

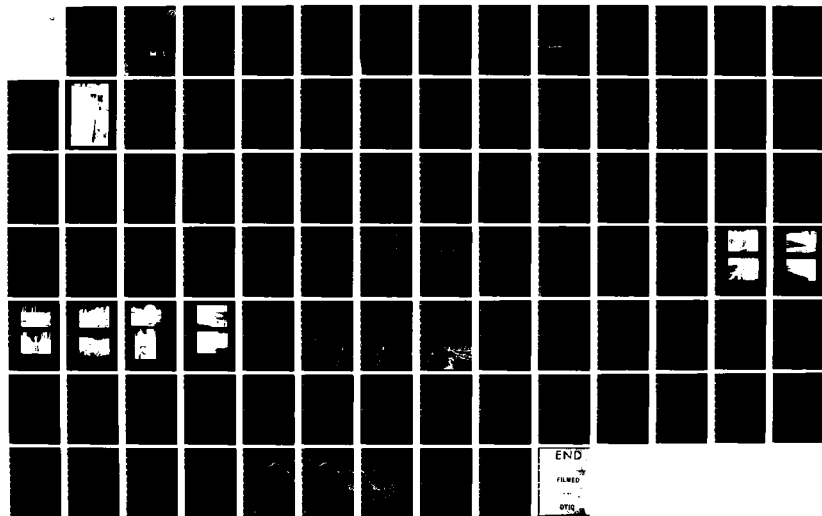
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NATIONAL PROGRAM FOR INSPECTION OF NON-FEDERAL DAMS PIN 1/1  
SHOP POND DAM (CT. (U) CORPS OF ENGINEERS WALTHAM MA  
NEW ENGLAND DIV JAN 81

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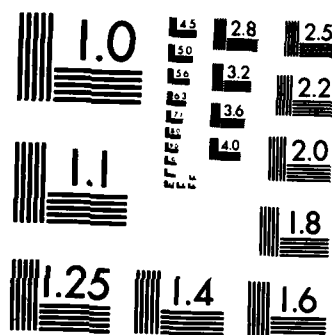
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AD-A143 357

NAUGATUCK RIVER BASIN  
WATERTOWN, CONNECTICUT



**PIN SHOP POND DAM  
CT 00127**

**PHASE I INSPECTION REPORT  
NATIONAL DAM INSPECTION PROGRAM**



**DTIC**  
**ELECTE**  
**S** JUL 25 1984

DEPARTMENT OF THE ARMY  
NEW ENGLAND DIVISION, CORPS OF ENGINEERS  
WALTHAM, MASS. 02154

JANUARY 1981

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|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-------------------------------------------------------------|--|
| 1. REPORT NUMBER<br>CT 00127                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 2. GOVT ACCESSION NO.<br><b>AD-A143357</b> | 3. RECIPIENT'S CATALOG NUMBER                               |  |
| 4. TITLE (and Subtitle)<br>Pin Shop Pond Dam                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                            | 5. TYPE OF REPORT & PERIOD COVERED<br>INSPECTION REPORT     |  |
| NATIONAL PROGRAM FOR INSPECTION OF NON-FEDERAL DAMS                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                            | 6. PERFORMING ORG. REPORT NUMBER                            |  |
| 7. AUTHOR(s)<br>U.S. ARMY CORPS OF ENGINEERS<br>NEW ENGLAND DIVISION                                                                                                                                                                                                                                                                                                                                                                                                                    |                                            | 8. CONTRACT OR GRANT NUMBER(s)                              |  |
| 9. PERFORMING ORGANIZATION NAME AND ADDRESS                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                            | 10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS |  |
| 11. CONTROLLING OFFICE NAME AND ADDRESS<br>DEPT. OF THE ARMY, CORPS OF ENGINEERS<br>NEW ENGLAND DIVISION, NEDED<br>424 TRAPELO ROAD, WALTHAM, MA. 02254                                                                                                                                                                                                                                                                                                                                 |                                            | 12. REPORT DATE<br>January 1981                             |  |
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| 14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)                                                                                                                                                                                                                                                                                                                                                                                                             |                                            | 15. SECURITY CLASS. (of this report)<br><br>UNCLASSIFIED    |  |
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| 16. DISTRIBUTION STATEMENT (of this Report)<br><br>APPROVAL FOR PUBLIC RELEASE: DISTRIBUTION UNLIMITED                                                                                                                                                                                                                                                                                                                                                                                  |                                            |                                                             |  |
| 17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)                                                                                                                                                                                                                                                                                                                                                                                              |                                            |                                                             |  |
| 18. SUPPLEMENTARY NOTES<br>Cover program reads: Phase I Inspection Report, National Dam Inspection Program; however, the official title of the program is: National Program for Inspection of Non-Federal Dams; use cover date for date of report.                                                                                                                                                                                                                                      |                                            |                                                             |  |
| 19. KEY WORDS (Continue on reverse side if necessary and identify by block number)<br>DAMS, INSPECTION, DAM SAFETY,<br><br>Naugatuck River Basin<br>Watertown, Conn.<br><del>Pin Shop Pond Dam</del>                                                                                                                                                                                                                                                                                    |                                            |                                                             |  |
| 20. ABSTRACT (Continue on reverse side if necessary and identify by block number)<br>The Pin Shop Pond Dam consists of an earth embankment with a 100 ft. long stone masonry overflow spillway located at the left end of the dam. The dam has a total length of 400 ft. and a maximum height of 23 ft. The dam is judged to be in poor condition. The dam is classified as small in size with a high hazard potential. A Test Flood equal to $\frac{1}{2}$ the Probable Maximum Flood. |                                            |                                                             |  |



DEPARTMENT OF THE ARMY  
NEW ENGLAND DIVISION, CORPS OF ENGINEERS  
424 TRAPELO ROAD  
WALTHAM, MASSACHUSETTS 02254

REPLY TO  
ATTENTION OF:

NEDED-E

MAR 18 1981

Honorable William A. O'Neill  
Governor of the State of Connecticut  
State Capitol  
Hartford, Connecticut 06115

Dear Governor O'Neill:

Inclosed is a copy of the Pin Shop Pond Dam (Ct-00127) Phase I Inspection Report, which was prepared under the National Program for Inspection of Non-Federal Dams. The report is based upon a visual inspection, a review of past performance, and a preliminary hydrological analysis. A brief assessment is included at the beginning of the report.

The preliminary hydrologic analysis has indicated that the spillway capacity for the Pin Shop Pond Dam would likely be exceeded by floods greater than 17 percent of the Probable Maximum Flood (PMF). Our screening criteria specifies that a dam of this class which does not have sufficient spillway capacity to discharge fifty percent of the PMF, should be adjudged as having a seriously inadequate spillway and the dam assessed as unsafe, non-emergency, until more detailed studies prove otherwise or corrective measures are completed.

The term "unsafe" applied to a dam because of an inadequate spillway does not indicate the same degree of emergency as that term would if applied because of structural deficiency. It does indicate, however, that a severe storm may cause overtopping and possible failure of the dam, with significant damage and potential loss of life downstream.

It is recommended that within twelve months from the date of this report the owner of the dam engage the services of a professional or consulting engineer to determine by more sophisticated methods and procedures the magnitude of the spillway deficiency. Based on this determination, appropriate remedial mitigating measures should be designed and completed within 24 months of this date of notification. In the interim a detailed emergency operation plan and warning system should be promptly developed. During periods of unusually heavy precipitation, round-the-clock surveillance should be provided.

MAR 18 1981

NEDED-E

Honorable William A. O'Neill

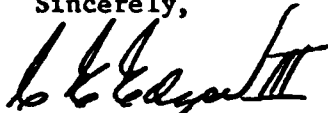
I have approved the report and support the findings and recommendations described in Section 7, with qualifications as noted above. I request that you keep me informed of the actions taken to implement these recommendations since this follow-up is an important part of the non-Federal Dam Inspection Program.

A copy of this report has been forwarded to the Department of Environmental Protection, the cooperating agency for the State of Connecticut. This report has also been furnished to the owner of the project, John Mancinone and Maurice Fabiani, Waterbury, CT.

Copies of this report will be made available to the public, upon request to this office, under the Freedom of Information Act, thirty days from the date of this letter.

I wish to take this opportunity to thank you and the Department of Environmental Protection for the cooperation extended in carrying out this program.

Sincerely,



C.E. EDGAR, III  
Colonel, Corps of Engineers  
Division Engineer

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PIN SHOP POND DAM  
CT 00127

NAUGATUCK RIVER BASIN  
WATERTOWN, CONNECTICUT

PHASE I INSPECTION REPORT  
NATIONAL DAM INSPECTION PROGRAM

NATIONAL DAM INSPECTION PROGRAM  
PHASE I INSPECTION REPORT

IDENTIFICATION NO: CT 00127  
NAME OF DAM: Pin Shop Pond Dam  
TOWN: Watertown  
COUNTY AND STATE: Litchfield County, Connecticut  
STREAM: Steele Brook  
DATE OF INSPECTION: December 15, 1980

BRIEF ASSESSMENT

The Pin Shop Pond Dam consists of an earth embankment with a 100 foot long stone masonry overflow spillway located at the left end of the dam. The dam has a total length of 400 feet and a maximum height of 23 feet. The outlet works located to the left of the spillway consist of an intake sluice gate which discharges into a stone masonry and concrete structure. A 16-inch gate valve drains the structure and discharges downstream of the spillway. A conduit to a downstream industrial complex is plugged with concrete.

The dam impounds Pin Shop Pond, which serves no formal purpose at the present time.

Based on the visual inspection, the dam is judged to be in poor condition. The future integrity of the dam can be affected by the lack of slope protection on the upstream slope, and continued erosion of the upstream and downstream slopes; trees on the embankment; continued undermining of the spillway apron; vegetation growing in open joints of the stone masonry training walls; the poor condition of the outlet works; and inadequate spillway capacity.

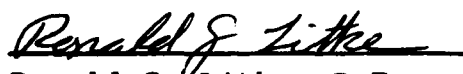
Based on the Corps of Engineers' Recommended Guidelines for Safety Inspection of Dams, the dam is classified as "Small" in size with a "High" hazard potential. A Test Flood equal to 1/2 the Probable Maximum Flood (1/2 PMF) was selected in accordance with the Corps of Engineers' Guidelines. Due to the small size of the impoundment, the Test Flood outflow was assumed to equal the Test Flood inflow of 9,500 cfs and would overtop the dam by 2.5 feet.

The spillway has a capacity of 3,200 cfs and is capable of discharging 34 percent of the Test Flood outflow.

It is recommended that the owner engage the services of a qualified, registered engineer experienced in the design of dams to design slope protection and repairs for the eroded areas of the embankment; to oversee tree removal; to investigate the condition of the spillway apron and training walls and the outlet works; and to perform a detailed hydraulic and hydrologic analysis.

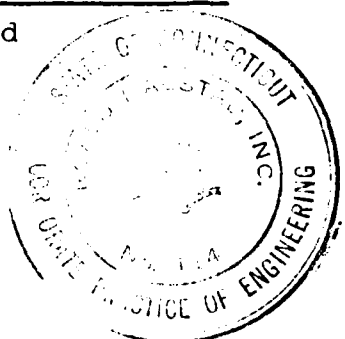
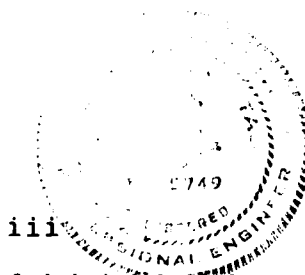
In addition, the owner should clear brush from the embankment, institute a program of annual technical inspections by a qualified, registered engineer, prepare an operations and maintenance manual and put a formal warning system into effect.

The owner should implement the recommendations as described herein and in greater detail in Section 7 within one year after receipt of this Phase I Inspection Report.

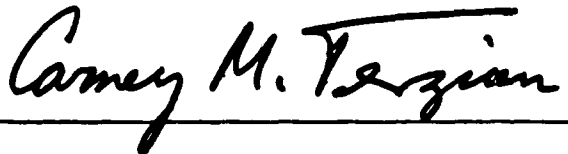
  
Ronald G. Litke, P.E.  
Project Engineer



  
Roald Haestad  
President



This Phase I Inspection Report on Pin Shop Pond Dam (CT-00127) has been reviewed by the undersigned Review Board members. In our opinion, the reported findings, conclusions, and recommendations are consistent with the Recommended Guidelines for Safety Inspection of Dams, and with good engineering judgement and practice, and is hereby submitted for approval.



CARNEY M. TERZIAN, MEMBER  
Design Branch  
Engineering Division

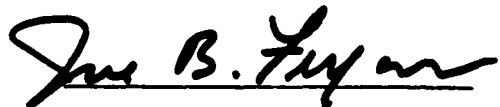


JOSEPH W. FINEGAN, JR., MEMBER  
Water Control Branch  
Engineering Division



ARAMAST MAHTESIAN, CHAIRMAN  
Geotechnical Engineering Branch  
Engineering Division

APPROVAL RECOMMENDED:



JOE B. FRYAR  
Chief, Engineering Division

## PREFACE

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

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

It is important to note that the condition of a dam depends on numerous and constantly changing internal and external conditions and is evolutionary in nature. It would be incorrect to assume that the present condition of the dam will continue to represent the

condition of the dam at some point in the future. Only through continued care and inspection can there be any chance that unsafe conditions be detected.

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

The Phase I Investigation does not include an assessment of the need for fences, gates, no-trespassing signs, repairs to existing fences and railings and other items which may be needed to minimize trespass and provide greater security for the facility and safety of the public. An evaluation of the project for compliance with OSHA rules and regulations is also excluded.

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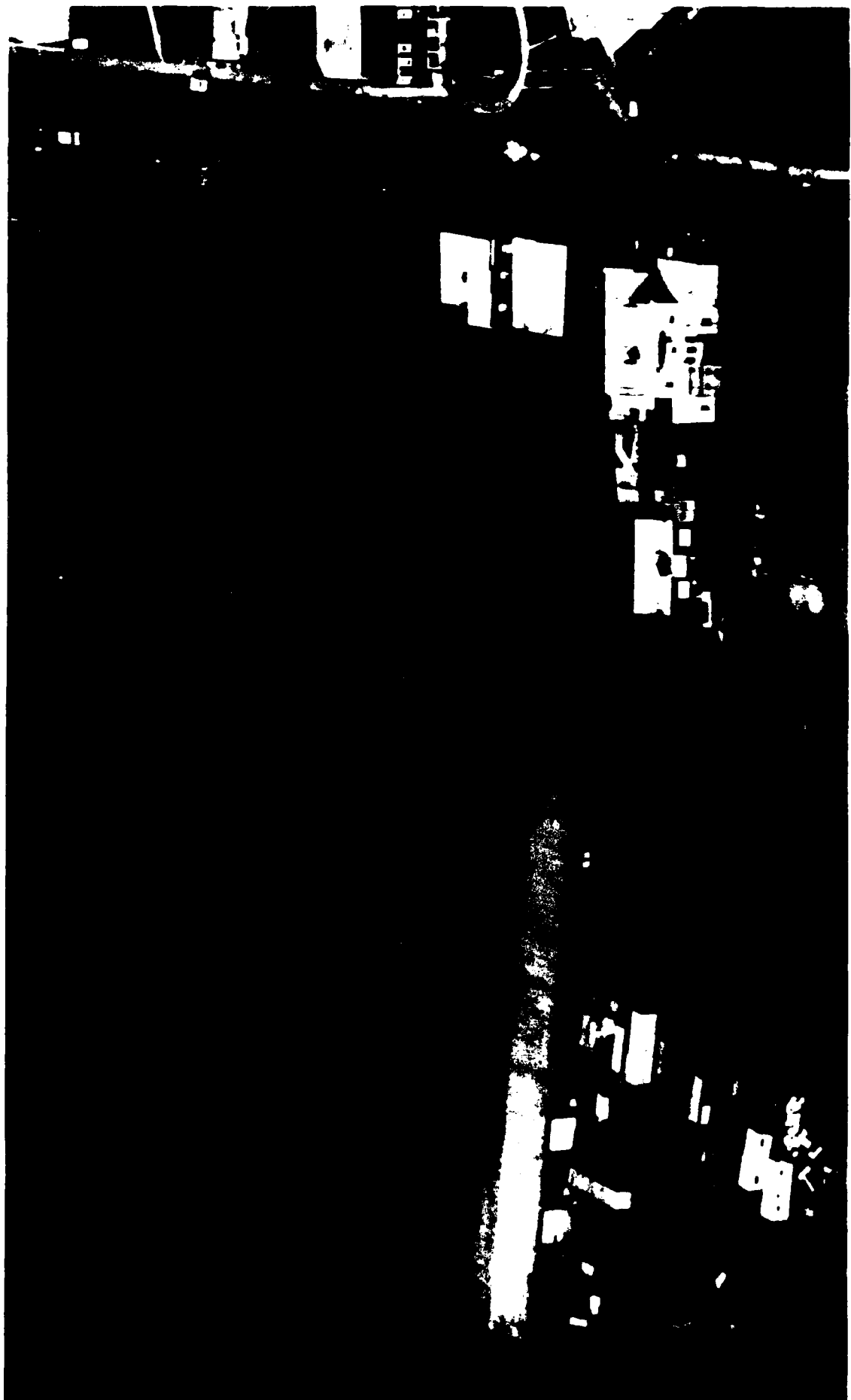
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OVERVIEW PHOTO

U S ARMY ENGINEER DIV NEW ENGLAND  
CORPS OF ENGINEERS  
WALTHAM, MASSACHUSETTS

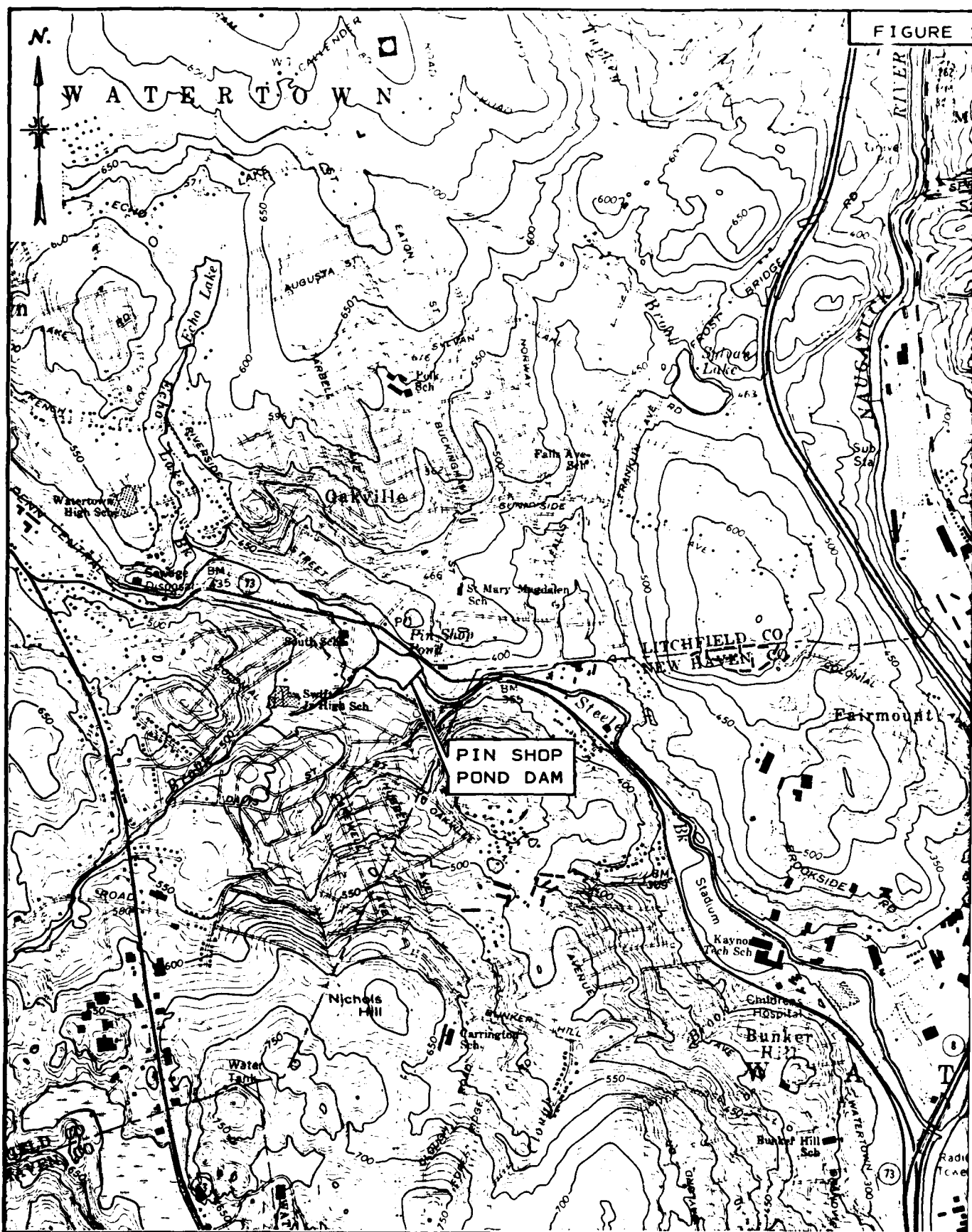
ROALD HAESTAD, INC.  
CONSULTING ENGINEERS  
WATERBURY, CONNECTICUT

NATIONAL PROGRAM OF  
INSPECTION OF  
NON-FED. DAMS

PIN SHOP POND DAM - CT 00127

STEELE BROOK

WATERTOWN, CONNECTICUT 13 NOVEMBER 1980



LOCATION PLAN

PIN SHOP POND DAM  
WATERTOWN, CONNECTICUT

ROALD HAESTAD, INC.

SCALE 1" = 2000'

WATERBURY QUADRANGLE 19

NATIONAL DAM INSPECTION PROGRAM  
PHASE I INSPECTION REPORT

PIN SHOP POND DAM

PROJECT INFORMATION

SECTION 1

1.1 General

a. Authority

Public Law 92-367, August 8, 1972, authorized the Secretary of the Army, through the Corps of Engineers, to initiate a National Program of Dam Inspection throughout the United States. The New England Division of the Corps of Engineers has been assigned the responsibility of supervising the inspection of dams within the New England Region. Roald Haestad, Inc., has been retained by the New England Division to inspect and report on selected dams in the State of Connecticut. Authorization and notice to proceed were issued to Roald Haestad, Inc. under a letter of October 28, 1980, from William E. Hodgson, Jr., Colonel, Corps of Engineers. Contract No. DACW33-81-C-0005 has been assigned by the Corps of Engineers for this work.

b. Purpose of Inspection

The purposes of the program are to:

1. Perform technical inspection and evaluation of non-federal dams to identify conditions requiring correction in a timely manner by non-federal interest.
2. Encourage and prepare the States to quickly initiate effective dam inspection programs for non-federal dams.
3. To update, verify and complete the National Inventory of Dams.

## 1.2 Description of Project

### a. Location

The Pin Shop Pond Dam is located on Steele Brook, immediately south of Connecticut Route 73, approximately 6,000 feet east of the intersection of Connecticut Routes 63 and 73 in the Oakville section of Watertown, Connecticut. The dam is shown on the Waterbury Quadrangle map having coordinates of latitude  $N41^{\circ} 35.2'$  and longitude  $W73^{\circ} 05.1'$ .

### b. Description of Dam and Appurtenances

The dam consists of an earth embankment with a stone masonry overflow spillway located at the left end of the dam and outlet works located to the left of the spillway. The total length of the dam, including the spillway and outlet works, is 400 feet and the maximum height is 23 feet.

The earth embankment section has a top width of 15 feet, an upstream slope of 2 horizontal to 1 vertical, and a downstream slope of 1.5 horizontal to 1 vertical. There is no formal slope protection present on the upstream or downstream slopes. Numerous trees are present on the slopes of the embankment. Near the center on the earth embankment at the top of the downstream slope there are two concrete piers which serve no apparent purpose at the present time.

The 100 foot long stone masonry overflow spillway has a maximum height of 18 feet, a top width of 4.5 feet and a vertical downstream face. A portion of the downstream spillway face approximately 40 feet wide by 8 feet high was repaired with concrete following the August 1955 Flood. Below the spillway there is a concrete apron which extends approximately 20 feet downstream. There are stone masonry training walls at the ends of the spillway. The outlet works are

located to the left of the spillway. The top of the embankment is 4.7 feet above spillway level. A 16 foot long stone masonry section between the left end of the spillway and the outlet works is 3.3 feet above spillway level and acts as an auxiliary spillway during heavy flows.

The outlet works consist of a stone masonry and concrete chamber. The chamber has an intake sluice gate of unknown size at the upstream end. A 16-inch gate valve drains the structure and discharges downstream of the spillway. A sluice gate also on the drain line appears to be inoperable. A conduit to a downstream industrial complex has been plugged with concrete. The structure and gates serve as the low level outlet for the dam.

c. Size Classification - "Small"

According to the Corps of Engineers' Recommended Guidelines for Safety Inspection of Dams, a dam is classified as "Small" in size if the height is between 25 feet and 40 feet or the dam impounds between 50 Acre-Feet and 1,000 Acre-Feet. The dam has a maximum height of 23 feet and a maximum storage capacity of 82 Acre-Feet. Therefore the dam is classified as "Small" in size based upon the maximum storage capacity of 82 Acre-Feet.

d. Hazard Classification - "High"

Based upon the Corps of Engineers' Recommended Guidelines for Safety Inspection of Dams, the hazard classification for the dam is "High". A dam breach analysis indicates that a failure of Pin Shop Pond Dam would inundate the warehouse/office building immediately below the dam, flood the first floor of an industrial building further downstream, overtop Watertown Avenue (Connecticut Route 73) and Falls Avenue by 5 feet, and flood a multi-family dwelling to 3 feet above

sill level and 5 commercial buildings to depths of 4 feet. Prior to dam failure the maximum spillway discharge would overtop Watertown Avenue (Connecticut Route 73) by 2 feet and flood the 5 commercial buildings to a depth of 1 foot. The maximum spillway discharge would not affect the warehouse/office building immediately below the dam. A dam failure could result in the loss of more than a few lives and extensive property damage.

e. Ownership

Former Owner: Scovill, Incorporated

Present Owner: John Mancinone and Maurice Fabiani  
203 Robinwood Road  
Waterbury, Connecticut 06708  
(203) 574-1885

f. Operator

John Mancinone and Maurice Fabiani  
203 Robinwood Road  
Waterbury, Connecticut 06708  
(203) 574-1885

g. Purpose of Dam

The dam currently serves no formal purpose. In the past water has been drawn from the impoundment for industrial use.

h. Design and Construction History

There is no design or construction history available for the dam. It was reported that the area at the base of the spillway was eroded and a portion of the downstream face of the spillway was damaged during the August 1955 Flood. A concrete apron was installed at the base of the spillway and the stone masonry wall repaired with concrete masonry in the summer of 1956.

i. Normal Operational Procedures

There are no operational procedures in effect for the dam.

### 1.3 Pertinent Data

#### a. Drainage Area

The drainage area consists of 11.9 square miles of "rolling" terrain including densely developed sections of Watertown and Oakville. There are several impoundments within the watershed.

#### b. Discharge at Damsite

Discharge at the damsite is over a 100 foot long stone masonry spillway. Water may also flow through the outlet works at the left end of the dam to the stream channel below the spillway.

|    |                                                       |                                      |
|----|-------------------------------------------------------|--------------------------------------|
| 1. | Outlet Works (conduits) Size:                         | 16-inch                              |
|    | Invert Elevation at Outlet:                           | 377.3                                |
|    | Discharge Capacity:                                   | 30 cfs @ pool elevation 391.5        |
| 2. | Maximum Known Flood at Damsite:                       | 3,000 cfs <sup>+</sup> - August 1955 |
| 3. | Ungated Spillway Capacity<br>at Top of Dam:           | 3,160 cfs                            |
|    | Elevation:                                            | 391.5                                |
| 4. | Ungated Spillway Capacity<br>at Test Flood Elevation: | 5,875 cfs                            |
|    | Elevation:                                            | 393.9                                |
| 5. | Gated Spillway Capacity<br>at Normal Pool Elevation:  | N/A                                  |
|    | Elevation:                                            |                                      |
| 6. | Gated Spillway Capacity<br>at Test Flood Elevation:   | N/A                                  |
|    | Elevation:                                            |                                      |
| 7. | Total Spillway Capacity<br>at Test Flood Elevation:   | 5,875 cfs                            |
|    | Elevation:                                            | 393.9                                |
| 8. | Total Project Discharge<br>at Top of Dam:             | 3,200 cfs*                           |
|    | Elevation:                                            | 391.5                                |
| 9. | Total Project Discharge<br>at Test Flood Elevation:   | 9,500 cfs*                           |
|    | Elevation:                                            | 393.9                                |

\*Includes discharge over area of outlet works.

c. Elevation - Feet Above Mean Sea Level (NGVD)

|                                        |         |
|----------------------------------------|---------|
| 1. Streambed at Toe of Dam:            | 368.8   |
| 2. Bottom of Cutoff:                   | Unknown |
| 3. Maximum Tailwater:                  | N/A     |
| 4. Normal Pool:                        | 386.8   |
| 5. Full Flood Control Pool:            | N/A     |
| 6. Spillway Crest:                     | 386.8   |
| 7. Design Surcharge - Original Design: | Unknown |
| 8. Top of Dam:                         | 391.5   |
| 9. Test Flood Surcharge:               | 393.9   |

d. Reservoir - Length in Feet

|                         |       |
|-------------------------|-------|
| 1. Normal Pool:         | 800   |
| 2. Flood Control Pool:  | N/A   |
| 3. Spillway Crest Pool: | 800   |
| 4. Top of Dam:          | 1,600 |
| 5. Test Flood Pool:     | 1,800 |

e. Storage - Acre-feet

|                         |              |
|-------------------------|--------------|
| 1. Normal Pool:         | 32 Acre-Feet |
| 2. Flood Control Pool:  | N/A          |
| 3. Spillway Crest Pool: | 32 Acre-Feet |
| 4. Top of Dam:          | 82 Acre-Feet |
| 5. Test Flood Pool:     | 91 Acre-Feet |

f. Reservoir Surface - Acres

|                        |            |
|------------------------|------------|
| 1. Normal Pool:        | 6.4 Acres  |
| 2. Flood-Control Pool: | N/A        |
| 3. Spillway Crest:     | 6.4 Acres  |
| 4. Test Flood Pool:    | 19.1 Acres |
| 5. Top of Dam:         | 14.7 Acres |

g. Dam

1. Type: Earth Embankment
2. Length: 400 Feet including 265 foot long earth embankment,  
100 foot long stone masonry spillway and outlet work
3. Height: Maximum height of Earth Embankment - 15 feet  
Maximum height of Dam - 23 feet
4. Top Width: 15 feet
5. Side Slopes: Upstream - 2 horizontal to 1 vertical  
Downstream - 1.5 horizontal to 1 vertical
6. Zoning: Unknown
7. Impervious Core: Unknown
8. Cutoff: Unknown
9. Grout Curtain: N/A
10. Other:

h. Diversion and Regulating Tunnel - N/A

i. Spillway

- |                                          |                                                                                                                                                  |
|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Type:                                 | Stone masonry overflow section with upstream earth embankment                                                                                    |
| 2. Length of Weir:                       | 100 feet                                                                                                                                         |
| 3. Crest Elevation<br>with Flash Boards: | N/A                                                                                                                                              |
| without Flash Boards:                    | 386.8                                                                                                                                            |
| 4. Gates:                                | N/A                                                                                                                                              |
| 5. Upstream Channel:                     | N/A                                                                                                                                              |
| 6. Downstream Channel:                   | Natural Channel of Steele Brook                                                                                                                  |
| 7. General:                              | A 16 foot long stone masonry section to the left of the spillway has an elevation of 390.1 and acts as an auxiliary spillway during heavy flows. |

j. Regulating Outlets

- |                       |                                                                                                                             |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------|
| 1. Invert:            | 377.3 at outlet of 16-inch drain gate valve                                                                                 |
| 2. Size:              | 16-inch                                                                                                                     |
| 3. Description:       | Intake sluice gate of unknown size discharges to stone masonry and concrete structure, 16-inch gate valve drains structure. |
| 4. Control Mechanism: | Manually operated                                                                                                           |
| 5. Other:             | Conduit to downstream location plugged with concrete.                                                                       |

## ENGINEERING DATA

### SECTION 2

#### 2.1 Design Data

There was no design data available for review on either the dam or the spillway.

#### 2.2 Construction Data

There was no construction data available for review on either the dam or the spillway. It was reported that the area at the base of the spillway was eroded and a portion of the downstream face of the spillway was damaged during the August 1955 Flood. Repairs were made in the summer of 1956.

#### 2.3 Operational Data

There was no operational data available for review.

#### 2.4 Evaluation of Data

##### a. Availability

Design or construction data was not available from either the State of Connecticut Department of Environmental Protection, the present owner of the dam, or the former owner of the dam.

##### b. Adequacy

As no design or construction information was available, the assessment of the condition of the dam was based on the visual inspection, past performance history, and hydrologic and hydraulic calculations performed for this Report.

## VISUAL INSPECTION

### SECTION 3

#### 3.1 Findings

##### a. General

The visual inspection of the dam was conducted on December 15, 1980. At the time of inspection approximately 0.1 feet of water was flowing over the spillway.

The dam consists of an earth embankment with a stone masonry overflow spillway located at the left end of the dam, and outlet works located to the left of the spillway, Photos 1 and 2.

##### b. Dam

The upstream slope of the dam is overgrown with numerous trees up to 8-inches in diameter, Photo 3. There is no riprap slope protection present, and considerable erosion has taken place at and above the normal water line, Photo 4. The crest is fairly level and is covered with grass, brush and small trees, Photo 1. An erosion path is worn at about the centerline of the crest. The downstream slope is covered with numerous trees up to 12-inches in diameter, Photo 5. The slope is relatively steep in some areas and has an average slope of about 1.5 horizontal to 1 vertical. Several erosion paths are present on the downstream slope, including one at the left end of the earth embankment which cuts back into the crest and measures approximately 5 feet wide and 5 feet deep, Photo 6. Near the center of the earth embankment at the top of the downstream slope there are two small concrete piers which serve no apparent purpose at the present time. There was no seepage observed on either the downstream slope or in the area immediately downstream of the dam.

c. Appurtenant Structures

The appurtenant structures consist of the overflow spillway and the outlet works.

Spillway

The overflow spillway consists of a stone masonry structure with an upstream earth embankment and a downstream concrete apron. On the right half of the spillway a portion of the stone masonry on the downstream face, approximately 40 feet long by 8 feet high, has been replaced by concrete, Photo 7. A section of the crest at the center of the spillway is slightly higher in elevation, possibly indicating uplift of one of the cap stones near the center of the spillway, Photo 7. Also near the center of the spillway at the base of the wall there is a 2 foot wide by 1.5 foot high opening in the stone masonry. An orange stain on the downstream apron in the vicinity of the opening may indicate seepage through the opening, Photo 7. The downstream edge of the concrete apron has been undermined, Photos 7 and 8; however, no cracks or structural deficiencies were noted in the apron.

The spillway training walls are constructed of stone masonry. There are trees growing immediately behind the right training wall, Photo 9. There is vegetation growing in open joints of the stone masonry of both the right and left training walls, Photos 9 and 10.

Outlet Works

The outlet works located at the left end of the dam consist of an upstream intake sluice gate, Photo 11, which discharges into a stone masonry and concrete structure. A sluice gate of unknown size on the inside wall of the structure and a 16-inch gate valve on the outside wall, drain the structure and discharge into the stream channel.

below the spillway, Photo 2. The gate valve was opened approximately three quarters of the way and water was flowing from the gate valve at the time of inspection. It is not known whether the flow was from seepage through the chamber walls, or from leakage or partial opening of the intake gate. A conduit discharging to a downstream industrial complex is plugged with concrete. The structure is partially filled with debris and it is not known whether the gates are operable. The structure and gates serve as the low level outlet for the dam.

d. Reservoir Area

There are no indications of instability along the edges of the reservoir in the vicinity of the dam.

e. Downstream Channel

The downstream channel is the natural channel of the Steele Brook. There is a foot bridge across the channel, approximately 75 feet downstream of the dam. The center pier of the foot bridge has settled considerably, Photo 12. The stream channel would be obstructed in the event of a failure of the bridge. Approximately 275 feet farther downstream there is a pipe bridge across the channel.

3.2 Evaluation

On the basis of the visual inspection, the dam is considered to be in poor condition. Features that could affect the future integrity of the dam are the following:

1. The lack of slope protection on the upstream slope of the dam and continued erosion of the upstream and downstream slope, particularly in the area to the right of the spillway, could lead to a breach of the dam.
2. Trees on the embankment and in the immediate downstream area

of the dam could be overturned during a storm, damaging the embankment. Root systems could provide seepage paths leading to internal erosion and piping failure of the embankment.

3. Continued undermining of the spillway apron could lead to failure of the apron and subsequent damage to the spillway weir.

4. Trees growing behind the right training wall and vegetation growing in open joints of both walls could lead to failure of the walls.

5. The poor condition of the outlet works makes their ability to function questionable.

## OPERATIONAL AND MAINTENANCE PROCEDURES

### SECTION 4

#### 4.1 Operational Procedures

##### a. General

The dam presently serves no formal purpose, therefore there are no operational procedures for the dam.

##### b. Description of Any Warning System in Effect

There is no downstream warning system in effect for the dam.

#### 4.2 Maintenance Procedures

##### a. General

There are no maintenance procedures for the dam.

##### b. Operating Facilities

There are no maintenance procedures for the operating facilities.

#### 4.3 Evaluation

It was reported that no operational and maintenance procedures are in effect for the dam, which is evidenced by the general condition of the embankment, spillway apron and outlet works.

An Operations and Maintenance Manual should be prepared for the dam and operating facilities, and a formal warning system should be put into effect. In addition, the dam should be inspected annually by a qualified, registered engineer.

## EVALUATION OF HYDRAULIC/HYDROLOGIC FEATURES

### SECTION 5

#### 5.1 General

The spillway for the Pin Shop Pond Dam consists of a 100 foot long stone masonry overflow section with an upstream earth embankment located at the left end of the dam. The spillway crest is 4.7 feet below the top of the dam. A 16-foot long stone masonry section at the left abutment is 1.4 feet below the top of the dam and would act as an auxiliary spillway.

The outlet works is located at the left abutment and consists of a stone masonry and concrete chamber. The roof of the structure has collapsed and the chamber is partially full of debris including the remains of a wooden trash rack. The chamber has an intake sluice gate of unknown size at the upstream end and a sluice gate and 16-inch gate valve on the blow-off. The blow-off has a capacity of about 30 cfs and discharges downstream of the spillway apron. The gate valve was opened about three-quarters of the way, the sluice gates did not appear to be operable.

The watershed area is 11.9 square miles of "rolling" terrain including densely developed sections of Oakville and Watertown. There are several impoundments within the watershed mostly in the upper reaches, only two or three are of significant size. Watershed elevations range from 950 feet in the north to 387 at the dam.

#### 5.2 Design Data

No design data was available for the dam or the spillway.

### 5.3 Experience Data

The August 1955 Flood was reported to have come close to overtopping the embankment although no overtopping occurred. The downstream stone masonry face of the spillway was damaged during the flood.

### 5.4 Test Flood Analysis

The dam is classified as "Small" in size, with a "High" hazard potential. According to the Corps of Engineers' Recommended Guidelines for Safety Inspection of Dams, the Test Flood for a "Small", "High" hazard dam is in the range of the Probable Maximum Flood (PMF) to 1/2 the Probable Maximum Flood (1/2 PMF), depending on the involved risk.

A Test Flood equal to the 1/2 PMF was selected because of the low height of the dam and the small storage capacity of the impoundment.

An inflow flood peak was calculated for the 11.9 square mile watershed using a peak inflow of 1,600 cubic feet per second per square mile (csm) for the PMF from the guide curve for "rolling" terrain supplied by the Corps of Engineers. The 1/2 PMF inflow was calculated to be about 9,500 cfs. The outflow is equal to the inflow because of the minimum surcharge storage in comparison to the volume of runoff.

The spillway has a capacity of 3,200 cfs equal to 34 percent of the Test Flood. The Test Flood would overtop the embankment by about 2-1/2 feet.

The spillway capacity is judged to be inadequate requiring further evaluation and remedial action.

### 5.5 Dam Failure Analysis

A dam failure analysis was made using the Corps of Engineers' "Rule of Thumb" guidance. Failure was assumed when the water level reached the top of the dam, producing a maximum head of 23 feet.

The spillway discharge prior to dam breach was significant when compared to the dam breach flows, and was taken into consideration in the flood routings. The spillway discharge was first routed through each reach, assuming steady state conditions, and the storage volume thus obtained subtracted from the storage required for the dam breach flood in order to derive the usable storage within the reach.

The calculated dam breach, 23 feet high by 156 feet long, would release up to 29,000 cfs into Steele Brook below the dam. The dam breach was assumed to include the spillway, and therefore the spillway discharge was not added to the dam breach flow. The flood wave would inundate the warehouse/office building below the dam and cause flooding of the first floor of an industrial building farther downstream before overtopping Watertown Avenue (Connecticut Route 73) by 5 feet. The flood waters would continue downstream, flooding Falls Avenue by 5 feet and inundating a multi-family dwelling to a depth of 3 feet above sill level. Downstream of Falls Avenue 5 commercial buildings would be inundated to a depth of 4 feet. For the next 4,000 feet downstream the flood waters would be contained within the stream channel and its overbank areas without causing damage. Downstream of the Huntingdon Avenue Bridge the capacity of the channel varies. The dam breach flood waters would overtop the low points on the channel banks and cause minor flooding.

The maximum spillway discharge of 3,200 cfs prior to dam failure

would overtop Watertown Avenue (Connecticut Route 73) by 2 feet and inundate the commercial buildings downstream of Falls Avenue to a depth of 1 foot. The channel and bridges downstream of the commercial buildings can discharge the spillway flow. The warehouse/office building immediately downstream of the dam would not be affected by the maximum spillway discharge.

The dam was classified as "High" potential hazard because of the possible loss of more than a few lives and extensive downstream property damage should the dam fail.

## EVALUATION OF STRUCTURAL STABILITY

### SECTION 6

#### 6.1 Visual Observations

The visual observations did not disclose any evidence of present structural instability. The future stability of the dam could be affected by:

1. Continued erosion of the embankment.
2. Continued undermining of the spillway apron.
3. Trees growing on the embankment and vegetation growing in the open joints of the stone masonry training walls.

#### 6.2 Design and Construction Data

There was no information available on the design or construction of the dam.

#### 6.3 Post-Construction Changes

The August 1955 Flood eroded the area at the base of the spillway and damaged a portion of the downstream face of the stone masonry spillway. In the summer of 1956 the area at the base of the spillway was repaired by installing a concrete apron and the downstream face of the stone masonry spillway was repaired with concrete masonry.

#### 6.4 Seismic Stability

The dam is located in Seismic Zone 1 and in accordance to the recommended Phase I Guidelines does not warrant seismic stability analysis.

## ASSESSMENT, RECOMMENDATIONS, & REMEDIAL MEASURES

### SECTION 7

#### 7.1 Dam Assessment

##### a. Condition

On the basis of the visual inspection, Pin Shop Pond Dam is judged to be in poor condition. The future integrity of the dam could be affected by the following conditions:

1. The lack of slope protection on the upstream slope and continued erosion of the embankment.
2. Trespass erosion of the downstream slope.
3. Trees on the embankment and in the immediate downstream area of the dam.
4. Continued undermining of the spillway apron.
5. Vegetation growing in open joints of the stone masonry training walls.
6. The poor condition of the outlet works.

An evaluation of the hydrologic and hydraulic features of the dam determined that the spillway is capable of passing 34 percent of the Test Flood outflow (1/2 PMF).

##### b. Adequacy of Information

As no information was available on the dam, the assessment of the condition of the dam is based on the visual inspection, past performance history, and hydraulic and hydrologic calculations made for this Report.

##### c. Urgency

The recommendations presented in Sections 7.2 and 7.3 should be carried out within one year of receipt of this Report.

## 7.2 Recommendations

The following recommendations should be carried out under the direction of a qualified, registered engineer:

1. Design repairs for the eroded areas of the upstream and downstream slopes of the embankment.
2. Design slope protection for the upstream and downstream slope of the dam.
3. Remove trees, stumps and root systems from the slopes and crest of the dam and in the area within 20 feet of the downstream toe, and backfill with proper material.
4. Investigate the undermining of the spillway apron and recommend remedial measures.
5. Investigate the condition of the spillway training walls and oversee removal of vegetation from open joints in the masonry, and repair of the joints.
6. Investigate the condition and capacity of the outlet works and recommend remedial measures to make the outlet works operable.
7. Perform a detailed hydrologic and hydraulic analysis in order to determine the need for and means to provide additional project discharge capacity.

The owner should implement all recommendations of the engineer based upon the findings of the above.

## 7.3 Remedial Measures

### a. Operation and Maintenance Procedures

1. A program of annual technical inspections by qualified, registered engineers should be instituted.
2. Brush should be cleared from the crest and slopes of the dam. The embankment should be maintained free of brush.

3. An operations and maintenance manual should be prepared for the dam and the operating facilities.

4. Develop a downstream warning system in case of an emergency at the dam.

#### 7.4 Alternatives

As the dam no longer serves any formal purpose, one alternative to the above recommendations would be to remove the dam.

APPENDIX A

VISUAL CHECK LIST WITH COMMENTS

# VISUAL INSPECTION CHECK LIST PARTY ORGANIZATION

PROJECT: Pin Shop Pond Dam

DATE: 12/15/80 TIME: 3:00 p.m. WEATHER: Cloudy 25°

W.S. ELEVATION: 386.85 U.S. N/A DN.S  
0.05' above spillway

| <u>PARTY</u>                                        | <u>DISCIPLINE</u>         |
|-----------------------------------------------------|---------------------------|
| 1. <u>Roald Haestad, P.E. Roald Haestad, Inc.</u>   | <u>Civil/Geotechnical</u> |
| 2. <u>Donal L. Smith, P.E. Roald Haestad, Inc.</u>  | <u>Civil/Hydrologic</u>   |
| 3. <u>Ronald G. Litke, P.E. Roald Haestad, Inc.</u> | <u>Civil/ Structural</u>  |
| 4. _____                                            | _____                     |
| 5. _____                                            | _____                     |
| 6. _____                                            | _____                     |

| <u>PROJECT FEATURE</u>                   | <u>INSPECTED<br/>BY</u> | <u>REMARKS</u>                                                      |
|------------------------------------------|-------------------------|---------------------------------------------------------------------|
| 1. <u>Dam Embankment</u>                 | <u>RH, DLS, RGL</u>     | <u>Erosion on U.S.&amp;D.S. slopes;<br/>overgrown with trees</u>    |
| 2. <u>Outlet Works - Intake</u>          | <u>RH, DLS, RGL</u>     | <u>No intake channel, structure<br/>is stone masonry</u>            |
| 3. <u>Channel &amp; Intake Structure</u> | <u>RH, DLS, RGL</u>     | <u>Structure filled with debris,<br/>condition of gates unknown</u> |
| 4. <u>Outlet Works -</u>                 | <u>RH, DLS, RGL</u>     | <u>16-inch gate valve on D.S. wall o</u>                            |
| 5. <u>Control Tower</u>                  | <u>RH, DLS, RGL</u>     | <u>control tower disch. below spillw</u>                            |
| 6. <u>Outlet Works - Outlet</u>          | <u>RH, DLS, RGL</u>     | <u>Spillway apron undermined at</u>                                 |
| 7. <u>Structure &amp; Channel</u>        | <u>RH, DLS, RGL</u>     | <u>downstream edge</u>                                              |
| 8. <u>Outlet Works - Spillway</u>        |                         |                                                                     |
| 9. <u>Weir, Appr.&amp;Disch. Channel</u> |                         |                                                                     |
| 10. _____                                |                         |                                                                     |
| 11. _____                                |                         |                                                                     |
| 12. _____                                |                         |                                                                     |

# PERIODIC INSPECTION CHECK LIST

PROJECT: Pin Shop Pond Dam DATE: 12/15/80

PROJECT FEATURE: Dam Embankment NAME: RH

DISCIPLINE: Civil/Geotechnical Engineers NAME: RGL,DLS

| AREA ELEVATION                                               | CONDITIONS                                                                 |
|--------------------------------------------------------------|----------------------------------------------------------------------------|
| <u>DAM EMBANKMENT</u>                                        |                                                                            |
| <u>CREST ELEVATION</u>                                       | 391.5                                                                      |
| <u>CURRENT POOL ELEVATION</u>                                | 386.85 (.05 above spillway)                                                |
| <u>MAXIMUM IMPOUNDMENT TO DATE</u>                           | 391.5± August 1955                                                         |
| <u>SURFACE CRACKS</u>                                        | None observed                                                              |
| <u>PAVEMENT CONDITION</u>                                    | Not paved - path worn at centerline                                        |
| <u>MOVEMENT OR SETTLEMENT OF CREST</u>                       | Crest surface somewhat irregular, probably due to erosion not settlement   |
| <u>LATERAL MOVEMENT</u>                                      | None observed                                                              |
| <u>VERTICAL ALIGNMENT</u>                                    | Area at training wall lower due to erosion                                 |
| <u>HORIZONTAL ALIGNMENT</u>                                  | Good                                                                       |
| <u>CONDITION AT ABUTMENT AND AT CONCRETE STRUCTURES</u>      | Erosion behind right training wall                                         |
| <u>INDICATIONS OF MOVEMENT OF STRUCTURAL ITEMS ON SLOPES</u> | None observed                                                              |
| <u>TRESPASSING ON SLOPES</u>                                 | Several paths on slopes, most severe at left end of dam 5' wide by 5' deep |
| <u>VEGETATION ON SLOPES</u>                                  | Numerous trees up to 12 inches in diameter                                 |
| <u>SLOUGHING OR EROSION OF SLOPES OR ABUTMENTS</u>           | Erosion at and above waterline upstream, several paths downstream          |
| <u>ROCK SLOPE PROTECTION - RIPRAP FAILURES</u>               | No riprap on upstream slope                                                |
| <u>UNUSUAL MOVEMENT OR CRACKING AT OR NEAR TOES</u>          | None observed                                                              |
| <u>UNUSUAL EMBANKMENT OR DOWNSTREAM SEEPAGE</u>              | None observed                                                              |
| <u>PIPING OR BOILS</u>                                       | None observed                                                              |
| <u>FOUNDATION DRAINAGE FEATURES</u>                          | None observed                                                              |
| <u>TOE DRAINS</u>                                            | None observed                                                              |
| <u>INSTRUMENTATION SYSTEM</u>                                | None observed                                                              |

# PERIODIC INSPECTION CHECK LIST

PROJECT: Pin Shop Pond Dam DATE: 12/15/80  
 PROJECT FEATURE: Intake Channel and Outlet Works - Intake Structure NAME: RH  
 DISCIPLINE: Civil/Geotechnical Engineers NAME: DLS, RGL

| AREA EVALUATED                                     | CONDITIONS                          |
|----------------------------------------------------|-------------------------------------|
| OUTLET WORKS - INTAKE CHANNEL AND INTAKE STRUCTURE | No intake channel                   |
| A. APPROACH CHANNEL:                               |                                     |
| SLOPE CONDITIONS                                   |                                     |
| BOTTOM CONDITIONS                                  |                                     |
| ROCK SLIDES OR FALLS                               |                                     |
| LOG BOOM                                           |                                     |
| DEBRIS                                             |                                     |
| CONDITION OF CONCRETE LINING                       |                                     |
| DRAINS OR WEEP HOLES                               |                                     |
| B. INTAKE STRUCTURE:                               |                                     |
| CONDITION OF CONCRETE                              | Stone masonry with some open joints |
| STOP LOGS AND SLOTS                                | N/A                                 |

# PERIODIC INSPECTION CHECK LIST

PROJECT: Pin Shop Pond Dam DATE: 12/15/80  
 PROJECT FEATURE: Outlet Works - Control Tower NAME: RH  
 DISCIPLINE: Civil Engineers NAME: RGL, DLS

| AREA EVALUATED                                    | CONDITIONS                                                                 |
|---------------------------------------------------|----------------------------------------------------------------------------|
| <u>OUTLET WORKS - CONTROL TOWER</u>               |                                                                            |
| A. <u>CONCRETE AND STRUCTURAL:</u>                | Stone masonry structure appears to have been encased with concrete         |
| <u>GENERAL CONDITION</u>                          | Concrete and stone masonry in fair condition, structure filled with debris |
| <u>CONDITION OF JOINTS</u>                        | Some spalling at construction joints                                       |
| <u>SPALLING</u>                                   | Some spalling at construction joints                                       |
| <u>VISIBLE REINFORCING</u>                        | N/A                                                                        |
| <u>RUSTING OR STAINING OF CONCRETE</u>            | None observed                                                              |
| <u>ANY SEEPAGE OR EFFLORESCENCE</u>               | Some efflorescence at construction joint                                   |
| <u>JOINT ALIGNMENT</u>                            | N/A                                                                        |
| <u>UNUSUAL SEEPAGE OR LEAKS IN GATE CHAMBER</u>   | Water flowing from chamber, possibly from leakage at intake gate           |
| <u>CRACKS</u>                                     | None observed                                                              |
| <u>RUSTING OR CORROSION OF STEEL</u>              | N/A                                                                        |
| B. <u>MECHANICAL AND ELECTRICAL:</u>              |                                                                            |
| <u>AIR VENTS</u>                                  | N/A                                                                        |
| <u>FLOAT WELLS</u>                                | N/A                                                                        |
| <u>CRANE HOIST</u>                                | N/A                                                                        |
| <u>ELEVATOR</u>                                   | N/A                                                                        |
| <u>HYDRAULIC SYSTEM</u>                           | N/A                                                                        |
| <u>SERVICE GATES</u>                              | Condition unknown.<br>16" drain gate valve open 3/4 of way                 |
| <u>EMERGENCY GATES</u>                            | N/A                                                                        |
| <u>LIGHTNING PROTECTION SYSTEM</u>                | N/A                                                                        |
| <u>EMERGENCY POWER SYSTEM</u>                     | N/A                                                                        |
| <u>WIRING AND LIGHTING SYSTEM IN GATE CHAMBER</u> | N/A                                                                        |

# PERIODIC INSPECTION CHECK LIST

PROJECT: Pin Shop Pond Dam DATE: 12/15/80  
 PROJECT FEATURE: Outlet Structure and Outlet Works - Outlet Channel NAME: RH  
 DISCIPLINE: Civil Engineers NAME: DLS, RGL

| AREA EVALUATED                                     | CONDITIONS                                                                          |
|----------------------------------------------------|-------------------------------------------------------------------------------------|
| OUTLET WORKS - OUTLET STRUCTURE AND OUTLET CHANNEL | Outlet structure consists of 16-inch gate valve on downstream wall of control tower |
| GENERAL CONDITION OF CONCRETE                      |                                                                                     |
| RUST OR STAINING                                   | None observed                                                                       |
| SPALLING                                           | Some spalling at construction joints                                                |
| EROSION OR CAVITATION                              | None observed                                                                       |
| VISIBLE REINFORCING                                | None observed                                                                       |
| ANY SEEPAGE OR EFFLORESCENCE                       | Some efflorescence at construction joints                                           |
| CONDITION AT JOINTS                                | Some spalling and efflorescence at joints                                           |
| DRAIN HOLES                                        | N/A                                                                                 |
| CHANNEL                                            | Drain gate discharges to stream channel below spillway                              |
| LOOSE ROCK OR TREES OVERHANGING CHANNEL            | None of significance                                                                |
| CONDITION OF DISCHARGE CHANNEL                     | Natural stream channel                                                              |

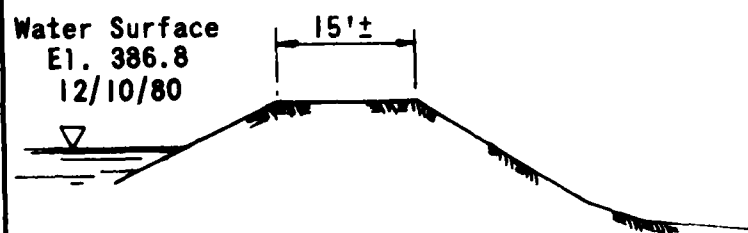
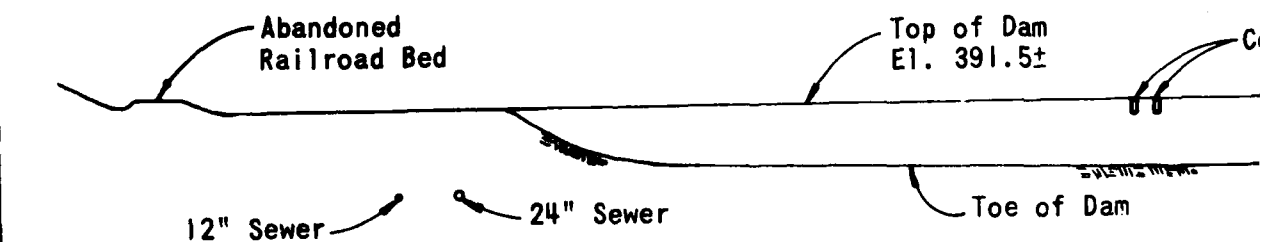
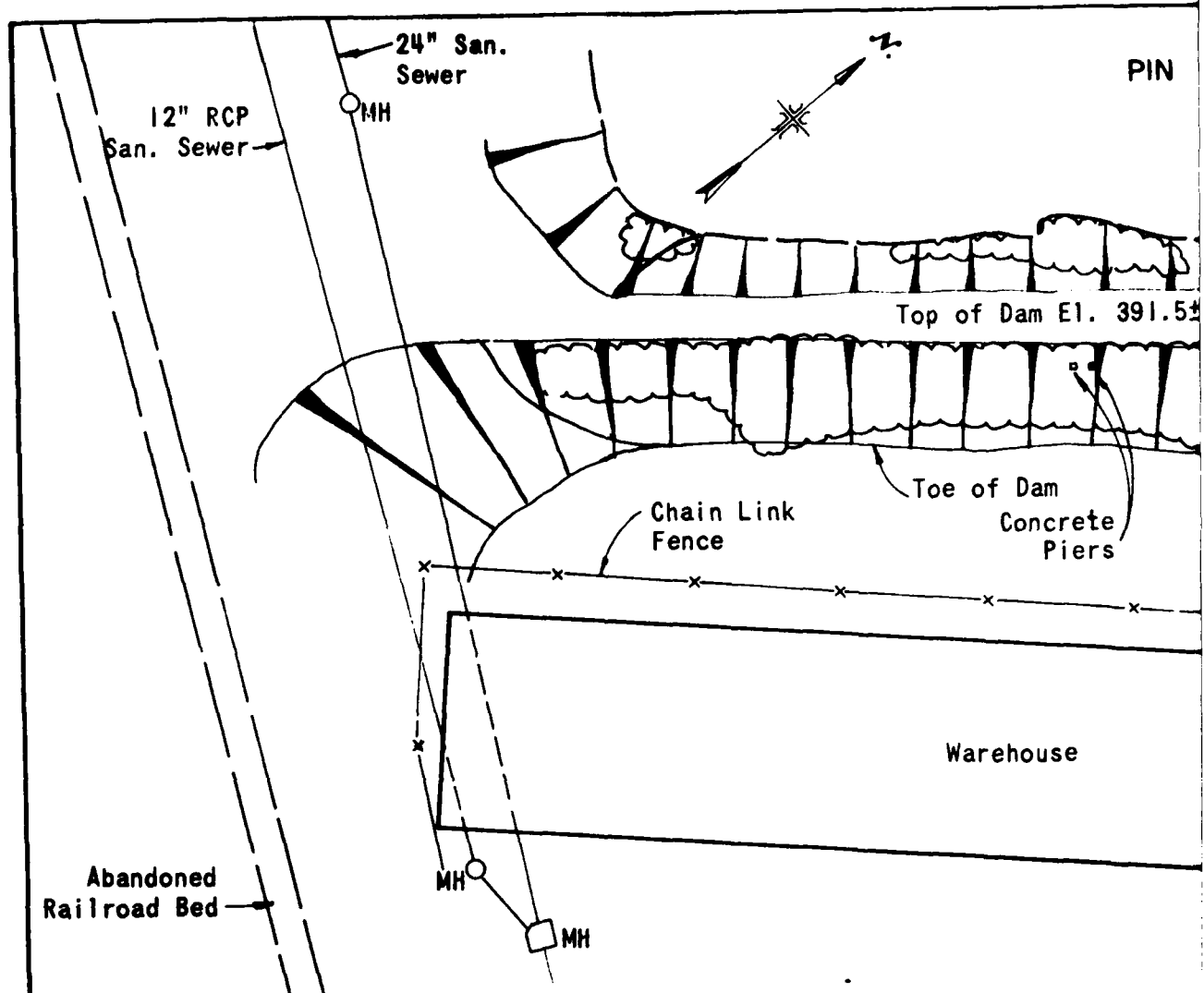
# PERIODIC INSPECTION CHECK LIST

PROJECT: Pin Shop Pond Dam DATE: 12/15/80  
 PROJECT FEATURE: Spillway Weir, Approach Outlet Works - and Discharge Channel NAME: RH  
 DISCIPLINE: Civil/Geotechnical Engineers NAME: DLS, RGL

| AREA EVALUATED                                                       | CONDITIONS                                                                                            |
|----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| <u>OUTLET WORKS - SPILLWAY WEIR, APPROACH AND DISCHARGE CHANNELS</u> |                                                                                                       |
| A. <u>APPROACH CHANNEL:</u>                                          | No approach channel                                                                                   |
| <u>GENERAL CONDITION</u>                                             |                                                                                                       |
| <u>LOOSE ROCK OVERHANGING CHANNEL</u>                                |                                                                                                       |
| <u>TREES OVERHANGING CHANNEL</u>                                     |                                                                                                       |
| <u>FLOOR OF APPROACH CHANNEL</u>                                     |                                                                                                       |
| B. <u>WEIR AND TRAINING WALLS:</u>                                   |                                                                                                       |
| <u>GENERAL CONDITION OF CONCRETE</u>                                 | Stone masonry weir and training walls, portion of D.S. face of weir is concrete                       |
| <u>RUST OR STAINING</u>                                              | Orange stain on apron at 2'x1.5' opening at base of spillway                                          |
| <u>SPALLING</u>                                                      | None observed. Some open joints in stone masonry training walls                                       |
| <u>ANY VISIBLE REINFORCING</u>                                       | None observed                                                                                         |
| <u>ANY SEEPAGE OR EFFLORESCENCE</u>                                  | None observed                                                                                         |
| <u>DRAIN HOLES</u>                                                   | None observed                                                                                         |
| C. <u>DISCHARGE CHANNEL:</u>                                         |                                                                                                       |
| <u>GENERAL CONDITION</u>                                             | Concrete spillway apron undermined at D.S. edge. Discharge channel natural streambed of Steele Brook. |
| <u>LOOSE ROCK OVERHANGING CHANNEL</u>                                | None observed                                                                                         |
| <u>TREES OVERHANGING CHANNEL</u>                                     | None of any significance                                                                              |
| <u>FLOOR OF CHANNEL</u>                                              | Loose rock                                                                                            |
| <u>OTHER OBSTRUCTIONS</u>                                            | Foot bridge D.S. center pier has settled, would obstruct flow if bridge failed.                       |

APPENDIX B

ENGINEERING DATA



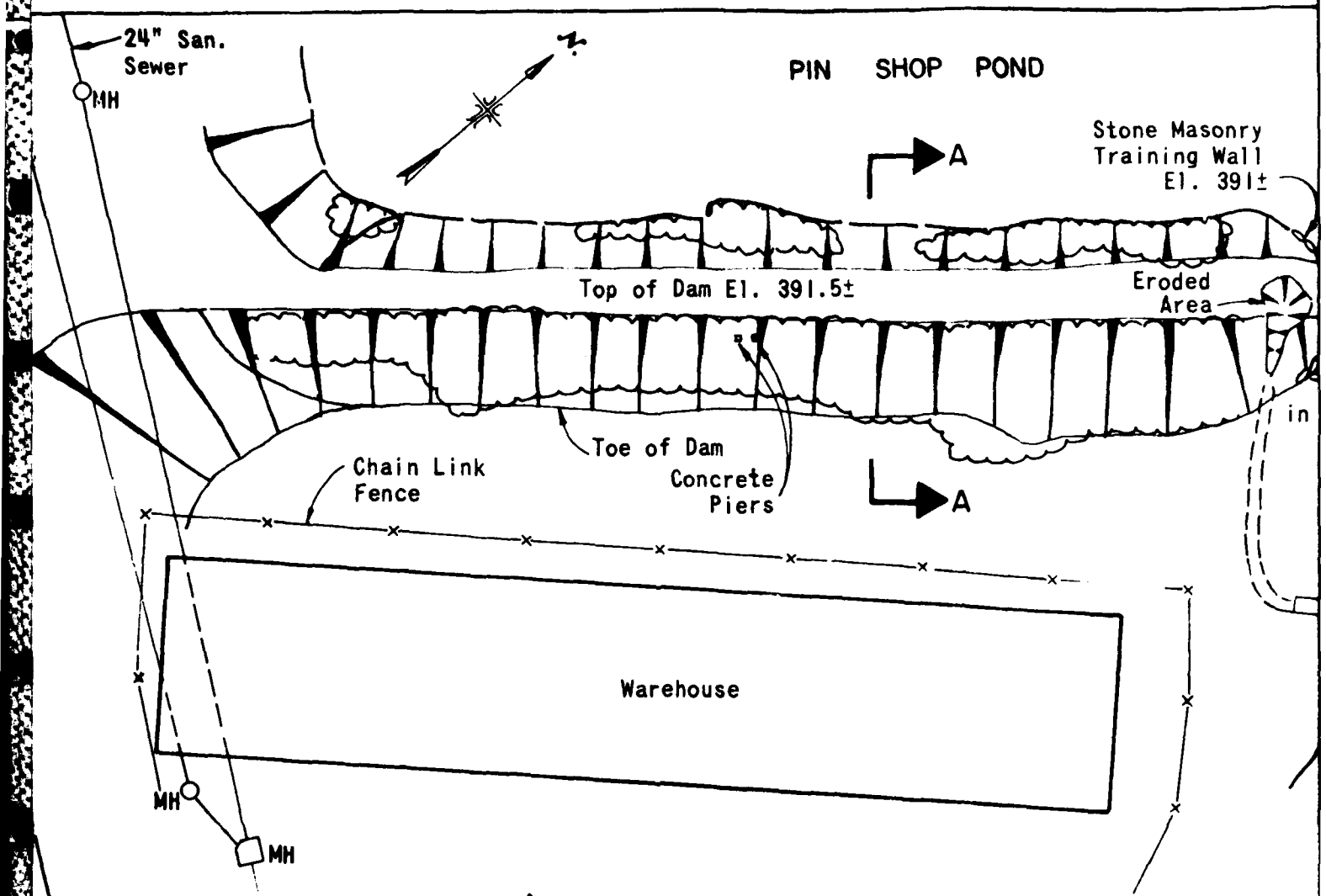
# SECTION A-A

Scale: 1" = 20' Horiz. & Vert.

2' X 1.5' Opening

SECTION

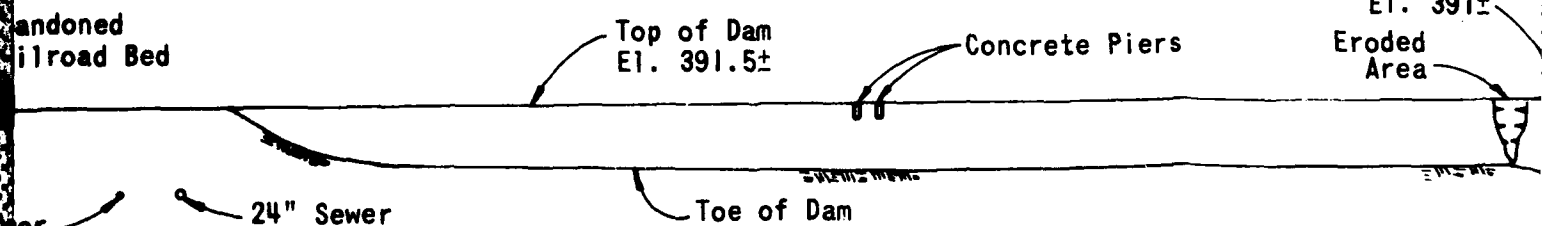
Scale: 1" = 2'



### PLAN

Scale: 1" = 40'

Abandoned Railroad Bed



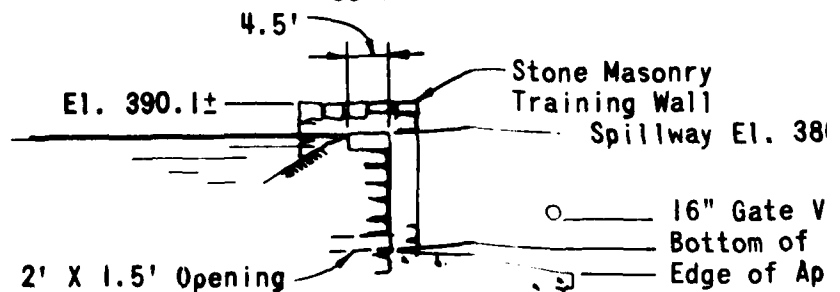
### ELEVATION

Scale: 1" = 40'



### SECTION A-A

= 20' Horiz. & Vert.



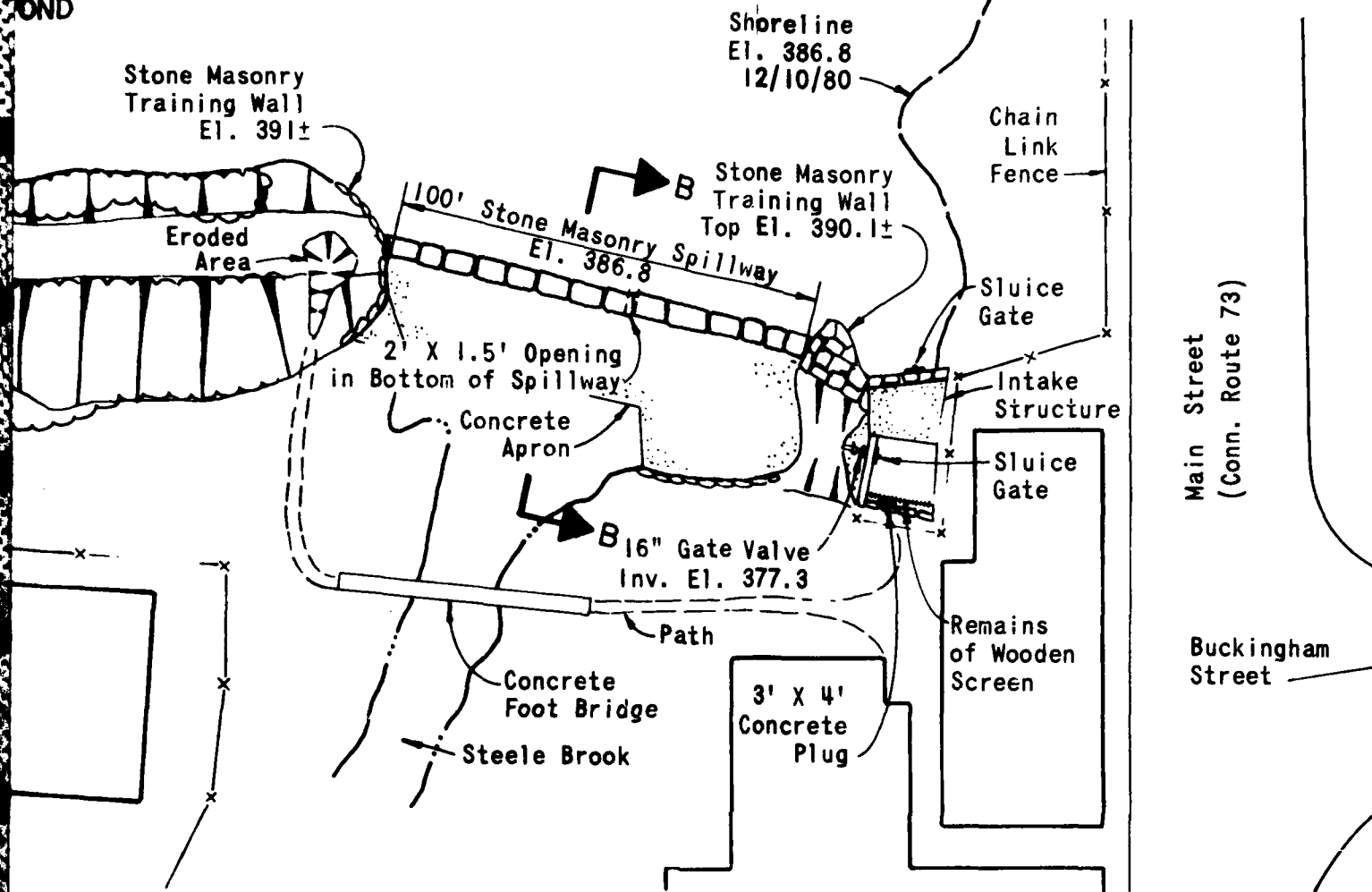
### SECTION B-B

Scale: 1" = 20' Horiz. & Vert.

(2)

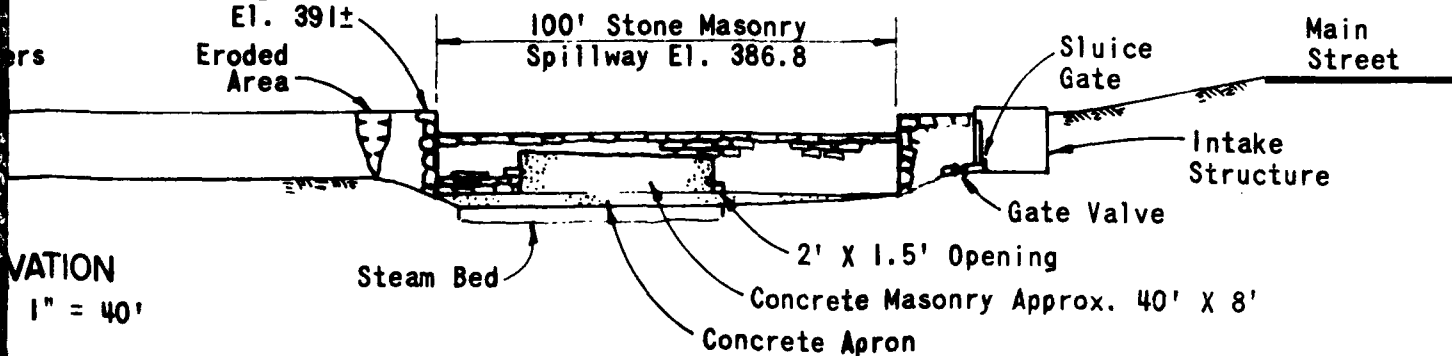
FIGURE

OND



AN

1" = 40'



VATION

1" = 40'

Stone Masonry  
Training Wall  
Spillway El. 386.8

○ 16" Gate Valve Inv. El. 377.3  
Bottom of Spillway El. 374  
Edge of Apron El. 371.5

Stream Bed El. 368.8

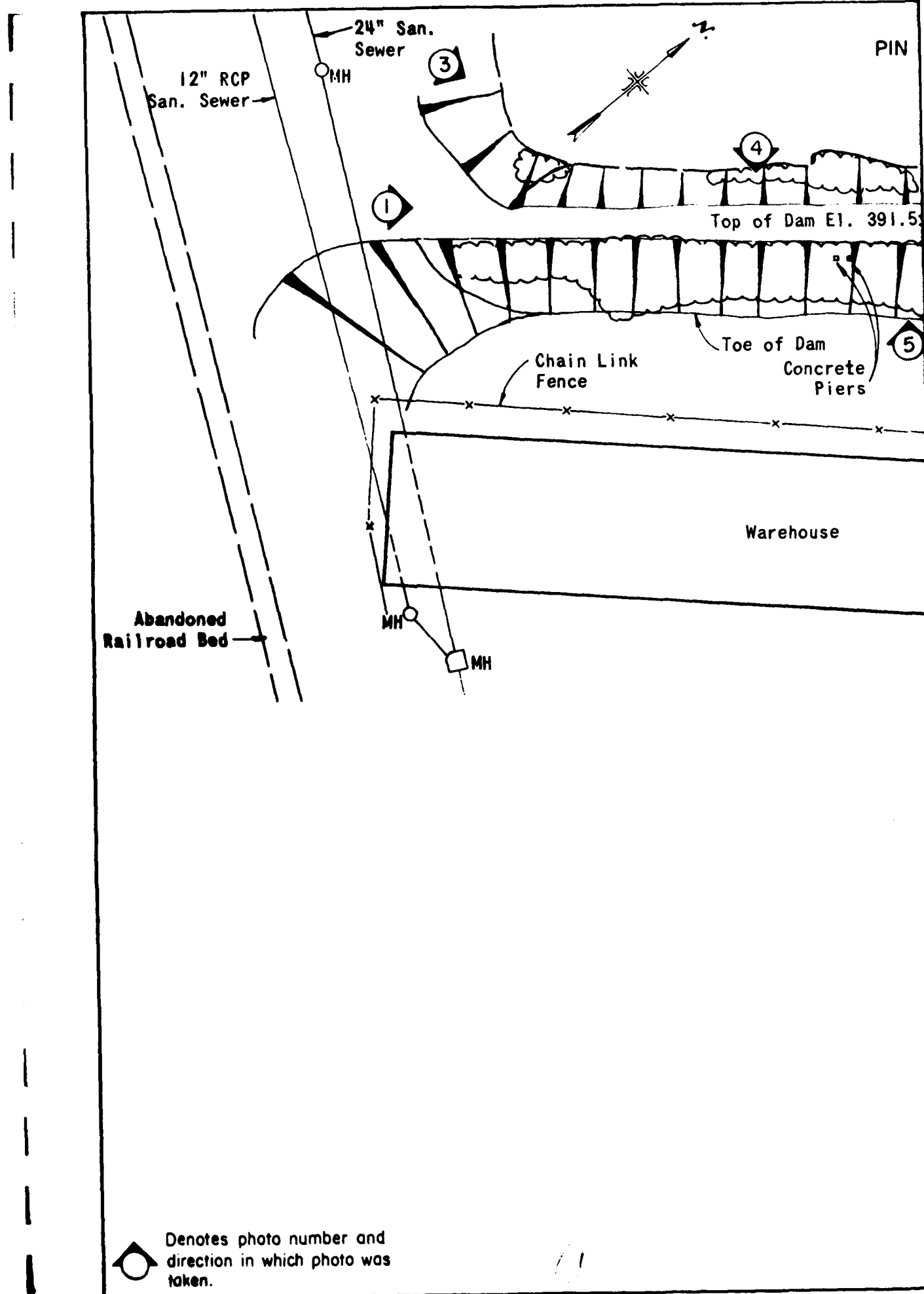
3

Vert.

|                                                                      |                |                                                                        |                                     |
|----------------------------------------------------------------------|----------------|------------------------------------------------------------------------|-------------------------------------|
| ROALD HAESTAD, INC<br>CONSULTING ENGINEERS<br>WATERBURY, CONNECTICUT |                | U.S. ARMY ENGINEER DIV NEW ENGL<br>CORPS OF ENGINEERS<br>WALTHAM, MASS |                                     |
| NATIONAL PROGRAM OF INSPECTION OF NON-FED DAM                        |                |                                                                        |                                     |
| PIN SHOP POND DAM                                                    |                |                                                                        |                                     |
| DRAWN<br>JRS                                                         | CHECKED<br>RGL | APPROVED<br>PH                                                         | SCALE: As Noted<br>DATE 1/81 PAGE B |

APPENDIX C

PHOTOGRAPHS



 Denotes photo number and direction in which photo was taken.

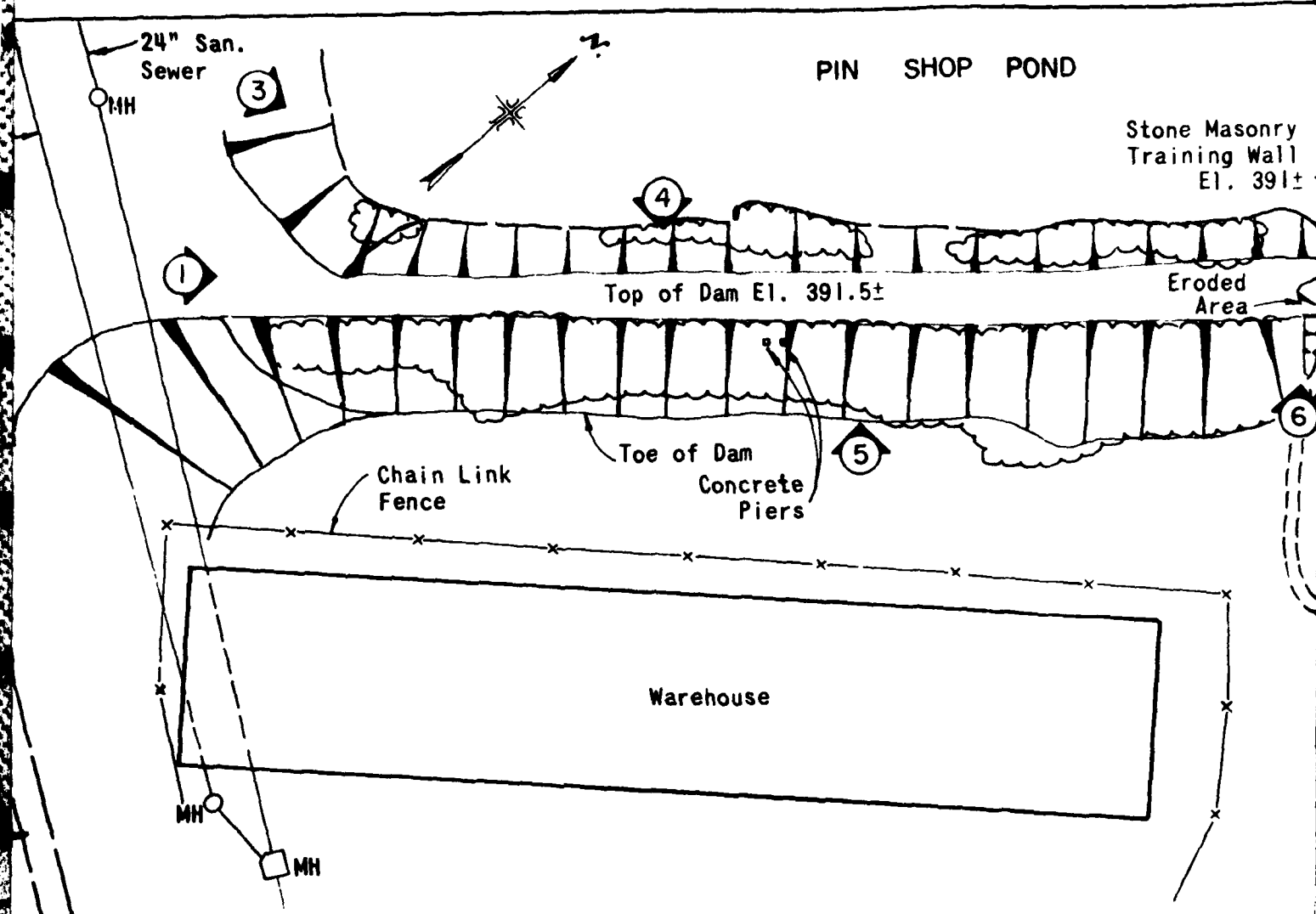
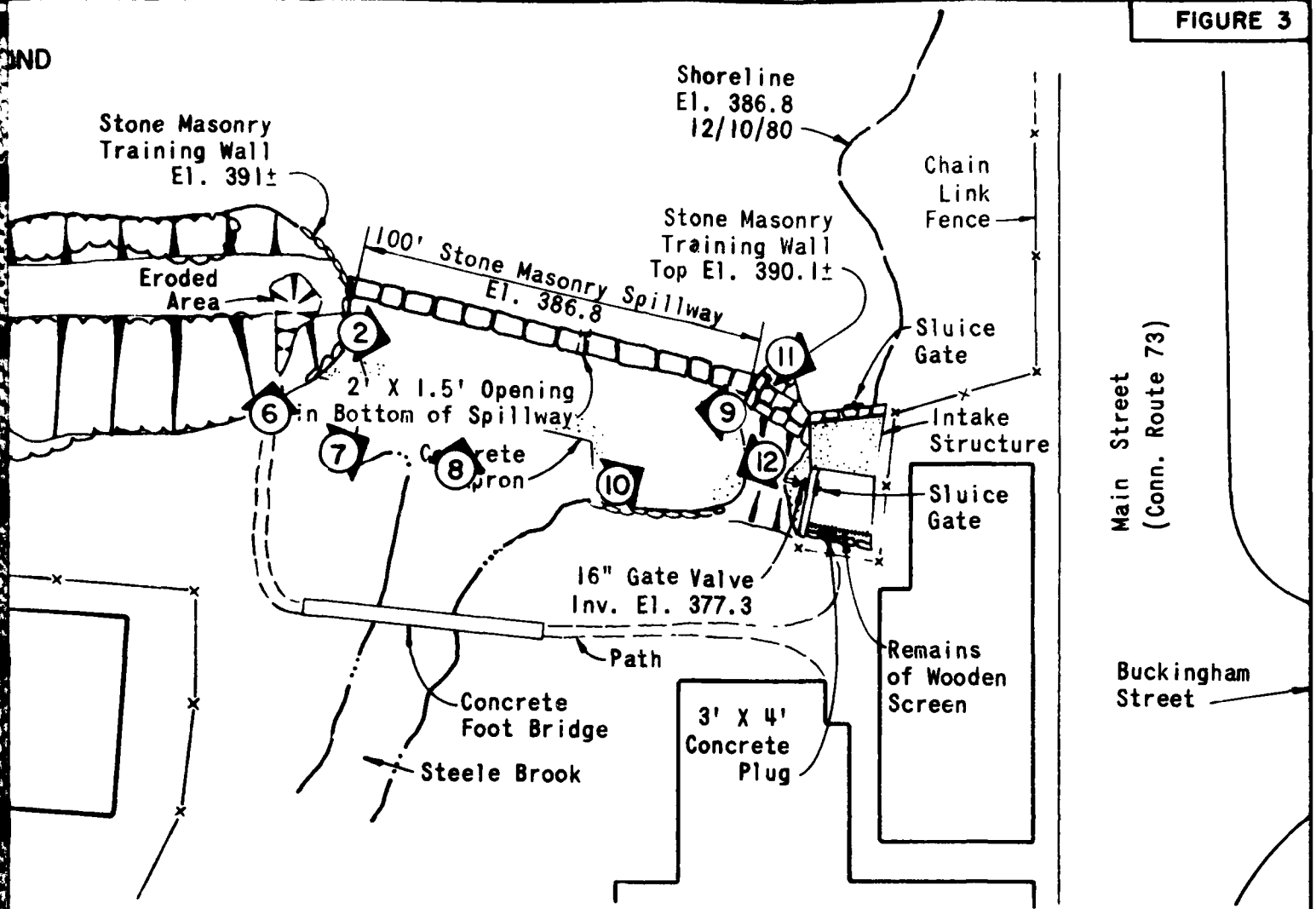


photo number and  
which photo was

FIGURE 3



|                                                                      |         |                                                                           |                    |
|----------------------------------------------------------------------|---------|---------------------------------------------------------------------------|--------------------|
| ROALD MAESTAD, INC<br>CONSULTING ENGINEERS<br>WATERBURY, CONNECTICUT |         | U.S. ARMY ENGINEER DIV NEW ENGLAND<br>CORPS OF ENGINEERS<br>WALTHAM, MASS |                    |
| NATIONAL PROGRAM OF INSPECTION OF NON-FED DAMS                       |         |                                                                           |                    |
| PHOTO LOCATION PLAN<br>PIN SHOP POND DAM<br>WATERTOWN, CONNECTICUT   |         |                                                                           |                    |
| DRAWN                                                                | CHECKED | APPROVED                                                                  | SCALES 1" = 40'    |
| JRS                                                                  | DLS     | RH                                                                        | DATE 1/81 PAGE C-1 |

(3)



PHOTO NO. 1

EARTH EMBANKMENT FROM RIGHT ABUTMENT.  
NOTE TREES ON SLOPES AND CREST AND EROSION PATH.



PHOTO NO. 2

OVERFLOW SPILLWAY AND OUTLET WORKS AT  
LEFT ABUTMENT. NOTE 16-INCH GATE VALVE  
DISCHARGING BELOW SPILLWAY.

U.S. ARMY ENGINEER DIV. NEW ENGLAND  
CORPS OF ENGINEERS  
WALTHAM, MASSACHUSETTS

ROALD HAESTAD, INC.  
CONSULTING ENGINEERS  
WATERBURY, CONNECTICUT

NATIONAL PROGRAM OF  
INSPECTION OF  
NON-FED. DAMS

|                        |
|------------------------|
| PIN SHOP POND DAM      |
| STEELE BROOK           |
| WATERTOWN, CONNECTICUT |
| CT 00127               |
| 15 DECEMBER '80        |



PHOTO NO. 3

UPSTREAM SLOPE FROM RIGHT ABUTMENT.  
NOTE TREES.



PHOTO NO. 4

EROSION OF UPSTREAM SLOPE AT AND  
ABOVE WATER LINE.

U.S. ARMY ENGINEER DIV. NEW ENGLAND  
CORPS OF ENGINEERS  
WALTHAM, MASSACHUSETTS

ROALD HAESTAD, INC.  
CONSULTING ENGINEERS  
WATERBURY, CONNECTICUT

NATIONAL PROGRAM OF  
INSPECTION OF  
NON-FED. DAMS

PIN SHOP POND DAM  
STEELE BROOK  
WATERTOWN, CONNECTICUT  
CT 00127  
15 DECEMBER '80



PHOTO NO. 5

TREES ON DOWNSTREAM SLOPE OF DAM



PHOTO NO. 6

EROSION GULLY AT LEFT END OF  
EARTH EMBANKMENT.

U.S. ARMY ENGINEER DIV. NEW ENGLAND  
CORPS OF ENGINEERS  
WALTHAM, MASSACHUSETTS

ROALD HAESTAD, INC.  
CONSULTING ENGINEERS  
WATERBURY, CONNECTICUT

NATIONAL PROGRAM OF  
INSPECTION OF  
NON-FED. DAMS

PIN SHOP POND DAM  
STEELE BROOK  
WATERTOWN, CONNECTICUT  
CT 00127  
15 DECEMBER '80



PHOTO NO. 7

SPILLWAY SECTION. NOTE CONCRETE PORTION OF  
DOWNSTREAM FACE (LEFT SIDE IN PHOTO), ORANGE  
STAIN ON APRON AT 2' X 1.5' OPENING AT BASE OF  
SPILLWAY AND UNDERMINING OF APRON.

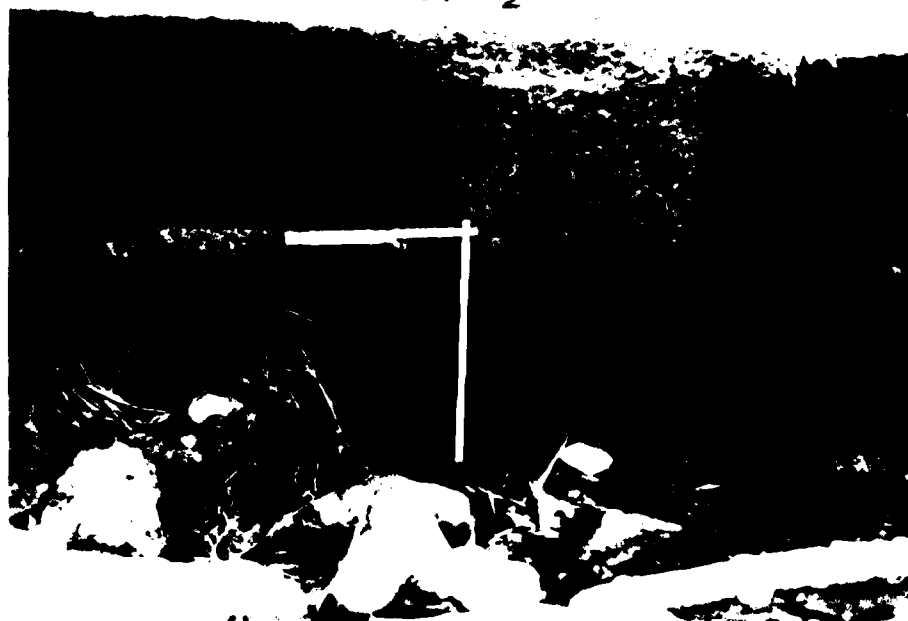


PHOTO NO. 8

UNDERMINING OF SPILLWAY APRON.

U.S. ARMY ENGINEER DIV. NEW ENGLAND  
CORPS OF ENGINEERS  
WALTHAM, MASSACHUSETTS

ROALD HAESTAD, INC.  
CONSULTING ENGINEERS  
WATERBURY, CONNECTICUT

NATIONAL PROGRAM OF  
INSPECTION OF  
NON-FED. DAMS

PIN SHOP POND DAM  
STEELE BROOK  
WATERTOWN, CONNECTICUT  
CT 00127  
15 DECEMBER '80



PHOTO NO. 9

RIGHT TRAINING WALL  
AND DOWNSTREAM SLOPE  
OF EARTH EMBANKMENT.  
NOTE TREES BEHIND WALL  
AND WAREHOUSE  
BUILDING IMMEDIATELY  
DOWNSTREAM OF DAM.



PHOTO NO. 10

LEFT TRAINING WALL.  
NOTE OPEN JOINTS IN STONE  
MASONRY AND VEGETATION  
GROWING IN JOINTS.

U.S. ARMY ENGINEER DIV. NEW ENGLAND  
CORPS OF ENGINEERS  
WALTHAM, MASSACHUSETTS

ROALD HAESTAD, INC.  
CONSULTING ENGINEERS  
WATERBURY, CONNECTICUT

NATIONAL PROGRAM OF  
INSPECTION OF  
NON-FED. DAMS

PIN SHOP POND DAM

STEELE BROOK

WATERTOWN, CONNECTICUT

CT 00127

15 DECEMBER '80



PHOTO NO. 11

OPERATING MECHANISM FOR INTAKE SLUICE GATE.



PHOTO NO. 12

RIVER CHANNEL AND FOOTBRIDGE DOWNSTREAM OF DAM

U.S. ARMY ENGINEER DIV. NEW ENGLAND  
CORPS OF ENGINEERS  
WALTHAM, MASSACHUSETTS

ROALD HAESTAD, INC.  
CONSULTING ENGINEERS  
WATERBURY, CONNECTICUT

NATIONAL PROGRAM OF  
INSPECTION OF  
NON-FED. DAMS

PIN SHOP POND DAM  
STEELE BROOK  
WATERTOWN, CONNECTICUT  
CT 00127  
15 DECEMBER '80

APPENDIX D

HYDROLOGIC AND HYDRAULIC COMPUTATIONS



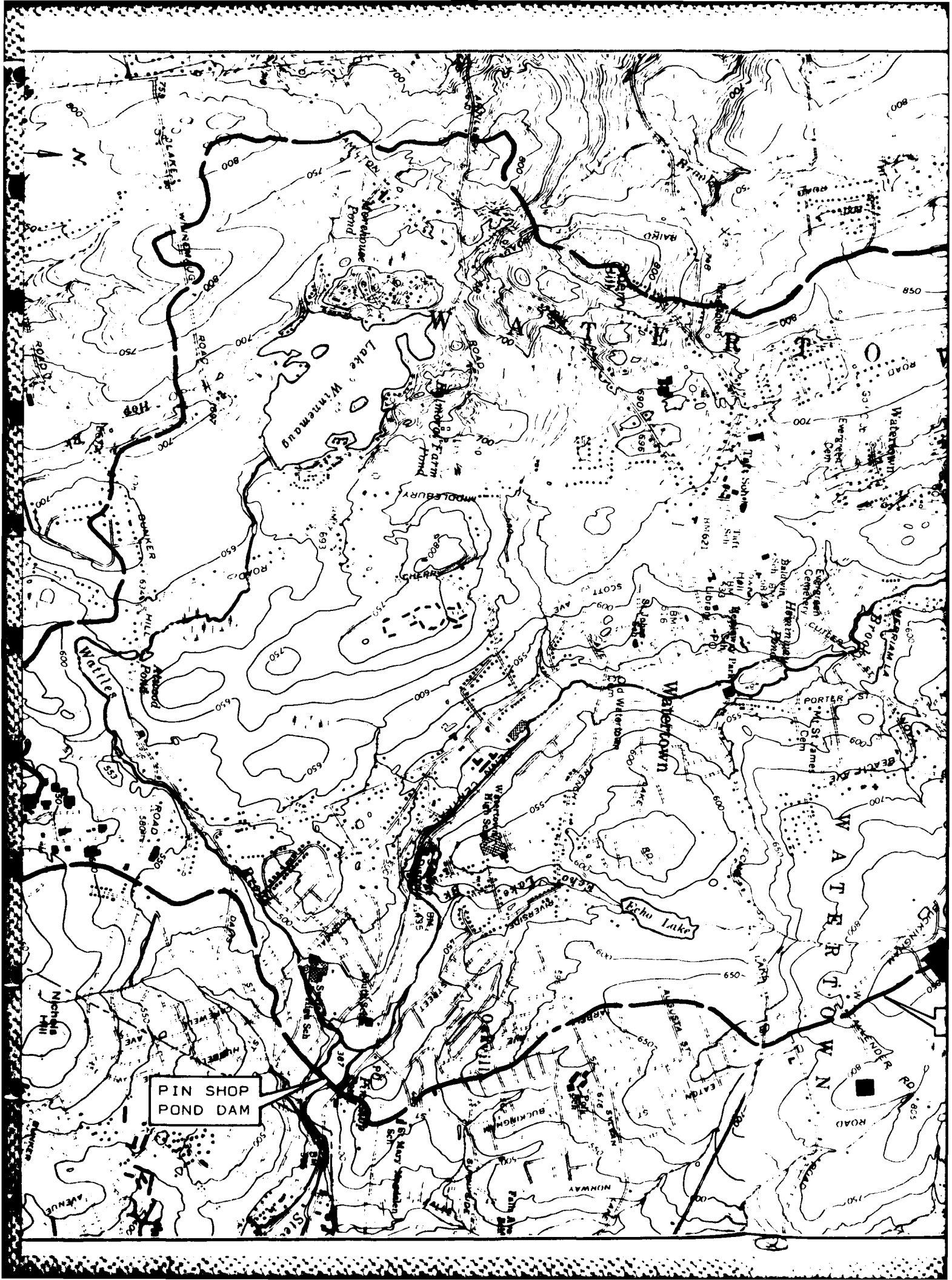


FIGURE 4



ROALD HAESTAD, INC  
CONSULTING ENGINEERS  
WATERBURY, CONNECTICUT

U S ARMY ENGINEER DIV NEW ENGLA  
CORPS OF ENGINEERS  
WALTHAM, MASS

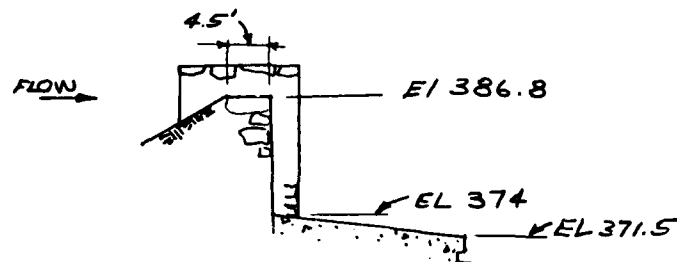
NATIONAL PROGRAM OF INSPECTION OF NON-FED DA

WATERSHED MAP  
PIN SHOP POND DAM  
WATERTOWN, CONNECTICUT

|       |         |          |           |           |
|-------|---------|----------|-----------|-----------|
| DRAWN | CHECKED | APPROVED | SCALES    | 1' = 2000 |
| JRS   | DLS     | RH       | DATE 1/81 | PAGE D-   |

BY SAL DATE 12/24/80 **ROALD HAESTAD, INC.** SHEET NO 1 OF 24  
CONSULTING ENGINEERS  
CKD BY DLS DATE 12/30/80 37 Brookside Road - Waterbury, Conn. 06708 JOB NO 49-033  
SUBJECT PIN SHOP POND DAM - Project discharge capacity

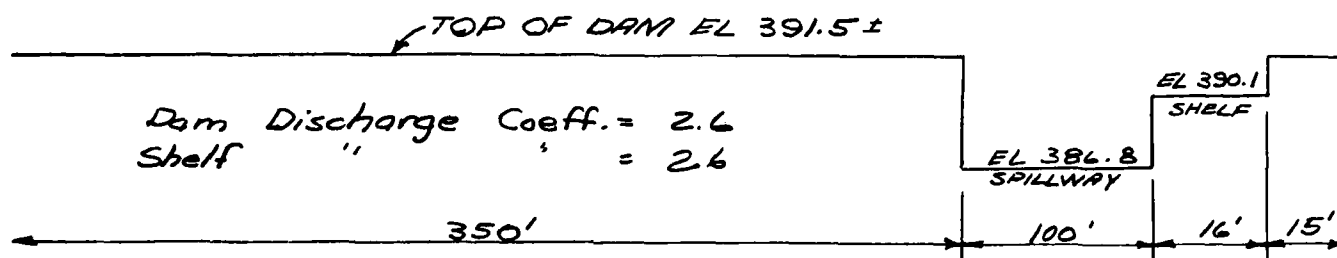
Spillway Section: (Scale 1" = 20' H & V)



Spillway Length = 100'  
Discharge Coeff = 3.1

Formula:  
 $Q = CLH^{3/2}$

Dam Profile: (Not to Scale)



Dam Discharge Coeff. = 2.6  
Shelf " " = 2.6

| ELEVATION<br>(FEET) | DISCHARGE CAPACITIES |                |                     | TOTAL DISCH.<br>CAPACITY<br>(CFS) |
|---------------------|----------------------|----------------|---------------------|-----------------------------------|
|                     | SPILLWAY<br>(CFS)    | SHELF<br>(CFS) | TOP OF DAM<br>(CFS) |                                   |
| 386.8               | 0                    | 0              | 0                   | 0                                 |
| 387.5               | 182                  | 0              | 0                   | 182                               |
| 388.5               | 687                  | 0              | 0                   | 687                               |
| 389.5               | 1,375                | 0              | 0                   | 1,375                             |
| 390.1               | 1,858                | 0              | 0                   | 1,858                             |
| 390.5               | 2,206                | 11             | 0                   | 2,206                             |
| 391.5               | 3,159                | 69             | 0                   | 3,228                             |
| 392.5               | 4,219                | 155            | 949                 | 5,323                             |
| 393.5               | 5,376                | 261            | 2,684               | 8,321                             |
| 394.5               | 6,624                | 384            | 4,931               | 11,939                            |

BY L.F.G. DATE 12-31-80

ROALD HAESTAD, INC.  
CONSULTING ENGINEERS

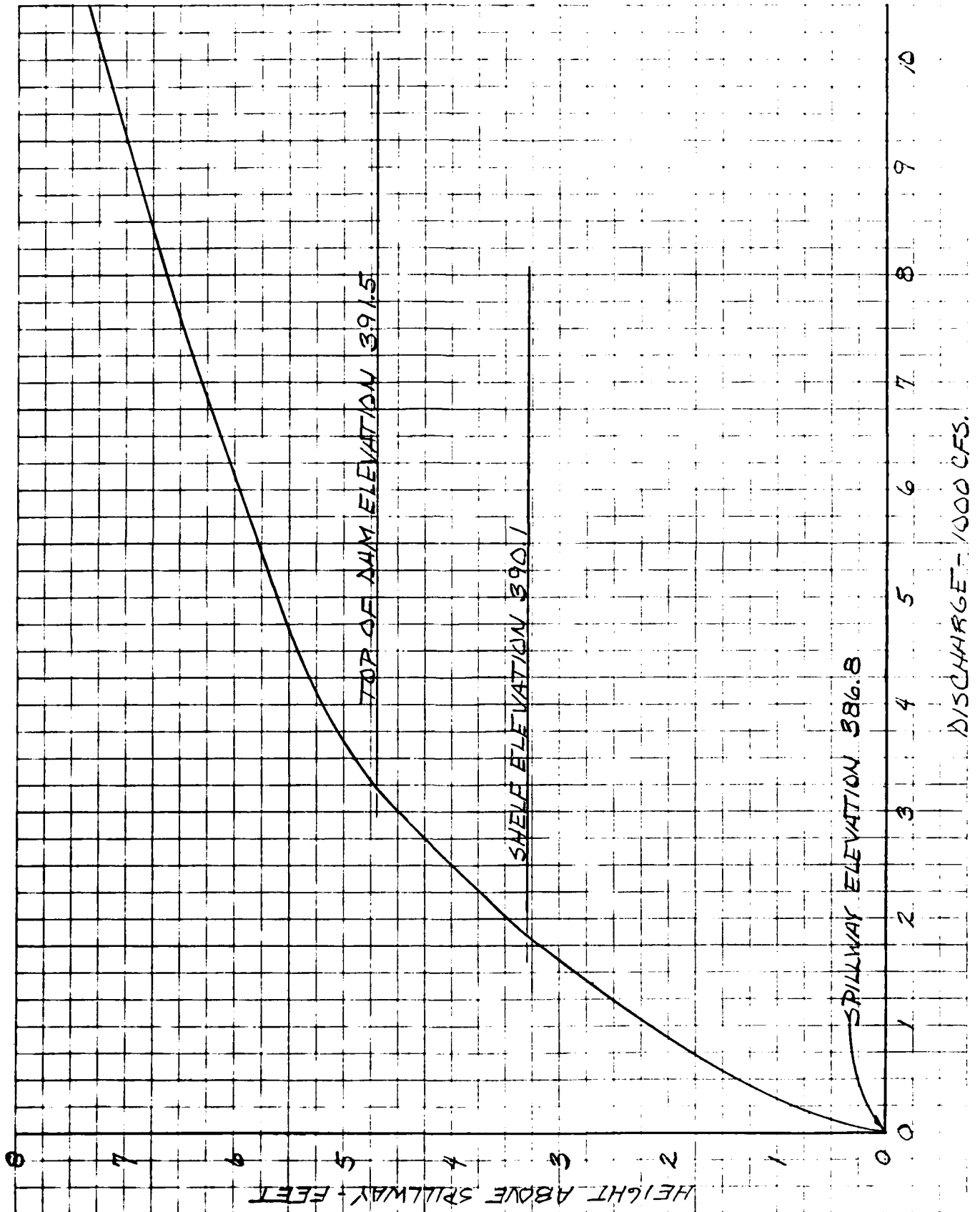
SHEET NO. 2 OF 24

CKD BY SAL DATE 12-31-80

37 Brookside Road - Waterbury, Conn. 06708

JOB NO. 49-035

SUBJECT PIN SHOP POND DAM - PROJECT DISCHARGE CAPACITY CURVE



BY LBG DATE 12-17-80 **ROALD HAESTAD, INC.** SHEET NO. 3 OF 24  
CONSULTING ENGINEERS  
CKD BY SAL DATE 12-31-80 37 Brookside Road - Waterbury, Conn. 06708 JOB NO. 44-033  
SUBJECT PIN SHOP POND DAM - SURCHARGE STORAGE CAPACITY

| ELEVATION<br>(FEET) | SURFACE AREA<br>(ACRES) | AVERAGE SURFACE AREA<br>(ACRES) | STORAGE CAPACITY<br>(ACRE- FEET) |
|---------------------|-------------------------|---------------------------------|----------------------------------|
| 386.8               | 6.4                     | 7.5                             | 0                                |
| 388                 | 8.6                     | 9.4                             | 9.0                              |
| 389                 | 10.2                    | 11.05                           | 18.4                             |
| 390                 | 11.9                    | 12.82                           | 29.5                             |
| 391                 | 13.74                   | 14.66                           | 42.3                             |
| 392                 | 15.58                   | 16.5                            | 57.0                             |
| 393                 | 17.42                   | 18.34                           | 73.4                             |
| 394                 | 19.26                   | 20.18                           | 91.8                             |
| 395                 | 21.1                    | 22.02                           | 112.0                            |
| 396                 | 22.94                   | 23.86                           | 134.0                            |
| 397                 | 24.78                   | 25.7                            | 157.8                            |
| 398                 | 26.62                   | 27.54                           | 183.5                            |
| 399                 | 28.46                   | 29.38                           | 211.1                            |
| 400                 | 30.3                    |                                 | 240.5                            |

BY LBG DATE 12-17-80

ROALD HAESTAD, INC.

SHEET NO. 4 OF 24

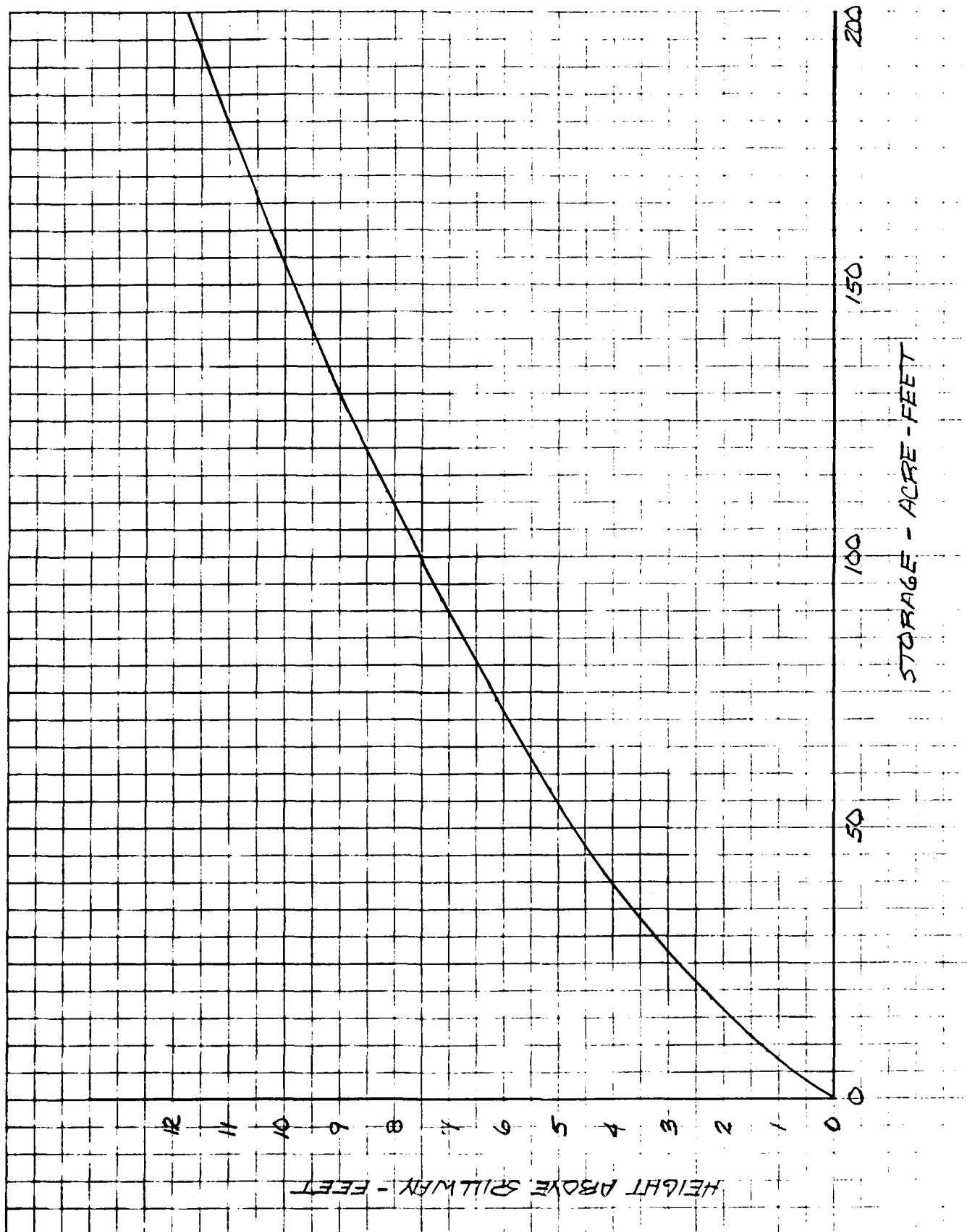
CONSULTING ENGINEERS

CKD BY SAL DATE 12-31-80

37 Brookside Road - Waterbury, Conn. 06708

JOB NO. 49-033

SUBJECT PIN SHOP POND DAM - SURCHARGE STORAGE CAPACITY CURVE



BY DLS.....DATE 12/30/80 **ROALD HAESTAD, INC.** SHEET NO. 5 OF 24  
CONSULTING ENGINEERS  
CKD BY SAL DATE 12/31/80 37 Brookside Road - Waterbury, Conn. 06708 JOB NO. 49-033  
SUBJECT P/N SHOP POND - TEST FLOOD 1/2 PMF

FREEBOARD = 4.7 Feet

SPILLWAY CAPACITY = 3228 CFS

STORAGE CAPACITY = 6.4 ACRES X 5 FT. AVE. DEPTH + SURCHARGE STORAGE  
= 32 AC-FT. + 50 AC-FT.  
= 82 AC-FT.

SMALL - HIGH HAZARD USE 1/2 PMF

WATERSHED AREA = 11.9 square miles

USING CORPS OF ENG. CHART FOR "ROLLING" TERRAIN

MPF = 1600 CSM

PMF = 1600 x 11.9 sq. mi. = 19,040 CFS

1/2 PMF = 1/2 (19,040) = 9,520 CFS

NOTE: Inflow and Outflow would be essentially equal because of the small storage capacity of the impoundment in comparison to the size of the watershed.

Spillway Capacity =  $\frac{3228 \text{ CFS}}{9520 \text{ CFS}} \times 100$   
= 34% of 1/2 PMF

BY SAL DATE 12/30/80 ROALD HAESTAD, INC. SHEET NO 6 OF 24  
CONSULTING ENGINEERS  
CKD BY DLS DATE 12/30/80 37 Brookside Road - Waterbury, Conn. 06708 JOB NO 49-033  
SUBJECT PIN SHOP POND DAM - Dam breach calculations

$S$  = Storage at time of failure with water level at top of dam

$S$  = Storage at spillway level + Surcharge Storage

$S$  = (Ave. depth  $\times$  Surface Area) + Surcharge Storage

$S$  = (6.4 Acres  $\times$  5 feet) + 50 Acre-Feet

$S$  = 32 Ac-Ft + 50 Ac-Ft = 82 Acre-Feet

$Q_{p1}$  = Peak Failure Outflow =  $\frac{8}{27} W_b \sqrt{g} Y_o^{3/2}$

$W_b$  = Breach width - 40% of dam length across river at mid height =  $0.4(390) = 156'$

$Y_o$  = Total height from river bed to pool level at time of failure = 23'

$Q_{p1} = \frac{8}{27} (156) \sqrt{32.2} (23)^{3/2}$   
= 28,931 use 28,900 cfs

Note: Dam breach was assumed to include the spillway so that spillway discharge was not added to the dam breach flow.

BY SAL DATE 1/5/81

ROALD HAESTAD, INC.

SHEET NO 7 OF 24CKD BY DLS DATE 1/5/81

CONSULTING ENGINEERS

JOB NO. 049 033SUBJECT PIN SHOP POND DAM-FLOOD ROUTING AT TOP OF DAM

## SECTION NUMBER 1

## TOTAL SECTION

| H<br>(FT) | W<br>(FT) | A<br>(SQ-FT) | R<br>(FT) | S<br>(FT/FT) | V<br>(FT/SEC) | Q<br>(CFS) |
|-----------|-----------|--------------|-----------|--------------|---------------|------------|
| 1.0       | 35        | 31           | 0.88      | 0.0238       | 4.20          | 129        |
| 2.0       | 46        | 70           | 1.51      | 0.0238       | 6.04          | 422        |
| 3.0       | 55        | 118          | 2.13      | 0.0238       | 7.60          | 895        |
| 4.0       | 58        | 171          | 2.92      | 0.0238       | 9.37          | 1600       |
| 5.0       | 62        | 226          | 3.66      | 0.0238       | 10.89         | 2458       |
| 6.0       | 65        | 283          | 4.35      | 0.0238       | 12.23         | 3458       |
| 7.0       | 68        | 342          | 5.01      | 0.0238       | 13.43         | 4590       |
| 8.0       | 71        | 403          | 5.64      | 0.0238       | 14.53         | 5852       |
| 9.0       | 74        | 465          | 6.29      | 0.0238       | 15.62         | 7272       |
| 10.0      | 77        | 529          | 6.91      | 0.0238       | 16.64         | 8806       |
| 11.0      | 79        | 594          | 7.51      | 0.0238       | 17.59         | 10450      |
| 12.0      | 82        | 660          | 8.09      | 0.0238       | 18.47         | 12200      |
| 13.0      | 84        | 728          | 8.64      | 0.0238       | 19.31         | 14053      |
| 14.0      | 87        | 796          | 9.19      | 0.0238       | 20.12         | 16021      |
| 15.0      | 89        | 866          | 9.72      | 0.0238       | 20.89         | 18085      |
| 16.0      | 91        | 936          | 10.24     | 0.0238       | 21.62         | 20241      |
| 17.0      | 94        | 1008         | 10.73     | 0.0238       | 22.31         | 22489      |
| 18.0      | 96        | 1080         | 11.22     | 0.0238       | 22.98         | 24826      |
| 19.0      | 99        | 1154         | 11.64     | 0.0238       | 23.54         | 27176      |
| 20.0      | 102       | 1230         | 12.05     | 0.0238       | 24.09         | 29627      |
| 21.0      | 105       | 1307         | 12.45     | 0.0238       | 24.63         | 32180      |
| 22.0      | 108       | 1385         | 12.84     | 0.0238       | 25.15         | 34836      |
| 23.0      | 111       | 1466         | 13.23     | 0.0238       | 25.65         | 37594      |
| 24.0      | 114       | 1548         | 13.58     | 0.0238       | 26.09         | 40383      |

MANNING COEFFICIENT=N=0.0500

STORAGE AT TIME OF FAILURE=S= 82 AC. FT.

LENGTH OF REACH=L= 1300 FT

INFLOW INTO REACH=QP1= 28900 CFS

DEPTH OF FLOW=H1= 19.7 FT.

CROSS SECTIONAL AREA=A1= 1207 SQ.FT.

STORAGE IN REACH=V1= 28.0 AC. FT.

TRIAL REACH OUTFLOW=QP(TRIAL)= 19040 CFS

TRIAL DEPTH OF FLOW=H(TRIAL)= 15.4 FT.

TRIAL CROSS SECTIONAL AREA=A(TRIAL)= 897 SQ.FT.

TRIAL STORAGE IN REACH=V(TRIAL)= 18.7 AC. FT.

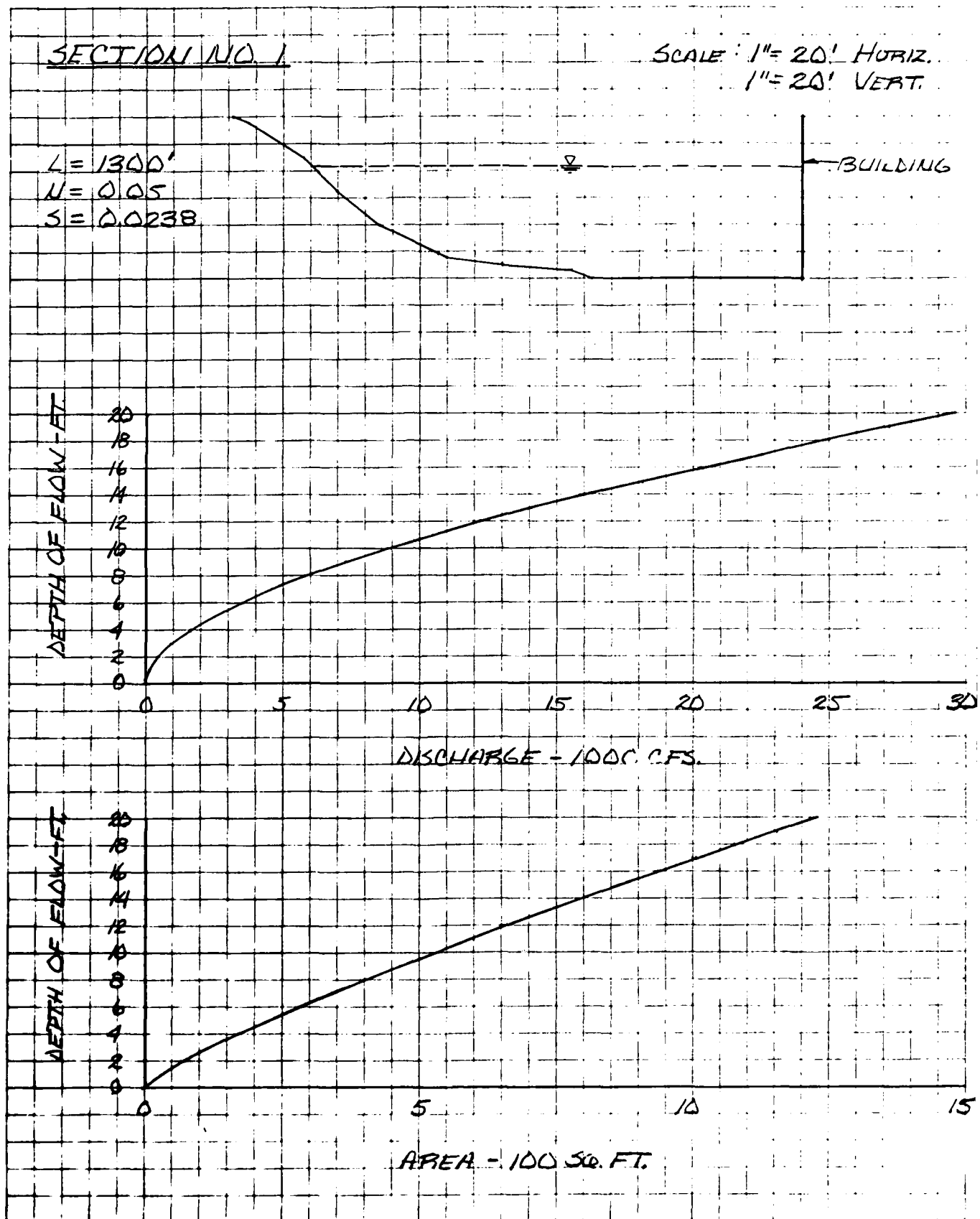
REACH OUTFLOW=QP2= 20671 CFS

DEPTH OF FLOW=H2= 16.2 FT.

REACH OUTFLOW=QP2= 21208 CFS

DEPTH OF FLOW=H2= 16.4 FT.

BY L.B.G. DATE 12-31-80 **ROALD HAESTAD, INC.** SHEET NO. 8 OF 24  
 CONSULTING ENGINEERS  
 CKD BY SAL DATE 1-5-81 37 Brookside Road - Waterbury, Conn. 06708 JOB NO. 49-CES  
 SUBJECT PIN SHOP POND DAM - FLOOD ROUTING



BY SAL DATE 1/5/81

ROALD HAESTAD, INC.

SHEET NO 9 OF 24CKD BY DLS DATE 1/5/81

CONSULTING ENGINEERS

JOB NO. 049 033SUBJECT PIN SHOP POND DAM-FLOOD ROUTING AT TOP OF DAMSECTION NUMBER 2FALLS AVENUE  
(STORAGE CAPACITY WITHIN REACH)

| <u>HEIGHT</u><br><u>(FEET)</u> | <u>SURFACE AREA</u><br><u>(ACRES)</u> | <u>STORAGE VOLUME</u><br><u>(ACRE-FeET)</u> |
|--------------------------------|---------------------------------------|---------------------------------------------|
| 1.0                            | 0.05                                  | 0.0                                         |
| 2.0                            | 0.10                                  | 0.1                                         |
| 3.0                            | 0.15                                  | 0.2                                         |
| 4.0                            | 0.20                                  | 0.4                                         |
| 5.0                            | 0.36                                  | 0.7                                         |
| 6.0                            | 0.52                                  | 1.1                                         |
| 7.0                            | 0.68                                  | 1.7                                         |
| 8.0                            | 0.84                                  | 2.5                                         |
| 9.0                            | 1.00                                  | 3.4                                         |
| 10.0                           | 1.16                                  | 4.5                                         |
| 11.0                           | 1.32                                  | 5.7                                         |
| 12.0                           | 1.48                                  | 7.1                                         |
| 13.0                           | 1.64                                  | 8.7                                         |
| 14.0                           | 1.80                                  | 10.4                                        |
| 15.0                           | 2.08                                  | 12.3                                        |
| 16.0                           | 2.36                                  | 14.6                                        |
| 17.0                           | 2.64                                  | 17.1                                        |
| 18.0                           | 2.92                                  | 19.8                                        |
| 19.0                           | 3.20                                  | 22.9                                        |
| 20.0                           | 3.48                                  | 26.2                                        |
| 21.0                           | 3.76                                  | 29.9                                        |
| 22.0                           | 4.04                                  | 33.8                                        |
| 23.0                           | 4.32                                  | 37.9                                        |
| 24.0                           | 4.60                                  | 42.4                                        |
| 25.0                           | 4.90                                  | 47.1                                        |

STORAGE CAPACITY CALCULATED FROM SURFACE AREAS AT KNOWN ELEVATIONS

BY SAL DATE 1/5/81 ROALD HAESTAD, INC. SHEET NO 10 OF 24  
 CKD BY DLS DATE 1/5/81 CONSULTING ENGINEERS JOB NO. 049 033  
 SUBJECT PIN SHOP POND DAM-FLOOD ROUTING AT TOP OF DAM

SECTION NUMBER 2

FALLS AVENUE

| HEIGHT ABOVE<br>INVERT<br>(FEET) | D I S C H A R G E<br>CONDUIT<br>(CFS) | C A P A C I T Y<br>SPILLWAY<br>(CFS) | TOTAL<br>(CFS) |
|----------------------------------|---------------------------------------|--------------------------------------|----------------|
| 1.0                              | 160                                   | 0                                    | 160            |
| 2.0                              | 320                                   | 0                                    | 320            |
| 3.0                              | 540                                   | 0                                    | 540            |
| 4.0                              | 760                                   | 0                                    | 760            |
| 5.0                              | 1120                                  | 0                                    | 1120           |
| 6.0                              | 1480                                  | 0                                    | 1480           |
| 7.0                              | 1900                                  | 0                                    | 1900           |
| 8.0                              | 2320                                  | 0                                    | 2320           |
| 9.0                              | 2720                                  | 0                                    | 2720           |
| 10.0                             | 3120                                  | 0                                    | 3120           |
| 11.0                             | 3680                                  | 0                                    | 3680           |
| 12.0                             | 4240                                  | 0                                    | 4240           |
| 13.0                             | 4720                                  | 0                                    | 4720           |
| 14.0                             | 5200                                  | 0                                    | 5200           |
| 15.0                             | 5600                                  | 700                                  | 6300           |
| 16.0                             | 6000                                  | 1980                                 | 7980           |
| 17.0                             | 6380                                  | 3637                                 | 10017          |
| 18.0                             | 6760                                  | 5600                                 | 12360          |
| 19.0                             | 7160                                  | 8001                                 | 15161          |
| 20.0                             | 7560                                  | 10783                                | 18343          |
| 21.0                             | 7780                                  | 14049                                | 21829          |
| 22.0                             | 8000                                  | 17734                                | 25734          |
| 23.0                             | 8360                                  | 21916                                | 30276          |
| 24.0                             | 8720                                  | 26532                                | 35252          |
| 25.0                             | 8960                                  | 31515                                | 40475          |

STORAGE AT TIME OF FAILURE=S= 82 AC. FT.  
 LENGTH OF REACH=L= 1000 FT

INFLOW INTO REACH=QP1= 21208 CFS  
 HEIGHT ABOVE CONDUIT INVERT=H1= 20.8 FT.  
 STORAGE IN REACH=V1= 24.5 AC. FT.

TRIAL REACH OUTFLOW=QP(TRIAL)= 14874 CFS  
 TRIAL HEIGHT ABOVE CONDUIT INVERT=H(TRIAL)= 18.9 FT.  
 TRIAL STORAGE IN REACH=V(TRIAL)= 17.9 AC. FT.

REACH OUTFLOW=QP2= 15731 CFS  
 HEIGHT ABOVE CONDUIT INVERT=H2= 19.2 FT.

BY LBG DATE 1-5-81

**ROALD HAESTAD, INC.**  
CONSULTING ENGINEERS

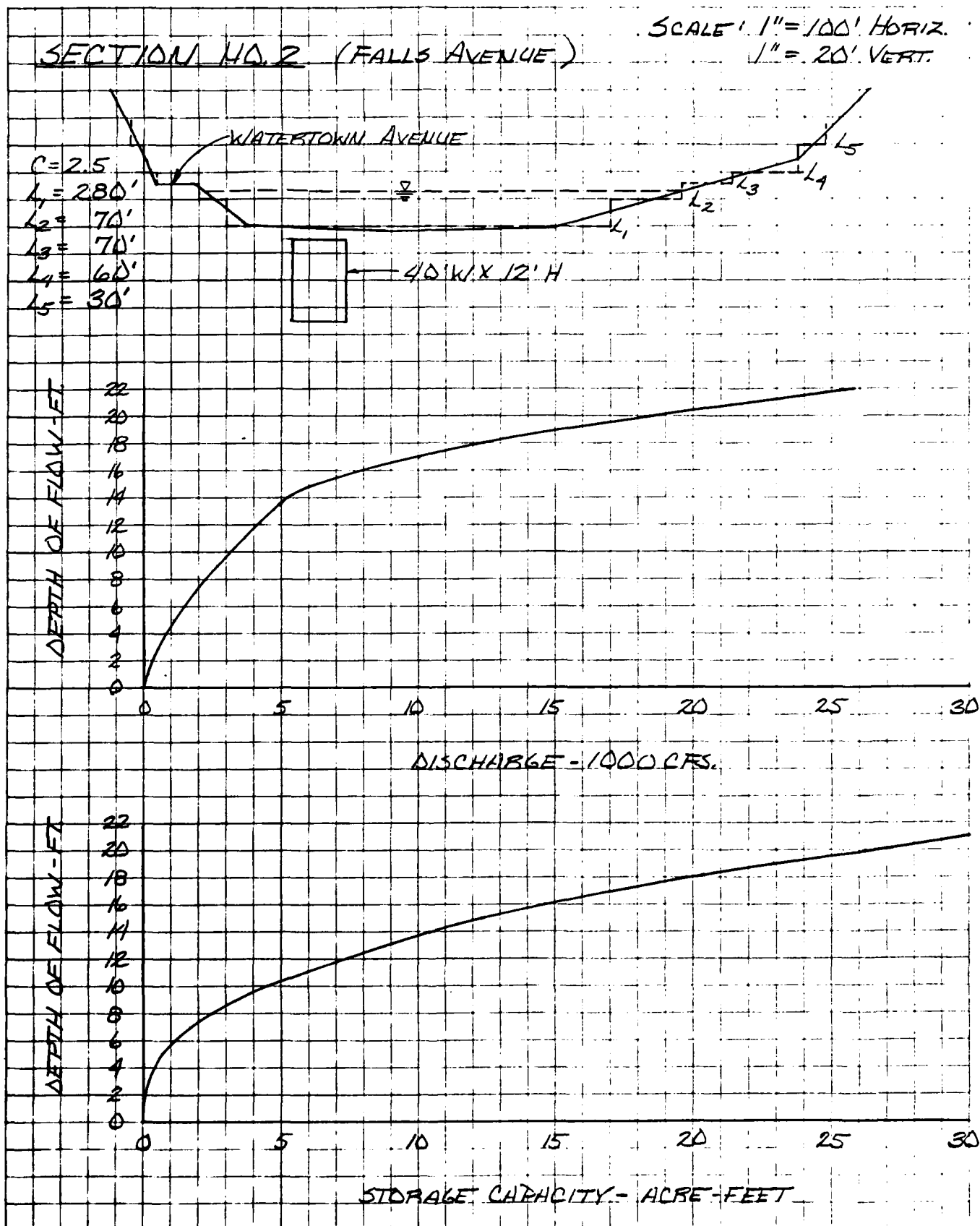
SHEET NO. 11 OF 24

CKD BY SAL DATE 1-5-81

37 Brookside Road - Waterbury, Conn. 06708

JOB NO. 49-033

SUBJECT PIN SHOT POND DAM - FLOOD ROUTING



BY SAL DATE 1/5/81

ROALD HAFSTAD, INC.

SHEET NO 12 OF 24CKD BY DLS DATE 1/5/81

CONSULTING ENGINEERS

JOB NO. 049 033SUBJECT PIN SHOP POND DAM-FLOOD ROUTING AT TOP OF DAMSECTION NUMBER 3A

## MAIN CHANNEL

| <u>H</u><br><u>(FT)</u> | <u>W</u><br><u>(FT)</u> | <u>A</u><br><u>(SQ-FT)</u> | <u>R</u><br><u>(FT)</u> | <u>S</u><br><u>(FT/FT)</u> | <u>V</u><br><u>(FT/SEC)</u> | <u>Q</u><br><u>(CFS)</u> |
|-------------------------|-------------------------|----------------------------|-------------------------|----------------------------|-----------------------------|--------------------------|
| 1.0                     | 40                      | 33                         | 0.83                    | 0.0080                     | 2.94                        | 97                       |
| 2.0                     | 50                      | 78                         | 1.55                    | 0.0080                     | 4.45                        | 346                      |
| 3.0                     | 60                      | 132                        | 2.19                    | 0.0080                     | 5.61                        | 743                      |
| 4.0                     | 71                      | 197                        | 2.79                    | 0.0080                     | 6.59                        | 1300                     |
| 5.0                     | 81                      | 272                        | 3.36                    | 0.0080                     | 7.46                        | 2030                     |
| 6.0                     | 81                      | 352                        | 4.35                    | 0.0080                     | 8.85                        | 3119                     |
| 7.0                     | 81                      | 432                        | 5.34                    | 0.0080                     | 10.15                       | 4387                     |
| 8.0                     | 81                      | 512                        | 6.33                    | 0.0080                     | 11.37                       | 5822                     |
| 9.0                     | 81                      | 592                        | 7.31                    | 0.0080                     | 12.52                       | 7415                     |
| 10.0                    | 81                      | 672                        | 8.30                    | 0.0080                     | 13.62                       | 9159                     |
| 11.0                    | 81                      | 752                        | 9.29                    | 0.0080                     | 14.68                       | 11047                    |
| 12.0                    | 81                      | 832                        | 10.28                   | 0.0080                     | 15.71                       | 13074                    |
| 13.0                    | 81                      | 912                        | 11.27                   | 0.0080                     | 16.70                       | 15235                    |
| 14.0                    | 81                      | 992                        | 12.25                   | 0.0080                     | 17.66                       | 17526                    |
| 15.0                    | 81                      | 1072                       | 13.24                   | 0.0080                     | 18.60                       | 19944                    |

MANNING COEFFICIENT=N=0.0400

BY SAL DATE 1/5/81

ROALD HALESTAD, INC.

SHEET NO 13 OF 24CKD BY DLS DATE 1/5/81

CONSULTING ENGINEERS

JOB NO. 049 033SUBJECT PIN SHOP POND DAM-FLOOD ROUTING AT TOP OF DAMSECTION NUMBER 3B

## LEFT OVERBANK

| <u>H</u><br><u>(FT)</u> | <u>W</u><br><u>(FT)</u> | <u>A</u><br><u>(SQ-FT)</u> | <u>R</u><br><u>(FT)</u> | <u>S</u><br><u>(FT/FT)</u> | <u>V</u><br><u>(FT/SEC)</u> | <u>Q</u><br><u>(CFS)</u> |
|-------------------------|-------------------------|----------------------------|-------------------------|----------------------------|-----------------------------|--------------------------|
| 6.0                     | 300                     | 150                        | 0.50                    | 0.0080                     | 0.84                        | 126                      |
| 7.0                     | 301                     | 450                        | 1.50                    | 0.0080                     | 1.74                        | 782                      |
| 8.0                     | 302                     | 750                        | 2.48                    | 0.0080                     | 2.44                        | 1828                     |
| 9.0                     | 303                     | 1050                       | 3.47                    | 0.0080                     | 3.04                        | 3196                     |
| 10.0                    | 304                     | 1350                       | 4.44                    | 0.0080                     | 3.59                        | 4848                     |
| 11.0                    | 305                     | 1650                       | 5.41                    | 0.0080                     | 4.10                        | 6758                     |
| 12.0                    | 306                     | 1950                       | 6.37                    | 0.0080                     | 4.57                        | 8909                     |
| 13.0                    | 307                     | 2250                       | 7.33                    | 0.0080                     | 5.01                        | 11284                    |
| 14.0                    | 308                     | 2550                       | 8.28                    | 0.0080                     | 5.44                        | 13871                    |
| 15.0                    | 309                     | 2850                       | 9.22                    | 0.0080                     | 5.85                        | 16660                    |

MANNING COEFFICIENT=N=0.1000

BY SAL DATE 1/5/81

ROALD HAESTAD, INC.

SHEET NO 14 OF 24CKD BY DLG DATE 1/5/81

CONSULTING ENGINEERS

JOB NO. 049 033SUBJECT PIN SHOP POND DAM-FLOOD ROUTING AT TOP OF DAMSECTION NUMBER 3C

## RIGHT OVERBANK

| <u>H</u><br><u>(FT)</u> | <u>W</u><br><u>(FT)</u> | <u>A</u><br><u>(SQ-FT)</u> | <u>R</u><br><u>(FT)</u> | <u>S</u><br><u>(FT/FT)</u> | <u>V</u><br><u>(FT/SEC)</u> | <u>Q</u><br><u>(CFS)</u> |
|-------------------------|-------------------------|----------------------------|-------------------------|----------------------------|-----------------------------|--------------------------|
| 6.0                     | 8                       | 4                          | 0.50                    | 0.0080                     | 1.04                        | 4                        |
| 7.0                     | 15                      | 15                         | 0.99                    | 0.0080                     | 1.65                        | 25                       |
| 8.0                     | 23                      | 34                         | 1.49                    | 0.0080                     | 2.16                        | 73                       |
| 9.0                     | 30                      | 60                         | 1.98                    | 0.0080                     | 2.62                        | 157                      |
| 10.0                    | 38                      | 94                         | 2.48                    | 0.0080                     | 3.04                        | 285                      |
| 11.0                    | 45                      | 135                        | 2.97                    | 0.0080                     | 3.44                        | 464                      |
| 12.0                    | 53                      | 184                        | 3.47                    | 0.0080                     | 3.81                        | 700                      |
| 13.0                    | 61                      | 240                        | 3.97                    | 0.0080                     | 4.16                        | 999                      |
| 14.0                    | 68                      | 304                        | 4.46                    | 0.0080                     | 4.50                        | 1368                     |
| 15.0                    | 76                      | 375                        | 4.96                    | 0.0080                     | 4.83                        | 1811                     |

MANNING COEFFICIENT=N=0.0800

BY SAL DATE 1/5/81

ROALD HAESTAD, INC.

SHEET NO 15 OF 24CKD BY DLS DATE 1/5/81

CONSULTING ENGINEERS

JOB NO. 049 033SUBJECT PIN SHOP POND DAM-FLOOD ROUTING AT TOP OF DAM

## SECTION NUMBER 3

## TOTAL SECTION

| A R E A (SQ.FT.) |      |      |     |       | D I S C H A R G E (CFS) |       |      |       |
|------------------|------|------|-----|-------|-------------------------|-------|------|-------|
| H                | A    | B    | C   | TOTAL | A                       | B     | C    | TOTAL |
| 1.0              | 33   | 0    | 0   | 33    | 97                      | 0     | 0    | 97    |
| 2.0              | 78   | 0    | 0   | 78    | 346                     | 0     | 0    | 346   |
| 3.0              | 132  | 0    | 0   | 132   | 743                     | 0     | 0    | 743   |
| 4.0              | 197  | 0    | 0   | 197   | 1300                    | 0     | 0    | 1300  |
| 5.0              | 272  | 0    | 0   | 272   | 2030                    | 0     | 0    | 2030  |
| 6.0              | 352  | 150  | 4   | 506   | 3119                    | 126   | 4    | 3249  |
| 7.0              | 432  | 450  | 15  | 897   | 4387                    | 782   | 25   | 5194  |
| 8.0              | 512  | 750  | 34  | 1296  | 5822                    | 1828  | 73   | 7723  |
| 9.0              | 592  | 1050 | 60  | 1702  | 7415                    | 3196  | 157  | 10769 |
| 10.0             | 672  | 1350 | 94  | 2116  | 9159                    | 4848  | 285  | 14292 |
| 11.0             | 752  | 1650 | 135 | 2537  | 11047                   | 6758  | 464  | 18269 |
| 12.0             | 832  | 1950 | 184 | 2966  | 13074                   | 8909  | 700  | 22682 |
| 13.0             | 912  | 2250 | 240 | 3402  | 15235                   | 11284 | 999  | 27517 |
| 14.0             | 992  | 2550 | 304 | 3846  | 17526                   | 13871 | 1368 | 32765 |
| 15.0             | 1072 | 2850 | 375 | 4297  | 19944                   | 16660 | 1811 | 38415 |

STORAGE AT TIME OF FAILURE=S= 82 AC. FT.  
 LENGTH OF REACH=L= 1000 FT

INFLOW INTO REACH=QP1= 15731 CFS  
 DEPTH OF FLOW=H1= 10.4 FT.  
 CROSS SECTIONAL AREA=A1= 2268 SQ.FT.  
 STORAGE IN REACH=V1= 40.5 AC. FT.

TRIAL REACH OUTFLOW=QP(TRIAL)= 7953 CFS  
 TRIAL DEPTH OF FLOW=H(TRIAL)= 8.1 FT.  
 TRIAL CROSS SECTIONAL AREA=A(TRIAL)= 1327 SQ.FT.  
 TRIAL STORAGE IN REACH=V(TRIAL)= 18.9 AC. FT.

REACH OUTFLOW=QP2= 10027 CFS  
 DEPTH OF FLOW=H2= 8.8 FT.

REACH OUTFLOW=QP2= 10455 CFS  
 DEPTH OF FLOW=H2= 8.9 FT.

BY LBG.....DATE 1-5-81

**ROALD HAESTAD, INC.**  
CONSULTING ENGINEERS

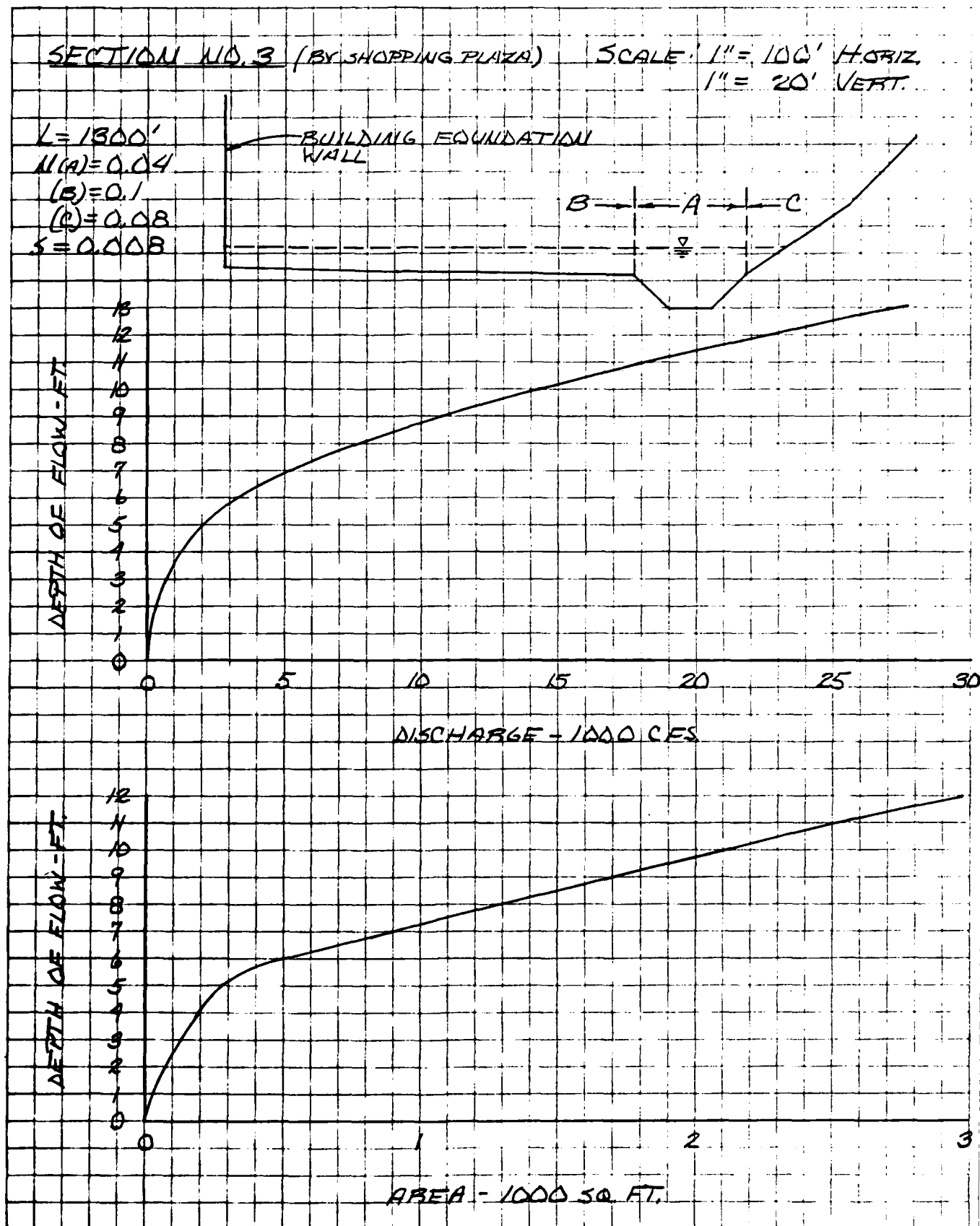
SHEET NO. 16 OF 24

CKD BY SAL DATE 1-5-81

37 Brookside Road - Waterbury, Conn. 06708

JOB NO. 49-033

SUBJECT PIN SHOP POND DAM - FLOOD ROUTING



BY SAL DATE 1/5/81

ROALD HAESTAD, INC.

SHEET NO. 7 OF 24CKD BY DLS DATE 1/5/81

CONSULTING ENGINEERS

JOB NO. 049 033SUBJECT PIN SHOP POND DAM-FLOOD ROUTING AT TOP OF DAMSECTION NUMBER 4A

## MAIN CHANNEL

| H<br>(FT) | W<br>(FT) | A<br>(SQ-FT) | R<br>(FT) | S<br>(FT/FT) | V<br>(FT/SEC) | Q<br>(CFS) |
|-----------|-----------|--------------|-----------|--------------|---------------|------------|
| 1.0       | 34        | 30           | 0.88      | 0.0080       | 3.06          | 93         |
| 2.0       | 37        | 65           | 1.78      | 0.0080       | 4.89          | 320        |
| 3.0       | 39        | 102          | 2.63      | 0.0080       | 6.33          | 649        |
| 4.0       | 41        | 141          | 3.44      | 0.0080       | 7.57          | 1070       |
| 5.0       | 43        | 182          | 4.21      | 0.0080       | 8.66          | 1579       |
| 6.0       | 46        | 225          | 4.94      | 0.0080       | 9.64          | 2173       |
| 7.0       | 48        | 270          | 5.65      | 0.0080       | 10.54         | 2851       |
| 8.0       | 50        | 317          | 6.34      | 0.0080       | 11.38         | 3612       |
| 9.0       | 52        | 366          | 7.00      | 0.0080       | 12.16         | 4457       |
| 10.0      | 55        | 417          | 7.65      | 0.0080       | 12.90         | 5386       |
| 11.0      | 57        | 471          | 8.22      | 0.0080       | 13.54         | 6371       |
| 12.0      | 60        | 526          | 8.78      | 0.0080       | 14.14         | 7446       |
| 13.0      | 63        | 585          | 9.34      | 0.0080       | 14.73         | 8614       |
| 14.0      | 65        | 645          | 9.88      | 0.0080       | 15.30         | 9875       |
| 15.0      | 68        | 709          | 10.42     | 0.0080       | 15.85         | 11234      |

MANNING COEFFICIENT=N=0.0400

BY SAL DATE 1/5/81

ROALD HAFSTAD, INC.

SHEET NO 18 OF 24CKD BY DLS DATE 1/5/81

CONSULTING ENGINEERS

JOB NO. 049 033SUBJECT PIN SHOP POND DAM-FLOOD ROUTING AT TOP OF DAMSECTION NUMBER 4B

## RIGHT OVERBANK

| H<br>(FT) | W<br>(FT) | A<br>(SQ-FT) | R<br>(FT) | S<br>(FT/FT) | V<br>(FT/SEC) | Q<br>(CFS) |
|-----------|-----------|--------------|-----------|--------------|---------------|------------|
| 2.0       | 155       | 145          | 0.93      | 0.0080       | 1.27          | 184        |
| 3.0       | 161       | 303          | 1.88      | 0.0080       | 2.03          | 613        |
| 4.0       | 167       | 466          | 2.80      | 0.0080       | 2.64          | 1230       |
| 5.0       | 172       | 635          | 3.69      | 0.0080       | 3.17          | 2015       |
| 6.0       | 178       | 810          | 4.55      | 0.0080       | 3.65          | 2957       |
| 7.0       | 184       | 990          | 5.39      | 0.0080       | 4.09          | 4047       |
| 8.0       | 189       | 1176         | 6.21      | 0.0080       | 4.49          | 5283       |
| 9.0       | 195       | 1368         | 7.01      | 0.0080       | 4.87          | 6660       |
| 10.0      | 201       | 1565         | 7.79      | 0.0080       | 5.23          | 8177       |
| 11.0      | 206       | 1768         | 8.59      | 0.0080       | 5.57          | 9850       |
| 12.0      | 211       | 1975         | 9.36      | 0.0080       | 5.90          | 11660      |
| 13.0      | 216       | 2188         | 10.12     | 0.0080       | 6.22          | 13606      |
| 14.0      | 221       | 2405         | 10.87     | 0.0080       | 6.52          | 15689      |
| 15.0      | 226       | 2628         | 11.61     | 0.0080       | 6.82          | 17908      |

MANNING COEFFICIENT=N=0.1000

BY SAL DATE 1/5/81

ROALD HAESTAD, INC.

SHEET NO 19 OF 24CKD BY DLS DATE 1/5/81

CONSULTING ENGINEERS

JOB NO. 049 033SUBJECT PIN SHOP POND DAM-FLOOD ROUTING AT TOP OF DAMSECTION NUMBER 4

## TOTAL SECTION

| A R E A (SQ.FT.) |     |      |       | D I S C H A R G E (CFS) |       |       |
|------------------|-----|------|-------|-------------------------|-------|-------|
| H                | A   | B    | TOTAL | A                       | B     | TOTAL |
| 1.0              | 30  | 0    | 30    | 93                      | 0     | 93    |
| 2.0              | 65  | 145  | 210   | 320                     | 184   | 503   |
| 3.0              | 102 | 303  | 405   | 649                     | 613   | 1262  |
| 4.0              | 141 | 466  | 608   | 1070                    | 1230  | 2301  |
| 5.0              | 182 | 635  | 818   | 1579                    | 2015  | 3594  |
| 6.0              | 225 | 810  | 1035  | 2173                    | 2957  | 5130  |
| 7.0              | 270 | 990  | 1261  | 2851                    | 4047  | 6898  |
| 8.0              | 317 | 1176 | 1494  | 3612                    | 5283  | 8895  |
| 9.0              | 366 | 1368 | 1734  | 4457                    | 6660  | 11117 |
| 10.0             | 417 | 1565 | 1982  | 5386                    | 8177  | 13563 |
| 11.0             | 471 | 1768 | 2238  | 6371                    | 9850  | 16221 |
| 12.0             | 526 | 1975 | 2501  | 7446                    | 11660 | 19106 |
| 13.0             | 585 | 2188 | 2772  | 8614                    | 13606 | 22220 |
| 14.0             | 645 | 2405 | 3050  | 9875                    | 15689 | 25565 |
| 15.0             | 709 | 2628 | 3336  | 11234                   | 17908 | 29142 |

STORAGE AT TIME OF FAILURE=S= 82 AC. FT.  
 LENGTH OF REACH=L= 2000 FT

INFLOW INTO REACH=QP1= 10455 CFS  
 DEPTH OF FLOW=H1= 8.7 FT.  
 CROSS SECTIONAL AREA=A1= 1663 SQ.FT.  
 STORAGE IN REACH=V1= 41.5 AC. FT.

TRIAL REACH OUTFLOW=QP(TRIAL)= 5162 CFS  
 TRIAL DEPTH OF FLOW=H(TRIAL)= 6.0 FT.  
 TRIAL CROSS SECTIONAL AREA=A(TRIAL)= 1040 SQ.FT.  
 TRIAL STORAGE IN REACH=V(TRIAL)= 12.9 AC. FT.

REACH OUTFLOW=QP2= 6986 CFS  
 DEPTH OF FLOW=H2= 7.0 FT.

REACH OUTFLOW=QP2= 7220 CFS  
 DEPTH OF FLOW=H2= 7.2 FT.

BY L.B.G. DATE 1-5-81

**ROALD HAESTAD, INC.**  
CONSULTING ENGINEERS

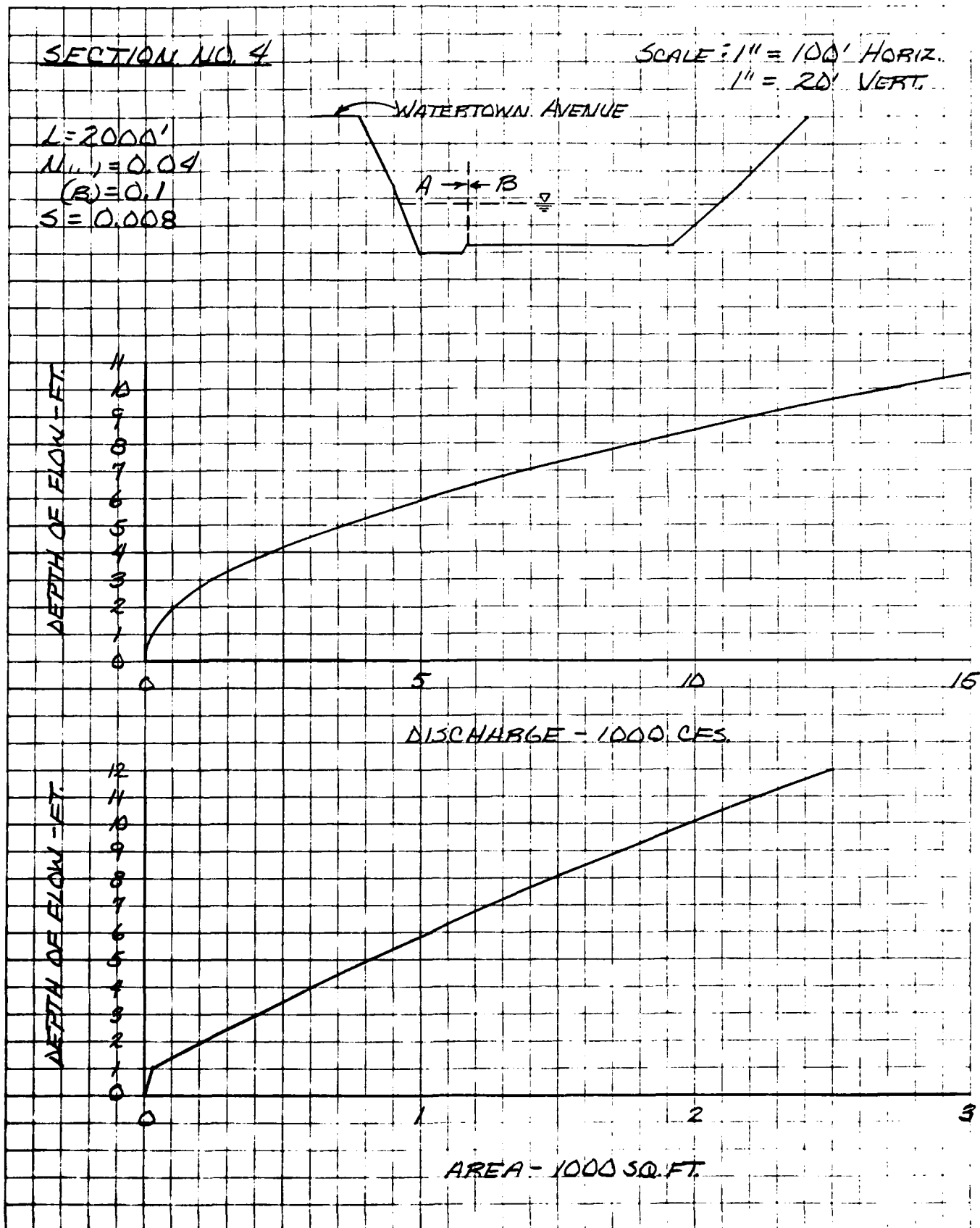
SHEET NO. 20 OF 24

CKD BY SRL DATE 1-5-81

37 Brookside Road - Waterbury, Conn. 06708

JOB NO. 49-033

SUBJECT PIN SHOP POND DAM - FLOOD ROUTING



BY SAL DATE 1/5/81

ROALD HAESTAD, INC.

SHEET NO 21 OF 24CKD BY DLS DATE 1/5/81

CONSULTING ENGINEERS

JOB NO. 049 033SUBJECT PIN SHOP POND DAM-FLOOD ROUTING AT TOP OF DAMSECTION NUMBER 5

## TOTAL SECTION

| H<br>(FT) | W<br>(FT) | A<br>(SQ-FT) | R<br>(FT) | S<br>(FT/FT) | V<br>(FT/SEC) | Q<br>(CFS) |
|-----------|-----------|--------------|-----------|--------------|---------------|------------|
| 1.0       | 42        | 36           | 0.85      | 0.0067       | 2.18          | 78         |
| 2.0       | 48        | 80           | 1.69      | 0.0067       | 3.45          | 277        |
| 3.0       | 53        | 130          | 2.45      | 0.0067       | 4.43          | 573        |
| 4.0       | 57        | 183          | 3.23      | 0.0067       | 5.31          | 972        |
| 5.0       | 60        | 239          | 3.99      | 0.0067       | 6.12          | 1463       |
| 6.0       | 63        | 297          | 4.72      | 0.0067       | 6.85          | 2034       |
| 7.0       | 66        | 357          | 5.42      | 0.0067       | 7.51          | 2682       |
| 8.0       | 69        | 420          | 6.08      | 0.0067       | 8.10          | 3402       |
| 9.0       | 73        | 486          | 6.64      | 0.0067       | 8.59          | 4171       |
| 10.0      | 77        | 555          | 7.18      | 0.0067       | 9.06          | 5024       |
| 11.0      | 81        | 627          | 7.72      | 0.0067       | 9.50          | 5961       |
| 12.0      | 85        | 704          | 8.24      | 0.0067       | 9.93          | 6985       |
| 13.0      | 89        | 783          | 8.84      | 0.0067       | 10.40         | 8138       |
| 14.0      | 92        | 863          | 9.41      | 0.0067       | 10.85         | 9365       |

MANNING COEFFICIENT=N=0.0500

STORAGE AT TIME OF FAILURE=S= 82 AC. FT.  
LENGTH OF REACH=L= 3000 FTINFLOW INTO REACH=QP1= 7220 CFS  
DEPTH OF FLOW=H1= 12.2 FT.  
CROSS SECTIONAL AREA=A1= 720 SQ. FT.  
STORAGE IN REACH=V1= 21.7 AC. FT.TRIAL REACH OUTFLOW=QP(TRIAL)= 5312 CFS  
TRIAL DEPTH OF FLOW=H(TRIAL)= 10.3 FT.  
TRIAL CROSS SECTIONAL AREA=A(TRIAL)= 577 SQ. FT.  
TRIAL STORAGE IN REACH=V(TRIAL)= 11.9 AC. FT.REACH OUTFLOW=QP2= 5744 CFS  
DEPTH OF FLOW=H2= 10.8 FT.

BY L.B.G. DATE 12-31-80

**ROALD HAESTAD, INC.**  
CONSULTING ENGINEERS

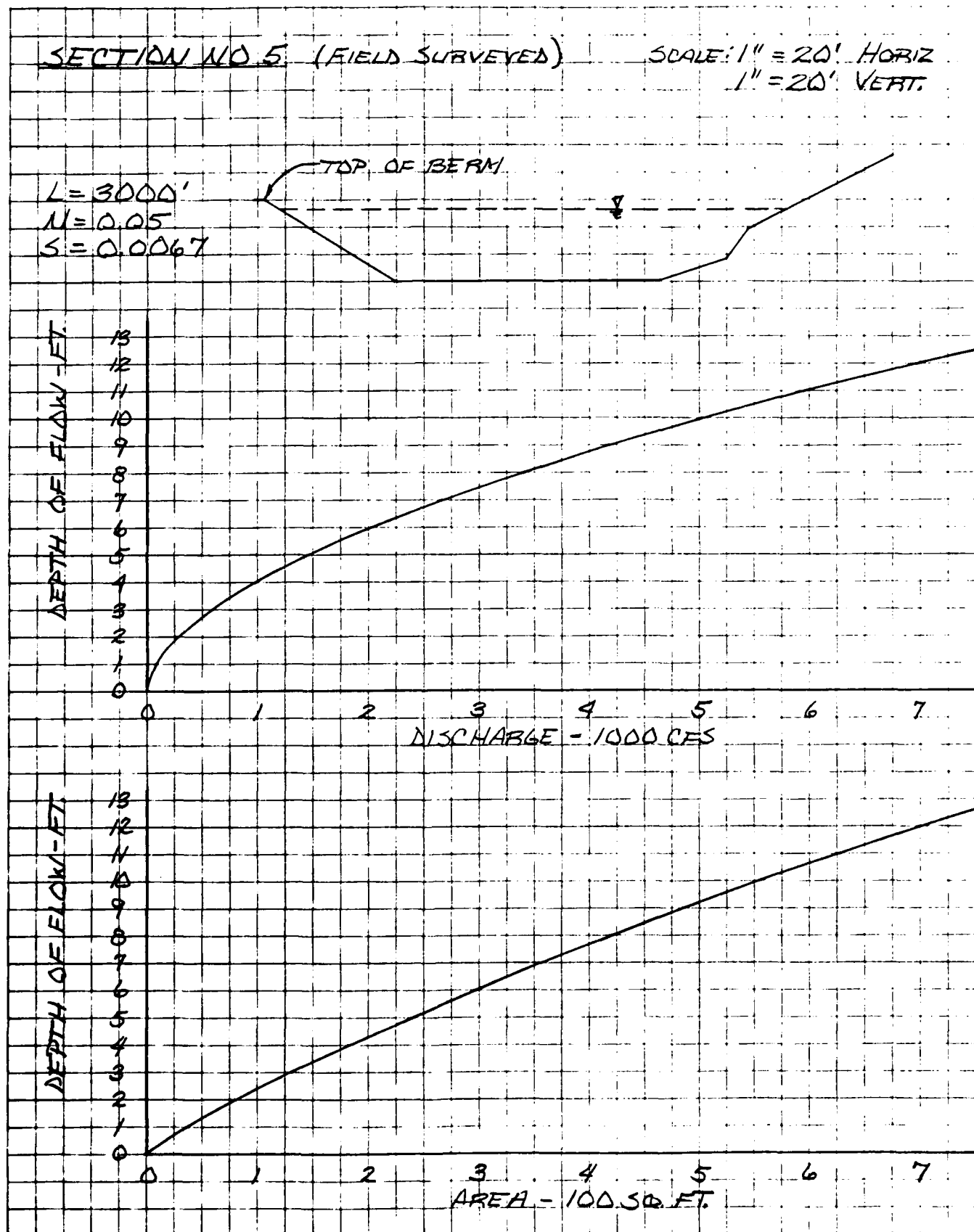
SHEET NO. 22 OF 24

CKD BY SAL DATE 1-5-81

37 Brookside Road - Waterbury, Conn. 06708

JOB NO. 49-033

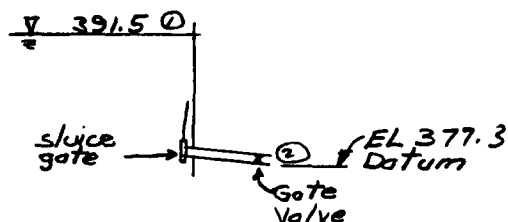
SUBJECT PIN SHAP TOND DAM - FLOOD ROUTING



BY SAL DATE 12-30-80 **ROALD HAESTAD, INC.** SHEET NO. 23 OF 24  
CONSULTING ENGINEERS  
CKD BY DLS DATE 1/5/81 37 Brookside Road - Waterbury, Conn. 06708 JOB NO. 49-033  
SUBJECT PIN SHOP POND DAM - Blowoff capacity

DATA: 1) Top of dam El 391.5  
2) Pipe invert El 377.3  
3) 16" Pipe - 10 feet in length

Head Losses: 1) Friction - neglected  
2) Sluice Gate  $= K \frac{V^2}{2g}$  ( $K=0.5$ )  
3) Gate Valve  $\frac{3}{4}$  open  $= K \frac{V^2}{2g}$  ( $K=0.5$ )



$$P_1/\gamma + z_1 + V_1^2/2g = P_2/\gamma + z_2 + V_2^2/2g + H_{L1-2}$$

$$0 + 14.2 + 0 = 0 + 0 + V_2^2/2g + [0.5 + 0.5] \frac{V_2^2}{2g}$$

$$14.2 = [1 + 0.5 + 0.5] \frac{V_2^2}{2g}$$

$$14.2 = 2 \frac{V_2^2}{2g}$$

$$\therefore V_2 = 21.4 \text{ ft/sec}$$

$$Q_{\text{TOP OF DAM}} = V_2 A = 21.4 \text{ ft/sec} \left( \pi \frac{(4\frac{1}{2})^2}{4} \right)$$

$$= 29.9 \text{ use } 30 \text{ cfs.}$$

BY L.B.G......DATE 11-6-80 **ROALD HAESTAD, INC.** SHEET NO. 24 OF 24  
 CKD BY DLS DATE 12/30/80 CONSULTING ENGINEERS  
 37 Brookside Road - Waterbury, Conn. 06708 JOB NO. 49-033  
 SUBJECT P.N. SHOP TONP - SURFACE AREAS

PLANIMETER NO. 60272

PLANIMETER READINGS :  
 (Scale : 1" = 2000')

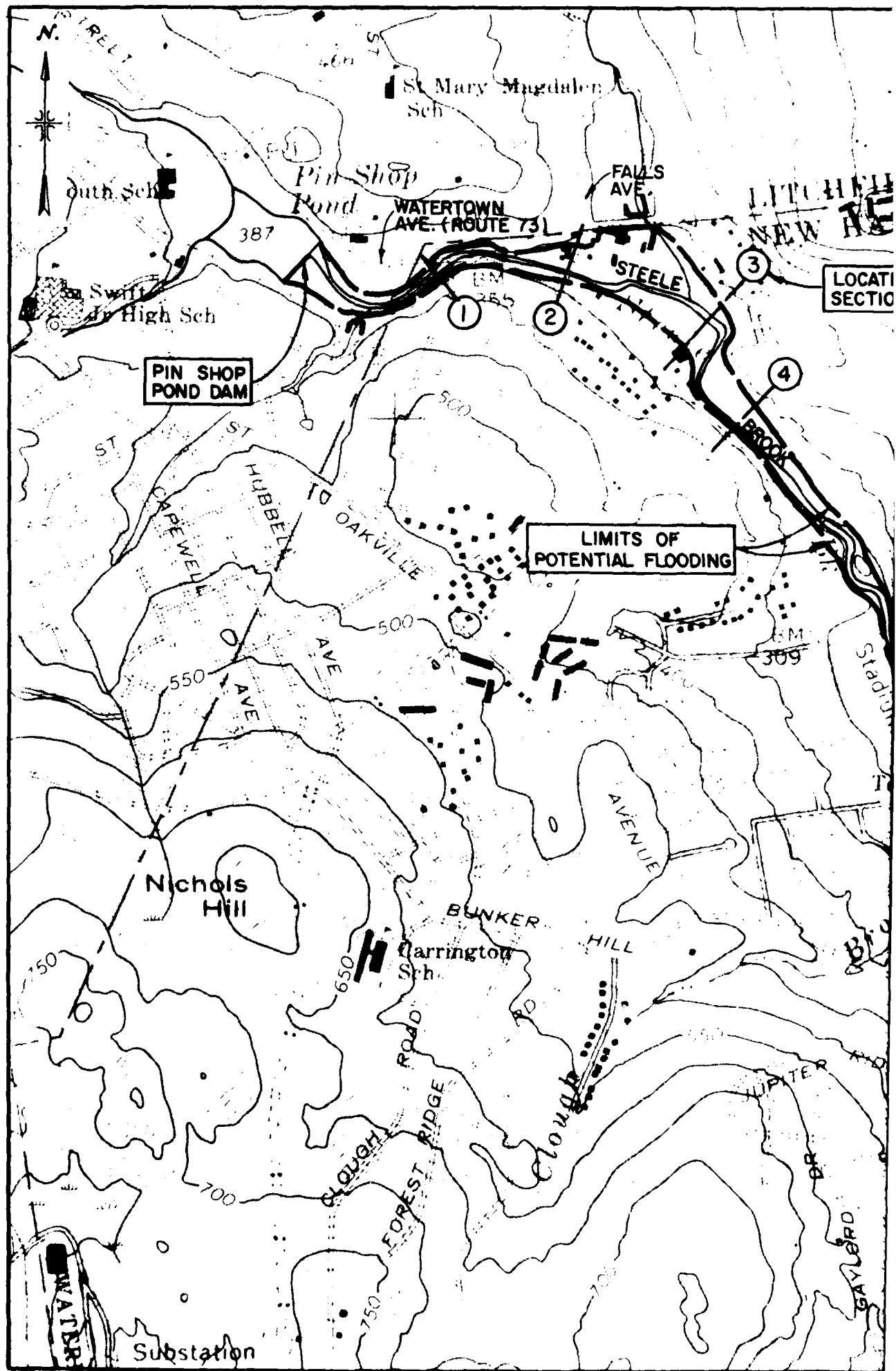
|                      |       |               |     |           |
|----------------------|-------|---------------|-----|-----------|
| <u>WATER SURFACE</u> | THIRD | 05.27 SQ. IN. | .07 | 6.4 ACRES |
| 386.8                | FIRST | 05.12 SQ. IN. | .07 |           |
|                      | START | 05.05 SQ. IN. |     |           |

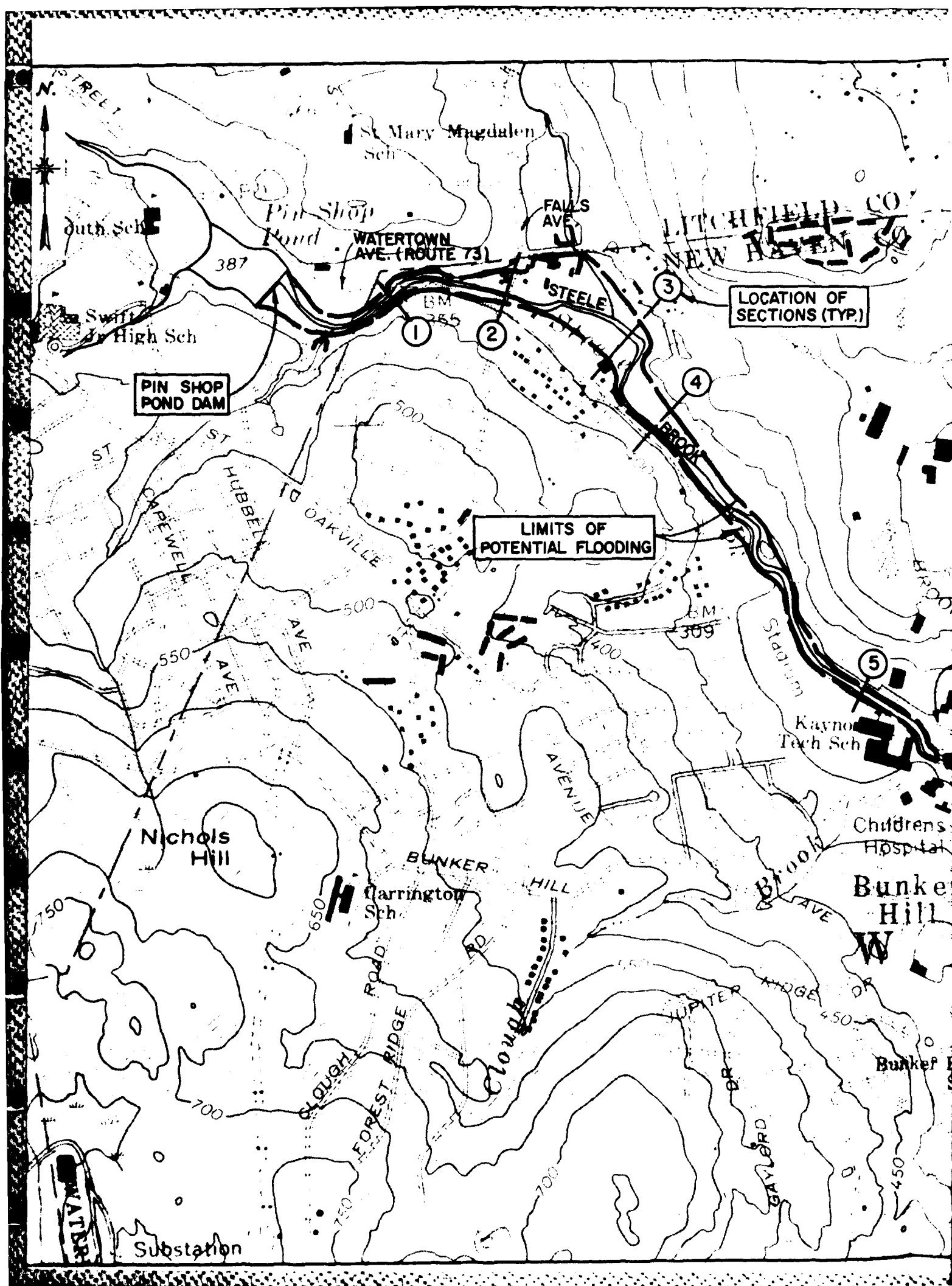
|                    |       |               |     |            |
|--------------------|-------|---------------|-----|------------|
| <u>CONTOUR 390</u> | THIRD | 06.56 SQ. IN. | .13 | 11.9 ACRES |
|                    | FIRST | 06.29 SQ. IN. | .12 |            |
|                    | START | 06.17 SQ. IN. |     |            |

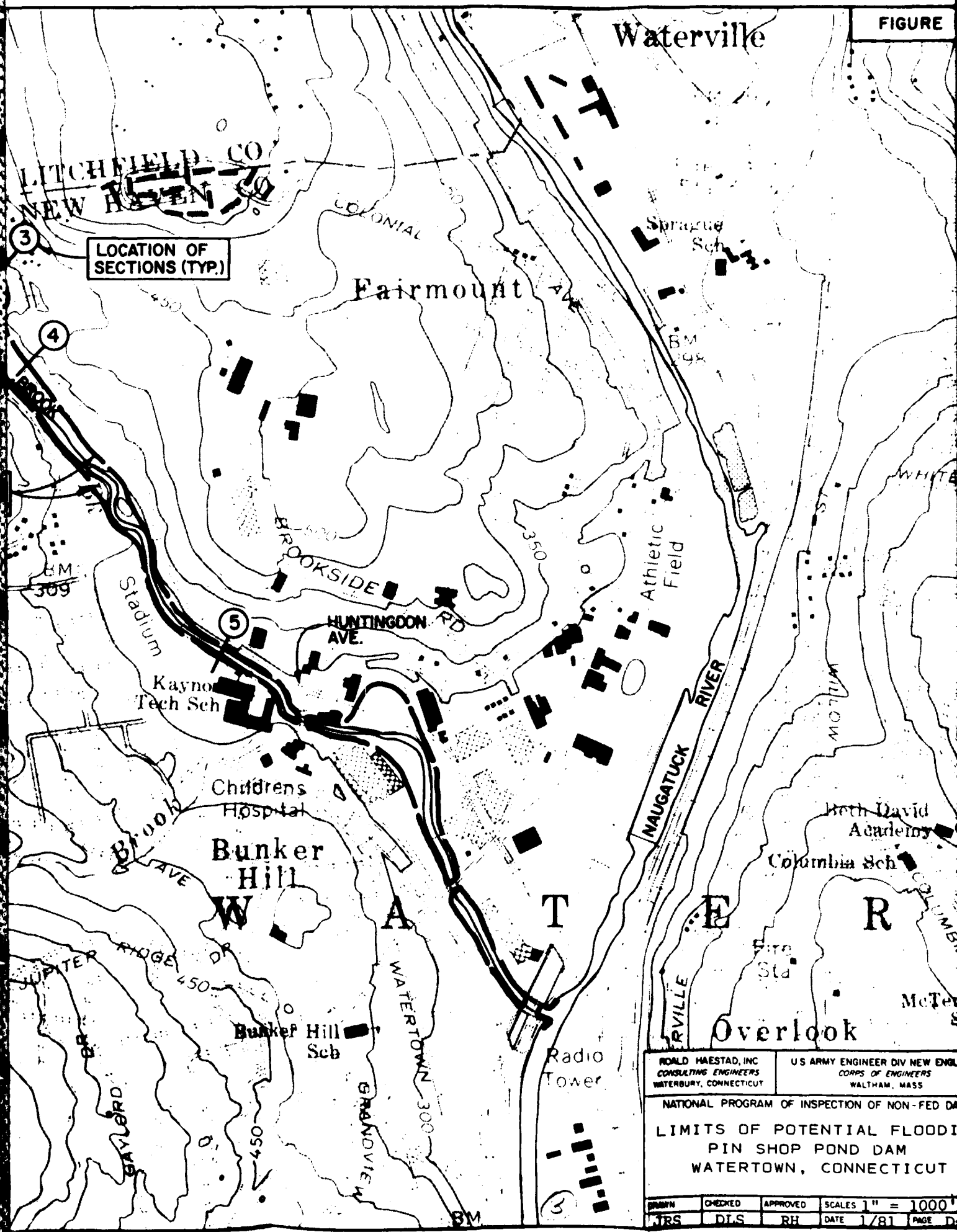
|                    |       |               |     |            |
|--------------------|-------|---------------|-----|------------|
| <u>CONTOUR 400</u> | THIRD | 06.91 SQ. IN. | .33 | 30.3 ACRES |
|                    | FIRST | 06.26 SQ. IN. | .33 |            |
|                    | START | 05.93 SQ. IN. |     |            |

|                  |       |       |                  |              |
|------------------|-------|-------|------------------|--------------|
| <u>WATERSHED</u> | THIRD | 45.00 | 20.65 × 4 = 82.6 | 11.9 SQ. MI. |
|                  | FIRST | 23.70 | 20.65            |              |
|                  | START | 3.05  |                  |              |

↑  
A PLANIMETER  
CONSTANT







|                                                                             |         |                                                                        |                  |
|-----------------------------------------------------------------------------|---------|------------------------------------------------------------------------|------------------|
| ROALD HAESTAD, INC<br>CONSULTING ENGINEERS<br>WATERBURY, CONNECTICUT        |         | U.S. ARMY ENGINEER DIV NEW ENGL<br>CORPS OF ENGINEERS<br>WALTHAM, MASS |                  |
| NATIONAL PROGRAM OF INSPECTION OF NON-FED DAM                               |         |                                                                        |                  |
| LIMITS OF POTENTIAL FLOODING<br>PIN SHOP POND DAM<br>WATERTOWN, CONNECTICUT |         |                                                                        |                  |
| DRAWN                                                                       | CHECKED | APPROVED                                                               | SCALE 1" = 1000' |
| JRS                                                                         | DLS     | RH                                                                     | DATE 1/81 PAGE 1 |

APPENDIX E

INFORMATION AS CONTAINED IN  
THE NATIONAL INVENTORY OF DAMS

# INVENTORY OF DAMS IN THE UNITED STATES

| IDENTITY NUMBER | DIVISION | STATE | COUNTY | CITY | NAME              | REPORT DATE             |
|-----------------|----------|-------|--------|------|-------------------|-------------------------|
| 127             | NED      | CT    | OS     | DA   | PIN SHOP POND DAM | 1135 27 105 1 08 JAN 81 |

| POPULAR NAME | NAME OF IMPROVEMENT                  |
|--------------|--------------------------------------|
|              | PIN SHOP POND                        |
| NEAREST DASH | NEAREST DOWNSTREAM CITY-TOWN-VILLAGE |
| 01 0         | STEEL BROOK                          |
|              | BUNKER HILL                          |
|              | POPULATION                           |
|              | 7500                                 |

| TYPE OF DAM | YEAR COMPLETED | PURPOSES | HEIGHT | HYDRAULIC | IMPROVING CAPACITIES | DIST OWN | FED H | PRV/FED | SCS A | VER/DATE |
|-------------|----------------|----------|--------|-----------|----------------------|----------|-------|---------|-------|----------|
| REGG        | 1870           | 0        | 23     | 23        | 32                   | N        | N     | N       | N     | 6 JAN 81 |

| REMARKS                                                              |          |                         |                    |                     |           |          |    |        |       |        |        |
|----------------------------------------------------------------------|----------|-------------------------|--------------------|---------------------|-----------|----------|----|--------|-------|--------|--------|
| 20 ESTIMATE 22 ESTIMATE 23 FORMERLY USED FOR INDUSTRIAL WATER SUPPLY |          |                         |                    |                     |           |          |    |        |       |        |        |
| D/S                                                                  | SPILLWAY | MAXIMUM DISCHARGE (CFS) | VOLUME OF DAM (CY) | POWER CAPACITY (KW) | INSTALLED | PROPOSED | NO | LENGTH | WIDTH | HEIGHT | WEIGHT |
| 1                                                                    | 400 U    | 100                     | 3200               | 6000                |           |          |    |        |       |        |        |

| OWNER                    | ENGINEERING BY | CONSTRUCTION BY |
|--------------------------|----------------|-----------------|
| JOHN MANCINONE + FARIANI | UNKNOWN        | UNKNOWN         |

| REGULATORY AGENCY |              |           |             |
|-------------------|--------------|-----------|-------------|
| DESIGN            | CONSTRUCTION | OPERATION | MAINTENANCE |
| NONE              | NONE         | CT DEP    | CT DEP      |

| INSPECTION BY     | INSPECTION DATE | AUTHORITY FOR INSPECTION |
|-------------------|-----------------|--------------------------|
| ROALD MAESTAD INC | 15 DEC 80       | PL 92-367                |

| REMARKS                 |  |
|-------------------------|--|
| 34 1000CY STONE MASONRY |  |