ADVISABILITY REPORT

for

CONSTRUCTION OF MARINE TERMINAL

at

MIDDLETOWN, CONNECTICUT

Prepared for

MIDSTATE REGIONAL PLANNING AGENCY

and

MIDDLESEX BRIDGE and PORT AUTHORITY

By

SCHOENFELD ASSOCIATES, INC.

CONSULTING ENGINEERS

BOSTON, MASSACHUSETTS

October, 1968

TITLE:	Advisability Report for Construction of Marine Terminal at Middletown
AUTHOR:	Schoenfeld Associates, Inc., Boston, Massachusetts 02111
SUBJECT:	Study of the Advisability of constructing a Marine Terminal at Middletown for commercial use by water, rail and highway elements.
DATE:	October, 1968
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ABSTRACT:

The analysis consists of three components:

1. Evaluation of need for development of a Marine Terminal and Port Facility at Middletown.

2. An Economic Survey of Main Generators for truck, rail and water shipments as well as magnitude and type of shipment that can be expected at the Terminal.

3. Analyses and recommendations as to the need, size and location of Port and Terminal Facilities.

The report is intended to serve as a basis for re-evaluation of the Connecticut River in this planning area from the commercial character to the recreational aspect.

ADVISABILITY REPORT

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The preparation of this report was financed through an urban planning grant from the Department of Housing and Urban Development, under the provisions of Section 701 of the Housing Act of 1954, as amended, and by a grant from the Middlesex Bridge and Port Authority.

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SCHOENFELD ASSOCIATES, INC.
BOSTON · WASHINGTON · MIAMI
CONSULTING ENGINEERS
210 SOUTH STREET · BOSTON · MASSACHUSETTS 02111

December 2, 1968

Mr. George Eames, III, Chairman
Midstate Regional Planning Agency
Post Office Box 139
Middletown, Connecticut 06457

Dear Mr. Eames:

In accordance with the requirements of our Contract for Consulting Engineering Services with Midstate Regional Planning Agency dated October 1, 1967, we are privileged to submit one hundred copies of the report entitled "Advisability Report for Construction of Marine Terminal at Middletown, Connecticut."

This report consists of an in-depth study of the existing and future development of marine potential at Middletown.

We wish to express our appreciation for the assistance and cooperation extended to us by Planning Agency's staff in the preparation of this report.

Very truly yours,

SCHOENFELD ASSOCIATES, INC.

Richard J. Schoenfeld, Jr.
President

RJS/pm

ACKNOWLEDGEMENT

Schoenfeld Associates, Inc., wishes to acknowledge the invaluable cooperation and assistance furnished throughout the study by the following members of the Midstate Regional Planning Agency and Middlesex Bridge and Port Authority.

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I. INTRODUCTION AND GENERAL CONCLUSION

The City of Middletown in the 16th Century was a thriving and active port on the Connecticut River; but with the advent of the Industrial Revolution and its respective effects, the port facilities of the town fell into disuse and its maritime activity became a thing of the past.

As presently constituted, the major use of the Connecticut River and Middletown as a port is strictly for local barge operations for the carrying of bulk commodities and for recreational purposes.

The purpose of this study is to determine the need and desirability of developing a port facility at Middletown. To this end, an in-depth analysis has been made to determine the factors influencing the development of a port facility in Middletown. This study was accomplished through personal interviews, surveys and the research of applicable publications.

The general consensus of companies interviewed had little to no interest in the development of a port facility in Middletown.

The feasibility of constructing a port facility in the Middletown area in terms of financial return proved to be non-existent. An analysis was made on the basis of a state-operated facility as well as for a privately developed facility; but in both cases, they proved to be deficit operations with no tangible benefits to be derived by the area.

In 1946, an in-depth study of the economics and engineering survey of all navigable waters in the State of Connecticut was prepared as a report to the Connecticut Port Survey Commission. It stated, "However, the extensive foreign and domestic commerce in general merchandise carried on by Connecticut in the past has decreased, and the increased tonnage during the past twenty-five years has been due to the movement of bulk fuels through these ports. Another factor has been the insufficient width and depth of channels in Connecticut ports, preventing vessels of increased size and draft from using them."

Today, better than twenty years later, the problem remains the same. However, the problem for Middletown as a port is more acute, since other modes of transportation have become more competitive. The moving of bulk cargo by barge is still the mainstay of river commerce for the Connecticut River at Middletown with future development to be geared to its recreational potentials.

II. SCOPE OF PROJECT

Under Modified Senate Bill No. 984 (Special Act No. 266), the Senate and House of Representatives created a commission to be known as the Middlesex Bridge and Port Authority.

This Bill reads as follows:

MODIFIED SENATE BILL NO. 984

Special Act No. 266

AN ACT CREATING THE MIDDLESEX BRIDGE AND PORT AUTHORITY

Be it enacted by the Senate and House of Representatives in General Assembly Convened:

SECTION 1. There is created a commission of eight members, four to be appointed by the president pro tempore of the senate and four by the speaker of the house of representatives, resident electors of Middlesex county, and known as "The Middlesex Bridge and Port Authority".

SEC. 2. The commission shall investigate and study the advisability of constructing a new bridge at Middletown to cross the Connecticut river, its cost, and the methods of financing its construction. The commission also shall investigate and study the advisability of constructing a state owned and operated terminal at Middletown for commercial use by water, rail, and highway use. It shall report its findings and recommendations to the general assembly not later than December 31, 1966.

SEC. 3. The members of the commission shall receive no compensation for their services as such but shall be reimbursed for all expenses incurred in the performance of their duties.

SUBSTITUTE FOR SENATE BILL NO. 927

Special Act No. 20

AN ACT CHANGING THE DATE UPON WHICH THE MIDDLESEX BRIDGE AND PORT AUTHORITY MUST MAKE ITS REPORT TO THE GENERAL ASSEMBLY.

Be it enacted by the Senate and House of Representatives in General Assembly convened:

Section 2 of number 266 of the special acts of February, 1965, is amended to read as follows: The commission shall investigate and study the advisability of constructing a new bridge at Middletown to cross the Connecticut River, its cost, and the methods of financing its construction. The commission also shall investigate and study the advisability of constructing a state owned and operated terminal at Middletown for commercial use by water, rail and highway use. The commission shall report its findings and recommendations to the general assembly by December 31, 1968, and said commission is extended to said date.

Under Section 2 of said Acts "The Commission also shall investigate and study the advisability of constructing a state owned and operated terminal at Middletown for commercial use by water, rail and highway use."

In accordance with the above instruction from the Legislature an agreement was executed on October 1, 1967, between Schoenfeld Associates, Inc., and Midstate Regional Planning Agency to study the advisability of constructing a commercial marine terminal at Middletown, Connecticut. This study was performed in connection with the Planning Project of the Planning Agency under Urban Planning Grant Contract No. Connecticut P-68 as amended, and in close coordination with the Middlesex Bridge and Port Authority.

The scope of this agreement as well as this report were directed to accomplish the following:

a. Evaluate the need and recommend a course of action for the development of a marine terminal and port facility within the planning area as shown on Exhibit 1 to the extent compatible with proposals for the commercial, conservation and recreational use of the river.

b. Prepare an economic survey of the main generator of truck, water and rail shipments in the area of influence of the Midstate Region.

c. Determine the magnitude and type of shipments which may be possible from a marine terminal in the Midstate Region.

d. Make an economic comparison of new facilities as compared to existing competitive facilities.

e. Evaluate all pertinent data and make recommendations as to the need, size and location of Port and Marine Facilities.

f. Coordinate with the appropriate state and federal agencies, including but not limited to the Army Corps of Engineers and the Department of the Interior, in order that any proposal will have the tentative approval of these agencies.

g. Prepare preliminary cost estimates of the terminal if found feasible, and investigate the various methods to finance its construction.

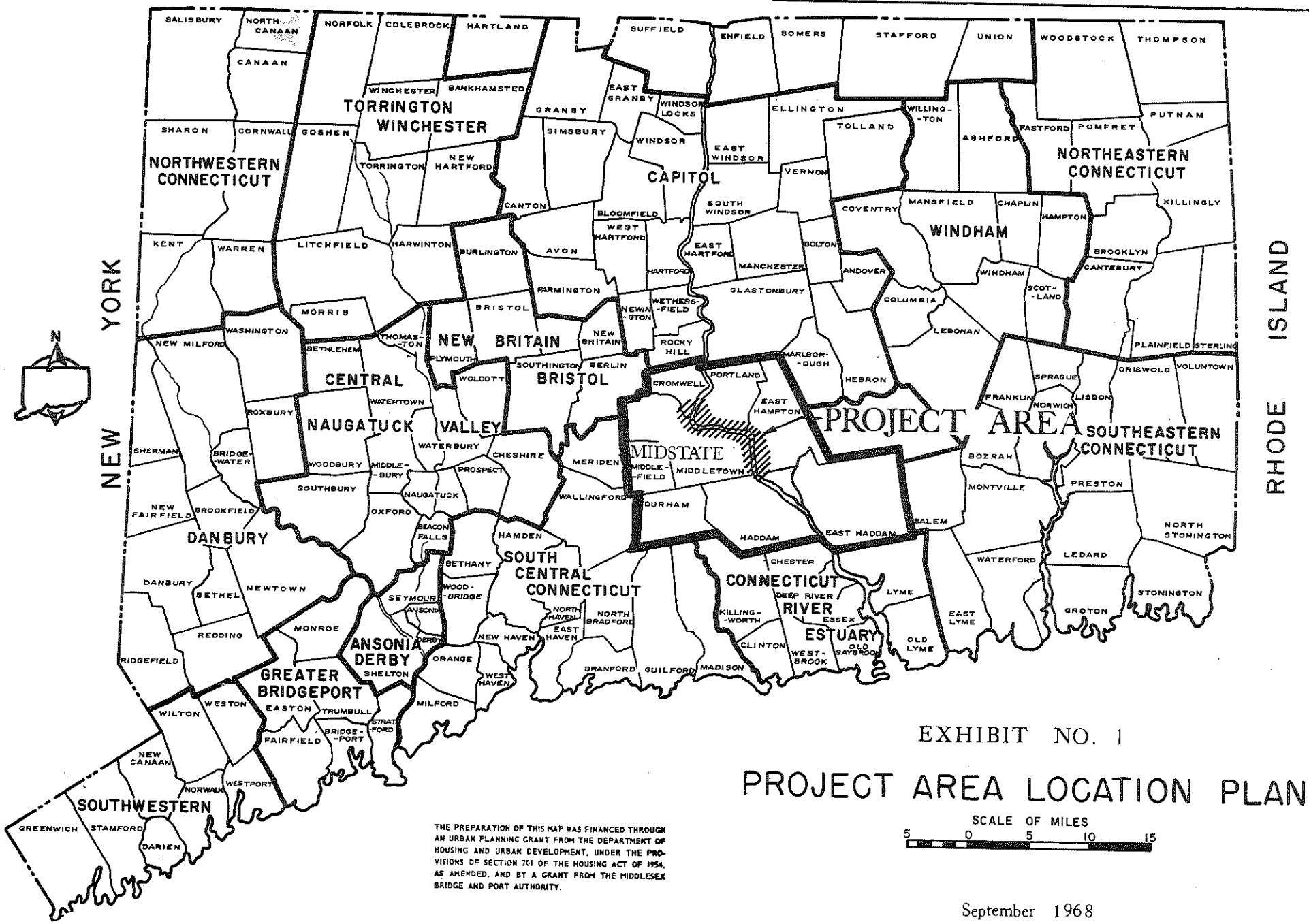

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EXHIBIT NO. 1

PROJECT AREA LOCATION PLAN

SCALE OF MILES

5 0 5 10 15

September 1968

III. HISTORICAL BACKGROUND OF CONNECTICUT'S WATER TRANSPORTATION

The first settlers in Connecticut naturally established their home on Long Island Sound or the inland waterways of the State, since they were entirely dependent on water transportation at that time. Although the colonial farmers became relatively self-sufficient, they bartered part of their produce for a wide variety of manufactured goods, such as molasses, rum, spices, salt, indigo, sugar, cloth, apparel, crockery, glassware, powder, shotguns, bar iron, and wines. These commodities were manufactured principally in Europe or the West Indies, and arrived at Connecticut ports by sailing vessel. They were paid for largely by exports of Connecticut lumber, live-stock, corn and fish.

This triangular trade was curtailed drastically by the British blockade during the Revolutionary War. Nevertheless, some goods trickled in from both Europe and the West Indies by vessel, while substantial quantities of British merchandise were smuggled overland or by water from New York City, which was then occupied by the British.

After the Revolution, overseas trade revived quite slowly, since Britain then treated this country as a foreign nation, and therefore placed restrictions on our trade with the homeland and also her West Indies colonies. Connecticut's waterborne commerce was then concentrated in the ports of Norwich, New London, Middletown and New Haven. The City of Middletown during the 18th Century was one of the largest shipping ports in the country; and in 1756 it had a population of 5,664, the largest town in Connecticut.

Shipping and shipbuilding were among Middletown's earliest industries and in 1676, it had a vessel of 70 tons. The U. S. Embargo of 1807 and the blockade instituted by the British during the War of 1812 struck further blows at oceanborne trade. Connecticut ports thereafter had only minor importance, except to the whaling industry, partly because a growing share of the State's trade was routed through Boston and New York.

The introduction of steam revolutionized water transportation during the first half of the 19th Century. The first steamboat to appear in Connecticut was Robert Fulton's "Clermont", which initiated regular service between New York, New Haven and New London in 1815. By the 1830's, steamboats carried passengers and freight to and from most Connecticut ports on Long Island Sound and

the navigable rivers. Middletown retained its nautical flavor until the 1850's by which time industry pushed it into the background.

Today, because of its 15-foot depth, the Connecticut River in the area of Middletown is restricted in use to barges and other small craft. This depth limitation along with bends of the river effectively bar navigation by deepwater vessels. Another major drawback of the area, especially South of Middletown, is the high precipitous land formations along the river banks which limit site development in the area.

There has been a trend toward the construction of larger ships and barges as a means of achieving more economical water transportation. (Carriage of bulk commodities over long distances is generally much cheaper by water than by any other mode). This trend has tended to restrict cargo handling to fewer but more efficient ports, because of the large expense in providing necessary channels, piers and relocated facilities. As a result, Connecticut's sizeable waterborne commerce is limited primarily to the handling of petroleum, coal, and building materials at only a few ports.

IV. COMMERCIAL TRANSPORTATION IN CONNECTICUT

In 1964 there were 580 major trucking firms in Connecticut handling interstate and intrastate cargoes, of which 60 were Class I and II common carriers (with operating revenues of over $200,000 annually) domiciled in this state. The domiciled common carriers primarily serve the principal cities of New England and the Middle Atlantic States, while several of the out-of-state carriers also serve the South, North Central States, and the Far West. Next morning delivery is offered from Connecticut to most of New England, Eastern New York, Pennsylvania, New Jersey, and Maryland. Second morning delivery is obtainable to Western New York and Pennsylvania, Eastern Ohio, West Virginia, Virginia, and North Carolina. Third morning delivery is available to Western Ohio, Michigan, Indiana, Eastern Illinois, Kentucky and Tennessee, Northern Georgia and South Carolina. Additional typical truck load delivery time from Connecticut is shown on Exhibit 2. On short hauls, truck service is generally faster than that obtainable by rail, principally due to the trucks' use of new expressways and leaving at unscheduled times.

At least 95% are owned by private carriers, such as manufacturing firms, retailers, wholesalers, and service industries. Private carriage apparently has grown much more rapidly than common or contract carriage. In fact, common motor carriers have experienced many of the competitive pressures faced by the railroads.

As can be seen from Exhibit No. 3, Middletown is in the enviable position of being located at the mid-point in the State of Connecticut and approximately half way between Boston and New York. However, until recently the connecting roadway system from Middletown to either Route 95 or Route 15 has been lacking. This drawback is being remedied with the construction of the Route 72 Connector which will greatly increase accessibility and mobility for trucking to the Middletown and Midstate areas.

A. Truck Traffic

Truck traffic is the major factor today in the movement of cargo intrastate or interstate. The prime reason for this is the flexibility, service and cost of shipping goods.

The following table shows the origin of truck shipments to Connecticut by Commodity grouping:

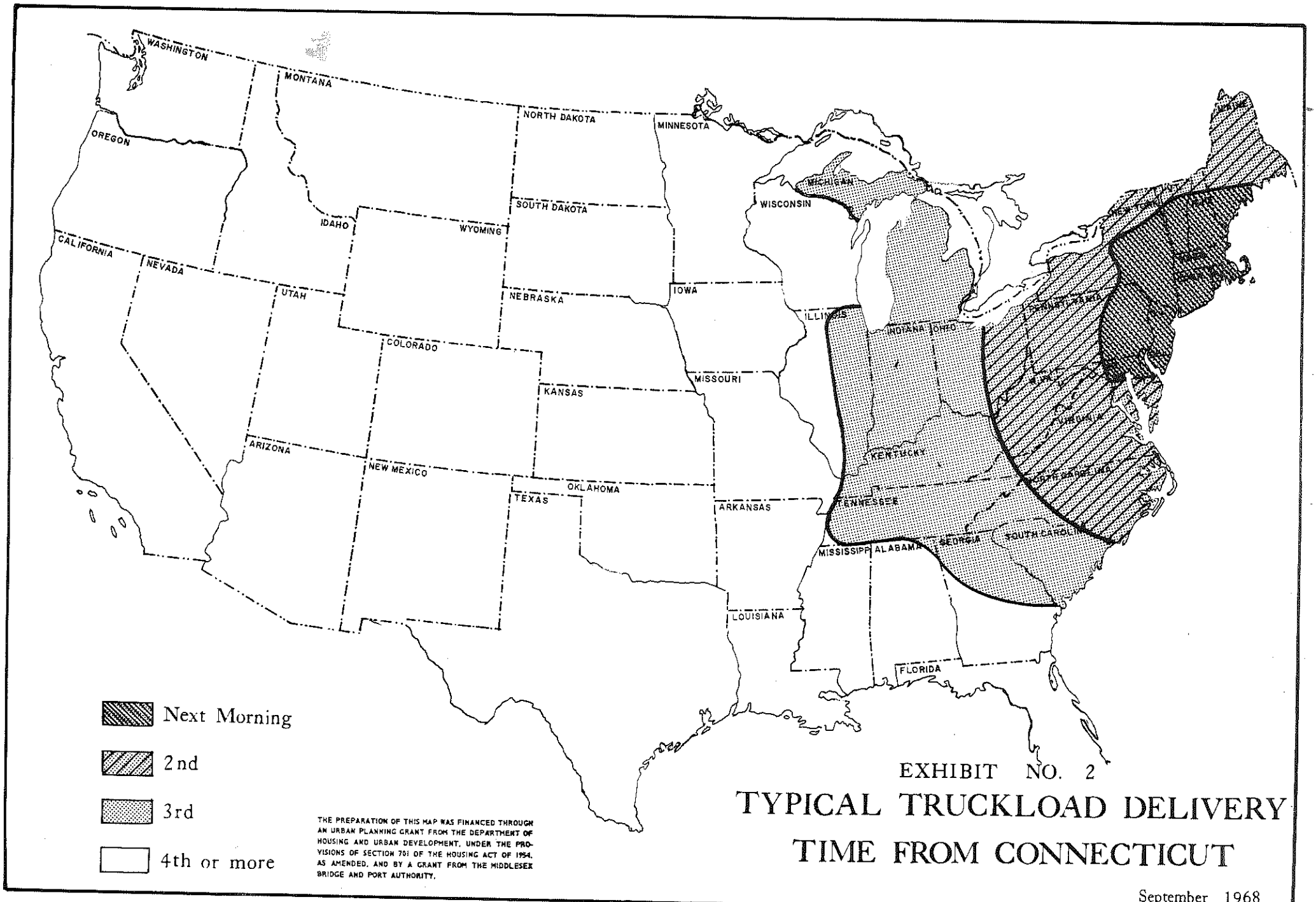

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EXHIBIT NO. 2

TYPICAL TRUCKLOAD DELIVERY TIME FROM CONNECTICUT

September 1968

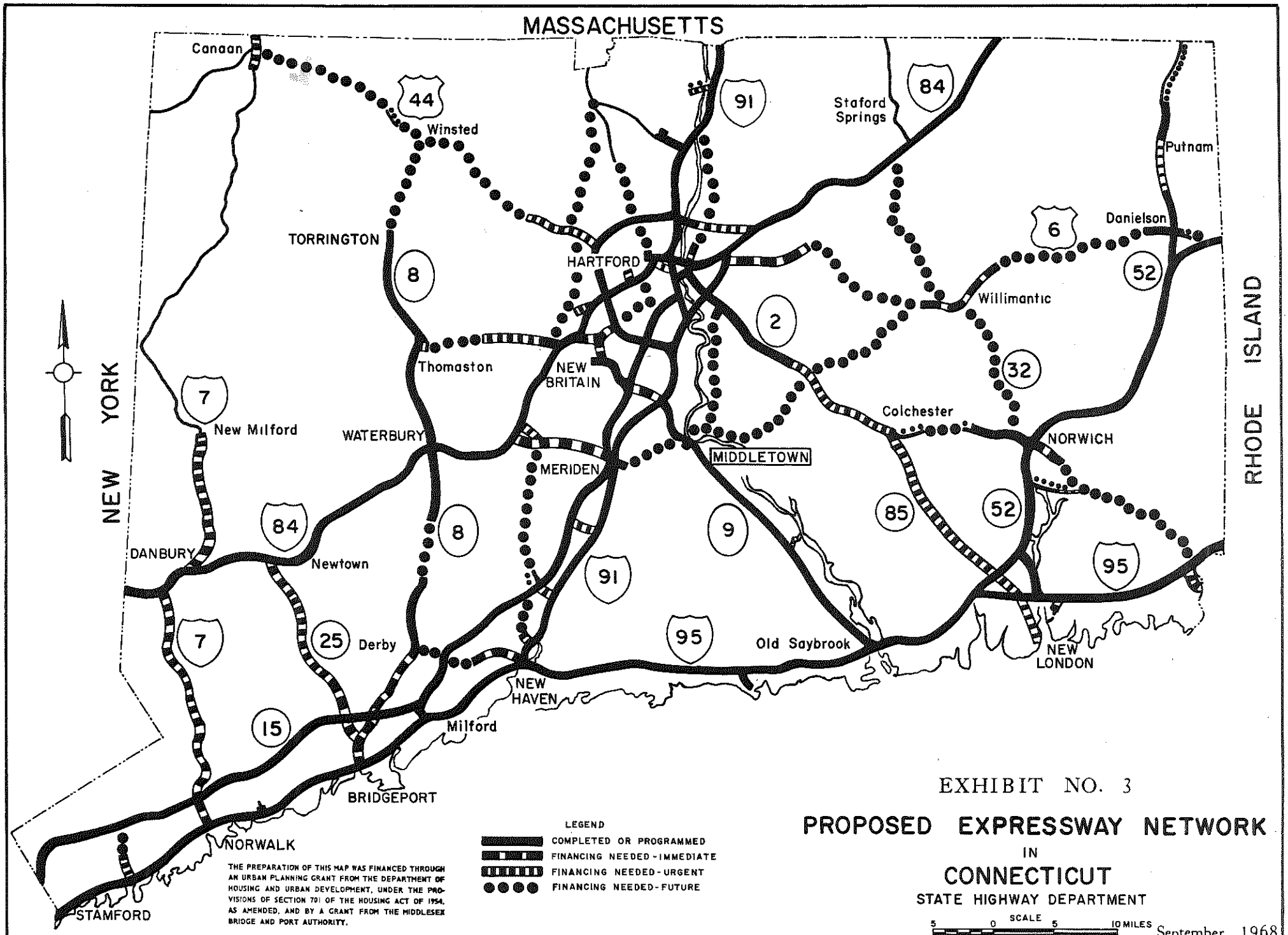

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EXHIBIT NO. 3

PROPOSED EXPRESSWAY NETWORK IN CONNECTICUT

STATE HIGHWAY DEPARTMENT

September 1968

TABLE 1

Estimated Origin of Truck Shipments
To Connecticut by Commodity Group - 1963

(Thousands of Tons)

Locality	Total	Farm & Forest Products	Manu-fact-ures	Minerals, Fuels, Misc.
Total All Areas	11,806	3,651	4,521	3,634
New England	4,368	1,566	1,416	1,386
Middle Atlantic	5,945	1,756	2,382	1,807
East North Central	343	--	134	209
West North Central	61	15	42	4
South Atlantic	614	303	283	28
East South Central	93	11	82	--
West South Central	293	--	97	196
Mountain	1	--	1	--
Pacific	88	--	84	4

Source: Connecticut Interregional Planning Program

As can be seen from Table 1, the major destination of these truck shipments to Connecticut were from the Northeast and Middle Atlantic states. These areas are readily accessible to trucking and generally have a good highway system both to and from destination points.

Table II shows the estimated destination of truck shipments from Connecticut by Commodity grouping:

TABLE II

Estimated Destination of Truck Shipments
From Connecticut by Commodity Group - 1963
(Thousands of Tons)

Locality	Total	Farm & Forest Products	Manu-fact-ures	Minerals, Fuels, Misc.
Total All Areas	10,094	787	4,839	4,468
New England	5,453	570	1,949	2,934
Middle Atlantic	2,363	165	1,411	787
East North Central	493	--	493	--
West North Central	24	--	24	--
South Atlantic	1,324	52	553	719
East South Central	255	--	255	--
West South Central	--	--	--	--
Mountain	31	--	7	24
Pacific	151	--	147	4

Source: Connecticut Interregional Planning Program

It should be noted that the major destination of truck shipments from Connecticut were also to the Northeast and South Atlantic States.

This being the case, the area of influence for the movement of goods is limited to this periphery, and greater access and mobility can be obtained by both truck and train movement, compared to movement by water.

B. Rail Traffic

Connecticut is served by two common carrier railroad systems - the New York, New Haven and Hartford Railroad Company (referred to hereafter as the "New Haven") and the Central Vermont Railway (an affiliate of the Canadian National Railways) - plus a small industrial carrier, the Branford Steam Railroad. The New Haven Railroad is by far the most important of these carriers in Connecticut. The New Haven Railroad operates lines in most parts of Connecticut, with the heaviest concentration being in the heavily industrialized Southern and Central sectors. While all the lines carry freight, only six have passenger service. Exhibit 4 shows rail lines in the State of Connecticut presently in use.

From Interstate Commerce Commission records, it appears that better than 70% of the tonnage of all commodities shipped by rail to Connecticut come from Middle and South Atlantic and New England States.

Rail shipments from Connecticut are sent mainly to the Middle and South Atlantic, East North Central and the New England States.

These statistics are further verified from data collected in the Transportation Survey.

The Hartford Electric Company is one of the major rail users in the Middletown area. To date, the company has used the "unit coal train" effectively for delivery to its plant along the river.

The railroad is making every effort to be competitive with the other modes of transportation. The most important of these innovations has been the "piggyback" service which has had a phenomenal growth and has improved the competitive position of the railroad.

C. Air Transportation

Although cargo movements by air are still relatively small in Connecticut, there was a 116% increase at all Connecticut airports (Exhibit 5) between 1950 and 1960. At Bradley Field, which handled 96% of the statewide total in 1960, air cargo movements rose from 5,000 tons in 1950 to 16,000 in 1963. It is likely that the recent availability of fast all-cargo service by turbo jet and prop-jet aircraft will induce even greater increases in the future.

Almost 80% of Connecticut's air cargo consists of air freight

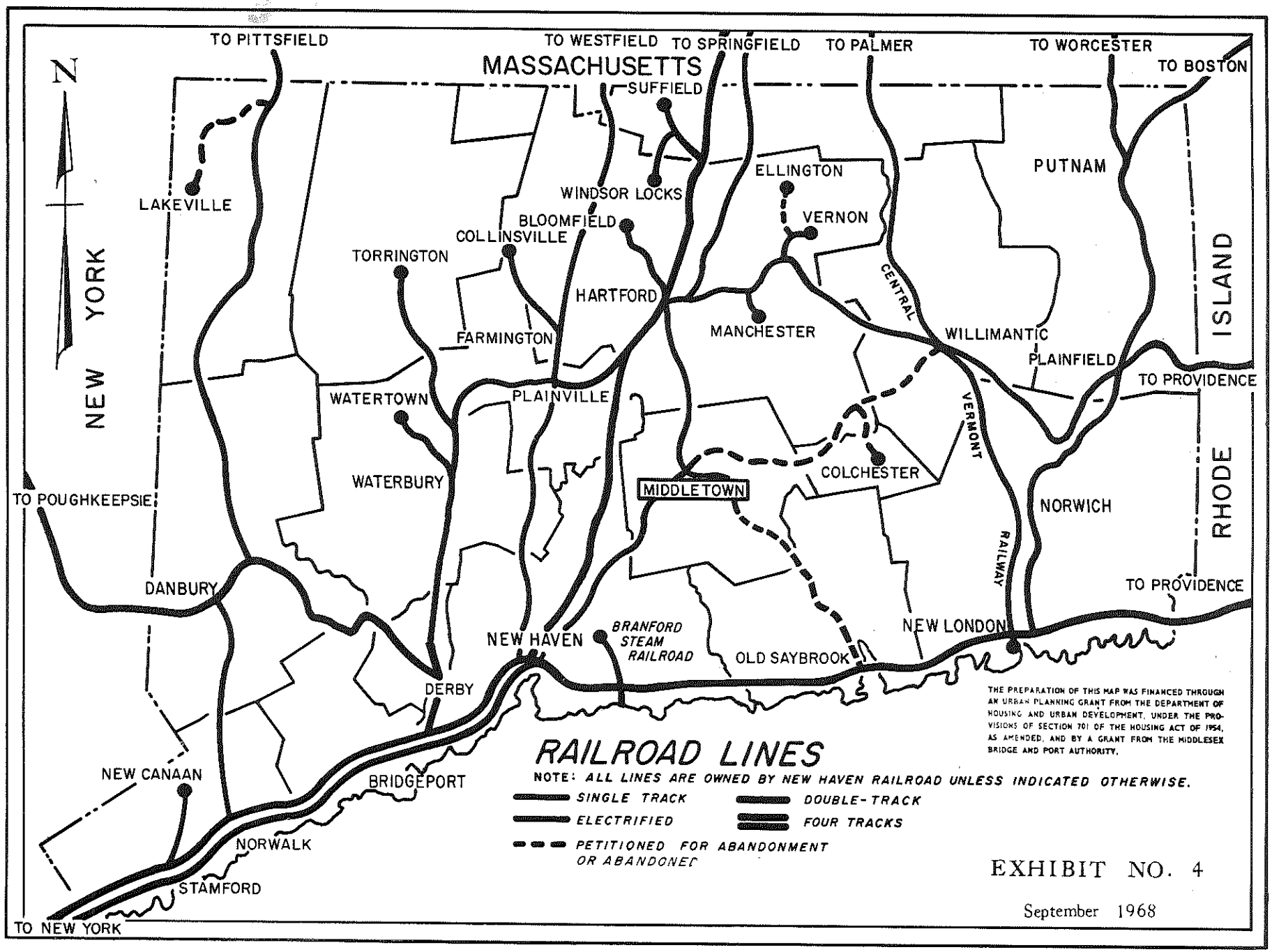

EXHIBIT NO. 4

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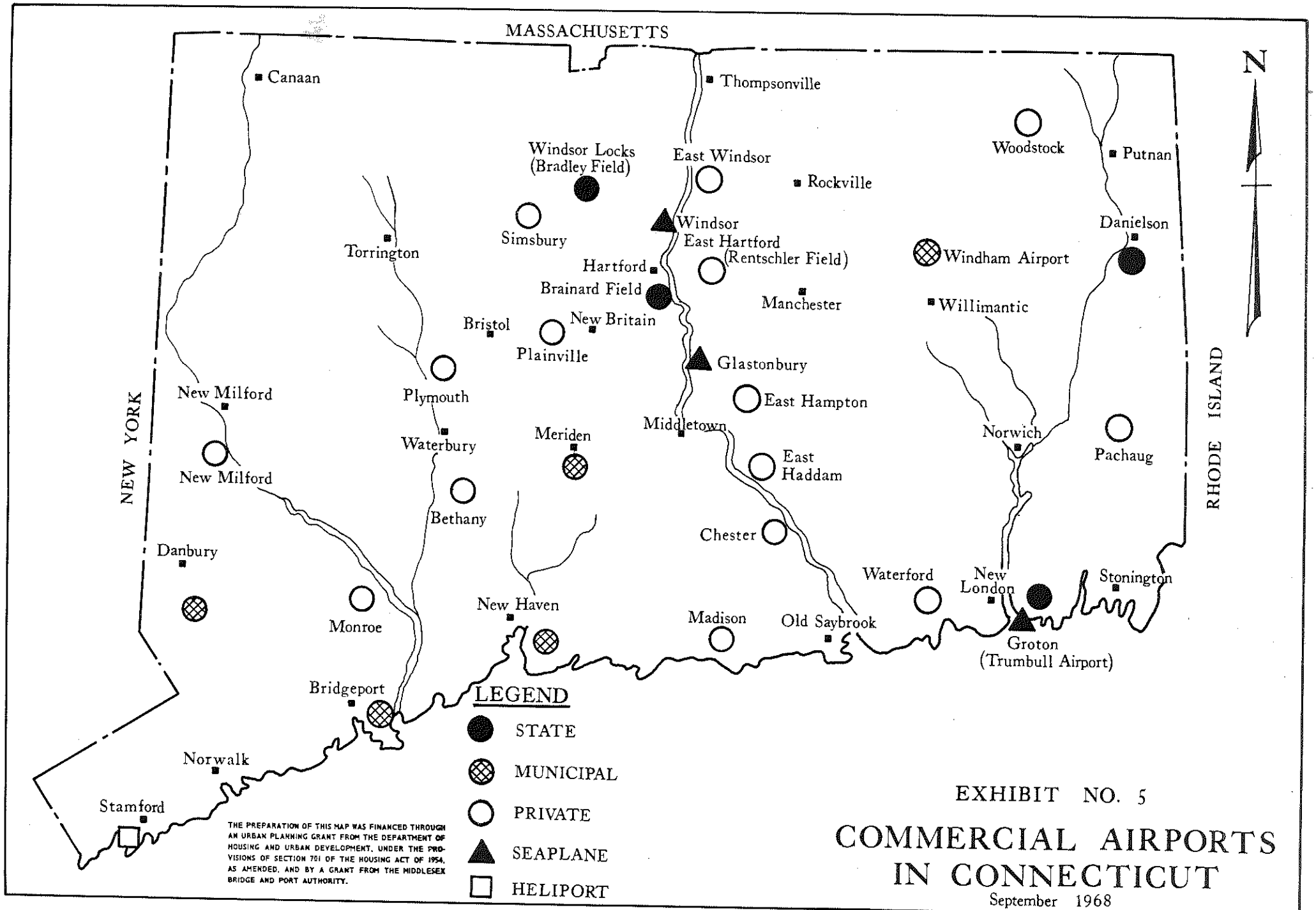

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EXHIBIT NO. 5

COMMERCIAL AIRPORTS IN CONNECTICUT

September 1968

shipments, the remainder being composed of airmail (including air parcel post) and air express. Airmail and express usually are carried on passenger planes, which have belly compartments holding up to 6.5 tons. Air freight, due to its bulkier nature, often is carried on all-cargo planes, where available.

Cargo service is now offered at Bradley Field by 7 passenger carriers (one of which trucks shipments to Boston) and 2 all-cargo airlines. A large share of freight carried by the passenger lines is collected locally, processed, and delivered by air freight forwarders. Air express, consisting of smaller packages requiring more expeditious service, is handled in a similar manner by REA Express, while air mail is in the charge of the U. S. Post Office.

D. Water Traffic

Waterborne freight traffic at all Connecticut ports increased from 4.9 million tons in 1920 to 20.2 million in 1965. Three-fourths of the 1965 total consisted of coastwise receipts, which were followed in importance by foreign imports (12%), coastwise shipment (10%), and exports (1%). Petroleum and coal alone comprised 93% of all coastwise receipts, 80% of total imports, and 86% of all coastwise shipment. Coal has been decreasing in tonnage, while petroleum has risen tremendously since 1920. Aside from fuel, the principal commodities received in coastwise trade are sand, gravel and rock, chemicals, and steel products. Other main imports are cement, molasses, gypsum and lumber. The principal coastwise shipments, other than fuels (which are transshipped), are scrap iron and sulfur. Exports consist mainly of scrap iron and steel.

The principal commercial ports in Connecticut are at New Haven, Connecticut River ports below Hartford, Bridgeport, New London, Housatonic River ports, Stamford, Thames River ports and Norwalk as shown on Exhibit 6. These are listed in order of decreasing importance. New Haven Harbor is by far the largest port in Connecticut in respect to commercial importance. It contains a main channel 35 feet deep and 400 to 800 feet wide extending from the breakwaters on Long Island Sound to Kopper's Wharf, a distance of approximately 4 miles.

This main channel is suitable for use by ocean-going vessels of all types.

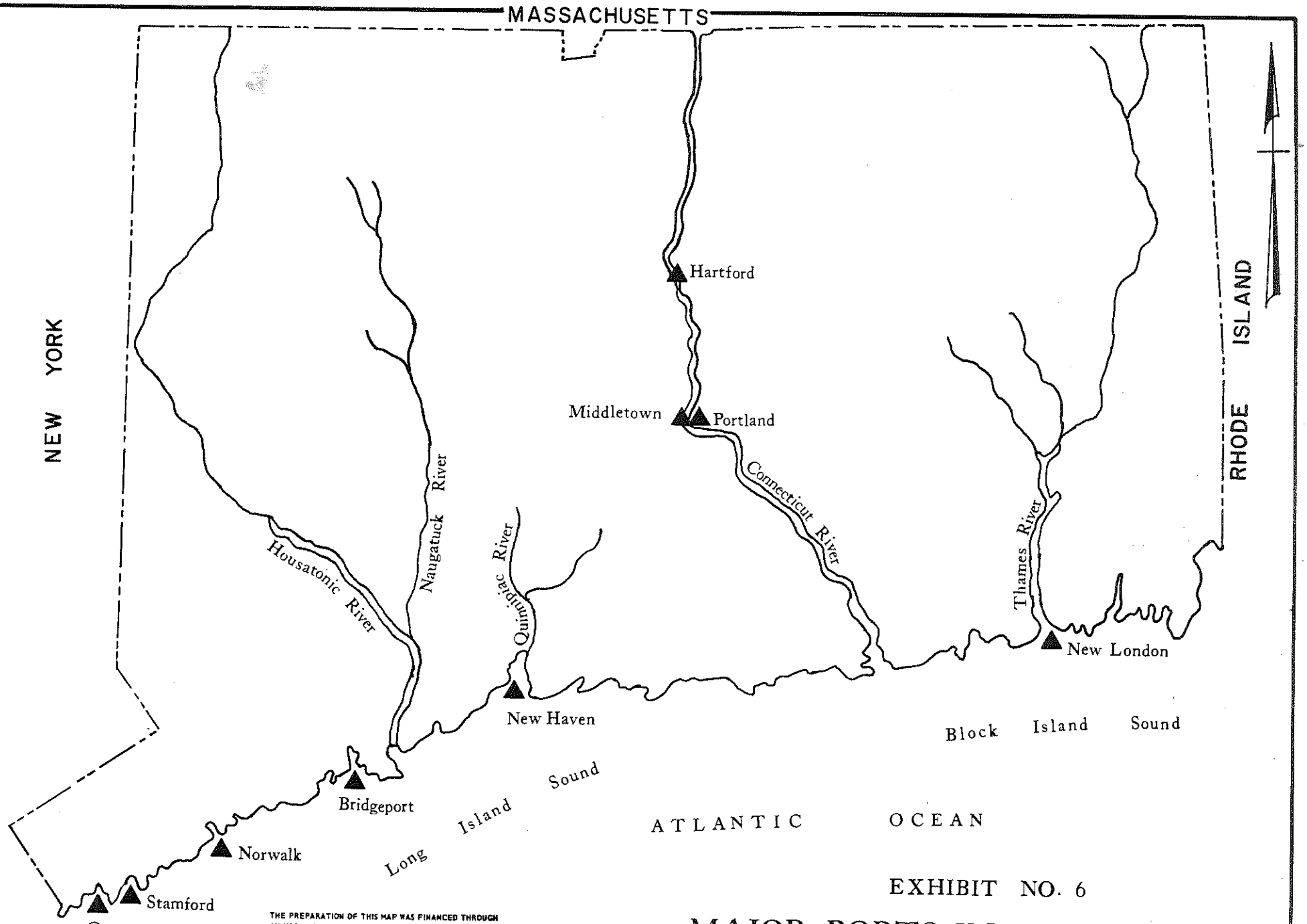

EXHIBIT NO. 6

MAJOR PORTS IN CONNECTICUT

September 1968

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As a comparison, the Connecticut River channel extends 52 miles from Long Island Sound to the head of commercial navigation at Hartford; but its 15-foot depth restricts its use to barges and other shallow drawing vessels.

Data contained in Table III indicates that New Haven Harbor handled 46% (in the years from 1956 to 1965) of Connecticut's waterborne trade.

TABLE III

Average Tonnages from 1950 to 1965 for Major Connecticut Ports
(Thousands of Tons)

Location	1965	1960	1950
New Haven Harbor	8,341	7,933	5,297
Connecticut River below Hartford	2,839	2,556	1,983
Bridgeport Harbor	2,441	2,090	2,265
New London Harbor	1,127	1,114	684
Housatonic River	914	881	451
Stamford Harbor	830	793	633
Thames River	753	691	719
Norwalk Harbor	717	593	248

Source: Waterborne Commerce of the United States (1956-1965)
Department of the Army, Corps of Engineers

Greenwich, Westport Harbor and the Saugatuck River handle very small tonnages of bulk products (sand, gravel and petroleum) with other minor ports such as Branford, Milford, Stonington and Clinton only handling fish and shellfish.

The Connecticut River, due to its shallow depth, is restricted exclusively to barges and small self-propelled craft. Table IV shows the commodities that are typically being shipped and the amount that

was transported in 1965. It should be noted that all of the commodities listed are bulk commodities.

TABLE IV

Connecticut River Below Hartford, Connecticut

Freight Traffic, 1965

Commodity	Total (Tons)	Coastwise Receipts	Coastwise Shipments
Total	3,075,974	3,075,782	162
Fresh fish, except shellfish	3	------	---
Bituminous coal and lignite	230,036	230,036	---
Crude tar, oil, gas products	2,247	2,247	---
Gasoline	1,040,014	1,039,852	162
Jet Fuel	82,309	82,309	---
Kerosene	131,753	131,753	
Distillate Fuel Oil	865,629	865,629	---
Residual Fuel Oil	622,711	622,711	---
Lubricating oils and greases	1,609	1,609	---
Naphtha Petroleum Solvents	4,317	4,317	---
Asphalt, tar and pitches	72,273	72,273	---
Building cement	23,046	23,046	

Source: Waterborne Commerce of the United States - 1965
U. S. Army Corps of Engineers

Even though bulk commodities are presently being transported on the Connecticut River at an ever increasing rate as shown in Tables III and IV Middletown's potential for grasping portions of this trade at a future cargo terminal will be passed by. Industries needing coal, ores, oil and chemicals at cheap prices cannot afford to rehandle these items. The companies who need and use waterfront facilities to any extent, are presently on the River.

Through a personal interview with Pratt & Whitney, it was ascertained that they presently ship 30 to 50 million dollars worth of jet engines overseas. This is transported from their plant by truck to Bradley Field in Windsor Locks where they are loaded aboard planes and off to their destination. In the shipments of these engines time is of the essence, since the cost of the engine is so great that they can afford no time lost in transportation. Presently they have facilities on the River for handling bunker oil and jet fuel.

The other companies who presently use barges for the majority of the incoming raw material are Hartford Electric Company, the Peterson Bulk Plant in Middletown, and Redwing Oil Company, Cities Service and Valley Oil Company in Portland.

These companies, as does Pratt & Whitney, maintain their own waterfront facilities at their own expense, and any further expansion would be accomplished by their own efforts.

V. SURVEY OF CONNECTICUT MANUFACTURERS

In order to determine if a marine cargo terminal should be attempted in Middletown, it is necessary to evaluate the following items:

Investigate the modes of transportation presently being used for transporting goods in the area.

Determine the quantity and types of goods that are presently being manufactured or used in Connecticut, and

Compare the rate structures of all these modes.

Transport Time

The first and second items as outlined above were partially determined by a survey developed by this office. This survey was mailed out to over 700 leading manufacturers in selected areas of Connecticut, a copy of which is enclosed in the Appendix. Exhibit 7 shows the areas surveyed, which is comparable to the Labor Market Areas used by the Connecticut Labor Department. In addition, data accumulated by the Connecticut Development Commission, the United States Corps of Engineers, published reports pertaining to the economic growth of Connecticut, personal interviews with many government agencies, and many other sources were used. Among these were the following businesses and agencies:

Connecticut Interregional Planning Program
Hartford, Connecticut

Connecticut Development Commission
Hartford, Connecticut

Motor Transportation Association of Connecticut
Hartford, Connecticut

Manufacturers' Association of Connecticut
West Hartford, Connecticut

State Department of Labor
Wethersfield, Connecticut

Connecticut Highway Department
Wethersfield, Connecticut

2/15 = Number of Responses in Area / Number of Companies in Area Surveyed by Mail

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EXHIBIT NO. 7

September 1968

AREA OF SURVEY COVERAGE

New England Motor Rate Bureau
Boston, Massachusetts

Sea-Land Service, Inc.
Elizabeth Port, New Jersey and Boston, Massachusetts

Moran Towing and Transportation Company, Inc.
New York, New York

Atlantic Container Lines, Ltd.
New York, New York

Interstate Commerce Commission
Boston, Massachusetts and New York, New York

Inter-Coastal Steamship Freight Bureau
New York, New York

Boise-Griffin Steamship Company, Inc.
New York, New York

American Export Isbrandtsen Lines, Inc.
New York, New York

Department of Agriculture
Portsmouth, New Hampshire

Connecticut Water Resources Commission
Hartford, Connecticut

Soils Conservation Service
Hartford, Connecticut

Army Corps of Engineers
Waltham, Massachusetts

Capitol Regional Planning Agency
Hartford, Connecticut

Red Star Towing and Transportation Company

Nohab, Bofors, Trolhattan, Sweden

Personal interviews were held with some of the major manufacturers and shippers in the area to ascertain the methods,

New England Motor Rate Bureau
Boston, Massachusetts

Sea-Land Service, Inc.
Elizabeth Port, New Jersey and Boston, Massachusetts

Moran Towing and Transportation Company, Inc.
New York, New York

Atlantic Container Lines, Ltd.
New York, New York

Interstate Commerce Commission
Boston, Massachusetts and New York, New York

Inter-Coastal Steamship Freight Bureau
New York, New York

Boise-Griffin Steamship Company, Inc.
New York, New York

American Export Isbrandtsen Lines, Inc.
New York, New York

Department of Agriculture
Portsmouth, New Hampshire

Connecticut Water Resources Commission
Hartford, Connecticut

Soils Conservation Service
Hartford, Connecticut

Army Corps of Engineers
Waltham, Massachusetts

Capitol Regional Planning Agency
Hartford, Connecticut

Red Star Towing and Transportation Company

Nohab, Bofors, Trolhattan, Sweden

Personal interviews were held with some of the major manufacturers and shippers in the area to ascertain the methods,

quantities, and types of shipments currently in use, as well as their respective interest in a port and terminal facility in Middletown.

Some of the companies not answering the survey were contacted by telephone to determine their interest in the project, as well as their current modes of shipments.

Approximately 22 percent of 723 companies to whom the survey was mailed responded to the questionnaire.

The following is a breakdown of the pertinent data of the Transportation Survey:

Total Number Responding: 155 Total Number of Companies Contacted: 723

QUESTION 1

ARE ANY OF YOUR MANUFACTURED PRODUCTS EXPORTED OVERSEAS BY YOUR FIRM?

Yes	No	Data Not Available
46%	43%	11%

The response to this question indicated that a majority number of those companies responding to the survey are presently involved in exporting manufactured goods to an overseas port.

QUESTION 2

IF THE ANSWER IS YES TO QUESTION NO. 1, WOULD YOU PLEASE INDICATE WHAT WAS THE APPROXIMATE TONNAGE.

Of those responding, 37% exported goods overseas and this tonnage varried from a low of 11 tons to a high of 12,000 tons.

It was the intent of this question to determine the tonnage that would be available for a port facility.

QUESTION 3

ARE ANY OF THE RAW MATERIALS YOU USE IN THE MANUFACTURING OF YOUR PRODUCT IMPORTED FROM OVERSEAS?

Yes	No	Data Not Available
34%	60%	6%

Approximately one-third of those parties responding indicated that they imported raw materials from overseas.

QUESTION 4

IF THE ANSWER TO QUESTION 3 IS YES, WOULD YOU PLEASE INDICATE WHAT WAS THE APPROXIMATE TONNAGE.

Of those responding, 21% imported raw materials from overseas and this tonnage varied from 1 ton to 20,000 tons.

The answer to this question was to determine the tonnage currently imported into the State of Connecticut and serve as a basis for calculating traffic in a port facility similar to our basis of export stated in Question 2. Although there was an annual shipment of 12,000 tons from one company, upon further investigation it was determined that the product was wool which is currently being brought into the port of Boston. There was no interest in transferring the port of entry.

QUESTION 5

IF YOU EXPORT OR IMPORT GOODS, WOULD YOU PLEASE INDICATE THROUGH WHICH PORT THEY ARE PRESENTLY ENTERING OR LEAVING.

Of those responding to Question 5, approximately 90% ship to New York and Port Elizabeth, New Jersey, with the remainder using the ports of Boston, Massachusetts; New Haven, Connecticut; New London, Connecticut; Baltimore, Maryland and Miami, Florida. In regard to imports, the same ratio of 90% imports pass through New York and New Jersey, with the remainder coming in through Boston, Massachusetts and New Haven, Connecticut.

QUESTION 6

FROM THE PORT OF ENTRY TO YOUR PLANT, BY WHAT MODE OF TRANSPORTATION ARE THE MATERIALS SHIPPED TO YOU: (PLEASE INDICATE % IF BY MORE THAN ONE MODE)

Truck	Rail	Piggyback	Water
90%	10%	--	--

As indicated from the response, the overwhelming majority of Connecticut manufacturers have their goods shipped by truck from port of entry.

QUESTION 7

FROM YOUR PLANT TO THE PORT FROM WHICH YOU EXPORT, BY WHAT MODE OF TRANSPORTATION ARE THE MATERIALS SHIPPED BY: (PLEASE INDICATE % IF BY MORE THAN ONE MODE OF TRANSPORTATION)

Truck	Rail	Piggyback	Water
95%	5%	--	--

In answer to this question, it was found that 90% of the State's manufacturers prefer to ship their manufactured goods by truck to port of embarkation.

QUESTION 8

ARE YOU PRESENTLY USING "VAN-CONTAINERS" (SUCH AS THOSE OPERATED BY SEALAND AND/OR FINNLINE FOR IMPORT AND/OR EXPORT?

Yes	No
11%	89%

Our reply to this question was to serve an indication as to the basis of current use of containers in the State and to determine the interest in a containerized port facility.

QUESTION 9

IF THE ANSWER TO QUESTION NO. 8 IS YES, WHAT LENGTH OF CONTAINER DO YOU USE?

20 Foot	30 Foot	35 Foot	40 Foot	Other
25%	10%	10%	35%	20%

Our reply to this question was to serve an indication as to the basis of current use of containers in the State and to determine the physical layout of a containerized port facility.

QUESTION 10

APPROXIMATELY HOW MANY "CONTAINERS" DID YOU UTILIZE IN 1967 AND 1966?

The number of containers utilized varies from 2 to 50 in 1967 and from 1 to 65 in 1966.

Our reply to this question was to serve an indication as to the basis of current use of containers in the State and to determine the interest and size of a containerized port facility.

QUESTION 11

WHAT NUMBER OF "CONTAINERS" USED WERE "LESS THAN TRUCK LOAD" SHIPMENTS IN 1967 AND 1966?

Only two answers were received to this question and, therefore, the data is not conclusive.

The reply to this question was to serve an indication as to the basis of current use of containers in the State and to determine the interest in a containerized port facility.

QUESTION 12

PLEASE INDICATE THE STATE OR REGION FROM WHICH YOU PRESENTLY RECEIVE YOUR RAW MATERIALS FOR THE MANUFACTURING OF YOUR FINISHED PRODUCT.

The New England States, New York, New Jersey, were the major areas from which raw materials were obtained and this con-

stituted 90% of those answering the survey. The majority of this material, approximately 90%, was delivered by truck.

QUESTION 13

PLEASE INDICATE THE STATE OR REGION TO WHICH YOU PRESENTLY SHIP YOUR FINISHED PRODUCTS.

Approximately 80% of the goods shipped were to the New England States, New York, New Jersey and Pennsylvania while the remainder was sent throughout the United States. The finished products were almost entirely (95%) sent out by truck.

The response to both questions (12 and 13) supplemented other surveys and data that has been researched and unquestionably proved that the majority of raw material and manufactured products are shipped by truck whether for export or import or for use in the continental United States.

VI. PORT FACILITIES FOR MIDDLETOWN

In the analysis of the type of port facilities to be developed at Middletown, several types of port facilities were examined as to their feasibility.

The first alternative to be considered was a normal pier and/or bulkhead along the river together with parking and storage facilities. This arrangement was discarded, since most companies with bulk cargoes presently have their own facilities along the river; and there is no desire to combine their needs into a central unit. Any desired location for these facilities would be to require double handling of the commodity thereby adding to the cost of shipping.

The second alternative examined was the facility for a general cargo port. The physical make-up would be similar to that of alternate one, however it would not require as much area for storage. This alternative was also discarded because of the re-handling of goods at the pier, time schedule in shipping and receiving as well as the associated labor and union problems of handling these goods.

It became evident through exhaustive investigation that there was but one type of marine facility that could possibly be developed reasonably at this location. A major factor in this determination was the 15' depth of channel of the Connecticut River in the Middletown Area. This channel depth limited the type of ship that could possibly be brought up the River; and, therefore, it was logical that only a barge drawn by a tug would be the most practical vessel that could be utilized. This was also a major consideration in alternates one and two.

A second factor, which has to be considered in the port development, was the number of manufacturers and types of products produced in the area that would possibly use the facility. It was found that much of the goods manufactured or shipped into the area were by truck while a minimum amount of bulk goods were delivered by train or barge. The delivery of these goods to various destinations are sporadic, and it would be difficult to ascertain a fixed schedule for normal shipping, thereby preventing alternatives one and two from being feasible.

In order to overcome many of these objections, the possibility of a containerzied cargo port was investigated.

In its ultimate form, containerization consists of stowing large amounts of cargo into strongly constructed, standard-sized boxes or vans at the manufacturer's plant inland and shipping that van load of cargo as a unit to its destination. From the moment the box is locked and sealed, the cargo is untouched until it reaches the consignees. It is loaded aboard trucks, rail flatcars and ships by mechanical devices which speed up the shipping process and reduce overall labor costs. During the time the cargo is in its container, the box also acts as its warehouse.

When an inland shipper desires to send less than a container load of freight, he may truck his shipment to a consolidating station near his plant, in this case, a facility at Middletown. At this station, the shipment is stowed into containers with other cargo enroute to the same destination area. Then the container moves by truck, rail or ship as a unit. The small shipment finally leaves its protective box either at the door of the consignee or at a customs inspection station if being transported overseas.

Three types of containerships are already in use and more types may be designed as the containerization revolution progresses. The cellular stowage type appears to be the most favored for commercial operations. On these, vertical rails guide the containers as they are being lowered into the hold. When the container comes to rest in its cell, it is automatically secured for its sea voyage without requiring any manual lashings. Special gantry cranes equipped with automatic locking frames pick up the container from its truck trailer, and the locks automatically disengage after the box is safely deposited in its cell. The process works in reverse when a ship is being unloaded. In this type of ship containers are stacked one on top of the other in order to accommodate as many as possible in the hold.

The roll-on roll-off containership is the oldest form for truck body handling. Its methods are very similar to those used for years by car and rail ferries. On such vessels the entire vehicle or the trailer part of a truck is rolled onto the ship and locked in place for the voyage. However, excessive cubage loss due to unnecessary transportation of the wheeled chassis, the inability to stock containers as previously described and the expense of possibly having a cab inactive for the period of the voyage render this type of operation very expensive and cumbersome. The use of such vessels was considered for the Middletown Port Facility.

The horizontal stowage containership is the evolutionary conversion into container vessels of ships originally designed to carry rail cars. Rail cars were deposited aboard these ships by cranes and warped along tracks until they reached the place where they were to be secured. As containers replaced rail cars, rollers were installed on which the boxes could be moved while the tracks acted as rail guides. These ships are expected to give way eventually to the cellular containerships.

Secure packaging has customarily been one of the most expensive items to exporters in sending their products abroad, and the incidence of damage and pilferage to cargo has been high in breakbulk general cargo shipping despite the care and material used in crating commodities. This has been a major cause of high cargo insurance rates.

One of the principal advantages of containerization is that it provides exporters with sea-going strongboxes which not only protect their shipments from damage and theft, but which also can be used again and again, reducing or eliminating entirely the expensive export packaging costs.

Containers are being designed to fit every need. There are dry vans, refrigerated vans, bulk liquid, dry bulk, pressure tanks, and open top vans.

The dry bulk and refrigerated vans are the two most common in use. Dry cargo vans can double as dry bulk units for some commodities. As containerization grows, wide use of open top is anticipated. These skeletal type containers will be constructed so as to fit in the cells of a containership, and will be employed for irregularly shaped, high density or low value cargo requiring little protection.

Most containers are constructed of aluminum because this durable metal is light and does not rust; but other materials have been utilized, including plywood, plastics and combinations of laminated wood. Steel producers have also been experimenting in the construction of containers.

In Middletown, in order to arrive at a reasonable scheme due to the small number of containers anticipated, we have used a modification of the cellular storage type and the roll-on roll-off containership. Exhibit 8 shows a straddle carrier loading a container onto the barge.

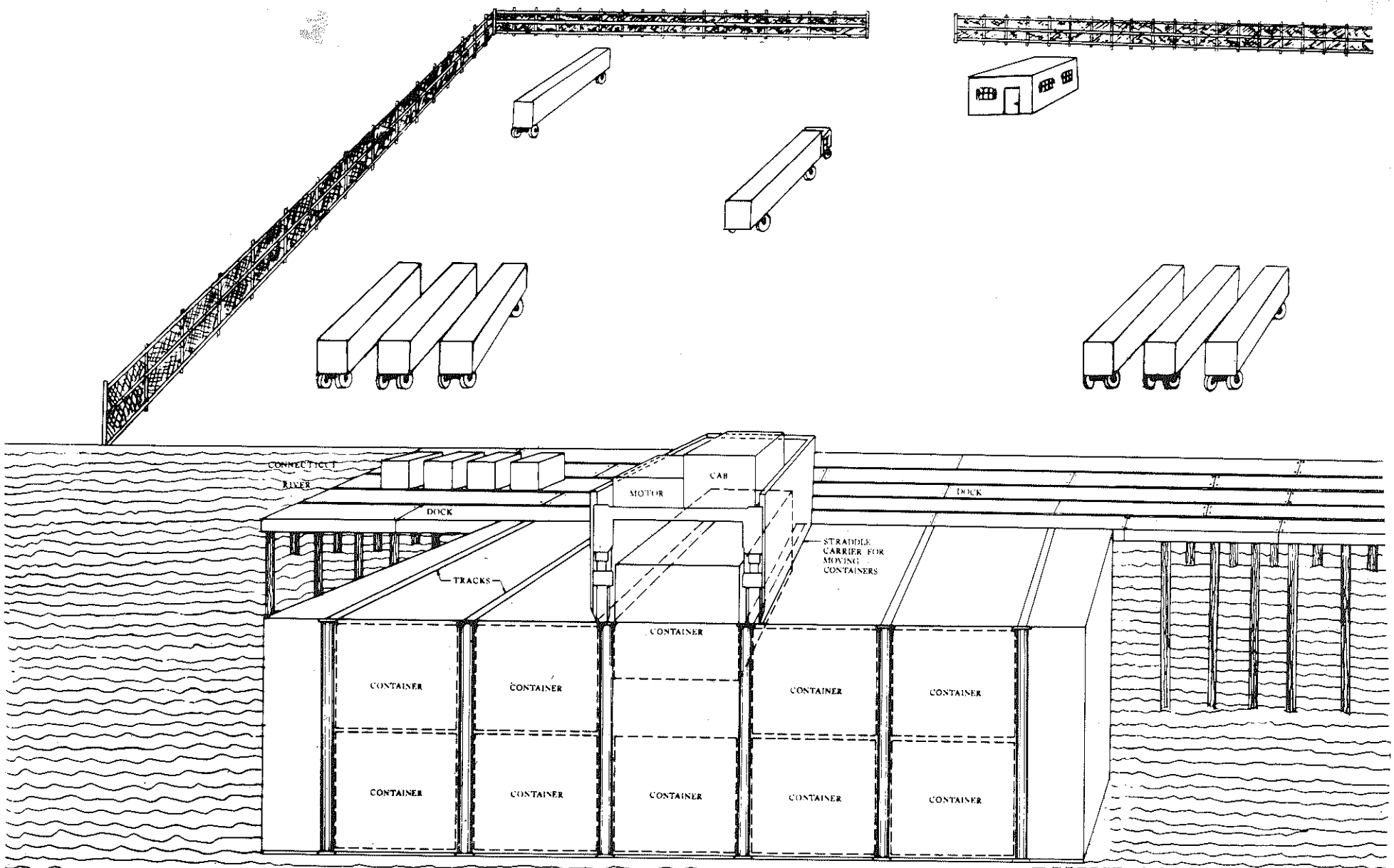

EXHIBIT NO. 8

TYPICAL STRADDLE CARRIER OPERATION

THE PREPARATION OF THIS MAP WAS FINANCED THROUGH AN URBAN PLANNING GRANT FROM THE DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT, UNDER THE PROVISIONS OF SECTION 701 OF THE HOUSING ACT OF 1954, AS AMENDED, AND BY A GRANT FROM THE MIDDLESEX BRIDGE AND PORT AUTHORITY.

September 1968

VII. COST ANALYSIS OF MARINE TERMINAL FACILITY

The decision to build a containerized cargo terminal at Middletown requires the resolution of the following parameters in order to prepare a cost comparison:

The number of containers to be utilized in operation.

Determination of the costs to develop a typical facility in Middletown.

Determination of the destination of the containers when leaving Middletown.

Investigate the comparative price of shipping these containers by barge, versus the normal rail and truck shipping costs.

As an outgrowth of discussions with the Connecticut Highway Department of the Connecticut Development Commission, it was ascertained that interstate truck tonnages for general cargo could be established. For their report entitled "Transportation", the origin and destination was determined through truck weighing stations, interviews with shippers, etc. The problem here was that their data consisted mainly of the origin or destination points from the State of Connecticut in general and not any particular locations within the state. Our survey (Appendix 1) was set up to determine to which localities these trucks were actually going or coming from in Connecticut and to or from what section of the United States the goods were being transported.

In Chapter V "Survey of Connecticut Manufacturers" a detailed breakdown of the survey distribution is shown as well as the response pro and con for the proposed cargo terminal. It is interesting to note here that of the number of questionnaires returned, 20% of these people indicated by letter that they would not be interested in any type of port facility, even though this was not asked of them in the questionnaire. The major reason given was the time factor involved. For example, those shipping products to New York could expect to have their shipment there in approximately four hours by truck versus the delay involved in using an intermediate installation such as Middletown.

Non-export shipments were considered in this analysis, however, they were discarded because of the time factor.

The only feasible destination for raw or manufactured goods was the Port of Elizabeth and New York, due to desire lines studied. Therefore, if a shipment were going to Pennsylvania, it would be foolhardy to barge merchandise to New York and then truck to Pennsylvania, since it would take perhaps one day longer due to the barge time and scheduling.

The survey, along with records of the major trans-Atlantic carriers container service indicated that, if this operation were started, Middletown could anticipate an average of 20 van containers per week over a period of twenty years. The origin and destination study indicated the desired lines to be between the Port of New York and Port Elizabeth. It was also determined that the only feasible destination for containers would be the aforementioned ports, since they have the facilities available to presently handle the containers.

It was also indicated to our organization that the carriers presently operating the installations in Port Elizabeth would not be interested in having the barge unloaded there. The expense involved of having longshoremen available to unload twenty containers, the use of their gantry crane and the re-handling again of these containers if being exported would not be economically feasible, or for that matter, practical.

Even though this hypothetical operation was experiencing many major road blocks, including no interest from manufacturers and shippers, we set up an imaginary schedule of a manufacturer in Middletown having a truck load of goods to be exported overseas.

Using rates of the "New England Motor Rate Bureau, Inc." Tariff #3-5 was used to determine costs for transporting commodities by truck. Class 5-F of the New England Motor Rate Bureau, Inc., which is transporting dense cargo with a full truck load, was used as a comparison basis to the barge rates.

The cost of developing a marine facility as shown in Exhibit 9 was determined to be $407,000. The building costs used were obtained from Engineering News Record publications and cost data experience records of our firm. These prices represent the present data cost averages and do not reflect anticipated cost increase that can be expected annual. Presently, this increase is running at the rate of 5 - 10% annually.

The following is a breakdown of the costs involved:

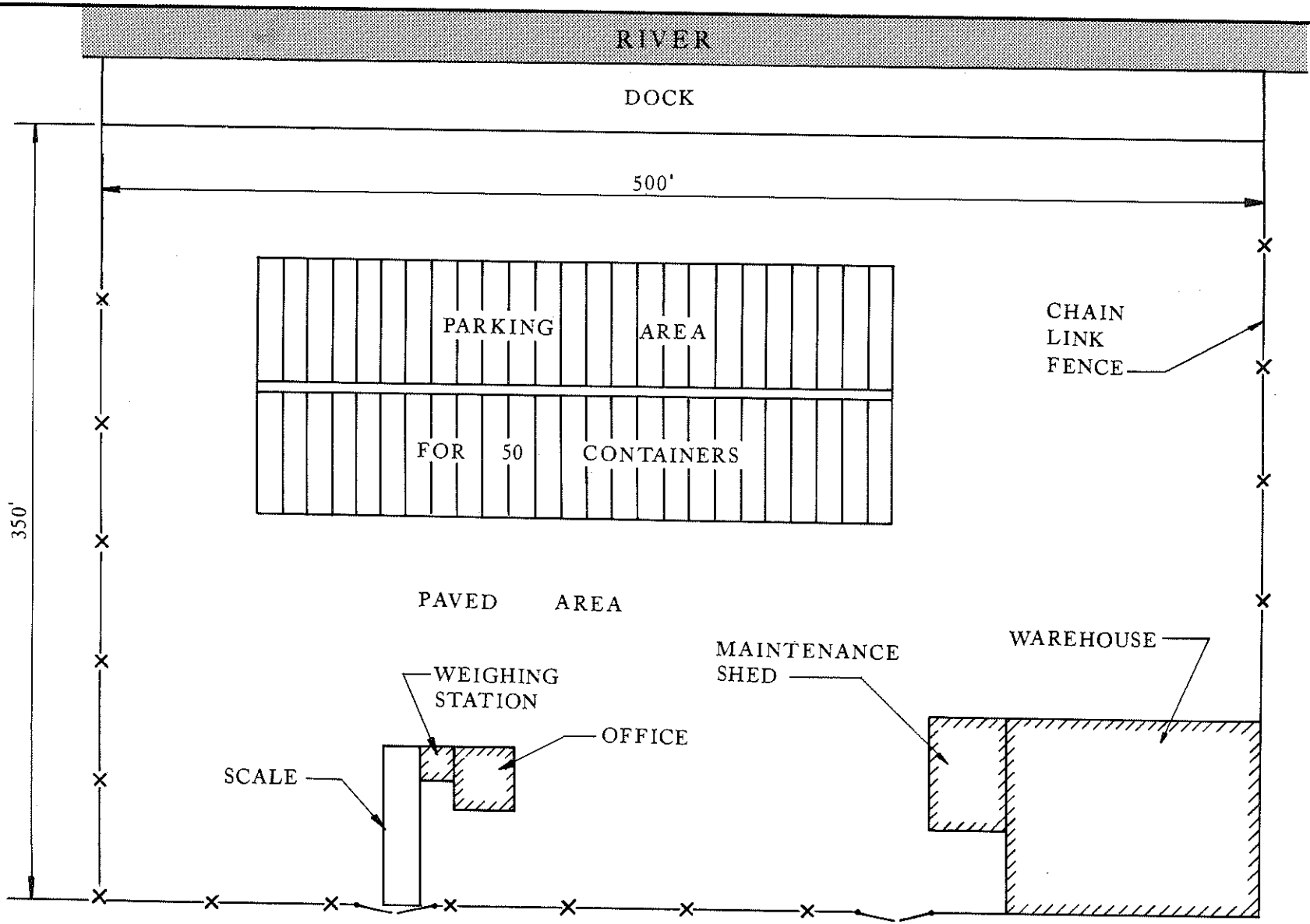

EXHIBIT NO. 9

September 1968

TYPICAL PORT FACILITY LAYOUT

THE PREPARATION OF THIS MAP WAS FINANCED THROUGH AN URBAN PLANNING GRANT FROM THE DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT, UNDER THE PROVISIONS OF SECTION 701 OF THE HOUSING ACT OF 1954, AS AMENDED, AND BY A GRANT FROM THE MIDDLESEX BRIDGE AND PORT AUTHORITY.

TABLE V

ANNUAL BUILDING COST OF FACILITY

Item	n (years)	Cost	i (%)	k	R
Buildings (Operations Building, Warehouse and Maintenance Shed)	40	$97,000	6	.066462	$ 6,450
Dock	60	83,000	6	.061876	5,140
Scale	20	15,000	8	.101852	1,530
Pavement and Site	20	79,000	6	.087185	6,890
Land	60	75,000	6	.061876	4,640
Carriers	7	64,000	8	.192072	12,290
Drainage & Misc.	40	8,000	6	.066462	530
		TOTAL COST $407,000			$37,470 /year

R = Capital recovery with return on Capital

P = Principal

K = Capital recovery factor

N = Life Expectancy

I = Interest Rate

$$R = \frac{P(i\ (1+i^{m})}{(4i)^{m}-1)} = PK$$

Source: Highway Engineers' Handbook - Author, Kenneth B. Woods - Publisher, McGraw-Hill Company, Inc., 1960 First Edition.

This formula is employed for the determination of the combined annual cost for depreciation and interest of a facility. It is

an equal annual combined sum of return of capital (depreciation) and return on investment (interest), which when received for each year of operation will return over the service life (or estimated probable life.), the full depreciation cost plus interest on the undepreciated cost at the beginning of each year.

The above computations determined that the annual outlay for the physical facility would be $37,470 per year. To this cost, it is now necessary to add the anticipated annual operation cost.

TABLE VI

ANNUAL OPERATING COST

Personnel (full time)	
Manager	$11,000
Assistant Manager	9,000
Watchman	7,000
Maintenance and Janitor	5,000
Personnel (part time)	
Laborers (6 men for 52 days at $50 per day)	15,600
Telephone	3,600
Heat and Electricity	1,500
Miscellaneous Office Expense	2,000
Insurance - Property and Liability	2,500
	$57,200 /year
Annual Building Cost of Facility	37,470
Total Annual Cost	$94,670

The cost of a round trip from Middletown, Connecticut, to Port Elizabeth by a barge capable of carrying twenty containers one way was determined to be $4,200. This cost does not include the cost of handling these containers at each end of the trip or modifications of the barge.

A hypothetical case is presented herewith wherein a load of

goods is transported from Middletown to Port Elizabeth by two modes of transport, truck and barge.

Truck:

Middletown to Port Elizabeth Class 5-F $169.60 one way

Time elapsed: 4 hours

Barge:

Total annual cost for facility $94,670

Average Number of containers per year - 20 containers per week x 52 weeks x 2 (into and out of) = 2080 containers per year

Trucking Cost to Facility = $83.20

Average rate per container for operating port terminal facility = $\frac{94,670}{2080}$ = $45.50/ container

Rate for barging container one way = $\frac{\$4200}{40 \text{ cont.}}$ = $105.00/container

Handling cost in Port Elizabeth = $ 20.00/container

Total cost per container one way = $254.50

Time elapsed: 24 hours

The rate of $254.50 would be the break even rate that would have to be established to run this facility with no profit factor administered to this cost. This could be the case if the State constructed and operated the facility, however, it would be more reasonable to assume that the State would construct the facility and lease it to a private operator. Even in this case, the operating costs would remain the same and the State's rent would be based on a no-profit basis in order to induce development of the port.

The actual barge rate of $105 was determined on the basis of twenty containers being transported both ways.

The major point that becomes apparent in this analysis is the time differential involved. Assume the shipping schedule in New York is such that the container arrives from a foreign country on Wednesday while the containers to be exported leave on Thursday, the barge would then pick up the imported container in New York on Wednesday, arrive in Middletown on Thursday and return to New York with the containers for the following week. This means that the manufacturers have to actually ship from their factory 7 days ahead of the sailing schedule in New York versus a four-hour truck trip.

VIII. CONCLUSIONS

In summarizing the proposed operation, it can be said that a container cargo or marine terminal facility in Middletown is uneconomical and impractical for the following reasons:

The time lag involved between shipping by barge versus truck.

The rate that would have to be applied to the cost of transporting containers ($254.50 versus $169.60 for trucks) is excessive if the operation were merely to break even, which is a questionable criterion.

That interest by manufacturers is lacking due to the time lag of the difference in modes of transportation.

Other factors that negate the use of Middletown as a port facility as previously mentioned is its 15-foot channel which denies the port deep sea traffic.

New Haven, which is approximately 30 miles to the south on Long Island Sound, presently has the advantages for berthing ocean going vessels and facilities for general cargo. There is some doubt as to whether even here Connecticut's industries can generate sufficient volume to justify additional general cargo or container facilities.

It was the general consensus among officials of various port authorities who were interviewed that only the Port of New York, Port Elizabeth and Baltimore can continue expansion and growth. The other ports throughout the United States do not have the necessary volume of traffic and have insufficient variety of shipping routes thereby requiring expensive transshipping at intermediate points. This higher cost which must be passed on in the price of the product greatly reduces the competitive stature of the port.

The utility company will still maintain its present use of the railroad for importing coal into the area by "unit train", but they are also currently expanding their dock facilities along the river for receiving oil fuel. However, this arrangement serves a dual purpose of the utility company in that either fuel is available in the case of emergencies; and they can take advantage of the price differentials.

The expanding highway system in and around Middletown together with its proper access roads to these expressways make the movement of goods by truck one of the most attractive modes of shipping cargo. With future highway improvement planned for the area, this margin of desirability will be maintained.

In conclusion, it is anticipated that there will be a slight increase in the present barge operation for fuels and bulk cargo along the river; but this will not be the significant determinant of the future character or pattern of utilization of the Connecticut River.

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State of Connecticut

Container Shipping - The Port of New York Authority

Container Services of the North Atlantic - Immer

Economic and Engineering Survey of all Navigable Water in the
State for Connecticut Port Survey Commission.

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Bureau, Inc.

Class Rate - New England Motor Rate Bureau, Inc.

Appendix 1

TRANSPORTATION SURVEY

Upon tabulation of the completed survey, a summary will be sent to you upon request. Call our staff **Collect** at 1-617-423-5541 if you have any questions. **Careful estimates are acceptable if records are not easily available.** Please **mail** the completed **questionnaire** by **March 1, 1968.**

GENERAL INFORMATION

NAME OF FIRM _____

PRESENT ADDRESS _____

PRINCIPAL PRODUCTS MANUFACTURED AT YOUR PLANT. (PLEASE BE SPECIFIC)

A. _____

B. _____

C. _____

The questionnaire has been divided into two parts: PART I deals exclusively with any of your manufactured products or goods that may be exported overseas, or any raw materials that may be imported by your firm for producing your finished product. PART II deals with your manufactured products, or raw materials that are used in your plant operation that are being transported interstate.

PART I

1. ARE ANY OF YOUR MANUFACTURED PRODUCTS EXPORTED OVERSEAS BY YOUR FIRM?

   YES ☐ NO ☐

2. IF THE ANSWER IS YES TO QUESTION NO. 1, WOULD YOU PLEASE INDICATE WHAT THE APPROXIMATE TONNAGE WAS IN:

   1967 _____ TONS

   1966 _____ TONS

3. ARE ANY OF THE RAW MATERIALS YOU USE IN THE MANUFACTURING OF YOUR PRODUCT IMPORTED FROM OVERSEAS?

   YES ☐ NO ☐

4. IF THE ANSWER TO QUESTION NO. 3 IS YES, WOULD YOU PLEASE INDICATE WHAT THE APPROXIMATE TONNAGE WAS IN:

   1967 _____ TONS

   1966 _____ TONS

5. IF YOU EXPORT OR IMPORT GOODS, WOULD YOU PLEASE INDICATE THROUGH WHICH PORT THEY ARE PRESENTLY ENTERING OR LEAVING.

EXPORT _____

IMPORT _____

6. FROM THE PORT OF ENTRY TO YOUR PLANT, BY WHAT MODE OF TRANSPORTATION ARE THE MATERIALS SHIPPED TO YOU: (PLEASE INDICATE % IF BY MORE THAN ONE MODE)

TRUCK _____ RAIL _____ PIGGYBACK _____ WATER _____

7. FROM YOUR PLANT TO THE PORT FROM WHICH YOU EXPORT, BY WHAT MODE OF TRANSPORTATION ARE THE MATERIALS SHIPPED BY: (PLEASE INDICATE % IF BY MORE THAN ONE MODE OF TRANSPORTATION)

TRUCK _____ RAIL _____ PIGGYBACK _____ WATER _____

8. ARE YOU PRESENTLY USING "VAN-CONTAINERS" (SUCH AS THOSE OPERATED BY SEA-LAND AND/OR FINNLINE FOR IMPORT AND/OR EXPORT?

YES ☐ NO ☐

9. IF THE ANSWER TO QUESTION NO. 8 IS YES, WHAT LENGTH OF CONTAINER DO YOU USE?

20 FOOT ☐ 30 FOOT ☐ 35 FOOT ☐ 40 FOOT ☐ OTHER SIZE _____

10. APPROXIMATELY HOW MANY "CONTAINERS" DID YOU UTILIZE IN

1967 _____ 1966 _____

11. WHAT NUMBER OF "CONTAINERS" USED WERE "LESS THAN TRUCK LOAD" SHIPMENTS IN:

1967 _____ % 1966 _____ %

PART II

DEFINITION: South Atlantic States -- All states bordering the Atlantic Ocean excluding the New England States, New York and New Jersey.

12. PLEASE INDICATE ON THE APPROPRIATE LINE OR LINES, THE STATE OR REGION FROM WHICH YOU PRESENTLY RECEIVE YOUR RAW MATERIALS FOR THE MANUFACTURING OF YOUR FINISHED PRODUCT.

	1967 Tonnage Received	1967 Mode Used	1966 Tonnage Received	1966 Mode Used
NEW ENGLAND				
NEW YORK				
NEW JERSEY				
PENNSYLVANIA				
SOUTH ATLANTIC STATES				
OTHER STATES				

13. PLEASE INDICATE ON THE APPROPRIATE LINE OR LINES, THE STATE OR REGION TO WHICH YOU PRESENTLY SHIP YOUR FINISHED PRODUCTS.

	1967 Tonnage Shipped	1967 Mode Used	1966 Tonnage Shipped	1966 Mode Used
NEW ENGLAND				
NEW YORK				
NEW JERSEY				
PENNSYLVANIA				
SOUTH ATLANTIC STATES				
OTHER STATES				