

FRONTISPIECE

P R E F A C E

The Flood Protection Works at Ardsley, New York was authorized by Congress in the Flood Control Act of 1965, Section 201 (Public Law 89-298 89th Congress) approved on 27 October 1965. The Act of 1965 specifies that provisions of local cooperation contained in Section 3 of the Act approved 22 June 1936 (Public Law 738, 74th Congress) as amended by Section 2 of the Act approved 28 June 1938 (Public Law 761, 75th Congress) shall apply. Section 3 of the 1936 Flood Control Act prescribes, among other stipulations, general regulations which apply to all local flood protection works. These regulations are contained in the Code of Federal Regulations of the United States of America, Title 33, Chapter II, Part 208, Section 208.10. The Regulations, which were approved by the Acting Secretary of War on 9 August 1944, are contained in this manual as Exhibit A.

Upon establishment of the Department of Defense the improvement of rivers and harbors and other waterways for flood control and other purposes, formerly under the jurisdiction of the Secretary of War, became the responsibility of the Secretary of the Army. Reference in the Regulations to the Secretary of War and the War Department shall be construed to mean, respectively, the Secretary of the Army and the Department of the Army.

To supplement these general regulations, it is provided (subparagraph 208.10 (a) (10) of the Regulations) that the "War Department will furnish local interests with an Operation and Maintenance Manual for each completed project.....to assist them in carrying out their obligations under these Regulations". In accordance with this provision, the Operation and Maintenance Manual for the Ardsley, New York Flood Protection Works has been issued.

OPERATION AND MAINTENANCE MANUAL

ARDSLEY, NEW YORK

LOCAL FLOOD PROTECTION WORKS

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DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
26 FEDERAL PLAZA
NEW YORK, N.Y. 10278

OPERATION AND MAINTENANCE MANUAL
ARDSLEY, NEW YORK
ARDSLEY FLOOD CONTROL PROJECT

I -INTRODUCTION

1. Authority.

The Flood Control Project in the Saw Mill River Basin at Ardsley, New York was authorized by Congress in the Flood Control Act of 1965, Section 201, and endorsed by the New York State Department of Environmental Conservation in 1982.

2. Location.

The project area is located on the Saw Mill River in the incorporated Village of Ardsley approximately 7.2 miles above the mouth of the Saw Mill River. The project begins at the Saw Mill River Parkway and continues to 1,250 feet above the Ashford Avenue Bridge. The drainage area at the project site is 20.7 square miles.

3. Description.

The project has been divided in three reaches as shown on plate 1. The first Downstream Reach consists of an improved 20 foot wide riprapped trapezoidal channel with 1:2 side slopes between the Elm Street Bridge and the Saw Mill River Parkway Bridge. The Conrail Bridge was removed.

The Middle Reach from the New York State Thruway to Ashford Avenue viaduct consists of non-structural flood relief for 3 structures. In general, the improvements consist of providing permanent and temporary closures for three brick-or-masonry-type structures.

In the Upstream Reach, the improvement consists of a 1160 foot length of wall on the left bank from the Ashford Avenue Viaduct that ties into high ground adjacent to the New York City blowoff tunnel headwall. The wall averages 14 feet in height along the channel and 16 feet tapering to 1 foot in height perpendicular to the channel at the upstream closure. Within this reach, from the Ashford Avenue Viaduct to the upstream limits of the project, the channel will be relocated and reconstructed to a ten-foot wide bottom, 1:2 1/2 side slopes trapezoidal channel. The channel consists of a new concrete 20 foot wide flume from

immediately above the Viaduct for a distance of 280 feet upstream. The remainder of the channel is a 10 foot wide trapezoidal earthen section stabilized with riprap. At Old Ashford Avenue the bridge was not removed or raised. Its left abutment was capped to the elevation of the channel and faced with concrete under the bridge structure to provide continuity to the concrete channel section. The blowoff channel was extended and modified to tie in with the relocated channel.

The interior drainage improvements are located in the upstream reach and are as follows:

(1) In the area above American Legion Drive, a 200 foot long interceptor ditch No. 2 receives flow from an existing mountain stream. This interceptor ditch discharges into Inlet Structure No. 1 which transitions into a approximate 140 foot long 60 inch diameter pipe. This pipe terminates at junction chamber No. 2 which transitions at outlet structure No. 3, into an approximate 150 foot long riprap lined channel, terminating at an intake structure directly over and connecting into the existing New York City Aqueduct blowoff tunnel. The tunnel discharges into a reconstructed 10 foot bottom width riprapped channel alongside where the closure wall was constructed. This 441-foot-long channel has a ten-foot-wide bottom 1:2-1/2 side slopes, and transitions into the relocated main channel.

(2) Drop inlets No. 3, 4, and 5 near Heatherdell Road discharge into a 450-foot-long interceptor ditch (No.1) at outlet structure No. 2, joining the main channel about 200 feet above the confluence with the blowoff channel.

(3) Drop inlets No. 6, 7, and 8 along American Legion Drive discharge into the intake structure of the improved blowoff channel.

(4) A small ponding area (#1) with a surface area of 0.03 acres is adjacent to the concrete channel immediately upstream of the Ashford Ave. viaduct with one drainage structure, drainage structure No. 1.

(5) A large ponding area (#2) with a surface area of 1.28 acres adjacent to the floodwall and closure wall with two drainage structures, drainage structures No. 3 and 4. An existing municipal parking area was affected by this construction. An equivalent area for parking at a lower elevation was paved and access ramps were provided at non-Federal cost.

(6) Diversion structure above American Legion Drive with intake structure of blowoff connection.

(7) Other miscellaneous drainage and outlet structures, pipes and grading for drainage where required.

For location of the protective works see Plate 1. The following table summarizes essential data.

HYDROLOGIC AND HYDRAULIC PERTINENT DATA

Drainage Basin (of) Saw Mill River

Size of Saw Mill River at project site = 20.2 sq. mi.

Length	= 12 mi.
Width	= 1.4 mi.
Average Slope	= 22 ft/mi

Estimate Largest Flood

Date	September 1975
Discharge	1200 C.F.S.

Standard Project Flood 3265 C.F.S.

Design Flood 1850 C.F.S.

(RETURN PERIOD) 167 Years

Improvement

A. Downstream Reach

Improved Channel - Saw Mill R. Pkwy. to Elm St.-220 ft.
Left & right banks - 15 inches of riprap
Channel bottom - 12 inches of riprap

B. Middle Reach

Non-structural flood relief was provided in this area.
Permanent closures for 3 brick-or-masonry type structures.

C. Upstream Reach

1. The existing channel was relocated for a distance of 970 ft. from the upstream limit of the project. The new channel will have a ten-foot wide bottom and 1:2-1/2 side slopes.

2. Protective works along the left bank of the new channel consist of 435 feet of floodwall along the relocated channel and 403 feet of floodwall along the improved blowoff

channel. The floodwalls along the relocated channel are approximately 14 to 16 feet above grade. The floodwalls along the improved blowoff channel range from approximately 15 to 0 feet (at closure) above grade.

3. Concrete Channel - The floodwall along the left bank transitions into a concrete U-shaped channel which extends a distance of 159 feet to the Old Ashford Avenue Bridge. The channel has a 20-foot-wide bottom and the left and right walls will average 18 and 13 feet in height respectively. The Old Ashford Avenue Bridge was not removed or raised. Its left abutment was capped to the elevation of the channel and faced with concrete under the bridge structure to provide for continuity to the next channel section. This second concrete U-shaped channel extends a distance of 125 feet to the downstream limit of this reach, the Ashford Avenue Viaduct.

(a). Interceptor ditches and a 60 inch diameter pipe near American Legion Drive with an intake structure connecting into the existing New York City Aqueduct Blowoff Tunnel.

(b). A ditch and drop inlet near Heatherdell Road discharging into a 450-foot-long interceptor ditch (#1) joining the improved blowoff channel.

(c). Drop inlets along American Legion Drive discharging into the head of the improved blowoff channel.

(d). A small ponding area (#1) adjacent to the concrete channel with one drainage structure.

(e). A large ponding area (#2) adjacent to the floodwall and closure wall with two drainage structures.

4. Protection Provided.

The authorized project is designed to provide protection to the area against a stream discharge of 1850 c.f.s., which has an approximate 0.6 percent exceedence frequency for existing conditions. This flow is 54 percent greater than the flood of September 1975, the estimated largest known flood. The design discharge is also 57 percent of the Standard Project Flood and has a frequency of occurrence of approximately once in 167 years.

5. Construction History.

Construction plans and specifications for the project were issued on 4 August 1987. Bids were received on 9 September 1987 and Contract No. DACW 51-87-C-0037 dated 29 September awarded to ECCO III Enterprises, Inc., 870 Nepperhan Avenue, Yonkers, N.Y. 10703. The project was completed on 28 November, 1989.

II. - Local Cooperation

6. Requirements.

The proposed local cooperation agreements were presented in House Document 94-519 for the Saw Mill River at Ardsley, New York, Flood Control Project as follows:

Prior to construction, local interests should furnish assurances satisfactory to the Secretary of the Army that they will:

(a) Provide without cost to the United States all lands, easements and rights-of-way, including spoil areas, necessary for construction of the project.

(b) Hold and save the United States free from any and all claims for loss or damage to the property of others resulting from the construction of such a project, except where such loss or damage is due to the fault or the negligence of the Government or its contractors.

(c) Maintain, operate and replace without cost to the United States all works after completion in accordance with regulations prescribed by the Secretary of the Army.

(d) Contribute in cash the non-Federal share of 20 percent of the costs of construction on non-structural measures for structures in the area identified as the Middle Reach in the April 1983 Design Memorandum for the project, exclusive of land costs. This sum (i.e. 20%) is presently estimated to be \$12,400.

Such contribution shall be paid in a lump sum prior to commencement of advertising of construction of the project, the final apportionment of cost to be made after all actual costs and values have been determined.

(e) Perform without cost to the United States all necessary relocations of utilities and resurfacing of a parking lot within the project area.

(f) Prescribe and enforce regulations to prevent encroachment on flood plain storage areas, channels, and rights-of-way as necessary for the proper functioning of the project, and agree to take appropriate measures to control development of the fringe areas not protected by the improvement with a view to preventing an undue increase in the flood damage potential, and to provide a pumping station or additional gravity outlets, due to the modification of, or encroachment upon, such area by local interests.

(g) Adopt and enforce adequate regulation and control measures to reduce flood hazards within the village of Ardsley, New York, along the Saw Mill River that will not be protected by the recommended project.

(h) At least annually notify the affected interests that the improvements will not provide complete protection.

(i) Comply with the provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law 91-646).

(j) Comply with Title VI of the Civil Rights Act of 1964 (Public Law 88-352).

7. Local Co-operation.

Assurances of local cooperation for the Ardsley Flood Control Project were issued by the Department of Environmental Conservation on behalf of the State of New York on 25 January 1982 and supplemented in their letter of 18 March. The project was completed on 28 November 1989 and transferred to the local interests on 28 November 1989 for operation and maintenance.

III - GENERAL RULES, DUTIES AND PROCEDURES

8. Purpose of this Manual.

The purpose of this manual is to present general information for assisting the responsible local interests in complying with the "Flood Control Regulations-Maintenance and Operation of Flood Control Works" as approved by the Acting Secretary of War, 9 August 1944, hereinafter referred to as the Regulations. The regulations which comprise Section 208.10, Title 33 of the Code of Federal Regulations, were published in the Federal Register of 17 August 1944, and are contained in this manual as Exhibit A.

Compliance with the Regulations is one of the requirements of local cooperation. As written, the Regulations is one of the requirements of local cooperation. As written, the Regulations are general in nature and obviously cannot give detailed instructions for the maintenance and operation of a specific project, but failure to maintain and operate the project as required by the Regulations may cause severe property losses and loss of life and can result in a loss of confidence in the protection works by those whose interests are involved.

9. General Rules and Procedures.

General rules for operation and maintenance of structures and facilities of local flood protection works are stated in Items 1 through 10 under paragraph (a) of the Regulations (Exhibit A). Further details and suggestions for complying with these requirements are given in this section of the manual.

10. The Superintendent and His Duties.

(a) The Regulations provide that "the responsible local agency shall appoint a permanent committee consisting of, or headed by, an official hereinafter called the Superintendent, who shall be responsible for the development and maintenance of, and directly in charge of, an organization responsible for the efficient operation and maintenance of all the structures and facilities during flood periods...." Mr. Russell E. Wege, Senior Hydraulic Engineer of the New York State Department of Environmental Conservation, has been designated as the Superintendent of the Ardsley Flood Control Project. As his local representative he has appointed the Village Manager of the City of Ardsley, Timothy C. Idoni, 505 Ashford Avenue, Ardsley, New York, Telephone: Area Code (914) 693-1550.

(b) It is not contemplated that the maintenance of the improvement work will require extensive labor forces except that an adequate standby or reserve of key personnel should be available for emergency repairs or maintenance in the event that failure of any facility is imminent during a flood. A reserve supply of materials for use during a flood emergency should be available at all times. A competent and responsible staff is essential to handle all contingencies in an efficient manner. Such staff personnel should include a sufficient number of supervisors thoroughly acquainted with the physical features of those portions of the protection works under their charge and the provisions of the Regulations and this manual. They should be fully

trained by periodic drill in the necessary steps of operation of these facilities during high water and also in emergency precautions and methods of repair outlined in Section IX of this manual.

(c) Drawings or prints of proposed improvements or alterations to the walls, drainage facilities or appurtenant structures as required by paragraph (a) 5 of the Regulations (Exhibit A) should be submitted in triplicate to the District Engineer, New York District Corps of Engineers, 26 Federal Plaza, New York, N.Y. 10278, Telephone: Area Code (212) 264-0100, sufficiently in advance of initiation of proposed construction to permit adequate study and consideration of the work involved. Drawings in triplicate, or reproducible prints showing any improvement or alterations as finally constructed, should be furnished to the District Engineer after completion of the work.

(d) It is essential that the superintendent make permanent arrangements to secure stream-flow data and forecasts of river stages and weather conditions in the tributary drainage area. It cannot be overemphasized that he should never depend on rumor or hearsay for guidance relative to the operation of the flood protection works. The official Federal forecasting agency in New York is the National Weather Service. Weather forecasts can be obtained through their forecast office at 30 Rockefeller Plaza, New York, N.Y. 10112, Telephone: (212) 399-5569.

(e) River stage forecasts for the Saw Mill River at Ardsley are available from the Northeast River Forecast Center, 705 Bloomfield Avenue, Bloomfield, Connecticut 06002, Telephone: (203) 240-3514. During flood situations, the flood stage should be monitored at the two staff gages within the pond and on the river.

The first location is at drainage structure No. 4 in Ponding area No. 2. The second gage is installed on the west wall just north of this Old Ashford Avenue Bridge. At an approximate elevation of 27 ft. M.S.L. at drainage structure No. 4 the sluice gates associated with drainage structure No. 3 and No. 4 should be closed in order to minimize increased back flooding from the river.

(f) A directory of names, addresses, telephone numbers and functions of those personnel involved in the operation of this project is given in Exhibit M. This directory should be checked periodically.

11. Periodic and Joint Annual Inspections.

Periodic inspections as required by the Regulations (Exhibit A) should be made at the following times:

(a) Immediately prior to the beginning of the flood season.

(b) Immediately following each major high water period.

(c) Otherwise at periods not exceeding 90 days.

(d) At such intermediate times as may be necessary to insure the best possible care of the flood protection works. A joint annual inspection will be conducted during the fall of the year by representatives of the Emergency Management Branch Corps of Engineers, NYSDEC and the Village of Ardsley. The meeting will be scheduled by the Corps at a mutually agreeable time. The purpose of the annual inspection is to assure that adequate and timely maintenance is being accomplished and to furnish technical assistance when required. The NYSDEC will be furnished a letter report on the inspection indicating maintenance deficiencies, required corrective action and anticipated completion date. Additionally, a semi-annual inspection is to be conducted by personnel of the Emergency Management Branch Corps of Engineers during or just after spring to evaluate the condition of the flood control project after spring runoff. Additional maintenance requirements will be brought to the attention of the NYSDEC by letter report.

12. Check Sheets.

To facilitate inspection, either routine or emergency, there are suggested forms of check sheets shown in Exhibits C through L of this manual. These, or similar forms, should be used at each inspection to insure that no features of the protective system are overlooked. Any items requiring repairs should be noted thereon: satisfactory items should be indicated by a check. Appropriate notations regarding the condition of drainage structures should be made at the time the various drainage gates are inspected.

13. Semi-annual Reports.

The semi-annual report required by paragraph (a) 6 of the Regulations (Exhibit A) is to be submitted by the Superintendent to the District Engineer, New York District, Corps of Engineers, 26 Federal Plaza, New York, NY 10278, ATTN: Emergency Management Branch, Telephone: Area Code (212) 264-0162. Such reports should cover inspection, maintenance, and operation of the protective works and should include dated and signed copies of inspection check lists or report sheets made during the period covered by this report. In the event repairs have been made, either temporary or permanent, the nature and dates of construction are pertinent and should be included. Prints of any photographs showing the protective works in operation during floods are desired whenever available. The reports should be completed and transmitted during the latter part of December and June, unless the Superintendent desires to arrange for other dates of submission, and should include all operation and maintenance performed during the preceding 6 months.

IV - CHANNELS

14. Location and Description.

a. In the downstream reach, there is 220 feet of improved channel from the Saw Mill River Parkway to just below Elm Street. The bottom width is 20 feet and the side slopes are 1:2. The average slope is .0007 feet per ft. The left and right banks and the channel bottom is protected with 15 inches and 12 inches of riprap, respectively, over 6 inches of bedding material. The existing Conrail Bridge has been removed. A view of the improved channels is shown on Plate 6.

b. In the upstream reach, the existing channel is relocated for a distance of 970 feet from the upstream limit of the project. The new channel has a ten-foot wide bottom and 1:2-1/2 sideslopes. A view of the improved concrete channel is shown on Plate 3. The floodwall along the left bank transitions into a concrete U-shaped channel, which extends a distance of 159 feet to the Old Ashford Avenue Bridge. The channel has a 20-foot wide bottom and the left and right walls will average 18 and 13 feet in height respectively.

c. At the upstream end, the blow-off channel starts below Saw Mill River Road and terminates at the main Saw Mill River channel, for a length of approximately 441 feet. The earthen trapezoidal shaped channel has a 10 foot bottom width and 1 on 2 1/2 side slopes. The upstream end of the channel at the outlet of the Aqueduct Blowoff Tunnel is protected with riprap. A view of the blowoff channel confluence is shown on Plate 3.

d. At the upstream end, starting at Heatherdell Road, an approximate 450 foot long interceptor ditch No. 1, with a bottom width of 2 feet and side slopes of 1:2 joins the main channel about 200 feet above the confluence with the blowoff channel.

e. At the upstream end above American Legion Drive, there is an interceptor ditch No. 2, which is fed by an existing mountain stream. This interceptor ditch discharges into Inlet Structure No. 1. The interceptor ditch is 370 feet long, with a bottom width of 5 feet and side slopes of 1 on 2. The left bank of this channel is elevated above grade.

15. Maintenance.

Paragraph (g) (1) (i) through (vi) of the regulations (Exhibit A) provides for periodic inspections of improved channels to assure that channels are clear of debris, wild growth, shoals or encroachments. A checksheet (Exhibit F) should be used for recording the inspections. In addition to the examination of the channels designed by the Corps of Engineers, the inspection should be extended to other portions of the river, as serious flooding could result from obstructions elsewhere.

Paragraph (g) (1) (ii) of the Regulations provides for inspections to assure that the channels are not being restricted by the deposition of waste materials, building of unauthorized structures or other encroachments. The dumping of snow into the channels within the project area should be prohibited. No deposits should be made or structures placed in the channels without prior authority of the Corps of Engineers, and in no event will any deposition or building be authorized that may restrict the channels. Profiles along the improved channel bottom are shown on the record drawing, CC-ARD-411.

All concrete is to be inspected twice a year. Any chipped or spalled areas are to be thoroughly cleaned and patched with appropriate material. Minor cracks should be sealed with appropriate material to prevent water from entering the cracks and causing damage to the concrete by freezing and thawing action.

Construction joints are to be inspected to assure that caulking materials are in place and in good condition. Any areas where caulking materials are missing due to vandalism or any other cause must be thoroughly cleaned and caulked with suitable material. Any caulking material found to have lost its elasticity should be removed, the area thoroughly cleaned and recaulked with appropriate material.

Any settlement or shifting of concrete channel walls should be immediately brought to the attention of the Department of Environmental Conservation and to the Corps of Engineers. The earthen channels should be maintained to the designed cross section and slope.

Careful attention during inspections should be given to the riprapped portions of the channel sides. Defective areas indicating conditions of riprap removal or bad repair should be promptly replaced or repaired. Areas of sluffing, exposure of bedding material or erosion should be promptly repaired.

16. Operation.

Paragraph (g) (2) of the Regulations provides for patrolling the channels during periods of high water and immediately following each major high water period. Particular attention should be paid to the collection of drift material along banks, bridges and outlet structures. In addition, attention should be paid to interceptor ditch No. 2, because of the high left bank. There is the possibility of a sand boil through the embankment. This would consist of seepage through a pervious stratum and a break through the ground surface on the landward side of the embankment. These "blowouts" or sand boils are danger spots when discharging solids. An effective way to localize the danger from a sand boil is to build a watertight sandbag ring around it. The required sand bags would be located at the Department of Public Works Office. A check sheet for the required supplies is shown in Exhibit H.

V - FLOOD WALLS

17. Location and Description.

(a) In the upstream reach, protective works along the left bank of the new channel consists of 436 feet of floodwall along the relocated channel and 403 feet of floodwall along the improved blowoff channel. These walls are L-type and T-type floodwalls and retaining walls along the right bank base of the New York State Thruway. The floodwalls along the relocated channel are approximately 14 to 16 feet above grade. The floodwalls along the improved blowoff channel range from approximately 15 to 0 feet (at closure) above grade. A view of the floodwalls is shown on Plate 3.

Footings were constructed approximately five feet below grade and have substantial keys. Special stability provisions were required at two locations where a 66 inch diameter sanitary trunk line passed under the floodwalls.

18. Maintenance.

The requirements for maintenance of floodwalls are stated in the Regulations (Exhibit A) paragraph (c) (1), items (i) through (viii) and are generally self-explanatory. Periodic inspection of the walls must be made at the intervals indicated in paragraph 11 of this manual to insure that no condition arises on either the landside or riverside of the structure that endangers its stability. If any cracks are discovered, they should be inspected regularly as an indication of possible settlement. Arrangements must be made for elimination of encroachments. Whenever encroachment occurs it should be reported to the District Engineer immediately. Accumulations of trash and debris, trees or other vegetation whose root growth would endanger the wall are to be removed as a matter of routine. The building of rubbish fires against walls should be prohibited.

All concrete is to be inspected twice a year. Any chipped or spalled areas are to be thoroughly cleaned and patched with appropriate material. Minor cracks should be sealed with appropriate material to prevent water from entering the cracks and causing damage to the concrete by freezing and thawing action.

Construction joints are to be inspected to assure that caulking materials are in place and in good condition. Any areas where caulking materials are missing due to vandalism

or any other cause must be thoroughly cleaned and caulked with suitable material. Any caulking material found to have lost its elasticity should be removed, the area thoroughly cleaned and recaulked with appropriate material.

Repairs found necessary by the inspections are to be made upon approval by the District Engineer. A suggested form of check sheet for reporting conditions found during inspections is presented in Exhibit C.

19. Operation.

The requirements for operation pertinent to floodwalls are stated in the Regulations (Exhibit A) paragraph (c) (2). It is imperative that a continuous patrol of walls be maintained during flood periods to locate possible leakage at construction joints or seepage underneath the walls and seepage at points of transition between abutments and walls or at closures to higher ground. Appropriate measures should be taken to insure the availability of adequate labor and materials to meet all contingencies and immediate steps should be taken to correct any condition which endangers the stability of the walls. Methods for control and handling of emergency repairs are contained in Section IX of this manual.

VI - DRAINAGE STRUCTURES

20. Description.

Surface runoff in the City of Ardsley in the vicinity of and prior to the construction of the protective works, was carried off by either overland flow or by a system of storm drains discharging directly into the stream. Since the protective works intercepted this drainage, it was necessary to provide for the intercepted storm drainage flow. Continuous swales and ditches, drop inlets, gravity culverts and ponding areas were constructed along the protective works for maximum discharge of interior runoff. Under favorable low river stage conditions, runoff is discharged into the stream by gravity culverts constructed through the channel embankment or walls. When gravity flow is not possible due to high river stages, the interior drainage runoff will be contained by ponding to a non-damaging flood level. To prevent damage due to back water from the river, gravity culverts and pond outlets are provided with automatic drainage (A.D.) gates on concrete outlet structures. In order to provide positive protection, each gravity outlet is provided with a sluice gate located in a

control manhole. Locations of the various drainage structures in the protective works are shown on Plate No. 1 and pertinent data for major drainage structures are included in Exhibit B of this manual.

Identification numbers for the drainage structures included in Exhibit B correspond, to the identification numbers used in the following descriptions.

21. Description of System.

Interior flood control works are required for the following subareas 1 to 5, as described below. A schematic of the subareas is shown on Plate 2.

(a) The improvements for subarea 1 consist of intercepting the existing 36 inch RCP and letting it flow into pond No. 2 located between Saw Mill River Road and the floodwall. The pond will accommodate the 100 year runoff and the maximum design seepage for a maximum volume of 250,000 cubic feet at a peak pond elevation of 127.2 ft MSL. The peak flow (100 year) into the pond is 97.5 cfs. The outlets from the pond were selected to match the existing conduit size and to assure prompt drawdown. The outlets include both flap gates and sluice gates. The outlet structure associated with Drainage Structure No. 3 is shown on Plate 5.

A detailed description of ponding area No. 2 is found in Section VIII. A view of Ponding Area No. 2 is shown on Plate 4.

(b) The improvements for Subarea 2, which is diverted in its entirety, consists of 2 principal drainage systems. The lower portion of the system consists of the No.'s 1,2,3,4 and 5 drop inlets. Drop inlets No. 4 and No. 5, located along the west curb of Heatherdell Rd, intercept about half the runoff, 92 cfs from the area. Should the junction chamber clog up and have flow bypass it, drop inlets No. 1 and No. 3 will pick up the residual flow. The No. 5 drop inlet discharges through a 30 inch pipe into drop inlet No. 4 and then through a 30 inch pipe into drop inlet No. 3. Drop inlet No. 3 then discharges through a 33 inch pipe into interceptor ditch No. 1, which discharges into the Saw Mill River. Interceptor ditch No. 1 is 350 feet in length with a 2 foot bottom width, trapezoidal in shape and riprapped against erosion. Drop inlet No. 2 picks up about 25 percent of the runoff, 46 cfs, from the subarea and is located along the east curb near the intersection of Saw Mill River Road and Heatherdell Road. This inlet discharges

to drop inlet No. 1 through a 27 inch pipe and then through a 30 inch pipe into junction chamber No. 1 which discharges into the aqueduct blowoff tunnel discharge channel. The remainder of the runoff from this subarea, 25 percent or 46 cfs is collected by drop inlet No. 4 located on America Legion Drive near the intersection with the shopping center driveway. This inlet empties through a 30 inch pipe into the newly constructed Intake Structure which discharges into the blowoff tunnel. A view of the outlet from the blow-off tunnel is shown in Plate 5.

(c) The improvements for Subarea 3 consist of the following: The existing drainage ditch which runs into catch basins on American Legion Drive will be diverted with a five-foot-wide channel and 60 inch pipe to a drop inlet structure located adjacent to the New York City blowoff tunnel. The inlet will be joined to the tunnel via a six-foot-square vertical shaft and a short length of six-foot diameter RCP. The peak discharge from this subarea is 215 C.F.S., which is also the design discharge used for the inlet weir. The inlet structure will permit weir flow through openings in all four sides and will have a clear opening of 6 feet horizontally by 2 feet vertically. A view of the intake structure to the blow-off tunnel is shown in Plate 6.

(d) There are no improvements in subarea 4.

(e) Improvements for Subarea 5 consist of a 0.03 acre pond and 15 inch diameter outlet structure. The pond is designed to contain the 100-year runoff volume of 3,000 cubic feet. The outlet is designed to pass the 100-year peak flow and is 15 inches in diameter. For positive protection both an automatic drainage gate and sluice gate are provided. A view of Ponding Area No. 1 is shown in Plate 4.

(f) A detailed description of the major drainage structures in the system is as follows:

(1) Drainage Structure No. 1 in ponding area No. 1 is located immediately upstream of Ashford Avenue on the left bank. It is a gravity outlet structure consisting of a control manhole. The drain pipe of 15 inches is equipped with a 15 inch diameter automatic drainage (A.D.) gate. To provide positive protection a 15 in. x 15 in. hand operated sluice gate is provided. The gate lift controls with enclosed gears, stem cover, locking device and indicator are located on top on the manhole. The outlet with an invert

elevation of 123 ft. M.S.L. drains through the concrete wall. A view of Drainage Structure No. 1 is shown on Plate 4.

(2) Drainage Structure No. 2 located at Old Ashford Avenue consists of a 4.5 ft x 4.0 ft control manhole, fed through the top by a 4 foot by 4 foot grate. The outlet consists of a 24 inch diameter pipe at invert 126 ft. M.S.L., discharging through the wall. The outlet is equipped with a automatic drainage gate.

(3) Drainage Structure No. 3 is located on the left bank in ponding area No. 2. It is a gravity outlet structure and consists of a 4 ft x 5 ft control manhole. The outlet consists of a 36 inch diameter pipe, equipped with a 36 inch diameter gate. To provide positive protection, a 36 in x 36 inch hand operated sluice gate is provided. The gate lift controls with enclosed gears, stem cover, locking device and indicator are located on top of the manhole. The outlet with an invert elevation of 122.7 ft M.S.L., drains through the concrete wall.

(4) Drainage Structure No. 4 is located on the left bank in ponding area No. 2. It is a gravity outlet structure and consists of a 4 ft x 5 ft control manhole. The outlet consists of a 36 inch diameter pipe, equipped with a 36 inch diameter automatic drainage gate. To provide positive protection, a 36 inch x 36 inch hand operated sluice gate is provided. The gate lift controls with enclosed gears, stem cover, locking device and indicator are located on top of the manhole. The outlet with an invert elevation of 122.7 ft M.S.L. drains through the floodwall into the channel embankment. A view of Drainage Structure No. 4 is shown on Plate 4.

It is noted that these drainage structures are located on the General Plan shown on Plate No. 1.

22. Maintenance.

Provisions for maintenance of the above facilities are given in paragraph (d) (1) of the Regulations, Exhibit A. The inspections, at the intervals indicated in paragraph 11 of this manual, are to insure that inlet and outlet channels and pipes or culverts are free of trash and debris; that drainage gates are unobstructed, in proper alignment and operating freely; that riprap and headwalls are in good condition; that no erosion which will endanger the structure is occurring; and that no fires are being built in pipes and

structures. Necessary repairs should receive prompt attention. Prevention of vandalism is important. The Regulations require that drainage gates and valves on drainage structures shall be examined, oiled and trial-operated at least once every 90 days.

Frequently, well-meaning but uninformed residents will prop a flap gate open to facilitate local runoff without considering the serious consequences in event of a flood. Likewise, gates of relief culverts are sometimes secured in a closed position to prevent leakage during high river stages without consideration of potential damage resulting from precipitation within the protected area. Though such obstructions are placed with no malicious intent to damage the flood protection works, the result is no less serious, and necessary steps should be taken to prevent such acts. Another cause of failure is the collection of debris, drift and ice at outlets, which may block automatic gates in open as well as in closed position. In addition, the grates at the inlet and outlet of all Drainage Structure must be kept free of debris. The removal of such deposits should be a part of regular maintenance.

A suggested form of check sheet for reporting conditions of drainage structures during inspections is presented in Exhibit D. Paragraph (h) (1) of the Regulations requires that "facilities which function as a part of, or affect the efficient functioning of the protective works, shall be periodically inspected by the Superintendent and appropriate measures taken." City officials should be advised of the undesirable effects of filling in or developing low-lying areas in the vicinity of relief culverts since ponding of local runoff from the landside of walls is relied upon to prevent inundation of more valuable adjoining areas. Drainage ditches should be periodically inspected to assure that riprap sections and ditches in general are in good condition and sufficiently clear of obstructions and debris to permit proper functioning. A suggested form of check sheet for reporting conditions of drainage ditches during inspections is presented in Exhibit E.

23. Operation.

(a) Paragraph (d) (2) of the Regulations (Exhibit A) states that: "Whenever high water conditions impend, all gates will be inspected a short time before water reaches the invert of the pipe and any object which might prevent closure of the gates shall be closely observed until it has been ascertained that they are securely closed." Many of the gated outlets are submerged with only a moderate rise in

river stage. Therefore, it will be necessary to inspect the gates and perform any necessary servicing prior to undertaking other duties pertinent to the emergency. Exhibit D is a sample record for such as inspection. The ponding of water at the intake of a drainage structure does not necessarily indicate serious leakage since such ponding may be due to local runoff. Leakage of the gates can be established from close observation of the direction of flow at the landside end of the pipe. Sluice gates at drainage structures with flap-gated outlets are for emergency use only and are to be closed only when the automatic flap gates are known to be malfunctioning. More detailed information for emergency operation of the gates is provided in paragraph 10 on page 9.

(b) Maintenance and operation of sewers is the responsibility of the City of Ardsley. Maintenance forces will report all modifications to the sewer facilities, made or contemplated by the City.

Modifications which affect the flood protection works, particularly those requiring work on flood control lands are not to be undertaken without prior approval of the District Engineer, Paragraph (a) (5) of the Regulations (Exhibit A).

VII - PONDING AREAS

24. Description.

A ponding area No. 2 was provided to improve overland flow and act as a relief for excess storm water in conjunction with Subarea 2. This ponding area is bounded by the river to the West, American Legion Drive to the east, Old Ashford Avenue to the south and Heatherdall Street to the north. The ponding area is roughly triangular in shape. The side embankments are sloped 1 foot vertical to 2 foot horizontal, and the outer limits of the ponding area are enclosed by a 4 foot high chain link fence. Gated access Ramps No. 1 and No. 2 in the southeasterly corner of the ponding area provide access to the pond. A parking lot will be provided in pond No. 2 in the easterly sector of the pond. The capacity will be approximately twice that of the previous parking area. A warning sign is provided indicating that; "This parking area is part of a Corps of Engineers Flood Control Project. Flooding is imminent during periods of heavy rainfall." A ponding area No. 1 was provided to impound overland flow and act as a relief for excess storm water in conjunction with Subarea 5. The

ponding area is located between Old Ashford Avenue, Ashford Avenue Viaduct and the River. The ponding area is triangular in shape with a base of 35 feet and a height of about 55 feet. The side embankments are sloped 1 foot vertical to 2 foot horizontal, and the outer limits of the ponding area are enclosed by a 4 foot high chain link fence. A 12 foot gated ramp in the easterly corner of the ponding area provides access to the pond. A view of the Ponding Areas No. 1 & 2 is shown in Plate 4. There are outlet structures to the river associated with the ponds. For positive protection automatic drainage gates and sluice gates were provided. More detailed information for emergency operation of the gates is provided in paragraph 10 on pages 7 and 8.

25. Maintenance.

The requirements for maintenance of areas used for ponding are stated in the Regulations (Exhibit A), under "Miscellaneous facilities", paragraph (h) (1). Areas used for ponding or for temporary storage of interior runoff during flood periods shall not be allowed to become filled with silt, debris, or dumped material. Ponding areas and drainage ditches in connection therewith should be inspected periodically. A suggested form of check sheet for reporting conditions found during inspections, is given in Exhibit I.

26. Operation.

The requirements for operation of the ponding area are given in the Regulations (Exhibit A) paragraph (h) (2), under "Miscellaneous facilities". The ponding area for interior runoff will usually require little attention during flood periods other than the taking of usual precautions to block entry into the inundated area.

VIII - FLOOD PROOFING

27. Description.

Because full structural flood protection was not justified for the middle reach, a non structural plan was developed for three structures in the reach. Temporary and permanent closures were used on three of the structures shown on Plate 1. The resulting levels of protection ranged from 20 to 70 year events. A brief description of the structures and the associated work is as follows:

(a) Structure #1. This structure houses a restaurant. The first floor of this masonry structure is above the design flood. The basement level of this structure is subject to frequent flooding. It houses a finished banquet room and mechanical and electric equipment. Isolated internal protection of these items is not possible. The plan provided for protecting the structure against a flood to elevation 131 (no freeboard allowance), which translates to a 70-year level of protection. Closure of the depressed driveway was accomplished by providing a low wall between the existing sloping cement block retaining wall and the west face of the structure. The stoplogs will be placed where the top of the retaining wall is at Elevation 131. Provisions for a portable sump pump and watertight door are included in the plan to provide positive drainage in the enclosed area and to protect against rising groundwater or seepage under the wall. Waterproofing at the south wall of the restaurant would consist of excavating adjacent to the wall and applying a layer of tarpaper and sealant. The excavation was backfilled to its original condition and the three windows glass bricked. A schematic of a flood shield for the door is shown as Exhibit J. A view of the flood proofing associated with structure No. 1 is shown on Plate 7.

(b) Structure #2. This structure consists of a two-story (with basement) brick residence/commercial structure and a concrete-block garage sharing a common wall. The interior of the auto repair garage contains no hydraulic lifts or other permanent in-place equipment which would incur significant damage during flooding. Tools and other portable equipment could be placed on shelves or removed during periods of extreme flows in the river. The other structure, whose first floor is above the design flood, has a dirt floor in the west portion of the basement. The east portion, housing a furnace and hot water heater, has a concrete floor and is separated from the west side by a grouted stone wall and a door.

Essential equipment can be isolated by waterproofing the east portion of the structure and protection was proposed on that basis. Low level protection (15-year) to reduce the impact of nuisance flooding in these structures was proposed. The plan for the auto repair shop includes the placement of 2.5 feet of stoplogs for the garage doors, a check valve on the line running from the floor drain and patching of the west face of the building. Protection for the other structure includes a watertight door, glass bricked windows, and patching and/or waterproofing of the

interior wall in the basement. A schematic of a temporary closure for the garage door is shown as Exhibit K. A view of the flood panel associated with structure No. 2 is shown in Plate 7.

(c) Structure #4. The physical layout of this structure is similar to that of Structure #2 consisting of a one-story (w/basement) cement-block commercial structure adjacent to a cement-block garage. Low-level protection (15-year) to reduce the impact of nuisance flooding is proposed. Two watertight doors and three storage structures for the garage doors will be provided. The schematics for the closures for the doors are shown as Exhibit J and K.

28. Operation and Maintenance.

These requirements are minimal. The manufacturer has submitted operation and maintenance manuals to insure maximum efficiency and service life of the installations. The major items involve maintenance and periodic replacement of sump pumps, flood panels, and periodic replacement of stoplogs. The cost for operation and maintenance will be borne by the local sponsor. Routine operation and maintenance will be the responsibility of the affected property owner. A check sheet for inspection of the flood proofed buildings is included as Exhibit L.

IX HIGH WATER MAINTENANCE AND OPERATION

29. Scope.

This section of the manual is supplementary in nature and intended as outline of standard practices that have been developed during years of experience with the various problems that arise during flood periods. The remarks are primarily concerned with the floodwall and the interior drainage portions of the flood protection system. Reference is made to the applicable section of this manual for details concerning high water operation of other features of the protection.

30. General.

A rapid rise of the river leaves little time to make emergency repairs. Effective flood fighting under these circumstances can be carried on only if there is a well organized and trained crew, together with an ample supply of suitable materials immediately available. Confidence of the protected persons and firms is a valuable asset that should not be carelessly lost through inefficient-operation of the

protection system in time of emergency. It is possible that dangerous conditions may arise which are not covered by these instructions. It is not the intent to restrict the Superintendent, or others concerned, to a rigid set of rules. Difficult conditions can usually be met by the methods suggested here, together with independent initiative and action along with sound engineering principles. In cases where the Superintendent is in doubt as to procedures to be taken, he will be expected to consult the District Engineer, N.Y. District, Corps of Engineers, 26 Federal Plaza, N.Y. 10278 Telephone: (212) 264-0100. In connection with flood fighting, attention is invited to the New York District Plan 500-1-1. National Disaster Activities under PL-84-99 and PL 93-288 prepared in accordance with Emergency Regulation 500-1-1, "Natural Disaster Procedures." These manuals outline the functions to be performed by the Corps of Engineers during floods. Liaison between the Corps of Engineers and other organizations such as the Weather Service, Red Cross, military organizations and local agencies concerned, with activities during floods, are also described.

31. Preliminary Work.

Upon receipt of information that high water is imminent, the Superintendent should immediately mobilize the skeleton forces of key personnel which have previously been formed as outlined in paragraph 10. Following this, reserve labor forces should be alerted for call on emergency work. As his initial activity, each sector foreman should make an immediate inspection of his assigned section to ascertain the following:

- (a) Condition of all drainage gates (Exhibit D).
- (b) Condition of concrete walls, concrete and riprap channel including area of recent repair (Exhibit C).
- (c) Location of any encroachment on right-of-way interfering with access and efficient operation.
- (d) Transportation facilities, including trucks available and possible detours.
- (e) Material supply: Items necessary for emergency repairs: sand bags, quantity, locations, and conditions (Exhibits B through L).
- (f) Communications: Convenient telephone available at any hour; also police and radio systems.
- (g) Location of relief organizations.

32. Operation of Drainage Structure.

After the initial inspection, or in connection therewith, each sector foreman should be assigned sufficient men to repair and see that automatic drainage gates are free of obstructions or defects so that they are free to seat properly on the outlets of gravity culverts. The importance of this step cannot be over-emphasized. Once the gates are submerged by rising river stages, proper servicing becomes difficult if not impossible. Should the flap gate fail to close, the adjacent sluice gate located in the control manhole of the drainage structure should be operated to close the outlet and afford positive protection. In general, the sluice gate should be trail operated, but kept open and only closed when the automatic flap gate is not operation properly and is allowing backwater into the protected area. Sector foremen should be furnished copies of Plate 1 and Exhibits B, D, and G so that no gates are overlooked.

33. Precautionary Measure.

After determining that all gates are either securely closed or known to be operating in a satisfactory manner, or concurrently with making such determination, attention should be given to the following additional items wherever applicable and the necessary work performed without delay:

a. Obtain necessary tools and materials (sacks, brush lumber, lights, etc.) and distribute and store the same at points where active maintenance is anticipated.

b. Investigate all drainage ditches and storm drainage inlets on the land side of the improvement works and open these drains when obstructions exist.

34. Patrol.

After preliminary work is completed, continuous patrol should be established if not previously done, and maintained during the flood period to locate:

a. Low reaches of concrete and riprap channel that may be overtopped.

b. Possible leakage at floodwall joints.

c. Seepage underneath walls or at interceptor ditch

No. 2.

d. Leakage through or at drainage gates and along culvert and sewer pipes.

e. Any condition or encroachment that might endanger concrete and riprap channel, drainage ditches, drop inlets, manholes, transverse drain or the operation of the drainage structure.

X- REAL ESTATE

35. Federal Flood Control Law.

Under the provisions of the Flood Control Act of 1965 and in accordance with the requirements of Section 3 of the Flood Control Act of 1936, the State of New York was required to provide without cost to the United States all lands, easements, and rights-of-way necessary for the construction of the entire flood control project at Ardsley, New York.

36. Interest in Real Estate.

In accordance with the authorized flood control act, the State of New York acquired necessary interests in the real estate required for this project. Such interests are perpetual and temporary easements conveying rights necessary for construction, operation and maintenance of the project. Temporary easements revert back to original ownership upon completion of construction.

37. Real Estate Records.

Maps showing the parcels of land which have been acquired similar to those shown in Appendices 1 of this manual, are on file at the New York District, Corps of Engineers, 26 Federal Plaza, New York, NY. Attention is invited to the Regulations (Exhibits A) which read in part as follows:

a. (4) No encroachment or trespass which will adversely affect the efficient operation or maintenance of the project works shall be permitting upon the rights-of-way for the protective facilities.

b. (5) No improvement shall be passed over, under, or through the walls, levees, or floodways, nor shall any excavation or construction be permitted within the limits of the project right of way, nor shall any change be made in any feature of the works without prior determination by the District Engineer of the New York District or his authorized representative that such improvement, excavation, construction, or alteration will not adversely affect the functioning of the protective facilities...."

38. Ownership of Facilities.

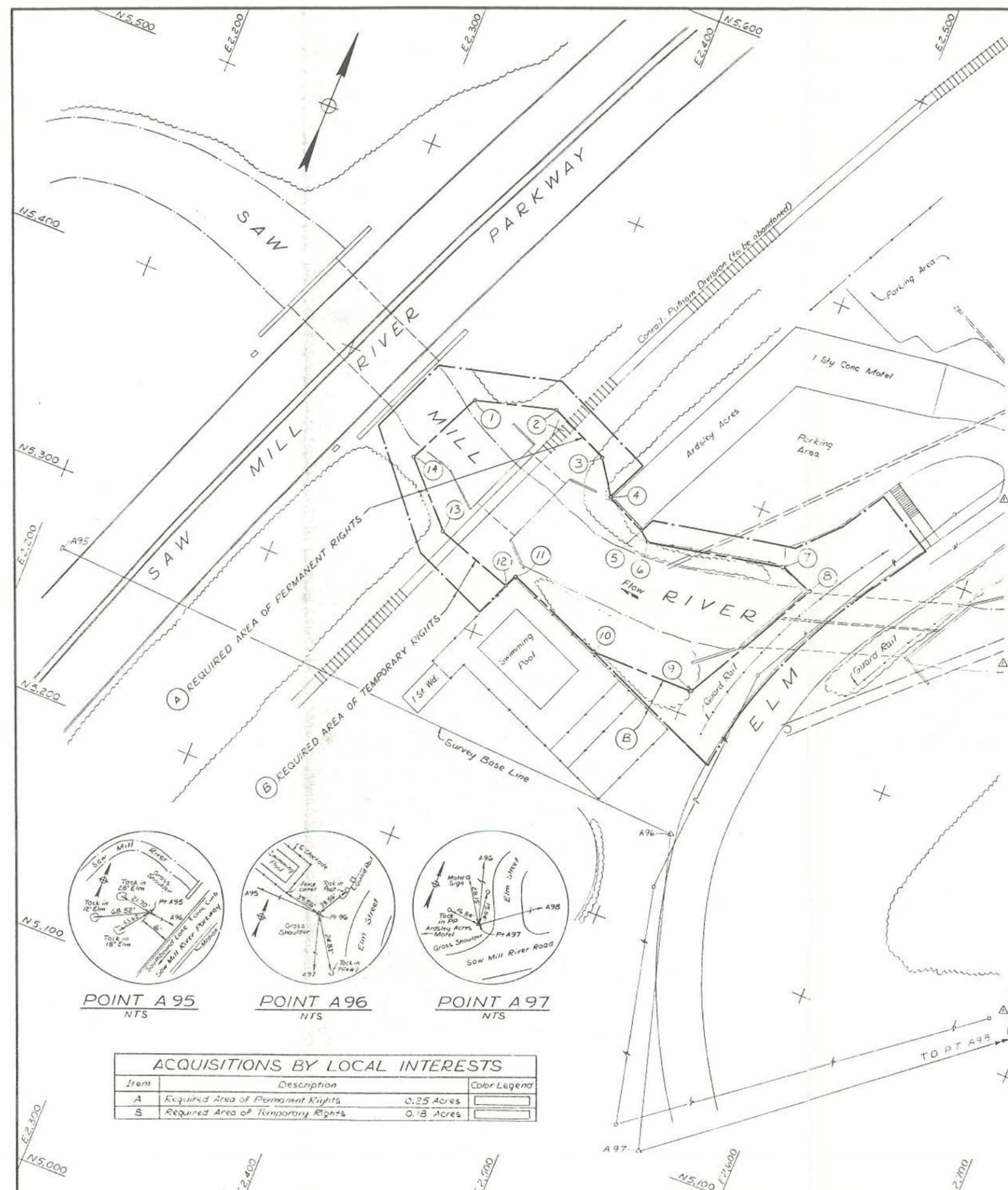
All structures erected and equipment installed by the Federal Government except those constructed for local interests at their request, remain Federal property, although their maintenance, operation and replacement is the responsibility of the State of New York and local interests.

OPERATION AND MAINTENANCE MANUAL

ARDSLEY, NEW YORK

LOCAL FLOOD PROTECTION WORKS

APPENDIX - REFERENCE DATA



DATA FOR PERMANENT ACQUISITION

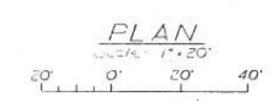
Point	Coordinates		Course	Distance	Bearing	Point	Coordinates		Course	Distance	Bearing
	North	East					North	East			
1	5,398	2,362	1-2	36.40	N74°-03'-17"E	80	6,446	3,382	80-81	18.44	S49°-23'-55"E
2	5,408	2,397	2-3	30.87	S65°-05'-43"E	81	6,434	3,396	81-82	22.20	S35°-50'-16"W
3	5,395	2,425	3-4	18.03	S33°-41'-24"E	82	6,416	3,383	82-83	19.21	N51°-20'-25"W
4	5,380	2,435	4-5	21.02	S64°-39'-14"E	83	6,428	3,368	83-84	81.22	S37°-59'-55"W
5	5,371	2,454	5-6	5.66	S45°-00'-00"E	84	6,364	3,318	84-85	56.22	S38°-30'-02"W
6	5,367	2,458	6-7	62.17	N78°-52'-15"E	85	6,320	3,283	85-15	28.43	N50°-42'-38"W
7	5,379	2,519	7-8	17.09	S69°-26'-38"E	86	6,364	3,318	86-87	70.46	S34°-35'-32"E
8	5,373	2,535	8-9	70.24	S28°-01'-28"W	87	6,306	3,358	87-88	19.31	S21°-15'-02"W
9	5,311	2,502	9-10	48.01	N88°-48'-23"W	88	6,288	3,351	88-89	19.65	N75°-15'-23"W
10	5,312	2,454	10-11	49.40	N68°-37'-46"W	89	6,293	3,332	89-90	23.26	N64°-32'-12"W
11	5,330	2,408	11-12	5.39	S21°-48'-05"W	90	6,333	3,311	90-91	32.76	N58°-44'-11"W
12	5,325	2,406	12-13	37.00	N71°-04'-31"W	91	6,333	3,311	91-92	56.08	S50°-03'-49"W
13	5,337	2,371	13-14	37.48	N43°-55'-09"W	92	6,313	3,318	92-93	18.60	S53°-44'-46"W
14	5,364	2,345	14-1	38.01	N26°-33'-54"E	93	6,702	3,803	93-94	66.07	N50°-31'-39"W
15	6,338	3,261	15-16	46.69	N46°-44'-09"E	94	6,660	3,752	94-95	28.60	N53°-31'-51"W
16	6,370	3,295	16-17	78.01	N36°-08'-07"E	95	6,677	3,729	95-96	132.65	S49°-35'-10"W
17	6,433	3,341	17-18	3.61	S56°-18'-36"E	96	6,591	3,628	96-97	47.93	S66°-38'-40"W
18	6,431	3,344	18-19	43.42	N38°-27'-13"E	97	6,572	3,584	97-98	4.47	N26°-33'-54"W
19	6,465	3,371	19-20	32.57	N17°-52'-43"E	98	6,576	3,582	98-99	40.71	S62°-10'-33"W
20	6,496	3,351	20-21	153.91	N49°-28'-46"E	99	6,557	3,546	99-100	5.10	S11°-18'-36"E
21	6,596	3,498	21-22	76.58	N40°-45'-49"E	100	6,552	3,547	100-101	14.32	S65°-13'-29"W
22	6,654	3,548	22-23	41.79	N21°-02'-15"W	101	6,546	3,534	101-102	11.70	S19°-58'-59"E
23	6,693	3,533	23-24	35.47	N40°-25'-34"E	102	6,535	3,538	102-103	23.09	S72°-20°-60"W
24	6,720	3,556	24-25	175.01	N34°-03'-12"E	103	6,528	3,516	103-104	13.93	S21°-02'-15"E
25	6,865	3,654	25-26	47.54	N67°-45°-04"E	104	6,515	3,521	104-105	72.62	S67°-19°-10"W
26	6,883	3,698	26-27	184.23	N22°-40°-04"E	105	6,487	3,454	105-76	21.59	N76°-36°-27"W
27	7,053	3,769	27-28	60.67	N08°-31°-51"E	106	6,660	4,538	106-107	22.05	S64°-39°-14"E
28	7,113	3,778	28-29	57.64	N16°-53°-27"E	107	6,642	4,576	107-108	84.21	S04°-05°-08"W
29	7,149	3,789	29-30	36.06	N33°-41°-24"E	108	6,558	4,570	108-109	65.86	S59°-55°-53"E
30	7,179	3,809	30-31	69.57	N18°-26°-06"E	109	6,525	4,627	109-110	54.72	S27°-19°-07"E
31	7,245	3,831	31-32	118.46	N11°-41°-22"E	110	6,476	4,652	110-111	138.00	S20°-58°-46"W
32	7,361	3,855	32-33	38.08	S76°-19°-43"E	111	6,348	4,603	111-112	27.87	S01°-01°-15"W
33	7,352	3,892	33-34	123.32	S08°-23°-35"W	112	6,320	4,602	112-113	24.00	S10°-34°-42"W
34	7,230	3,874	34-35	38.33	S15°-07°-26"W	113	6,239	4,590	113-114	89.14	S03°-12°-56"E
127	7,193	3,844	127-128	51.24	S72°-58°-44"E	114	6,210	4,595	114-115	20.41	S10°-45°-03"E
128	7,179	3,913	128-129	34.05	S55°-10°-32"E	115	6,121	4,575	115-116	27.46	S73°-30°-31"W
129	7,130	3,982	129-130	27.73	S41°-21°-32"E	116	6,126	4,585	116-117	130.00	N22°-37°-12"W
130	7,118	4,007	130-131	74.97	S80°-47°-20"E	117	6,246	4,533	117-118	65.49	N07°-00°-59"E
131	7,106	4,081	131-41	60.46	S55°-47°-03"E	118	6,311	4,521	118-119	30.71	N24°-10°-45"E
41	7,072	4,131	41-42	116.50	S55°-29°-29"E	119	6,339	4,524	119-120	41.71	N54°-09°-03"E
42	7,006	4,227	42-43	40.36	S41°-59°-14"E	120	6,363	4,587	120-121	113.74	N20°-58°-46"W
43	6,976	4,254	43-44	58.14	S26°-33°-54"E	121	6,470	4,628	121-122	85.86	N59°-40°-35"W
44	6,924	4,280	44-45	84.53	N62°-31°-32"E	122	6,513	4,554	122-123	27.02	N38°-59°-28"W
45	6,963	4,355	45-46	8.06	S29°-44°-42"E	123	6,534	4,537	123-124	31.62	N18°-26°-06"W
46	6,956	4,359	46-47	100.18	S62°-40°-04"W	124	6,564	4,527	124-125	33.11	N25°-01°-01"E
47	6,910	4,270	47-48	54.63	N23°-44°-58"W	125	6,594	4,541	125-126	30.87	N65°-05°-43"W
48	6,960	4,248	48-49	72.40	N57°-24°-27"W	126	6,607	4,513	126-106	58.60	N25°-15°-11"E
49	6,999	4,187	49-50	81.27	N55°-31°-40"W						
50	7,045	4,120	50-51	64.03	N54°-51°-57"W						
132	7,083	4,066	132-133	62.97	N79°-56°-22"W						
133	7,074	4,004	133-134	133.134	38.01	N63°-26°-04"W					
134	7,111	3,970	134-135	64.57	N57°-15°-53"W						
55	6,962	3,926	55-56	106.33	S58°-51°-05"E						
56	6,907	4,017	56-57	94.94	S66°-24°-19"E						
57	6,869	4,104	57-58	13.04	N85°-32°-05"E						
58	6,870	4,117	58-59	36.62	S55°-00°-29"E						
59	6,849	4,147	59-60	12.81	N38°-39°-35"E						
60	6,859	4,155	60-61	42.43	S45°-00°-00"E						
61	6,829	4,185	61-62	29.73	S47°-42°-35"W						
62	6,809	4,163	62-63	45.22	N54°-54°-15"W						
63	6,835	4,126	63-64	47.01	S23°-50°-19"W						
64	6,792	4,107	64-65	31.11	S45°-00°-00"W						
65	6,770	4,095	65-66	144.06	N61°-50°-02"W						
66	6,838	3,958	66-67	38.29	N40°-45°-49"E						
67	6,867	3,983	67-68	158.15	N60°-01°-50"W						
68	6,946	3,846	68-69	25.32	N80°-54°-35"W						
69	6,950	3,821	69-70	32.28	S73°-48°-39"W						
70	6,941	3,790	70-71	31.83	S46°-16°-23"W						
71	6,919	3,767	71-72	95.05	S26°-18°-04"W						
72	6,832	3,724	72-73	185.83	S34°-01°-56"W						
73	6,678	3,620	73-74	56.59	S43°-34°-04"W						
74	6,637	3,581	74-75	66.22	S38°-15°-16"W						
75	6,585	3,540	75-76	141.77	S49°-00°-15"W						
76	6,492	3,433	76-77	27.20	S53°-58°-21"W						
77	6,476	3,411	77-78	23.35	S46°-44°-09"W						
78	6,460	3,394	78-79	1.41	N45°-00°-00"W						
79	6,461	3,393	79-80	18.60	S36°-15°-14"W						
135	7,147	3,914	135-136	35.47	N68°-29°-55"W						
136	7,160	3,881	136-137	27.26	S77°-28°-16"W						
137	7,154	3,854	137-35	133.15	S14°-20°-58"W						
35	7,025	3,821	35-36	83.01	S58°-47°-58"E						
36	6,982	3,822	36-35	39.45	S59°-32°-04"E						

SURVEY BASE LINE DATA

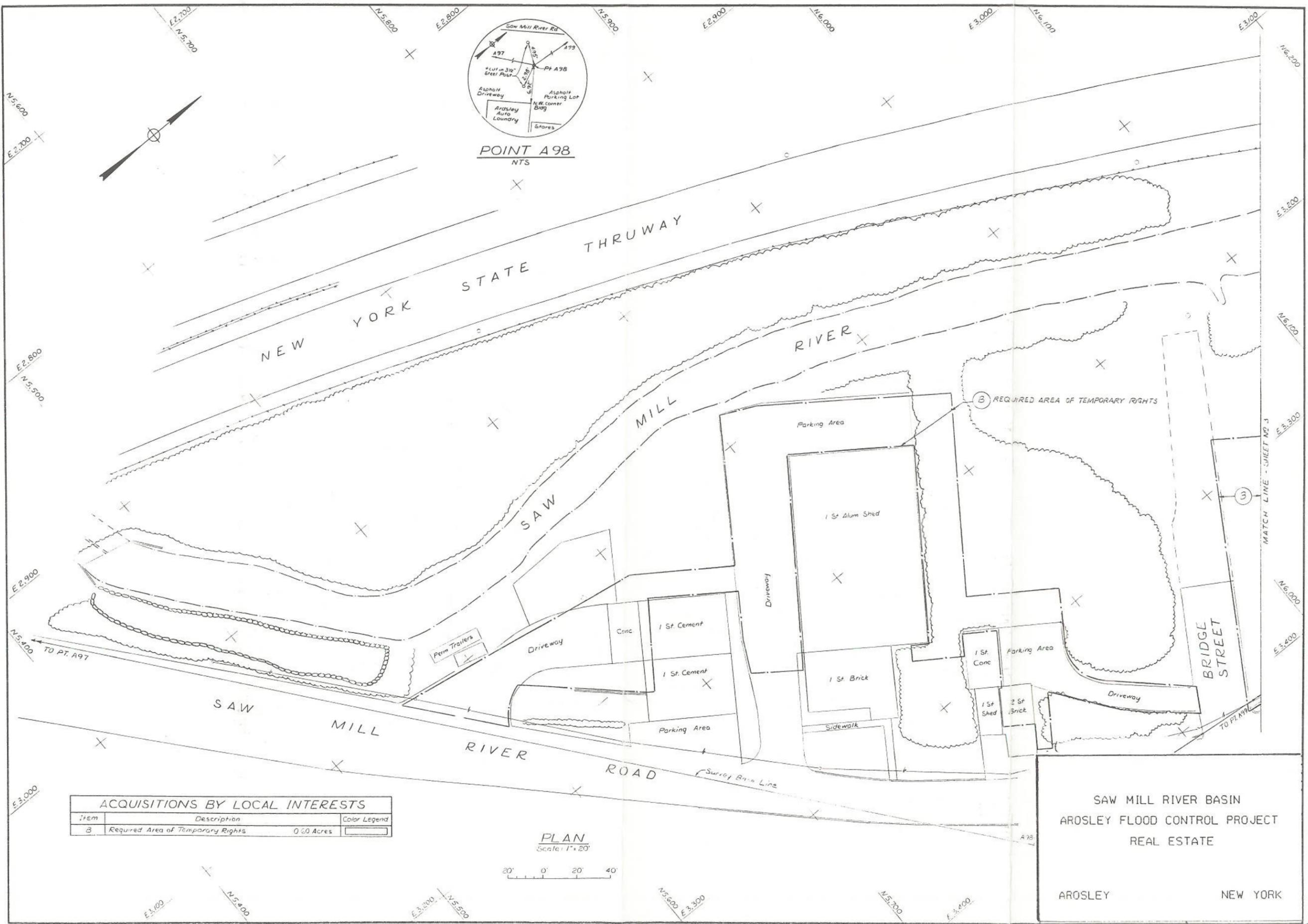
Point	Coordinates		Course	Distance	Bearing
	North	East			
A95	5,265.92	2,273.15	A95-A96	305.84	S86°-25'-27"E
A96	5,246.85	2,518.39	A96-A97	146.41	S15°-53'-09"E
A97	5,106.03	2,558.46	A97-A98	108.43	N50°-49'-13"E
A98	5,789.23	3,396.76	A98-A99	402.58	N05°-27'-22"E
A99	6,189.98	3,455.04	A99-A100	1157.37	N49°-26'-33"E
A100	6,942.52	4,314.35	-	-	-
208	6,636.85	4,558.98	208-209	358.51	S25°-45'-29"W
209	6,313.96	4,403.18	209-226	200.12	S67°-31'-45"E
226	6,237.47	4,588.11	226-300	241.64	N24°-39'-18"E
300	6,457.08	4,688.91	300-301	177.72	N10°-10'-12"E
301	6,632.01	4,702.29	301-208	161.38	N88°-16'-53"W
227	6,912.65	3,650.22	227-206	524.35	S32°-15'-19"W
206	6,469.22	3,370.38	206-228	9.18	N44°-17'-38"W
228	6,475.79	3,363.97	228-229	300.04	S33°-57'-54"W
229	6,226.94	3,196.34	-	-	-

ACQUISITIONS BY LOCAL INTERESTS

Item	Description	Color Legend
A	Required Area of Permanent Rights	0.25 Acres
S	Required Area of Temporary Rights	0.18 Acres



SAW MILL RIVER BASIN
 AROSLEY FLOOD CONTROL PROJECT
 REAL ESTATE
 AROSLEY NEW YORK



POINT A98
NTS

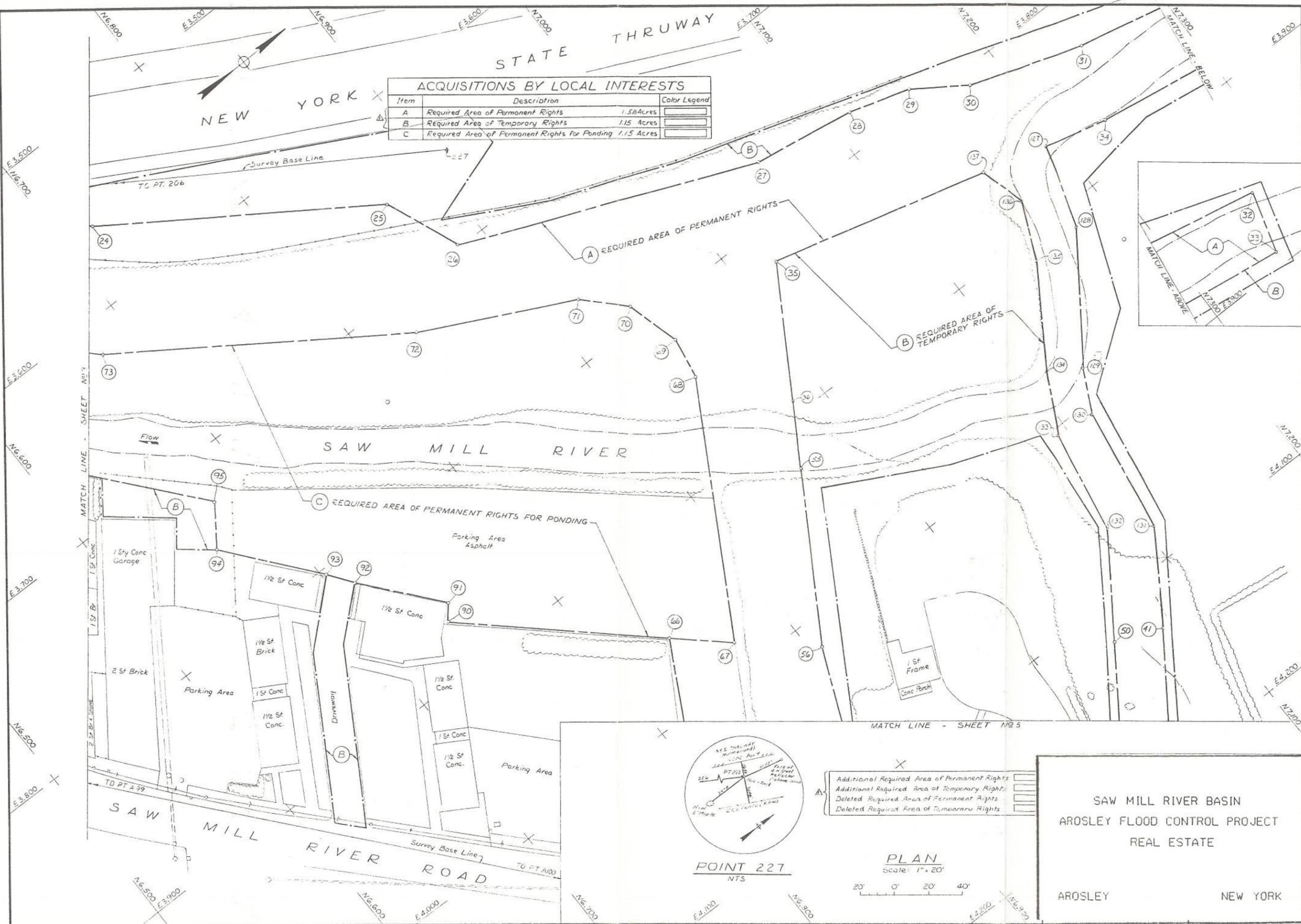
ACQUISITIONS BY LOCAL INTERESTS		
Item	Description	Color Legend
B	Required Area of Temporary Rights	0.60 Acres

PLAN
Scale: 1" = 20'



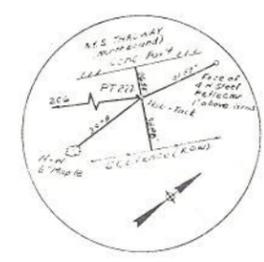
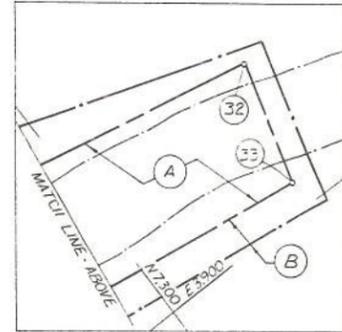
SAW MILL RIVER BASIN
AROSLEY FLOOD CONTROL PROJECT
REAL ESTATE

AROSLEY NEW YORK



ACQUISITIONS BY LOCAL INTERESTS

Item	Description	Color Legend
A	Required Area of Permanent Rights	1.58 Acres
B	Required Area of Temporary Rights	1.15 Acres
C	Required Area of Permanent Rights for Ponding	1.15 Acres



POINT 227
NTS

Additional Required Area of Permanent Rights	[Symbol]
Additional Required Area of Temporary Rights	[Symbol]
Deleted Required Area of Permanent Rights	[Symbol]
Deleted Required Area of Temporary Rights	[Symbol]

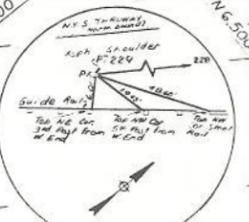
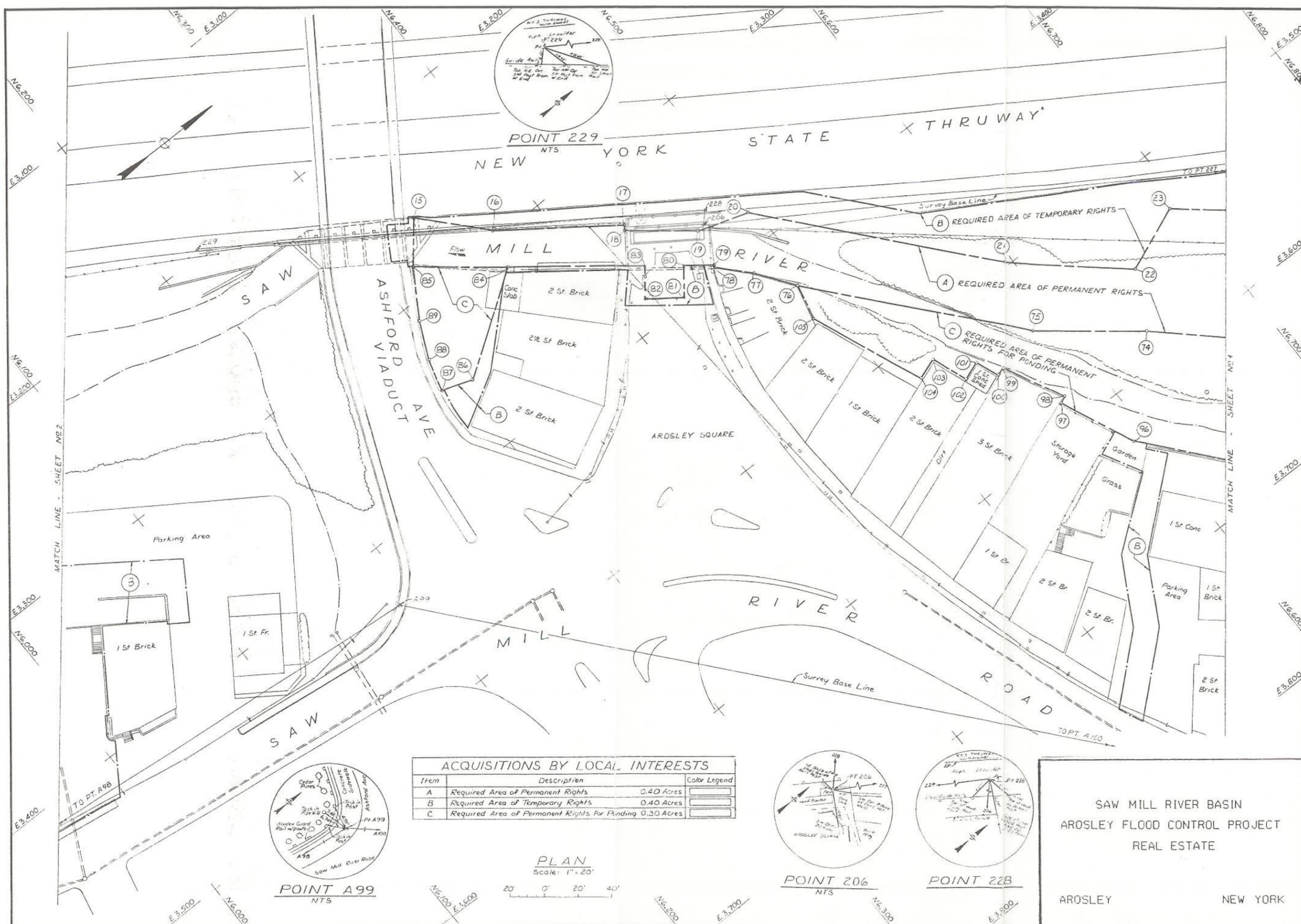
PLAN

Scale: 1" = 20'



SAW MILL RIVER BASIN
AROSLEY FLOOD CONTROL PROJECT
REAL ESTATE

AROSLEY NEW YORK

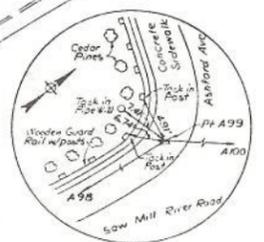


POINT 229
NTS

MATCH LINE - SHEET NO 2

MATCH LINE - SHEET NO 4

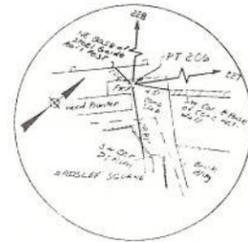
ACQUISITIONS BY LOCAL INTERESTS		
Item	Description	Color Legend
A	Required Area of Permanent Rights	0.40 Acres
B	Required Area of Temporary Rights	0.40 Acres
C	Required Area of Permanent Rights for Ponding	0.30 Acres



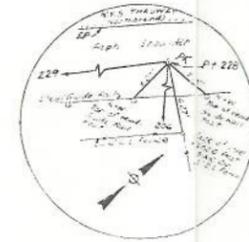
POINT A99
NTS



PLAN
Scale: 1" = 20'



POINT 206
NTS



POINT 228
NTS

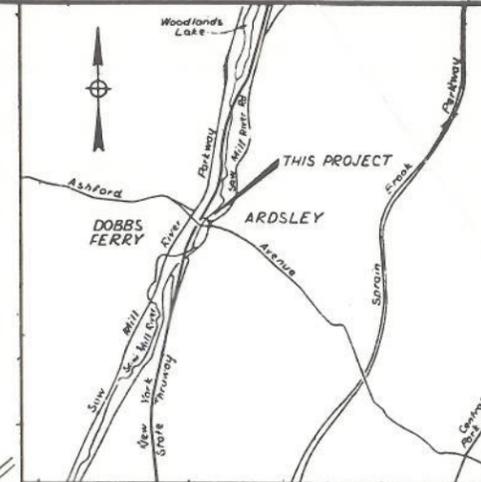
SAW MILL RIVER BASIN
ARDSLEY FLOOD CONTROL PROJECT
REAL ESTATE

ARDSLEY NEW YORK



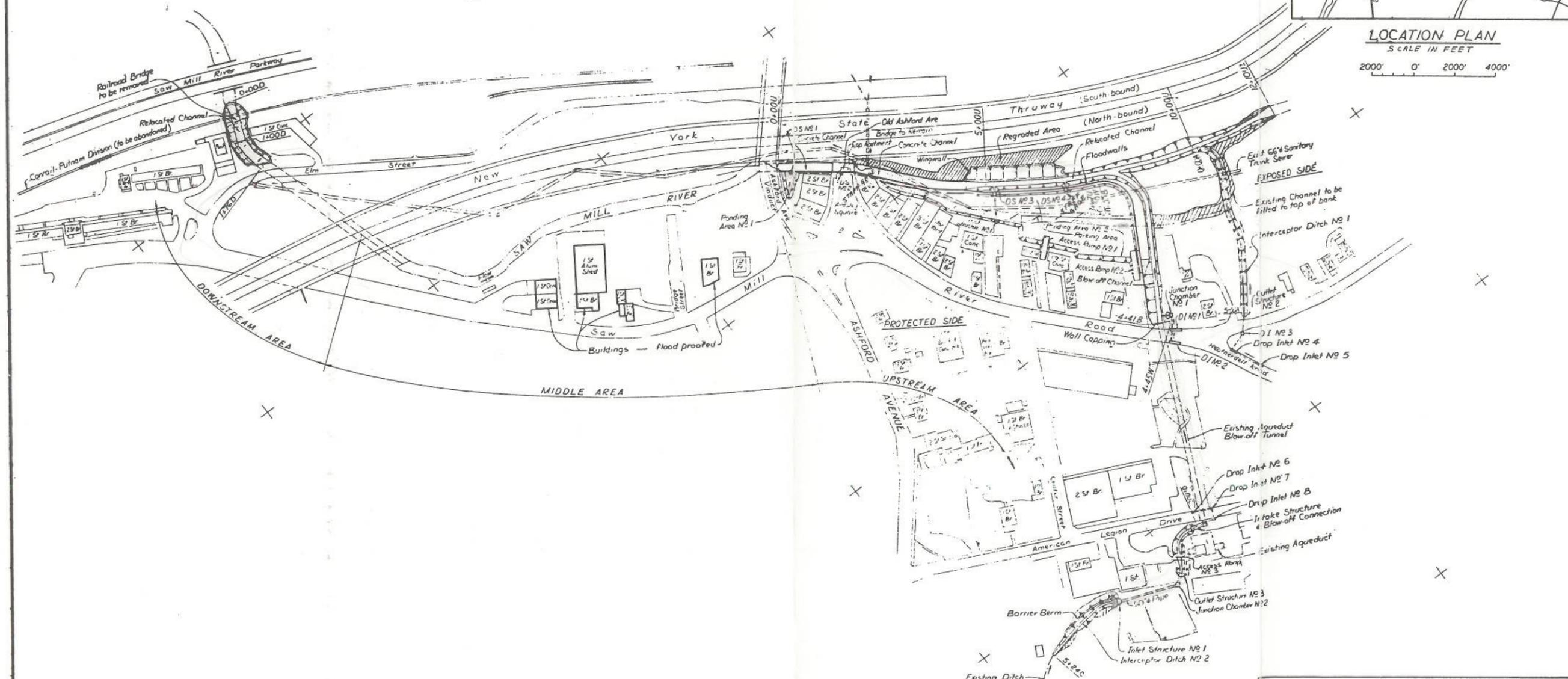
VICINITY MAP

Scale in Miles

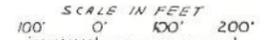


LOCATION PLAN

SCALE IN FEET



GENERAL PLAN



SAW MILL RIVER BASIN

ARDSLEY FLOOD CONTROL PROJECT
GENERAL PLAN

ARDSLEY NEW YORK



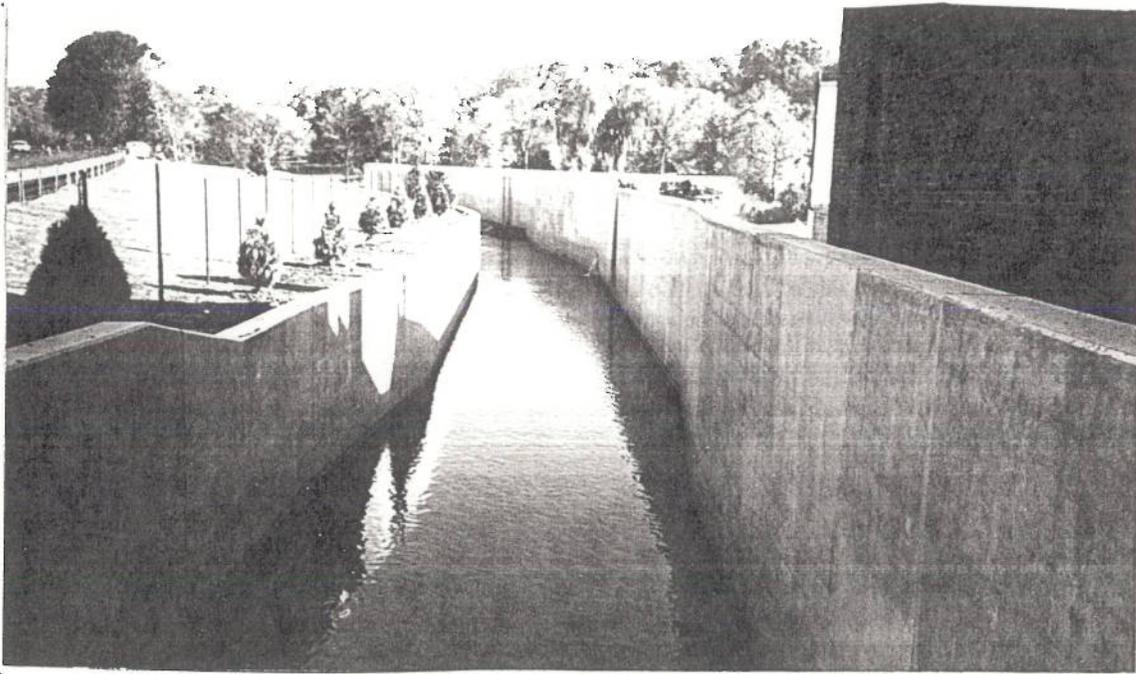
SCALE 1" = 1000'

SAW MILL RIVER
ARDSLEY FLOOD CONTROL
PROJECT
INTERIOR DRAINAGE
SUB AREA

ARDSLEY

NEW YORK

PLATE 2



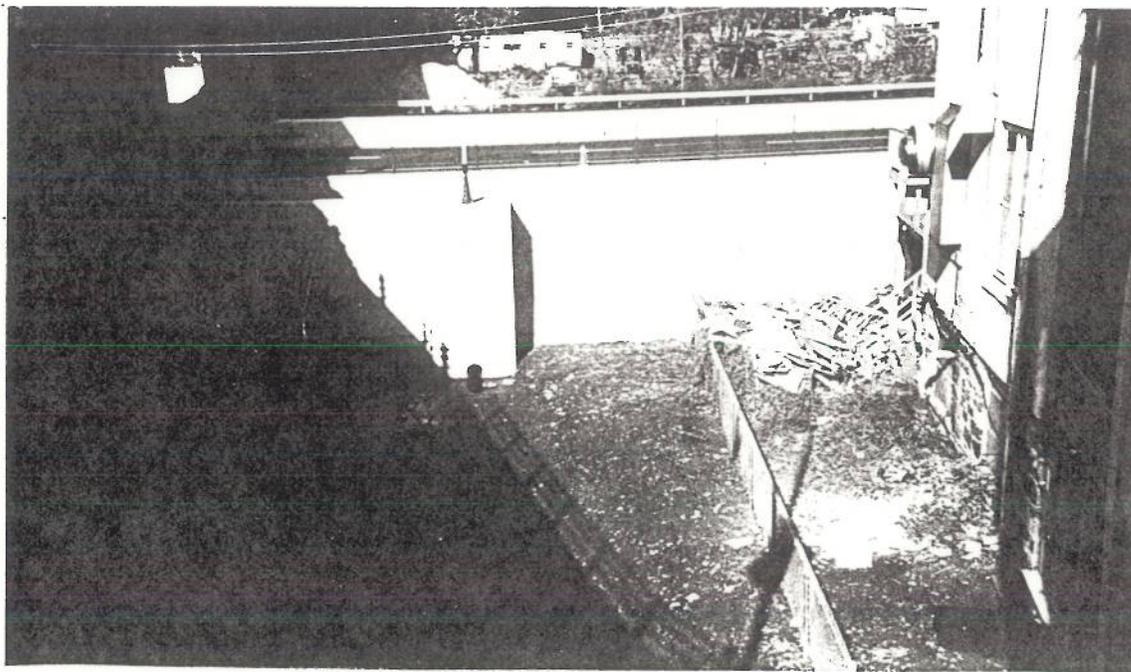
View looking upstream at the improved concrete channel



View looking downstream from blowoff channel confluence



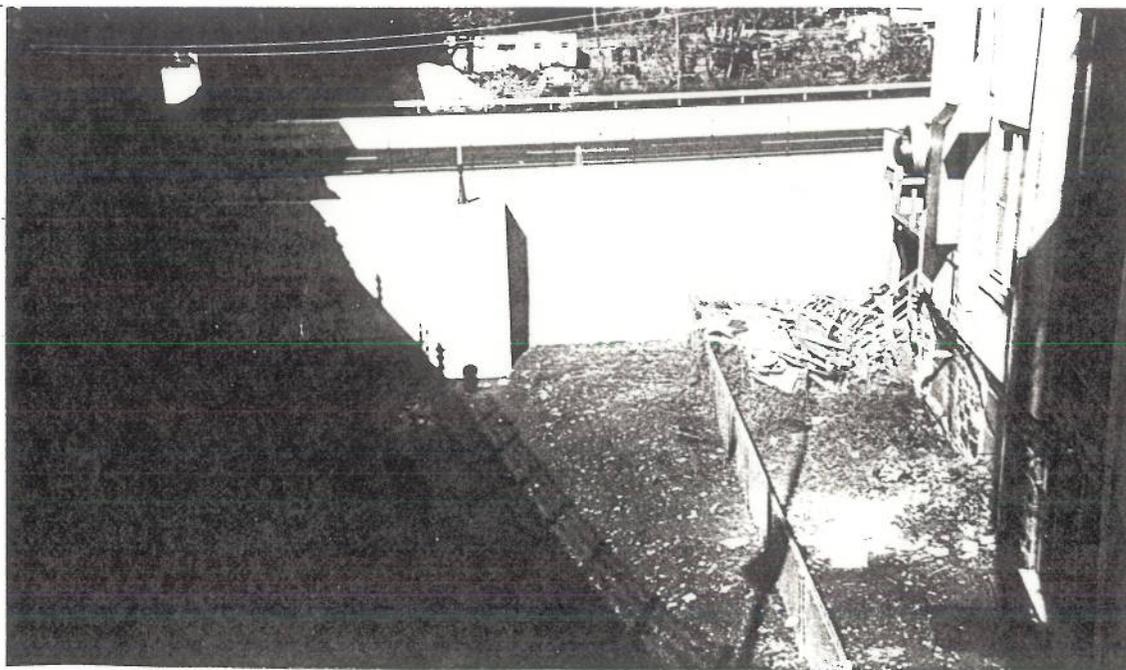
View of ponding area No. 2 with drainage structure No. 4 in background.



View of ponding area No. 1 with drainage structure No. 1.



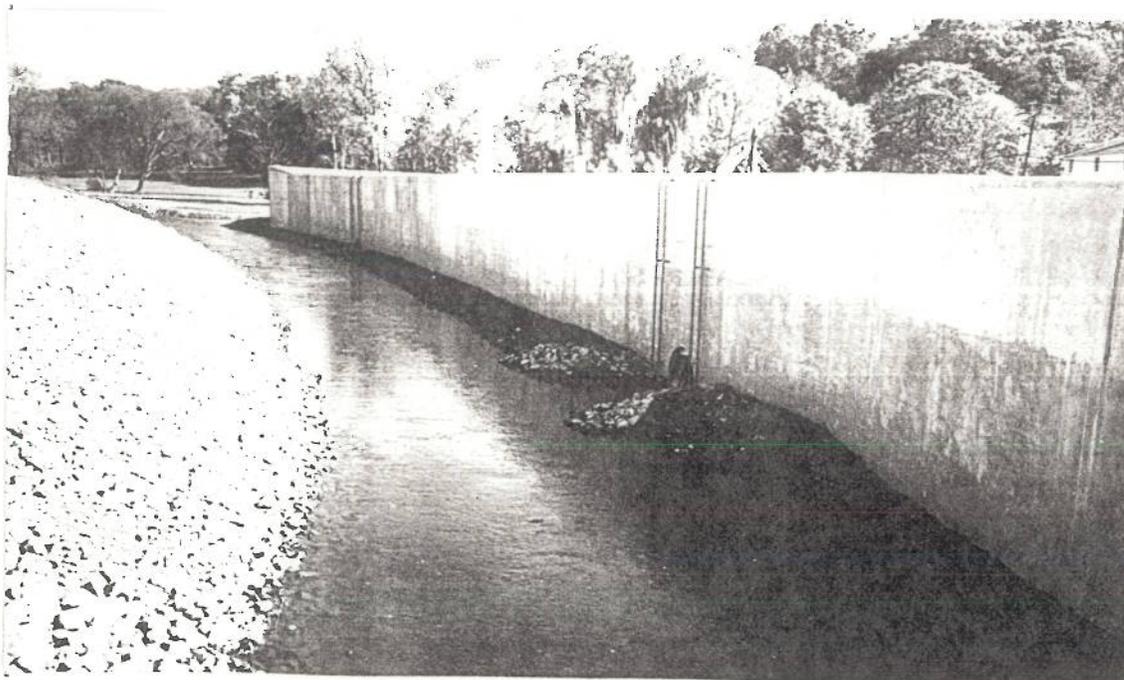
View of ponding area No. 2 with drainage structure No. 4 in background.



View of ponding area No. 1 with drainage structure No. 1.



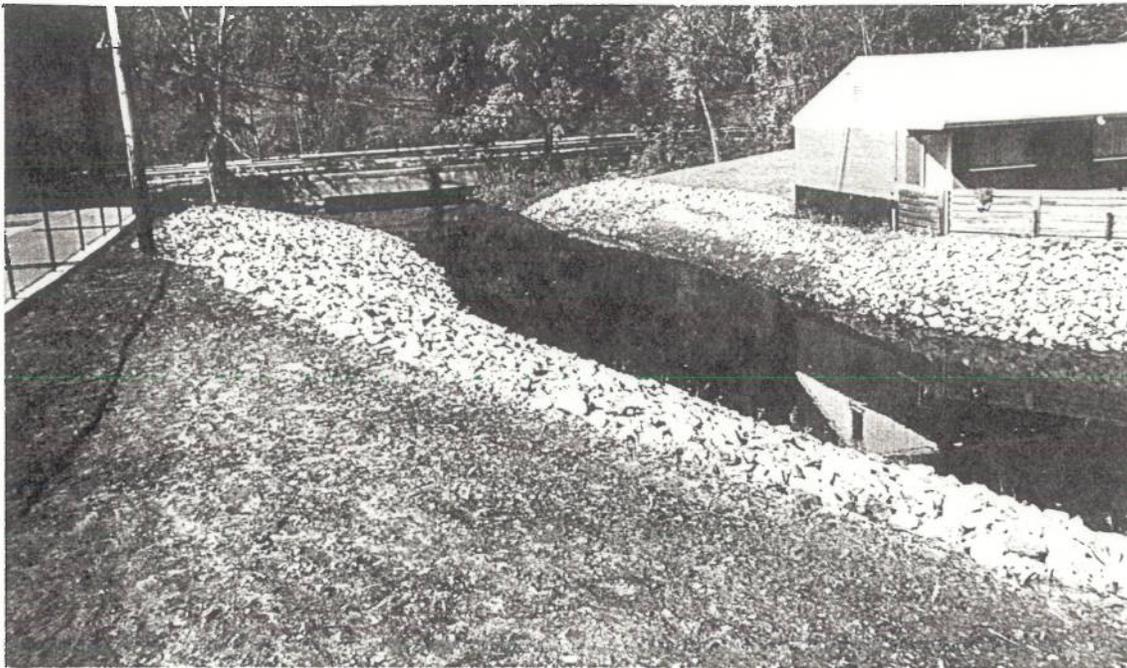
View of outlet from blow-off tunnel and junction chamber No. 1.



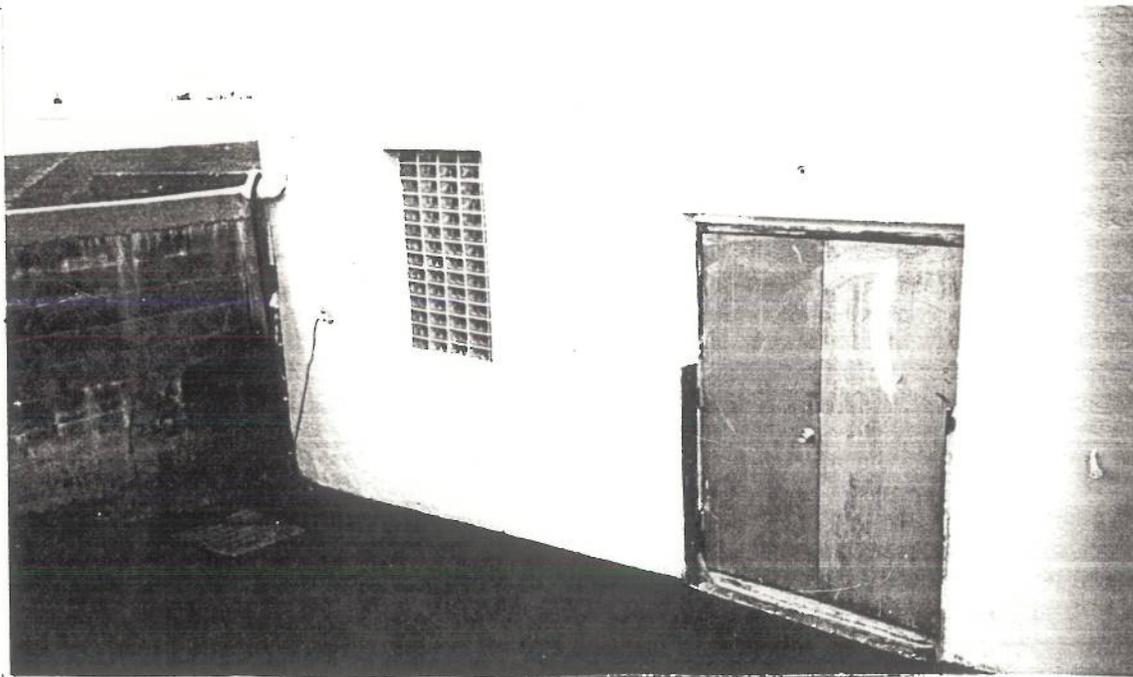
View of upstream end of project showing automatic drainage gate in concrete wall and riprapped right bank of channel.



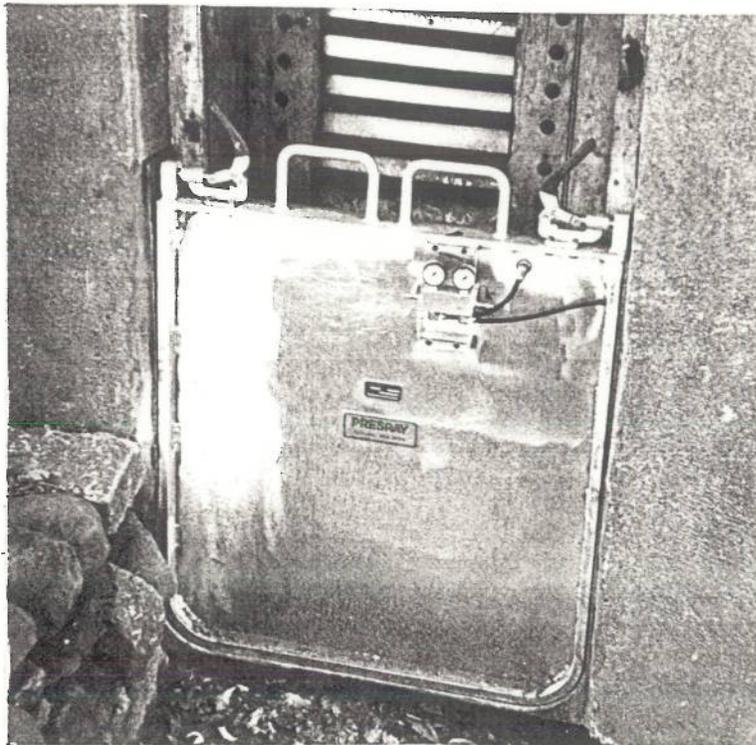
View of intake structure to blow off tunnel.



View of downstream area earthen channel improvement.



View of floodproofing of structure No. 1., waterproof door, provisions for a portable sump pump, glass bricked windows.



View of flood panel - floodproofing of structure No. 2.

OPERATION AND MAINTENANCE MANUAL

ARDSLEY, NEW YORK

FLOOD CONTROL PROJECT

EXHIBITS

TITLE 23—NAVIGATION AND
NAVIGABLE WATERS

Chapter II—Corps of Engineers, War
Department

PART 208—FLOOD CONTROL REGULATIONS
MAINTENANCE AND OPERATION OF FLOOD
CONTROL WORKS

PURSUANT to the provisions of section 3 of the Act of Congress approved June 22, 1896, as amended and supplemented (49 Stat. 1671; 50 Stat. 877; and 56 Stat. 638; 33 U. S. C. 701c; 701d-1), the following regulations are hereby prescribed to govern the maintenance and operation of flood control works:

- (a) **§ 208.10 Local flood protection works; maintenance and operation of structures and facilities—(a) General.** (1) The structures and facilities constructed by the United States for local flood protection shall be continuously maintained in such a manner and operated at such times and for such periods as may be necessary to obtain the maximum benefits.
- (2) The State, political subdivision thereof, or other responsible local agency, which furnished assurance that it will maintain and operate flood control works in accordance with regulations prescribed by the Secretary of War, as required by law, shall appoint a permanent committee consisting of or headed by an official hereinafter called the "Superintendent," who shall be responsible for the development and maintenance of, and directly in charge of, an organization responsible for the efficient operation and maintenance of all of the structures and facilities during flood periods and for continuous inspection and maintenance of the project works during periods of low water, all without cost to the United States.
- (3) A reserve supply of materials needed during a flood emergency shall be kept on hand at all times.
- (4) No encroachment or trespass which will adversely affect the efficient operation or maintenance of the project works shall be permitted upon the right-of-way for the protective facilities.
- (5) No improvement shall be passed over, under, or through the walls, levees, improved channels or floodways, nor shall any excavation or construction be permitted within the limits of the project right-of-way, nor shall any change be made in any feature of the works without prior determination by the District Engineer of the War Department or his authorized representative that such improvement, excavation, construction, or alteration will not adversely affect the functioning of the protective facilities. Such improvements or alterations as may be found to be desirable and permissible under the above determination shall be constructed in accordance with standard engineering practice. Advice regarding the effect of proposed improvements or alterations on the functioning of the project and information concerning methods of construction acceptable under standard engineering practice shall be obtained from the District Engineer or, if otherwise obtained, shall be submitted for his approval. Drawings or prints showing such improvements or alterations as finally constructed shall be furnished the District Engineer after completion of the work.

(6) It shall be the duty of the superintendent to submit a semiannual report to the District Engineer covering inspection, maintenance, and operation of the protective works.

(7) The District Engineer or his authorized representatives shall have access at all times to all portions of the protective works.

(8) Maintenance measures or repairs which the District Engineer deems necessary shall be promptly taken or made.

(9) Appropriate measures shall be taken by local authorities to insure that the activities of all local organizations operating public or private facilities connected with the protective works are coordinated with those of the Superintendent's organization during flood periods.

(10) The War Department will furnish local interests with an Operation and Maintenance Manual for each completed project, or separate useful part thereof, to assist them in carrying out their obligations under these regulations.

(b) **Levees—(1) Maintenance.** The Superintendent shall provide at all times such maintenance as may be required to insure serviceability of the structures in time of flood. Measures shall be taken to promote the growth of sod, exterminate burrowing animals, and to provide for routine mowing of the grass and weeds, removal of wild growth and drift deposits, and repair of damage caused by erosion or other forces. Where practicable, measures shall be taken to retard bank erosion by planting of willows or other suitable growth on areas riverward of the levees. Periodic inspections shall be made by the Superintendent to insure that the above maintenance measures are being effectively carried out and, further, to be certain that:

(i) No unusual settlement, sloughing, or material loss of grade or levee cross section has taken place;

(ii) No caving has occurred on either the land side or the river side of the levee which might affect the stability of the levee section;

(iii) No seepage, saturated areas, or sand boils are occurring;

(iv) Toe drainage systems and pressure relief wells are in good working condition, and that such facilities are not becoming clogged;

(v) Drains through the levees and gates on said drains are in good working condition;

(vi) No revetment work or riprap has been displaced, washed out, or removed;

(vii) No action is being taken, such as burning grass and weeds during inappropriate seasons, which will retard or destroy the growth of sod;

(viii) Access roads to and on the levee are being properly maintained;

(ix) Cattle guards and gates are in good condition;

(x) Crown of levee is shaped so as to drain readily, and roadway thereon, if any, is well shaped and maintained;

(xi) There is no unauthorized grazing or vehicular traffic on the levees;

(xii) Encroachments are not being made on the levee right-of-way which might endanger the structure or hinder its proper and efficient functioning during times of emergency.

Such inspections shall be made immediately prior to the beginning of the flood season; immediately following each major high water period, and otherwise at intervals not exceeding 90 days, and such intermediate times as may be necessary to insure the best possible care of

the levee. Immediate steps will be taken to correct dangerous conditions disclosed by such inspections. Regular maintenance repair measures shall be accomplished during the appropriate season as scheduled by the Superintendent.

(2) **Operation.** During flood periods the levee shall be patrolled continuously to locate possible sand boils or unusual wetness of the landward slope and to be certain that:

(i) There are no indications of slides or sloughs developing;

(ii) Wave wash or scouring action is not occurring;

(iii) No low reaches of levee exist which may be overtopped;

(iv) No other conditions exist which might endanger the structure.

Appropriate advance measures will be taken to insure the availability of adequate labor and materials to meet all contingencies. Immediate steps will be taken to control any condition which endangers the levee and to repair the damaged section.

(c) **Flood walls—(1) Maintenance.** Periodic inspections shall be made by the Superintendent to be certain that:

(i) No seepage, saturated areas, or sand boils are occurring;

(ii) No undue settlement has occurred which affects the stability of the wall or its water tightness;

(iii) No trees exist, the roots of which might extend under the wall and offer accelerated seepage paths;

(iv) The concrete has not undergone cracking, chipping, or breaking to an extent which might affect the stability of the wall or its water tightness;

(v) There are no encroachments upon the right-of-way which might endanger the structure or hinder its functioning in time of flood;

(vi) Care is being exercised to prevent accumulation of trash and debris adjacent to walls, and to insure that no fires are being built near them;

(vii) No bank caving conditions exist riverward of the wall which might endanger its stability;

(viii) Toe drainage systems and pressure relief wells are in good working condition, and that such facilities are not becoming clogged.

Such inspections shall be made immediately prior to the beginning of the flood season, immediately following each major high water period, and otherwise at intervals not exceeding 90 days. Measures to eliminate encroachments and effect repairs found necessary by such inspections shall be undertaken immediately. All repairs shall be accomplished by methods acceptable in standard engineering practice.

(2) **Operation.** Continuous patrol of the wall shall be maintained during flood periods to locate possible leakage at monolith joints or seepage underneath the wall. Floating plant or boats will not be allowed to lie against or tie up to the wall. Should it become necessary during a flood emergency to pass anchor cables over the wall, adequate measures shall be taken to protect the concrete and construction joints. Immediate steps shall be taken to correct any condition which endangers the stability of the wall.

(d) **Drainage structures—(1) Maintenance.** Adequate measures shall be taken to insure that inlet and outlet channels are kept open and that trash drift, or debris is not allowed to accumulate near drainage structures. Flap gates and manually operated gates and valves on

drainage structures shall be examined, oiled, and trial operated at least once every 90 days. Where drainage structures are provided with stop log or other emergency closures, the condition of the equipment and its housing shall be inspected regularly and a trial installation of the emergency closure shall be made at least once each year. Periodic inspections shall be made by the Superintendent to be certain that:

(f) Pipes, gates, operating mechanism, riprap, and headwalls are in good condition;

(ii) Inlet and outlet channels are open;

(iii) Care is being exercised to prevent the accumulation of trash and debris near the structures and that no fires are being built near bituminous coated pipes;

(iv) Erosion is not occurring adjacent to the structure which might endanger its water tightness or stability.

Immediate steps will be taken to repair damage, replace missing or broken parts, or remedy adverse conditions disclosed by such inspections.

(2) *Operation.* Whenever high water conditions impend, all gates will be inspected a short time before water reaches the invert of the pipe and any object which might prevent closure of the gate shall be removed. Automatic gates shall be closely observed until it has been ascertained that they are securely closed. Manually operated gates and valves shall be closed as necessary to prevent inflow of flood water. All drainage structures in levees shall be inspected frequently during floods to ascertain whether seepage is taking place along the lines of their contact with the embankment. Immediate steps shall be taken to correct any adverse condition.

(g) (e) *Closure structures*—(1) *Maintenance.* Closure structures for traffic openings shall be inspected by the superintendent every 90 days to be certain that:

(i) No parts are missing;

(ii) Metal parts are adequately covered with paint;

(iii) All movable parts are in satisfactory working order,

(iv) Proper closure can be made promptly when necessary;

(v) Sufficient materials are on hand for the erection of sand bag closures and that the location of such materials will be readily accessible in times of emergency.

Tools and parts shall not be removed for other use. Trial erections of one or more closure structures shall be made once each year, alternating the structures chosen so that each gate will be erected at least once in each 3-year period. Trial erection of all closure structures shall be made whenever a change is made in key operating personnel. Where railroad operation makes trial erection of a closure structure infeasible, rigorous inspection and drill of operating personnel may be substituted therefor. Trial erection of sand bag closures is not required. Closure materials will be carefully checked prior to and following flood periods, and damaged or missing parts shall be repaired or replaced immediately.

(2) *Operation.* Erection of each movable closure shall be started in sufficient time to permit completion before flood waters reach the top of the structure sill. Information regarding the proper method of erecting each individual closure structure, together with an estimate of the time required by an experienced crew to complete its erection will be given

in the Operation and Maintenance Manual which will be furnished local interests upon completion of the project. Closure structures will be inspected frequently during flood periods to ascertain that no undue leakage is occurring and that drains provided to care for ordinary leakage are functioning properly. Boats or floating plant shall not be allowed to tie up to closure structures or to discharge passengers or cargo over them.

(f) *Pumping plants*—(1) *Maintenance.* Pumping plants shall be inspected by the Superintendent at intervals not to exceed 90 days during flood seasons and 90 days during off-flood seasons to insure that all equipment is in order for instant use. At regular intervals, proper measures shall be taken to provide for cleaning plant, buildings, and equipment, repainting as necessary, and lubricating all machinery. Adequate supplies of lubricants for all types of machines, fuel for gasoline or diesel powered equipment, and flash lights or lanterns for emergency lighting shall be kept on hand at all times. Telephone service shall be maintained at pumping plants. All equipment, including switch gear, transformers, motors, pumps, valves, and gates shall be trial operated and checked at least once every 90 days. Megger tests of all insulation shall be made whenever wiring has been subjected to undue dampness and otherwise at intervals not to exceed one year. A record shall be kept showing the results of such tests. Wiring disclosed to be in an unsatisfactory condition by such tests shall be brought to a satisfactory condition or shall be promptly replaced. Diesel and gasoline engines shall be started at such intervals and allowed to run for such length of time as may be necessary to insure their serviceability in times of emergency. Only skilled electricians and mechanics shall be employed on tests and repairs. Operating personnel for the plant shall be present during tests. Any equipment removed from the station for repair or replacement shall be returned or replaced as soon as practicable and shall be trial operated after reinstallation. Repairs requiring removal of equipment from the plant shall be made during off-flood seasons insofar as practicable.

(2) *Operation.* Competent operators shall be on duty at pumping plants whenever it appears that necessity for pump operation is imminent. The operator shall thoroughly inspect, trial operate, and place in readiness all plant equipment. The operator shall be familiar with the equipment manufacturers' instructions and drawings and with the "Operating Instructions" for each station. The equipment shall be operated in accordance with the above-mentioned "Operating Instructions" and care shall be exercised that proper lubrication is being supplied all equipment, and that no overheating, undue vibration or noise is occurring. Immediately upon final recession of flood waters, the pumping station shall be thoroughly cleaned, pump house sumps flushed, and equipment thoroughly inspected, oiled and greased. A record or log of pumping plant operation shall be kept for each station, a copy of which shall be furnished the District Engineer following each flood.

(g) (f) *Channels and floodways*—(1) *Maintenance.* Periodic inspections of improved channels and floodways shall be made by the Superintendent to be certain that:

(i) The channel or floodway is clear of debris, weeds, and wild growth;

(ii) The channel or floodway is not being restricted by the depositing of waste materials, building of unauthorized structures or other encroachments;

(iii) The capacity of the channel or floodway is not being reduced by the formation of shoals;

(iv) Banks are not being damaged by rain or wave wash, and that no sloughing of banks has occurred;

(v) Riprap sections and deflection dikes and walls are in good condition.

(vi) Approach and egress channels adjacent to the improved channel or floodway are sufficiently clear of obstructions and debris to permit proper functioning of the project works.

Such inspections shall be made prior to the beginning of the flood season and otherwise at intervals not to exceed 90 days. Immediate steps will be taken to remedy any adverse conditions disclosed by such inspections. Measures will be taken by the Superintendent to promote the growth of grass on bank slopes and earth deflection dikes. The Superintendent shall provide for periodic repair and cleaning of debris basins, check dams, and related structures as may be necessary.

(2) *Operation.* Both banks of the channel shall be patrolled during periods of high water, and measures shall be taken to protect those reaches being attacked by the current or by wave wash. Appropriate measures shall be taken to prevent the formation of jams of ice or debris. Large objects which become lodged against the bank shall be removed. The improved channel or floodway shall be thoroughly inspected immediately following each major high water period. As soon as practicable thereafter, all snags and other debris shall be removed and all damage to banks, riprap, deflection dikes and walls, drainage outlets, or other flood control structures repaired.

(h) *Miscellaneous facilities*—(1) *Maintenance.* Miscellaneous structures and facilities constructed as a part of the protective works and other structures and facilities which function as a part of, or affect the efficient functioning of the protective works, shall be periodically inspected by the Superintendent and appropriate maintenance measures taken. Damaged or unserviceable parts shall be repaired or replaced without delay. Areas used for ponding in connection with pumping plants or for temporary storage of interior run-off during flood periods shall not be allowed to become filled with silt, debris, or dumped material. The Superintendent shall take proper steps to prevent restriction of bridge openings and, where practicable, shall provide for temporary raising during floods of bridges which restrict channel capacities during high flows.

(2) *Operation.* Miscellaneous facilities shall be operated to prevent or reduce flooding during periods of high water. Those facilities constructed as a part of the protective works shall not be used for purposes other than flood protection without approval of the District Engineer unless designed therefor. (49 Stat. 1571, 50 Stat. 877; and 55 Stat. 638; 33 U.S.C. 701c; 701c-1) (Regs. 9 August 1944, CE SPEWF)

[SEAL]

J. A. ULIO,
Major General,
The Adjutant General.

[P. R. Doc. 44-12285; Filed, August 15, 1944;
6:44 a. m.]

ARDSLEY, NEW YORK
 LOCAL FLOOD PROTECTION WORKS
 LIST OF DRAINAGE STRUCTURES

IDENTIFICATION ON PLATE 1	STATION OR LOCATION	BANK	OUTLET		GATE		REMARKS
			SIZE	INV.EL.	SIZE	TYPE	
D.S. No. 1	U.S. OF ASHFORD AVE. PONDING AREA 1	L.B.	15"	123.0	15"	A.D.	DRAINS PONDING AREA THROUGH NEW CONCRET WALL
D.S. No. 2	OLD ASHFORD AVE BRIDGE	L.B.	24"	126.0	24"	A.D.	DRAINS THROUGH NEW CONCRETE WALL
D.S. No. 3	5+20U PONDING AREA 2	L.B.	36"	122.5	36"	A.D.	DRAINS PONDING AREA THROUGH NEW CONCRET WALL
D.S. No. 4	6+90U PONDING AREA 2	L.B.	36"	122.7	36"	A.D.	DRAINS PONDING AREA THROUGH NEW CONCRET WALL

- Notes: 1. A.D. = Automatic Drainage
 2. Sluice gates are provided with Drainage Structure No. 1, 3 and 4.
 These provide positive protection in the case of an automic drainage gate malfunction.

EXHIBIT B

ARDSLEY, NEW YORK
FLOOD CONTROL PROJECT

CHECK SHEET FOR INSPECTION OF CONCRETE WALLS

Inspection of _____ River
() Emergency () Wall () Right () Left bank
From _____ to _____
Station or Street Station or Street
Inspected by _____ Date _____ 19____

<u>ITEM</u>	<u>LOCATION</u>	<u>CONDITION</u>	<u>RECOMMENDATIONS</u>
1.		Settlement, loss of grade	
2.		Riprap and slope protection	
3.		Evidence	
4.		Access roads and ramps	
5.		Concrete (cracking, breaking, or spalling)	
6.		Unauthorized encroachments on right of way	
7.		Unauthorized excavation or removal of sod	
8.		Unauthorized grazing or vehicular traffic	
9.		Accumulation of drift, trash, and debris	
10.		Joints and joint materials, including relative movement at joints between structures or portions of structures.	
11.		Water passages	
12.		Building, sliding or seepage.	
13.		Conditions of relief wells, collector pipes, inspection manholes, or other features of seepage control systems.	
14.		Foundation drains, joint drains, face drains.	

ARDSLEY, NEW YORK
LOCAL FLOOD CONTROL PROJECT

CHECK SHEET FOR INSPECTION OF
AUTOMATIC DRAINAGE GATES AND SLUICE GATES

IDENTIFICATION ON PLATE 1	STATION	OUTLET		GATE		LUBRICATED	CONDITION & RECOMMENDATIONS
		SIZE	INV.EL.	SIZE	TYPE		

EXHIBIT D

- NOTES: 1. The sluice gate of the drainage structure is located in a control manhole.
2. D.S.= Drainage Structure
C.M.= Control Manhole
A.D.= Automatic Drainage Gate (Flap Gate)

ARDSLEY, NEW YORK
FLOOD CONTROL PROJECT

CHECK SHEET FOR INSPECTION OF DRAINAGE DITCHES

Drainage Ditch _____.

From _____ to _____.

Inspected by _____ Date _____.

Item	Station or Location	Condition	Recomendations
1. Weeds & wild growth in ditch	_____		
2. Trash, ashes, debris, etc., dumped in ditch	_____		
3. Structure or other unauthorized encroachment on the ditch	_____		
4. Erosion of slopes	_____		
5. Riprap	_____		

REMARKS:

INSPECTOR

ARDSLEY, NEW YORK
FLOOD CONTROL PROJECT

CHECK SHEET FOR INSPECTION OF CHANNELS

Flood-Protection Works
at _____ New York

Name of Channel _____

From _____ to _____

Inspected by _____ Date _____

Item	Station or Location	Condition	Recommendations
1. Weed & wild growth in channel	_____		
2. Trash, ashes, etc. dumped in channel	_____		
3. Structures or other unauthorized encroachment within channel right-of way	_____		
4. Shoals forming in channel	_____		
5. Erosion of bank	_____		
6. Riprap	_____		
7. Unauthorized Borrow Pits	_____		

REMARKS:

INSPECTOR

ARDSLEY, NEW YORK
FLOOD CONTROL PROJECT

CHECK SHEET FOR INSPECTION OF DRAINAGE FACILITIES

ITEM	CONDITION	RECOMMENDATIONS
<u>Manhole</u>		
<u>Drop Inlet</u>		
<u>Culvert</u>		
<u>Drain Pipe</u>		
Other:		

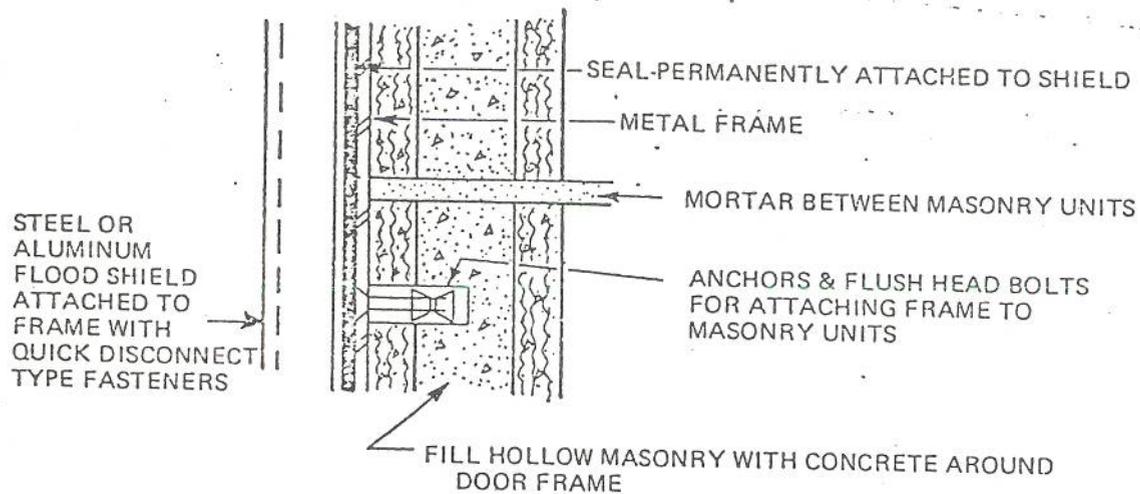
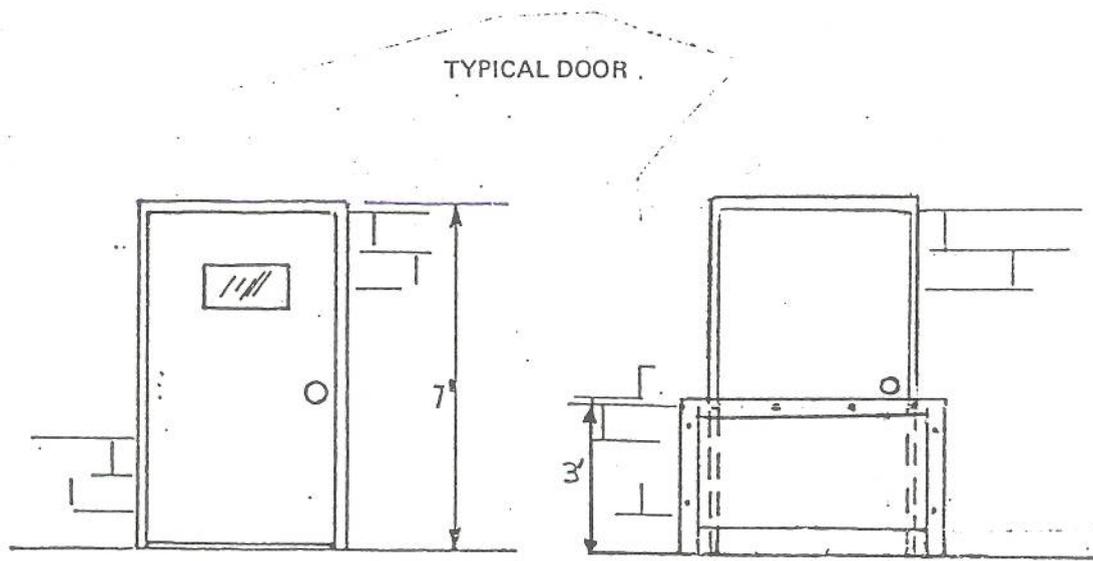
ARDSLEY, NEW YORK
LOCAL FLOOD PROTECTION WORKS

CHECK SHEET FOR INSPECTION OF PONDING AREAS

Inspected by _____ Title _____ Date _____

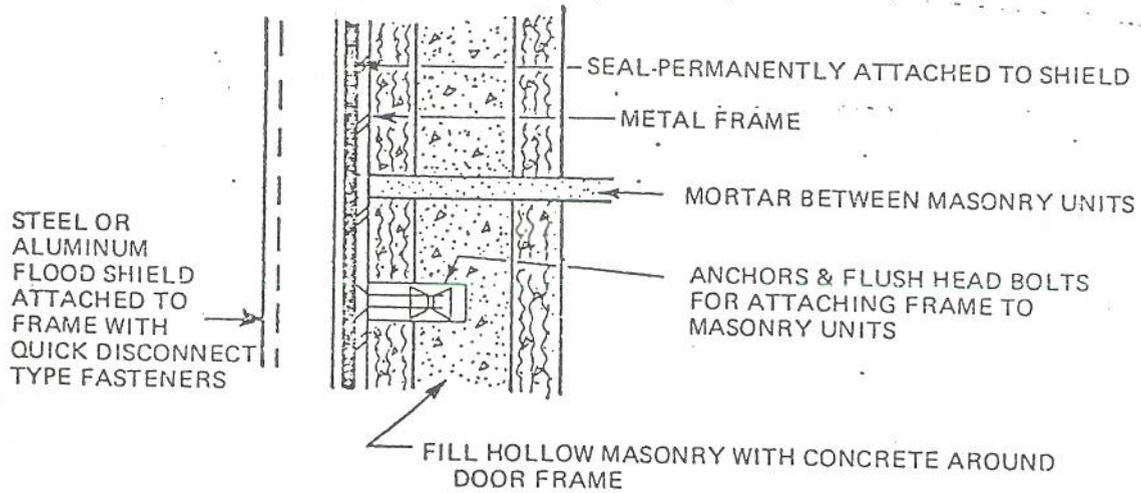
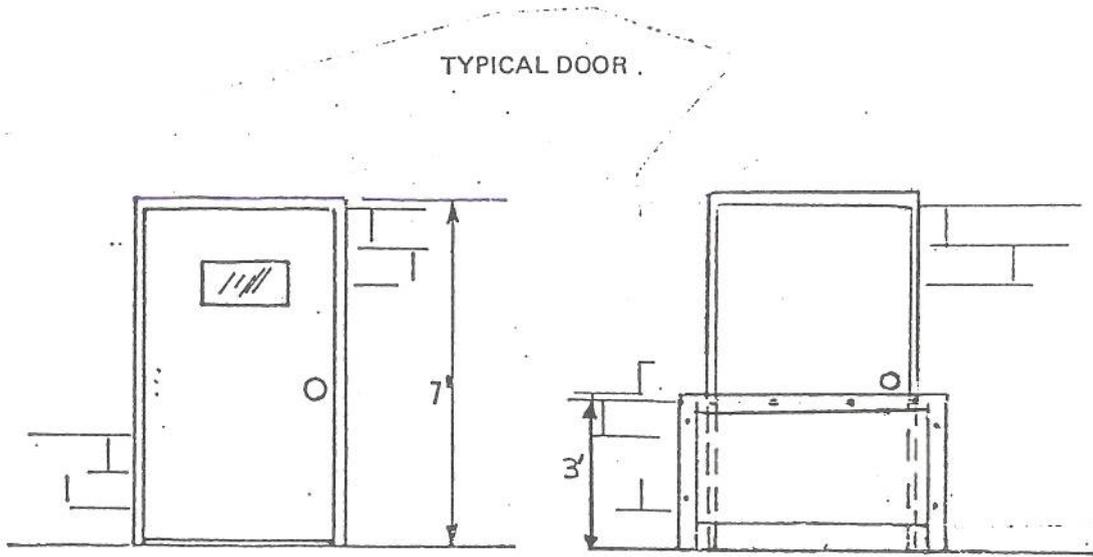
<u>ITEM</u>	<u>LOCATION</u>	<u>CONDITION</u>	<u>RECOMMENDATIONS</u>
1. Silt Accumulation			
2. Undesirable Growth			
3. Inlet Channels			
4. Outlet Channels			

ARDSLEY, NEW YORK
FLOOD CONTROL PROJECT
FLOODPROOFING



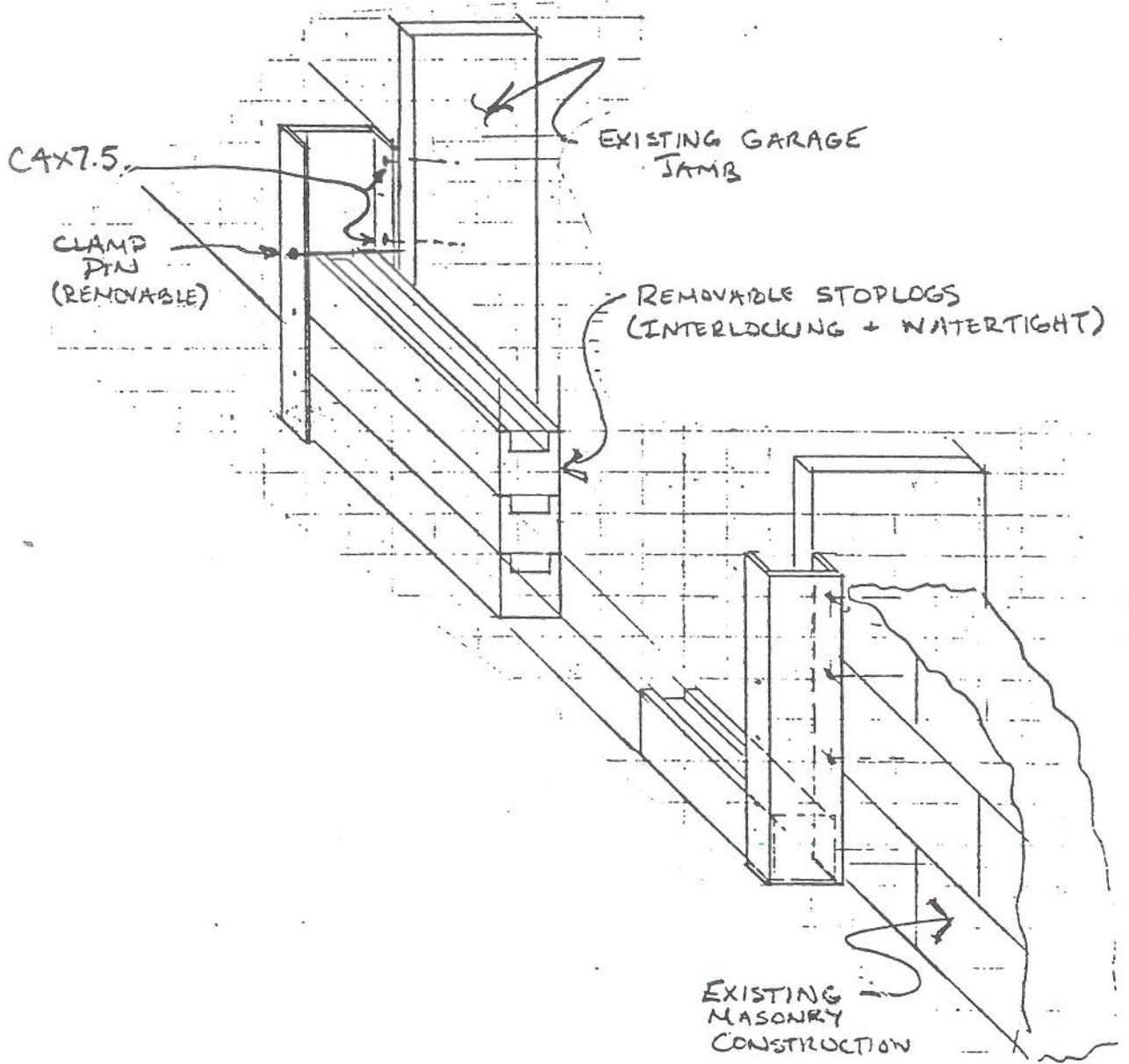
FLOODSHIELD FOR WATERTIGHT DOOR
(STRUCTURES # 1, 2, 4)

ARDSLEY, NEW YORK
FLOOD CONTROL PROJECT
FLOODPROOFING



FLOODSHIELD FOR WATERTIGHT DOOR
(STRUCTURES # 1, 2, 4)

ARDSLEY, NEW YORK
FLOOD CONTROL PROJECT
FLOODPROOFING



TEMPORARY CLOSURE FOR
GARAGE DOORS
(LOW-LEVEL PROTECTION, i.e. 2.5-3.0 feet)

ARDSLEY, NEW YORK
LOCAL FLOOD CONTROL PROJECT

CHECK SHEET FOR INSPECTION OF
FLOOD PROOFED BUILDINGS

STRUCTURE	LOCATION	EQUIPMENT	REMARKS
No. 1		Watertight door Sump Pump etc.	
No. 2		Stoplogs Flood Panels Air Pump etc.	
No. 3		Watertight door etc.	

ARDSLEY, NEW YORK
FLOOD CONTROL PROJECT

PERSONNEL DIRECTORY

TITLE	ADDRESS	TELEPHONE	FUNCTION
R.E. Wege Senior Hydraulic Engineer New York State Department of Environmental Conservation	Building #2 State Office Building Campus Washington Avenue Albany, NY 12226	(518) 457-3157	Superintendent responsible for Operation and Maintenance of entire flood control works.
Timothy C. Idoni Village Manager City of Ardsley	505 Ashford Ave. Ardsley, NY	(914) 639 -1550- 693	Superintendent's local representative
Col. R. M. Danielson District Engineer Department of the Army New York District Corps of Engineers	26 Federal Plaza New York, NY 10278	(212) 264-0100	District Engineer
Meteorologist - in - Charge National Weather Service	30 Rockefeller Plaza New York, NY 10112	(212) 399-5569	Weather forecasts
Forecaster - in - Charge Northeast River Forecast Center	705 Bloomfield Avenue Bloomfield, CT 06002	(203) 240-3514	River Stage forecasts

EXHIBIT M