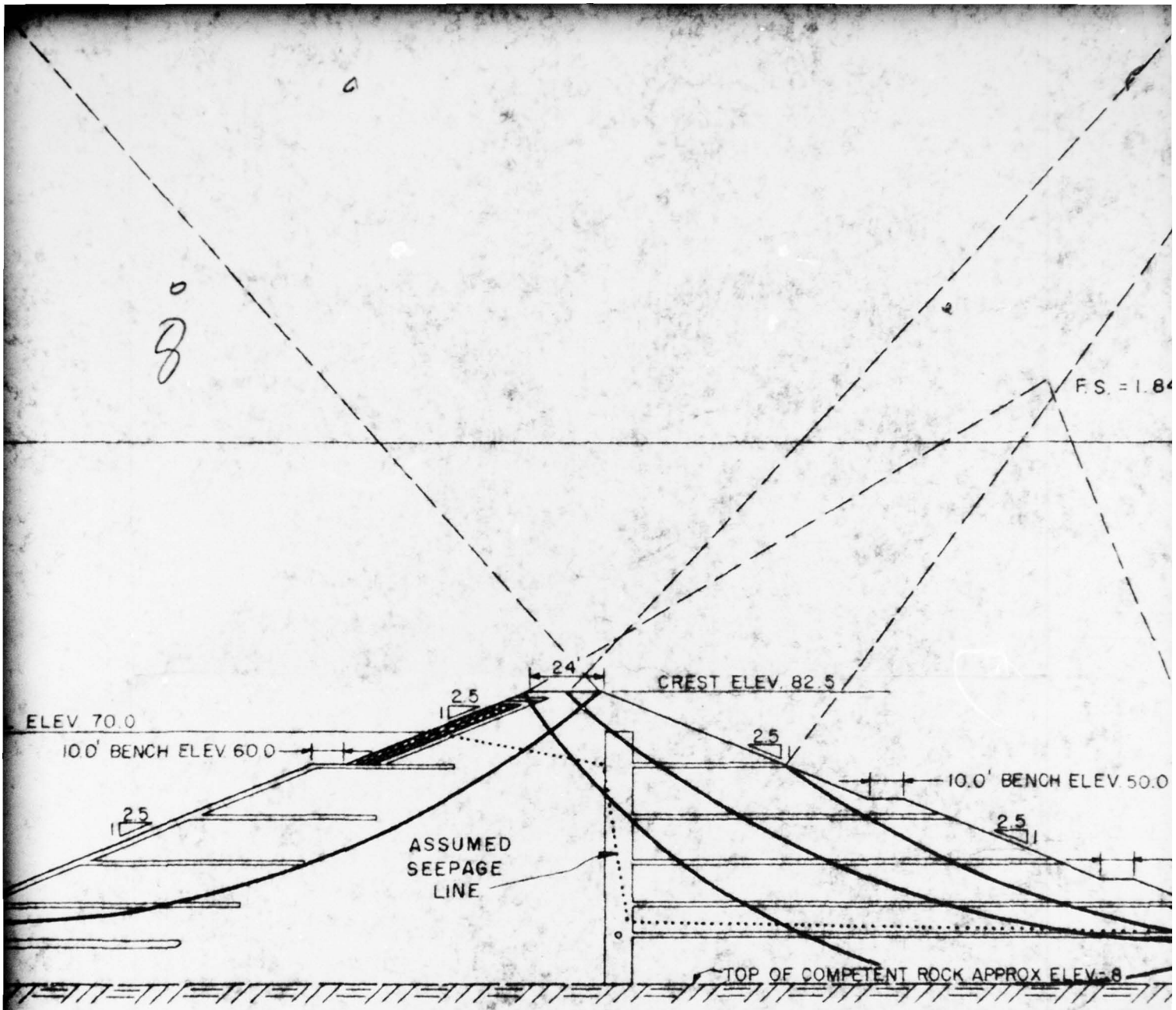


SUMMARY OF STABILITY ANALYSES FOR
THE MOST CRITICAL EMBANKMENT SECTIONS

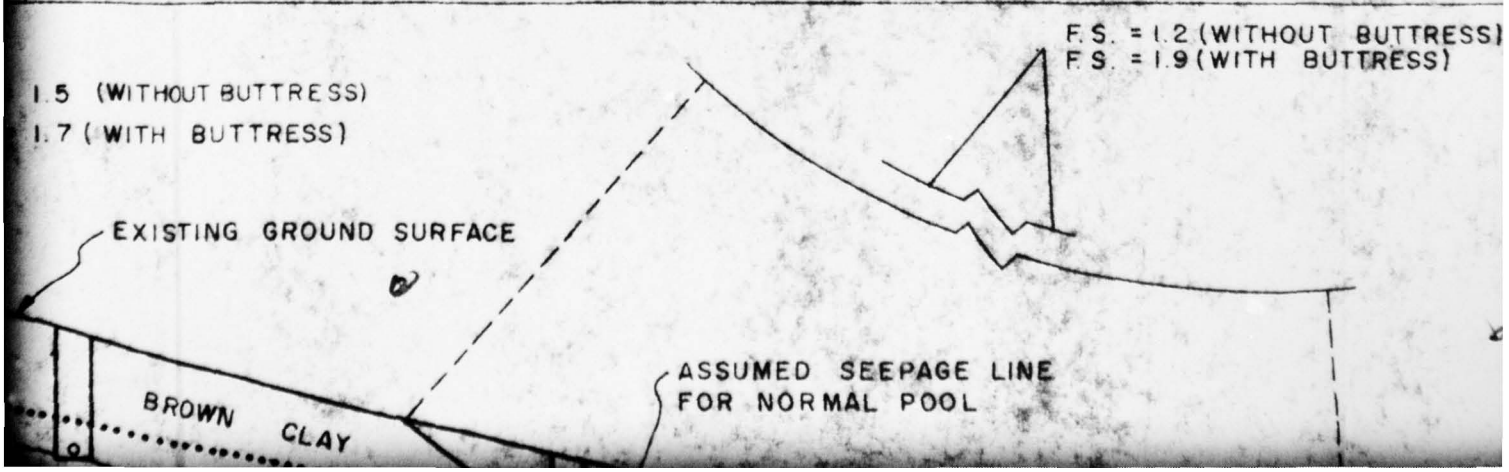
CONDITION	MINIMUM FACTOR OF SAFETY	
	UPSTREAM SLOPE	DOWNSTREAM SLOPE
END OF CONSTRUCTION	>1.3	>1.3
STEADY-STATE SEEPAGE		
DEEP FAILURE TAKING CREST	1.7	1.8
SHALLOW FAILURE AND SLOUGHING	>1.3	1.3
RAPID DRAWDOWN		
[illegible]	1.2	[illegible]



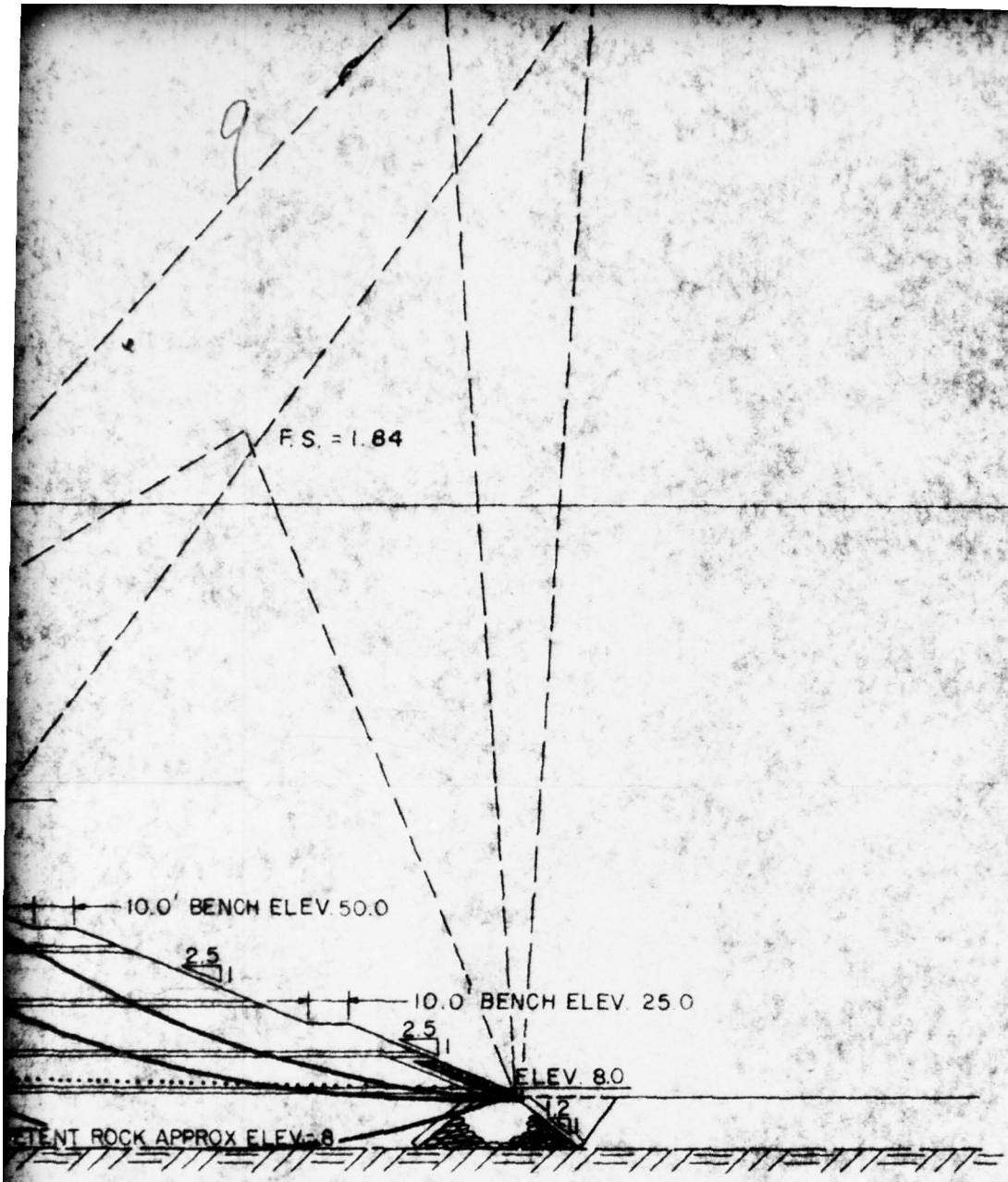

F.S. = 1.74
160
120
80
40
0
-40
ELEVATION
NORMAL POOL ELEV 70.0
10.0' BENCH ELEV 60.0
2.5
1
100
80
60
F.S. = 1.5 (WITHOUT BUTTRESS)
F.S. = 1.7 (WITH BUTTRESS)
EXISTING GROUND SUR



STEADY STATE SEEPAGE ANALYSES



DESCRIPTIO
STEADY STATE SEE
RAPID DRAWDO
END OF CONSTRUC



ANALYSES

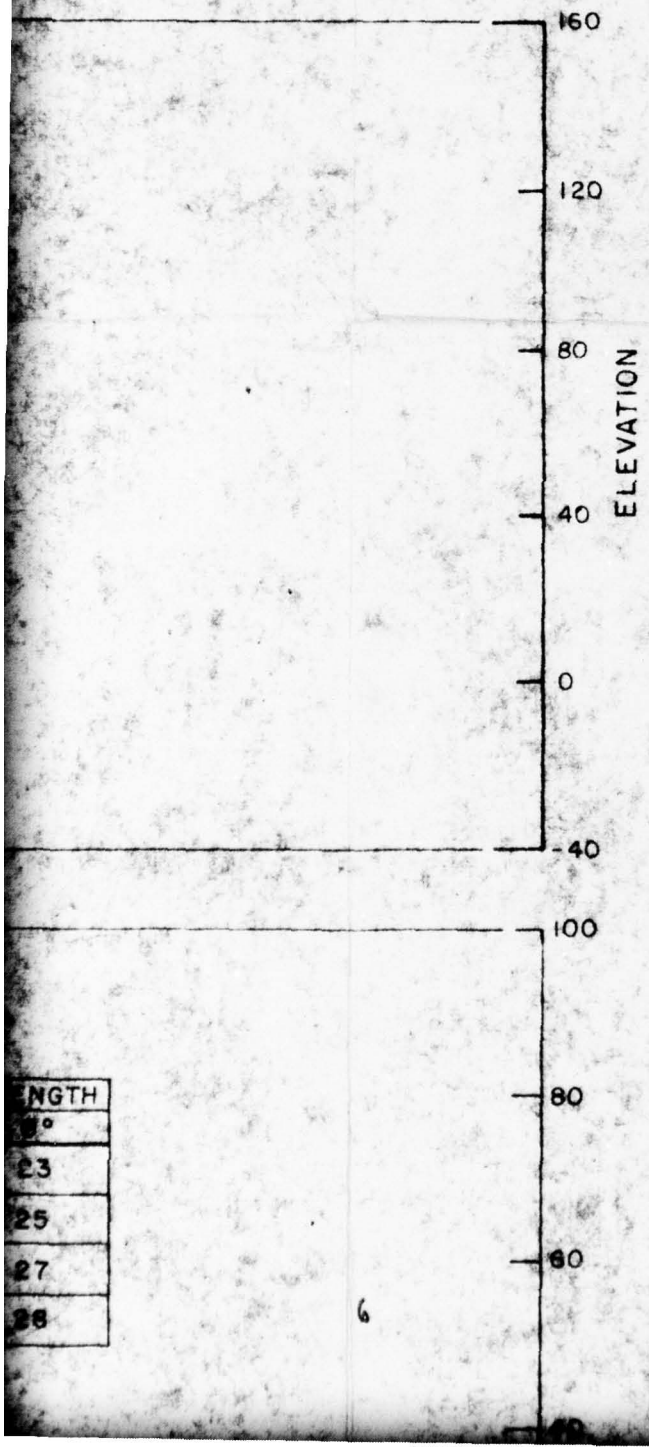
= 1.2 (WITHOUT BUTTRESS)
= 1.9 (WITH BUTTRESS)

SOIL	DRAINED STRENGTH	
	$\bar{C}$ PSF	$\bar{\phi}°$
BROWN VARVED CLAY	200	23
TRANSITION CLAY	100	25
BLUE VARVED CLAY	0	27
BUTTRESS	100	28

DESCRIPTION	PCF	DRAINED		
		$\bar{C}$, PSF	$\bar{\phi}°$	S_u, PSF
STEADY STATE SEEPAGE	125	100	28	—
RAPID DRAWDOWN	125	100	28	SEE DWG E27
END OF CONSTRUCTION	125	—	—	1600

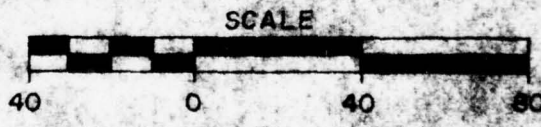
1

10



NOTE:

1. STABILITY ANALYSES PERFORMED USING A COMPUTERIZED VERSION OF BISHOP'S METHOD OF SLICES.



ENGTH
φ°
23
25
27
28

6

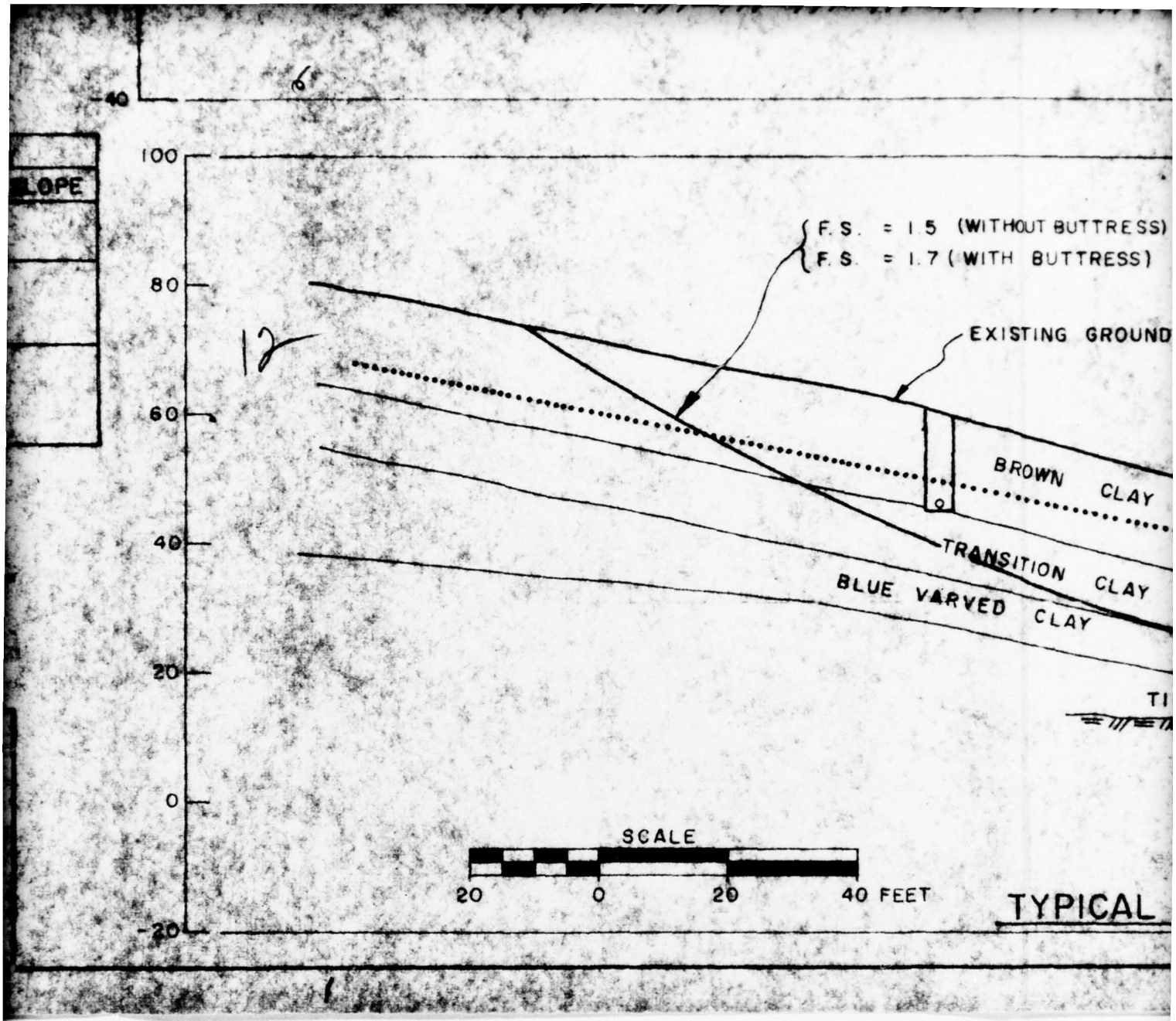
SLEEPY HOLLOW LAKE, INC.

GREENE COUNTY, N.Y.

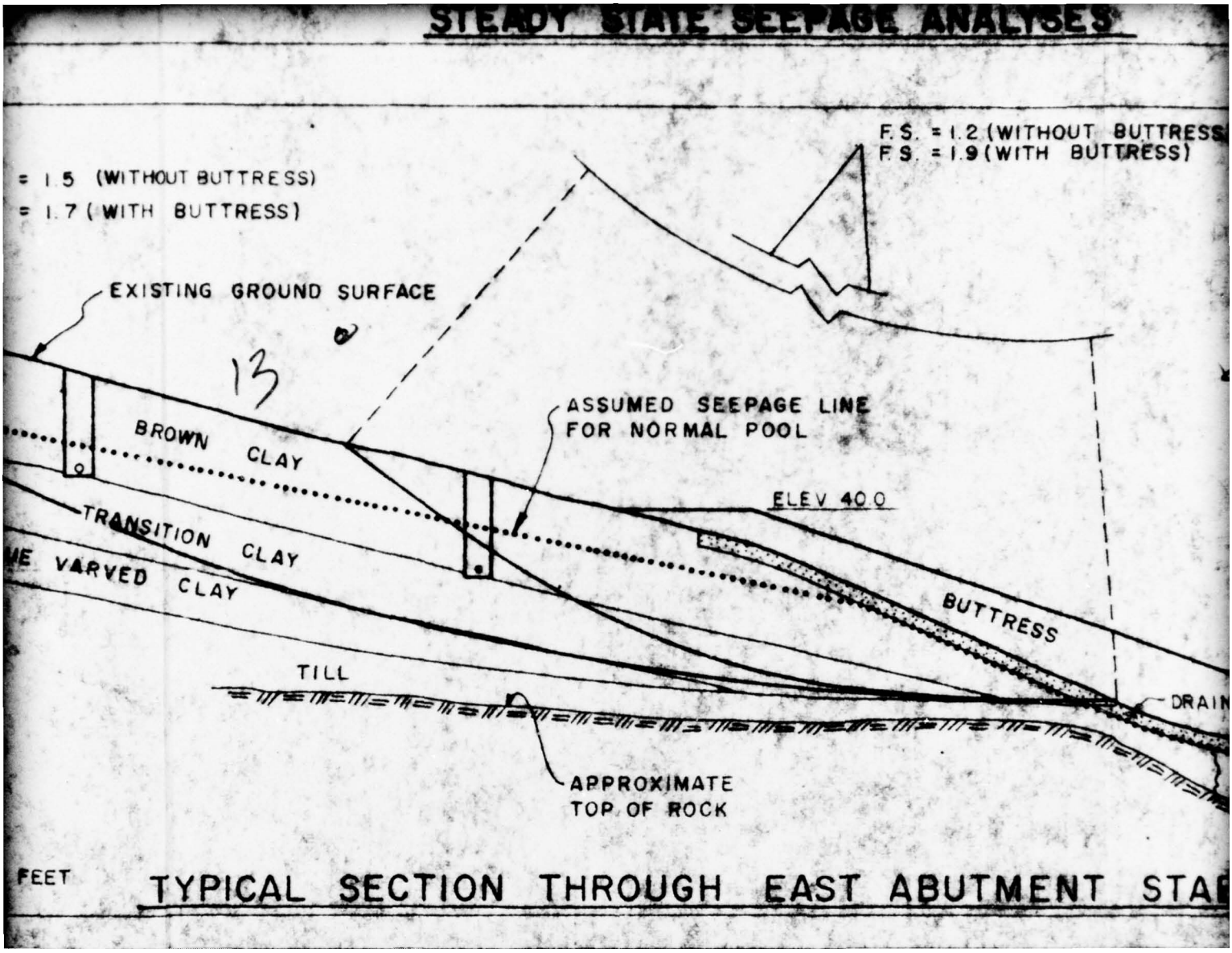
SUMMARY OF STABILITY ANALYSES FOR THE MOST CRITICAL EMBANKMENT SECTIONS

CONDITION	MINIMUM FACTOR OF SAFETY	
	UPSTREAM SLOPE	DOWNSTREAM SLOPE
END OF CONSTRUCTION	>1.3	>1.3
STEADY-STATE SEEPAGE		
DEEP FAILURE TAKING CREST	1.7	1.8
SHALLOW FAILURE AND SLOUGHING	>1.3	1.3
RAPID DRAWDOWN		
DEEP FAILURE TAKING CREST	1.2	1.8
SHALLOW FAILURE AND SLOUGHING	1.3	1.3

REFERENCE DRAWINGS	REVISION	DESCRIPTION


100
80
60
40
20
0
-20
F.S. = 1.5 (WITHOUT BUTTRESS)
F.S. = 1.7 (WITH BUTTRESS)
EXISTING GROUND
BROWN CLAY
TRANSITION CLAY
BLUE VARVED CLAY
SCALE
20 0 20 40 FEET
TYPICAL

STEADY STATE SEEPAGE ANALYSES

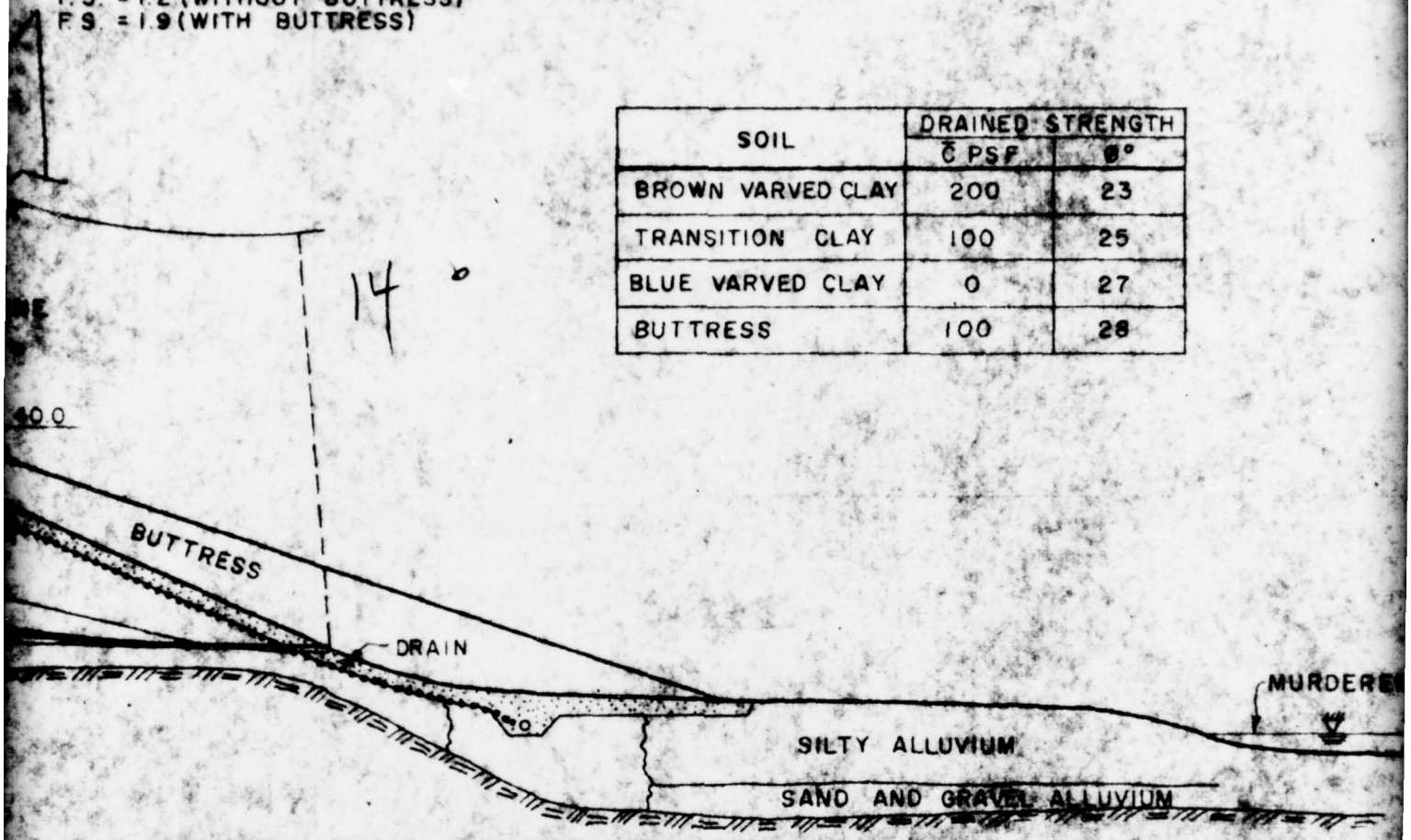


TYPICAL SECTION THROUGH EAST ABUTMENT STA

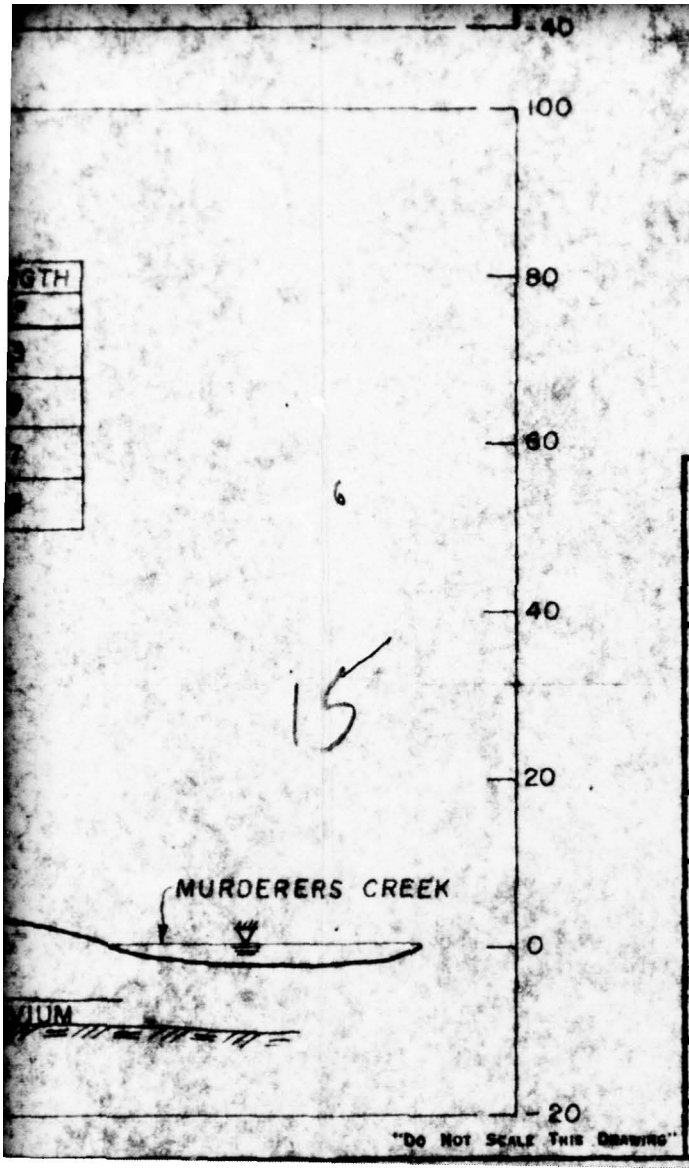
GE ANALYSES

F.S. = 1.2 (WITHOUT BUTTRESS)
F.S. = 1.9 (WITH BUTTRESS)

SOIL	DRAINED STRENGTH	
	$\bar{c}$ PSF	$\bar{\phi}°$
BROWN VARVED CLAY	200	23
TRANSITION CLAY	100	25
BLUE VARVED CLAY	0	27
BUTTRESS	100	28



T ABUTMENT STABILIZATION BUTTRESS



SLEEPY HOLLOW LAKE, INC.

GREENE COUNTY, N.Y.

E. D'APPOLONIA CONSULTING ENGINEERS, INC.

10 DUFF ROAD PITTSBURGH, PA. 15235	MR 522B CHESTERTON, IND.

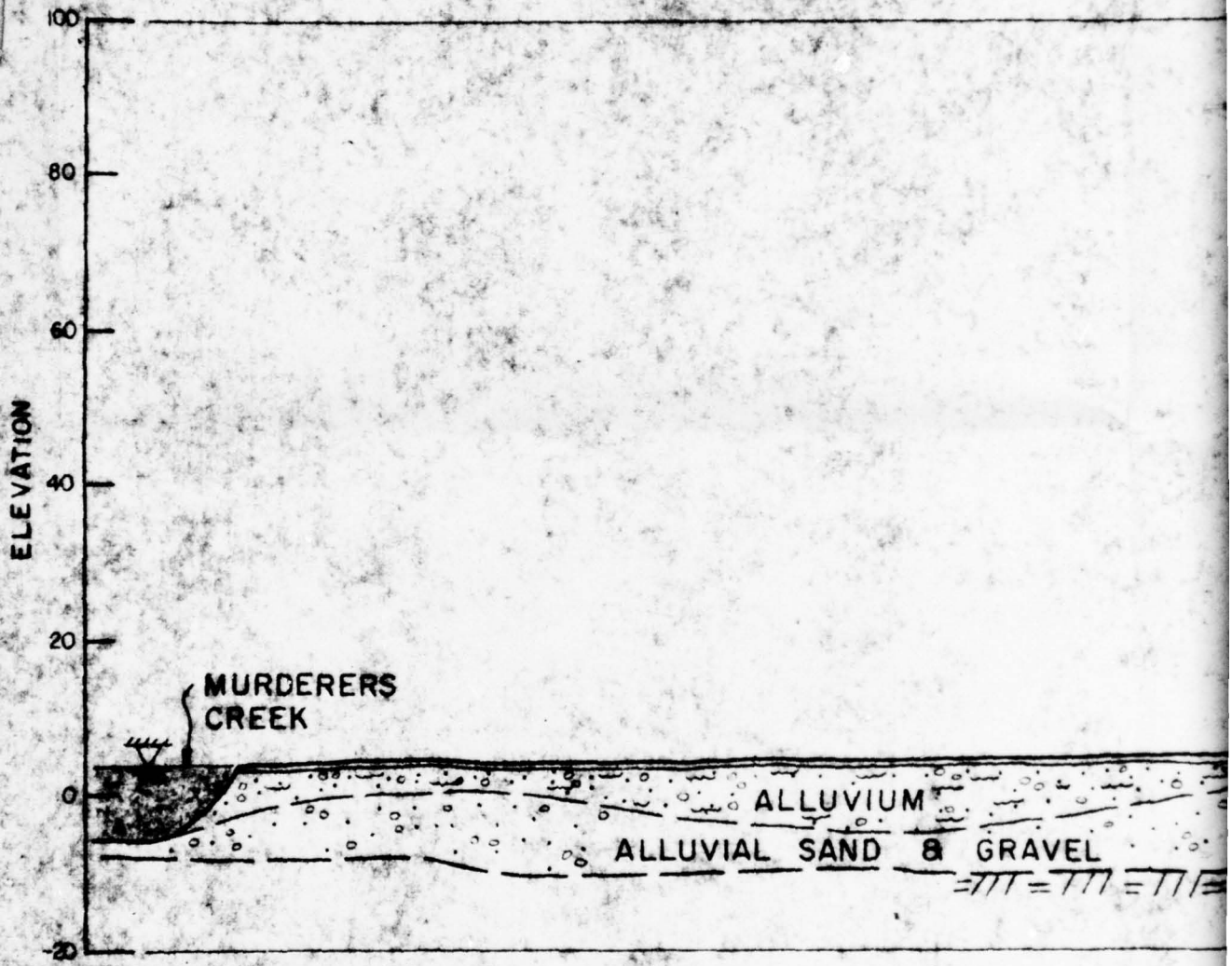
SLEEPY HOLLOW LAKE

GREENE COUNTY, N.Y.

STABILITY ANALYSIS

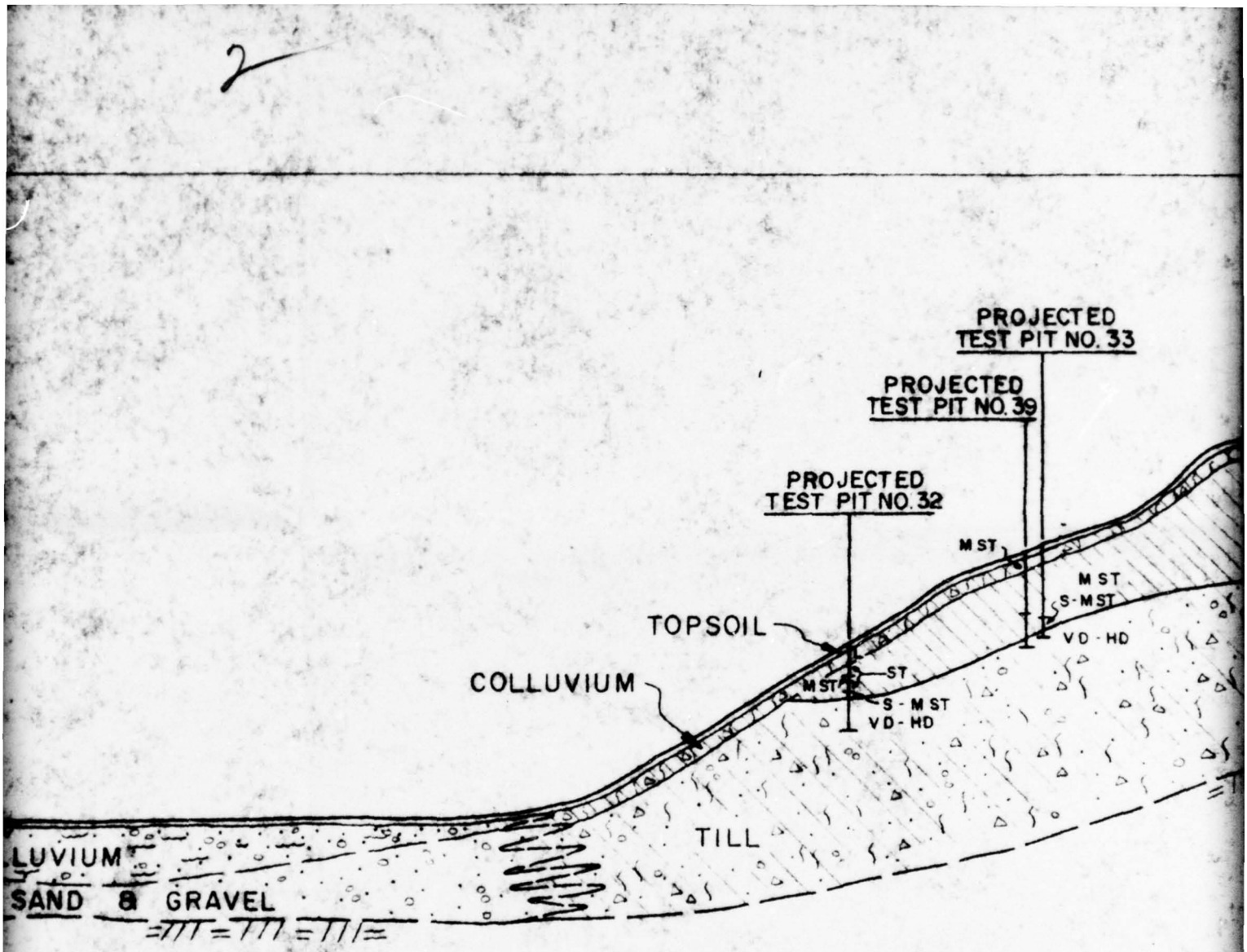
DRAWN BY	C/D	12-8-71	DRAWING NO.
CHECKED BY	MB DJD	12-30-71	71-11-E29

913-111-12

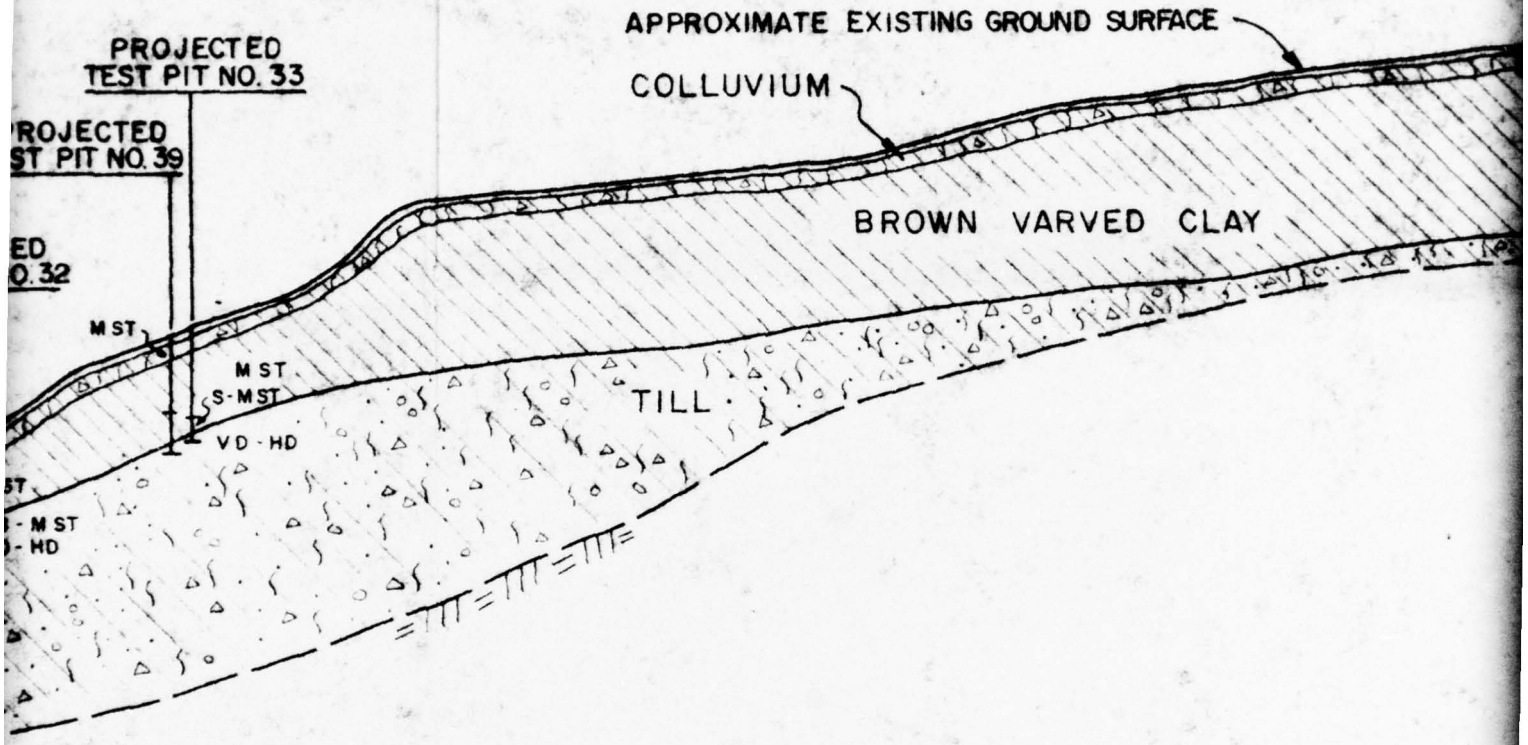

100
80
60
40
20
0
-20
ELEVATION
MURDERERS
CREEK
ALLUVIUM
ALLUVIAL SAND & GRAVEL

120
100
80

2


PROJECTED
TEST PIT NO. 33
PROJECTED
TEST PIT NO. 39
PROJECTED
TEST PIT NO. 32
MST
MST
S-MST
VD-HD
TOPSOIL
ST
COLLUVIUM
MST
S-MST
VD-HD
TILL
LUVIUM
SAND & GRAVEL

3



SECTION ⑦ - ⑦

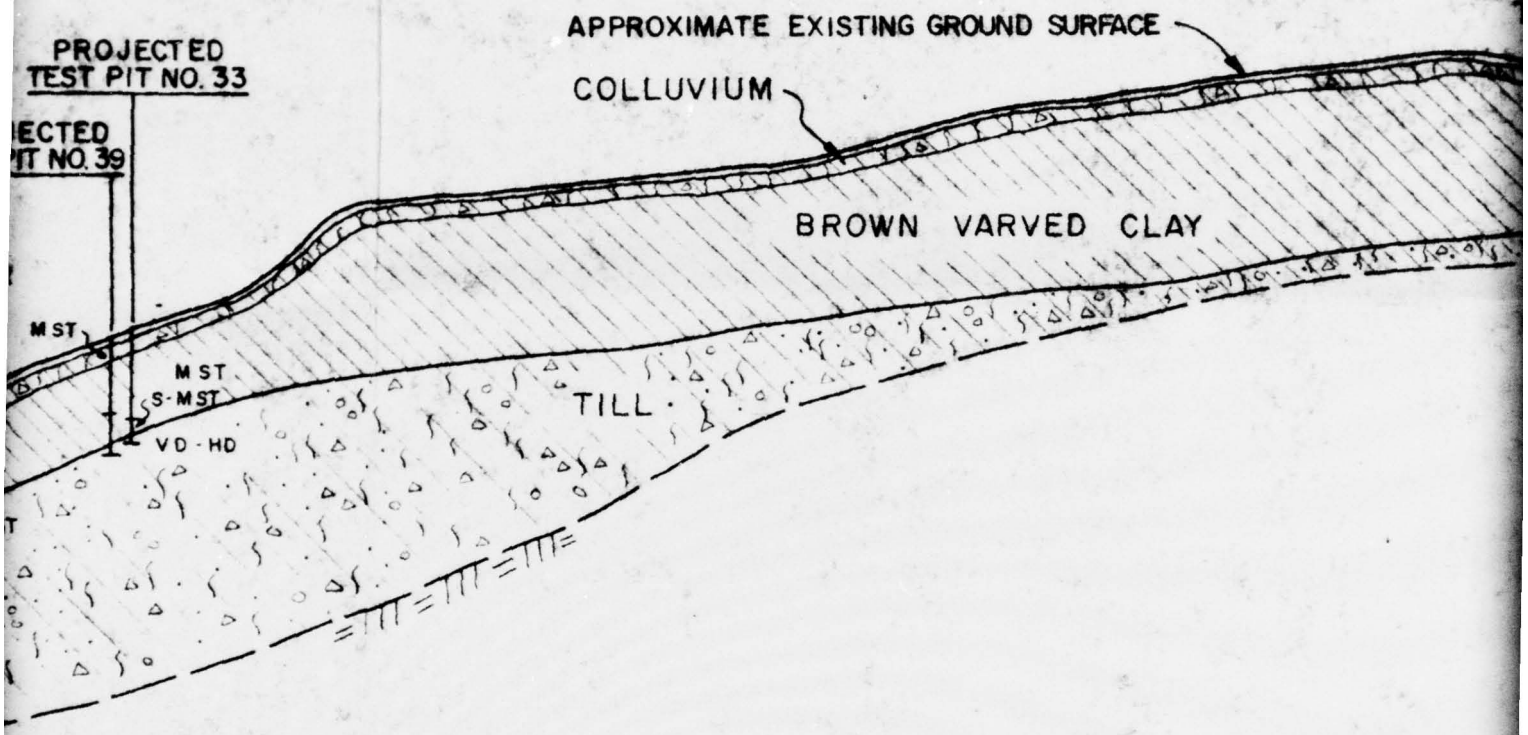
LOOKING SOUTHWEST

PROJECTED
BORING NO. 4

APPROXIMATE

TEST PIT NO 43

3

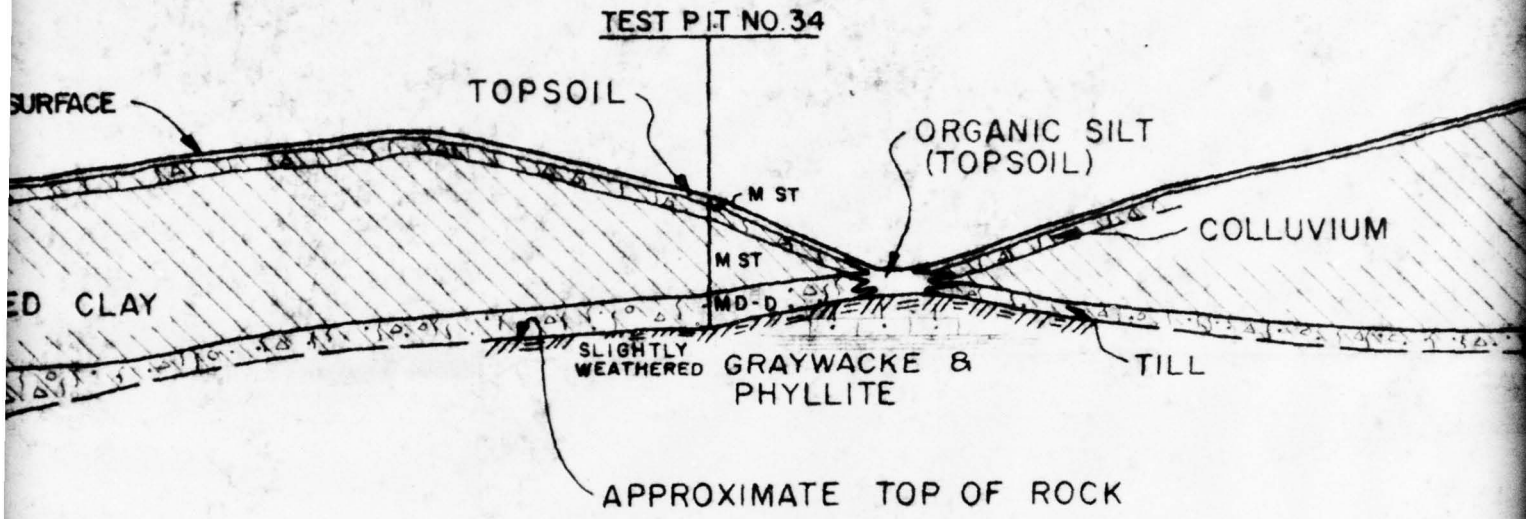


SECTION ⑦-⑦

LOOKING SOUTHWEST

PROJECTED
BORING NO. 4

APPROXIMATE EXI

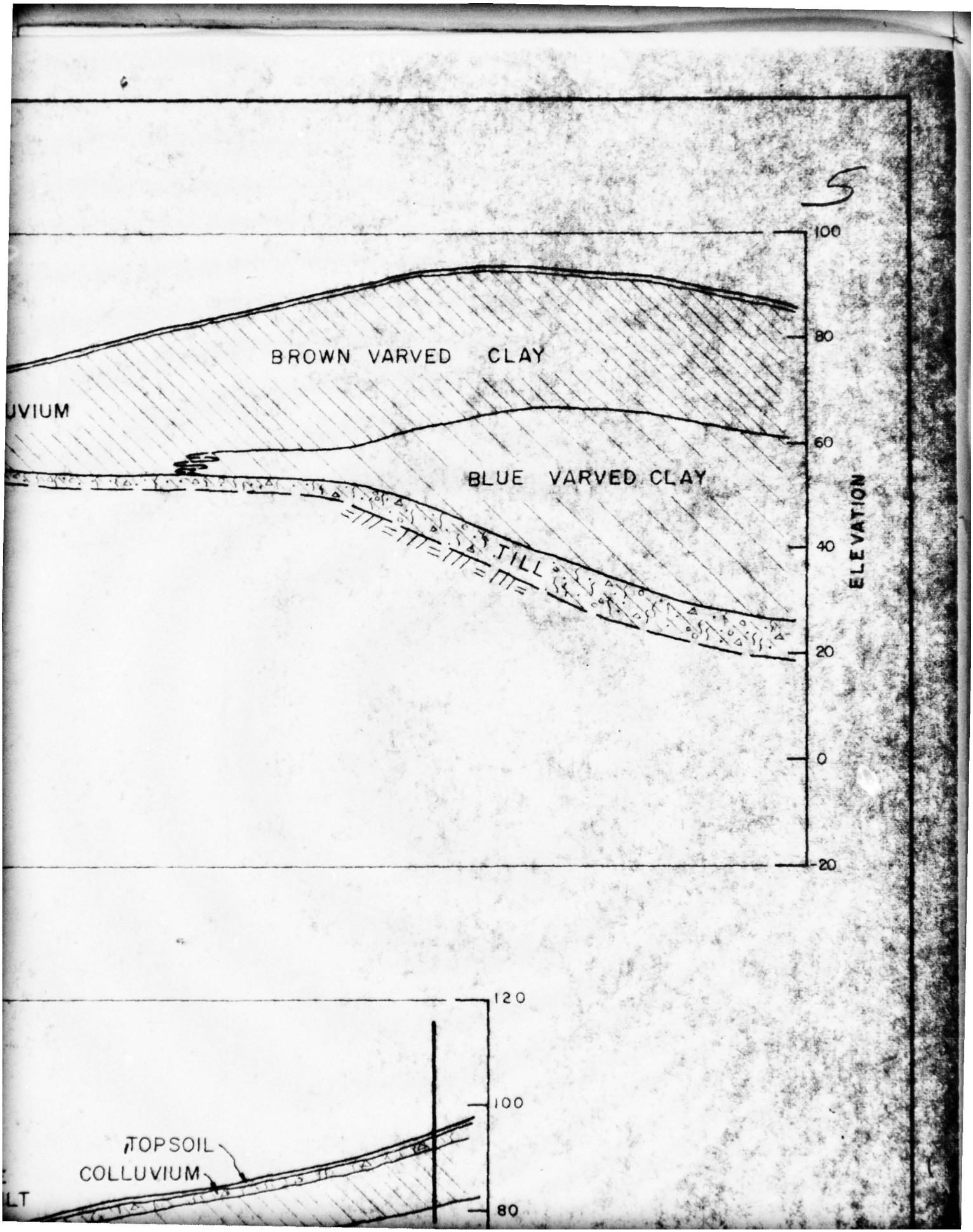


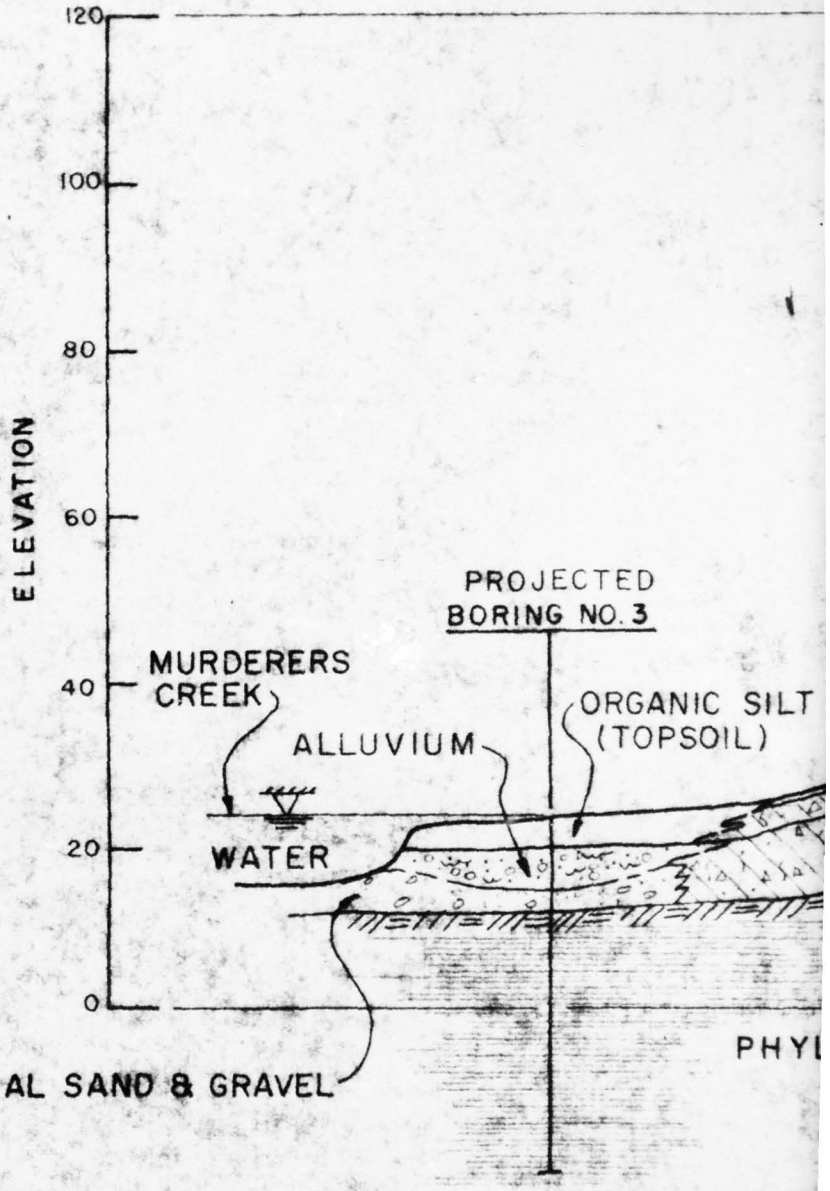
PROJECTED
TEST PIT NO. 41

APPROXIMATE EXISTING GROUND SURFACE

℄ OF RAVINE

ORGANIC SILT
(TOPSOIL)


5
100
80
60
40
20
0
20
ELEVATION
BROWN VARVED CLAY
UVIUM
BLUE VARVED CLAY
TILL
120
100
80
TOPSOIL
COLLUVIUM
LT



THE DEPTH AND THICKNESS OF THE SUBSURFACE STRATA INDICATED ON THE SECTIONS WERE GENERALIZED FROM AND INTERPOLATED BETWEEN THE TEST BORINGS. INFORMATION ON ACTUAL SUBSURFACE CONDITIONS EXISTS ONLY AT THE LOCATION OF THE TEST BORINGS AND IT IS POSSIBLE THAT SUBSURFACE CONDITIONS BETWEEN THE TEST BORINGS MAY VARY FROM THOSE INDICATED.

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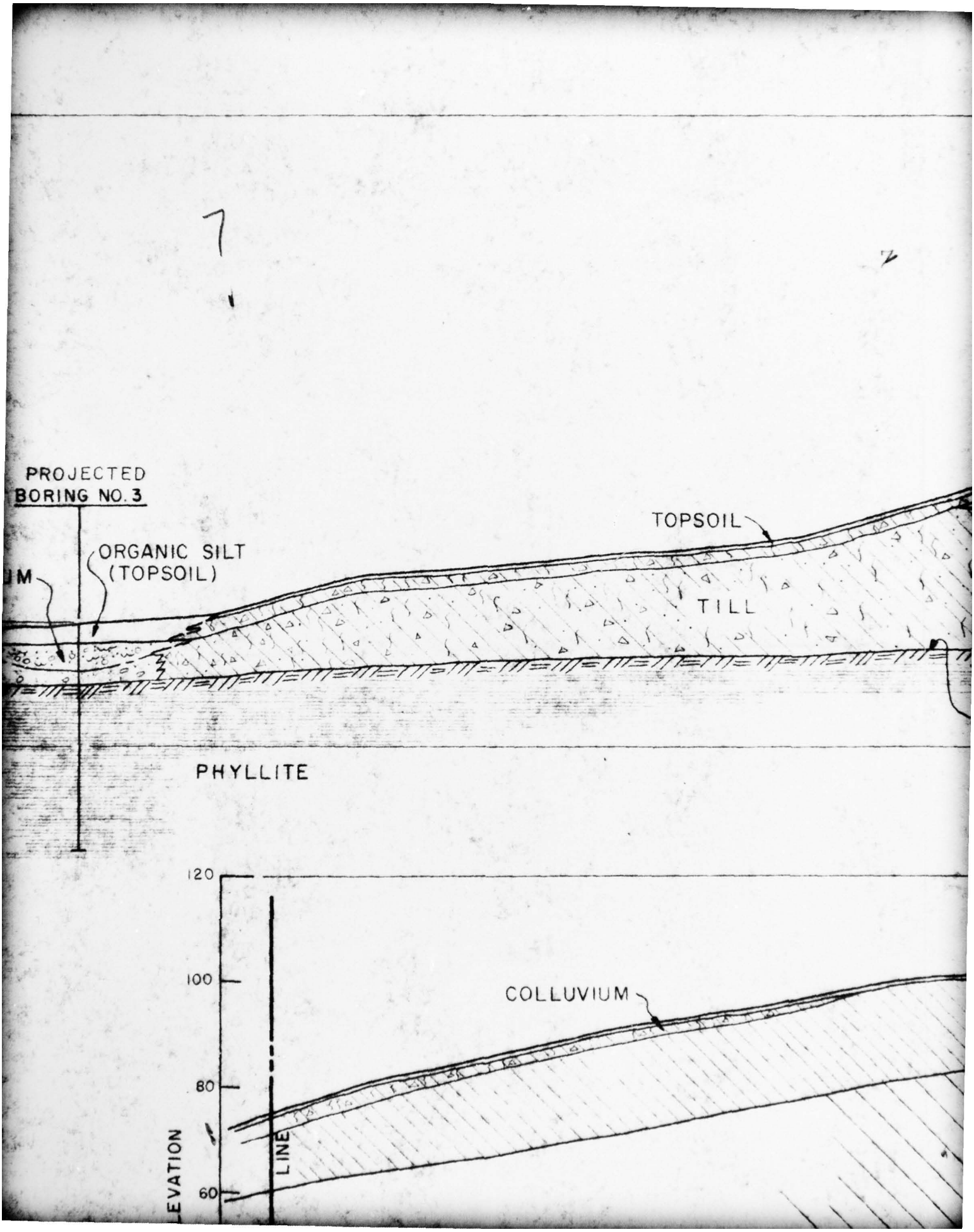
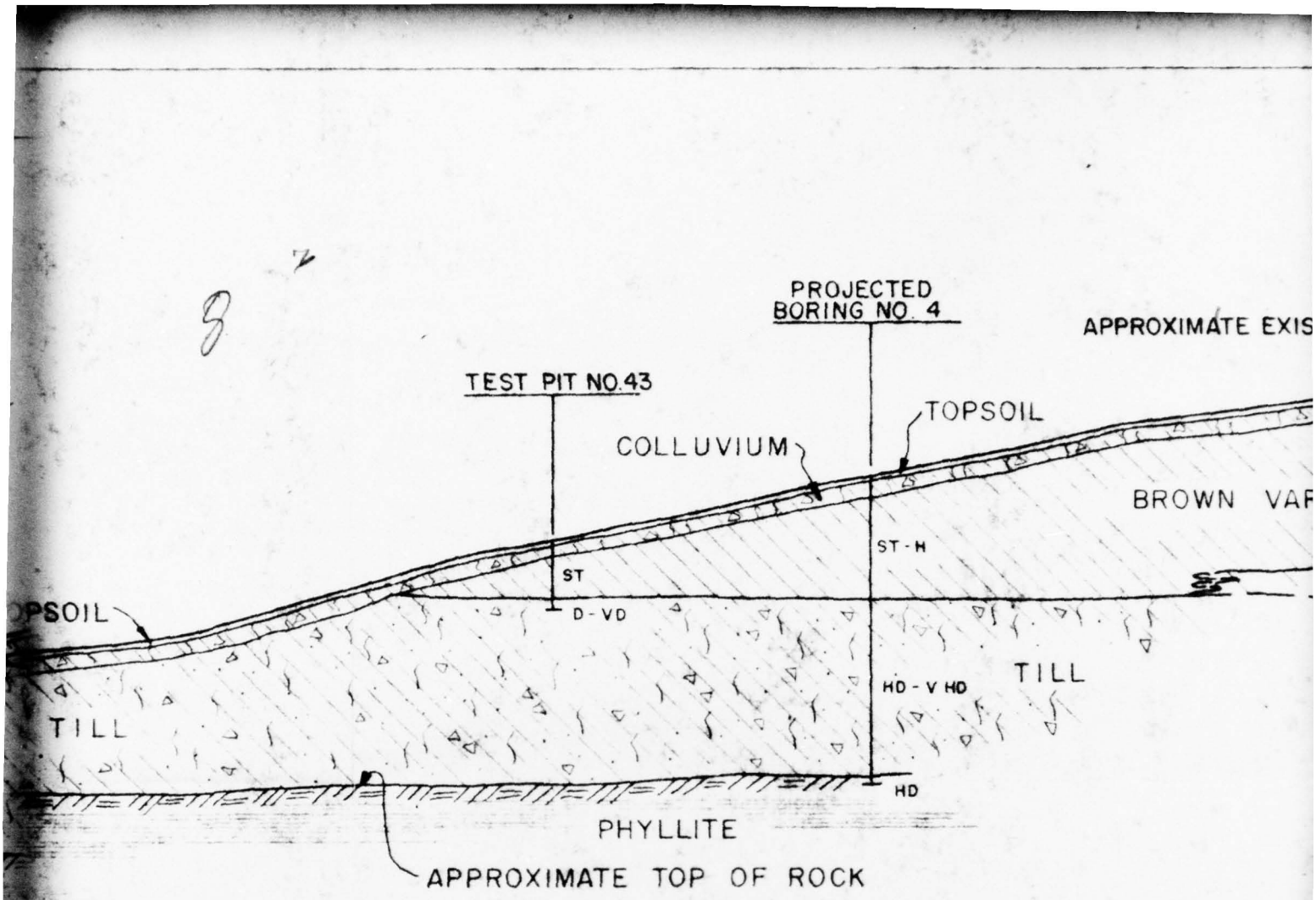
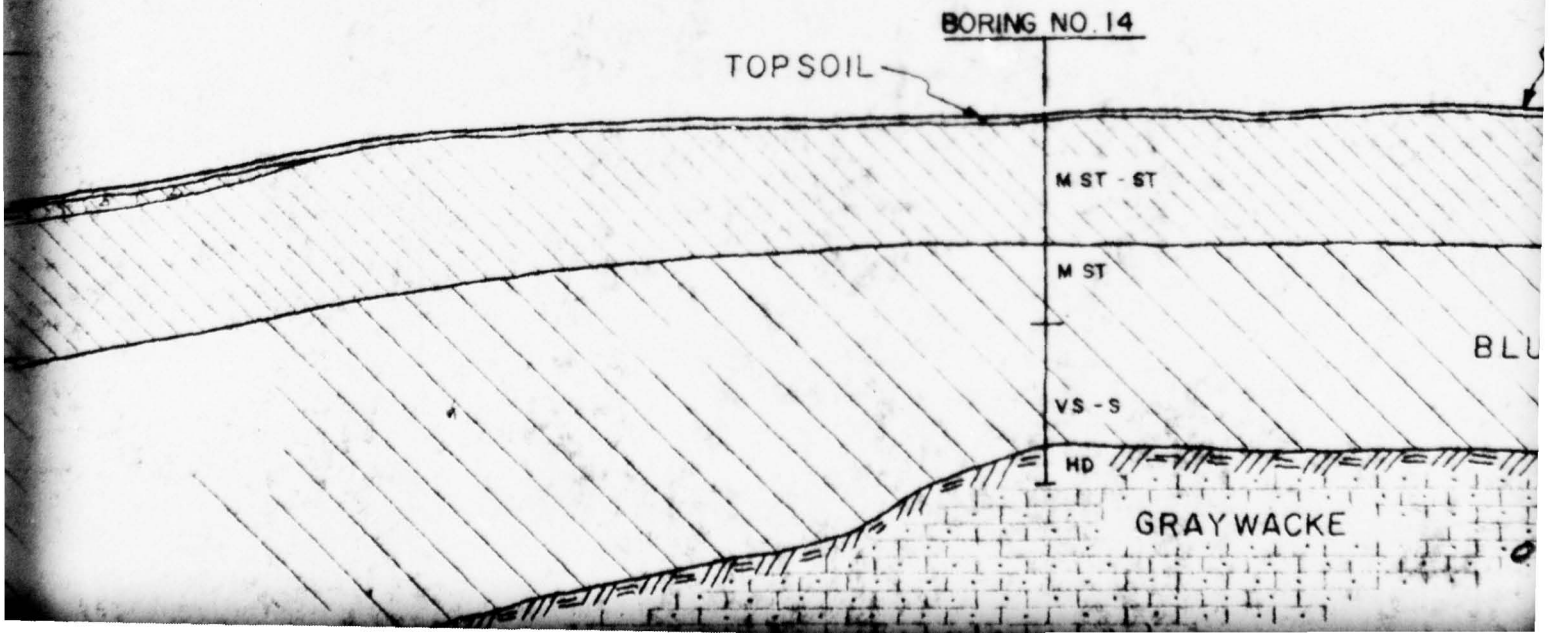
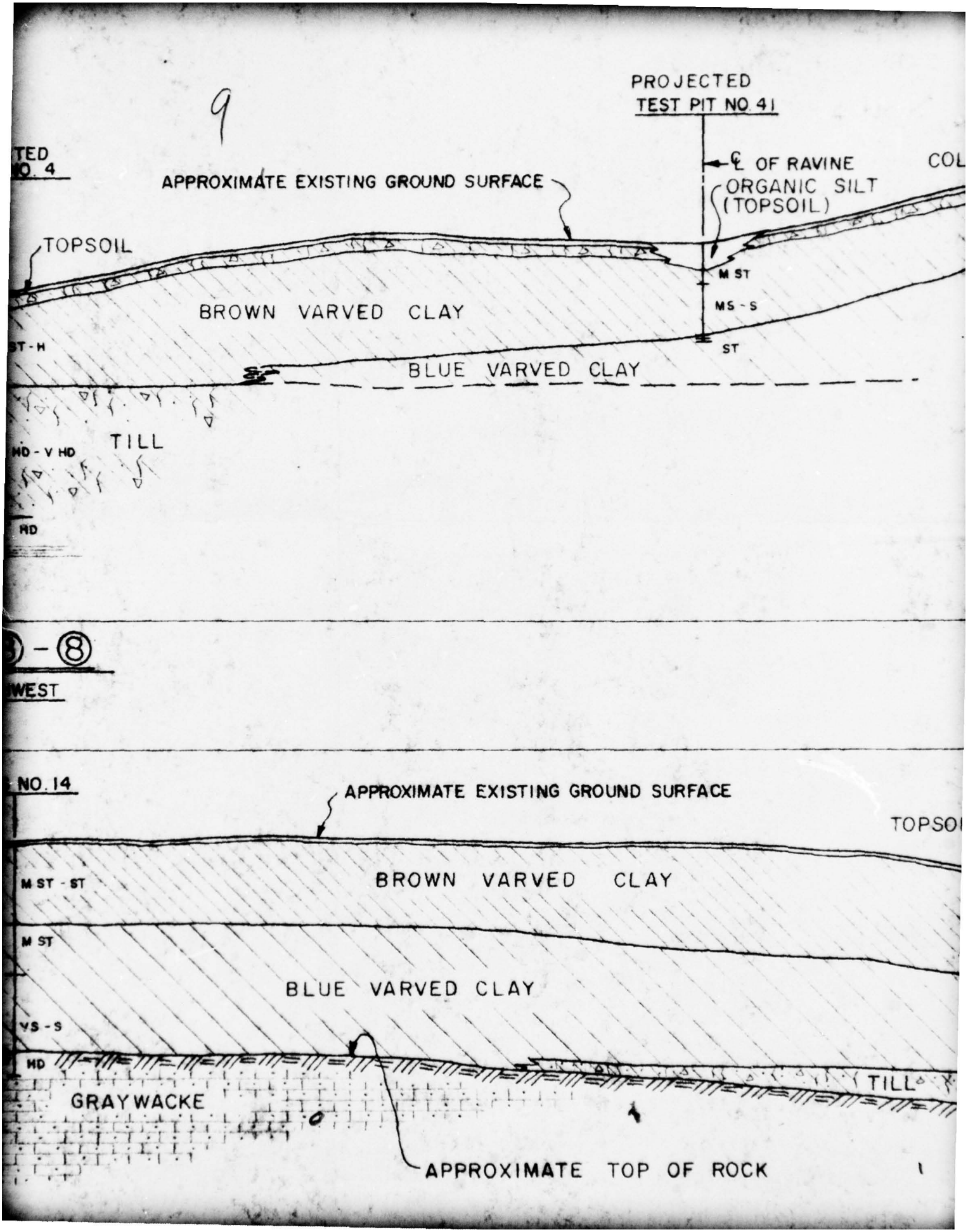

PROJECTED
BORING NO. 3
ORGANIC SILT
(TOPSOIL)
TOPSOIL
TILL
PHYLLITE
120
100
80
60
COLLUVIUM
LINE

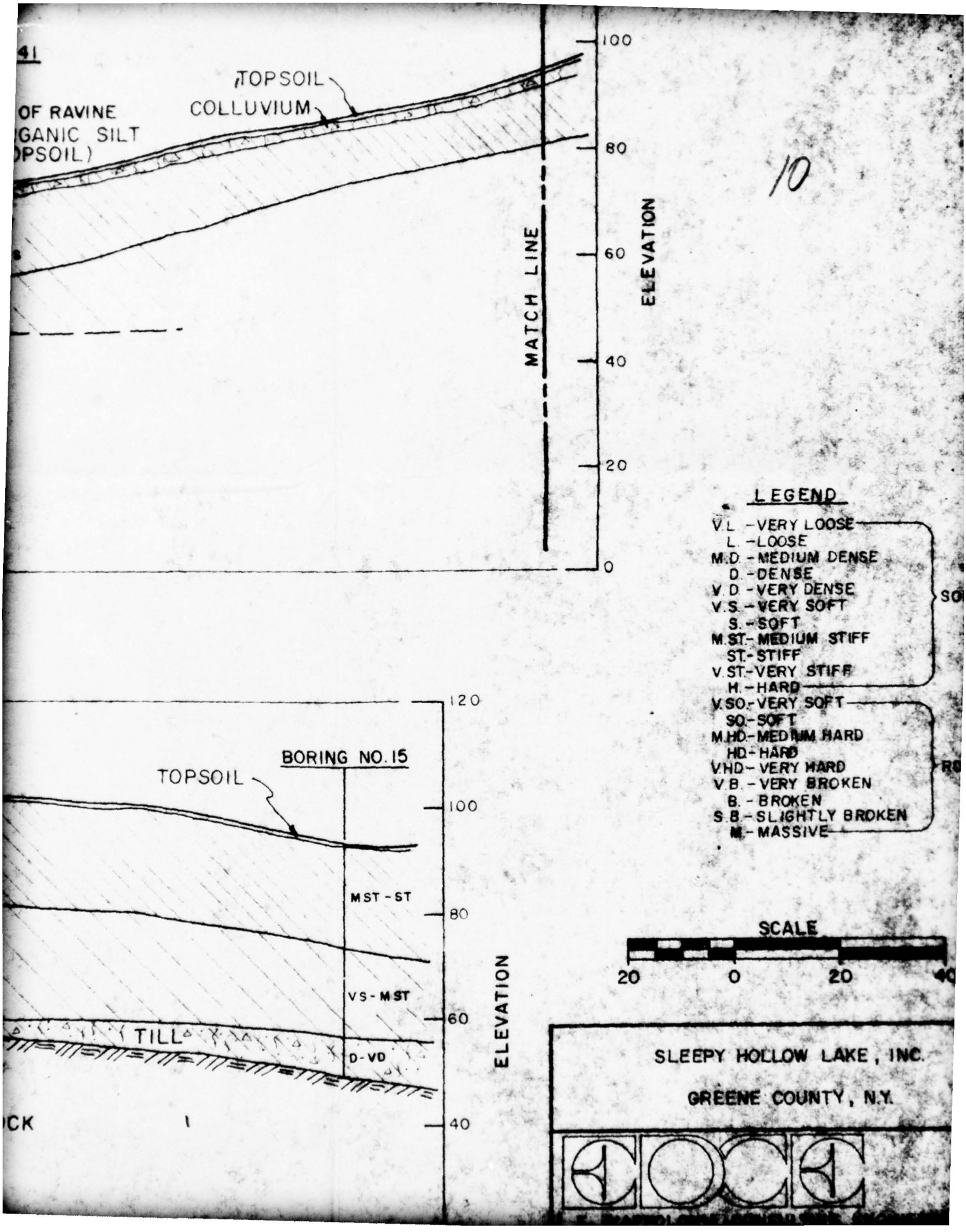


SECTION ⑧-⑧

LOOKING SOUTHWEST




9
PROJECTED
TEST PIT NO. 41
TED
O. 4
APPROXIMATE EXISTING GROUND SURFACE
℄ OF RAVINE
COL
ORGANIC SILT
(TOPSOIL)
TOPSOIL
M ST
MS - S
BROWN VARVED CLAY
ST - H
ST
BLUE VARVED CLAY
TILL
HD - V HD
HD
- ⑧
WEST
NO. 14
APPROXIMATE EXISTING GROUND SURFACE
TOPSO
M ST - ST
BROWN VARVED CLAY
M ST
BLUE VARVED CLAY
VS - S
HD
TILL
GRAYWACKE
APPROXIMATE TOP OF ROCK


41
OF RAVINE
GANIC SILT
PSOIL)
TOPSOIL
COLLUVIUM
MATCH LINE
ELEVATION
100
80
60
40
20
0
10
LEGEND
V.L - VERY LOOSE
L. - LOOSE
M.D. - MEDIUM DENSE
D. - DENSE
V.D. - VERY DENSE
V.S. - VERY SOFT
S. - SOFT
M.ST. - MEDIUM STIFF
ST. - STIFF
V.ST. - VERY STIFF
H. - HARD
V.SO. - VERY SOFT
SO. - SOFT
M.HD. - MEDIUM HARD
HD. - HARD
V.HD. - VERY HARD
V.B. - VERY BROKEN
B. - BROKEN
S.B. - SLIGHTLY BROKEN
M. - MASSIVE
SCALE
20 0 20
BORING NO. 15
TOPSOIL
MST - ST
VS - MST
TILL
D - VD
120
100
80
60
40
ELEVATION
SLEEPY HOLLOW LAKE, INC.
GREENE COUNTY, N.Y.

ALLUVIAL SAND & GRAVEL

THE DEPTH AND THICKNESS OF THE SUBSURFACE STRATA INDICATED ON THE SECTIONS WERE GENERALIZED FROM AND INTERPOLATED BETWEEN THE TEST BORINGS. INFORMATION ON ACTUAL SUBSURFACE CONDITIONS EXISTS ONLY AT THE LOCATION OF THE TEST BORINGS AND IT IS POSSIBLE THAT SUBSURFACE CONDITIONS BETWEEN THE TEST BORINGS MAY VARY FROM THOSE INDICATED.

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NOTES:
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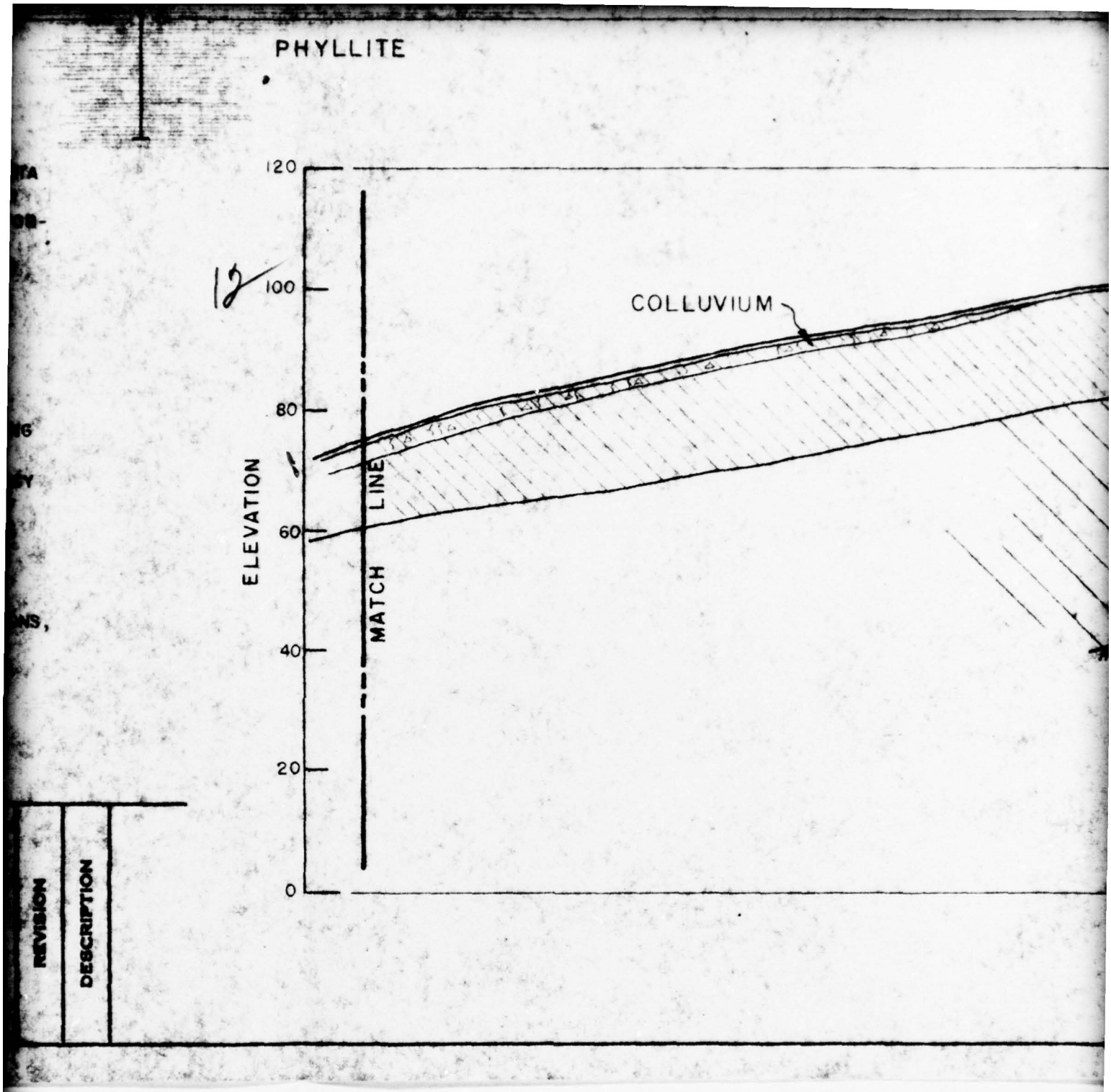
2. FOR DETAILED DESCRIPTION OF BORINGS, SEE DWG'S 71-111-E17 THROUGH E20
3. FOR DETAILED DESCRIPTION OF TEST PITS, SEE DWG'S 71-111-E21 THROUGH E25

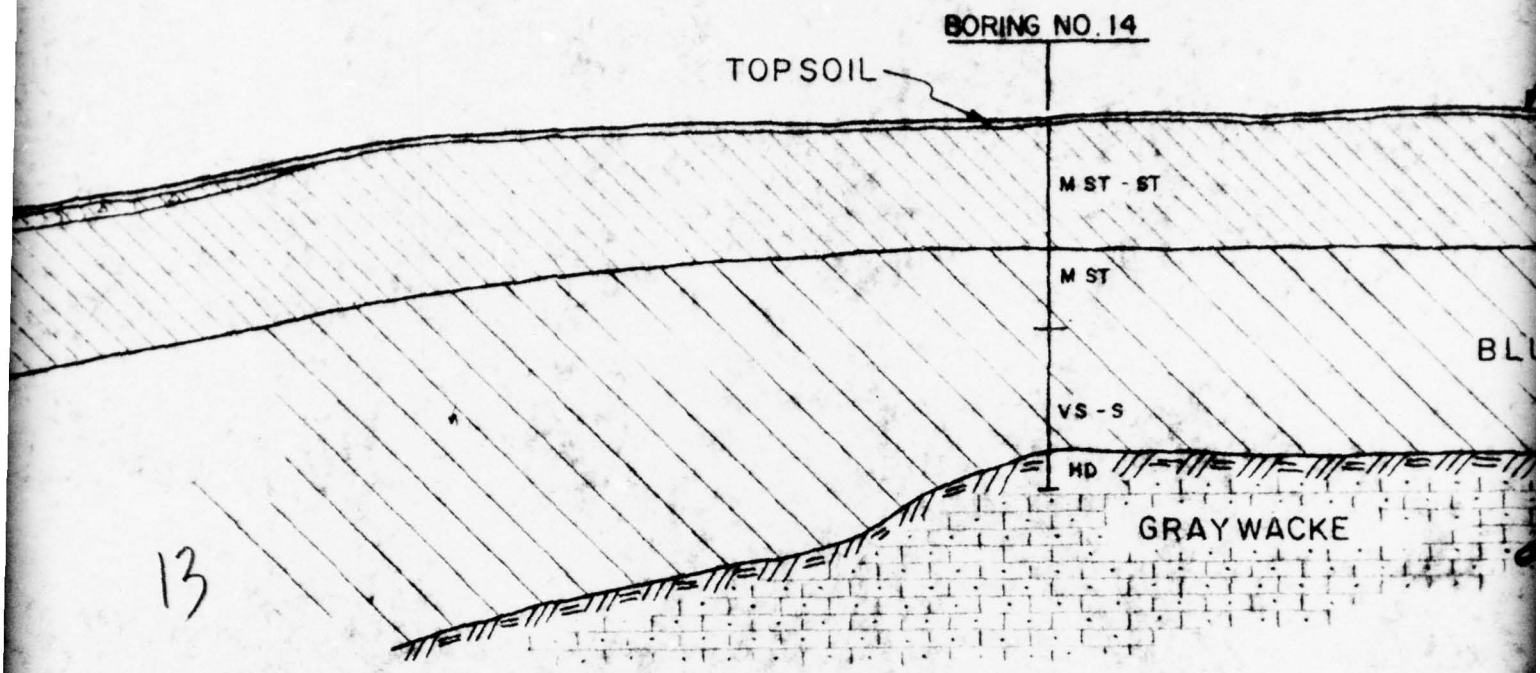
ELEVATION
120
100
80
60
40
20
0

REVISION	DESCRIPTION

REFERENCE DRAWINGS

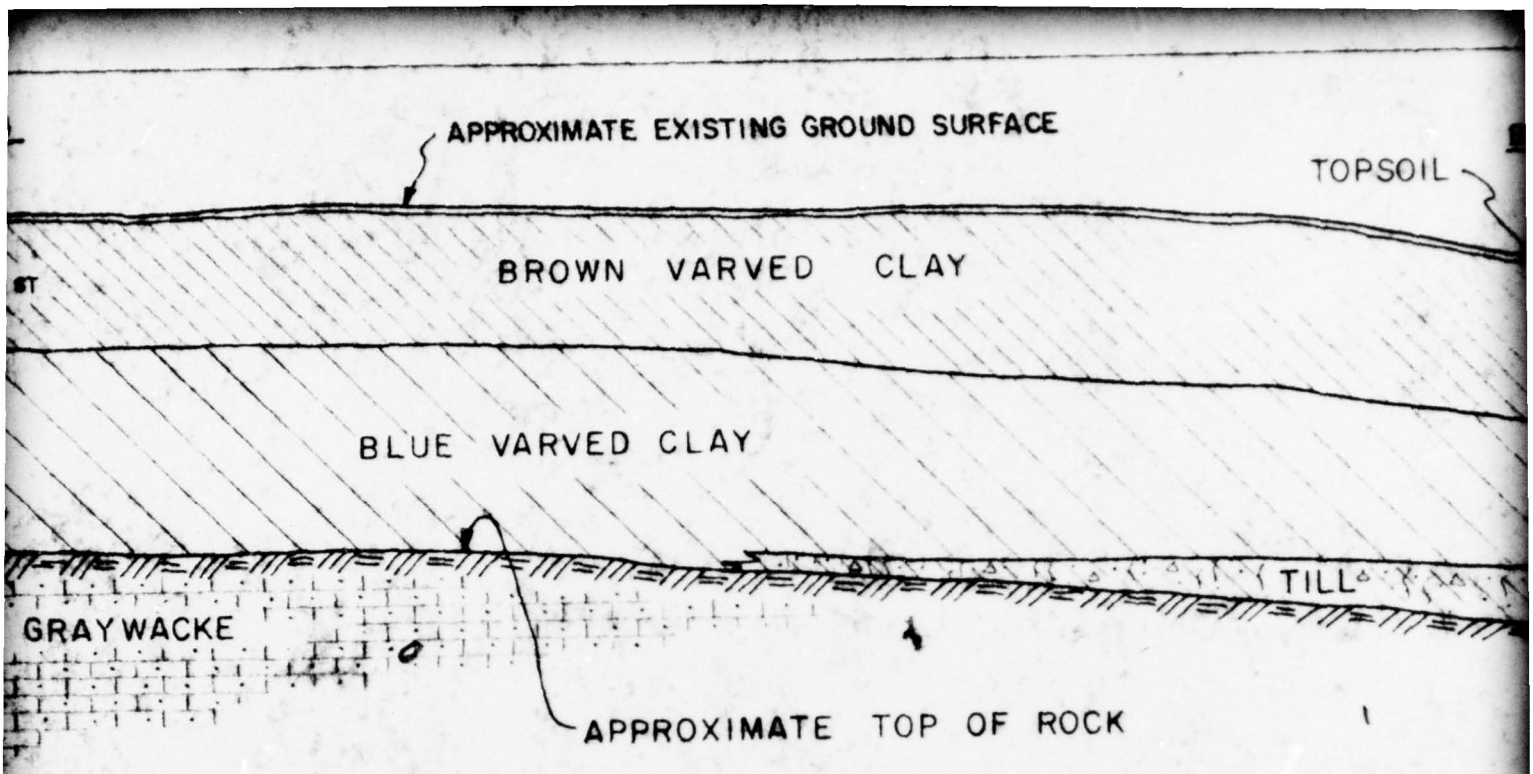

PHYLLITE
120
100
80
60
40
20
0
ELEVATION
MATCH LINE
COLLUVIUM
REVISION
DESCRIPTION

LOOKING SOUTHWEST



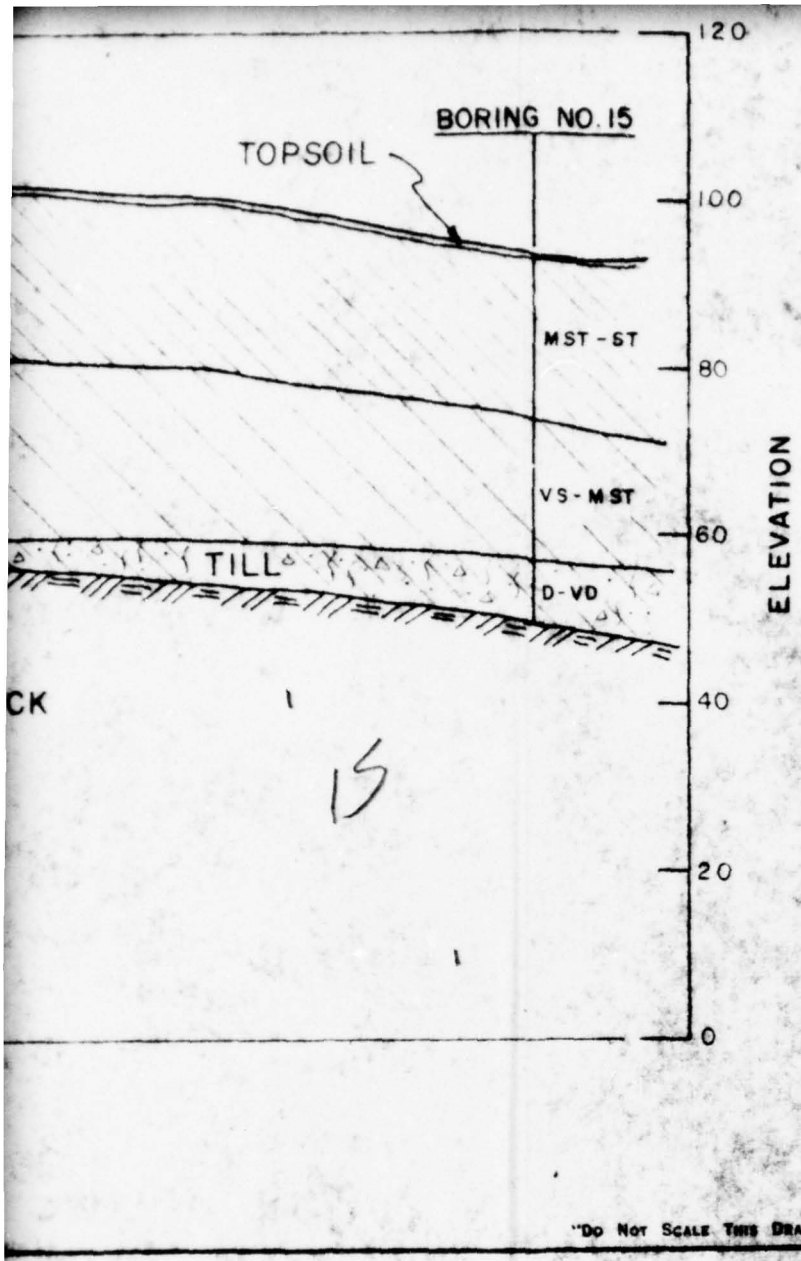
SECTION ⑧-⑧

LOOKING SOUTHWEST


APPROXIMATE EXISTING GROUND SURFACE
TOPSOIL
BROWN VARVED CLAY
BLUE VARVED CLAY
TILL
GRAYWACKE
APPROXIMATE TOP OF ROCK

14

8



VSO - VERY SOFT
SO - SOFT
M.HD - MEDIUM HARD
HD - HARD
VHD - VERY HARD
V.B. - VERY BROKEN
B. - BROKEN
S.B. - SLIGHTLY BROKEN
M. - MASSIVE

SCALE
20 0 20 40

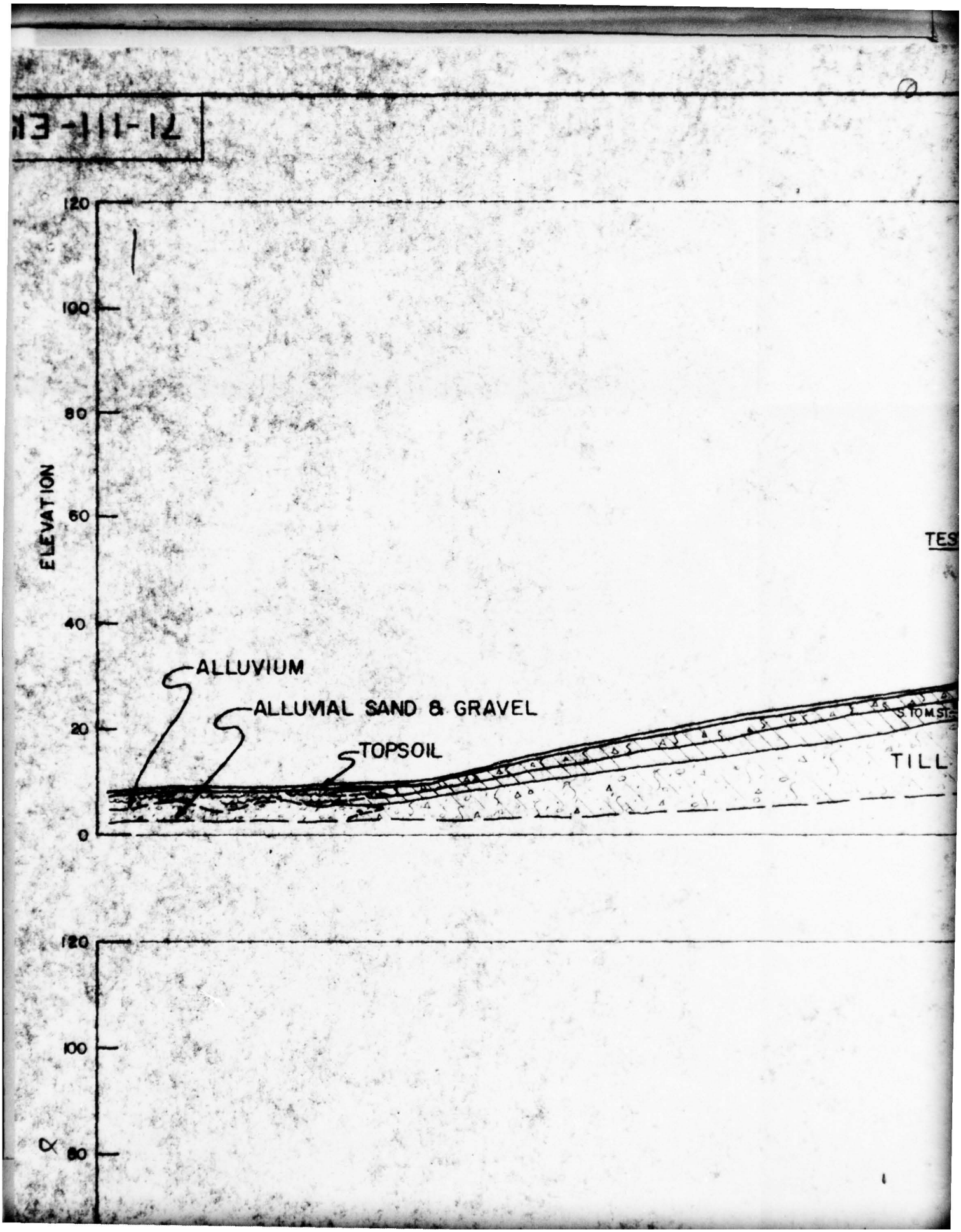
SLEEPY HOLLOW LAKE, INC.
GREENE COUNTY, N.Y.

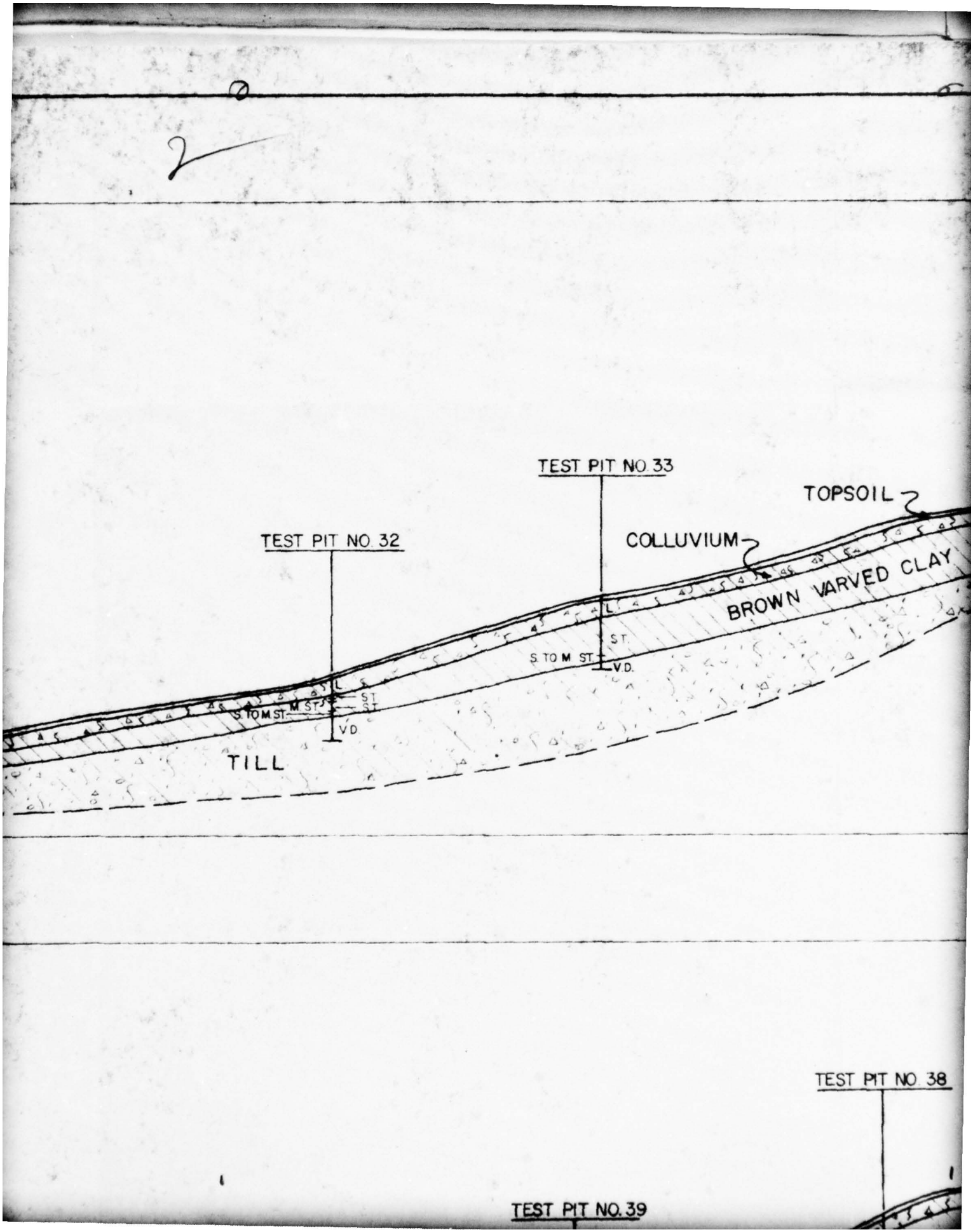
E. D'APPOLONIA CONSULTING ENGINEERS
10 DUFF ROAD
PITTSBURGH, PA. 15235
CHESTERTON, IND.

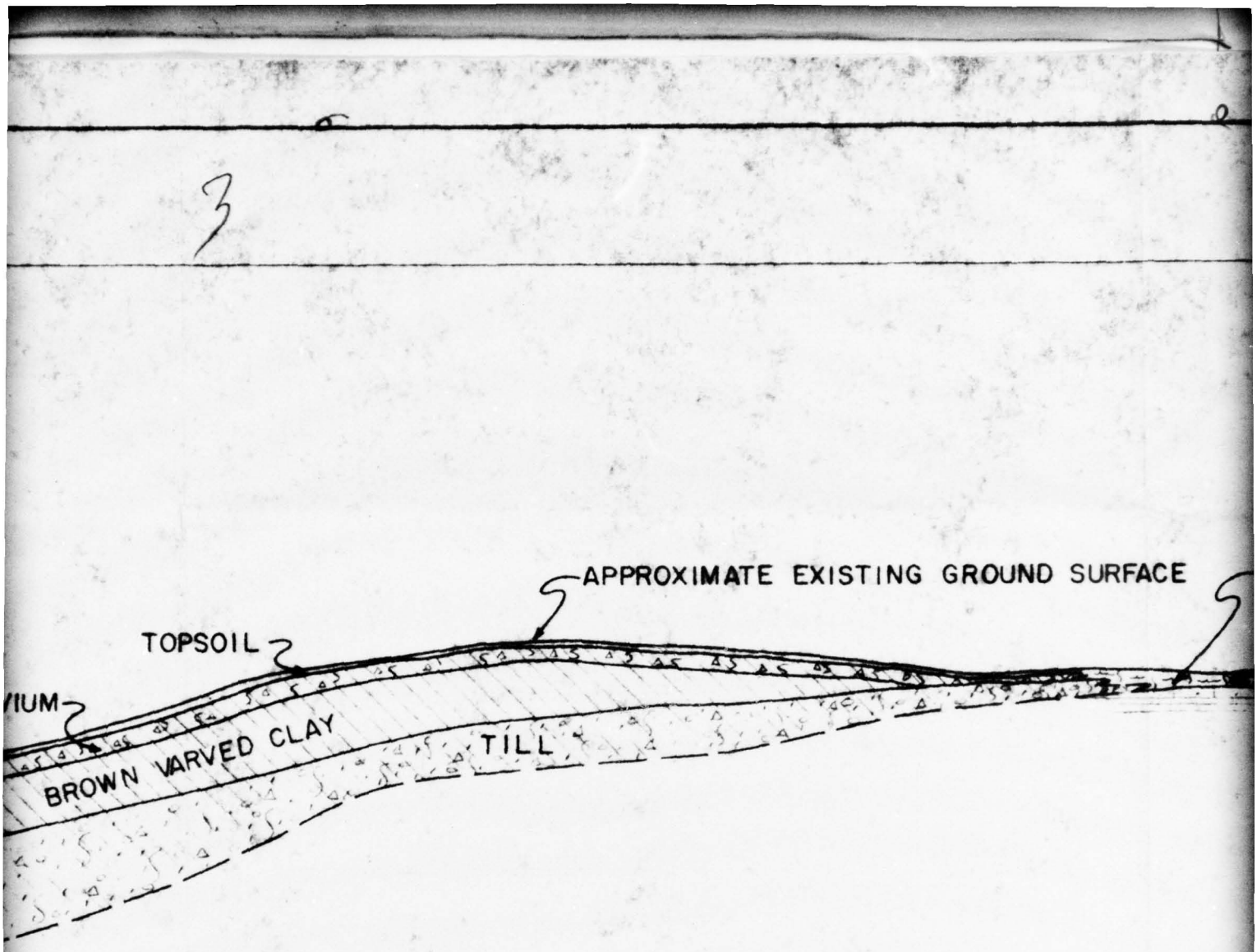
SLEEPY HOLLOW LAKE
GREENE COUNTY, N.Y.
SUBSURFACE INVESTIGATION
SUBSURFACE SECTIONS - SHEET 3

DRAWN BY	C/D	12-6-71	DRAWING NO.
CHECKED BY	WHB	12-20-71	71-111-E

"DO NOT SCALE THIS DRAWING"

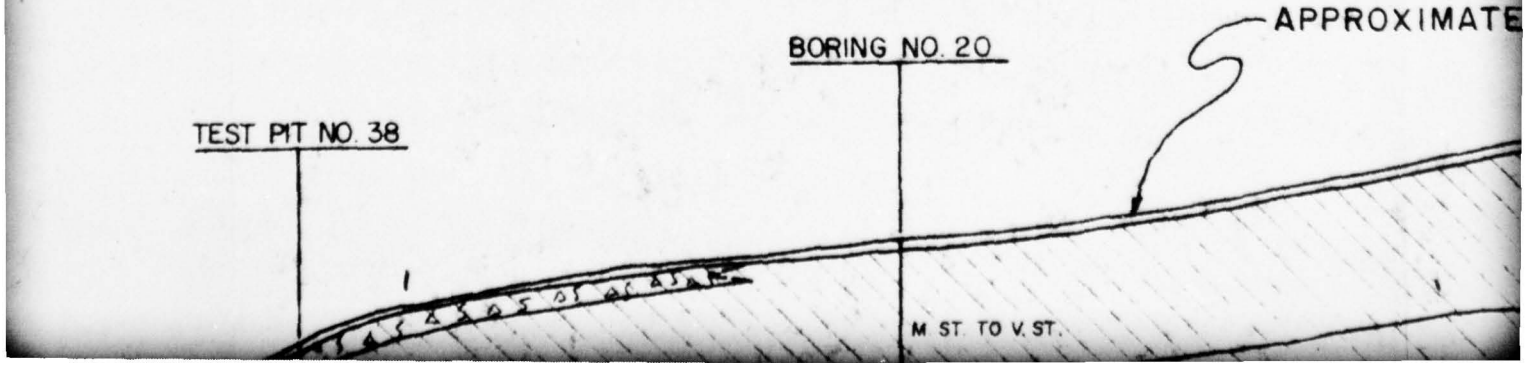

ELEVATION
120
100
80
60
40
20
0
ALLUVIUM
ALLUVIAL SAND & GRAVEL
TOPSOIL
TILL
120
100
80


TEST PIT NO. 33
TOPSOIL
TEST PIT NO. 32
COLLUVIUM
BROWN VARVED CLAY
L
ST
S. TO M. ST
V.D.
L
ST
ST
S. TO M. ST
V.D.
TILL
TEST PIT NO. 38
TEST PIT NO. 39

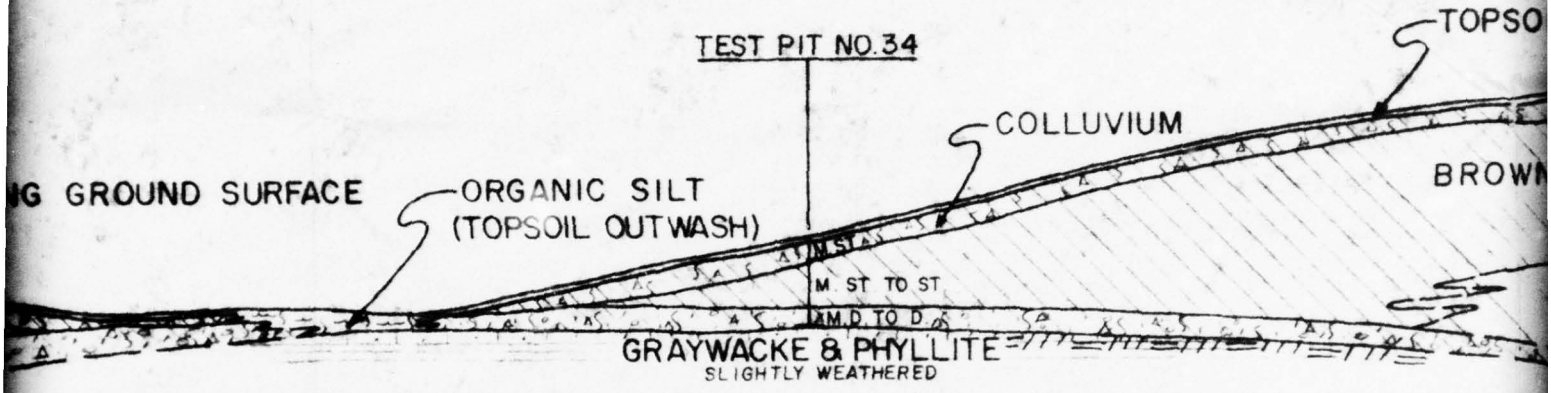


SECTION ⑤-⑤

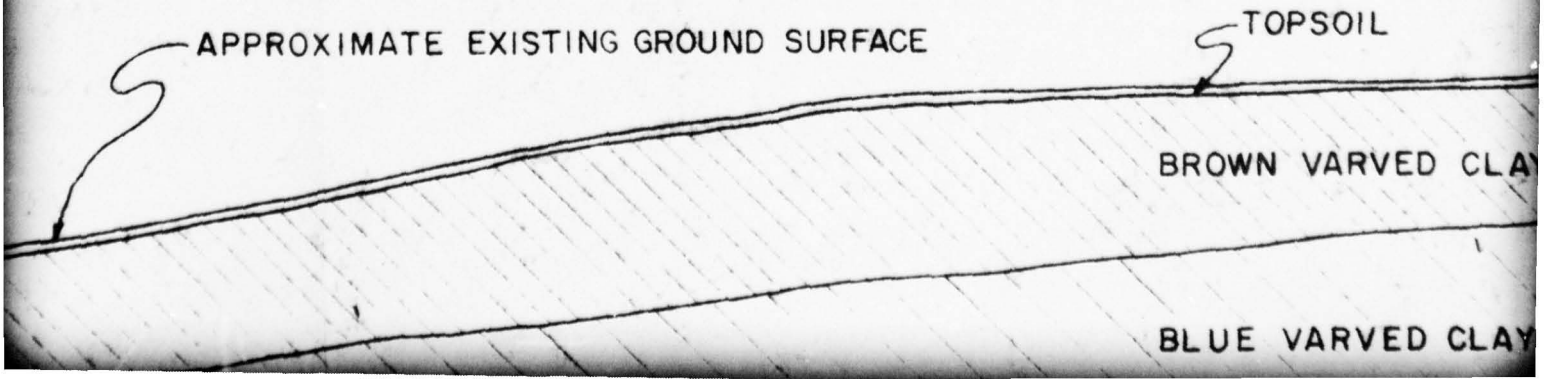
LOOKING SOUTH

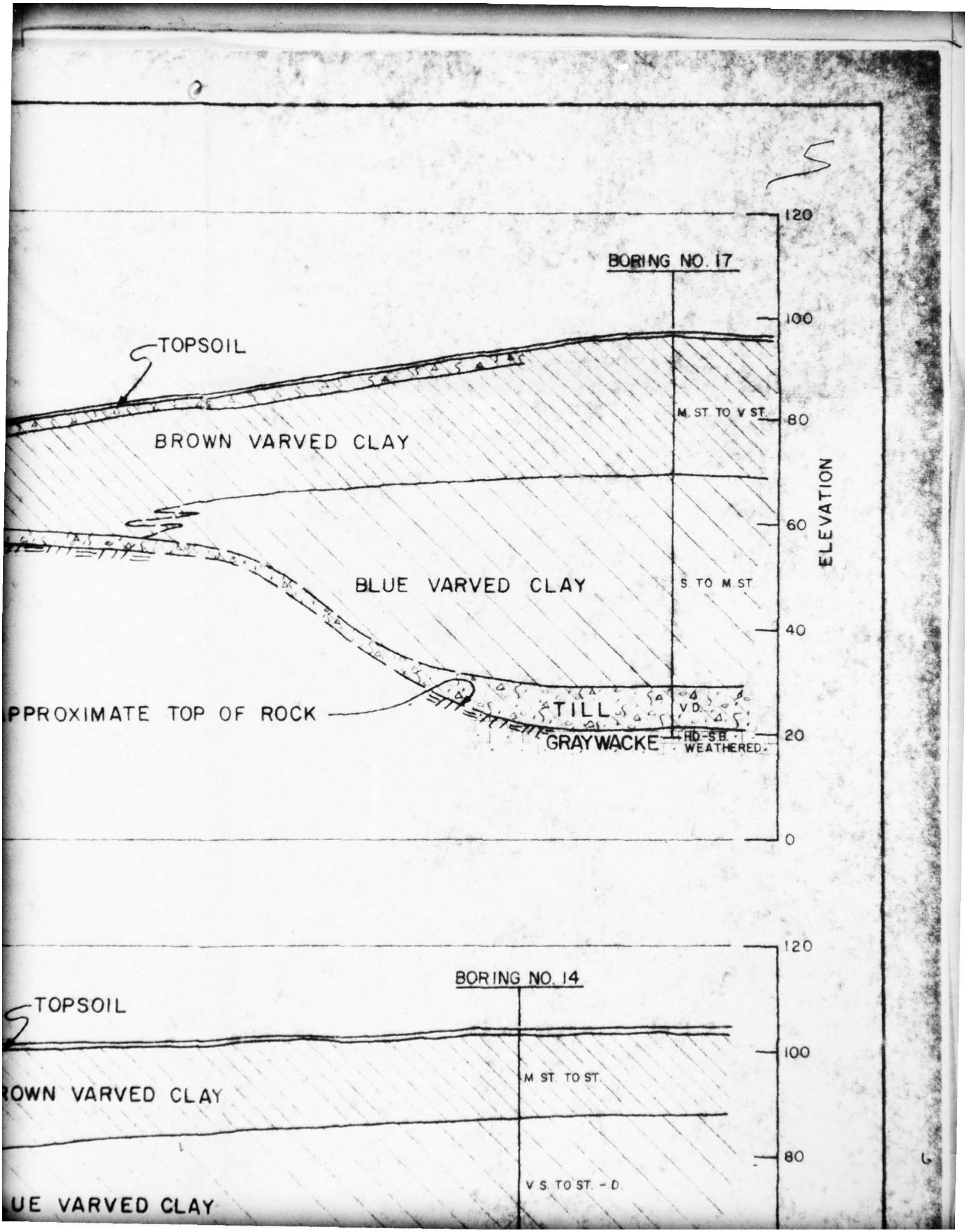


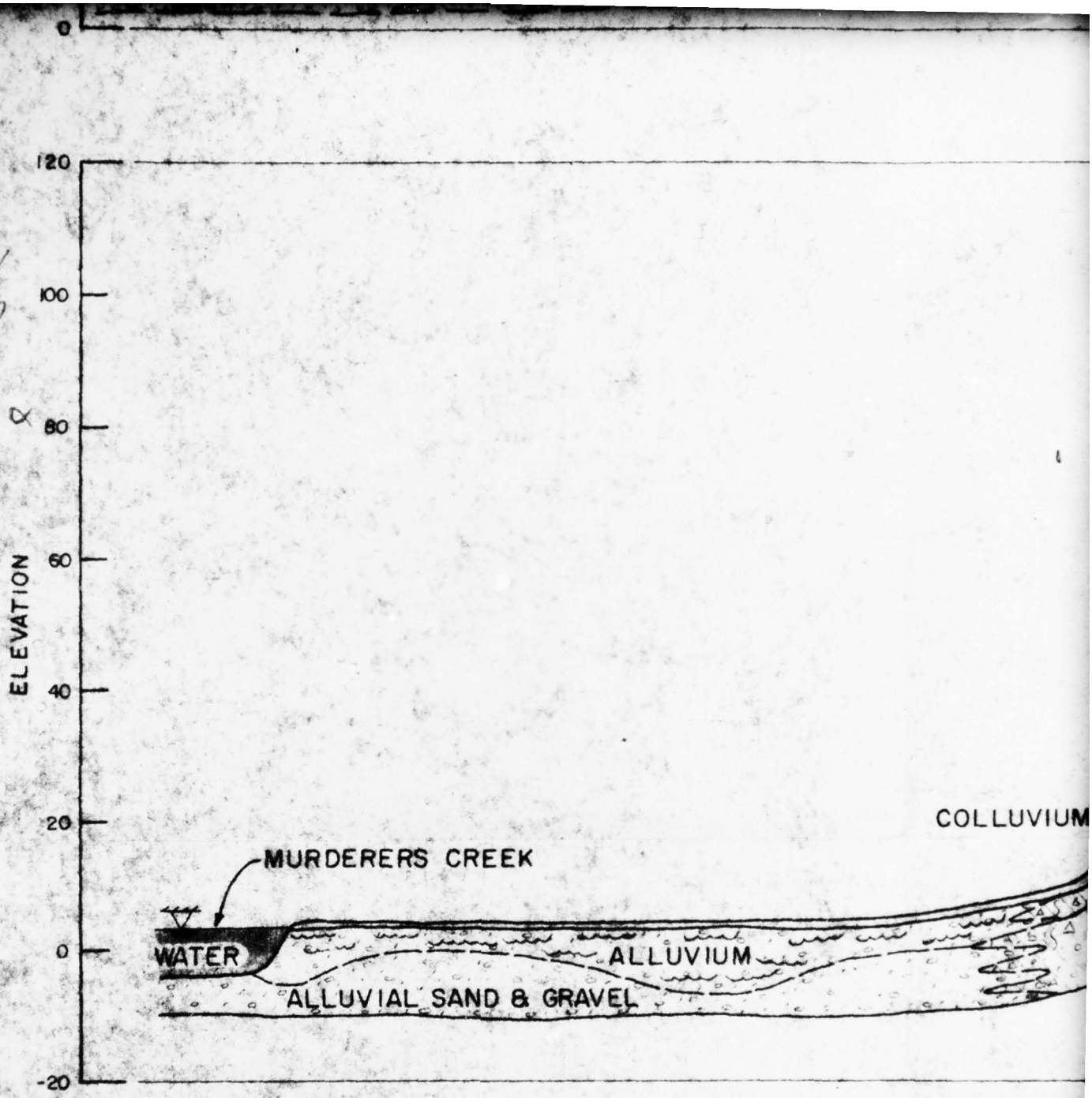
4



APPROXIMATE TOP




BORING NO. 17
TOPSOIL
BROWN VARVED CLAY
BLUE VARVED CLAY
PPROXIMATE TOP OF ROCK
TILL
GRAYWACKE
M. ST. TO V ST.
S. TO M. ST.
V.D.
HD.-S.B.
WEATHERED
120
100
80
60
40
20
0
ELEVATION
BORING NO. 14
TOPSOIL
ROWN VARVED CLAY
UE VARVED CLAY
M ST. TO ST.
V S. TO ST. - D.
120
100
80



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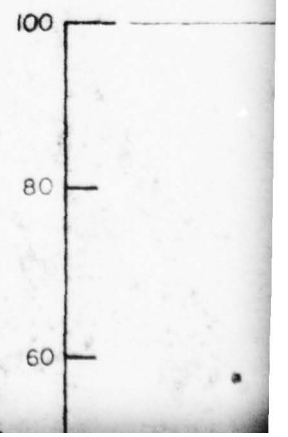
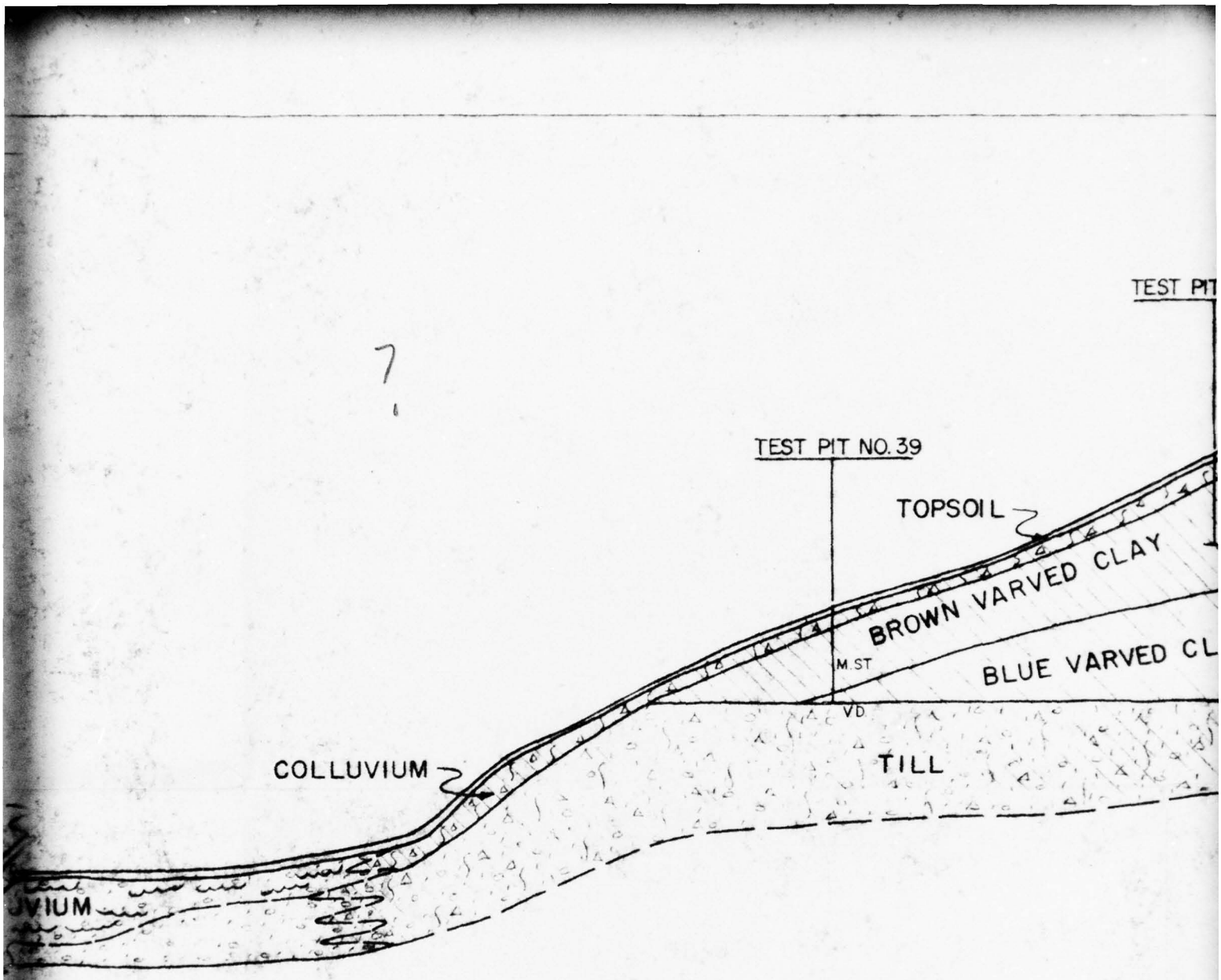
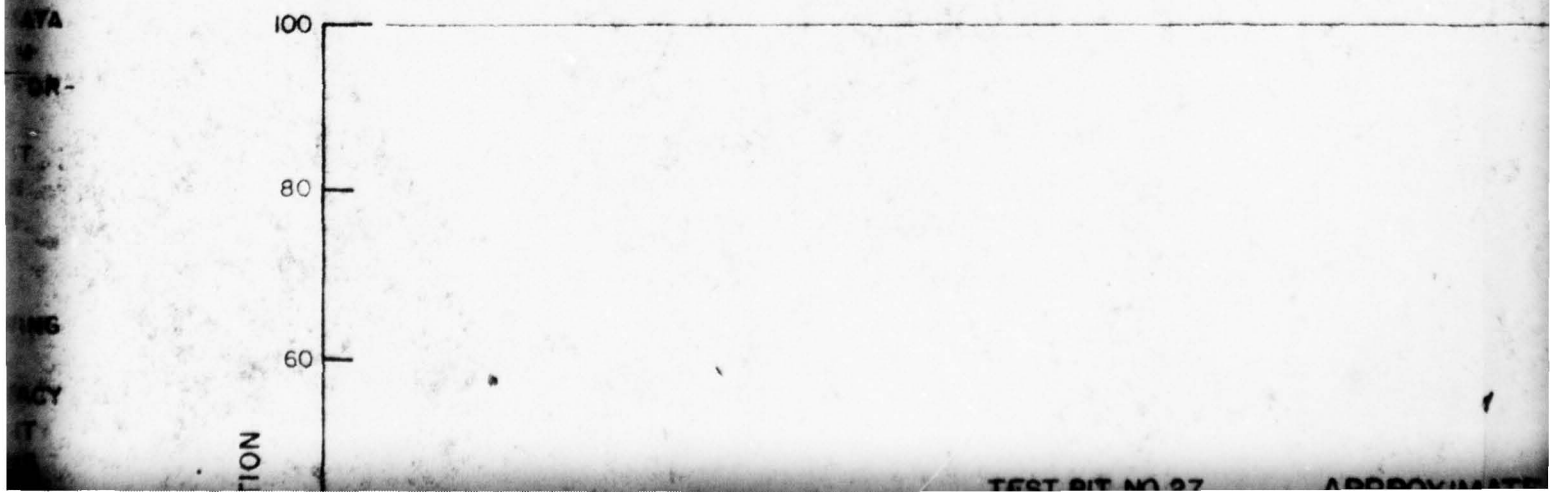
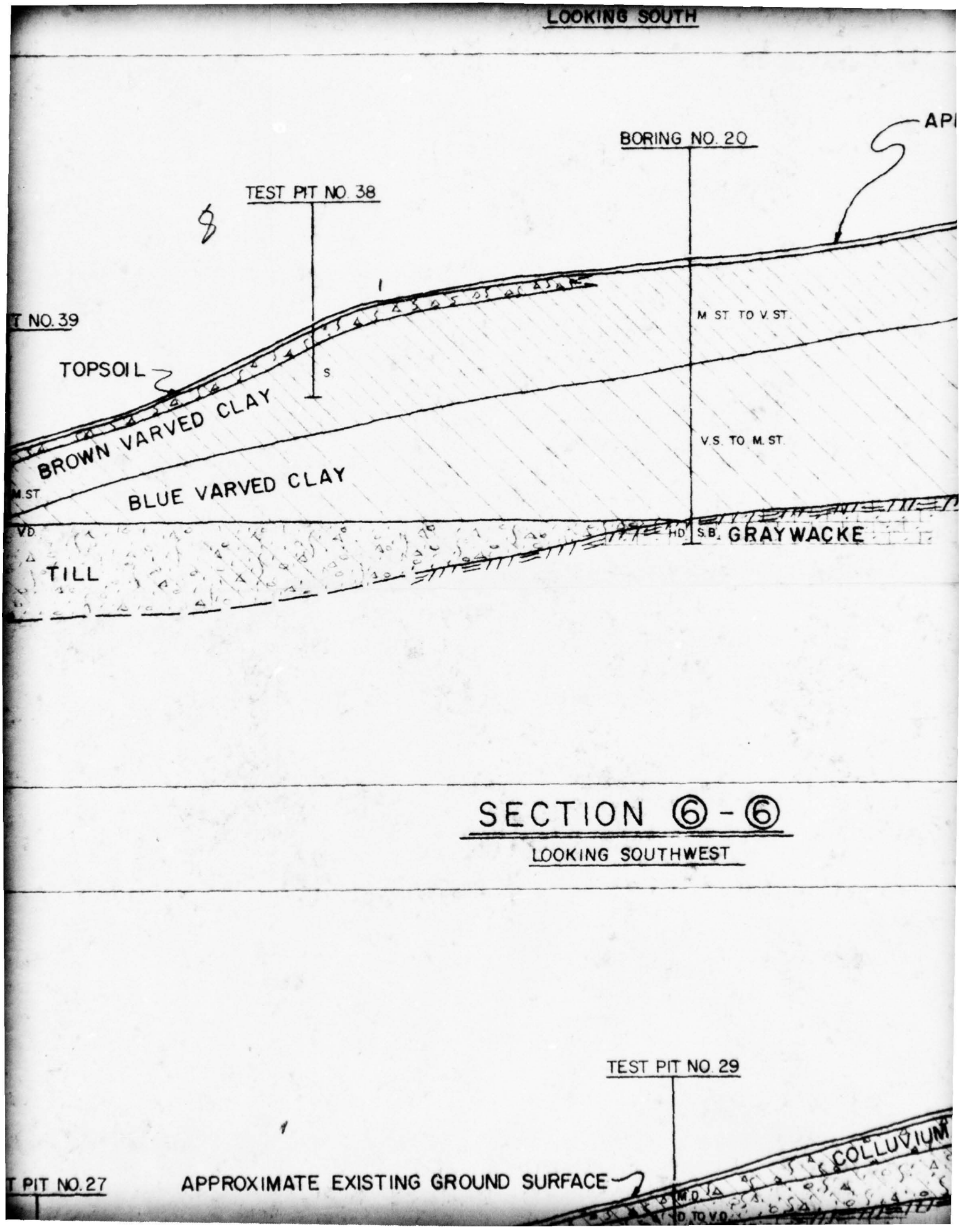


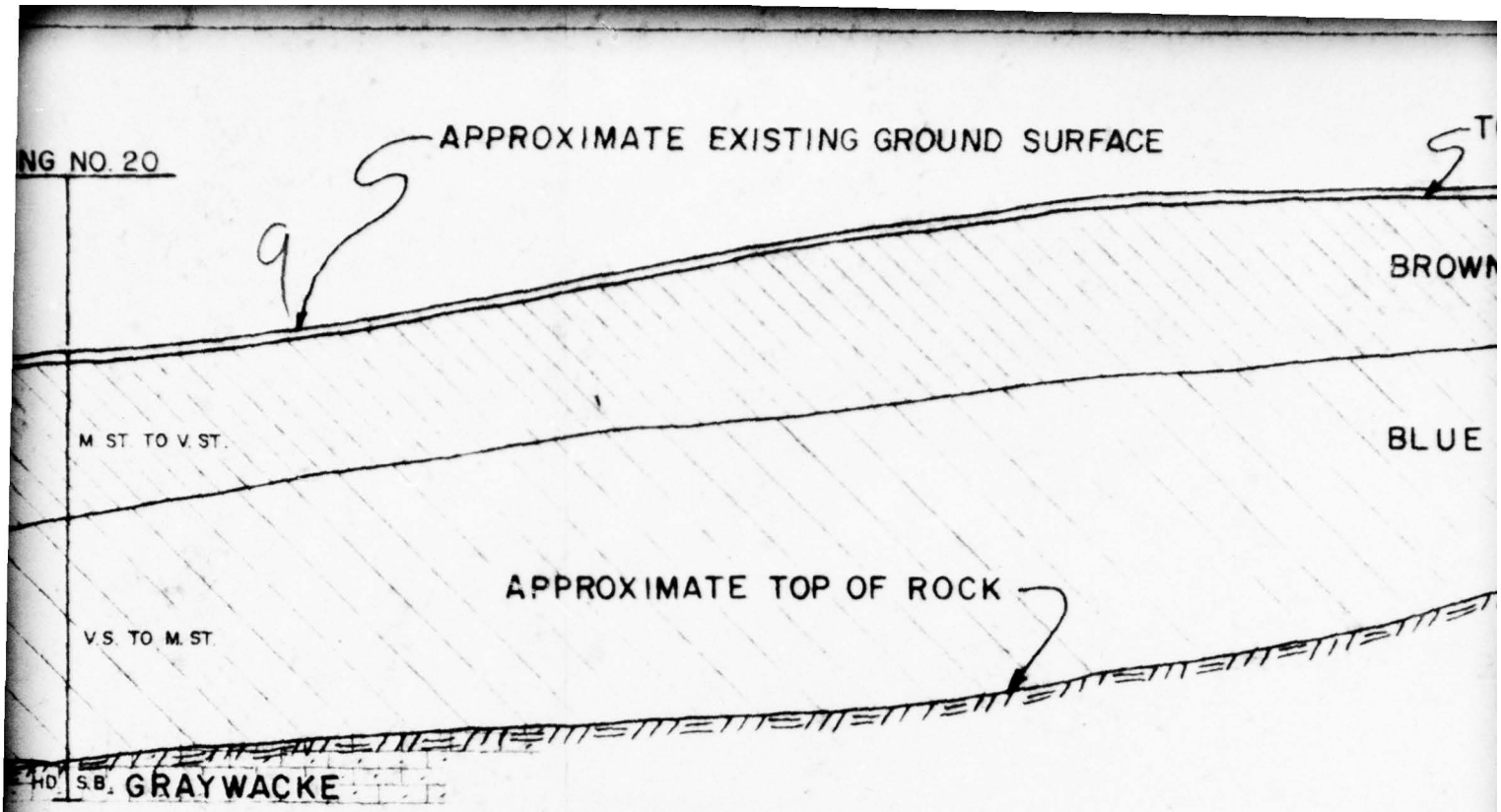

TEST PIT
TEST PIT NO. 39
TOPSOIL
BROWN VARVED CLAY
M.ST
BLUE VARVED CL
VD
COLLUVIUM
TILL
JVIUM


100
80
60



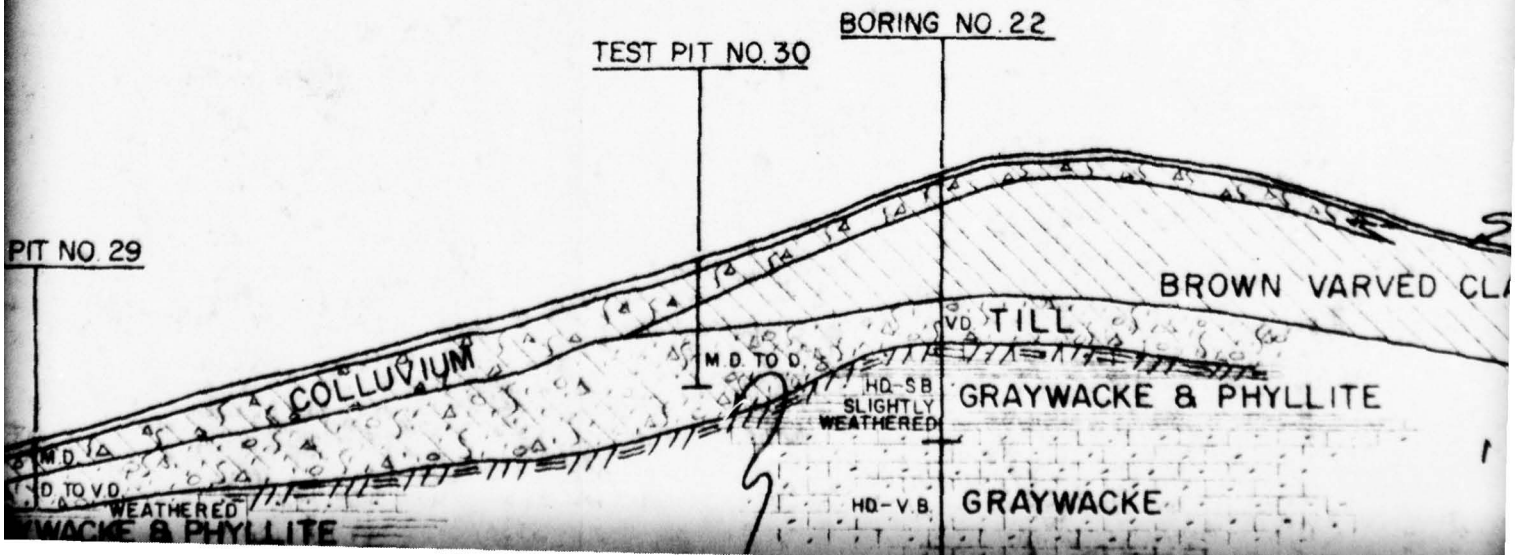
SECTION ⑥ - ⑥

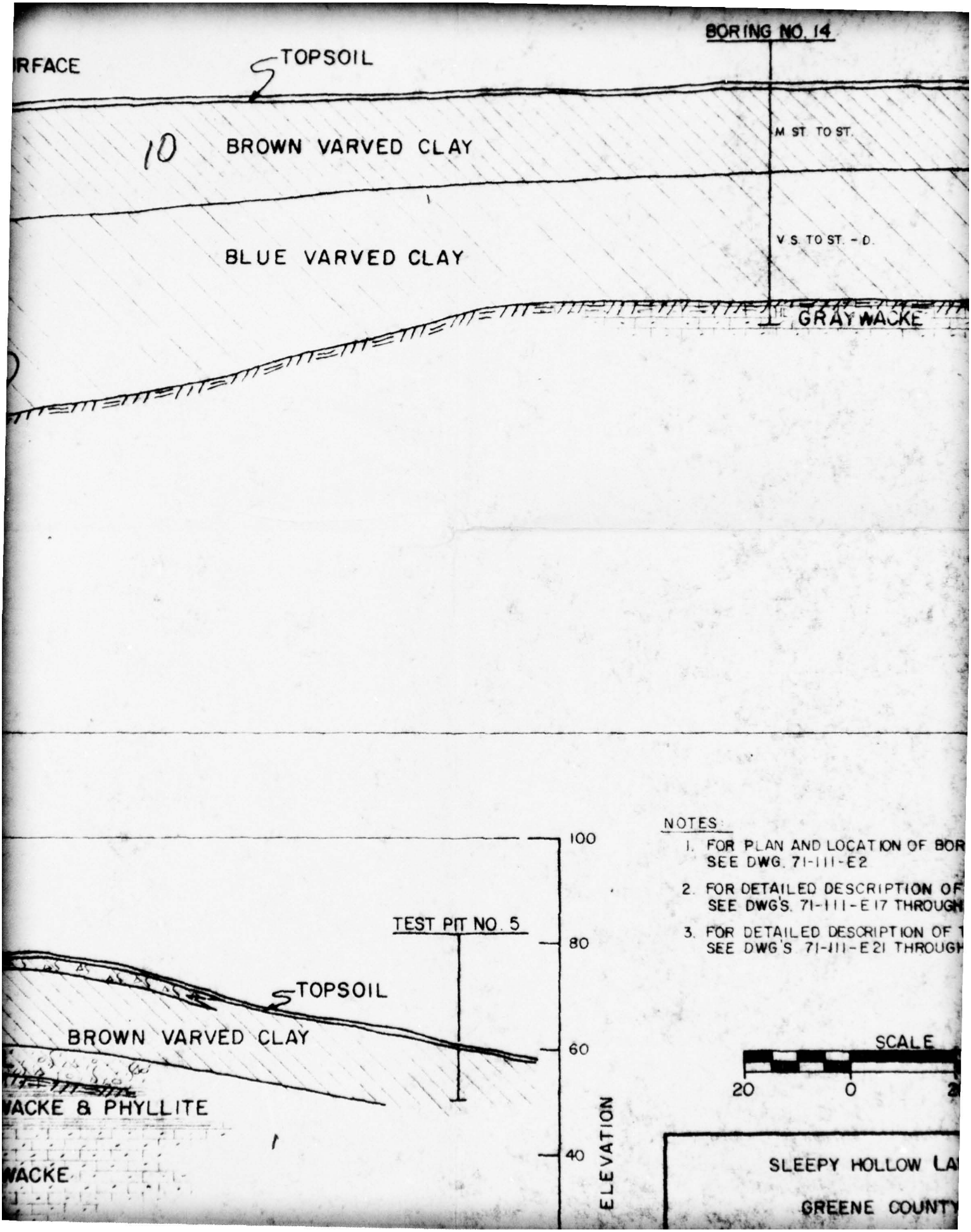
LOOKING SOUTHWEST

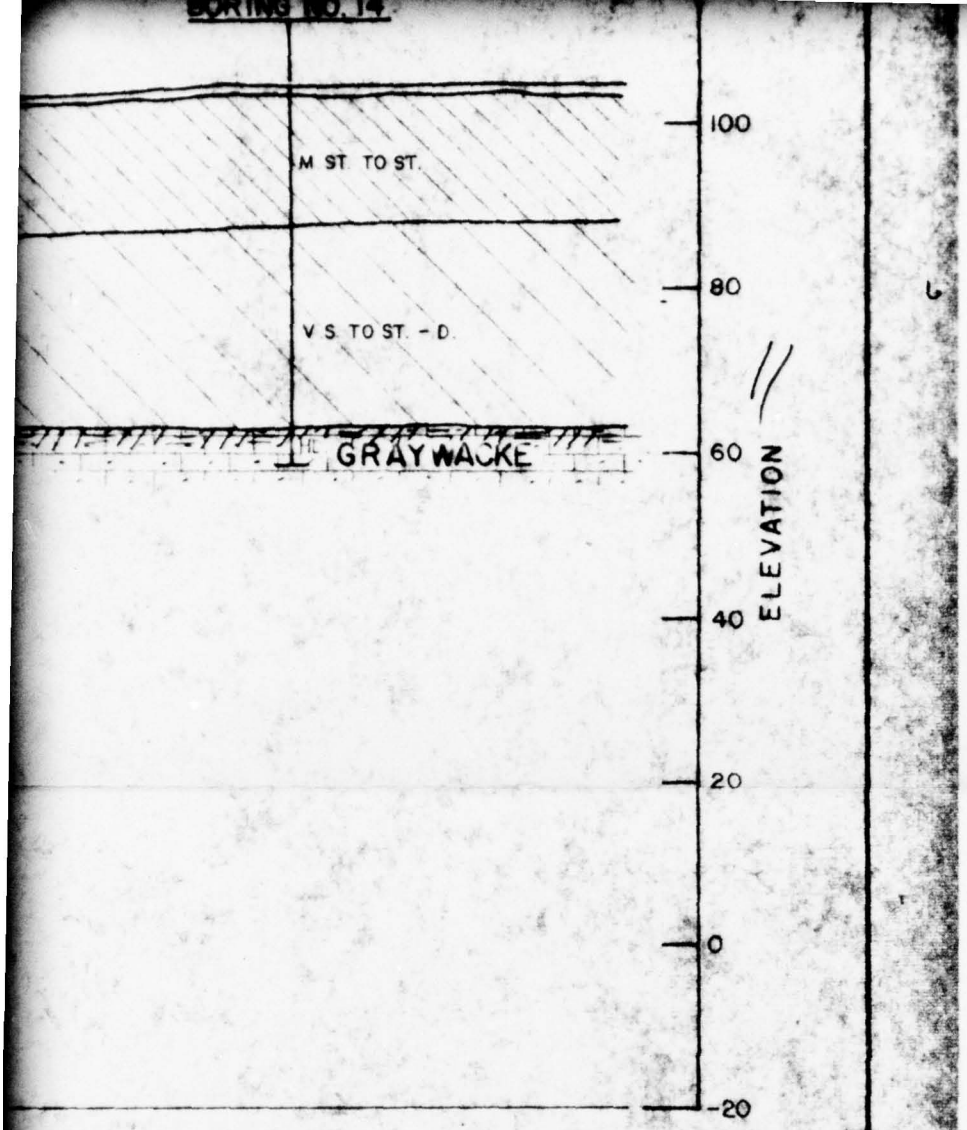

NG NO. 20
APPROXIMATE EXISTING GROUND SURFACE
BROWN
M ST. TO V. ST.
BLUE
APPROXIMATE TOP OF ROCK
V.S. TO M. ST.
HD S.B. GRAYWACKE

⑥ - ⑥

THWEST


BORING NO. 22
TEST PIT NO. 30
PIT NO. 29
BROWN VARVED CL
VD TILL
M.D. TO D.
COLLUVIUM
HQ-SB SLIGHTLY WEATHERED
GRAYWACKE & PHYLLITE
M.D.
D. TO V.D.
WEATHERED
WACKE & PHYLLITE
HQ-V.B. GRAYWACKE


BORING NO. 14
IRFACE
TOPSOIL
10
BROWN VARVED CLAY
M ST. TO ST.
BLUE VARVED CLAY
V S. TO ST. - D.
GRAYWACKE
TEST PIT NO. 5
TOPSOIL
BROWN VARVED CLAY
VACKE & PHYLLITE
VACKE
100
80
60
40
ELEVATION
NOTES:
1. FOR PLAN AND LOCATION OF BOR
SEE DWG. 71-111-E2
2. FOR DETAILED DESCRIPTION OF
SEE DWG'S. 71-111-E17 THROUGH
3. FOR DETAILED DESCRIPTION OF T
SEE DWG'S 71-111-E21 THROUGH
SCALE
20
0
SLEEPY HOLLOW LA
GREENE COUNTY



NOTES:

1. FOR PLAN AND LOCATION OF BORINGS AND SECTIONS, SEE DWG. 71-111-E2
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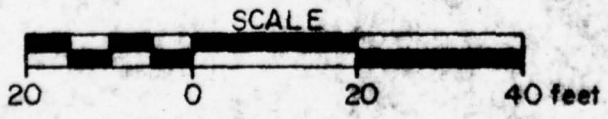
3. FOR DETAILED DESCRIPTION OF TEST PITS, SEE DWG'S 71-111-E21 THROUGH E25.



ELEVATION

SLEEPY HOLLOW LAKE, INC.

GREENE COUNTY, N.Y.

SECTION ①-①

LOOKING SOUTH

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12

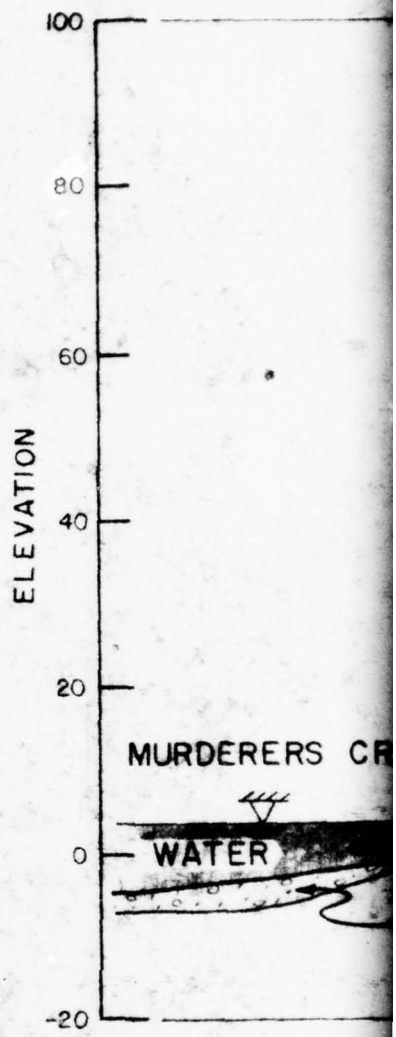
LEGEND

SOIL

- V.L. - VERY LOOSE
- L. - LOOSE
- M.D. - MEDIUM DENSE
- D. - DENSE
- V.D. - VERY DENSE
- V.S. - VERY SOFT
- S. - SOFT
- M.ST - MEDIUM STIFF
- ST. - STIFF
- V.ST - VERY STIFF
- H. - HARD

ROCK

- V.SO - VERY SOFT
- SO. - SOFT
- M.HD - MEDIUM HARD
- HD. - HARD
- V.HD. - VERY HARD
- V.B. - VERY BROKEN
- B. - BROKEN
- S.B. - SLIGHTLY BROKEN
- M. - MASSIVE



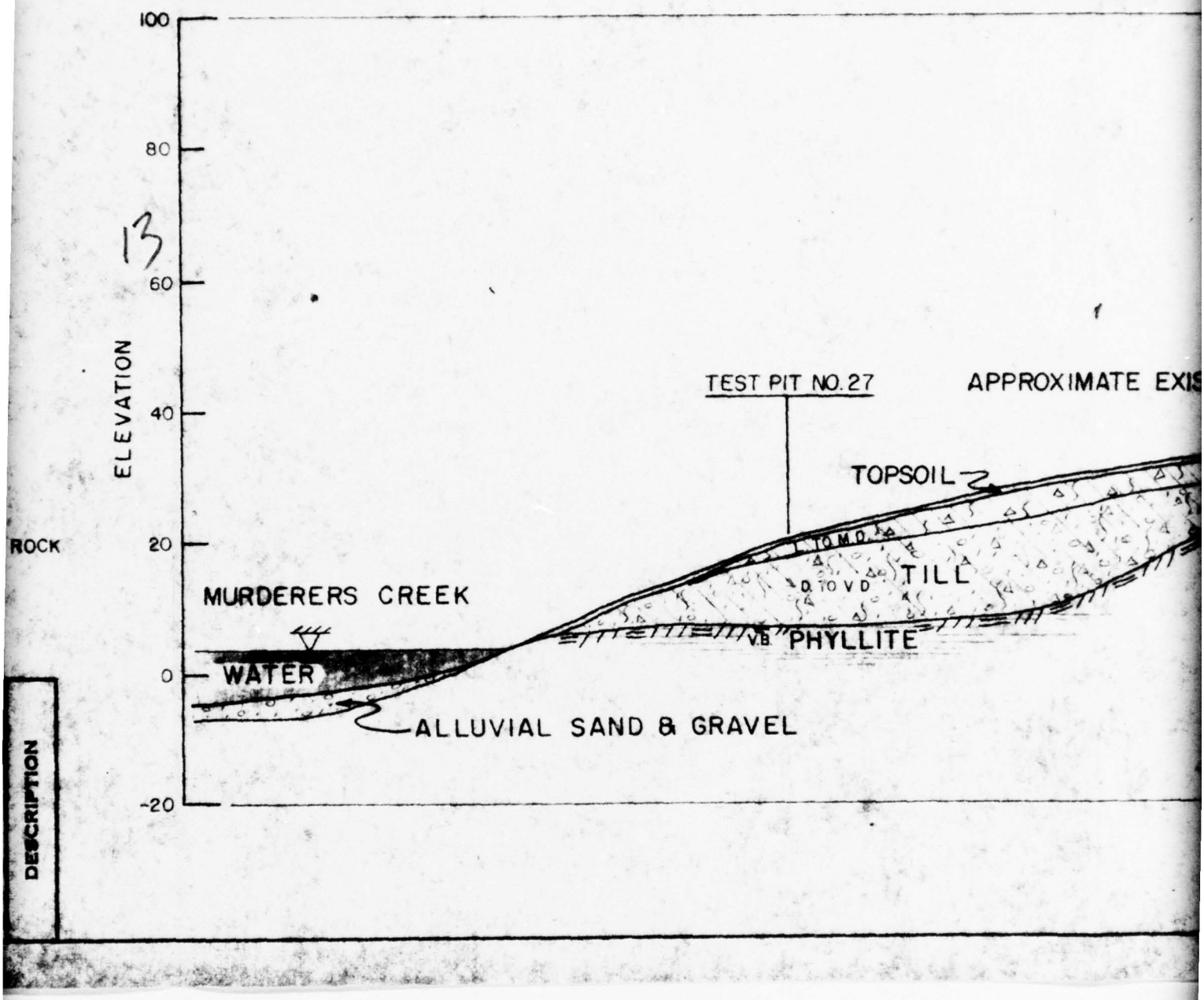
REVISION	DESCRIPTION

REFERENCE DRAWINGS

ALLUVIAL SAND AND GRAVEL

① - ①

SOUTH

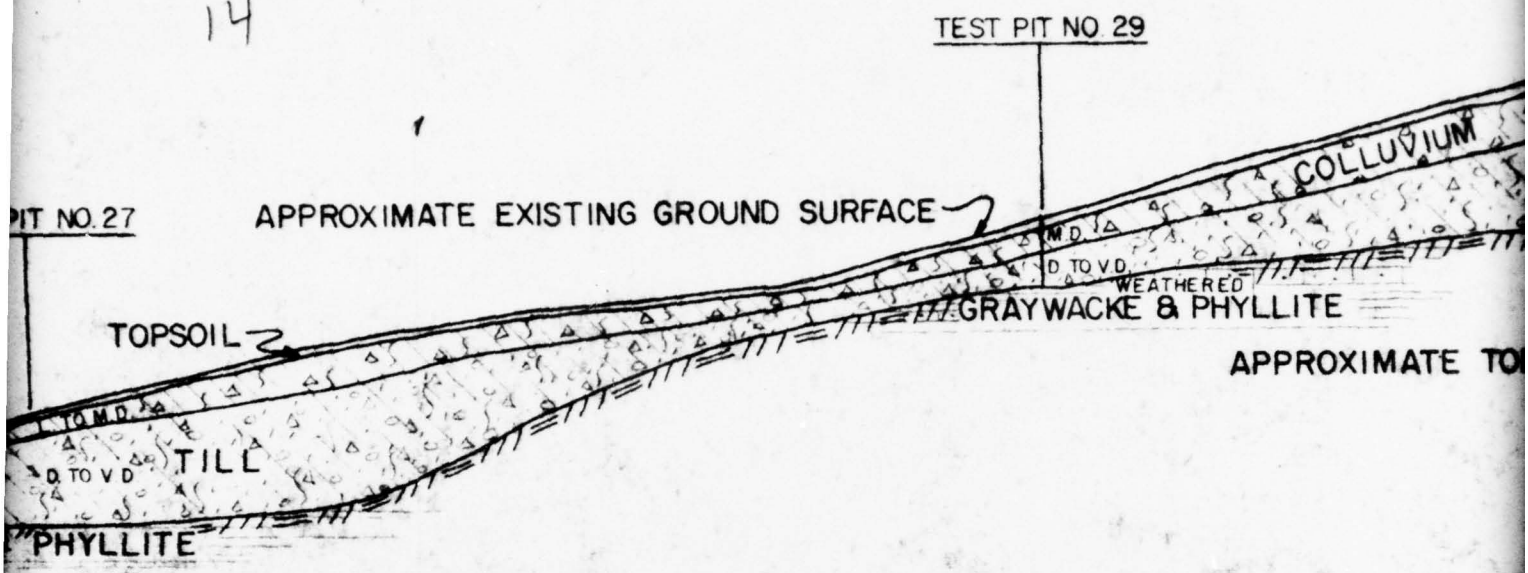

100
80
60
40
20
0
-20
ELEVATION
13
TEST PIT NO. 27
APPROXIMATE EXIS
TOPSOIL
T.O.M.D.
D. TO V.D.
TILL
V.B.
PHYLLITE
ROCK
MURDERERS CREEK
WATER
ALLUVIAL SAND & GRAVEL
DESCRIPTION

GRAVEL

100

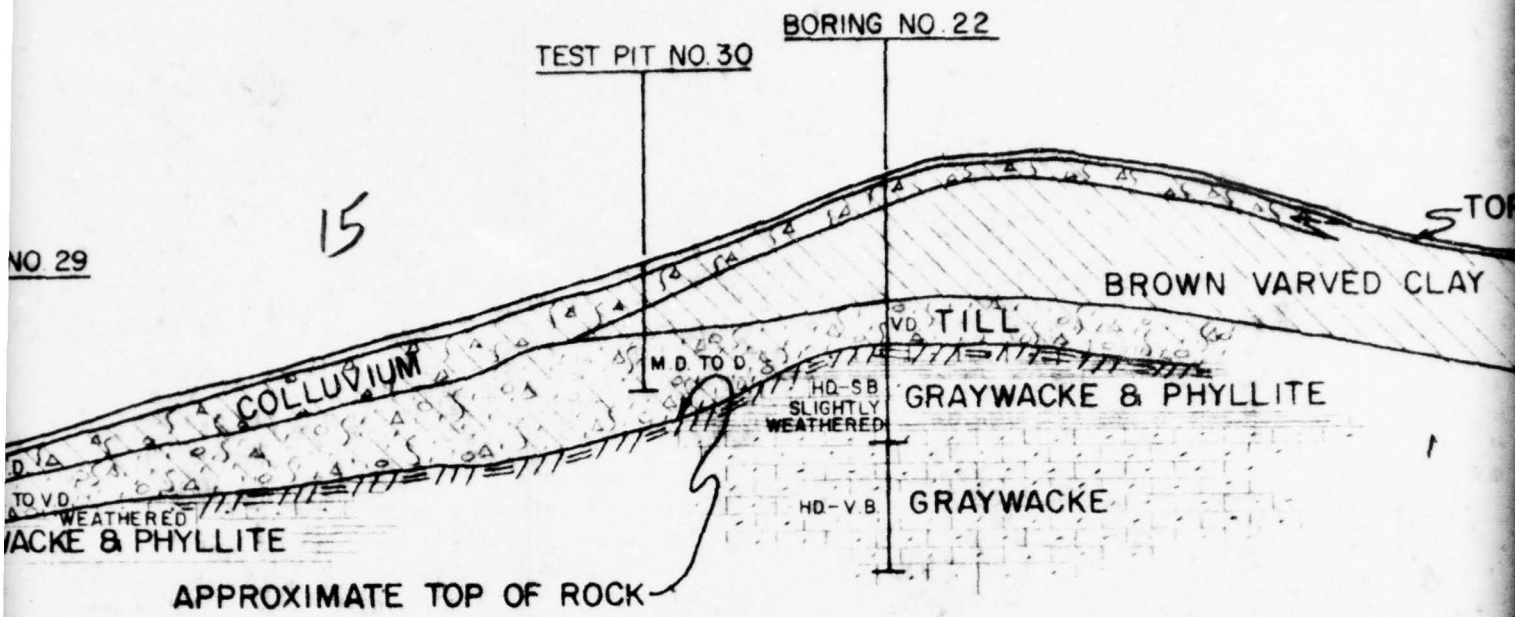
LOOKING SOUTHWEST

14

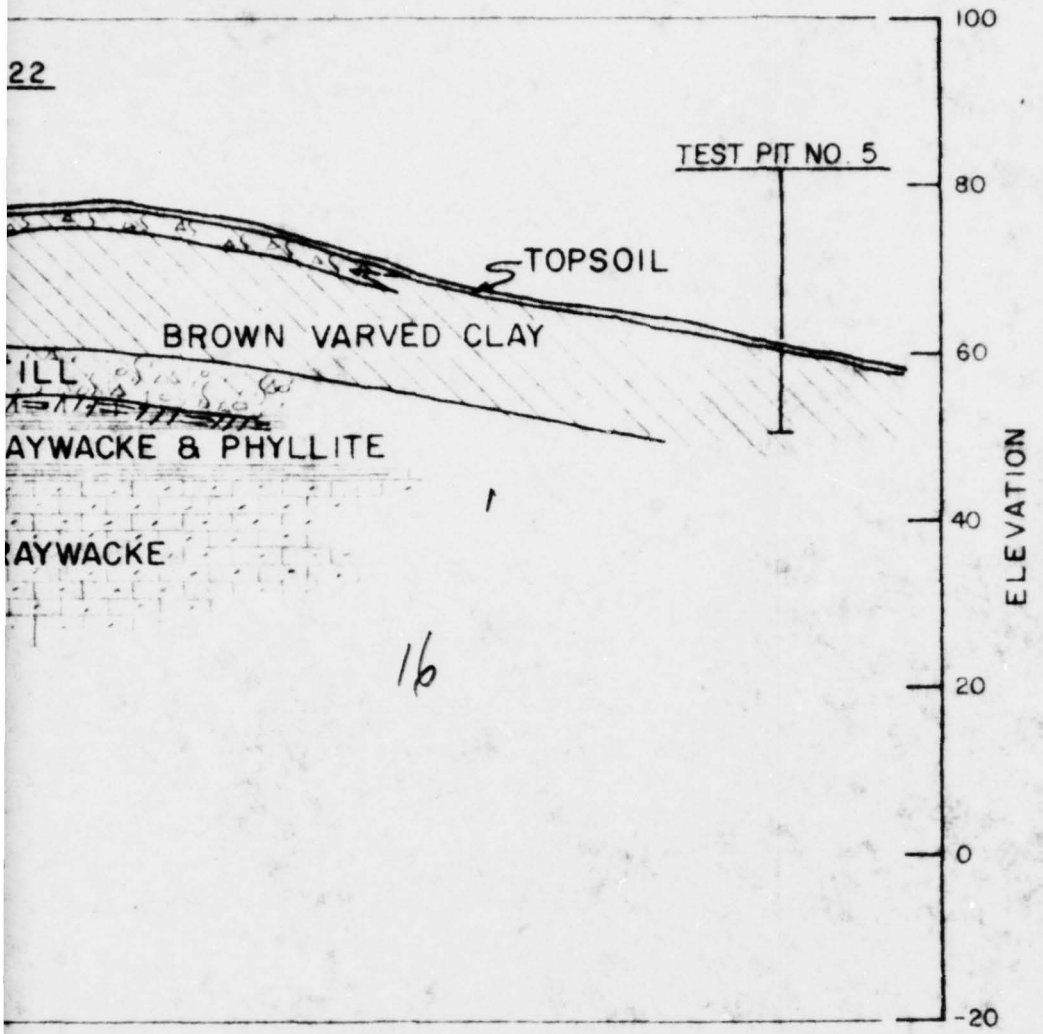


SECTION ④ - ④

LOOKING SOUTHWEST


TEST PIT NO. 30
BORING NO. 22
15
NO 29
TOP
BROWN VARVED CLAY
VD TILL
COLLUVIUM
M.D. TO D.
HQ-SB
SLIGHTLY
WEATHERED
GRAYWACKE & PHYLLITE
TO V.D.
WEATHERED
HQ-V.B.
GRAYWACKE
ACKE & PHYLLITE
APPROXIMATE TOP OF ROCK

④ - ④



16

NOTES

1. FOR PLAN AND LOCATION OF
   SEE DWG. 71-111-E2
2. FOR DETAILED DESCRIPTIO
   SEE DWG'S. 71-111-E17 THR
3. FOR DETAILED DESCRIPTION
   SEE DWG'S. 71-111-E21 THR

SCAL
20 0

SLEEPY HOLLOW
GREENE COU

E. D'APPOLONIA CONSULT

10 DUFF ROAD
PITTSBURGH, PA. 15235 CH

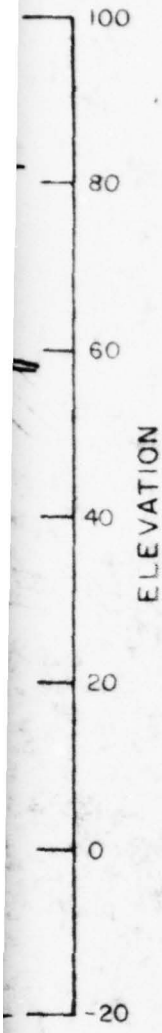
SLEEPY HOL
GREENE CO
SUBSURFACE
SUBSURFACE SECT

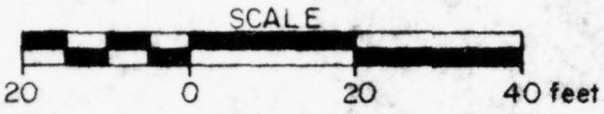
DRAWN BY	cjb	11-29-71
CHECKED BY	LJ / WHP	12-28-71

"DO NOT SCALE THIS DRAWING"

NOTES

1. FOR PLAN AND LOCATION OF BORINGS AND SECTIONS, SEE DWG. 71-111-E2
2. FOR DETAILED DESCRIPTION OF BORINGS, SEE DWG'S. 71-111-E17 THROUGH E20
3. FOR DETAILED DESCRIPTION OF TEST PITS, SEE DWG'S. 71-111-E21 THROUGH E25.





SLEEPY HOLLOW LAKE, INC.

GREENE COUNTY, N.Y.

E. D'APPOLONIA CONSULTING ENGINEERS, INC.

10 DUFF ROAD PITTSBURGH, PA. 15235	MR 522B CHESTERTON, IND. 46304

SLEEPY HOLLOW LAKE

GREENE COUNTY, N.Y.

SUBSURFACE INVESTIGATION

SUBSURFACE SECTIONS - SHEET 2 OF 3

DRAWN BY	cjb	11-29-71	DRAWING NO. 71-111-E15
CHECKED BY	LJ WHD	12-28-71	

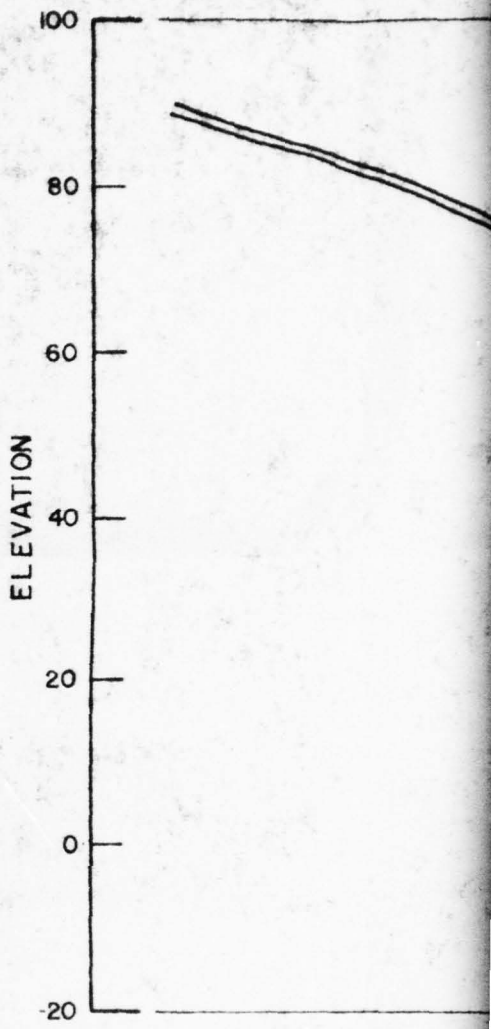
"DO NOT SCALE THIS DRAWING"

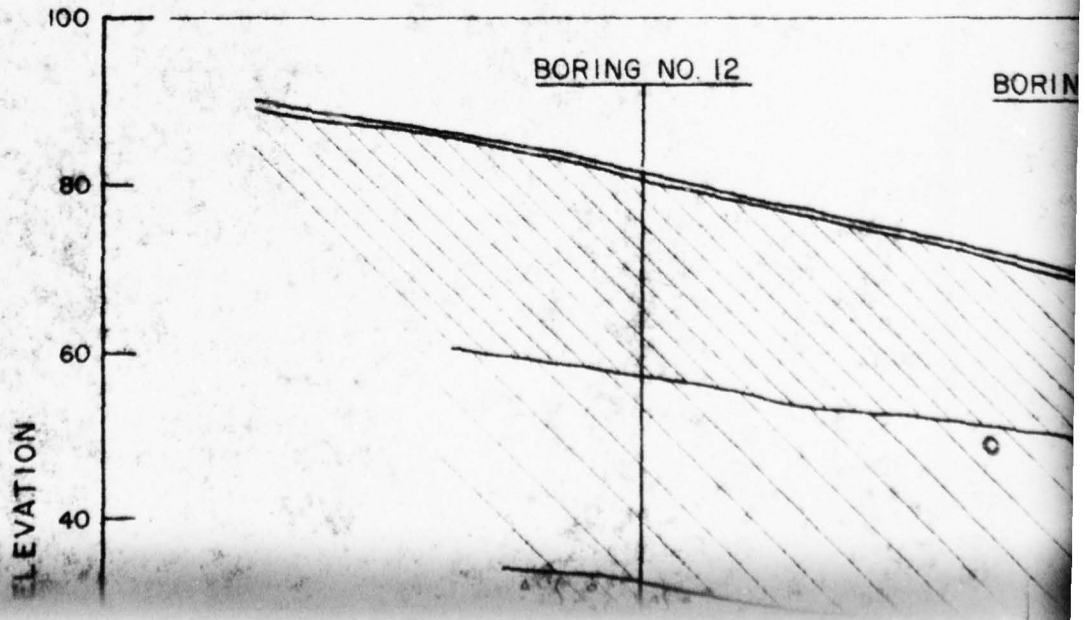
PR 1123-771

17

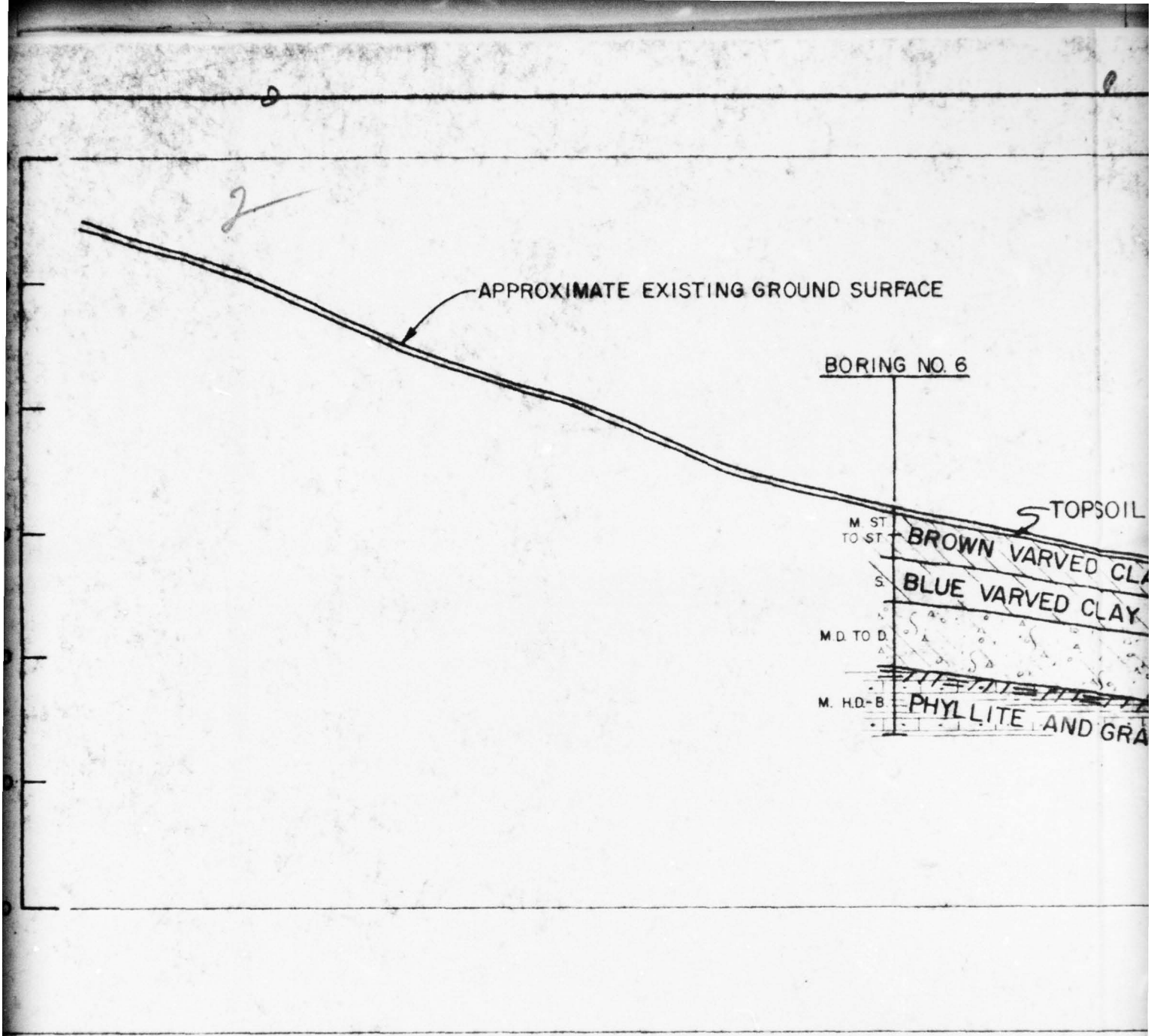
SECTION ②-②

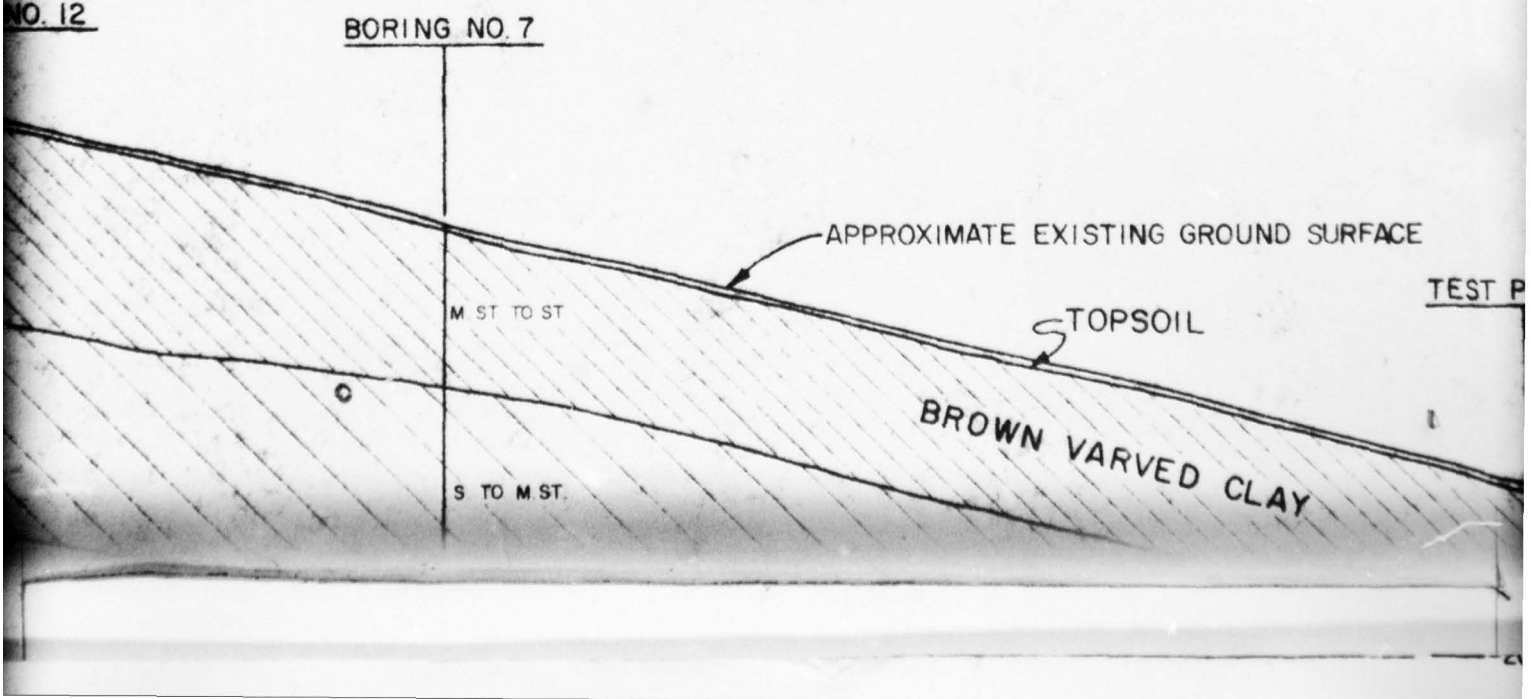
LOOKING SOUTH


100
80
60
40
20
0
-20
ELEVATION

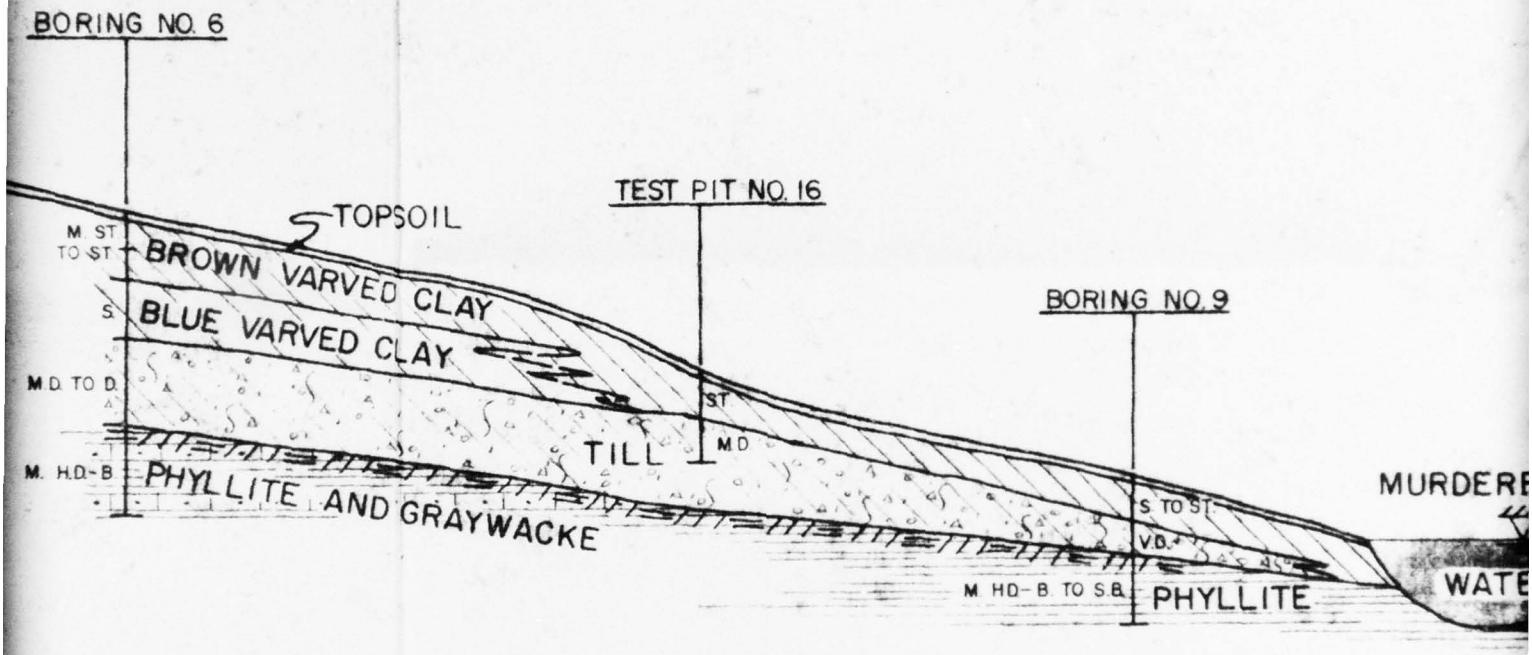

100
80
60
40
ELEVATION
BORING NO. 12
BORIN

N ②-②


APPROXIMATE EXISTING GROUND SURFACE
BORING NO. 6
TOPSOIL
M. ST TO ST
BROWN VARVED CL
S.
BLUE VARVED CLAY
M.D. TO D.
M. H.D.-B
PHYLLITE AND GRA


NO. 12
BORING NO. 7
APPROXIMATE EXISTING GROUND SURFACE
TEST P
M. ST TO ST
TOPSOIL
BROWN VARVED CLAY
S TO M.ST.

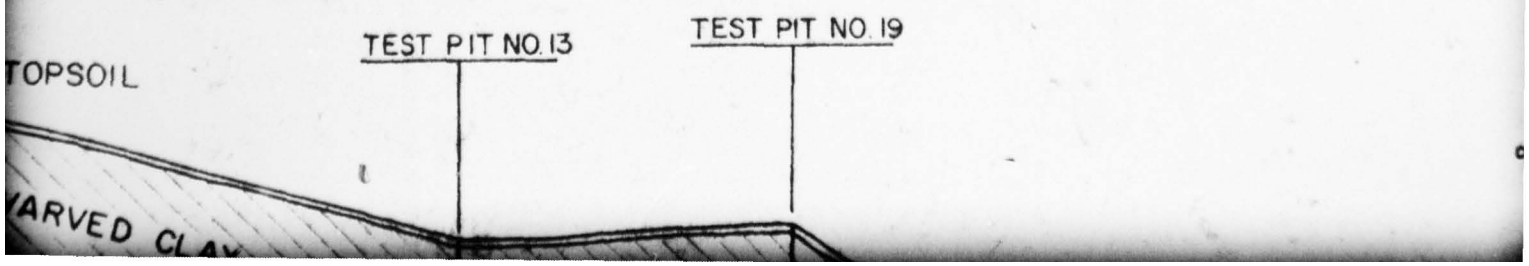
ND SURFACE 3



SECTION ①-①

LOOKING SOUTH

ISTING GROUND SURFACE



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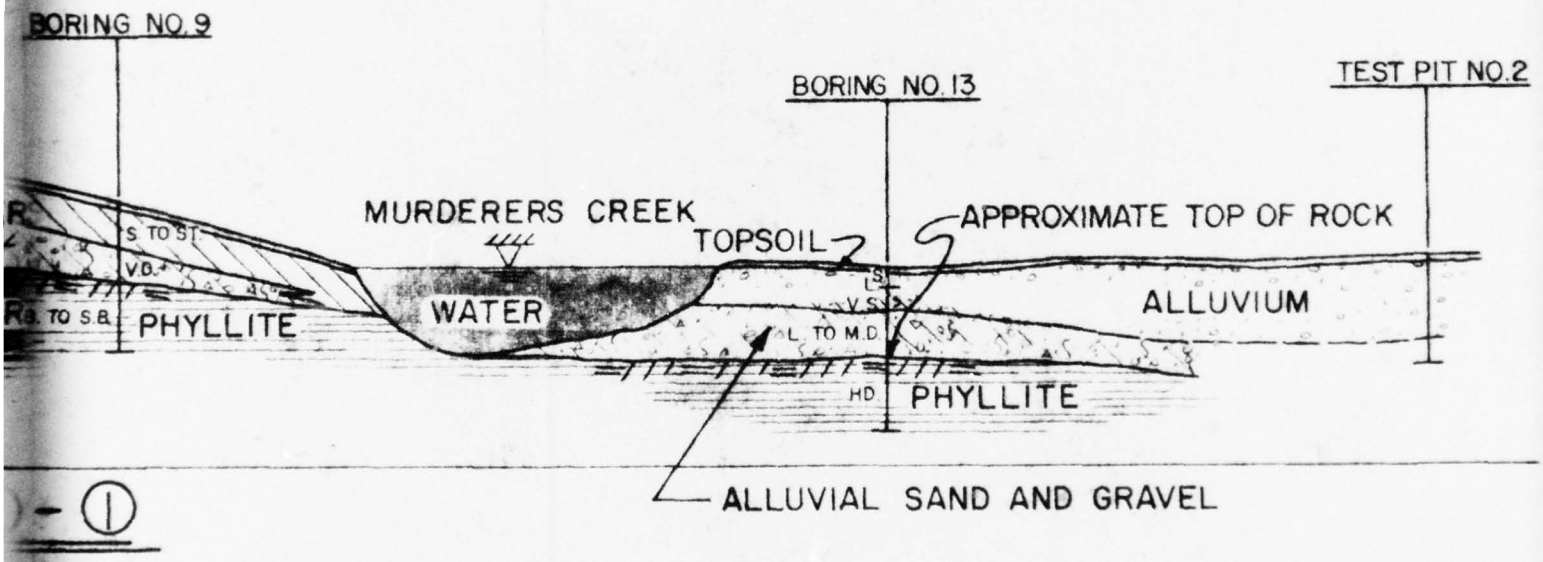
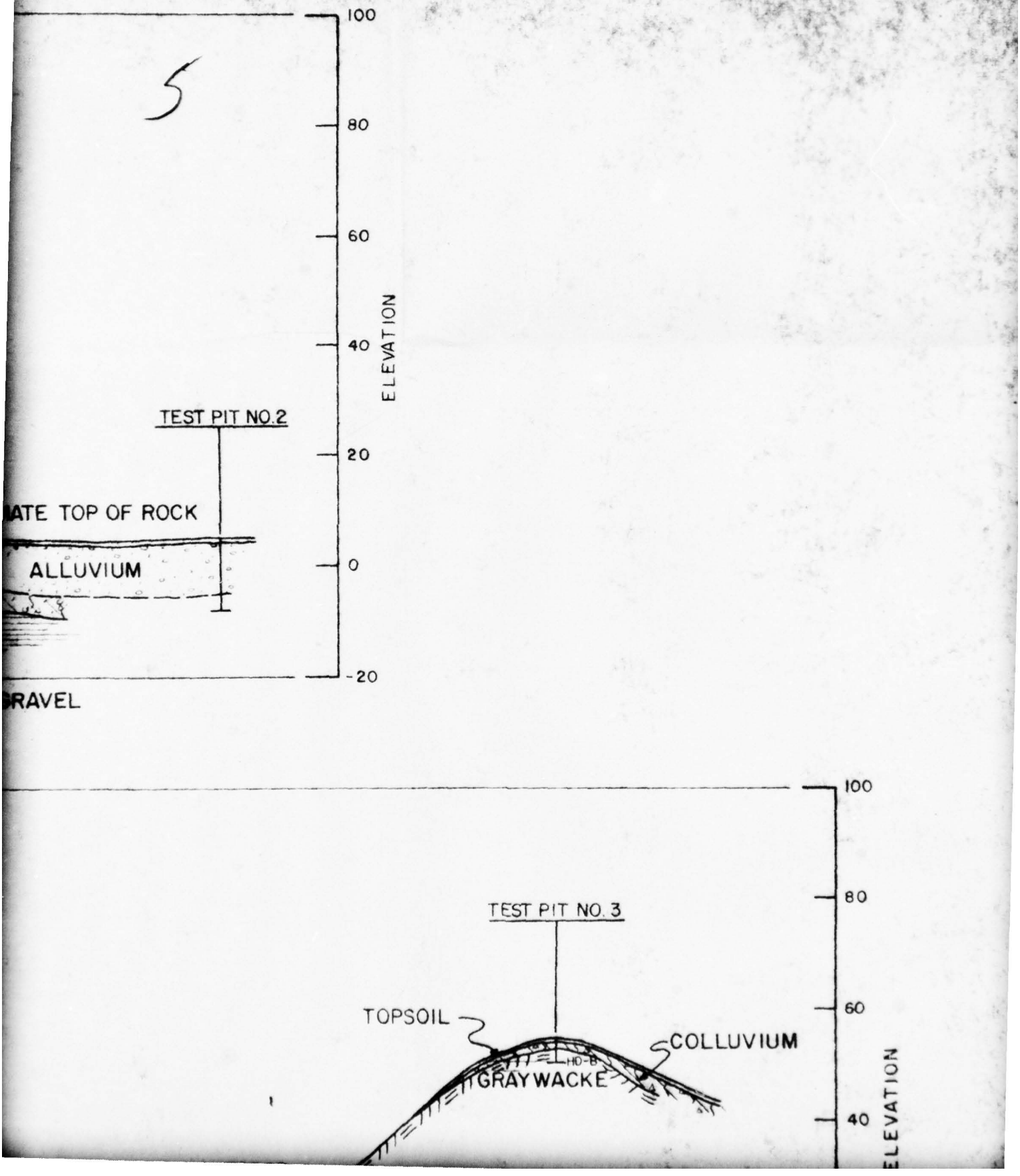
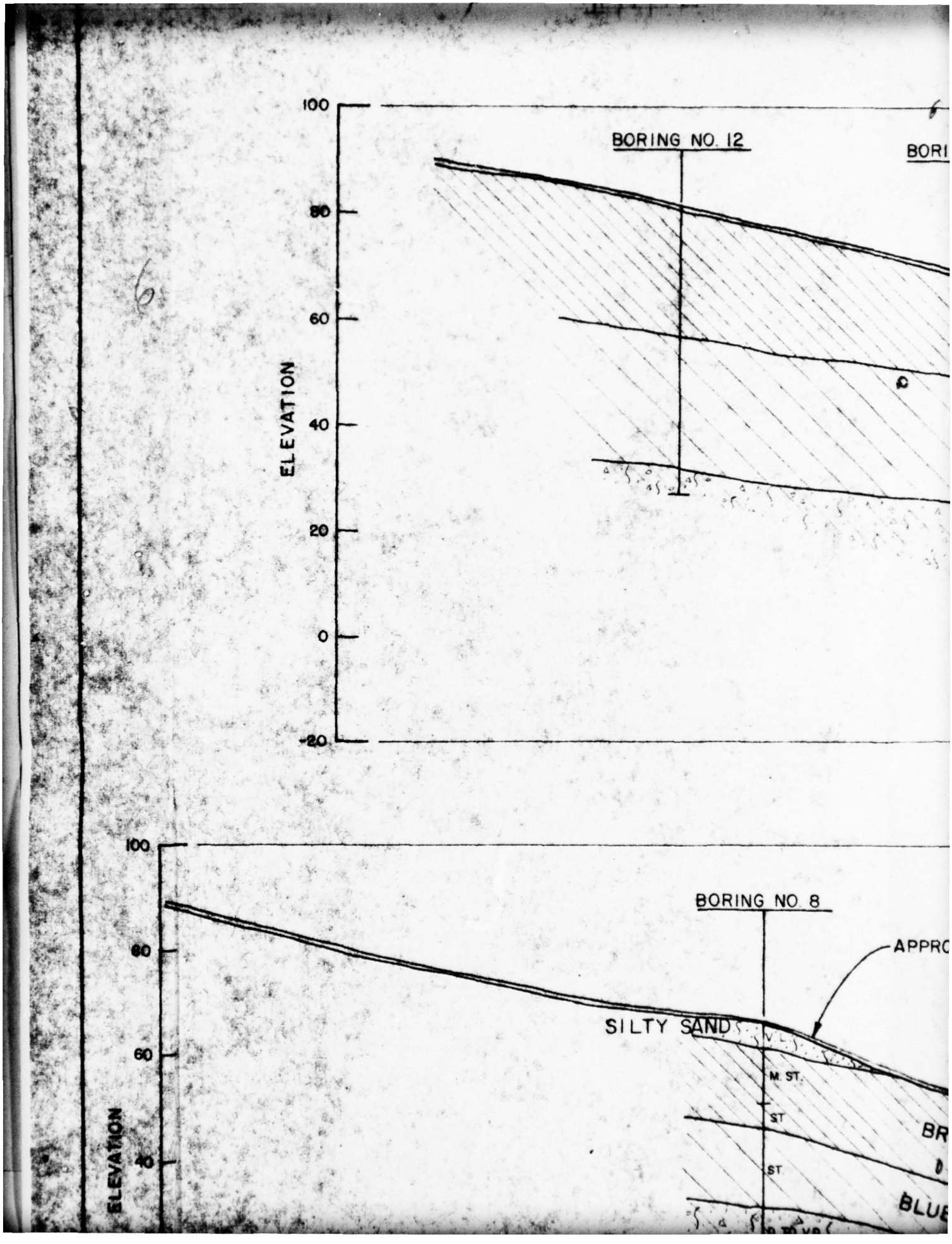
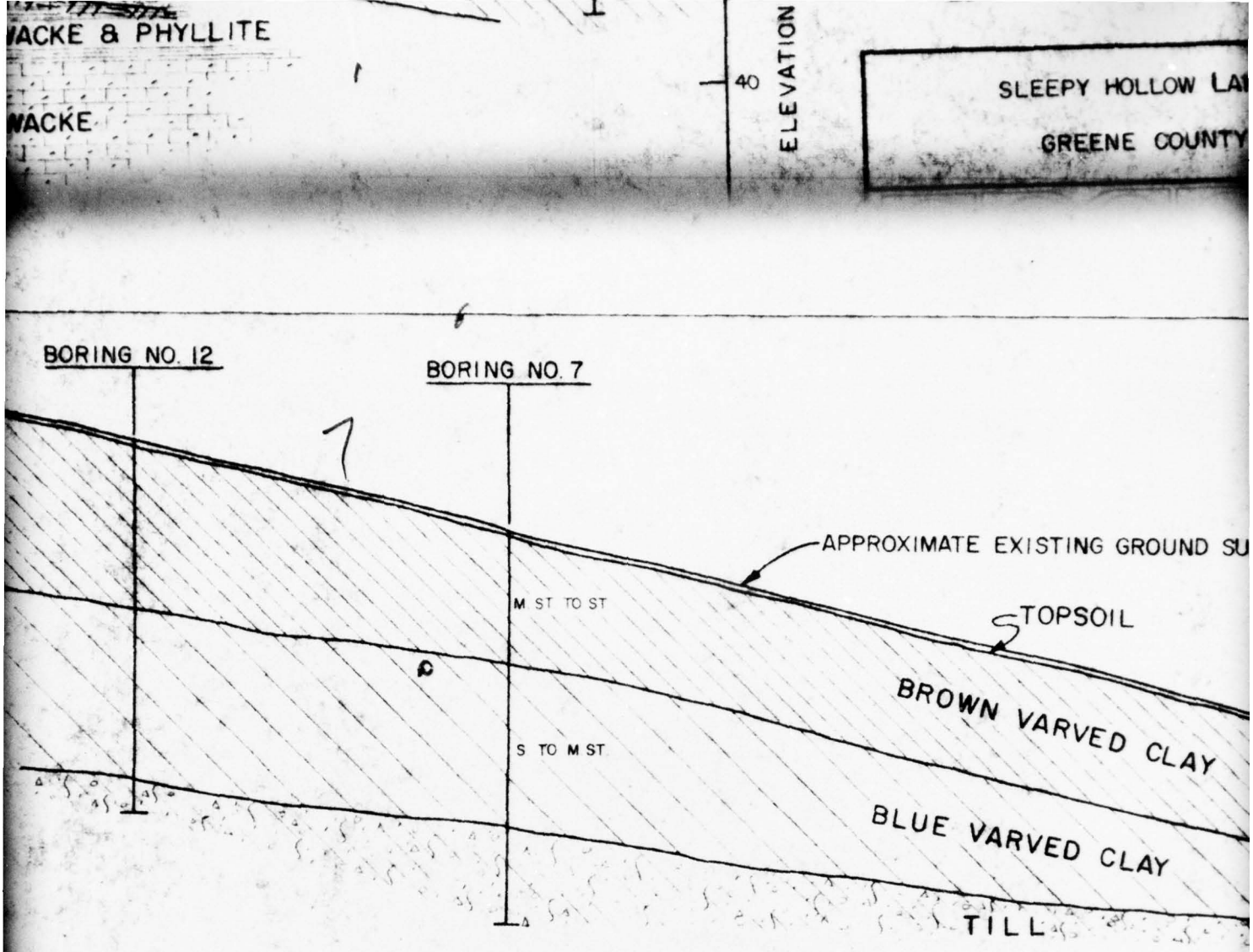
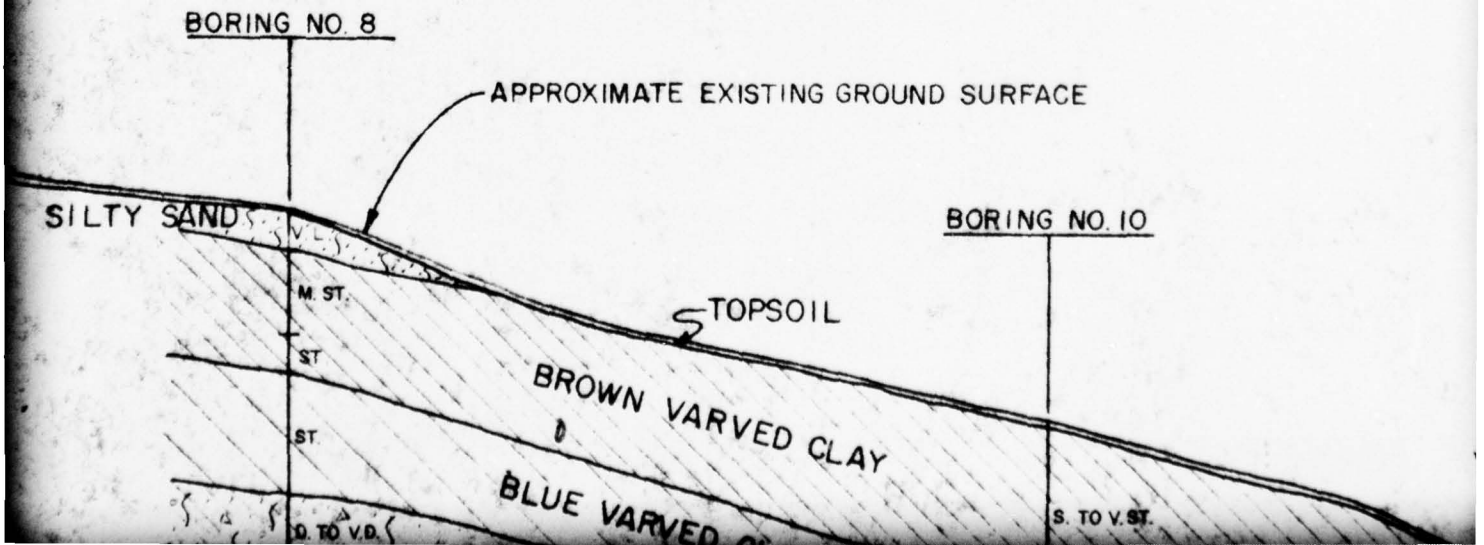

BORING NO. 9
BORING NO. 13
TEST PIT NO. 2
MURDERERS CREEK
TOPSOIL
APPROXIMATE TOP OF ROCK
S TO ST
V.D.
R.B. TO S.B.
PHYLLITE
WATER
L
V.S.
L. TO M.D.
ALLUVIUM
HD
PHYLLITE
ALLUVIAL SAND AND GRAVEL

- (1)


5
100
80
60
40
20
0
-20
ELEVATION
TEST PIT NO.2
ATE TOP OF ROCK
ALLUVIUM
RAVEL
100
80
60
40
TEST PIT NO. 3
TOPSOIL
COLLUVIUM
HD-B
GRAYWACKE
ELEVATION


100
80
60
40
20
0
-20
ELEVATION
BORING NO. 12
BORI
100
80
60
40
ELEVATION
BORING NO. 8
APPRO
SILTY SAND
M. ST.
ST
ST
BR
BLUE


ACKE & PHYLLITE
ACKE
40
ELEVATION
SLEEPY HOLLOW LA
GREENE COUNTY
BORING NO. 12
BORING NO. 7
APPROXIMATE EXISTING GROUND SU
TOPSOIL
M ST TO ST
S TO M ST
BROWN VARVED CLAY
BLUE VARVED CLAY
TILL


BORING NO. 8
APPROXIMATE EXISTING GROUND SURFACE
SILTY SAND
BORING NO. 10
TOPSOIL
M. ST.
ST
ST
BROWN VARVED CLAY
BLUE VARVED
S. TO V. ST.

ELEVATIO

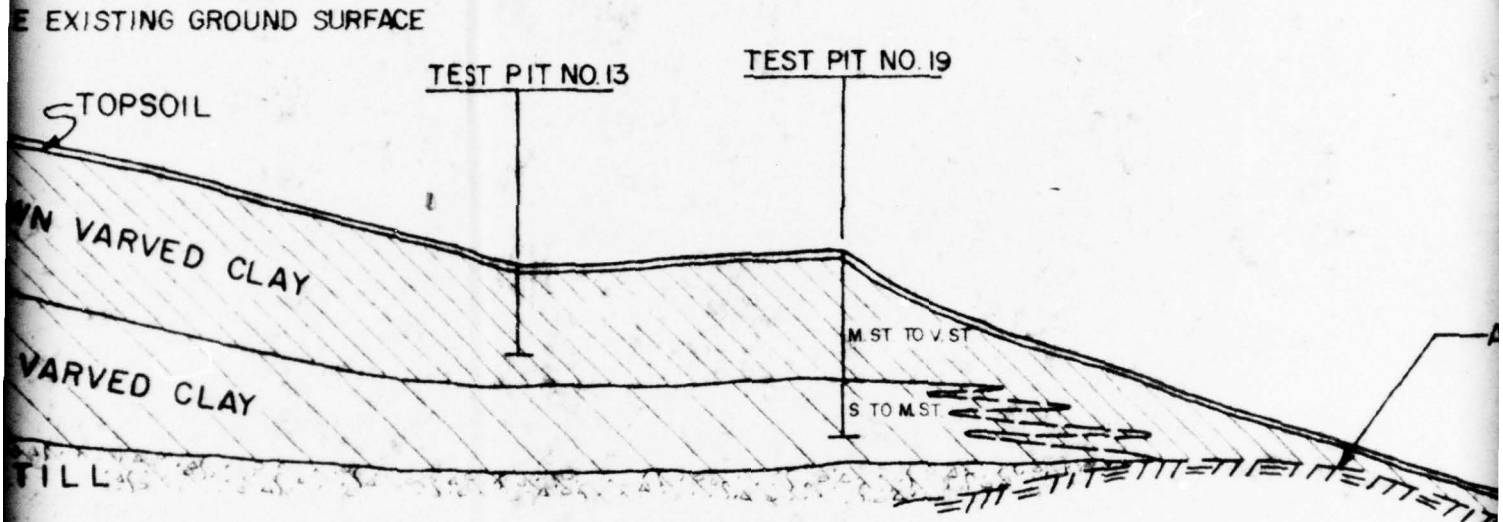
SLEEPY HOLLOW LAKE, INC.

GREENE COUNTY, N.Y.

SECTION ①-①

LOOKING SOUTH

8



SECTION ②-②

LOOKING SOUTH

0

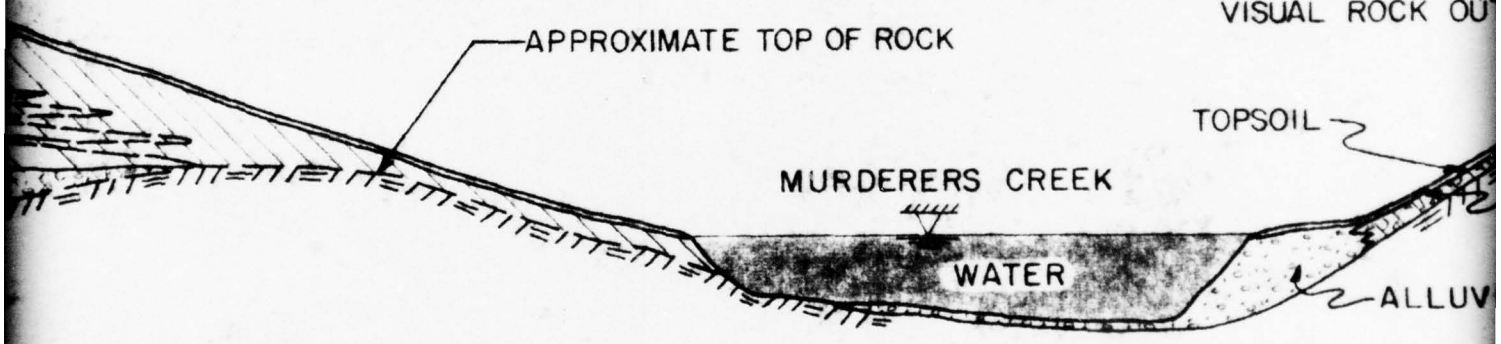
TEST PIT NO. 25

ALLUVIAL SAND AND GRAVEL

①-①

SOUTH

9



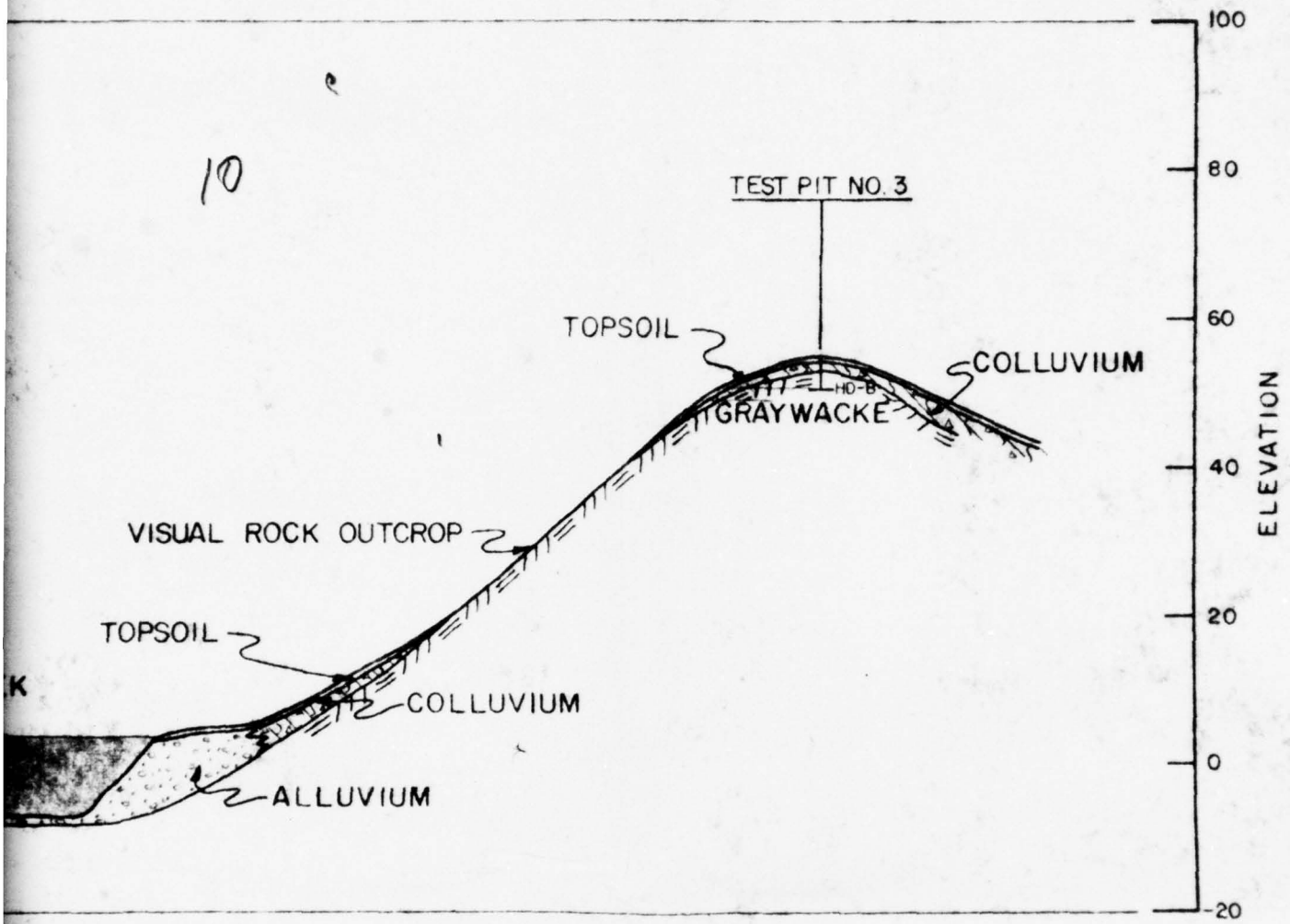
②-②

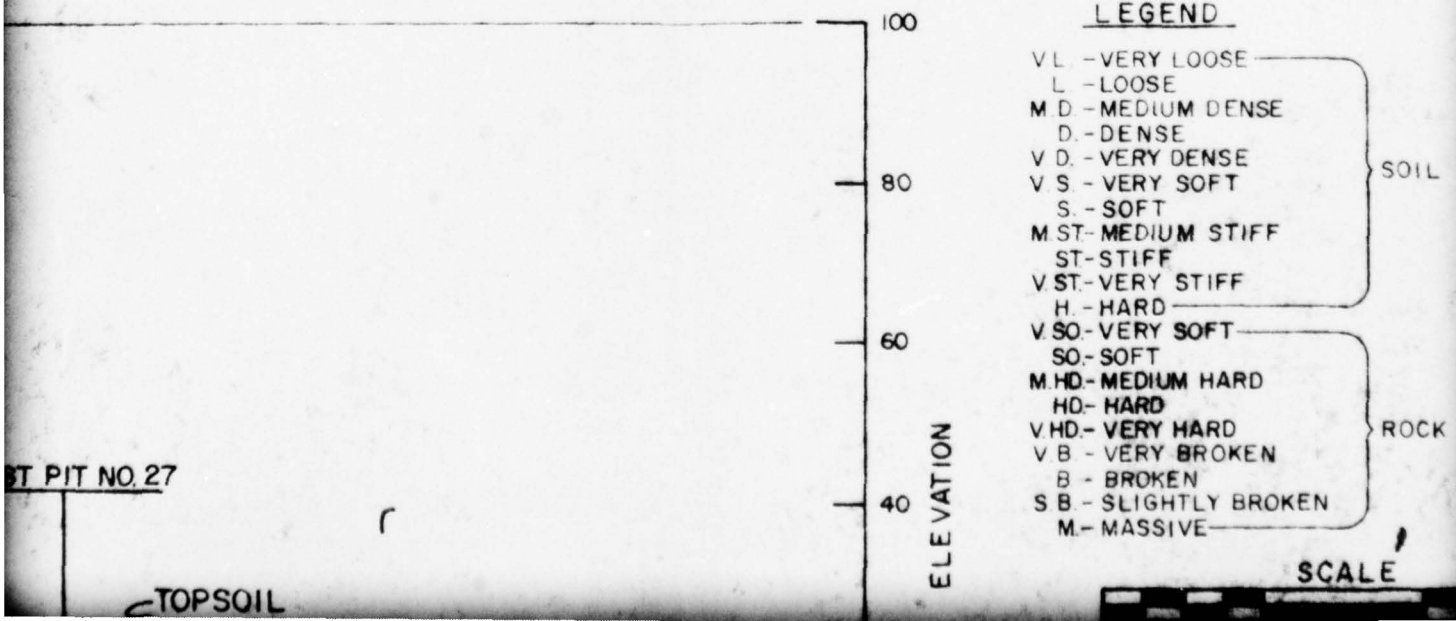
SOUTH

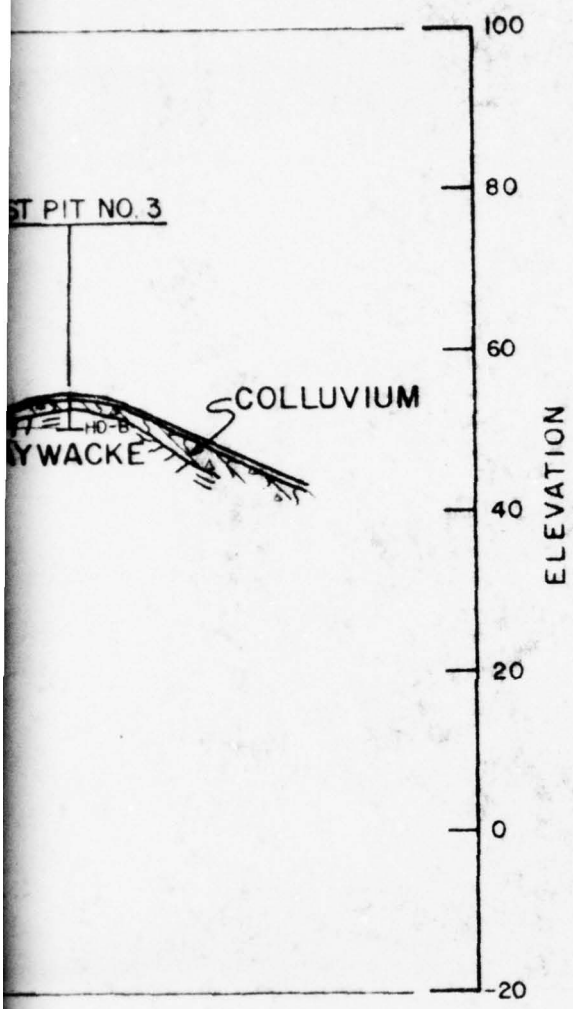
TEST PIT NO. 27

TOPSOIL

ND GRAVEL


10
TEST PIT NO. 3
TOPSOIL
COLLUVIUM
HD-B
GRAYWACKE
VISUAL ROCK OUTCROP
TOPSOIL
COLLUVIUM
ALLUVIUM
100
80
60
40
20
0
-20
ELEVATION


100
80
60
40
ELEVATION
LEGEND
VL - VERY LOOSE
L - LOOSE
M D - MEDIUM DENSE
D. - DENSE
V D. - VERY DENSE
V S. - VERY SOFT
S. - SOFT
M ST - MEDIUM STIFF
ST - STIFF
V ST. - VERY STIFF
H. - HARD
SOIL
V SO. - VERY SOFT
SO. - SOFT
M HD. - MEDIUM HARD
HD. - HARD
V HD. - VERY HARD
V B - VERY BROKEN
B - BROKEN
S B - SLIGHTLY BROKEN
M. - MASSIVE
ROCK
SCALE
T PIT NO. 27
TOPSOIL

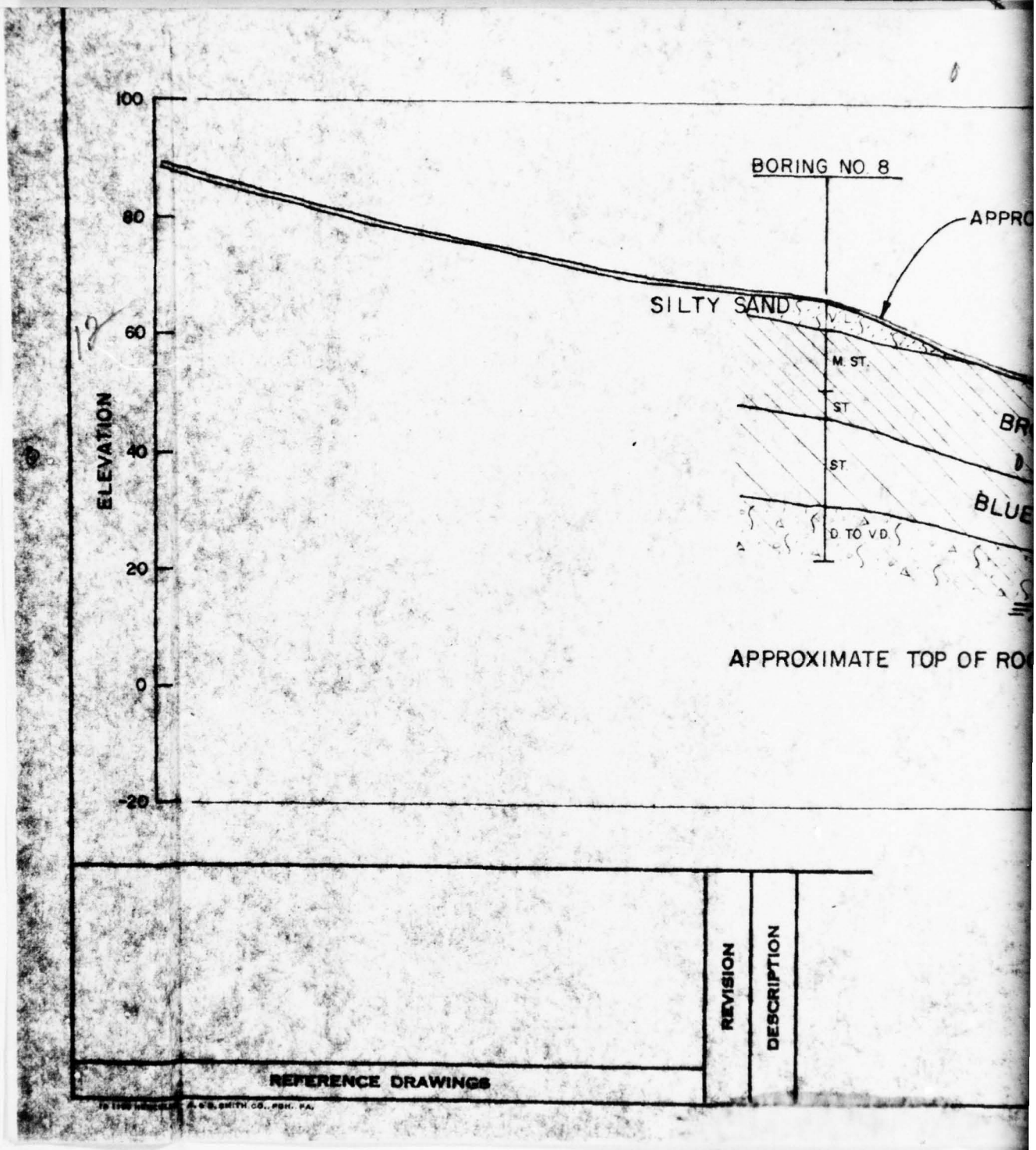


100
80
60
40
20
0
-20
ELEVATION

LEGEND

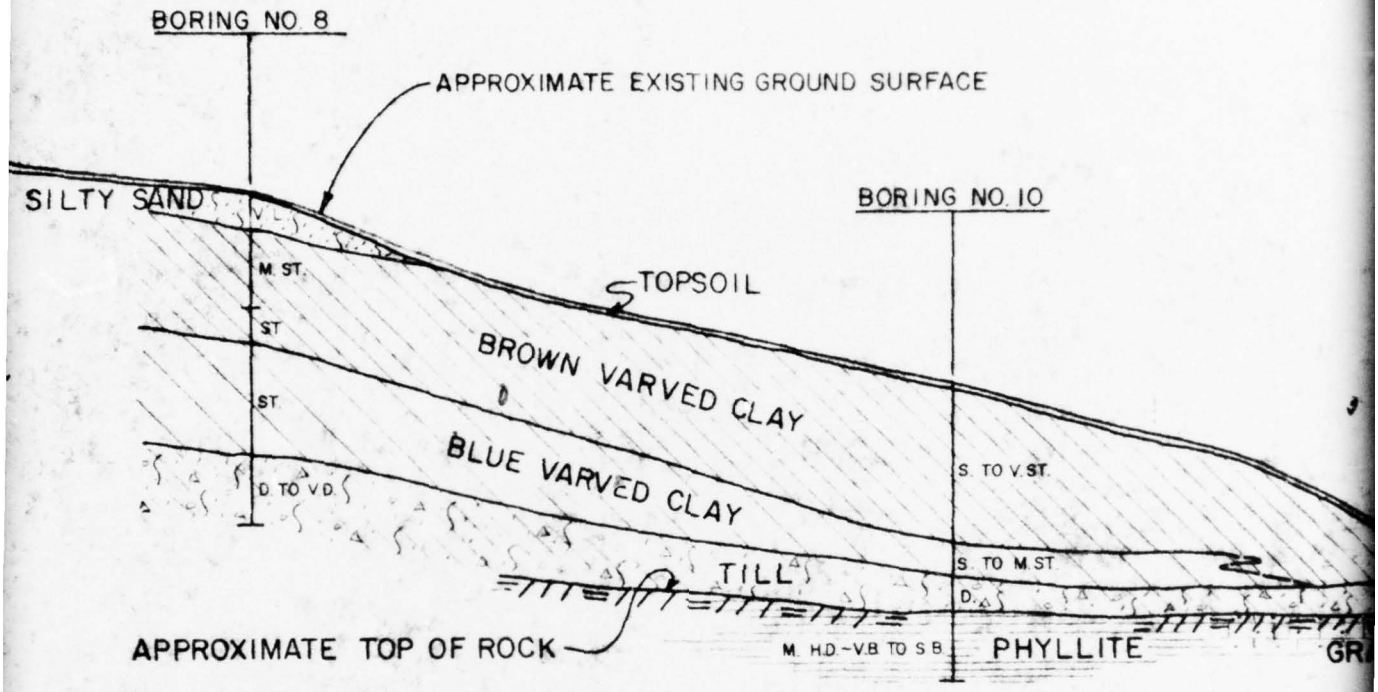
V L - VERY LOOSE	SOIL
L - LOOSE	
M D - MEDIUM DENSE	
D. - DENSE	
V D. - VERY DENSE	
V S. - VERY SOFT	
S. - SOFT	
M ST - MEDIUM STIFF	
ST - STIFF	
V ST - VERY STIFF	
H. - HARD	
V SO. - VERY SOFT	ROCK
SO. - SOFT	
M HD - MEDIUM HARD	
HD - HARD	
V HD - VERY HARD	
V B - VERY BROKEN	
B - BROKEN	
S B - SLIGHTLY BROKEN	
M - MASSIVE	

SCALE


100
80
60
40
20
0
-20
ELEVATION
BORING NO 8
SILTY SAND
M. ST.
ST
ST
D TO VD
APPROXIMATE TOP OF RO
REVISION
DESCRIPTION
REFERENCE DRAWINGS

TYPE I
PAVED GUTTER
18
30
20
TP-32

13



REVISION	DESCRIPTION

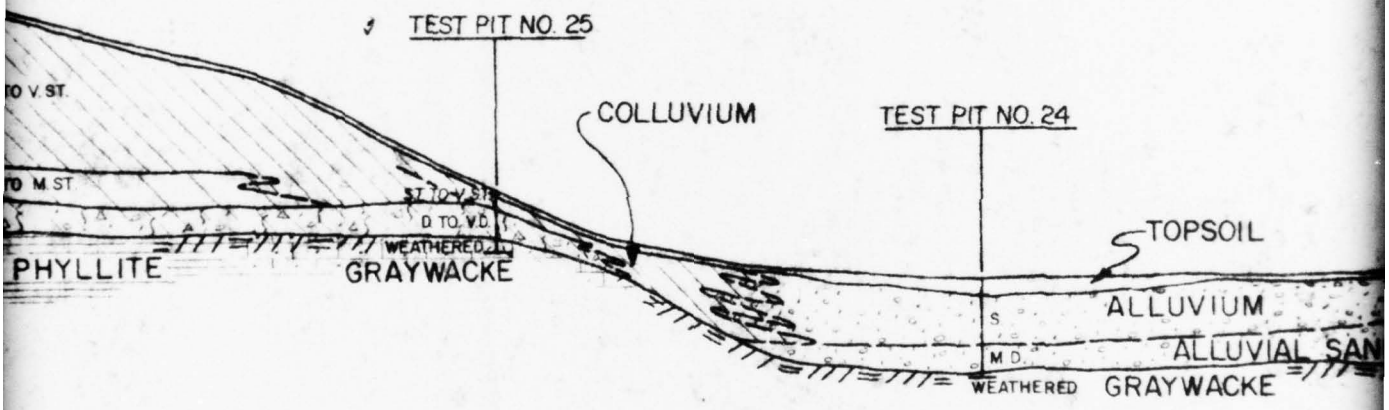
THE DEPTH AND THICKNESS OF THE SUBSURFACE STRATA INDICATED ON THE SECTIONS WERE GENERALIZED FROM AND INTERPOLATED BETWEEN THE TEST BORINGS. INFORMATION ON ACTUAL SUBSURFACE CONDITIONS EXISTS ONLY AT THE LOCATION OF THE TEST BORINGS AND IT IS POSSIBLE THAT SUBSURFACE CONDITIONS BETWEEN THE TEST BORINGS MAY VARY FROM THOSE INDICATED.

SECTION ②-②

LOOKING SOUTH

14

0.10



SECTION ③-③

LOOKING SOUTH

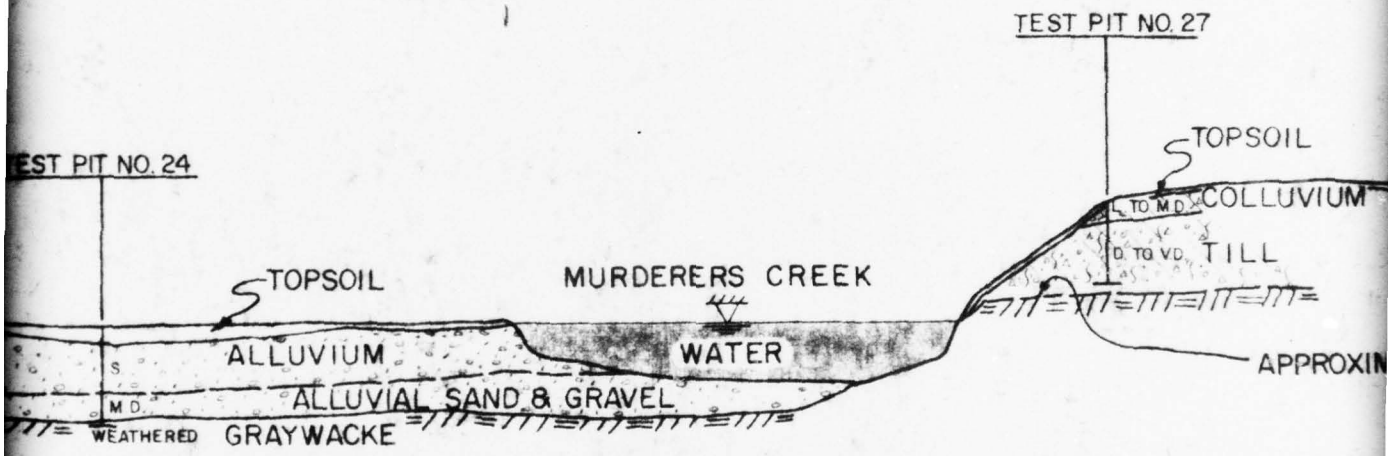
S OF THE SUBSURFACE STRATA
BS WERE GENERALIZED FROM
EEN THE TEST BORINGS INFOR-
RFACE CONDITIONS EXISTS
F THE TEST BORINGS AND IT
FACE CONDITIONS BETWEEN
ARY FROM THOSE INDICATED.

NOTE:
SUB
WAS
DESI
OF
IS
GOV

N ②-②

NG SOUTH

15

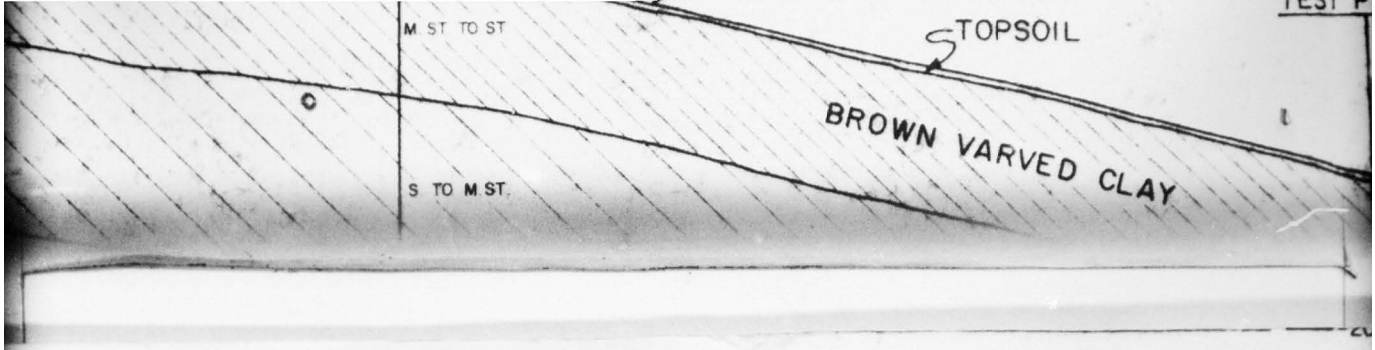


ON ③-③

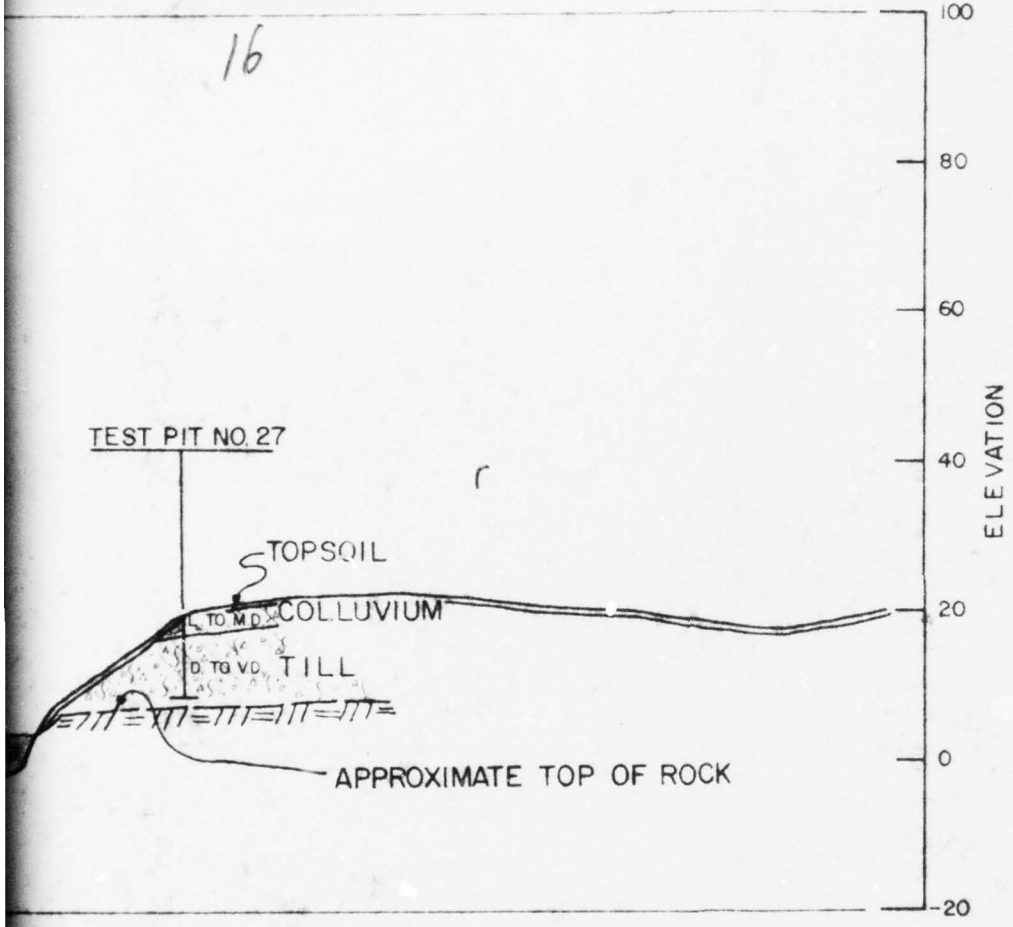
ING SOUTH

NOTE:
SUBSURFACE INFORMATION SHOWN ON THIS DRAWING WAS OBTAINED SOLELY FOR USE IN ESTABLISHING DESIGN CONTROLS FOR THE PROJECT. THE ACCURACY OF THIS INFORMATION IS NOT GUARANTEED AND IT IS NOT TO BE CONSTRUED AS PART OF THE PLANS GOVERNING CONSTRUCTION OF THE PROJECT.

NOTES:
1. FOR PL
SEE DW
2. FOR DE
SEE DW
3. FOR DET
SEE DW



16



LEGEND

V L - VERY LOOSE
L - LOOSE
M D - MEDIUM DENSE
D. - DENSE
V D. - VERY DENSE
V S. - VERY SOFT
S. - SOFT
M ST - MEDIUM STIFF
ST - STIFF
V ST - VERY STIFF
H. - HARD
V SO. - VERY SOFT
SO. - SOFT
M HD - MEDIUM HARD
HD - HARD
V HD - VERY HARD
V B - VERY BROKEN
B - BROKEN
S B - SLIGHTLY BROKEN
M. - MASSIVE

SCA

20 0

NOTES:

1. FOR PLAN AND LOCATION OF BORINGS AND SECTIONS, SEE DWG. 71-III-E2.
2. FOR DETAILED DESCRIPTION OF BORINGS, SEE DWG'S. 71-III-E17 THROUGH E20.
3. FOR DETAILED DESCRIPTION OF TEST PITS, SEE DWG'S 71-III-E21 THROUGH E25.

"DO NOT SCALE THIS DRAWING"

HIS DRAWING
BLISHING
HE ACCURACY
EED AND IT
THE PLANS
JECT.

SLEEPY HOLLO

GREENE CO

E. D'APPOLONIA CONSU

10 DUFF ROAD
PITTSBURGH, PA. 15235

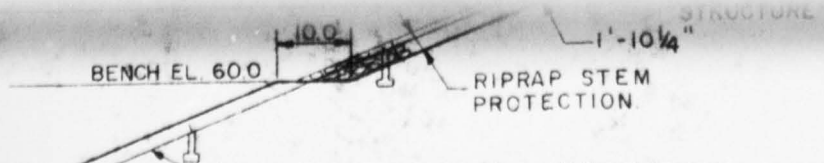
SLEEPY HO

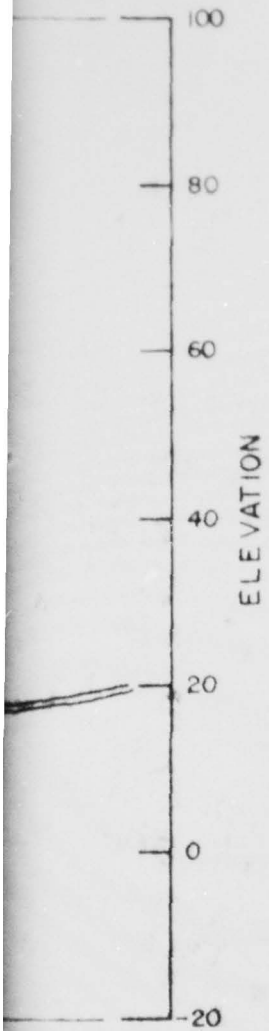
GREENE

SUBSURFACE

SUBSURFACE SEC

DRAWN BY	cjb	11-27-7
CHECKED BY	LJ WHB	12-28 7





17

LEGEND

SOIL
- V L - VERY LOOSE
- L - LOOSE
- M D - MEDIUM DENSE
- D - DENSE
- V D - VERY DENSE
- V S - VERY SOFT
- S - SOFT
- M ST - MEDIUM STIFF
- ST - STIFF
- V ST - VERY STIFF
- H - HARD

ROCK
- V SO - VERY SOFT
- SO - SOFT
- M HD - MEDIUM HARD
- HD - HARD
- V HD - VERY HARD
- V B - VERY BROKEN
- B - BROKEN
- S B - SLIGHTLY BROKEN
- M - MASSIVE

SCALE

20 0 20 40 feet

SLEEPY HOLLOW LAKE, INC.

GREENE COUNTY, N.Y.

E. D'APPOLONIA CONSULTING ENGINEERS, INC.

10 DUFF ROAD PITTSBURGH, PA. 15235	MR 522B CHESTERTON, IND. 46304

SLEEPY HOLLOW LAKE

GREENE COUNTY, N.Y.

SUBSURFACE INVESTIGATION

SUBSURFACE SECTIONS-SHEET 1 OF 3

DRAWN BY	cfb	11-27-71	DRAWING NO.
CHECKED BY	WNB	12-28-71	71-111-E14

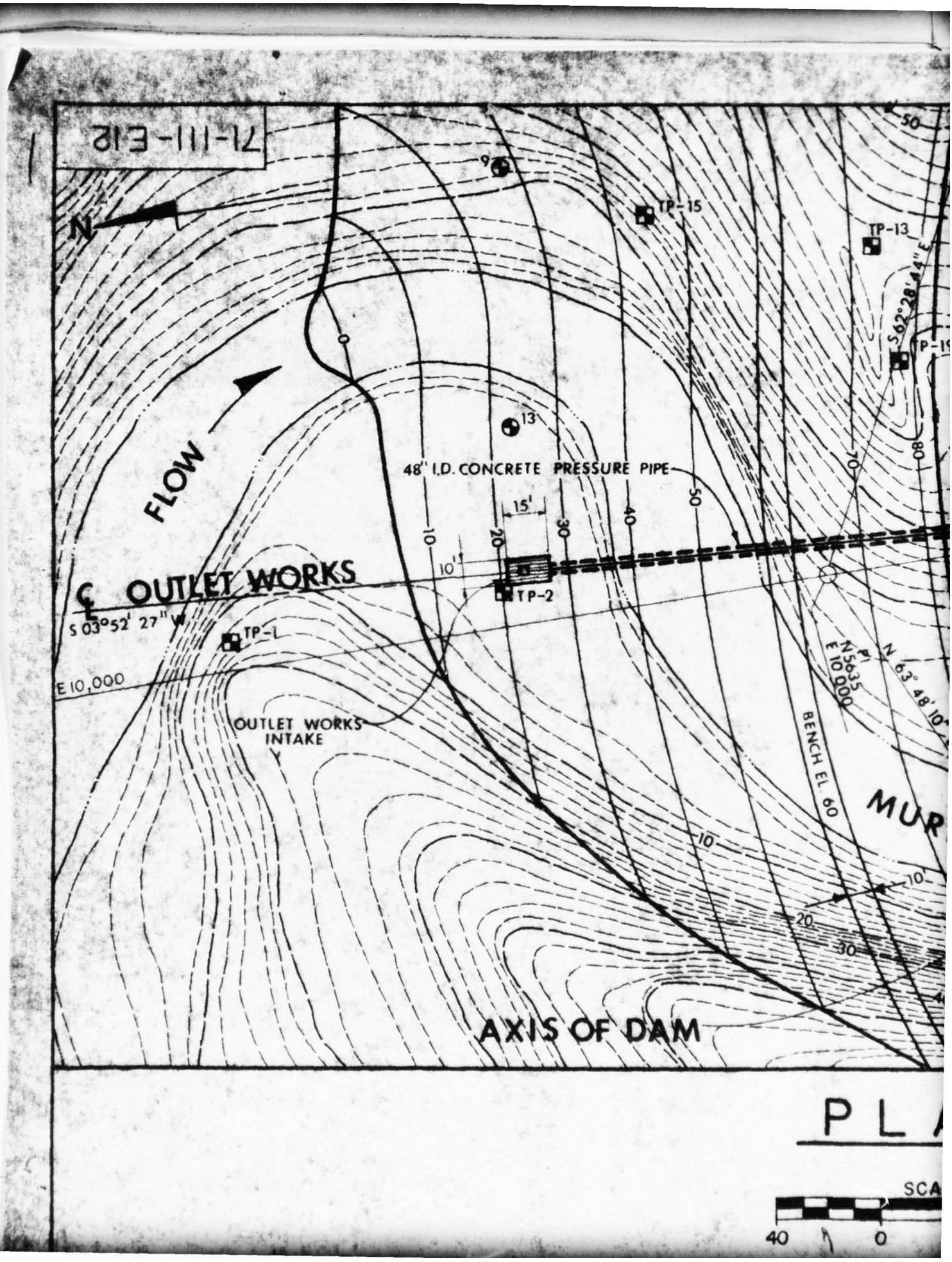
PR 1125-771

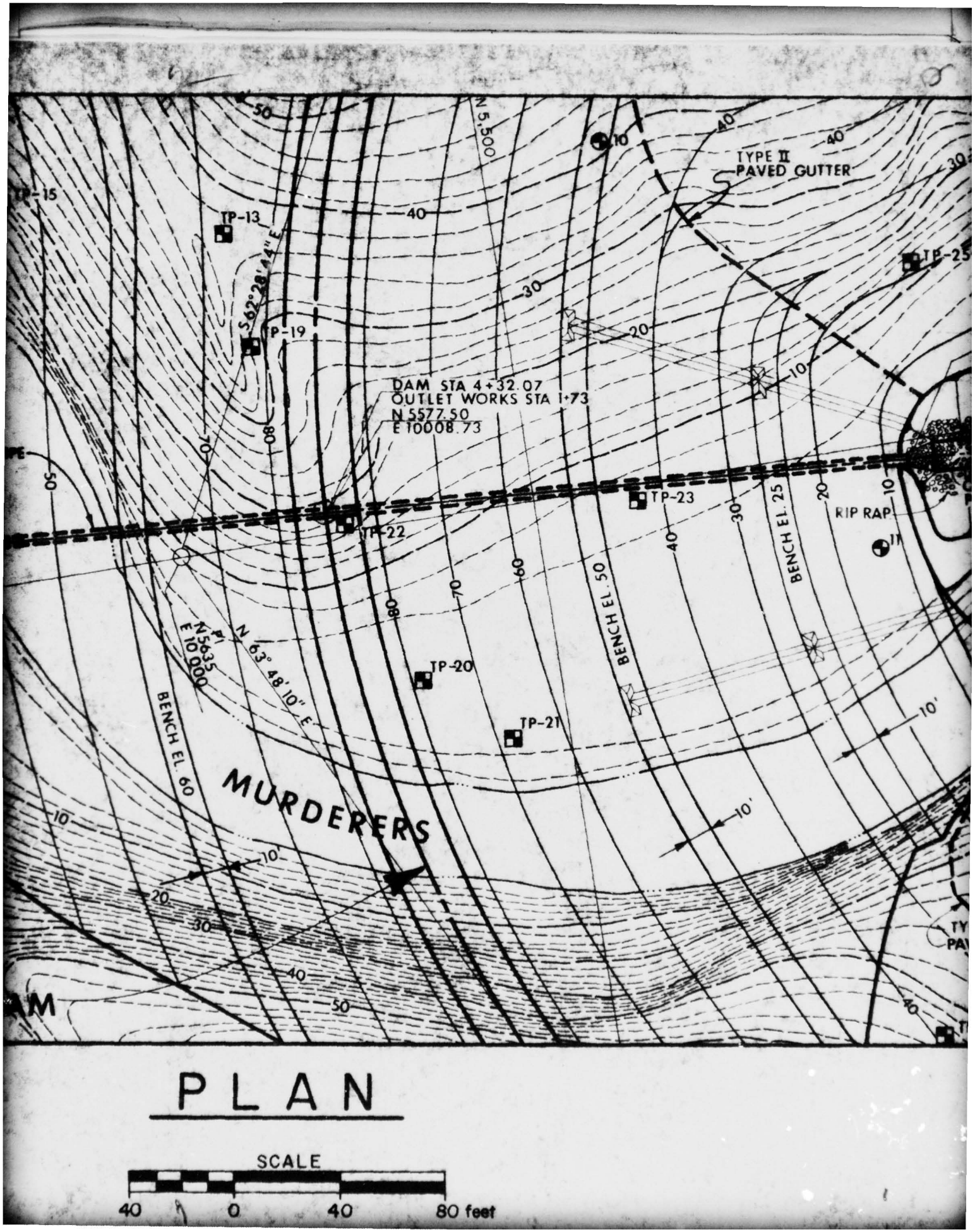
S AND SECTIONS,

RINGS,

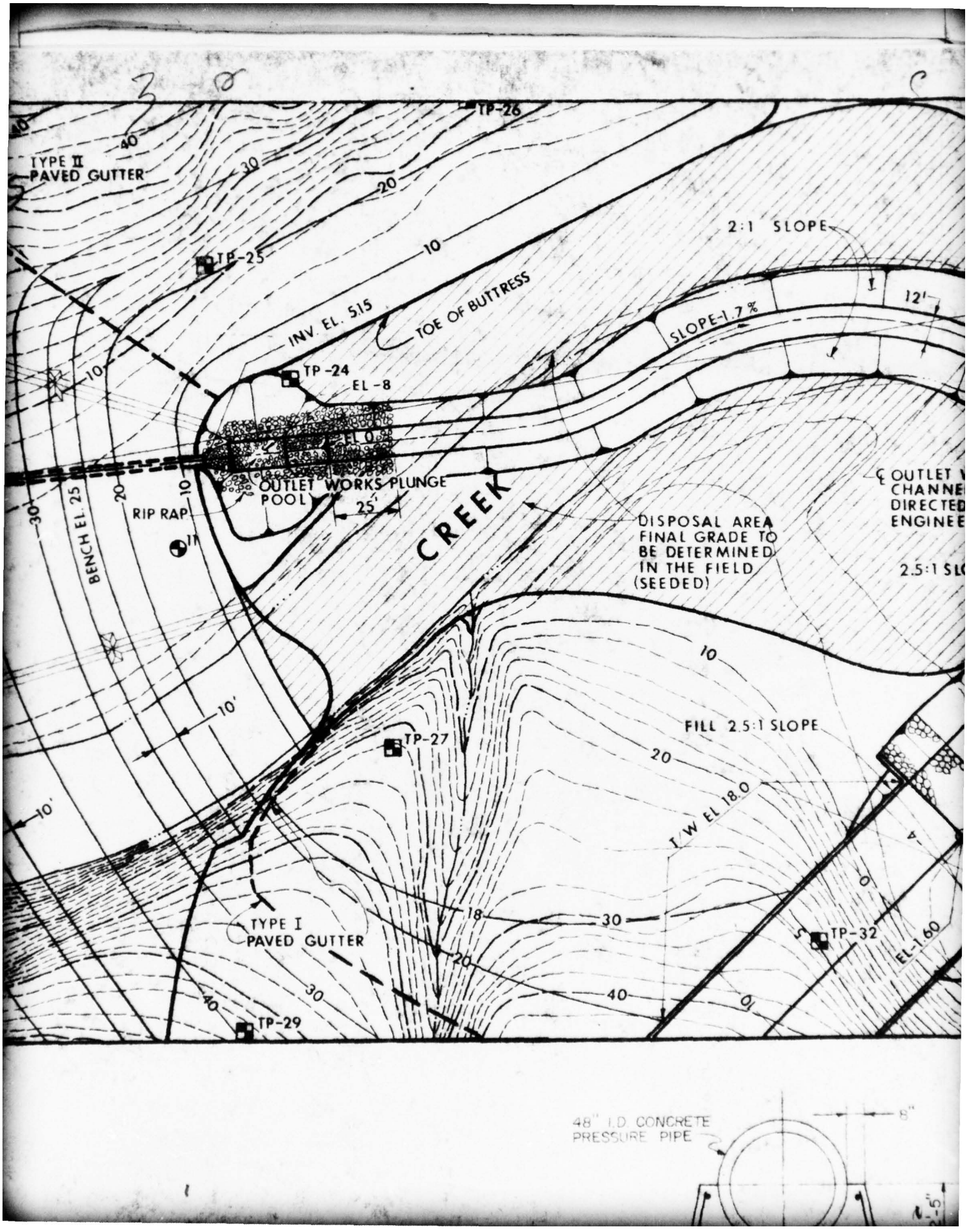
PITS,

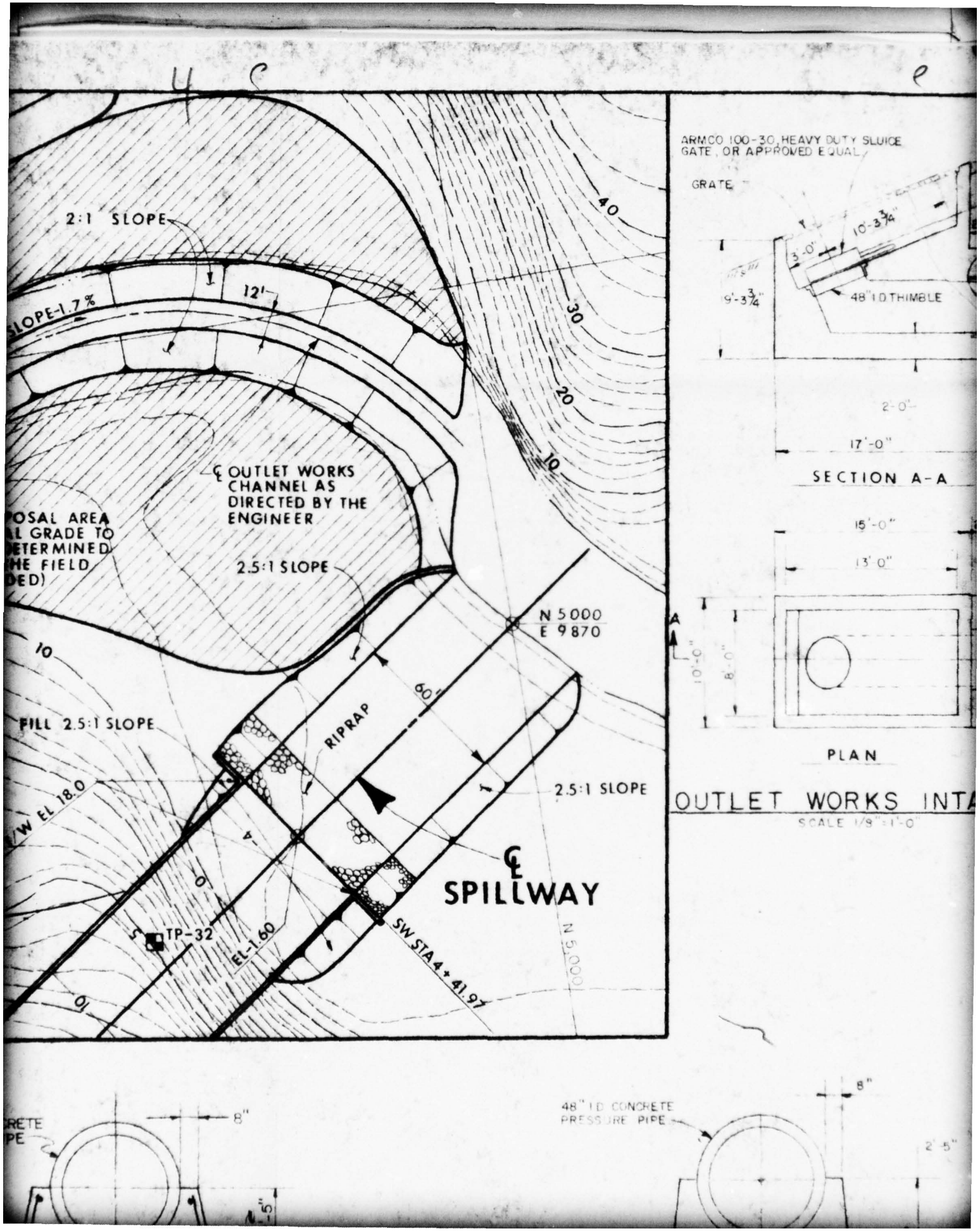
"DO NOT SCALE THIS DRAWING"

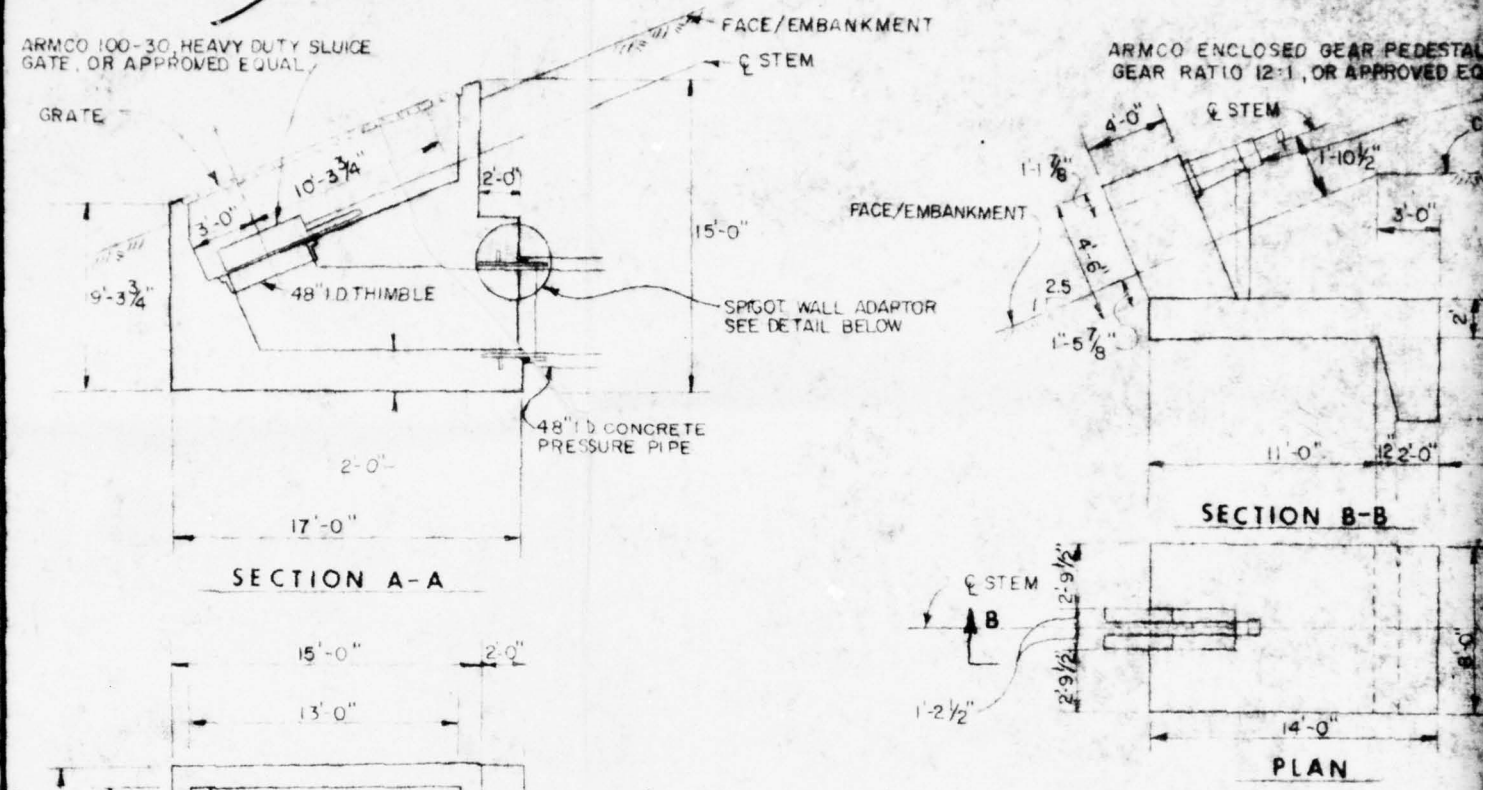

213-111-12
N
FLOW
48" I.D. CONCRETE PRESSURE PIPE
15'
10'
℄ OUTLET WORKS
S 03°52' 27" W
TP-1
TP-2
TP-13
TP-15
E 10,000
OUTLET WORKS INTAKE
BENCH EL. 60
N 63° 48' 10"
N 5635
E 10,000
AXIS OF DAM
MUR
PL
SCA
40
0


TYPE II
PAVED GUTTER
TP-15
TP-13
TP-19
TP-25
TP-23
TP-22
TP-20
TP-21
DAM STA 4+32.07
OUTLET WORKS STA 1+73
N 5577.50
E 10008.73
N 5,500
S62°28'44"E
N 63° 48'10" E
N5635
E 10,000
BENCH EL. 50
BENCH EL. 25
BENCH EL. 60
RIP RAP
MURDERERS
SCALE
40 0 40 80 feet

PLAN


TP-26
TYPE II
PAVED GUTTER
40
30
20
10
TP-25
2:1 SLOPE
INV. EL. 515
TOE OF BUTTRESS
12'
SLOPE-1.7%
TP-24
EL -8
EL 0
OUTLET WORKS PLUNGE
POOL
25'
RIP RAP
BENCH EL. 25
CREEK
DISPOSAL AREA
FINAL GRADE TO
BE DETERMINED
IN THE FIELD
(SEEDED)
℄ OUTLET
CHANNE
DIRECTED
ENGINEE
2.5:1 SL
FILL 2.5:1 SLOPE
TP-27
I/W EL 18.0
TYPE I
PAVED GUTTER
TP-29
TP-32
EL-1.60
48" I.D. CONCRETE
PRESSURE PIPE
8"


2:1 SLOPE
12'
SLOPE-1.7%
40
30
20
10
℄ OUTLET WORKS CHANNEL AS DIRECTED BY THE ENGINEER
2.5:1 SLOPE
N 5000
E 9870
RIPRAP
60"
FILL 2.5:1 SLOPE
2.5:1 SLOPE
℄ SPILLWAY
TP-32
EL-1.60
SW STA 4+41.97
N 5000
ARMCO 100-30, HEAVY DUTY SLUICE GATE, OR APPROVED EQUAL
GRATE
10-3¾"
3'-0"
9'-3¾"
48" I.D THIMBLE
2'-0"
17'-0"
SECTION A-A
15'-0"
13'-0"
10'-0"
8'-0"
PLAN
OUTLET WORKS INTA
SCALE 1/8"=1'-0"
8"
48" I.D CONCRETE PRESSURE PIPE
8"
2'-5"

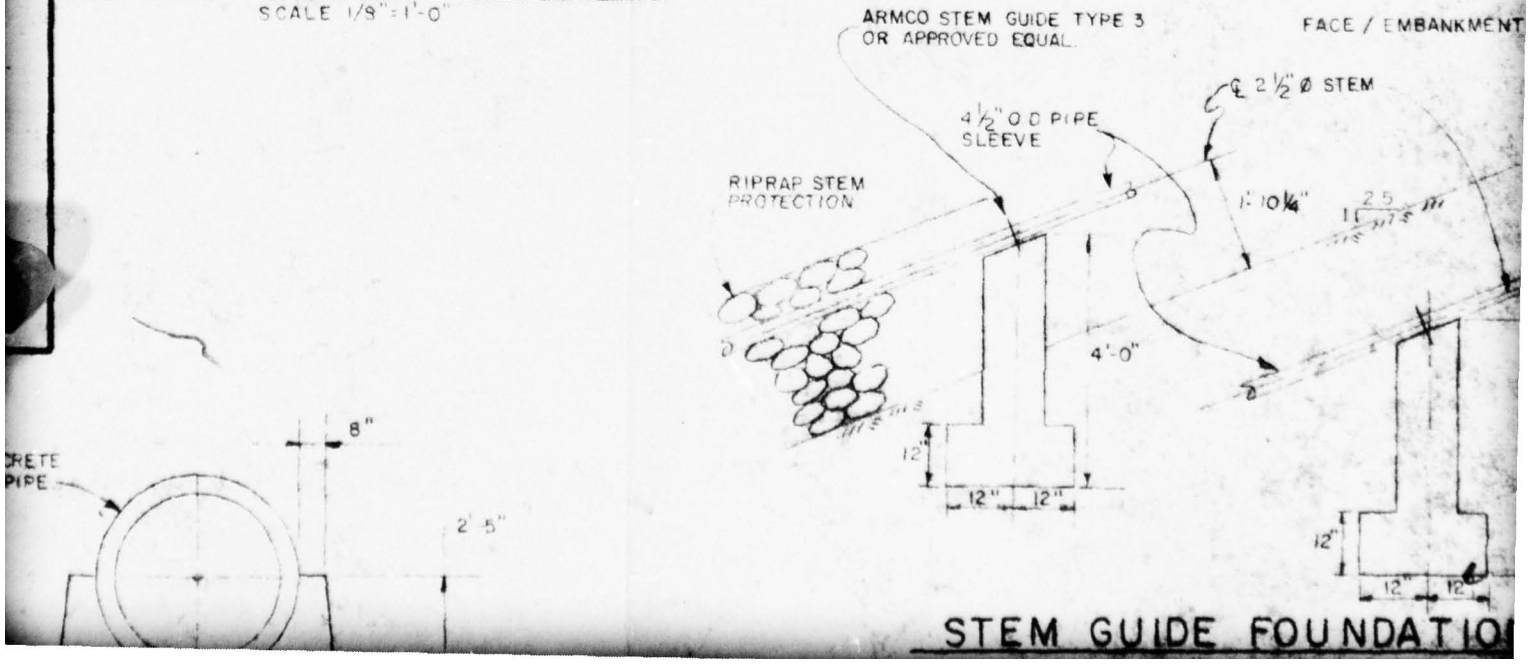


OUTLET WORKS INTAKE

SCALE 1/8" = 1'-0"

PEDESTAL LIFT FOUNDA

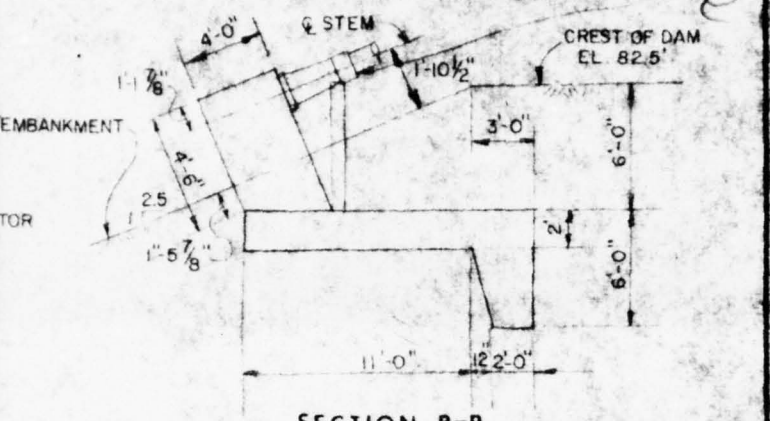
SCALE 1/8" = 1'-0"



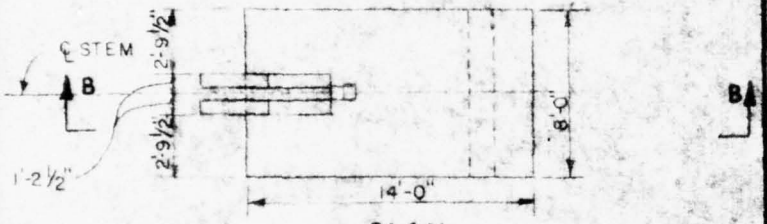
STEM GUIDE FOUNDATIO

KMENT

ARMCO ENCLOSED GEAR PEDESTAL, MODEL CPE 12,
GEAR RATIO 12:1, OR APPROVED EQUAL



SECTION B-B

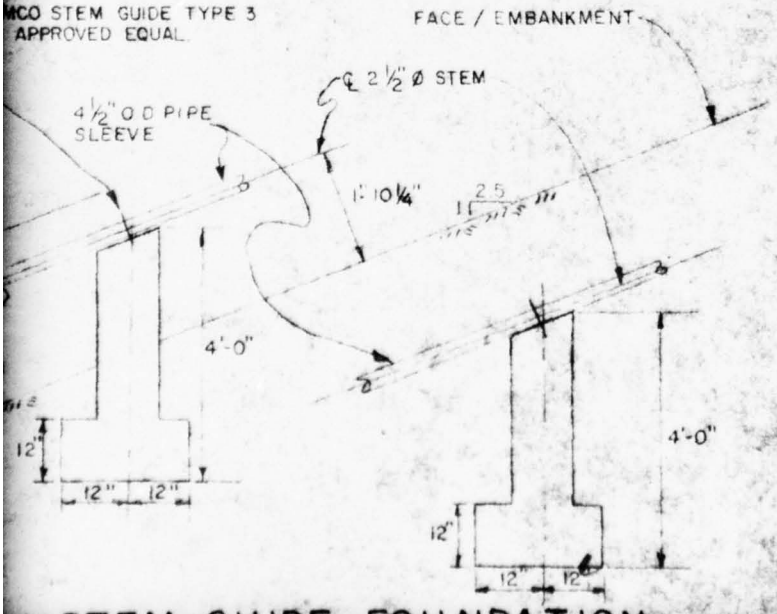


PLAN

PEDESTAL LIFT FOUNDATION

SCALE 1/8" = 1'-0"

MCO STEM GUIDE TYPE 3
APPROVED EQUAL



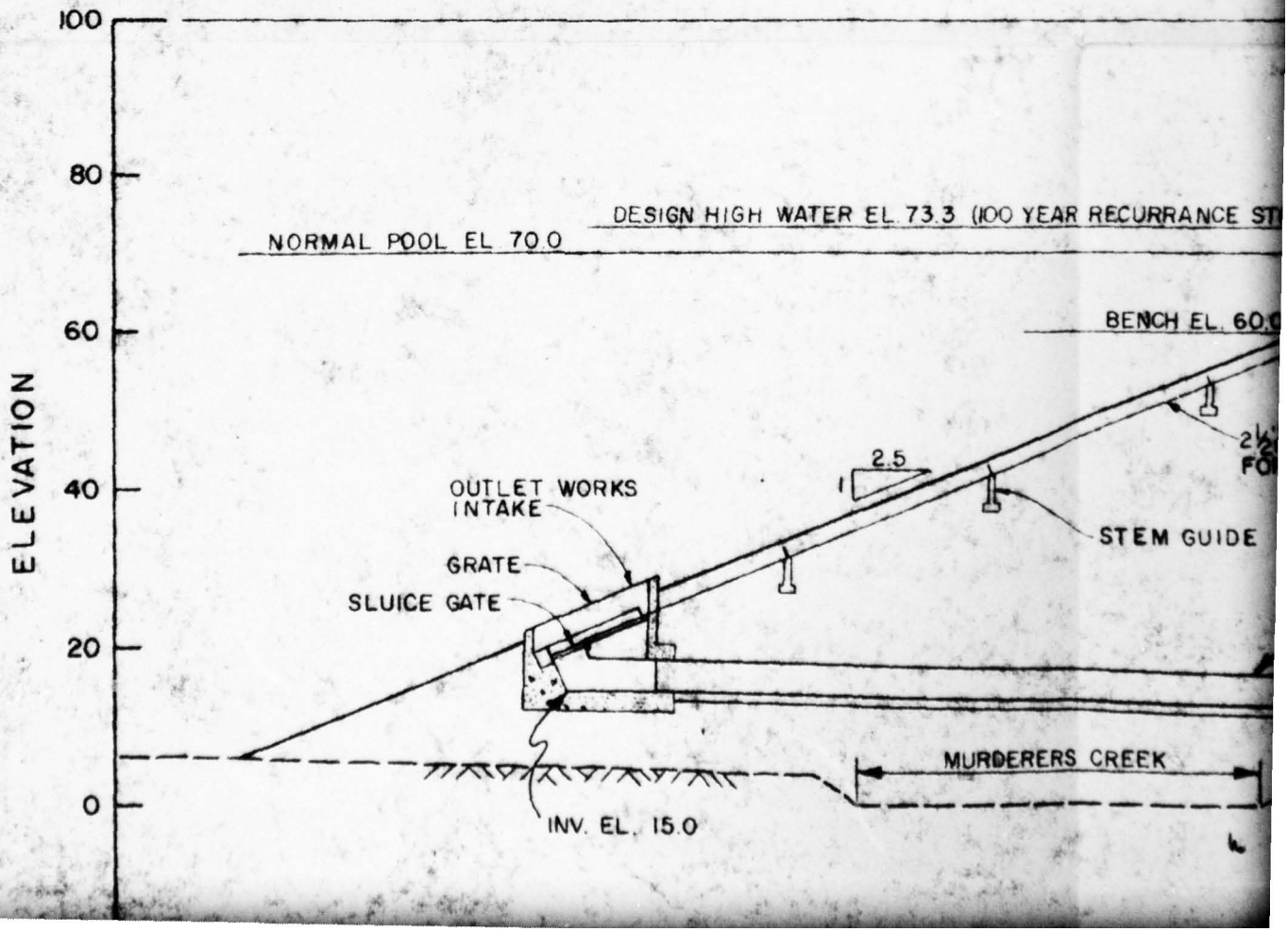
STEM GUIDE FOUNDATION

20
30
AXIS OF DAM

PLA

SCAL

40 0

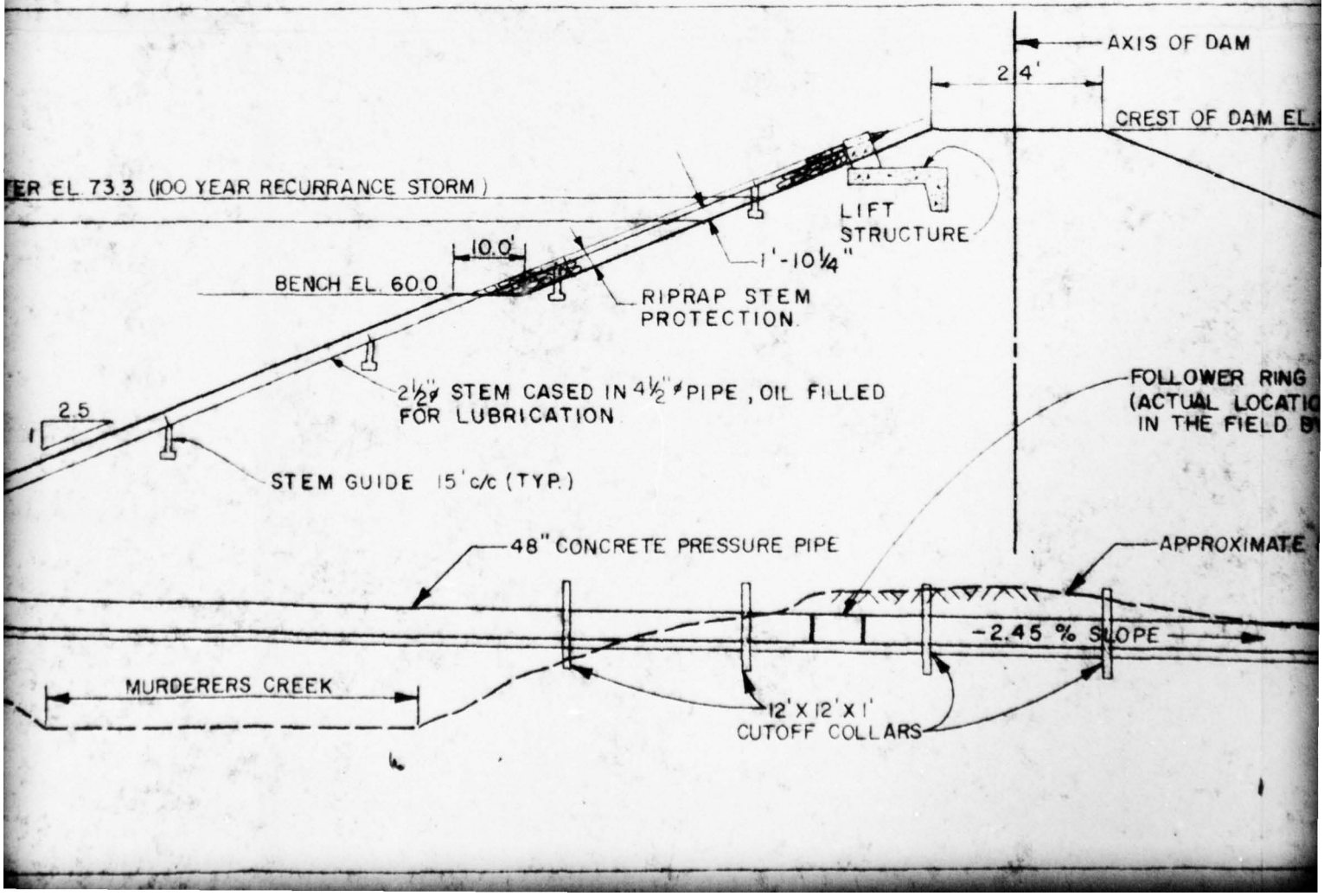

100
80
60
40
20
0
ELEVATION
DESIGN HIGH WATER EL. 73.3 (100 YEAR RECURRANCE ST
NORMAL POOL EL. 70.0
BENCH EL. 60.0
2.5
1
OUTLET WORKS INTAKE
GRATE
SLUICE GATE
STEM GUIDE
MURDERERS CREEK
INV. EL. 15.0

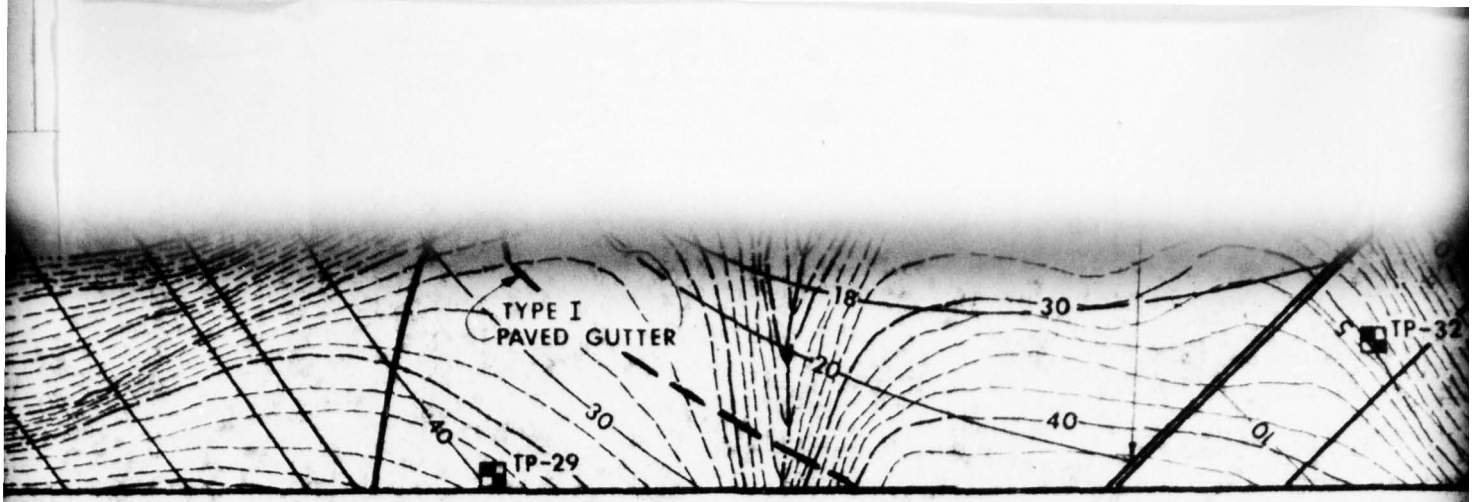
PLAN

8

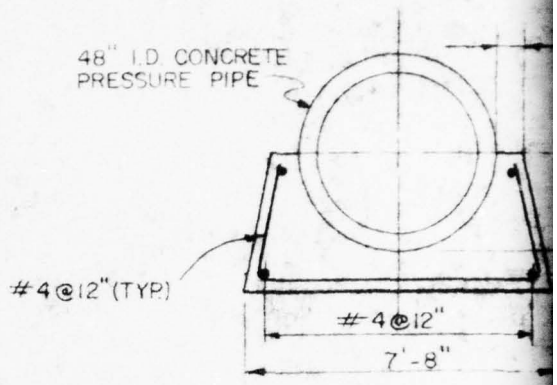
SCALE

40 0 40 80 feet



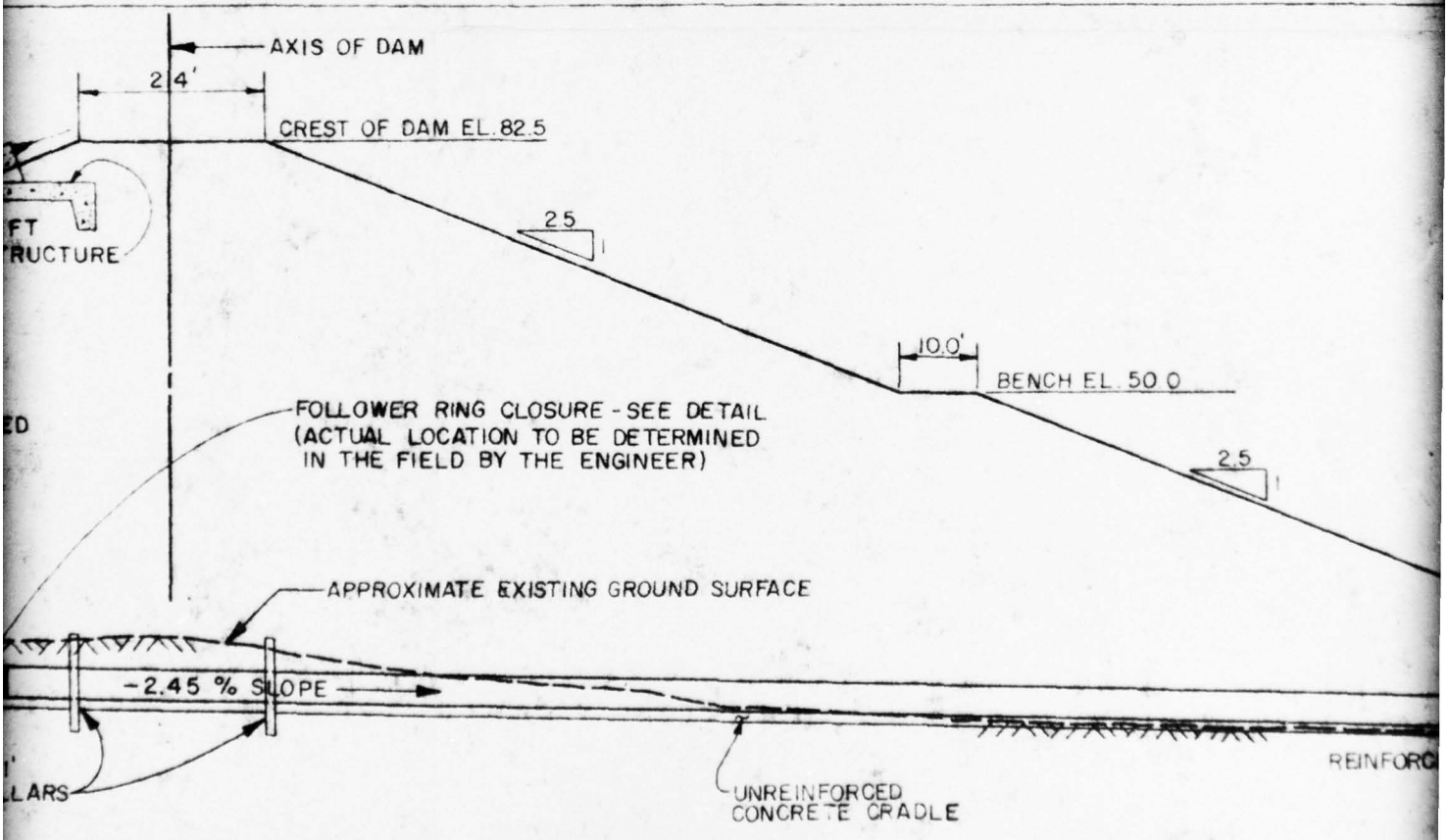


9 '



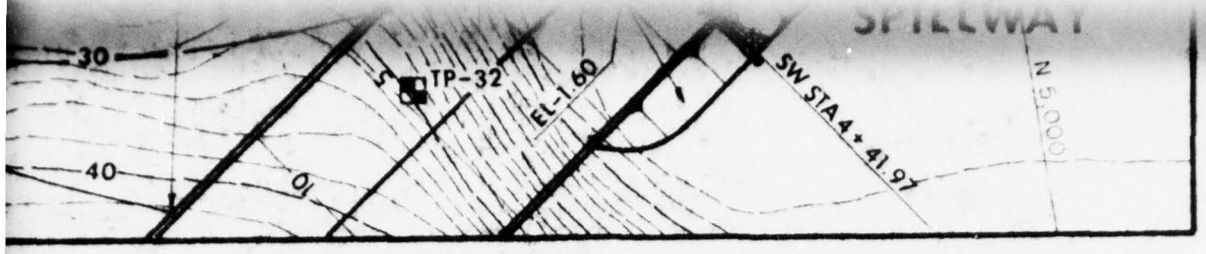
REINFORCED CONCRETE PIP

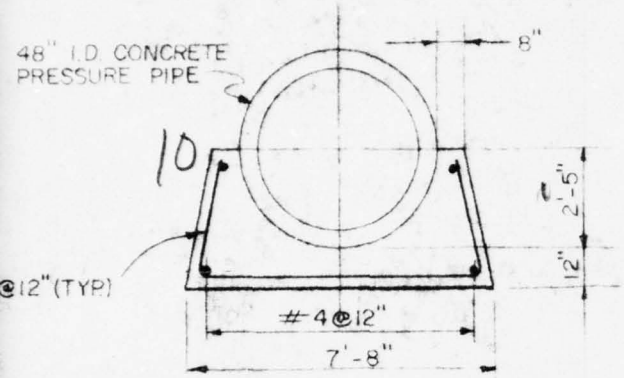
SCALE: 1/4" = 1'-0"



APPROXIMATE

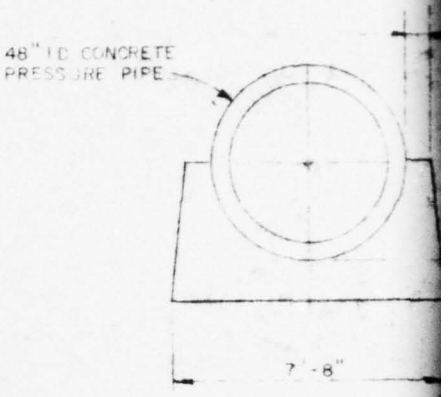
DETAILS OF OUTLET WORKS





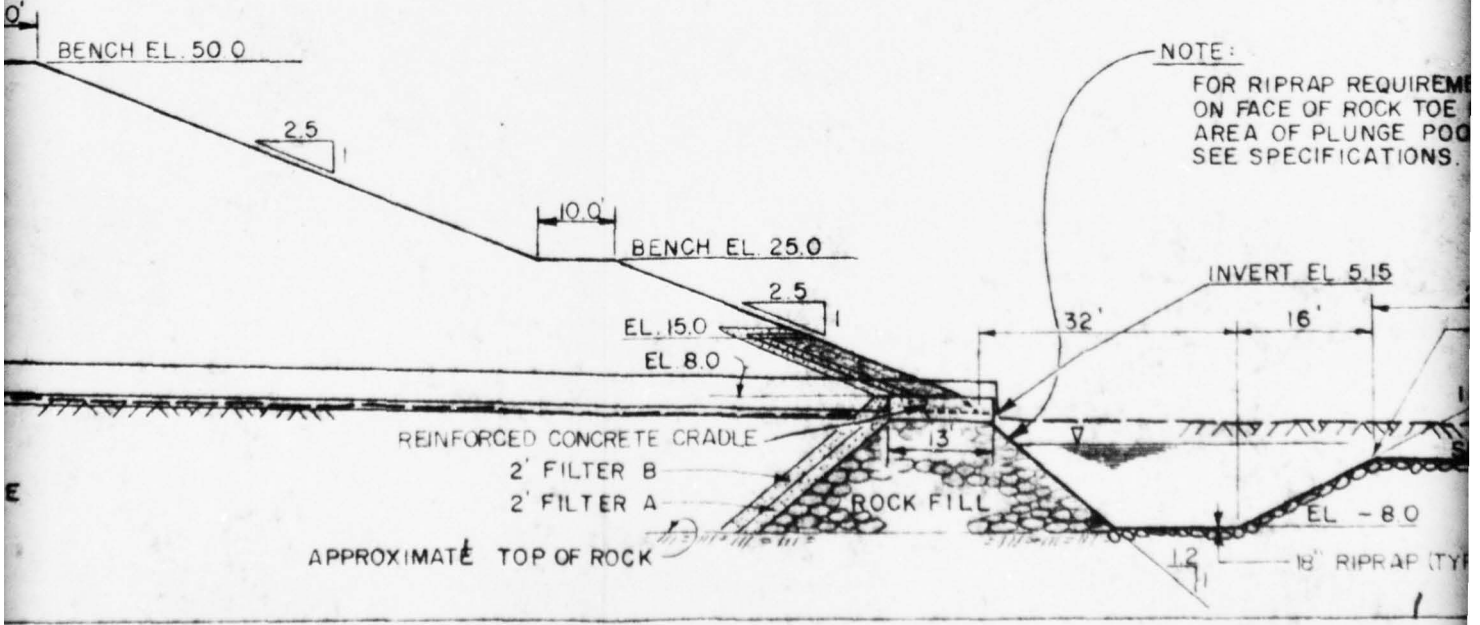
INFORCED CONCRETE PIPE CRADLE (ROCK FILL AREA ONLY)

SCALE 1/4" = 1'-0"



UNREINFORCED CONCRETE

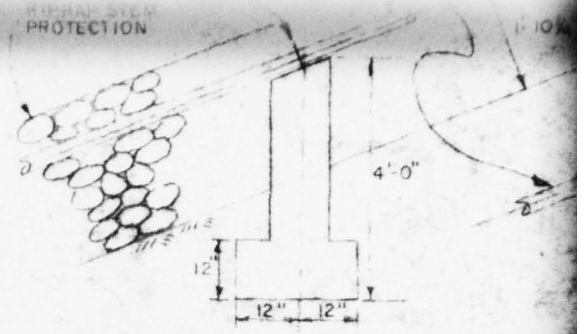
SCALE 1/4" = 1'-0"



WORKS

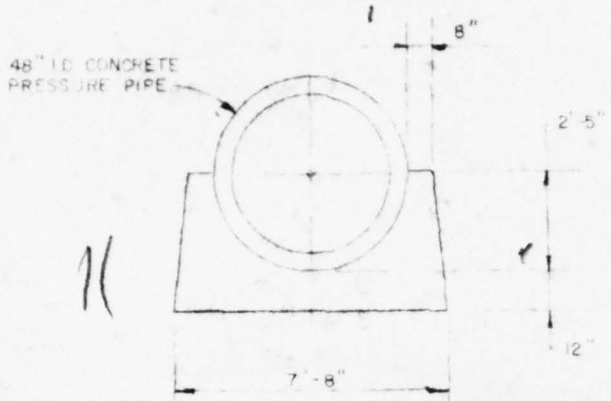
5/8" MACH. BOLT HEX NUT

WELDED FABRIC OR WIRE MESH



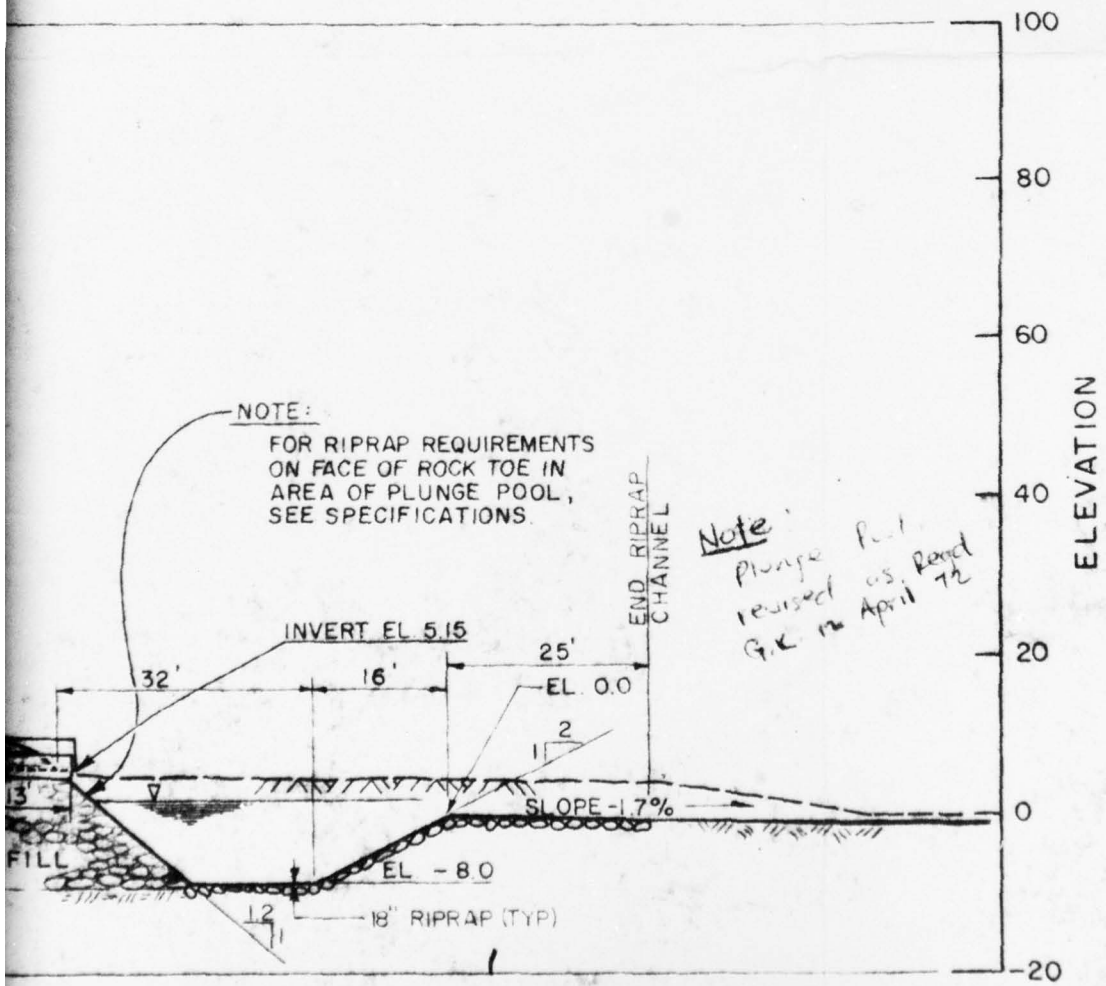
STEM GUIDE FO

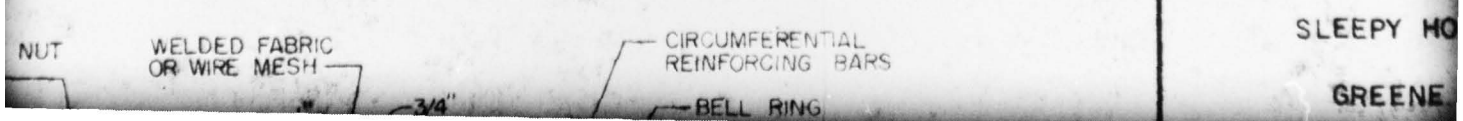
SCALE 3/8"=1'-0"



UNREINFORCED CONCRETE PIPE CRADLE

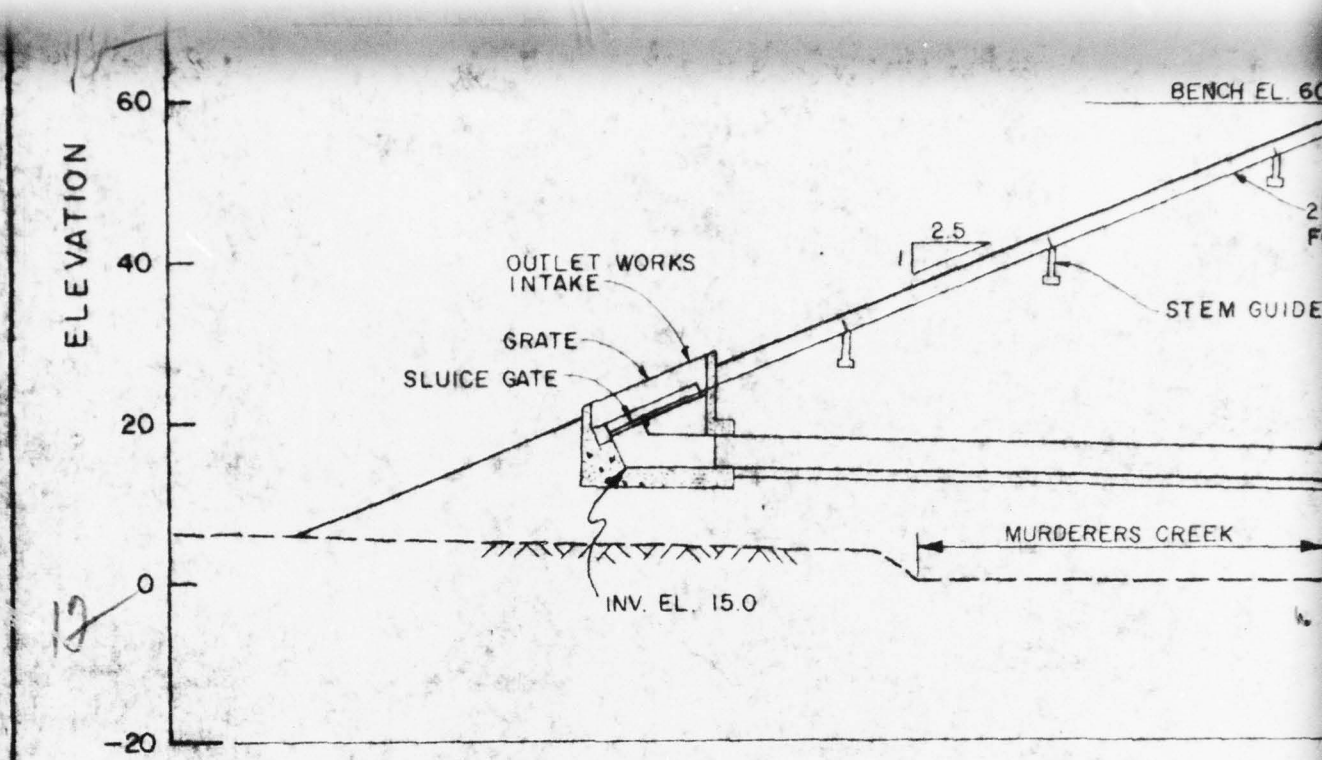
SCALE 1/4"=1'-0"





SLEEPY HO

GREENE

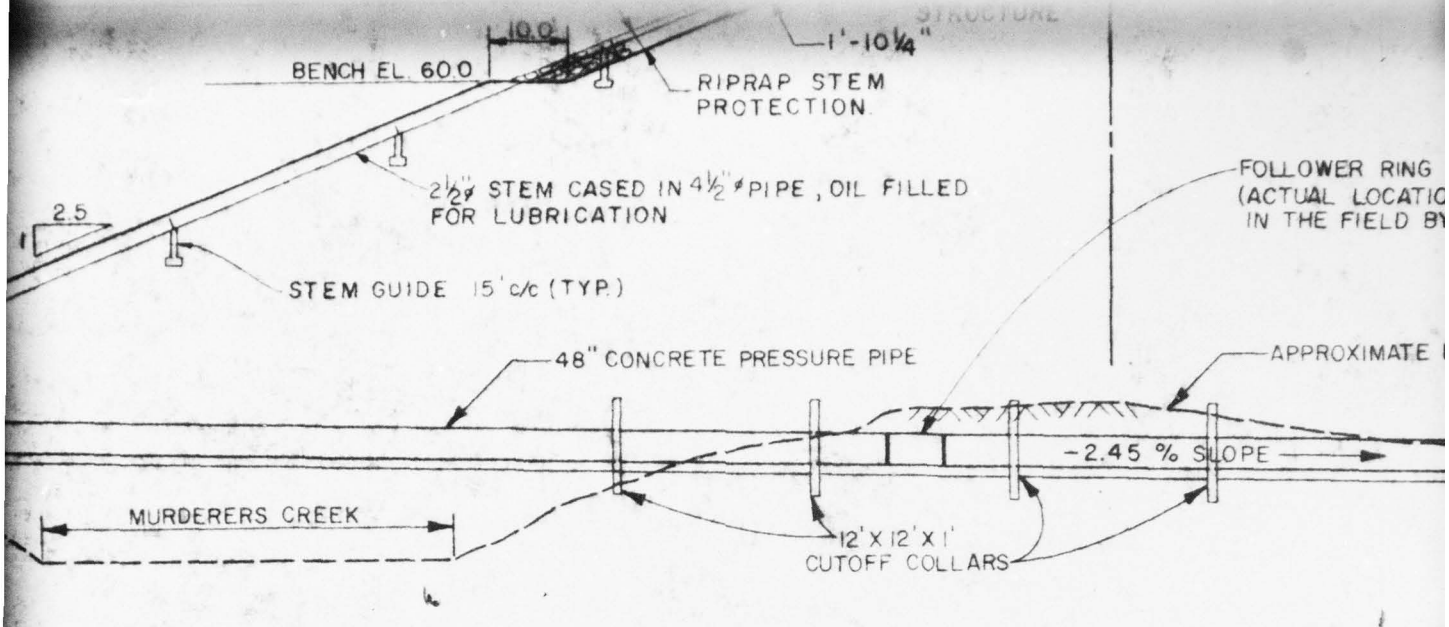


REVISION	DESCRIPTION
1	ADDED REINFORCED CONCRETE CRADLE @ ROCK TOE, UNREINFORCED CONCRETE CRADLE IN PROFILE, AND RIPRAP TO OUTLET WORKS PLUNGE POOL 2-24-72

REFERENCE DRAWINGS

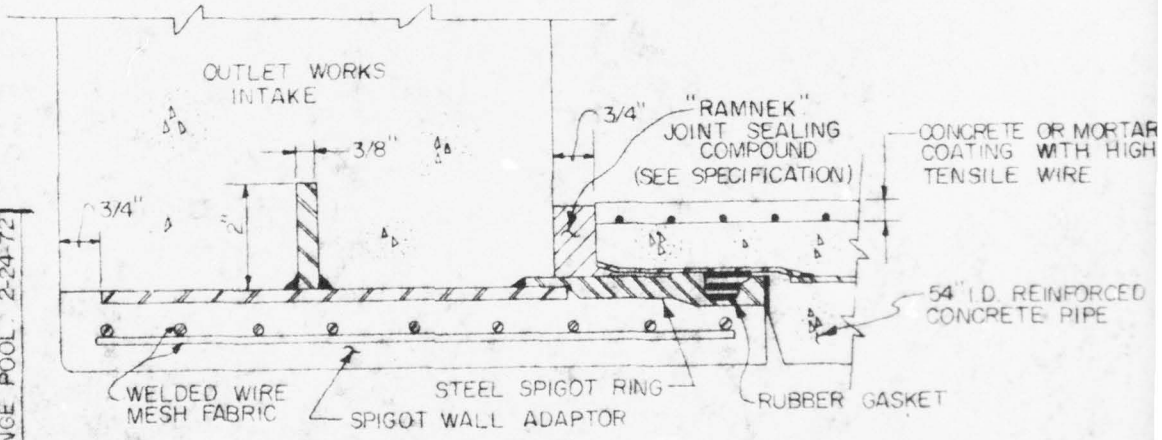
3/4"

© 1968 HERCULES A. & B. SMITH CO., PGH., PA.



13

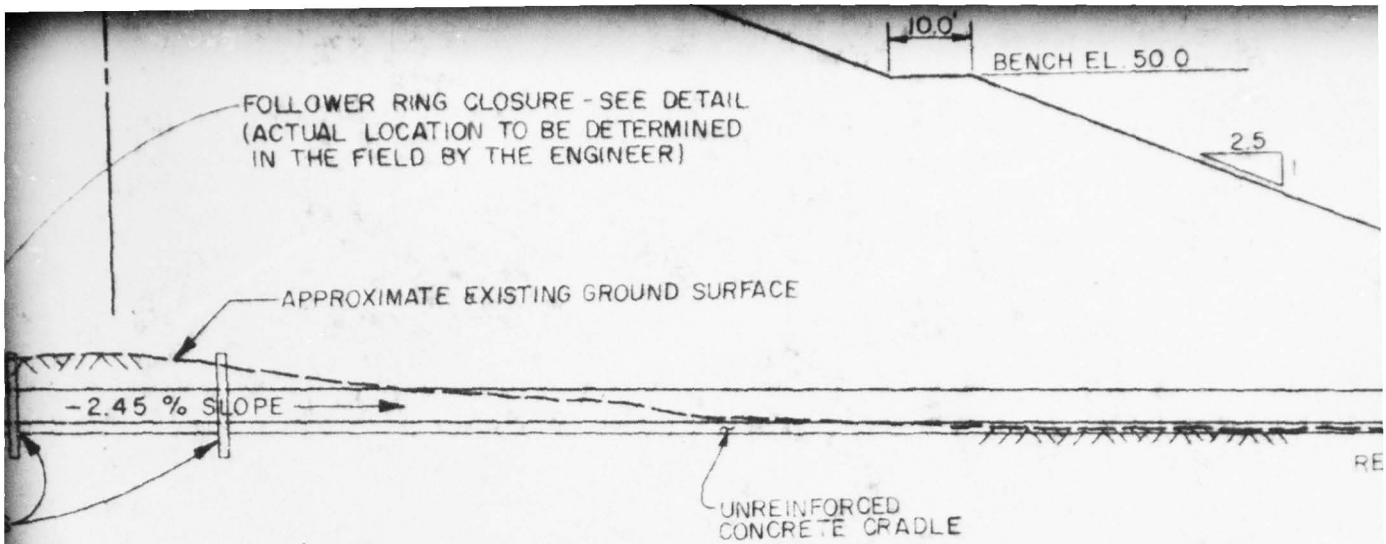
PROFILE OF



DETAIL OF SPIGOT WALL ADAPTOR

N.T.S.

REVISION	DESCRIPTION
1	ADDED REINFORCED CONCRETE CRADLE @ ROCK TOE, UNREINFORCED CONCRETE CRADLE IN PROFILE AND RIPRAP TO OUTLET WORKS PLUNGE POOL 2-24-72



14

APPROXIM

ROFILE OF OUTLET WORKS

SCALE: 1" = 20'

AMNEK"
T SEALING
OMPOUND
ECIFICATION)

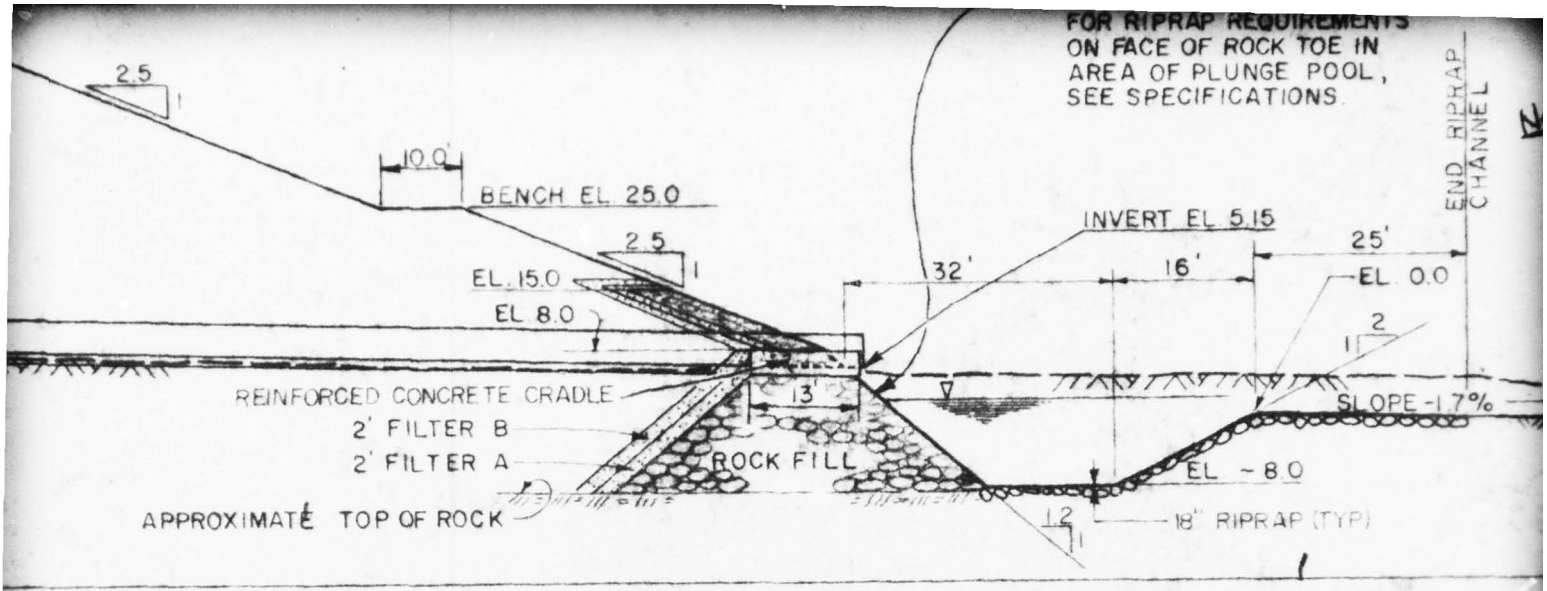
CONCRETE OR MORTAR
COATING WITH HIGH
TENSILE WIRE

54" I.D. REINFORCED
CONCRETE PIPE

RUBBER GASKET

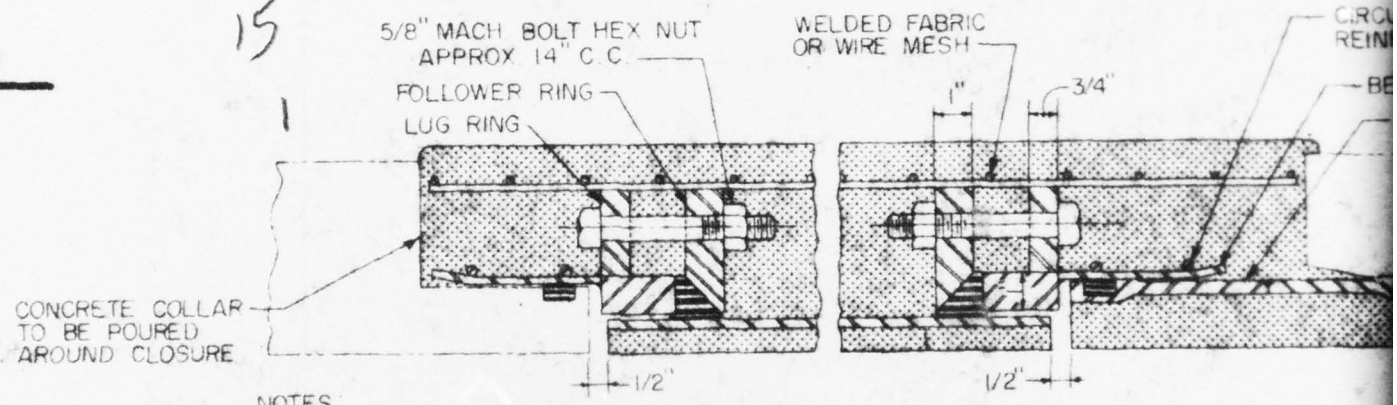
CONCRE
TO BE
AROUND

PTOR



RKS

15



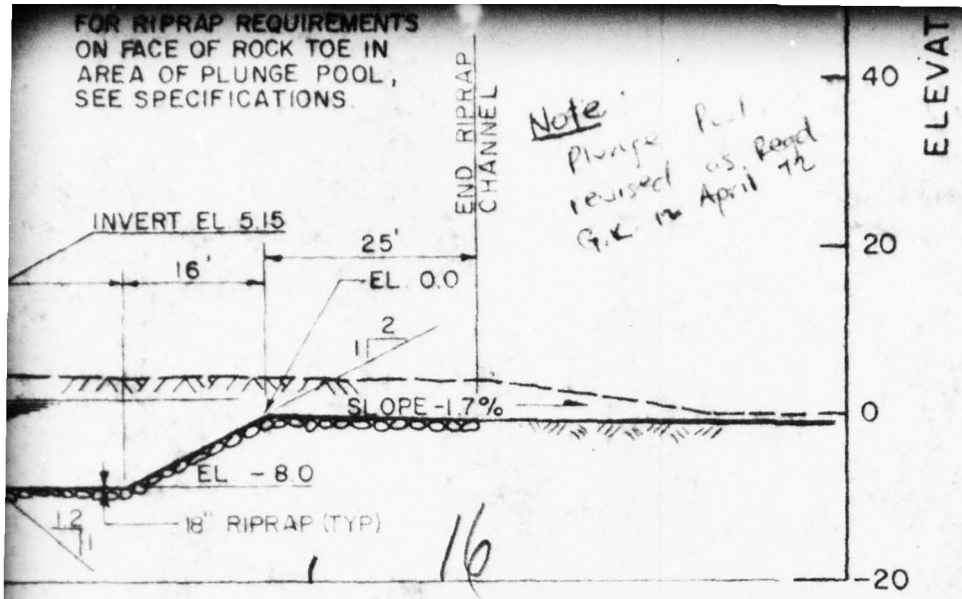
NOTES:

1. FOR CLOSURE LENGTHS BETWEEN 6 AND 18 FEET A SHORT WILL BE NECESSARY.
2. CONCRETE SHOWN SHADED TO BE SUPPLIED AND PLACED BY INSTALLING CONTRACTO
3. EXACT DIMENSION AND INSTALLATION TO BE AS RECOMMENDED BY THE MANUFACTUR AND AS APPROVED BY THE ENGINEER.

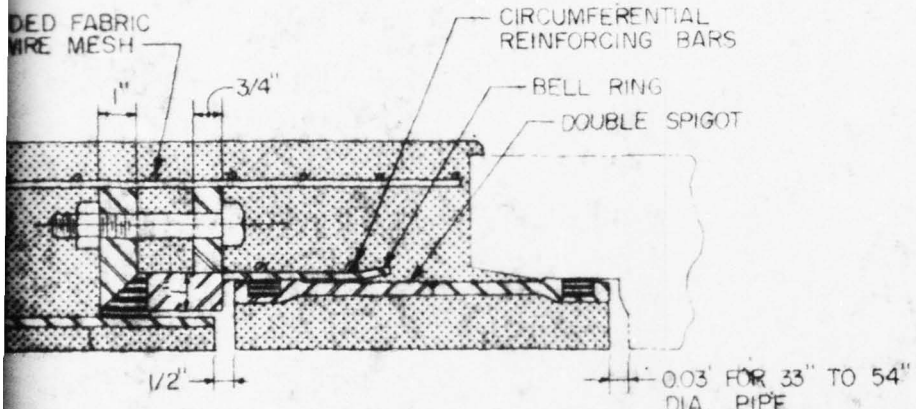
FOLLOWER RING* CLOSURE FOR 48" I.D. CONCRETE PRE

*BY INTERPACE CORP. OR APPROVED EQUAL

N.T.S.



16



FEET A SHORT WILL BE NECESSARY.
D AND PLACED BY INSTALLING CONTRACTOR.
E AS RECOMMENDED BY THE MANUFACTURER

R 48" I.D. CONCRETE PRESSURE PIPE
N.T.S.

"DO NOT SCALE THIS DRAWING"

SLEEPY HOLLOW LAKE, IN
GREENE COUNTY, N.Y.

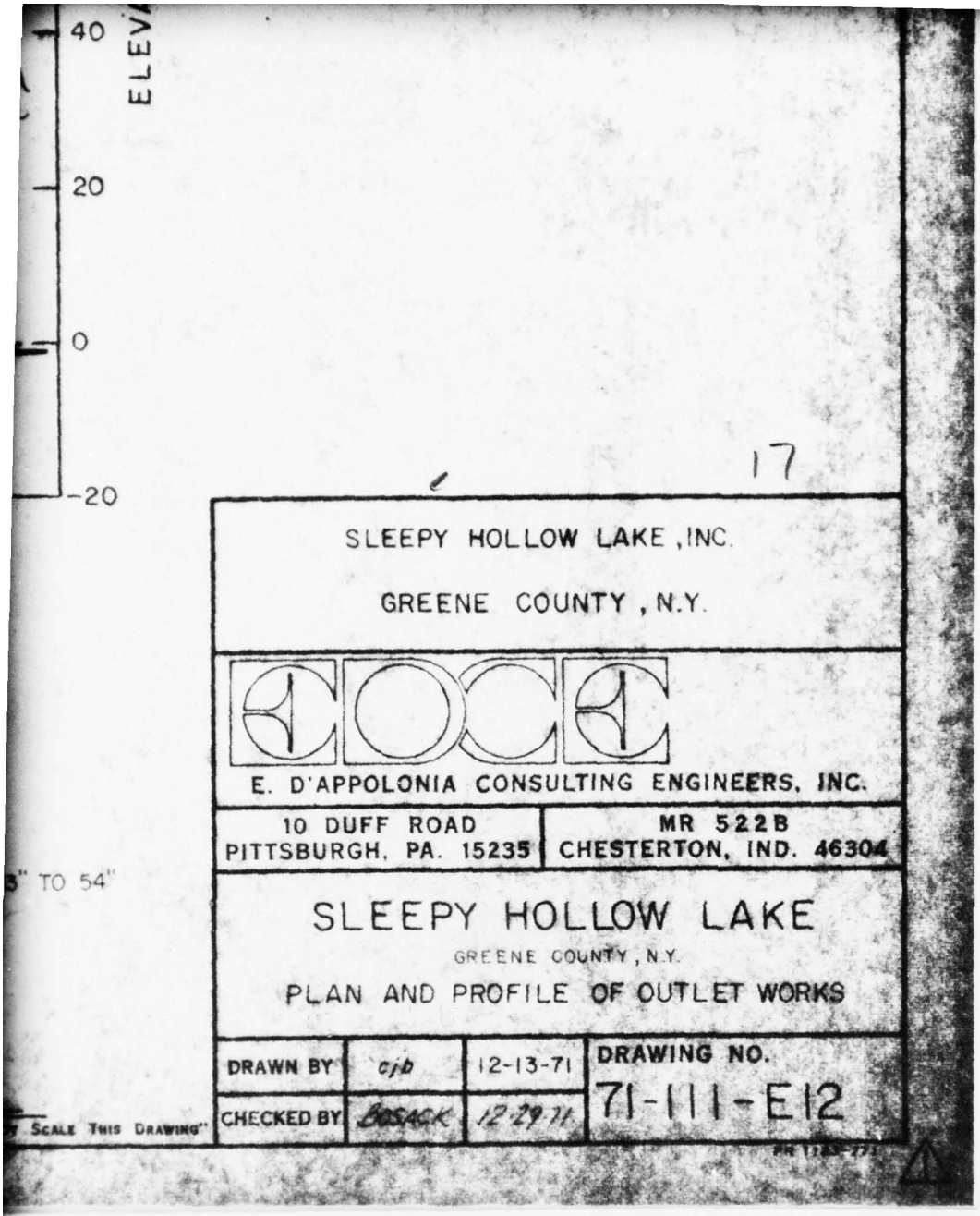
E. D'APPOLONIA CONSULTING ENG

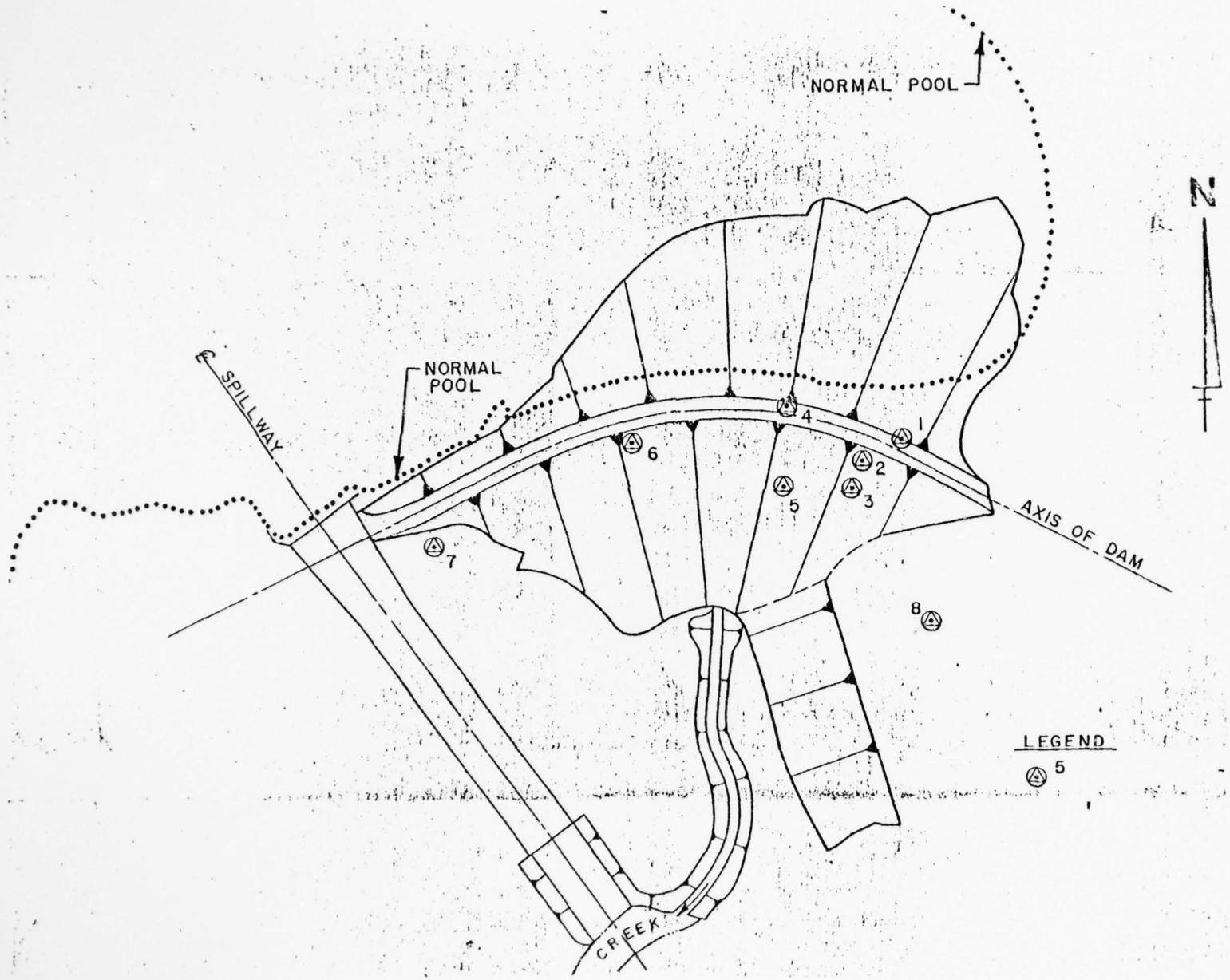
10 DUFF ROAD
PITTSBURGH, PA. 15235

MR
CHESTERTO

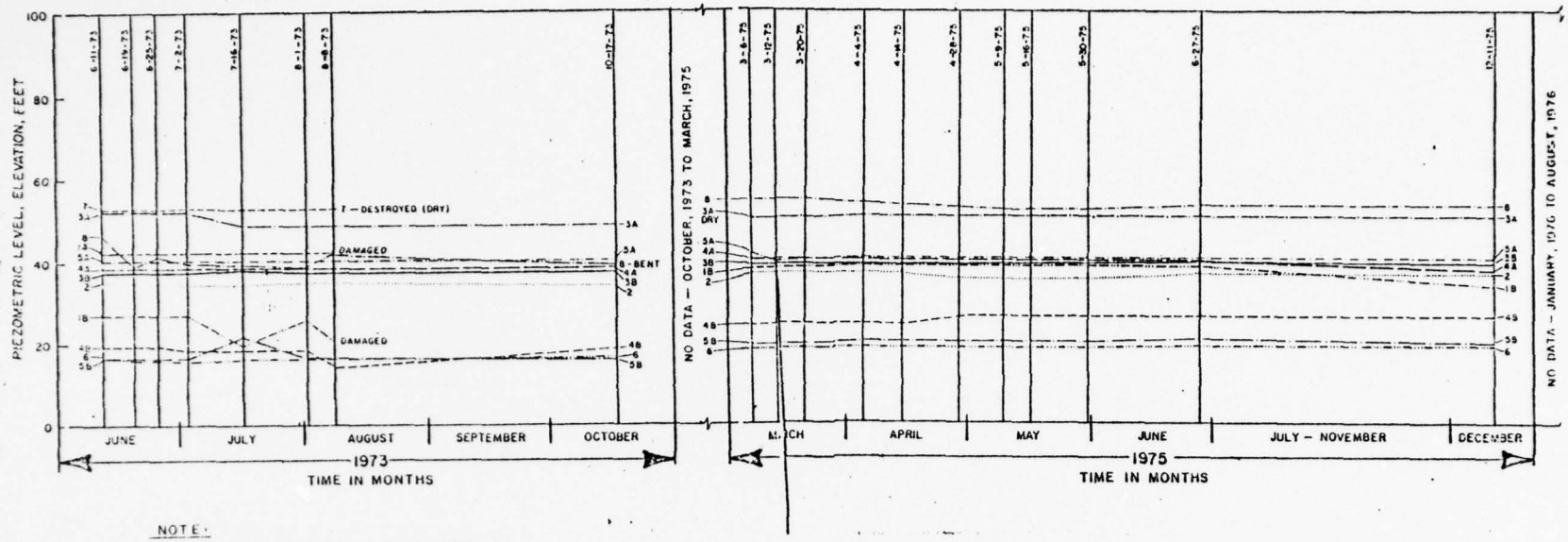
SLEEPY HOLLOW
GREENE COUNTY, N.Y.
PLAN AND PROFILE OF OUT

DRAWN BY	c/d	12-13-71	DRAWIN
CHECKED BY	BOSACK	12-29-71	71-1

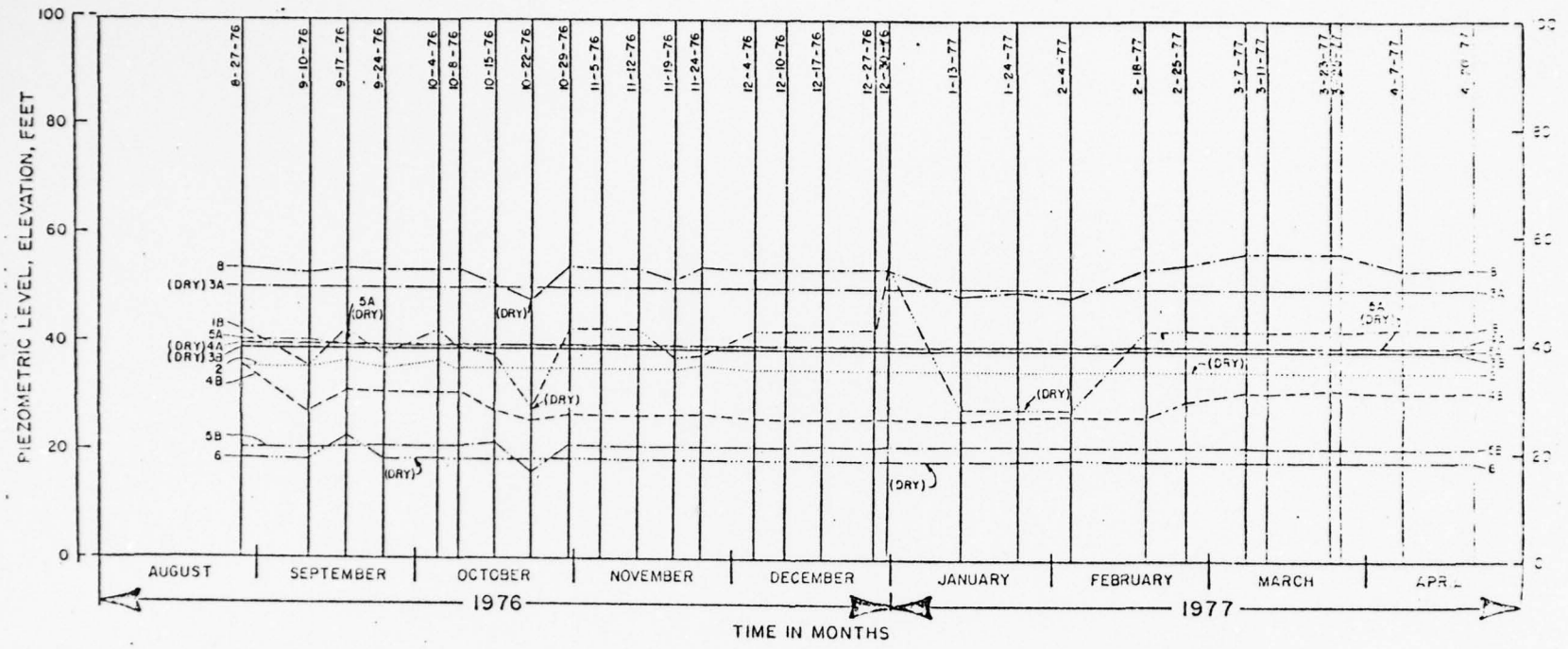

40
20
0
-20
17
SLEEPY HOLLOW LAKE, INC.
GREENE COUNTY, N.Y.
E. D'APPOLONIA CONSULTING ENGINEERS, INC.
10 DUFF ROAD
PITTSBURGH, PA. 15235
MR 522B
CHESTERTON, IND. 46304
SLEEPY HOLLOW LAKE
GREENE COUNTY, N.Y.
PLAN AND PROFILE OF OUTLET WORKS
DRAWN BY
cjb
12-13-71
DRAWING NO.
71-111-E12
CHECKED BY
BOSACK
12-29-71



LOCATION PLAN



NOTE:
PIEZOMETER DATA FROM JUNE, 1973 TO DECEMBER, 1975 OBTAINED FROM DWG. NO. 75-823-84, DATED 2-23-76



PIEZOMETER READINGS

REF. DRAWING PREPARED BY E. D'APPOLONIA

SLEEPY HOLLOW LAKE

LOWER HUDSON RIVER

#209D-3977

PHOTOGRAPHS

APPENDIX B

West Abutment and Spillway
Looking North

Central Portion of Dam

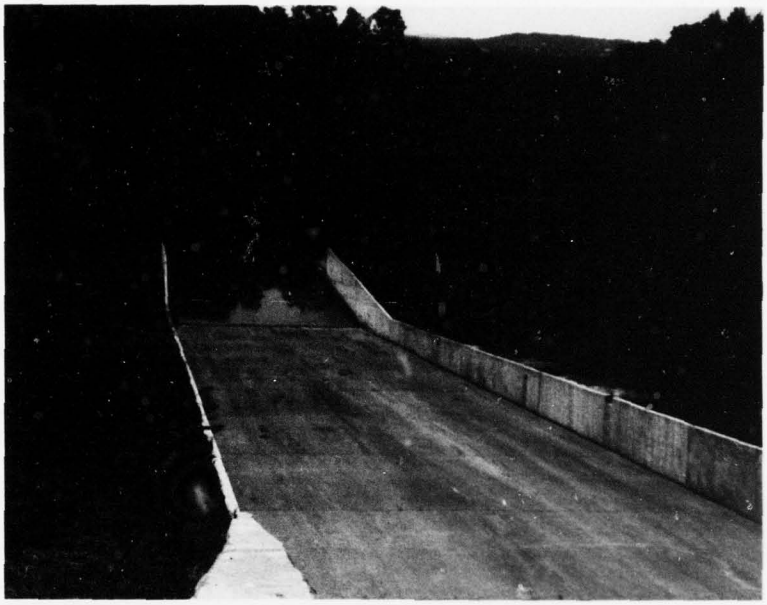
East Abutment and Stabilization Fill

Overview of Sleepy Hollow Dam
Photo taken during final construction
inspection - Nov. 8, 1973, looking west

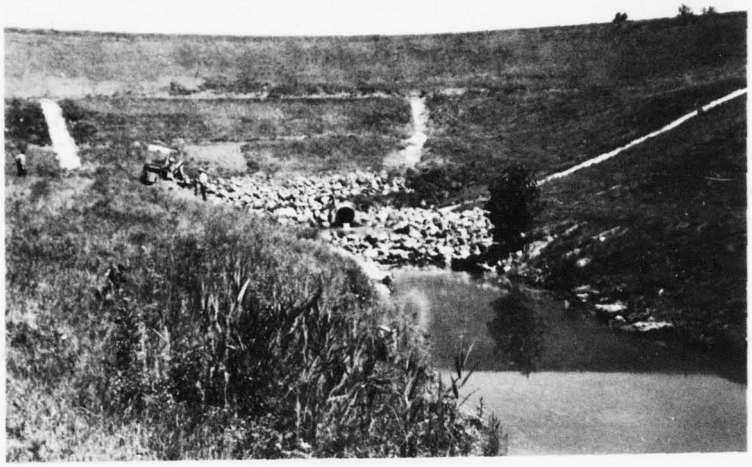
Spillway Overview
Looking North

Ogee Section of Spillway

Spillway Chute - looking south



Control Mechanism of the Low Level Outlet System
located at the top of the dam



Low Level Outlet
note paved surface drains

6" Chimney Drain Outlet
Eastern most pipe

ENGINEERING DATA CHECKLIST

APPENDIX C

AD-A064 171 NEW YORK STATE DEPT OF ENVIRONMENTAL CONSERVATION ALBANY F/G 13/2
NATIONAL DAM SAFETY PROGRAM. SLEEPY HOLLOW DAM (NY 142), LOWER --ETC(U)
AUG 78 G KOCH DACW51-78-C-0035

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3 OF 3
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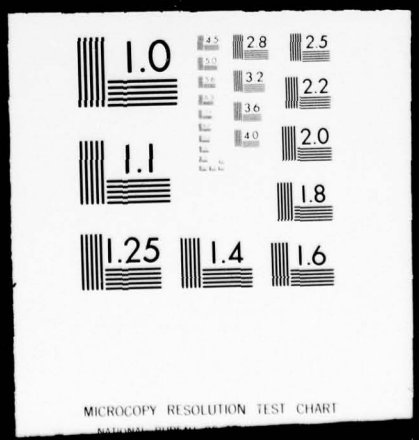
3 OF 3

AD A064171



Check List
Engineering Data
Design Construction Operation

Name of Dam Sleepy Hollow

I.D. # NY 142

Acc # 209 D-3977

Item	Remarks		
	Plans	Details	Typical Sections
Dam	Yes	Yes	Yes
Spillway(s)	Yes	Yes	Yes
Outlet(s)	Yes	Yes	Yes
Design Reports	D'Appolonia Reports on Design & Hydraulics		
Design Computations	Yes		
Discharge Rating Curves	Yes		
Dam Stability	Yes		
Seepage Studies	Yes		
Subsurface and Materials Investigations	Yes		

Item	Remarks
Construction History	No information available due to change in ownership except in the NYS DEC correspondence file
Surveys, Modifications, Post-Construction Engineering Studies and Reports	Repair of spalled concrete areas on Ogee section of spillway completed approximately 15 years ago No other studies or reports are available.
Accidents or Failure of Dam Description, Reports	None reported
Operation and Maintenance Records Operation Manual	Limited records, piezometer readings no operation manual

VISUAL INSPECTION CHECKLIST

APPENDIX D

VISUAL INSPECTION CHECKLIST

1) Basic Data

a. General

Name of Dam Sleepy Hollow

I.D. # NY 142 DEC # 209D-3977

Location: Town Athens County Green

Stream Name Murderers Creek

Tributary of Hudson River

Longitude (W), Latitude (N) 73° 48' 24" 42° 16' 54"

Hazard Category High

Date(s) of Inspection 7/13/78

Weather Conditions Clear 80°F

b. Inspection Personnel George Koch, Ken Harmer, W. Coleman
Muhamad Islam, W Lynick, R. McCarty

c. Persons Contacted Frank L Hoffman Jr, Herbert Kreig (maint.)
are managing facility. 518-756-9525 (site) Hoffman 462-7475

d. History:

Date Constructed 1972

Owner Sleepy Hollow Holding Corp.

Designer E. D'Appolonia Consulting Engrs.

Constructed by Green County Pulp & Lumber Co.

2) Technical Data

Type of Dam Earth Embankment

Drainage Area 13.3 sq. mi

Height 85 feet Length 743 feet

Upstream Slope 1:2.5 Downstream Slope 1:2.5

2) Technical Data (Cont'd.)

External Drains: on Downstream Face 3" concrete lining Downstream Toe Rock toe drain

Internal Components:

Impervious Core NONE

Drains Chimney drain with horizontal finger drains on downstream s.de of axis

Cutoff Type Impervious Earth Trench in Rock cut 20' to 35' wide

Grout Curtain NONE

Drains on upstream side of axis:

Horizontal finger drains extending to upstream face where the face is lined with 2 feet of filter material (Lined from El. 60 to original grade at toe)

3) Embankment

Earth Embankment - 743' long 85' high

a. Crest

(1) Vertical Alignment Good condition

(2) Horizontal Alignment generally good, with some settlement near east abutment. Additional fill was placed to adjust for settlement during design (see section along axis)

(3) Surface Cracks None evident

(4) Miscellaneous

b. Slopes

(1) Undesirable Growth or Debris, Animal Burrows No undesirable growth, slopes generally in good condition

(2) Sloughing, Subsidence or Depressions Some erosion beneath paved gutters (swale drains) owner is in process of removing concrete, backfilling voids & placing filter cloth & riprap in these areas needing work

(3) Slope Protection riprap on upstream slope in good condition

(4) Surface Cracks or Movement at Toe None evident

(5) Seepage none evident on slopes

(6) Condition Around Outlet Structure generally good, additional riprap could be placed below low level outlet as it enters plunge pool

c. Abutments

Earth abutment on East side, embankment Keyed into rock at west abutment

(1) Erosion at Embankment and Abutment Contact none evident

(2) Seepage along Contact of Embankment and Abutment none evident

(3) Seepage at toe or along downstream face none evident

d. Downstream Area - below embankment

Generally good condition some surface erosion areas were being topsoiled and seeded where required

(1) Subsidence, Depressions, etc. Some sloughing along slopes of reservoir drain channel below riprap, slopes are overSteepened

(2) Seepage, unusual growth Some seepage (wet area - no flow) at toe of stabilizing berm in area above water supply pipes this area has always been wet - could be from pipes

(3) Evidence of surface movement beyond embankment toe no evidence

(4) Miscellaneous

e. Drainage System

4 - 6" CM pipes discharge into riprap lined swale at toe these pipes collect & drain water from chimney & finger drains on downstream side of the axis of dam

(1) Condition of relief wells, drains, etc. eastern most pipe had approx 1" of clay in the pipe bottom no seepage thru pipe - clay could be from deposits in plunge pool which is approx 10 feet westward

(2) Discharge from Drainage System 3 pipes flowing - clear discharge - eastern most pipe flow was observed from along side and slightly below pipe - probably through porous backfill around pipe

western most pipe : flow 2 to 3 gpm, 1/8 full

second pipe from west : flow 5 to 10 gpm, 1/4 full

pipe adjacent to reservoir drain : no observed flow

eastern most pipe : flow 1 to 3 gpm, adjacent to pipe

4) Instrumentation

(1) Monumentation/Surveys Spillway crest used to determine elevations assumed El. 70.0

(2) Observation Wells None

(3) Weirs None

(4) Piezometers 12 piezometers were installed during construction at present #1A is plugged and #7 could not be located. Readings recorded do not indicate any appreciable change in piezometer levels since construction

(5) Other

5) Reservoir

a. Slopes Some slouging and erosion due to run-off and lake lowering - soil is fine silts and clays

b. Sedimentation Sedimentation is probable because of slope erosion and suspended solids in lake no problems have been reported.

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

Ogee top section, straight chute running down to flip buckets (buckets under water), no flow over spillway

a. General In good condition, some cracking of walls minor, 1 area on west side near flip buckets was spalling, maintenance forces plan to repair walls & replace eroded (minor) soil behind walls this summer

b. Principle Spillway construction joint in the center of the ogee spillway section was seeping slightly, joint needs to be recaulked (see photograph), seepage ≈ 1' below top of crest some cracking on inside of spillway walls & tie bolt insert slab & wall weeps appear in good condition, as tidal flow of Hudson receded minor seepage was observed from joint in center of spillway recaulk joints.

c. Emergency or Auxiliary Spillway

None

d. Condition of Tail race channel could not directly observe due to tidal backflow from Muscoot creek and Hudson River.

e. Stability of Channel side/slopes generally good condition additional riprap should be placed as required Some minor tree growth on slopes of channel not considered harmful

7) Downstream Channel

a. Condition (debris, etc.) one tree and one stump observed directly below tailrace channel and some minor debris in addition

b. Slopes slopes generally in good condition flow of water is tidal influenced ⇒ low flow rates

c. Approximate number of homes 1 home, 1 bar, 1 baseball field and 1 boat launch ramp with parking facilities directly downstream of the dam. Village of Athens is south of probable affected area.

8) Miscellaneous

9) Structural

a. Concrete Surfaces Some spalling of spillway walls on west side lower end. Remainder appears to be in good condition. Some surface spalling of ogee spillway (minor)

b. Structural Cracking minor cracking of spillway walls, some lateral movement ¼ to ½ inch

c. Movement - Horizontal & Vertical Alignment (Settlement) no apparent settlement some movement of walls

d. Junctions with Abutments or Embankments some minor erosion behind spillway walls otherwise good condition

e. Drains - Foundation, Joint, Face Foundation drains in good condition, paved gutters on downstream face have been undermined and cracking has resulted. These will be replaced with stone & filter cloth as required

f. Water passages, conduits, sluices good condition
previous problem with gate operation of low level outlet repair of system was underway during inspection & is now functional

g. Seepage or Leakage Some seepage at construction joint of Ogee spillway maintenance will recaulk
minor seepage at joint of center spillway slab during tidal fluxuations will recaulk

h. Joints - Construction, etc. generally good condition
see sample section "g"

i. Foundation no problems observed

j. Abutments N/A

k. Control Gates previous failure of pedestal lift assembly was repaired & is now operational

l. Approach & Outlet Channels no problems observed

m. Energy Dissipators (plunge pool, etc.) plunge pool - additional riprap is needed particularly along west slope to control erosion

n. Intake Structures not observable, no problems reported

o. Stability overall stability appears good
no problems observed

p. Miscellaneous

HYDROLOGIC DATA AND COMPUTATIONS

APPENDIX E

CHECK LIST FOR DAMS
HYDROLOGIC AND HYDRAULIC
ENGINEERING DATA

AREA-CAPACITY DATA:

	Elevation (ft.)	Surface Area (acres)	Storage Capacity (acre-ft.)
1) Top of Dam	32.5	472	13.500
2) Design High Water (Max. Design Pool)	80.5	451	12,500
3) Auxiliary Spillway Crest	No auxiliary spillway		
4) Pool Level with Flashboards	No Flashboards		-
5) Service Spillway Crest	70	324	8400

DISCHARGES

	Volume (cfs)
1) Average Daily	0.27
2) Spillway @ Maximum High Water	14,100
3) Spillway @ Design High Water	10,900
4) Spillway @ Auxiliary Spillway Crest Elevation	-
5) Low Level Outlet	350 Max
6) Total (of all facilities) @ Maximum High Water	14,450
7) Maximum Known Flood	1800

CREST: ELEVATION: 82.5

Type: Earth

Width: 24 ft. Length: 753 ft.

Spillover Ogee

Location West side of embankment

SPILLWAY:

PRINCIPAL		EMERGENCY
70.0	Elevation	None
Ogee	Type	-
79 ft. 10 in.	Width	-
	Type of Control	
None	Uncontrolled	-
	Controlled:	
-	Type (Flashboards; gate)	-
-	Number	-
-	Size/Length	-
	Invert Material	-
	Anticipated Length of operating service	-
390 ft.	Chute Length	-
5 ft.	Height Between Spillway Crest & Approach Channel Invert (Weir Flow)	-

OUTLET STRUCTURES/EMERGENCY DRAWDOWN FACILITIES:

Type: Gate _____ Sluice _____ Conduit 4'ø Penstock _____

Shape : Round

Size: 4 ft.

Elevations: Entrance Invert 15 ft

Exit Invert 5.15 ft.

Tailrace Channel: Elevation -4.0

HYDROMETEROLOGICAL GAGES:

Type : None

Location: _____

Records:

Date - _____

Max. Reading - _____

FLOOD WATER CONTROL SYSTEM:

Warning System: None

Method of Controlled Releases (mechanisms):

4 ft diameter concrete pressure pipe

DRAINAGE AREA: 13.3 sq. miles

DRAINAGE BASIN RUNOFF CHARACTERISTICS:

Land Use - Type: Farm, pasture, forest

Terrain - Relief: Relatively flat.

Surface - Soil: Rhinebeck, Troy-Nassau, Madalin associations

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

None

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

Entire reservoir.

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

None

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

Location: None

Elevation:

Reservoir:

Length @ Maximum Pool 2.5 (Miles)

Length of Shoreline (@ Spillway Crest) 17 (Miles)

Spillway Rating Curve

$C = 3.27 + 0.40 \frac{H}{h}$ where C = Coefficient of discharg

H = Head over spillway

h = Height of spillway

$L = L' - 0.1NH$ L = Crest length of spillway

$Q = CLH^{3/2}$ L' = Measured Length of spillwa

N = No. of end contraction

N = 1, L = 79'-10"

El., ft.	H, ft.	h, ft.	C	L, ft.	Q cfs
71	1	5	3.35	79.73	267
72	2	5	3.43	79.63	773
73	3	5	3.51	79.53	1,451
73.5	3.5	5	3.55	79.48	1848
74	4	5	3.59	79.43	2,281
75	5	5	3.67	79.33	3,255
76	6	5	3.75	79.23	4,367
77	7	5	3.83	79.13	5,613
78	8	5	3.91	79.03	6,992
79	9	5	3.99	78.93	8,503
80	10	5	4.07	78.83	10,146
80.5	10.5	5	4.11 *	78.78	10,910
81	11	5	4.15 *	78.73	11,690
82	12	5	4.23 *	78.63	13,303
82.5	12.5	5	4.27 *	78.58	14,134

* [illegible] 4.07 [illegible]

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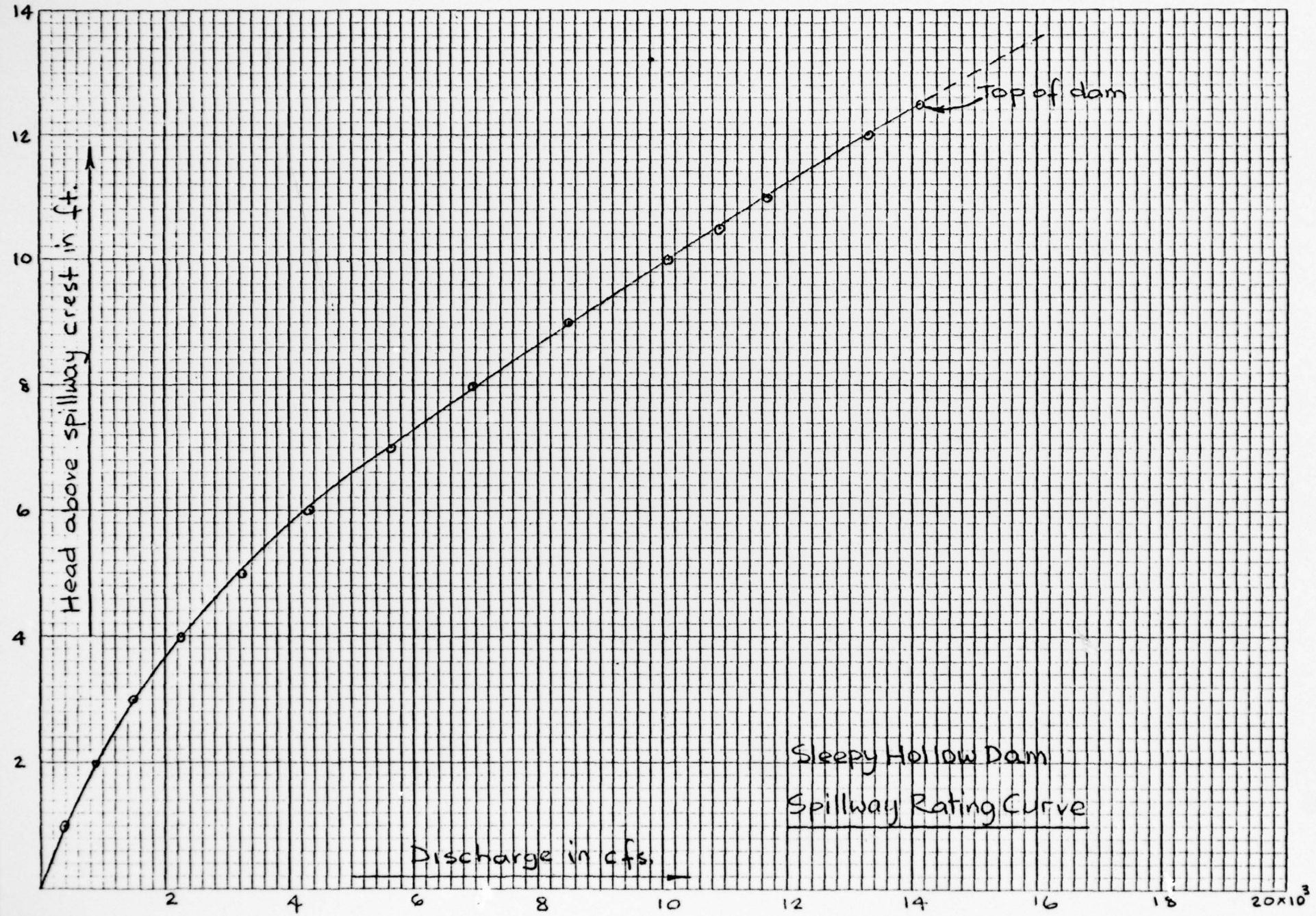

Sleepy Hollow Dam

Spillway Rating Curve

Storage Capacity Curve

Elevation (Feet)	Storage (Acre-Feet)
70.0	8,400
71.0	8,730
72.0	9,072
73.0	9,426
74.0	9,793
75.0	10,171
76.0	10,562
77.0	10,964
78.0	11,379
79.0	11,806
80.0	12,245
80.5	12,500
81.0	12,727
82.0	13,188
82.5	13,500

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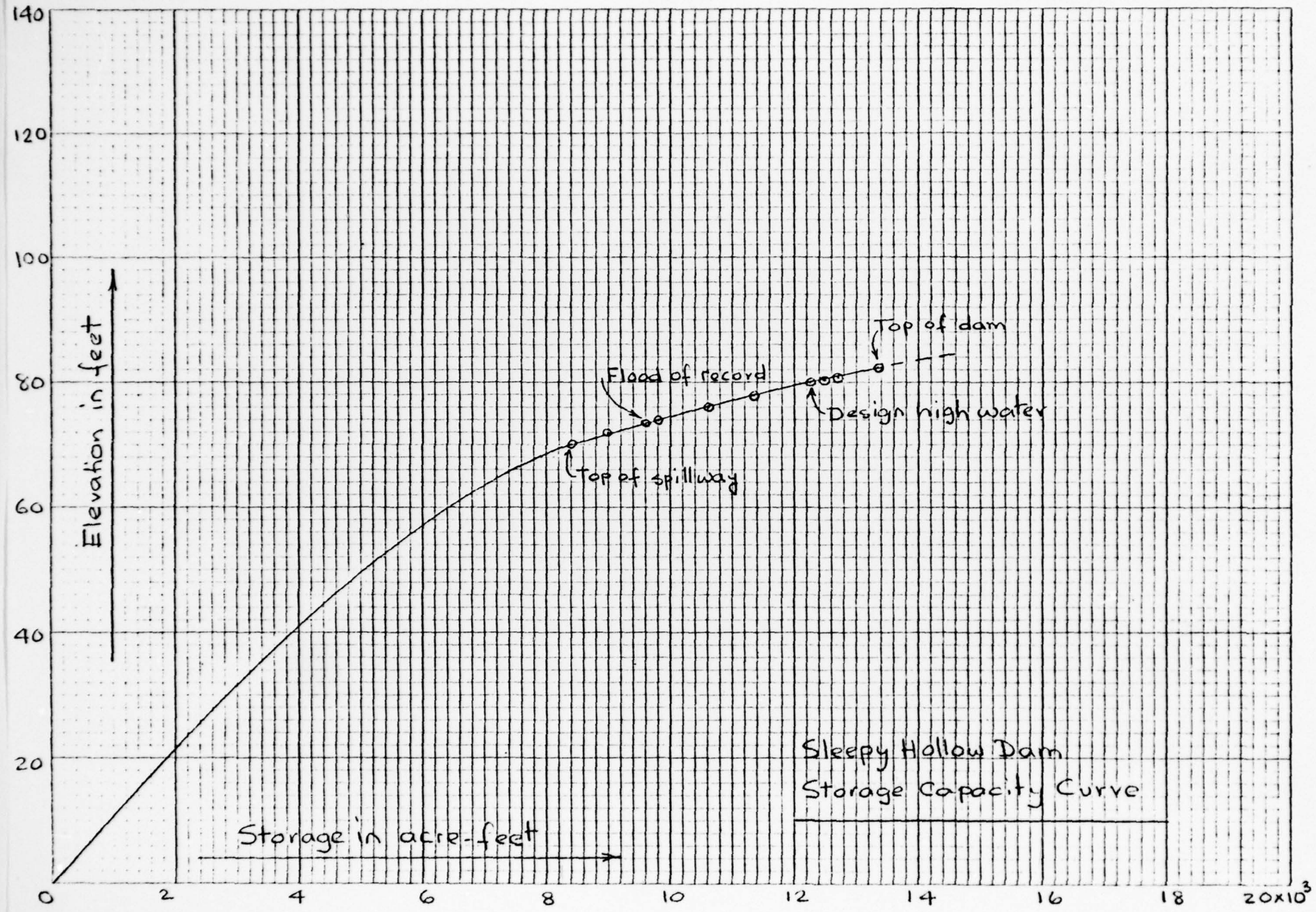

LIST OF REFERENCES

APPENDIX F

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