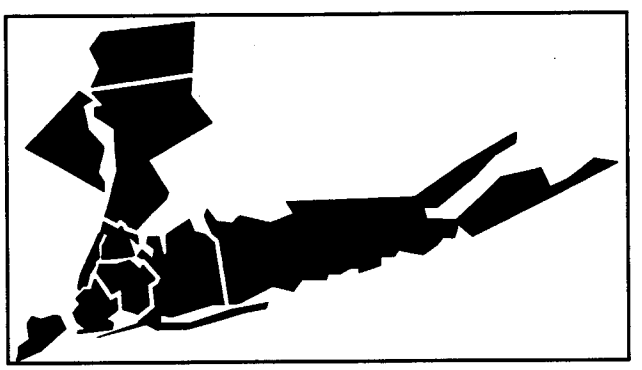
New York Metropolitan Transportation Council

Final Report
Freight Facilities and System Inventory



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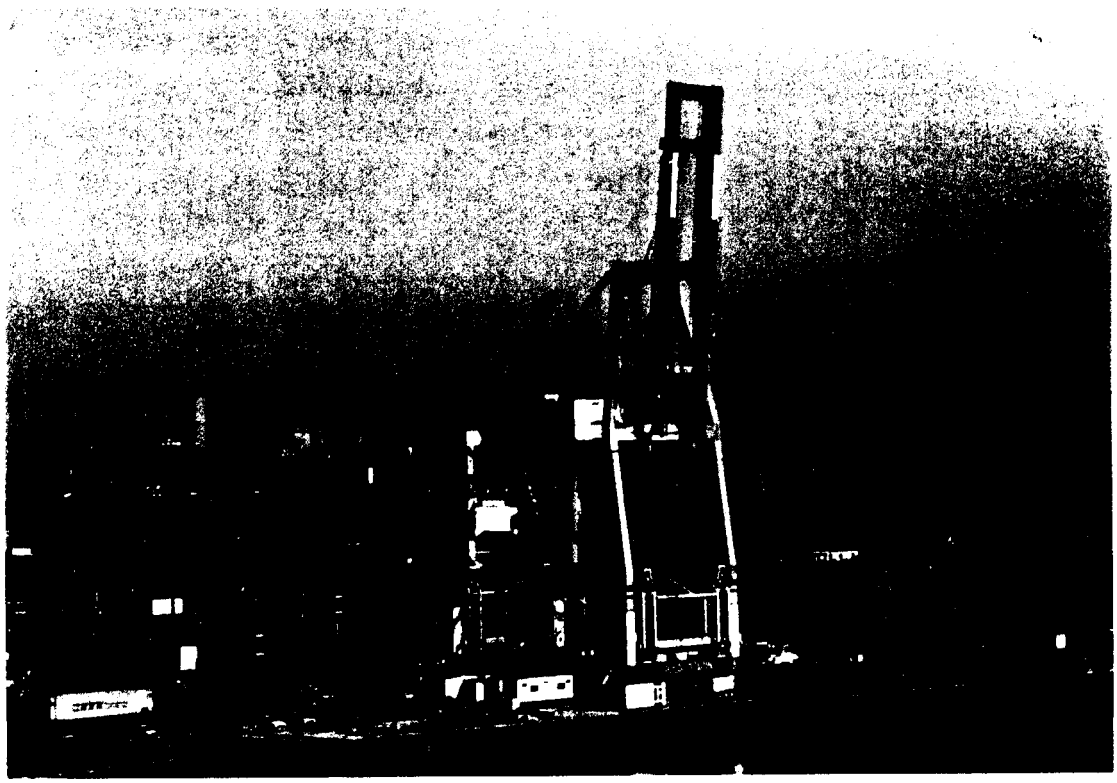

NEW YORK/NEW JERSEY PORT
INTERMODAL TERMINAL

This report is in partial fulfillment of the freight IMS implementations called by the Intermodal Surface Transportation Efficiency Act, 23 U.S.C. 134 and the Federal Transit Act, Section 8, 49 U.S.C. app.1607.

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PREFACE

Intermodal management System (IMS) definition per ISTEA:

The intermodal management system is a systematic process of identifying key linkages between one or more modes of transportation where the performance or use of one mode will affect another, defining strategies for improving the effectiveness of these modal interactions, and evaluating and implementing these strategies to enhance the overall performance of the transportation system.

As part of the implementation phase of the intermodal management system NYMTC Central staff has put together this inventory report for major freight facilities and systems. In this study the freight network is divided between the main network (which means within NYMTC's boundaries) and peripheral network (which means outside NYMTC's boundaries). These two classifications are not based on the terminal/network importance to the region. Also, the rail section (chapter III) and the truck section (chapter IV) are structured slightly differently, in the way that we categorized the subsections based on the terminal owner for the ease of capturing their performance and collecting the data.

The purpose of this inventory report is to describe the current condition of major freight intermodal transportation facilities and systems. Understanding the existing system is crucial in order to establish bottleneck locations and to generate improvement strategies. This inventory is an ongoing process that will be conducted every three years. The data will be input into a computer database, and, eventually, a Geographic Information System.
An efficient freight transportation system is vital to this region's economic stability and competitiveness. More than 700 million tons of freight are moved in and out of the New York metropolitan region each year. For total downstate region market size by commodity and commodity movement based on origin and destination see Appendix A. Intermodal freight movement annual tonnage flows (1990 data) are shown in Fig.A-1. Therefore, it is crucial to generate effective strategies for the freight transportation network. These strategies are an important element in the development of IMS. These strategies will be developed based on this inventory. The selected strategies will be included as projects in the Transportation Improvement Program and the Long Range Plan.

In order to support this report NYMTC Central Staff conducted a freight inventory survey in October 1994. This survey was sent to various freight terminal operators. For the truck survey we had limited coverage, but in the next phase the NYMTC Central Staff and the subregions will survey more truck companies including major warehouses in the metropolitan region. The survey had a 60 percent response rate, however, some major players of freight movement did not respond to our survey. As a result, research was conducted to fill this gap. However, more cooperation from the freight groups is needed in order to have a balanced and clear understanding of the freight and commodity movements in the region.

SUMMARY

This report was prepared based on various existing freight studies in the region and freight related and logistics articles in recent journals. In addition to these materials, NYMTC Central Staff conducted an inventory survey that was sent to major terminal operators. The purpose of this survey was to confirm and to enrich the existing data.

This report describes the general physical and operational characteristics and bottlenecks to the efficient operation of intermodal terminals and systems in the New York metropolitan area and its vicinity.

The findings are summarized by mode (aviation, marine, rail, and truck terminals) in the tables below.

AIRPORTS

JFK Int'l
LaGuardia
MacArthur
Stewart Int'l
Calverton
Newark

TRUCK TERMINALS

USPS, Queens P&DC
UPS Laurelton
UPS Maspeth
UPS 43rd Street
UPS Melville
UPS Nassau
UPS Foster Avenue
UPS Suffolk
USPS, V. Daniels P&DC
USPS, Mid-Island P&DC
USPS, Morgan GMF
USPS, AMC at JFK
Fedex, JFK
Fedex, EWR

MARINE TERMINALS

Auto Marine Terminal
Bay Avenue Terminal
Bush Terminal
Floatbridge
Global Terminal
Green St. Lumber Exch.
Howland Hook Terminal
Maersk Terminal
Maher Fleet Street
Maher Tripoli Street
New Haven Terminal
PANY&NJ Brooklyn
MarineTerminal
Red Hook Terminal
Sea-Land Terminal
South Brooklyn Marine
Universal Terminal

RAIL YARDS

Arlington Yard
APC S. Kearny
Atlantic Terminal
Bronx Terminal
Bush Terminal
Bushwick Terminal
Deer Park Yard
Doremus Avenue
Eastern Propane/Bulk
Terminal
E-Rail Terminal
ExpressRail
Farmingdale Yard
Fresh Pond Yard
Garden City
Greenville Yard
Harlem River Yard
Hunts Point
LIC Yard
Little Ferry
Maspeth Yard
Mirrer's Trucking
N. Bergen Terminal
North Jersey Intermodal
Nutritive Sweetners
NYS&W Auto Terminal
NYS&W Lumber/Reload
Oak Island Yard
Oak Point Yard
Portside Terminal
SBK Terminals
S. Kearny Terminal
St. George Yard
65th Street Yard

I. Airports

The tables below summarize the characteristics of the six airports located in the New York metropolitan area (JFK, LGA, MacArthur, Stewart, Calverton, and EWR in Newark/Elizabeth, New Jersey).

TABLE 1

Physical and Operational Characteristics

Airport Name & location (county, state)	Class	Size (acres)	Major Highway in vicinity (NHS**)	Highway Conditions	Number of employees	Runway number	Runway length	Cargo Handling Space (sq.ft.)	Planes move-ment per year	Air Cargo Tonnage per year	Access Roads (Primary/Secon-dary) (NHS**)	Terminal Type, based on FHWA Criteria*
JFK International Airport, Queens, NY	TR (1)	4,930	I-678 (**) (VanWyck Expy)	Cong (3)	35,000	5	14,752' 11,352' 10,000' 8,400' 2,562'	2.5 million	343,250	freight 1,486,156 mail 112,527	Primary: I-678 VanWyck Expy** Secondary: 878 Nassau Expy** Rockaway Blvd**	Primary
La Guardia Airport, Queens, NY	TR (1)	660	907M (Grand Central Pkwy) I-678** (V.Wyck Expy**)	Cong.; Trucks not Allowed	10,300	2	7,000' 7,000'	100,000	337,737	freight 40,375, mail 62,371	Primary: GCP** 94th St./Junction Blvd** Secondary: 23rd Ave/ 102 St, Astoria Blvd.**	Primary
Long Island MacArthur Airport, Islip, Suffolk County, NY	GU(2)	1,311	I-495** (LIE) 27** (Sunrise Hwy	Cong.	1,000	2	7,000' 5,000'	3,000	198,428	2,033 (total tonnage)	Primary: Johnson Ave/Vet. Memorial Blvd**, Secondary: Smithtown Ave ** (projected)	TBD
Stewart Int'l Airport, New Windsor, Orange County, NY	GU(2)	1,900	I-84** I-87**	Fair	3,286	2	11,818' 6,006'	50,000	143,045	146,310 (total tonnage)	Primary: Rt. 207, Secondary: Rt. 17K/ Drury Lane (projected)	Primary
Calverton Airport, Brookhaven, Suffolk County, NY	GU(2)	2,913	I-495** (LIE) NYS 25**	Cong.	2,000	2	7,000' 10,000'	NA	5,137	projected 145,000 (total tonnage)	Primary: Middle Country Road** Secondary: Grumman Blvd./ River Road	TBD

EWR, Newark Int'l Airport, Essex/Union, NJ	TR (1)	2,300	NJ Tpk, Rt. 1, 9, 78**	Cong.	17,800	3	9,300' 6,800' 8,200'	500,000	436,686	freight 872,617 mail 77,481	Primary: NJT, Rt.1 &9	Primary

Note: Intermodal connection is between air and highway modes only.

* See Appendix C for Federal Criteria
** Part of National Highway System (NHS)

(1) TR - Transport (Airport designed for jets with approach speeds over 121 knots)
(2) GU - General Utility (Airport designed for general aviation needs)
(3) Cong. - Congested
(4) TBD-To be determined

TABLE 2

Land Use Characteristics around the airports

Land Use	JFK	LGA	Mac Arthur	Stewart Int'l	Calverton	EWR
Agricultural			x	x	x	x
Residential	x	x	x		x	
Commercial	x	x	x	x	x	x
Industrial	x	x	x	x		x
Recreational	x	x				x
Open Space	x	x	x	x	x	x

II. MARINE

The tables below summarize the characteristics of major marine facilities in the NYMTC region, New Jersey, and Connecticut:

Summary of Ports Data - Table 3

Marine Terminal Physical Characteristics

Name of Terminal	County, State	Terminal Size (acres)	Number of berths	Channel depth	Major h'way in vicinity	Hwy Condition	RR access	Roads Access (Primary or Secondary)	Terminal Type based on FHWA Criteria *	Storage area (sq.ft.)
Red Hook	Kings, NY	88	10	42'	I-278** (BQE, Gowanus)	Cong.	yes	Primary: VanBrunt** & Union St** Secondary: Congress St. at Columbia St.**	Primary (future)	600,000
South Brooklyn Marine Terminal	Kings, NY	110	7	32'-35'	I-278** (Gowanus)	Cong.	yes	Primary:39th St Secondary: 29th St/2nd Ave.		600,000
PANY&NJ Brooklyn Marine Terminal	Kings, NY	10	3	32'	I-278** (BQE)	Cong.	yes	Primary: Atlantic Ave**/Columbia St.** Secondary: Congress St.		100,000
Bush Term. Floatbridge, Brooklyn	Kings, NY	NA	1	32'	I-278** (Gowanus)	Cong.	yes	Primary: First Ave, Brooklyn		NA
Howland Hook Marine Terminal	Richmond, NY	187	2	35'	I-278** (SIE), NJT, I-78, Rt.1,9**	Cong.	yes	Primary: Western Avenue**	Primary (future)	208,000
Green Street Lumber Exchange	Kings, NY	31	2	28'-35'	I-278** (BQE), I-495 (LIE)**	Cong.	no	Primary: West St. Secondary: Green St.	TBD	NA
Bay Avenue Terminal	Union, NJ	94	4	35'	NJTpk**	Cong.	yes	Primary: East Fleet St, Secondary: Bay Ave.	Primary (future)	63,000

Name of Terminal	County, State	Terminal Size (acres)	Number of berths	Channel depth	Major h'way in vicinity	Hwy Condition	RR access	Roads Access (Primary or Secondary)	Terminal Type based on FHWA Criteria *	Storage area (sq.ft.)
Maher Fleet St. Marine Terminal	Union, NJ	200	8	35'	NJTpk**	Cong.	yes	Primary: Lyle King St. Secondary: Corbin St.**	Primary	NA
Maher Tripoli St. Marine Terminal	Union, NJ	243	5	38'	NJTpk**	Cong.	yes	Primary:Tripoli St, Secondary: Bay Ave.**	Primary	371,000
Universal-Maersk Terminal	Essex, NJ	153	6	35'-37'	NJTpk**	Cong.	yes	Primary:Calcutta/ Tyler St, Secondary: Corbin St	Primary	250,000
Sea-Land Marine Terminal	Union, NJ	254	6	40'	NJTpk**	Cong.	yes	Primary:McLester St Secondary: Tripoli St.	Primary	306,000
Maersk Marine Terminal	Essex, NJ	64	4	37'	NJTpk**	Cong.	yes	Primary:Tyler St.	Primary	175,000
Global Marine Terminal	Hudson, NJ	110	2	40'	NJTpk, Rt.1, 9**	Cong.	yes	Primary: Port Jersey Blvd** Secondary: U. S. Rt. 1 & 9**	Primary	125,000
Auto Marine Terminal	Hudson, NJ	147	2	32'	NJTpk Extension**	Cong.	yes	Primary: Port Jersey Blvd, Jersey City**	Primary	NA
New Haven Terminal (Connect)	New Haven, CT	NA	3	35'	I-95, I-91, Rt.1**	Cong.	yes	Primary: I-95**	Primary	700,000
Cilco Terminal (Connect)	New Haven, CT	27	1	33'	I-95, I-91**	Cong.	no	Primary: I-95**		280,000
Gateway Terminal, (Connect)	New Haven, CT	NA	3	35'	I-95, I-91**	Cong.	no	Primary: I-95**		NA

See Appendix C for Federal Criteria

Summary of Ports Data - Table 3, continuation.

Marine Terminal Operational Characteristics

Marine Terminal	Berth Length (ft)	Equip. (Number of Cranes)	Ships arriving/ sailing per month	Number of employees	Operational status	Intermodal Connection	Terminal Type	Commodity Type	Freight volume (unit varies)
Red Hook	3,030'	4	25	200-600	active	S/T,S/R,S/B	bulk, containers	general cargo	69,219 TEUs/yr
South Brooklyn Marine Terminal	1,537' cont.berth 4,700' breakbulk	2	As Req'd	85	active	S/T, S/R	break-bulk	cocoa, coffee, gen. cargo, ro-ro	120,000 TEUs/yr
PANY&NJ Brooklyn Marine Terminal	5,880'	None	NA	NA	light activity	S/T	break-bulk	vehicles, gen.cargo	NA
Bush Terminal Floatbridge, Brooklyn	NA	NA	NA	NA	active	B/T	Bulk	general cargo	NA
Howland Hook Marine Terminal	2,500'	7	NA	250 (projected)	not active (in construction)	S/T,S/R	bulk, containers	gen.cargo (projected)	167,000 TEUs/yr (future)
Green Street Lumber Exchange	1,400'	None	1	30	active	S/T	bulk	lumber	24,000 tons/year (domestic) and 96,000 tons/year (international)
Bay Ave Terminal	2,825'	3	NA	NA	not active (barge activity only)	S/T, S/R, (future) S/B	bulk	general cargo, sludge	NA (future)
Maher Fleet Street Marine Terminal	4,875'	7	65	450	active	S/T, S/R	bulk, containers	gen. cargo automobiles	400,000 TEUs/year
Maher Tripoli Street Marine Terminal	3,150'	7	48	400	active	S/T,S/R	containers	general cargo	380,000 TEUs/yr

Marine Terminal	Berth Length (ft)	Equip. (Number of Cranes)	Ships arriving/ sailing per month	Number of employees	Operational status	Intermodal Connection	Terminal Type	Commodity Type	Freight volume (unit varies)
Universal Maersk Terminal	3,822'	3	35	500	active	S/T,S/R	container	general cargo	350,000 TEUs/year
Sea-Land Marine Terminal	4,519'	7	30	600	active	S/T,S/R	container	general cargo	350,000 TEUs/yr
Maersk Marine Terminal	764'	4	NA	NA	active	S/T,S/R	container	general cargo	250,000 TEUs/yr
Global Marine Terminal	1,800'	4	21	50	active	S/T,S/R	container	general cargo	167,000 TEUs/year
Auto Marine Terminal	1,800'	None	20	91	active	S/T	auto term.	automobiles	240 ships arriving/sailing per month
New Haven Terminal (Connect)	1,950'	6	20	85	active	S/T,S/R	bulk, oil	liquid products,petroleum, chemicals	200 truck transactions/day 850,000 tons of bulk/year
Cilco Terminal (Connect)	750'	2	NA	NA	active	S/T	bulk	fruits, juices, paper, automobiles	700,000 tons(bulk) per yr (140 truck transactions/day)
Gateway Terminal (Connect)	1,800'	2	NA	NA	active	S/T	bulk, oil	oil, dry cargo	500,000 oil barrels

Note: Intermodal Connection: Ship/Truck = S/T, Ship/Rail = S/R, Ship/Barge = S/B

III. RAIL

The following are summaries of rail yards, located within the NYMTC region in New Jersey:

Rail Terminal Characteristics - Table 4

Name of Facility	County/ State	Serving RR and RR Class	Size, Acres	No. of empl.	No. of tracks	Rail car capacity	Out-bound trains (Average (per week)	Ware-house space (sq.ft.)	Major Highway in vicinity	Hwy Condition	Volume of commodity (unit varies)	Primary or Secondary access roads	Type of service and main commodities	Intermodal connections	Terminal Type based on FHWA Criteria (primary/Se-condary) *
Harlem River Yard (Future)	Bronx, NY	CR, Class 1	40	NA	2	500	2	NA	I-87** (Major Deegan) I-278** (Bruckner)	Cong.	700 trucks/day (projected)	Primary:East 132nd St./ Bruckner Ave** (Bronx)	COFC and TOFC Commodity: Break-Bulk	R/T	Primary (future)
Hunts Point Market	Bronx, NY	CR, Class 1	329	NA	NA	500	NA	475,000	I-278** (Bruckner Expy)	Cong.	500 trucks/day	Primary:East 149th St./ Bruckner Ave** (Bronx)	COFC and TOFC Commodity: Food	R/T	Primary
Bronx Terminal	Bronx, NY	CR, Class 1	32	400	2	NA	Rail service inactive	yes	I-87**	Cong.	300 trucks/day	Primary: Exterior Street	Commodity: Food	R/T (Future)	
65th Street Yard (South Brooklyn Terminal) (Bayridge)	Kings, NY	NYCHRR Class III (inter-change w/CR & MTA-LIRR)	33	NA	4	500	As Req'd	NA	I-278** (Gowanus)	Cong.	79,000 railcars/yr (projected)	Primary: 65th Street/1st Ave, (Brooklyn)	COFC and TOFC Commodity: Bldg.Material, Paper	R/T, R/B (Future)	Secondary (future)
Atlantic Terminal	Kings, NY	NYCHRR Class III (proje-cted)	14	NA	1	250	5	NA	I-278** (BQE/ Gowanus)	Cong.	500 carloads/yr	Primary:Wolcott Street Secondary: Ferris St., (Brooklyn)	COFC and TOFC Commodity: Food, Bldg.Material, Steel	R/T, R/B (future)	
Bush Terminal (1st Avenue)	Kings, NY	NYCHRR Class III	11	NA	5	NA	5	NA	I-278** (BQE/ Gowanus)	Cong.	4,000 carloads/yr	Primary: First Ave/ 43th Street, (Brooklyn)	COFC and TOFC Commodity: sludge, Cocoa, Steel, Subw. Cars	R/T	TBD

Name of Facility	County/ State	Serving RR and RR Class	Size, Acres	No. of empl.	No. of tracks	Rail car capacity	Out-bound trains (Average (per week)	Ware-house space (sq.ft.)	Major Highway in vicinity	Hwy Condition	Volume of commodity (unit varies)	Primary or Secondary access roads	Type of service and main commodities	Intermodal connections	Terminal Type based on FHWA Criteria (primary/Se-condary) *
SBK, 2nd Ave, 4th Ave, 10th Ave Inter-change and Storage Yard	Kings, NY	SBK Class III (South B'klyn Railway Company)	1	2	1	15	2-3	NA	I-278** (Gowanus Expy/BQE)	Cong.	120 carloads/yr	Primary: 2nd Ave/ 39th St. ,4th Ave/37th St. and 10th Ave/37th St, (Brooklyn)	Bulk Commodity: Iron pipes, Subway Cars, Railroad material	R/T	TBD
Bushwick Terminal, Brooklyn	Kings, NY	MTA-LIRR, Class III	2	NA	5	45	5	NA	I-278** (BQE)	Cong.	2,055 carloads/yr	Primary: Meserole/Morgan Ave** (Greenpoint)	Bulk Commodity: Lumber, Plastics, Municipal Waste	R/T	TBD
Long Island City Rail Terminals: TeamYard, Yard A, Blissville Yard	Queens, NY	MTA-LIRR, Class III	12 Acres, 17 and 2.4 Acres	NA	6, 6, 8	77, 100, 100	5	NA	I-495** (LIE)	Cong.	1,863 carloads/yr	Primary: Queens Blvd.** Fifth St/48th Ave,(LIC)	Bulk Commodity: Brick, Lumber, Chemicals	R/T	TBD
Fresh Pond, Railroad Yard Queens	Queens, NY	MTA-LIRR Class III	N/A	NA	1 opera-tion and 15 classif tracks	200	5	NA	I-495** (LIE) I-278** (BQE)	Cong.	117 carloads/year	Primary: Metropolitan Ave/ Fresh Pond Rd., (Queens)	Bulk Commodity: Lumber, Building material, Cars	R/T	TBD
Garden City Yard, LI	Nassau, NY	MTA-LIRR Class III	4	NA	5	50	5	NA	I-495** (LIE)	Cong.	5 carloads/yr	Primary: Hempstead Tpk**	Bulk Commodity: Food	R/T	TBD
Farming-dale, Team Yard & Repub. site	Suffolk, NY	MTA-LIRR Class III	2 and 11	NA	2 (and can hold 4)	16	10	NA	I-495** (LIE) & Rt.110**	Cong.	82 carloads/yr	Primary: Broad Hollow Rd.	COFC and TOFC (future) Commodity: Lumber, Plastics, Paper	R/T	TBD
Deer Park Yard, LI	Suffolk, NY	MTA-LIRR, Class III	23	NA	1	100	5	NA	I-495** (LIE)	Cong.	1,027 carloads/yr	Primary: Dear Park Ave**	COFC and TOFC (future) Commodity: Paper, Lumber	R/T	TBD

Name of Facility	County/ State	Serving RR and RR Class	Size, Acres	No. of empl.	No. of tracks	Rail car capacity	Out-bound trains (Average (per week)	Ware-house space (sq.ft.)	Major Highway in vicinity	Hwy Condition	Volume of commodity (unit varies)	Primary or Secondary access roads	Type of service and main commodities	Intermodal connections	Terminal Type based on FHWA Criteria (primary/Se-condary) *
Maspeth Yard	Queens NY	MTA-LIRR, Class III	3.3	NA	2 unload and 5 storage tracks	50	5	NA	I-495** (LIE) I-278** (BQE)	Cong.	NA	Primary: Grand Ave	Bulk, General Cargo Commodity: Food, Plastics	R/T	TBD
Oak Point Yard	Bronx, NY	CR, Class I	5	45	NA	450	NA	NO	I-278** (Bruckner)	Cong.	5,000 car-loads/year =100 trucks/ day	Primary: East 138th Street/ Bruckner Blvd**	Classification Yard	NA	TBD
St. George Yard	Richmond NY	SIR, Class III	25	NA	1	NA	Inactive	NA	I-278** (SIE)	Cong.	Inactive (future)	Primary: Richmond Terrace**, S.I.	Bulk, General Cargo (future)	R/T, R/B (future)	TBD
Arlington Yard	Richmond NY	SIR, Class III	50	NA	1	NA	Inactive	NA	I-278** (SIE) 440**	Cong.	Inactive	Primary: South Avenue** Secondary: Western Ave**	Bulk, COFC and TOFC (future)	R/T, R/S	TBD
Portside Terminal	Union, NJ	CR, Class 1	25	NA	3	650	5	NA	NJTpk**	Cong.	1,700 truckload/ month or 286,000 tons/year	Primary:Corbin Street** Secondary: Lyle King Street (Elizabeth)	Double stack (DST) Commodity: Automobile, Food	R/T, R/S	Primary
South Kearny Terminal	Hudson, NJ	CR, Class 1	182	NA	6	1,963	45	NA	Rt. 1** & 9**	Cong.	255,000 container/ year	Primary:Fish House Road,(S.Kearny)	Double stack (DST) Commodity: Break-Bulk	R/T	Primary
APC South Kearny Terminal	Hudson, NJ	CR, Class 1	100	NA	3	2,600	4	NA	Rt. 1** & 9**	Cong.	109,000 container/ year	Primary: Pennsylvania Avenue (S.Kearny)	Double stack (DST) Commodity: Break-Bulk	R/T	Primary
E-Rail Term.	Union, NJ	CR, Class 1	55	30	4	1,800	3	NA	Rt. 1** & 9** NJTpk**	Cong.	1,700 containers/ month,	Primary:Third Ave, Secondary: Dowd Ave, Trumbell St.(Elizabeth)	Double stack (DST) Commodity: Break-Bulk	R/T,R/S	Primary

Name of Facility	County/ State	Serving RR and RR Class	Size, Acres	No. of empl.	No. of tracks	Rail car capacity	Out-bound trains (Average (per week)	Ware-house space (sq.ft.)	Major Highway in vicinity	Hwy Condition	Volume of commodity (unit varies)	Primary or Secondary access roads	Type of service and main commodities	Intermodal connections	Terminal Type based on FHWA Criteria (primary/Se-condary) *
ExpressRail Terminal	Union, NJ	CR, Class 1	33	12	5	NA	12	NA	Rt. 1** & 9** NJTpk**	Cong.	5,000 container/ month	Primary:East Fleet Street Secondary: Bay Ave.** (Elizabeth)	Double stack (DST) Commodity: Break-Bulk	R/T, R/S	Primary
North Bergen Terminal	Bergen, NJ	CR, Class 1	50	NA	4	500	25	NA	US 1** & 9**	Cong.	92,000 containers/ year,	Primary:Tonnelle Ave, (N.Bergen)**	Double stack (DST) Commodity: Break-Bulk	R/T	Primary
Doremus 1&2 Auto Terminal	Essex, NJ	CR, Class 1	30 - Term #1, 26 - Term #.2	NA	4+4 Holding 4+3 Unload. Tracks	2,765 (Term.1) 3,300 (Term.2)	NA	NA	NJT Ext,** Rt.1** & 9**	Cong.	100,000 Tons/year	Primary:Doremus Avenue** (Newark)	Automobiles	R/T, R/S	Primary
North Jersey Interm.Term. (Croxton Yard)	Bergen, NJ	CR, Class 1	75	NA	3	1,965	9	NA	Rt. 1** & 9** NJT**	Cong.	136,000 container/yr	Primary:County Road, (Jersey City)	Double stack (DST) Commodity: Break-Bulk	R/T	Primary
Oak Island Intermodal Terminal New Jersey	Essex, NJ	CP, Class 1	50	NA	4	600	7	NA	Rt. 1** & 9** NJTpk**	Cong.	120,000 Tons/year	Primary: Wilson Ave. (Newark)	COFC and TOFC Commodity: Break-Bulk	R/T	Primary
Little Ferry Terminal	Bergen, NJ	NYS&W Class III (CSXI owned)	23	NA	3	500	5	NA	NJTpk.** Rt. 1, 9**	Cong.	16,058 domestic & 36,576 international container/yr	Primary: North Bergen Avenue**	Double stack (DST) Commodity: Break Bulk	R/T	Primary
Greenville Yard	Hudson, NJ	NYCHRR, Class III	33	NA	10	500	5	NA	NJT**	Cong.	79,000 railcars/yr (projected) 6,000 carloads/yr	Primary: Port Jersey Blvd** (Jersey City)	DST, COFC and TOFC (future) Commodity: Municipal Waste, Steel, Chemicals	R/T, R/B, R/S	TBD

Name of Facility	County/ State	Serving RR and RR Class	Size, Acres	No. of empl.	No. of tracks	Rail car capacity	Out-bound trains (Average (per week)	Ware-house space (sq.ft.)	Major Highway in vicinity	Hwy Condition	Volume of commodity (unit varies)	Primary or Secondary access roads	Type of service and main commodities	Intermodal connections	Terminal Type based on FHWA Criteria (primary/Se-condary) *
Resources Warehouse and Consolidated Service: Land Bridge Terminal, and Meadow Land	Bergen, NJ	NYS&W Class III	54 and 20	70	1	700	5	NA	Rt. 1** & 9** NJTpk**	Cong.	27 DST cars, 33,619 container/yr	NA	DST Commodity: Break Bulk, Plastics, Paper	R/T	TBD
Nutritive Sweetener NJ	Sussex, NJ	NYS&W Class III	2	4	1	15	3	NA	Rt.15**	Fair	1,200 tons/month (bulk), 144 carloads/yr	NA	Bulk and Liquid Commodity: Corn sugar	R/T	
Bulk Trans. & Transport Terminal	Bergen, NJ	NYS&W Class III	15	NA	1	NA	As Req'd	NA	NJTpk**	Cong.	NA	NA	Bulk	R/T	
NYS&W Automob. Terminal	Bergen, NJ	NYS&W Class III	12	NA	1	NA	As Req'd	NA	NJTpk**	Cong.	NA	NA	Automobile Terminal	R/T	
NYS&W Lumber Reload	Bergen, NJ	NYS&W Class III	12	NA	1	NA	As Req'd	NA	NJTpk**	Cong.	NA	NA	Lumber Reload Center	R/T	
Eastern Propane at Sparta Junction	Sussex, NJ	NYS&W Class III	NA	NA	1	NA	As Req'd	NA	Rt 15**	Fair	NA	NA	Bulk (liquid)	R/T	
Mirrer's Trucking Co.	Bergen, NJ	NYS&W Class III	NA	NA	1	150	As Req'd	NA	I-80** Rt.46 NJT**	Cong.	NA	NA	Bulk General Cargo	R/T	

Note: Intermodal Connection - Rail to Truck=R/T, Rail to Ship = R/S, Rail to Barge = R/B,

IV. TRUCK

The following are the tabulated summaries of truck facility characteristics:

Table 5 - Truck Terminal Characteristics

Name	Ope-rator	Location (County, State)	Size (Acres)	Major Hwy in vicinity	Hwy Condi-tion	Access Roads (Primary/Sec)	No. of Truck Bays	Truck Trips per day in and out	Type of Cargo	Cargo Volume (tons per day)	Access to other mode	No. of Empl.	Terminal Type: Primary or Secondary based on FHWA Criteria
Queens Proces-sing & Distri-bution Center	USPS	Queens NY	24	I-678 (White-stone Exp.)** I-495 (LIE) 907M** (GCP)	Cong.	Primary:20th Ave Flushing	44	300	small package	4,500	Hwy	1,958	Primary
UPS Laureton	UPS	Queens NY	8	I-678** (Van Wyck), 907C (Belt Pkwy) I-495** (LIE)	Cong.	Primary:Farmer Blvd, Springfield Garden**	220	420	small package	50	Hwy	452	Primary
UPS Maspeth Hub	UPS	Queens NY	20	I-495** (LIE)/ I-278** (BQE)	Cong.	Primary:Laurel Hill Blvd/Meeker Ave	415	780	small package	300	rail, Hwy	1,590	Primary
UPS/43 Street Hub	UPS	New York, NY	4	9A** (West Side Hwy)	Cong.	Primary:43rd Street/ 12 Ave**	475	890	small package	2,250	Hwy	2,230	Primary
UPS/ Melville Hub	UPS	Suffolk NY	15	I-495** (LIE), 908G** (Northern State Pkwy)	Cong.	Primary:Broad Hollow Rd./ Smith Street Farmingdale	320	515	small package	1,260	Hwy	722	Primary
UPS/ Nassau Hub	UPS	Nassau NY	20	I-495** (LIE)	Cong.	Primary: Hempstead Tpk**, Uniondale	440	790	small package	2,500	Hwy	980	Primary

Name	Operator	Location (County, State)	Size (Acres)	Major Hwy in vicinity	Hwy Condition	Access Roads (Primary/Sec)	No. of Truck Bays	Truck Trips per day in and out	Type of Cargo	Cargo Volume (tons per day)	Access to other mode	No. of Empl.	Terminal Type: Primary or Secondary based on FHWA Criteria
UPS/ Foster Avenue	UPS	Kings, NY	10	I-678** (Van Wyck Expy), Belt Pkwy**	Cong.	Primary:Foster Ave/Linden Blvd	260	265	small package	1,000	Hwy	600	Primary
UPS Suffolk Hub	UPS	Suffolk NY	15	I-495**(LIE)	Cong.	Primary:Horse Block Rd. Farmingsville	250	508	small package	750	Hwy	490	Primary
Mid-Island P&D Center	US Postal Serv.	Suffolk NY	40	I-495 (LIE)	Cong.	Primary: Rt.110 Secondary: Duryea Rd. Melville	NA	650	Mail, small package	NA	none	2,000	Primary
Morgan GMF	US Postal Serv.	New York, NY	NA	9A** (West Side Hwy) NJT**	Cong.	Primary:9/10th Ave** Secondary: 29/30th Street, Manhattan	NA	670	Mail, small package	336	none	5,000	Primary
USPS AMC at JFK	US Postal Serv.	Queens NY (JFK)	27	South Conduit**/ Van Wyck**	Cong.	Primary: North Boundry Rd. Secondary: Port Authority Ramp	100	160	Mail, small package	150	airport	2,100	Primary
FedEx	JFK Hub	Queens NY	50	Van Wyck Expy,** Nassau**	Cong.	Primary: 878 Nassau Expy**	50	100	small package	100	airport	NA	Primary
Dominic V. Daniels P&D Center	USPS	Hudson NJ	40	Rt.280** and NJT**	Cong.	Primary:Newark Turnpike**	186	785	Mail, small package	NA	none	2,208	Primary
FedEx	EWR (Newark) Hub	Essex/ Union, NJ	100	NJTpk,** Rt.1,9**	Cong.	Primary: Rt.1&9**	100	300	small package	500	airport	NA	Primary

NA - data not available
Cong - Congested

CHAPTER I

AVIATION

Introduction

Air cargo operation is intermodal by definition. Freight, to be delivered between the customer and the airport, has to be moved by another mode of transportation that is typically by truck. Presently, there is no direct connection between air and marine and rail transportation modes in the metropolitan area. The typical commodity carried by air mode is lightweight, high value, and perishable or time-sensitive, such as overnight packages.

Freight movement by air is international or domestic. As global trade has become more significant, more flexible schedules and more frequent air freight services are needed in order for the region to be able to compete in the global market.

Freight moves in passenger aircraft, freighters, or integrated carriers, such as Federal Express, which combines trucking with aviation for a door to door delivery system. Freight revenue is a key element in the economics of passenger services and about 40 percent of the cargo in this region moves on passenger aircraft. Air cargo is transported in containers or pallets. Containers are typically placed in the belly of the passenger aircraft. These air cargo containers, which vary in dimension depending upon the type and size of aircraft, are designed to fit the cylindrical bodies of the air craft. The air cargo pallets, which are typically built up or broken down on or near the airport, are more likely transported in freighters. Freighters are aircraft dedicated for cargo deliveries. For typical airline container shapes see Figure A-1 and for commercial aircraft types see figure A-9.

Air Freight Issues

The following are some critical issues that influence efficient air freight movements.

- Airport Access: Congestion and substandard roadway conditions on airport access reduce some benefits of fast-moving shipments.

- Airport Support System: Surrounding area development, warehouses, and refrigeration facility availability and their capacity to meet the demand should be measured.

- New policies: Environmental issues, such as a new de-icing procedure, noise, air pollution, hazardous material regulations, transportation, and transportation related policy and regulation.

- Airport Intermodal Facilities: The newly designed businesses that use new technology and speed the transfer of freight between air and land.

- Airport infrastructure: The sound condition of airport infrastructure and its support mechanism is very important, especially to accommodate global changes in the cargo market, such as bigger airplanes, and automated equipment.

As an MPO, the main issue in our domain is improvement of airport access. Also, we could be a facilitator to get the rest of the issues addressed.

Airport Classification

A definition of an airport is: "A permanent facility that provides space for aircraft to take off and land, with a control tower, hangers, and accommodations for passenger and cargo." To understand airport capacity and its potential for freight movement, it is important to know the type of airport that exists in the region. NPIAS (National Plan of Integrated Airport Systems) has classified airport types as follows [Ref. A3]:

Classification	Characteristics
Basic Utility (BU)	Small airports designed primarily for single-engine aircraft. Precision approach operations are not anticipated.
♦ Basic Utility I	2,700 ft. runway; precision instruments approach operations not available.
♦ Basic Utility II	3,200 ft. runway; precision instrument approach operations are not generally available.
General Utility (GU)	Airport designed for a broader spectrum of general aviation needs including some air taxi, commuter traffic, and small business jets with low approach speeds.
♦ General Utility I	3,800 ft. runway; precision approach is not generally available.

♦ General Utility II	4,300 ft. runway; precision approach capabilities are available.
Transport (TR)	An airport designed for use by aircraft that cannot be accommodated adequately by a general utility airport. Typically these are pure jets with approach speeds of more than 121 knots. Runway length of 5,400 ft. or more and precision capability is available.

For this inventory, as specified in the IMS workplan, NYMTC has selected the following airports to survey:

Main network (airports located within the NYMTC region):

1. LaGuardia Airport, Queens County
2. John F. Kennedy (JFK) International Airport, Queens County
3. Long Island MacArthur Airport, Suffolk County
4. Stewart Airport, Orange County

Potential commercial airports in the future:

1. Calverton Airport, Suffolk County

Peripheral network (located outside the NYMTC region):

1. Newark International Airport, New Jersey

Republic Airport in Farmingdale, Suffolk County, and the Teterboro Airport in Bergen County, New Jersey, also conduct some freight operations, but the number of the transactions is not very significant, therefore these airports are not included in this study. There is no major freight operation in southwest Connecticut airports. For locations of airports in the metropolitan area included in this study see Fig. A-3.

Among the above airports, JFK International Airport, LaGuardia Airport, and Newark International Airport (EWR) are the major airports that handle cargo. These airports are operated by the Port Authority of New York and New Jersey.

These three airports are the largest regional airport complexes in the United States and in the world, and they serve as a significant source of jobs and economic activity in the New York/New Jersey area. Based on the Airport Council International report, the New York airports are ranked as number four in term of cargo volumes during the first quarter of 1995 (See Table A-6B). According to the PANY&NJ data for 1994, these airports generate direct employment to more than 62,000 people and help to create another 243,000 indirect jobs. These airports connect the region with the international and domestic markets. They generate almost $22.2 billion in economic activity to the New York/New Jersey region [Ref.A4]. In 1994, 77.6 million passengers traveled through these airports. This represents a 7% increase from 1993.

In the last ten years the amount of freight moved via the airports in the metropolitan region has increased significantly. The total cargo has increased from 640,000 tons in 1980 to 2.3 million tons in 1993. The total value of these cargos was in 1994 approximately $123 billion ($76.9 billion in international cargo and $46.1 billion in domestic market) [Ref.PANYNJ,A5]. However, based on the UTRC (University Transportation Research Center) study most of the cargo is not destined for the New York metropolitan area, but to points inland. In 1993 these three airports also handled 43% of the total freight movements between the USA and Europe, and 35% of all freight movement between the United States and Asia [Ref.A5]. For international cargo major origin and destination trade regions see Table A-1.

The value of international air trade continues to grow; it increased by 10.7 % from 1992 to 1993. Based on the New York Customs District 1993 data, the New York air cargo export reached a 423.5 thousand metric tons total with a value of $41.4 billion. For the same period, imports reached 562.6 thousand metric tons with a value of $34.8 billion [Ref.A6]. See Table A-2 and A-2A for New York and the U.S. air cargo exports and imports lead 2-digit commodities.

The other two airports (Stewart and MacArthur airports) cargo tonnages are approximately 4.2 % of the total cargo tonnage in the region [Ref.A8]. In comparison to other airline carriers, FedEx, UPS, American, Lufthansa, Korean, and Continental Airlines are the major air cargo carriers in the region, with Continental Airlines handling 50% of total air cargo. [Ref.PANYNJ, A7].

JAL modern air cargo terminal at JFK

(Courtesy of Mr. M. McCallister)

JOHN F. KENNEDY INTERNATIONAL AIRPORT

This airport is located in Jamaica, Queens County, New York, and is operated by the Port Authority of New York & New Jersey (contact person is Mr. D.B. Muscatello, One World Trade Center, 65 South, NYC 10048, Telephone: (212) 435-3718). Currently, the PANY&NJ is leasing the land from the City of New York under a complex formula, under which payments are linked to airport revenues and capital expenditures [Ref.A29].

Mailing address of the facility is:

John F. Kennedy Airport,
Building No. 14, 2nd Floor,
Jamaica, NY 11430.

Facility contact person:

* Mr. Robert Kelly, Airport Manager

  Telephone: (718)244-3500.

JFK International Airport (JFKIA) was responsible for 63% of the entire regional air cargo movement of 1.47 million tons in 1994 [Ref.PANYNJ,. A5].

Physical Characteristics:

The airport covers 4,930 acres. Its latitude is 40°38' North and its longitude is 73°46' West. Airfield elevation is 13 feet ASL (above sea level). The airport type is general transport. The typical aircraft approach speed is more than 121 knots. [Ref.A10]

This airport is located 13 miles from the Manhattan central business district [Ref.A10]. For the airport layout - see Fig.A-2. The nearest major highway for trucks to reach JFK airport is the Van Wyck Expressway, a limited access highway, which is a contiguous route from the Whitestone Expressway. The southern end of the expressway enters directly into the airport internal circumferential road and the JFK Expressway. The Belt Parkway serves airport-bound trips; however, no trucks are allowed on the parkway.

The primary access route to JFK International Airport is from the Van Wyck Expressway Exit number 1, and the secondary access is from Nassau Expressway and from Rockaway Boulevard [ref.A12].

JFK Airport has a total of five runways with the following length:

* 11,352' x 150';
* 8,400' x 150';
* 14,752' x 150';
* 10,000' x 150';
* 2,562' x 75'

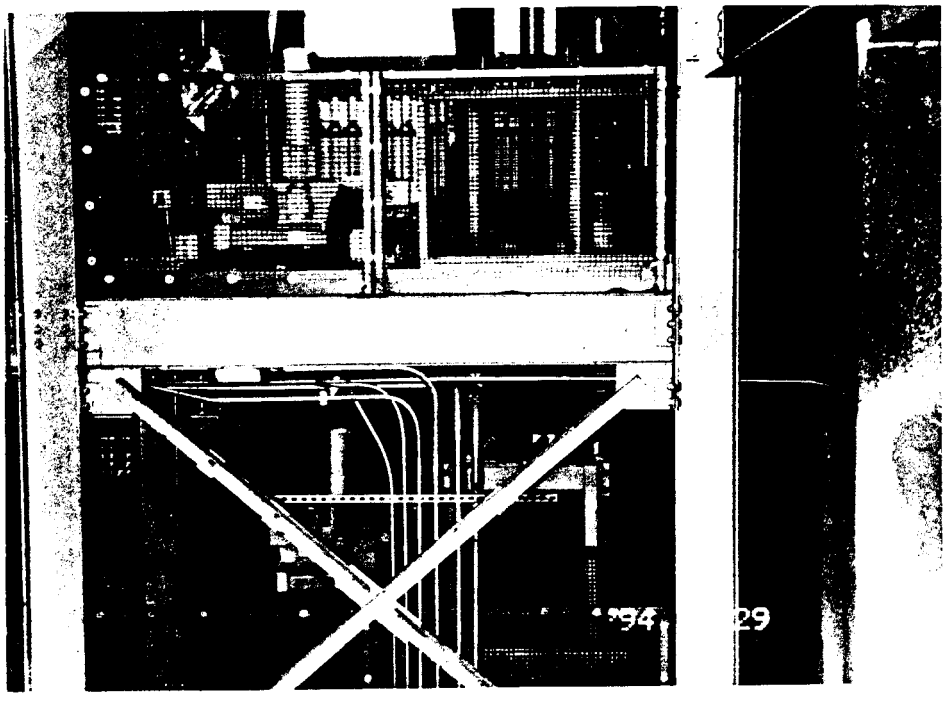
Directions of runways are respectively: 04L/22R; 04R/22L; 13R/31L; 13L/31R; 14/32 [Ref.A10].

JFK International Airport has developed thirty-five warehouses to serve increasing freight needs. These warehouses are located on the airport property and amount to 4.5 million sq.ft. of dedicated warehouse and office space [Ref.PANYNJ,A11]. Based on NYMTC's questionnaire, the conditions of the existing warehouse facilities are varied, from state of the art to needs improvement. The replacement of present buildings and development of new modern facilities is in progress [Ref.A13].

Based on the Citywide Industry Study (by NYC Department of City Planning), there are two possibilities for developing warehousing for high value but not severely time-sensitive cargo. The eastern end of the airport (east of Thurston Basin) has over 100 acres of underutilized land that could be allocated for on-airport warehouses, with direct access to the Nassau Expressway. However, without the proper infrastructure or a connecting roadway this plan has a low probability to materialize. The Port Authority recently purchased part of the Aqueduct Raceway property, but no plans exist for development at present. This raceway could be turned into an off-airport warehouse distribution facility that has a good access to the roadway network (Rockaway Boulevard and Conduit Avenue). The existing warehouses in Springfield Garden could be combined at this proposed facility and provided a partial solution to the congested local street network [Ref.A9]. However, the existing Port Authority strategy is to provide an on-airport space for this market.

Refrigeration service is available in the facility. There are climate controlled areas for perishable cargo with a 200,000 sq.ft. perishable center that features centralized refrigeration, storage and clearance services [Ref.A11,A13]. There are other special services available, such as an animal handling and holding center with a 24-hour veterinary service; the largest U.S. Customs installation in the United States; aircraft maintenance services; a container freight station; customhouse brokers and freight forwarders; Department of Agriculture services; compression chambers, and other vast freight infrastructure network for air and surface transportation facilities [Ref.A10,A11,A12].

In 1994 parking facilities served a total of 4.71 million parked cars (an increase of 5.2% from 1993) and 896,765 airport coach passengers (an increase of 1.4% from 1993). The number of available spaces for passengers is 15,100, and there are 750 spaces for cargo handling (truck docks)[Ref.A14,A12].



JAL Modern air cargo terminal at JFK
(Courtesy of LtC M. McCallister)

Presently, there are more than one hundred air carriers, including forty-six international, and twenty all-cargo airlines, serving 300 domestic and international destinations daily. Present passenger air carriers include eighty-five major domestic and international carriers [Ref.A11,A13].

Operating Characteristics

In 1994 the number of airplane operations was 343,250 [Ref.A10], which represents a 3.3% increase from 1993. This number includes109,311 domestic, 105,116 international, 119,785 other commercial (scheduled commuter, air-taxi), and 9,038 noncommercial (government, business and private) plane movements [Ref.A14].

In 1994, JFK International Airport employed 35,200 persons [Ref.A12]. According to 1990 data, JFKIA employees total earnings were $6,790 million annually [Ref.A8]. This figure contributes substantially to the region's economy. In 1994 there were 173,100 jobs connected directly or indirectly with the JFKIA activity and the economic impact was $15.8 billion [Ref.PANYNJ and Ref.A8].

JFK International Airport utilizes advanced technology in its operation, including: electronic cargo clearance; video, electronic detection security systems; navigational aids such as approach radar, terminal area radar, airfield surveillance radar, secondary surveillance radar, instrument landing system (ILS), VHF omnidirectional range navigation facility (VOR), distance measurement equipment (DME), and runway visual range (RVR) measurement [Ref.A10]. For JFK and LGA airports economic activities see Table A-5.

In 1994 JFK International Airport served 28.8 million passengers [Ref.PANYNJ,A10]. This reflected a 7.5% increase from 1993 (26.8 million passengers). Within the airport there are various modes of transportation service available, such as airport coach, transit buses, privately operated bus services, limousines, taxi service, and rental cars. A monorail project is planned for future development [Ref.A12].

Commodities

In 1994, the total volume of commodities handled was 1.49 million tons (which represents a 5.1% increase from 1993), which included 422,890 tons of domestic cargo and 1,063,266 tons of international cargo. The total mail freight in 1994 was 112,527 tons (which represents a 2.4% increase from 1993) which included 69,578 tons of domestic mail and 42,949 tons of international mail [Ref.A14].

Delay

The amount of delay during cargo transfer, from one mode to another, varies depending on the commodity type, time of day and year, document handling and processing time.

The main access deficiency is chronic congestion of the Van Wyck Expressway. In addition, there is ground access congestion on Conduit Avenue, the Brooklyn Queens Expressway, the Long Island Expressway, the Grand Central Parkway, and the Belt Parkway. Restricted use of the parkways for commercial vehicles also limits further grow of airport activities. Insufficient turning radius of roads at the entrance to individual cargo facilities adds to the existing access problem. The internal circulation problem is compounded by JFK Expressway congestion [Ref.A12].

Future Improvement

The PANY&NJ has set aside $2.5 billion for a rehabilitation/redevelopment program, which entails construction of a reconfigured airport roadway system, modernized airport utilities, modernized passenger transportation/transfer, on-airport hotel, new 321 foot Air Traffic Control Tower, and various other terminal improvements. Airport tenants and the New York City Industrial Development Agency have contributed $1 billion for facility improvement, including a new passenger terminal. The 600,000 sq.ft. terminal will be built on a 35-acre site, formerly used by Eastern Airlines at a cost $435 M. The PANY&NJ expects that this project will generate an estimated 2,500 construction jobs and $570 million in economic activity over the next five years [Ref.A4].

JAL (Japan Airline) is completing the development of a new multi purpose air cargo handling facility on a 50-acre site, which contains 260,000 sq.ft of modern warehouse space, offices, and a ground maintenance facility [Ref.A4]. The Nippon Cargo Airlines terminal was completed in the fall of 1994 and the JAL air cargo terminal will be completed by 1995. These cargo terminals are equipped with modern technology, such as ETV (elevating transfer vehicles). With ETV the turn around time to load or unload a B747 plane, in this new building, is just one and a half hours [Ref.A15]. There are several projects in the planning stage to improve the present performance of JFK International Airport and to help maximize future growth.

Based on the Citywide Industry Study Report [Ref.A9] the following are the plans to improve the JFK International Airport:

Short-term:

* Expand warehouse/distribution facilities on the airport property.

* Provide on-airport space for warehouses in Springfield Gardens.

* Improve access via the Van Wyck Expressway in conjunction with NYSDOT (New York State Department of Transportation)

* Study waterborne transport between airport and other intermodal facilities

Long-term:

* Initiate long-term improvement of the Van Wyck Expressway with NYSDOT

* Investigate the connection of a possible Trans-Brooklyn Freightway (Bay Ridge railway ROW) to the airport.

* Investigate creation of the NY/NJ Circumferential Commercial Corridor, circling Manhattan and providing direct connection between airports [Ref.A16].

The other future facility improvement projects include:

* A new on-airport roadway system

* Truck Stops and Information Center

* Signage Program

* ITS development

* Monorail system [Ref.A12]

* Fixed guided transit system. This PANY&NJ proposal to link both JFKIA and LGA to Manhattan (with a possible connections to the MTA-LIRR rail stations) is currently on hold [Ref.A30, A33].

Issues

Based on NYMTC's survey results, the PANY&NJ Aviation Department stated that the main road blocks to improvement of the airport's performance are as follows:

* access to critical roadways
* how environmental issues affect business development
* truck restrictions on the Belt Parkway.

Also, the Metropolitan Planning Organization should recognize the impact of aviation on the economy, and include airport projects in the Reallocation Process of Federal Funds [Ref.A12].

LaGUARDIA AIRPORT

This airport is located in Flushing, Queens County, New York, and is operated by the Port Authority of New York & New Jersey (contact person: Mr. D. B. Muscatello, (212) 435-3718, One World Trade Center, suite 65S, NYC 10048).

The facility mailing address is LaGuardia Airport (LGA), Hanger 7 Center, Flushing, NY 11371.

Facility contact person:

* Ms. Susan Baer, General Manager Airport Services

  Telephone: (718) 533-3401

Physical Characteristics

This airport covers 660 acres. Its latitude is 40°46.6' North and its longitude is 73°52.5' West. Airfield elevation is 23 ft. ASL (above sea level). There are two major runways. The lengths of both runways are 7,000 ft x 150 ft and their directions are 13/31 and 04/22 [Ref.A10]. The type of airport is general transport. This type of airport can handle all types of aircraft. For the layout of the airport see Fig. A-4.

This airport is located 5 miles from the Manhattan central business district [Ref.A10]. The nearest major expressway (less than 1 mile away) is the Grand Central Parkway (GCP), from which direct access is provided. Commercial traffic is prohibited on the Grand Central Parkway, as a result there are only local truck routes to access the airport. The number of vans and trucks serving the airport is significant in numbers and it affects the local road network in the area. The Van Wyck Expressway is located in the vicinity, but there is no direct access to the airport [Ref.A12].

The primary access to the airport is from 94th Street/Junction Boulevard. The secondary access to the airport is from 102nd Street/23rd Avenue/Astoria Boulevard. The main access deficiency is created by lack of direct freight access from the highway, which creates congestion on the local roads [Ref.A12].

Based on NYMTC's survey response, the facility's manager stated that at present the terminal's condition is acceptable.

Over 100,000 square feet of modern and dedicated air cargo warehouse space is available [Ref.A11]. Based on the current amount of warehouses space available, further growth of freight transportation demand will be difficult to meet in the future.
Various special services are available in the airport facility, such as a 35,000 sq.ft. multi-

tenant air cargo handling facility equipped with truck docks, an upgraded storage area, and refrigeration warehouses for perishable material [Ref.A11]. However, at present there are no animal handling services available. Aircraft maintenance is provided by American Airlines, United Airlines, and Trans World Airlines [Ref.A10].

In 1994, the parking facilities served a total of 2.19 million paid parked cars and a total of 0.664 million airport coach passengers [Ref.A14]. Currently there are 7,450 parking spaces available for passengers and 100 parking spaces available for cargo transporting vehicles. There are fifty truck docks available for cargo transfer [Ref.A12].

The present cargo carriers include over twenty-seven domestic carriers which operate 900 flights daily to over 100 U.S. destination and international routes [Ref.A11]. At present, there are thirteen passenger air carriers [Ref.A12], including Air Canada, American Airlines, Delta Airlines, Continental, Midwest Express, Northwest, TWA, United Airlines, US Air, Delta Shuttle, and US Air Shuttle [Ref.A10].

Operating Characteristics

In 1994 the number of airplane movements were 337,737. This number showed an increase of 0.2% compared to the 1993 figure [Ref.PANYNJ,A14]. Total domestic airplane movements were 231,989 including scheduled passenger, scheduled cargo, and scheduled non-revenue. Total international airplane movements were 18,314, other commercial (scheduled commuter, air taxi) were 69,736, and noncommercial (government, business & private planes) were 17,698 [Ref.A14].

All types of aircraft are handled in this airport. LaGuardia Airport had 10,300 employees with total annual earning (based on 1993 data) of $2.3 million. This income contributes significantly to the regional economy [Ref.A8,A12] and this airport has an estimate of $ 2.9 billion economic impact to the region. There are (1994 data) 31,000 regional jobs connected directly and indirectly to LGA activity [Ref.PANYNJ,A8].

In 1994 LGA served 20.73 million passengers per year [Ref.A10] which represents a 4.5% increase from 1993 [Ref.A14,A12]. Extensive passenger movement is possible due to various modes of transportation available within the airport facility, such as airport coach, transit buses, privately operated bus services, limousines, taxis, and rental cars.

Technology

LaGuardia Airport, like any other major airport in the country, continues to implement modern technology in order to maximize the efficiency of its operation. The advanced technology that has been implemented at LGA includes electronic billing, electronic tagging, wide area video detection (in security systems), electronic tracking, and modern navigational aids, such as approach radar, terminal area radar, airfield surveillance radar, instrument landing system

(ILS), VHF omnidirectional navigation facility (VOR), distance measurement equipment (DME), non directional beacon (NDB), and microwave landing system (MLS) [Ref.A10].

Commodities

Although the amount of freight handled at LaGuardia is relatively small compared to the other two major airports in the area it is an important site for the US Postal Service operation [Ref.A9].

Some of the top commodities handled at this facility are:

Import: apparel, articles and accessories, machinery, office equipment/computers, electric machinery, footwear, edibles, optics, and leather articles (for more detailed information see Table A-2A).

Export: machinery, office equipment/computers, electric/sound equipment, optic, photo, medical instruments, fish, books, and newspapers (for more detailed information see Table A-2).

In 1994, LGA handled 40,375 tons of commodities. The total volume for mail cargo was 62,371 tons (up 0.2% from 1993). Of this total tonnage the domestic commodities handled weighed 38,505 tons plus 60,748 tons of mail and the international commodities weighed 1,870 tons plus 1,623 tons of mail [Ref.A14]. Based on NYMTC's survey, the commodity transfer delay that the airport is experiencing varies depending upon the commodity type, the time of day, the time of year, and the administrative paper handling mechanism.

Delay

Insufficient road turning radius and insufficient width of access roads to the airport are the major cause for the external network congestion by the airport. The internal road circulation condition is effected by congestion on access roads, insufficient road turning radius and insufficient lane width to accommodate big trucks. The airport's major transportation problem is a result of restricted use of the Grand Central Parkway [Ref.A12].

Future Improvement Plans

Based on the Citywide Industry Study Report [Ref.A9] the following are LGA's future plans to improve the facility:

Short-term:

* Passenger terminal buildings improvement.

* Internal roadway improvements and widening of the roadway for departure terminal.

Long-term:

* Raise the bridges' clearance along the access corridor and permit trucks to move on the Grand Central Parkway between the Triborough Bridge and Northern Boulevard to provide better access to the airport and better connection to the Brooklyn Queens Expressway [Ref.A9,A4].

* Development of the NY/NJ Circumferential Commercial Corridor to circle Manhattan and provide direct connection between airports [Ref.A16].

* Fly-over to improve access project, currently in the planning stage [Ref.A12].

Issues

Based on NYMTC's survey response, the following are the operator's view of the barrier to achievement of an efficient intermodal airport operation:

* Regulations that prohibit trucks on the Grand Central Parkway.

* Environmental issues that affect business development.

* The Metropolitan Planning Organization should recognize the impact of aviation on the economy and should support airport projects and their implementation in the funding reallocation process [Ref.A12].

LONG ISLAND MacARTHUR AIRPORT.

This airport is located on Long Island, in Suffolk County and is owned and operated by the Town of Islip.

Facility contact person:

* Mr. Alfred Werner, Airport Manager

Address:

Long Island MacArthur Airport
Town of Islip
Islip, NY 11751
Telephone: (516) 467-3300

Physical Characteristics

The airport size is 1311 acres. Its mailing address is: 100 Arrival Avenue, Airline Terminal Building, Ronkonkoma, NY 11799. This is a general transport type of airport [Ref.A12].

The airport is located 3 miles from the nearest major highways which are the Long Island Expressway (New York State Route 495) on the north and the Sunrise Highway (NYS Route 27) on its southern border. For layout see Fig.A-5.

The airport's primary access is from the entrance road which is Johnson Avenue that spurs off Veterans Memorial Highway (NYS Route 454). Johnson Avenue is a four-lane access road. The annual vehicle trips are expected to grow from 756,000 in 1991 to 1,195,500 in 2006. Based upon this forecast, a new terminal (see future improvement plans) with a new access will be constructed to serve the added demand in the future. This access connection will start from the LIE and Smithtown Avenue [Ref.A17].

There are two runways in the airport. Their measurements are: 6-24 is 7,000 ft x 75 ft and 15/33 is 5000 ft x 75 ft. Expansions for these runways to a length of 7,200 ft and 5,700 ft respectively are planned [Ref.A17] in the future.

Warehouses are available within the airport to hold merchandise waiting for transfer. However, this airport has no refrigeration or special services available [Ref.A12].

At present, the parking facilities have 1,400 available spaces for passengers [Ref.A12] and capacity will be increased to 2,022 spaces in year 2006 [Ref.A17]. The number of available spaces for cargo carriers is sufficient, according to the manager's assessment.

Present cargo air carriers (mixed services, handled by aircraft servicing passengers) include American Airlines, US Air, United Express, Carnival Air Lines, and Piedmont Airlines. Besides these major carriers there are four commuter airlines: Precision Airlines, Henson Airlines, Suburban Airlines, and Business Express (Delta), which occasionally can handle freight transport in addition to passengers [Ref.A12,A17].

The land in the immediate surroundings of the airport is zoned for industrial use. Commercial and residential facilities are zoned in a distance over 1 mile from the airport. Some land is presently undeveloped or vacant. A small portion is used for agricultural purposes [Ref.A17].

Operating Characteristics

In 1993, the number of airplane movements was 198,428 per year [Ref.A12]. It is forecasted to grow to 317,000 airplane movements in the year 2006. There were 378 based aircraft in 1989 and it is forecasted to increase to 520 in year 2006 [Ref.A17]. The airport currently can only handle narrow body commercial aircraft.

Based on NYMTC's survey, the airport currently has 1000 employees [Ref.A12]. The advanced technologies utilized in this facility are electronic billing, electronic tagging, and a wide area video detection system for security. The number of passengers served was 1.17 million [Ref.A12] in 1993. By 2006, the projected number of passengers will be 1.27 million people [Ref.A17].

Access to the airport is indirectly provided by the Long Island Rail Road, which stops at the Ronkonkoma station. No scheduled bus service is available from the station to the airport. However, there is a scheduled bus (Hampton Bus Lines), which runs from the Hampton to JFK International Airport and LaGuardia Airport with a stop at MacArthur Long Island Airport. Rental cars, taxi or limousine services are not available, although passengers can make arrangements with Colonial Tours taxi service for ground transportation to and from the airport [Ref.A17].

Commodities

In 1993, the volume of commodities handled was 2,033 tons [Ref.A12]. Based on the projection for year 2006, the commodity volume will increase to 5,736 tons. As a result of this forecast, the demand for cargo processing space will also increase from 1,200 sq.ft. in 1988 to 2,868 sq.ft. in 2006. Major domestic destinations are Albany, NY; Baltimore, MD; Boston, MA; Chicago, IL; Philadelphia, PA; Pittsburgh, PA, Raleigh, NC; Syracuse, NY; Washington, D.C.; Ft. Lauderdale and Orlando, FL, and Hartford, CT. This airport does not handle international cargo movement [Ref.A17].

Delay

Presently, physical condition of the highway access is acceptable and it is under the city's jurisdiction for maintenance. The main freight access problem is the congestion on the Long Island Expressway. Based on NYMTC's survey, due to extensive and continuous road maintenance, the internal circulation conditions within the airport are acceptable (no congestion). Terminal condition is acceptable for current needs [Ref.A12].

Future Improvement Plans

Based on the master plan [Ref.A17], the following is the list of future improvements:

Airside Development:

* Runway 6/24 1,000 ft. extension southwest
* Runway 15R/33L 510 ft. extension southeast
* Additional taxiway development

Landside Development:

* Construction of a new terminal located at the north side of the airport. Expansion of the existing terminal as an alternative to building a new terminal is also being considered.
* Main Terminal Apron Expansion
* East Side General Aviation Facilities Development

Special Airside/Landside Projects:

* Overlay and Groove Runway 6/24
* Overlay All Taxiways
* Complete Airport Service Road
* Terminal Access Road Improvements
* Continued Property Acquisition for Noise Abatement
* Retainment of Property on the North Side of the airport for future development.
* Install Windshear Detection System.
* Provide navigational lights such as Runway End Identifier Lights, Precision Approach Path Indicator and Non-Precision Instrument Approach on Runway 15R.

STEWART INTERNATIONAL AIRPORT

This airport is located approximately 50 miles north of New York City in Orange County and is owned and operated by the New York State Department of Transportation.

Facility contact person:

* Mr. Kenneth H. Noe, Manager,
  Ms. Joyce D. Korus, Assistant Manager.

Address:

Stewart International Airport, Building 138, 1035 First Avenue
New Windsor, NY 12550.
Telephone: (914) 564-7200 X 250 and X 251

Physical Characteristics

The airport size is 1900 acres and it is located in Orange County, New York. The airport latitude is 41°30'25"N; longitude is 074°06'29"W ; airfield elevation is 491 ft. ASL (above sea level) and its type is general transport [Ref.A12]. For layout see Fig.A-6.

Stewart Airport is located 2 miles from the nearest major highway/expressway which is at the intersection of I-84 and I-87. Primary access to the airport is via Route 207. Secondary access is via Route 17 K. This secondary access is mainly used by truck traffic [Ref.A18].

The access road is adequate and in good condition. There is no major traffic problem on the access road to the airport and on the internal road of the airport. Terminal condition is acceptable [Ref.A12].

The airport is equipped with two runways that have the following measurements: R/W 9-27 is 11,818 ft x 150 ft and R/W 16-34 is 6,006 ft x 150 ft [Ref.A12].

Within the airport there are warehouses with refrigeration service. Other special services are also available, such as animal handling service, A/C maintenance, United States Department of Agriculture (USDA) Customs, USDA Animal Import Center, and perishable material center. The total area of the warehouses is 267,825 sq. ft. In addition, loading equipment is available, such as Dock Loader for B727 planes.

There are 1,598 spaces available for long and short parking for passenger and cargo transport vehicles. The air cargo carriers that are currently utilizing Stewart Airport are American Airlines, US Air, Delta Airlines, Airborne, Federal Express, Emery, Mountain Air Cargo, and Southern Air Transport. The airport has five loading/unloading gates [Ref.A12].

Currently, there is 50,000 sq.ft. of cargo handling space in the airport with a projected increase to 330,000 sq.ft. by year 2012 [Ref.A18].

The land use within a one mile radius from the airport is partly residential, commercial, light industry, recreation space, and open space. In the future, this land will be used for the development of Stewart Industrial Park and the Southwest Cargo Facility [Ref.A19].

Operating Characteristics

In 1993, there were 143,045 airplane movements from Stewart Airport. The types of aircraft that are used in this airport are DC-8, B-747, B-727, MD80, F28, B-707, and DC10 [Ref.A12]. The main domestic flight destinations are Atlanta, Buffalo, Bangor, Philadelphia, Chicago, Raleigh-Durham, Charlotte, Dayton, and Memphis. The typical international cargo destinations are the Far East and Western Europe [Ref.A18]. There are 3,286 employees in the airport, earning $68.048 million, which add to the local economy [Ref.A8].

Based on NYMTC's survey data, the airport had 370,659 passenger arrivals and 366,520 passenger departures during year 1993 [Ref.A12]. The total number of passengers (enplanements and deplanements) is predicted to reach 2,599,402 in year 2012 [Ref.A19]. Presently the only modes of transportation to reach the airport are private car and taxi [Ref.A12].

Commodities

The major commodities handled in this airport are mail, general cargo, and animals [Ref.A12]. The volume of commodities handled in the airport during 1993 was 146,309.8 tons (of which 6,060 tons is mail) with a projected increase of 355,053 tons by year 2015 [Ref.A18].

Future Improvement Plans

Based on the Stewart Airport master plan, there are the following improvement plans [Ref.A18,A19].

* The establishment of full time scheduled transit service from the city of Newburgh to the airport.

* Completion of I-84/Drury Lane project, which will provide direct access to the I-84.

* Development and expansion of existing main terminal and south cargo areas.

CALVERTON AIRPORT

Calverton Airport is currently owned by the U.S. Navy. The airport is underutilized, and at present it has no civilian activity. Since 1954, Grumman Corporation leased and operated 944 acres of this property. The lease is about to expire, and it may not be renewed. However, based on a recent study conducted by the Long Island Regional Planning Board, this airport has a potential to enhance the economic development of the area. Calverton Airport is located in Brookhaven, Long Island, Suffolk County, about 97 miles from the Manhattan CBD. The airport has tremendous commercial potential, and there are several options for its future use. Based on the Calverton Airport Regional Planning Board's latest feasibility study (1993), some of the possible management options are [Ref.A20]:

1. Federal Control
2. State Control
2. Local Control
3. Privatization

Physical Characteristics

Calverton Airport covers an extensive mass of land, approximately 6,000 acres, with 2,913 acres that are used for the operational airport including runways, supporting facilities and the major part of Grumman's production building. For layout see Fig. A-7.

This airport could be converted to a general transport type of airport. Based on the study conclusion, this airport location will make it a good candidate for transporting air cargo to and from Europe.

The nearest major highway to the airport is the Long Island Expressway (LIE, access from exit 71) within two mile distance, and the NYS Rt. 25 (Middle Country Road).

Primary access to the airport for freight and people is from Middle Country Road and the secondary access to airport is from Grumman Boulevard. The other access is from River Road. Due to current limited usage of the airport and the undecided status of the airport, the access to the facility is sufficient. However, after the development of the airport and the full scale operation, it is predicted that delays will be encountered on those access roads, especially with the present congestion on the LIE. Then, widening of the access roads will be required [Ref.A20].

At present, the terminal condition is good, however expansion and modernization will be required for expanded utilization in the future.

The two existing runways have the following measurements: runway 05/23 is 7,001' x 200' and runway 14/32 is 10,001' x 200'.

Warehouses within the airport are presently underutilized, but after the future expansion of the airport, these facilities should be modernized and expanded. At present, parking facilities are underdeveloped.

Based on the interview conducted during the preliminary study, Long Island manufacturers, freight forwarders, and several integrated carriers/major airline representatives have expressed an interest in the future use of Calverton Airport for at least a modest cargo operation.

The types of land around the facility (within a one mile radius) are agricultural, fields and forest, residential (low density housing), commercial, industrial establishments, such as Brookhaven National Laboratory, and recreational areas, such as golf fields, Peconic Estuary and local parks. The remaining areas are open spaces, such as wetlands, scenic and recreational areas, and the local cemetery [Ref.A20]. Some residential groups oppose the commercial and military use of the facility due to the possibility of future increase in its operation which will worsen the unwanted effect, such as noise.

Operating Characteristics

In 1991, Grumman conducted a total of 5,137 airflight operations from this airport, whereas in 1986 the number of airflight operations was 9,662 (see Table A-7 for Calverton average activity trends). Almost all of these operations were for military purposes with the majority being jet operations.

In the LI Regional Planning Board's study, they predicted that Calverton Airport will have a similar operational pattern as Stewart Airport which is 3,223 operations annually or about four landings and four takeoffs daily. The aircraft types that will be handled are B727 and B747.

During its peak period Grumman had approximately 4,000 employees; currently only 2,000 people are employed by Grumman. It is expected that the proposed development of Calverton Airport will generate 12,000 employments, which will add substantially to the LI economy [Ref.A20].

The number of passengers per year is not yet predicted, as the future development plan is only intended for a cargo airport mixed with military usage. Private car is the only mode of transportation to, from, and within the airport. Along with the airport development, a new bus route will be developed to serve facility [Ref.A20].

Commodities

The LI Regional Planning Board's study also expected that the airport will take some of the cargo import or export by LI firms and ship them via Kennedy Airport. The exports of goods from LI (Long Island) firms consist of 19% high-technology equipment or medical materials, 17% electronic components, and 17% machinery. The imported goods shipped by air percentage breakdown typically is as follows: 17% electronic components, 17% various retail merchandise, 13% machinery, 10% computers and computer components, and 10% high-technology equipment or medical materials. (See Table A-3)

The study also showed that 73% of the exported cargo destinations are to Europe, 40% to the Far East, 8% to South America, 6% to Canada, and 19% to the Middle East. As for the imported goods, 60% originated from Europe, 30% from the far East, 7% from South America, 7% from the Middle East, and 3% from Canada. (see Table A-3). For major export commodities on Long Island area see Table A-4.

Future Improvement Plans

Based on the Calverton Airport Joint Use Feasibility Study [Ref.A20], the following improvement plans are needed:

* If the airport will be converted for commercial use, a construction of 7,075,500 sq.ft. cargo and industrial related facilities are required.

* In addition, transportation system improvements for both people and cargo to and from the airport are necessary, such as:

    - Develop a new bus route
    - Improve freight/rail connection on the MTA-LIRR (Long Island Rail Road) which currently has only a very limited service into the southern portion of the airfield
    - Establish a high speed ferry service from LI to Connecticut
    - Improve the overall performance of the congested LIE

Peripheral Network (outside NYMTC region)

NEWARK INTERNATIONAL AIRPORT (EWR)

Although, this airport is not within the NYMTC's boundary, its role in cargo movement is very crucial for the economy of the New York metropolitan region. Newark International Airport is one of the ten busiest cargo airports in the U.S.[Ref.A7]. This airport also has the fastest growing air freight tonnage among the other three main airports (JFK, LaGuardia, and Newark Airports). Newark Airport handled 4.6 times more cargo tonnage in 1990 compared to 1977 and of the 2,000,000 tons of air cargo handled in the metropolitan region in 1992, approximately 650,000 tons were handled at Newark International Airport (EWR). This airport is also a major hub for Continental Airlines and for the three principal integrated carriers which are U.S. Postal Service, United Parcel Service, and Federal Express [Ref.A7].

This airport is operated by the Port Authority of New York and New Jersey. The contact person is Mr. D. B. Muscatello, One World Trade Center, suite 65S, NY, NY 10048, Tel. (212) 435-3718. The land is owned by the City of Newark [Ref.A29].

Facility contact person:

* Mr. Benjamin DeCosta, Manager;

Address:

Newark International Airport Building 10,
Tower Road,
Newark, NJ 07114.
Telephone: (201) 961-6161

Physical Characteristics

Newark International Airport (EWR) is located in the towns of Newark and Elizabeth, in Essex and Union Counties, New Jersey, within a distance of 16 miles from downtown Manhattan. For layout see Fig.A-8.

The geographic references are longitude: 40°41'36"N; latitude: 74°10'7"W, at 18.3 ft. above sea level. The airport size is 2,300 acres and its type is general transport [Ref.A21].

The nearest major highways are the New Jersey Turnpike, Routes 1 & 9, and I-78 at a distance of less than 1 mile. The primary access is from Routes 1 and 9 and the secondary access is from the New Jersey Turnpike (exit 13 A and 14).

In general, the main problem with airport access is congestion on the New Jersey Turnpike northbound exit 13A and also on the other access routes. Internal circulation problems within the airport are congestion and constricting roadway geometry in the North Cargo Area. Based on the questionnaire response, the terminal physical condition varies from one building to another, but typically the buildings are in acceptable condition [Ref.A12].

There are three runways within the airport. The directions and area are as follows: [Ref.A10,A12]

4R-22L : 9,300 ft. x 150 ft.
11-29 : 6,800 ft. x 150 ft.
4L-22R : 8,200 ft. x 150 ft.

The airport also has more than 12 miles of 75-foot wide taxiway that link the three runways with the central terminal and cargo areas. The runways are also equipped with an erosion control pavement. The facility's navigational aids consist of approach radar, terminal area radar, airfield surveillance radar, secondary surveillance radar, distance measuring equipment, RVR (runway visual range) measurement, non directional beacon, and ATIS (airport traffic information system) [Ref.A10].

The total space for warehouses is over 500,000 sq.ft. [Ref.A10]. There are warehouses located in both the South Area Cargo Center and in the North Area Cargo Center [Ref.A4]. Refrigeration service is available for perishable cargo, and other special services, such as aircraft maintenance service, fuel storage, central heating and refrigeration plant [Ref.A21], US Customs station, and Department of Agriculture services [Ref.A12].

The parking facility consists of 17,000 passenger parking spaces, 2,000 parking spaces for cargo transport vehicles (including employee parking), and 200 truck docks. The available cargo space is sufficient for current freight handling activity needs [Ref.A12].

The ground activity for Newark Airport in 1994 was as follows: 5.24 million paid parked cars (8.3% increase from 1993), 694,422 airport coach passengers (18.3% increase from 1993), 336,297 airlink passengers (9.9% increase from 1993), and 336,297 NJ Transit users [Ref.A22]. Presently, there are thirty-three air carriers operating in Newark Airport, including United Airlines, American Airlines, Delta Airlines, Continental Airlines, and Federal Express [Ref.A12]. Among these air carriers, Federal Express dominates the cargo activity by moving 40% of the total cargo that passes through Newark Airport [Ref.A7].

Land within 1 mile of the facility is almost completely developed, partly by low density housing residential, some commercial, and some industrial. Based on the survey, it was stressed that it is necessary to preserve scarce vacant land for future growth.

Operating Characteristics

The number of airplane movements in 1994 was 436,686, with 285,357 domestic operations, 31,193 international operations, 101,326 other commercial movements, and 18,810 noncommercial plane movements [Ref.A14, A10]. In 1987, the number of plane movements was only 367,927.

The types of aircraft that operate in the EWR are wide-body aircraft and smaller aircraft including DC10, B-727, B-757, and DC-8 [Ref.A7].

Based on the NYMTC survey, the number of employees was 17,800 in 1993. In addition, EWR is also providing 39,200 jobs with on and off-airport aviation and indirectly related businesses [Ref.A12,A21]. This contributes $3.5 billion in economic activity to the New York/New Jersey metropolitan region [Ref.A21].

The following advanced technologies are employed in the EWR: electronic billing, tagging, electronic tracking (AMS), wide area video detection system, electronic security, and navigational aids such as instrument landing system (ILS), distance measuring equipment (DME), runway visual range (RVR) measurement, non-directional beacon (NDB), airline traffic information system (ATIS), and approach, terminal and airfield surveillance radar system [Ref.A12,A10].

In 1994 there were 28.02 million passengers leaving and entering this airport [Ref.A12] (up 8% from 1993). There are twenty-seven passenger air carriers operating in this airport and the major ones are American, Air Canada, Carnaval, Continental, Delta, EUA, Northwest, SAS, TransWorld, United, US AIR, and Virgin Atlantic [Ref.A10,PANYNJ and Ref.A12]. Various modes of transportation for passenger's use within the airport are limousines, taxi, transit and private buses, rental cars, and - in the future - a monorail system.

Commodities

The commodities handled in EWR are mostly high value packaged goods, perishable goods (flowers, vegetables), pharmaceutical, electronic parts and equipment, domestic and international mail. The principal integrated carriers are the U.S. Postal Service, United Parcel Service, and Federal Express [Ref.A7].

In 1993, approximately 699,321 tons of cargo and 74,416 tons of mail were handled by EWR both domestically and internationally [Ref.A7,A32]. In 1994, the cargo volume increased 24.8% from 1993 and the mail volume increased 4.1% from 1993. Based on 1994 data, the weight of the cargo was 872,617 tons that includes 694,413 tons of domestic freight and 178,204 tons of international freight. The total mail cargo was 77,481 tons that includes 71,466 tons of domestic mail and 6,015 tons of international mail [Ref.A22]. Due to this increase in demand, a new area for air cargo was constructed at the southern end of EWR and completed recently.

This multi tenant cargo complex (#155 and #156) covers 265,000 square feet of warehouse space and 55,000 square feet of offices. Some of the tenants are Federal Express, ABX, and Delta Air Lines.

Future Improvement Plans

Based on various listed references, the following projects are in process of implementation or under review in order to improve the efficiency of the airport:

* Complete a $378 million on-airport monorail system (to reduce internal airport traffic congestion) [Ref.A4].
* Construct vehicular access to the monorail station and related parking modifications [Ref.A4].
* Improve airport access and introduce modifications to airport roads to reduce congestion [Ref.A7].
* Construction of a new international terminal building, located at Terminal B [Ref.A4].
* Complete studies to improve access to the east of Hudson River area (75% of all air cargo into and out of EWR originates or is destined for the areas east of the Hudson). Analyze the performance of major route improvements (NJ Turnpike, Rt.1 & 9)[Ref.A7].
* SAS has shown interest in a $36 Million terminal to be shared with Continental Airlines on the north side of the airport [Ref.A23].
* Future projects include North End Redevelopment with approximately 500,000 sq.ft. of new space and a supporting signage program [Ref.A12].

Issues

Based on the NYMTC survey, the following issues were raised by the respondents:

- major intermodal transfer problems, such as clearance limitation in the tunnels to New York City
- insufficient road turning radius, and bridge and access route congestion, especially on Routes 1 and 9 and the NJ Turnpike.

The main institutional and systems deficiencies (per NYMTC's questionnaire response) are the limited Customs/Federal Staffing/Regional Economic (Private Sector) growth at the expense of regional mobility. The survey response also stated that the Metropolitan Planning Organizations should recognize the impact of the aviation industry on the region's economy and the MPOs should include airport improvement projects in the reallocation process [Ref.A12].

Trend for Future Aviation

Air cargo growth forecast is based on the estimate of the last 10-years goods movement. The European aircraft manufacturing consortium [Ref.A27] forecasts the air industry will grow about 8% a year through year 2005. Based on the Air Transport Association 1994 data, the world wide air traffic was approximately fifteen millions tons, and the top domestic cargo airlines were Federal Express, United Parcel Service, and Northwest Airlines. (See Table A-6 for air cargo traffic forecast, Table A-6A for international traffic change, and Table A-8 for worldwide air traffic tonnage and major US players).

One of the characteristics of air cargo is its high value and low weight. Although air cargo makes up only 0.25% of the total regional freight movement, its value per ton is much higher than for other modes, for example in 1989 the value of cargo shipped by air was approximately $64,000 per ton, versus $3,344 per ton for ocean borne general cargo [Ref.A5]. The high value of air cargo contributes to the fast growth of air mode transportation and to the regional economy. According to the PANY&NJ, in 1986 the air cargo alone contributed $5.3 billion in economic activity, $2 billion in salaries and wages, $3.5 billion in gross regional product to the region [Ref.A9], and it provided 50,000 jobs directly and indirectly. In addition, based on DRI analysis, approximately a 5% growth projection for the Latin American economy in 1995-2000 will greatly affect the air cargo traffic in the New York Metropolitan area.

Based on the FAA report, the revenue ton miles for air cargo traffic has increased 13 percent in 1994, which is 20.8 billion, from 1993 (Traffic World, March 1995) The FAA does not forecast the cargo traffic since the 1978 deregulation because the database available from the carriers is very unreliable.

Air cargo traffic in the metropolitan region can be an effective means of stimulating economic development. The trend in the metropolitan area is a shift from heavy manufacturing to a service industry and light manufacturing industry, such as electronics, pharmaceutical, and other highly valued commodities. These type of products and services will create new opportunities for growth in air freight traffic. In addition, the North American Free Trade Agreement (NAFTA) and the enactment of General Agreement on Tariffs and Trade (GATT) bill will open new opportunities for international air freight movement by expanding free trade to Asia and Latin America besides the U.S. traditional markets.

As part of GATT development, the current administration is promoting an aggressive strategy to improve U.S. exports to Europe [Ref.A27,A28]. In Far Eastern trade, Japan and Korea are in the top position, whereas China plans to expand its exports of electronics and machinery to reach $30 billion in 1995 [Ref.A28]. As for India, the electronic industry had an output of $4.2 billion in 1993 and is expected to reach $10 billion by 1997.

During 1993 the U.S. direct foreign investment reached $58 billion [Ref.A28]. Table A-4 shows

the changes in 1992-1993 air cargo export/import. The average volume in exports has remained the same but the import volume has increased by 100%. At the same time, the value of air cargo exports increased over 200%. The main commodities shipped by air are presented in Table A-5. Table A-6 shows the global geographic origin and destination of international air cargo. The International Air Transport Association's (IATA) short-range forecast said that Southeast Asia air cargo would grow at an average 12.4% annual rate during the period 1994-1998, Northeastern Asia traffic will increase 12.1% annually, and Western Europe will grow at the rate of 6.7% (Traffic World, October 24, 1994, [Ref.A27]).

Aviation infrastructure and services, and lately the emerging of new technologies, play important roles in the transportation network that moves people and freight. GPS or global positioning system, integrates satellites, telecommunications, and computer technologies. Development of new de-icing technologies, which include fluids and materials to de-ice aircraft, melt ice and snow on runways, and detect icing, will increase safety while reducing negative environmental effects. New large airplanes (NLP) will double the capacity of the largest currently available aircraft [Ref.A32]. The improvement in logistics management and the increasing demand for just-in-time delivery services is expected to increase by 50% in the total air cargo service by the year 2000 [Ref.A5]. Domestic and international air cargo traffic is growing. This increase may create more bottlenecks in the existing system unless adjustments to existing air facilities and support systems can be made. See Table A-8 for current and projected worldwide air traffic volume.

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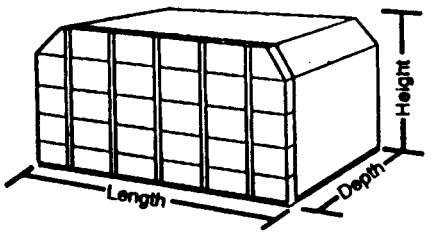
List of Figures and Tables

Air Containers Silhouettes

Fig. A-1

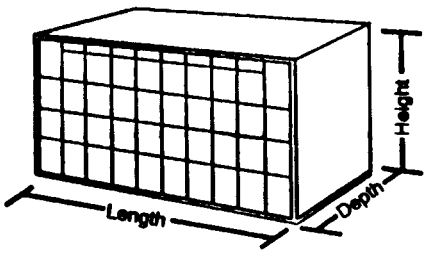
Air Container Specifications



TYPE LD-7/9 (IATA Rate Class 5)

MAXIMUM DIMENSIONS

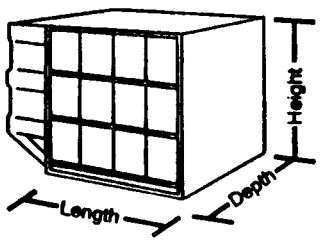
	External	*Internal*
Length: (in./cm.)	125.0/318	119.0/302
Depth: (in./cm.)	88.0/224	83.0/211
Height: (in./cm.)	64.0/163	59.0/150



TYPE LD-11 (IATA Rate Class 6)

MAXIMUM DIMENSIONS

	External	*Internal*
Length: (in./cm.)	125.0/318	115.0/292
Depth: (in./cm.)	60.4/153	56.75/144
Height: (in./cm.)	64.0/163	57.0/145



Courtesy of Continental Air Lines

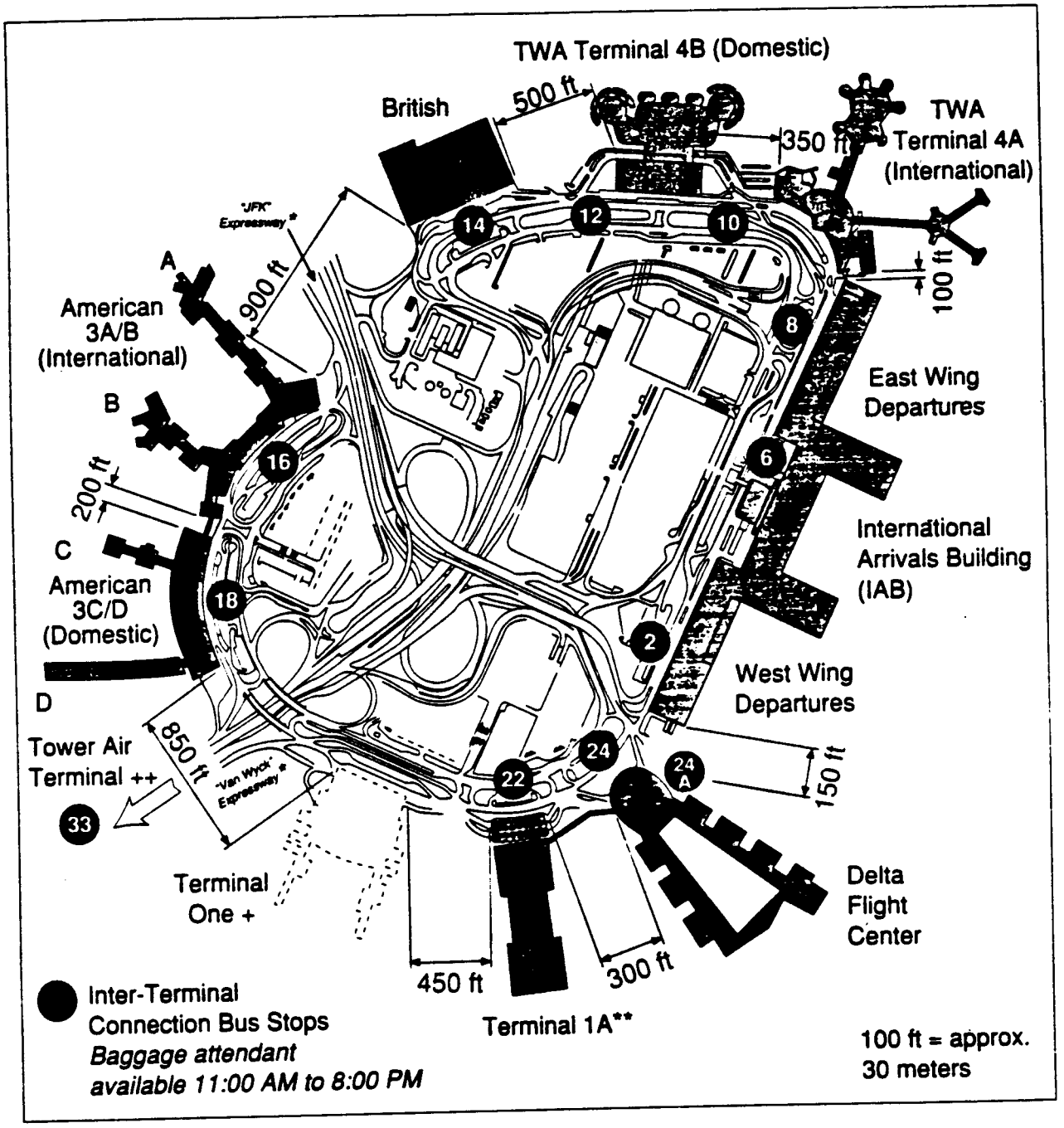
TYPE LD-3 (IATA Rate Class 8)

MAXIMUM DIMENSIONS

	External	*Internal*
Length: (in./cm.)	79.0/201	75.5/192
Base Length: (in./cm)	61.5/156	60.4/153
Depth: (in./cm.)	64.0/153	56.75/144
Height: (in./cm.)	64.0/163	59.0/150

Source: Intermodal Good Movement

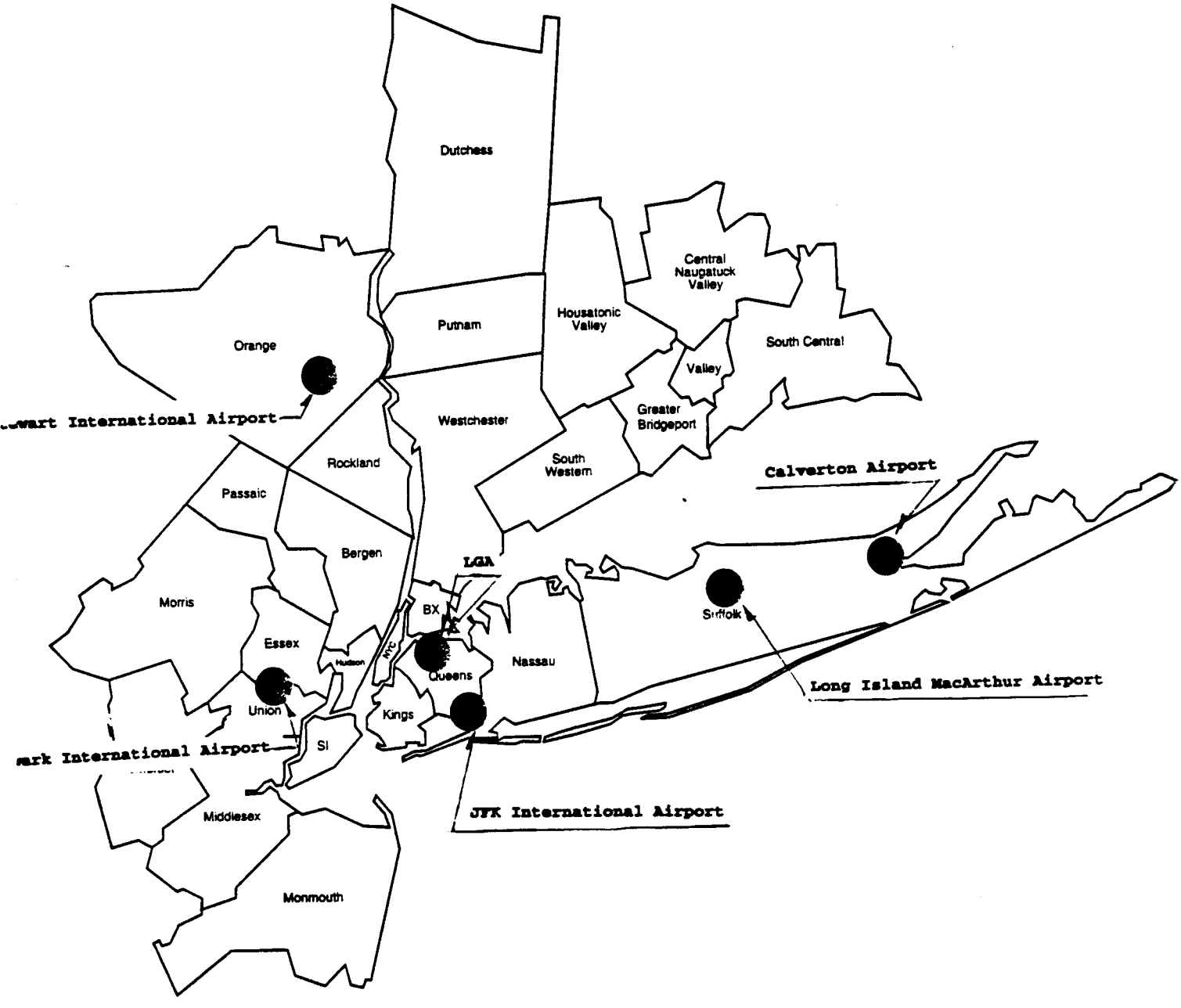
JFK



* *No Pedestrian Crossing*

Free Connection Bus Stops

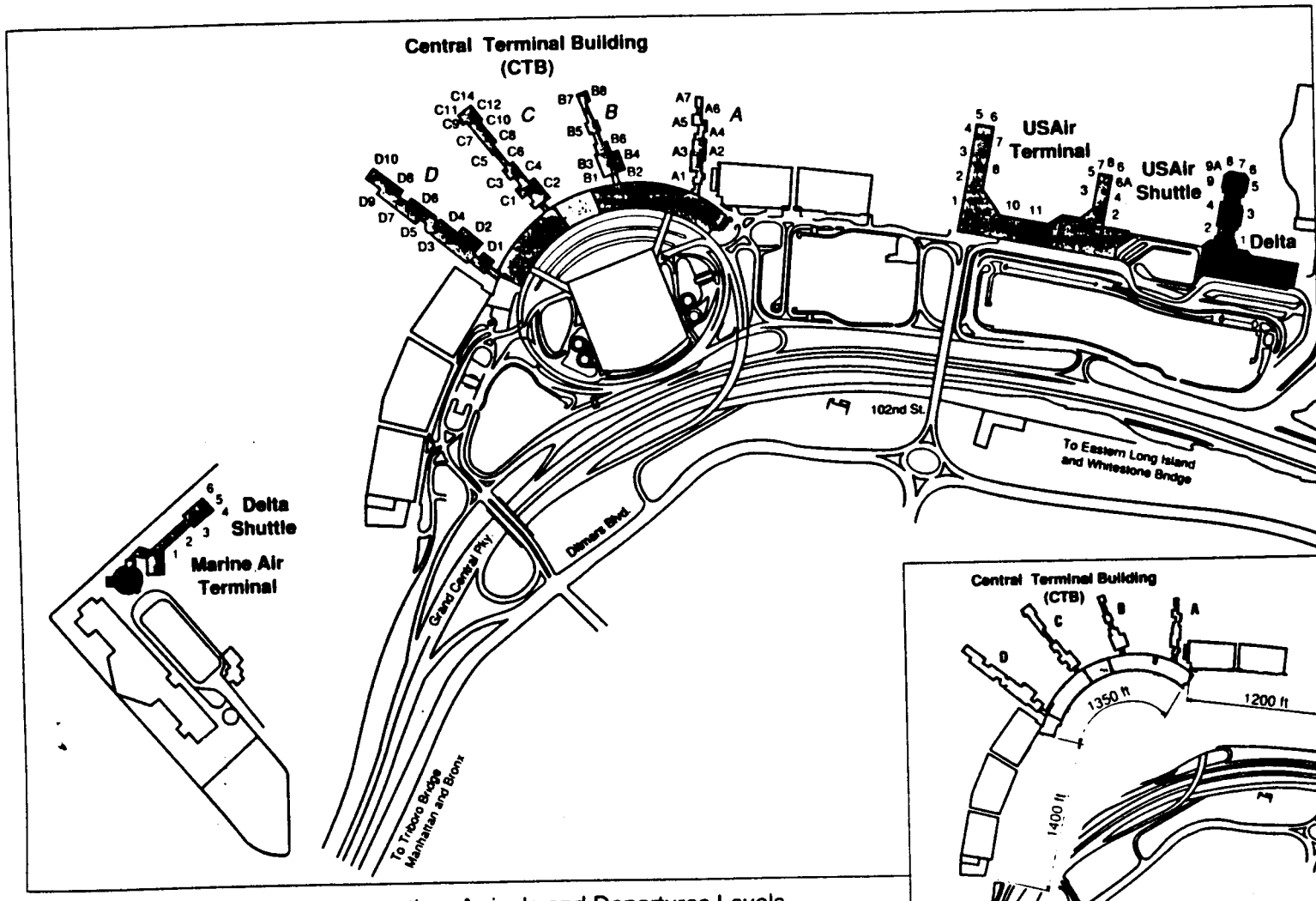
2,6,8	International Arrivals Building
10	TWA Terminal 4A (International)
12	TWA Terminal 4B (Domestic)
14	British
16	American 3A/B
18	American 3C/D
22	Terminal 1A
24 & 24A	Delta Flight Center
33	Tower Air Terminal


Dutchess
Orange
Putnam
Housatonic Valley
Central Naugatuck Valley
South Central
Valley
Greater Bridgeport
Westchester
South Western
Rockland
Passaic
Bergen
Morris
Essex
Union
Middlesex
Monmouth
LGA
BX
Queens
Kings
Nassau
Suffolk
Hudson
NYC
SI
Calverton Airport
Long Island MacArthur Airport
JFK International Airport

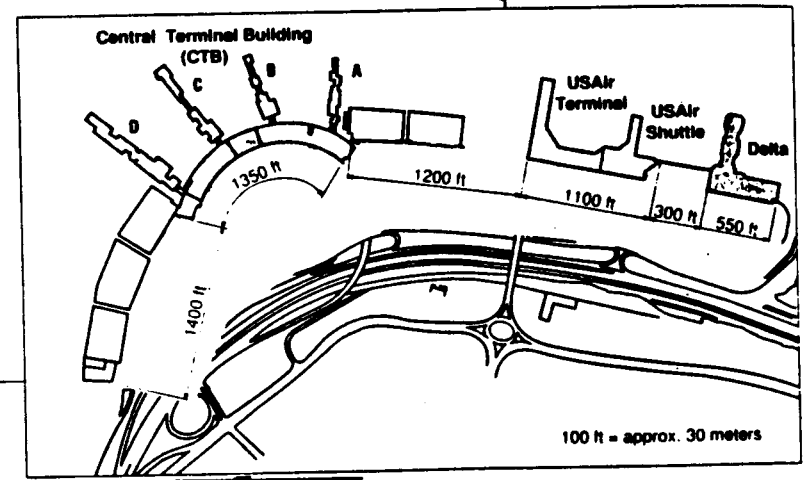
LGA

Fig. A-4

LGA Layout



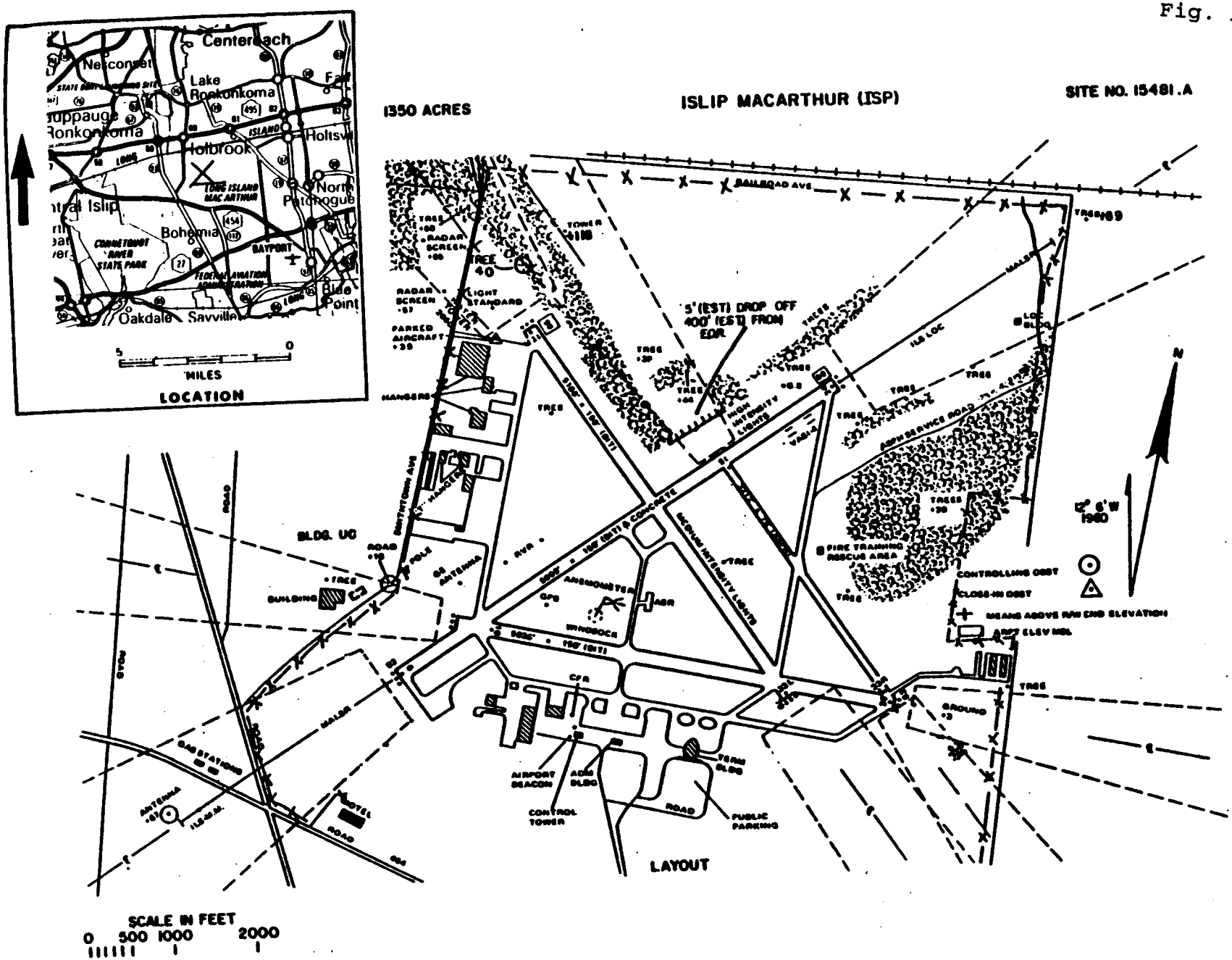
Distances From End to End and Between Terminals



Center Section under construction: Arrivals and Departures Levels

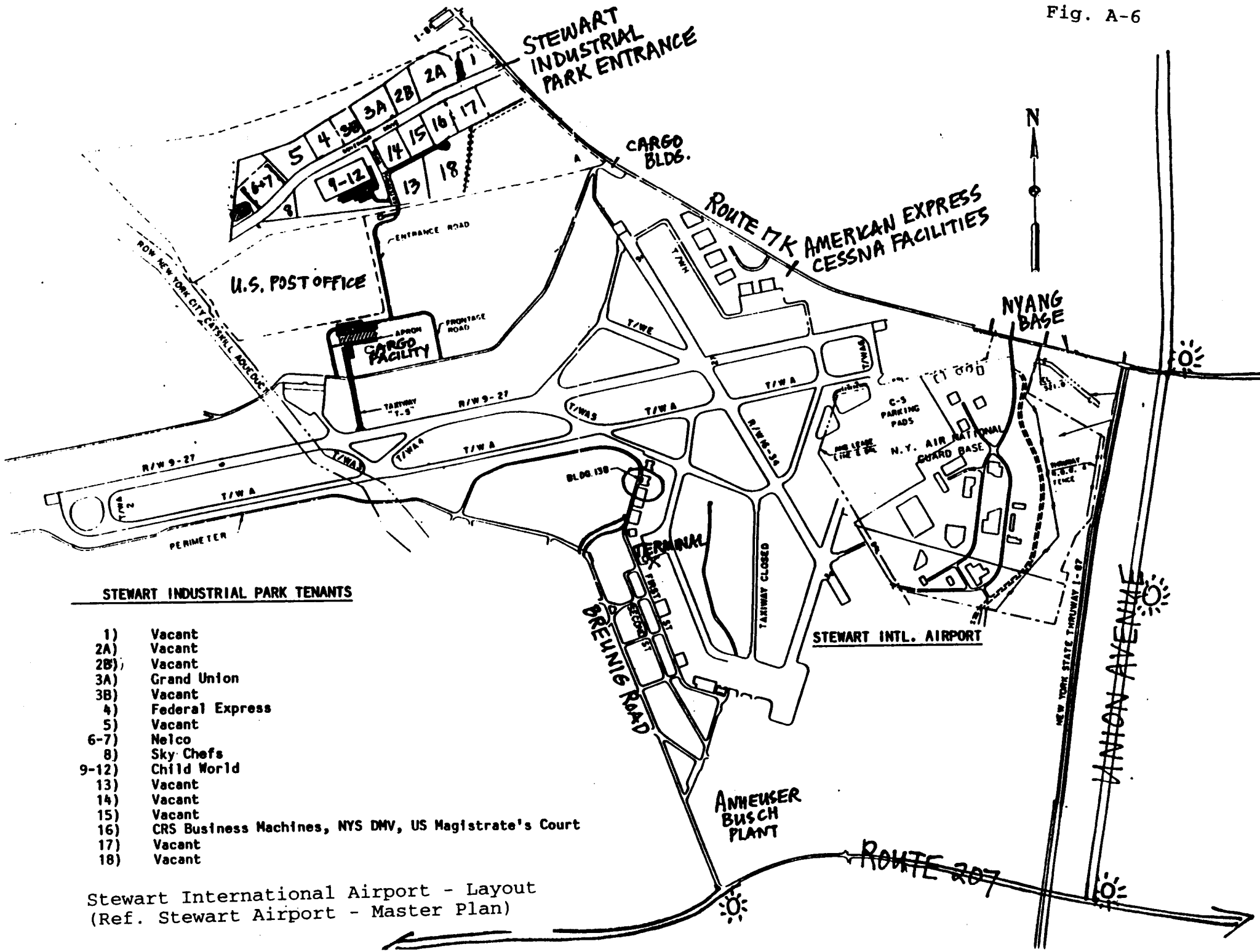
AIRLINES	IATA CODE	DEPARTURES	ARRIVALS
ACTION AIRLINES	XQ	Marine	Marine
AIR CANADA*	AC	CTB-A	CTB-A
AMERICA WEST	HP	CTB-A	CTB-A
AMERICAN*	AA	CTB-D	CTB-D
CONTINENTAL	CO	CTB-A	CTB-A
CONTINENTAL EXPRESS	CO	CTB-A	CTB-A
DELTA*	DL	Delta	Delta
DELTA (Business Express)	DL	Delta	Delta
DELTA SHUTTLE	DL	Marine	Marine
MIDWEST EXPRESS	YX	CTB-B	CTB-B
MONTAUK (L.I. AIR)	YL	Marine	Marine
NORTHWEST	NW	Delta	Delta
NW AIRLINK	NW	Delta	Delta
TWA	TW	CTB-B	CTB-B
TW EXPRESS	TW	CTB-B	CTB-B
UNITED*	UA	CTB-C	CTB-C
UNITED EXPRESS	UA	CTB-C	CTB-C
USAIR*	US	USAir	USAir
USAIR EXPRESS	US	USAir	USAir

Fig. A-5



MacArthur Airport - Layout
(Ref. Long Island MacArthur Master Plan)

Fig. A-6



STEWART INDUSTRIAL PARK TENANTS

1)	Vacant
2A)	Vacant
2B)	Vacant
3A)	Grand Union
3B)	Vacant
4)	Federal Express
5)	Vacant
6-7)	Nelco
8)	Sky Chefs
9-12)	Child World
13)	Vacant
14)	Vacant
15)	Vacant
16)	CRS Business Machines, NYS DMV, US Magistrate's Court
17)	Vacant
18)	Vacant

Stewart International Airport - Layout
(Ref. Stewart Airport - Master Plan)

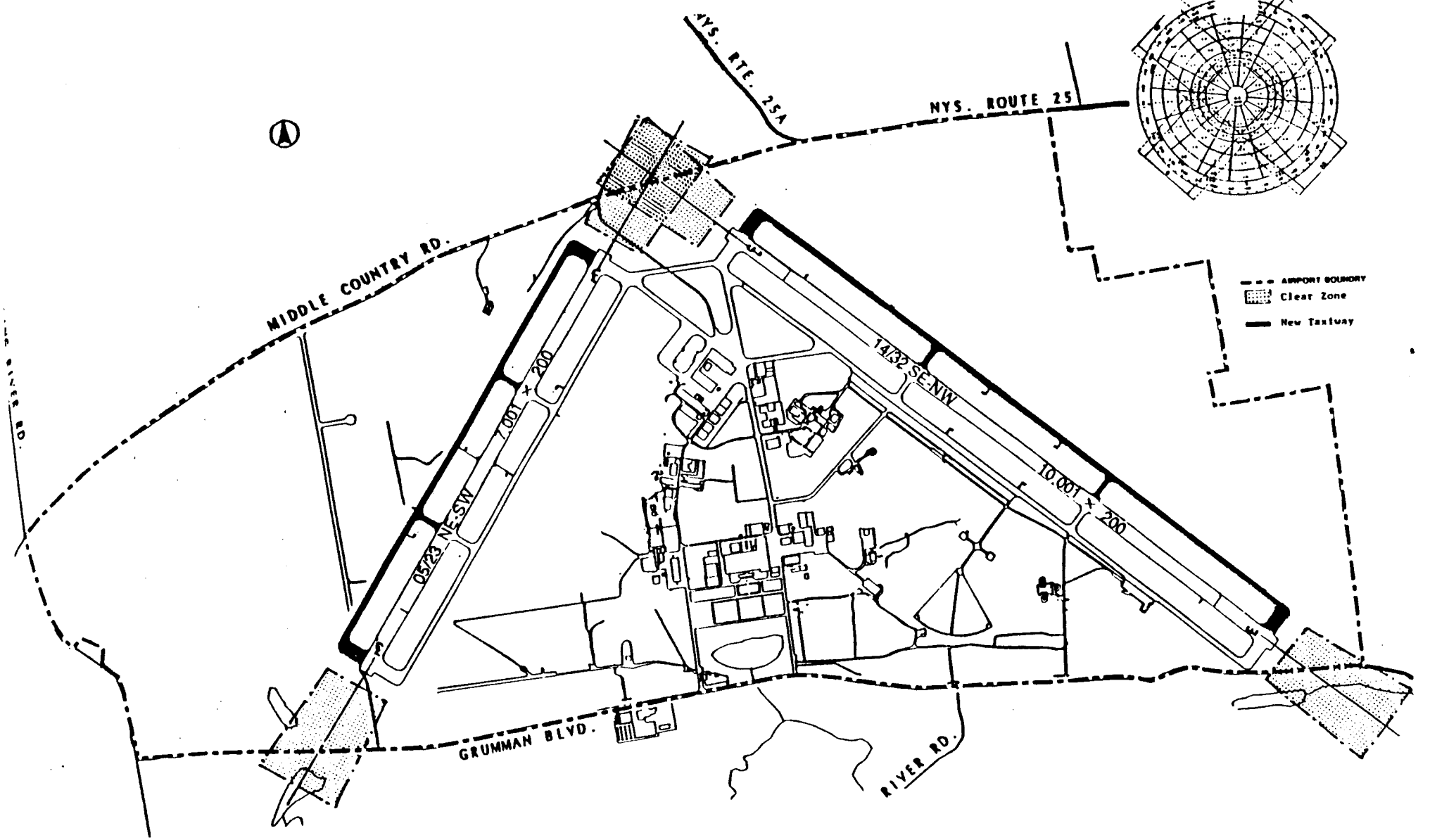


Fig. A-7

Calverton Airport
(Ref. "Airport Joint Use Feasibility Study")

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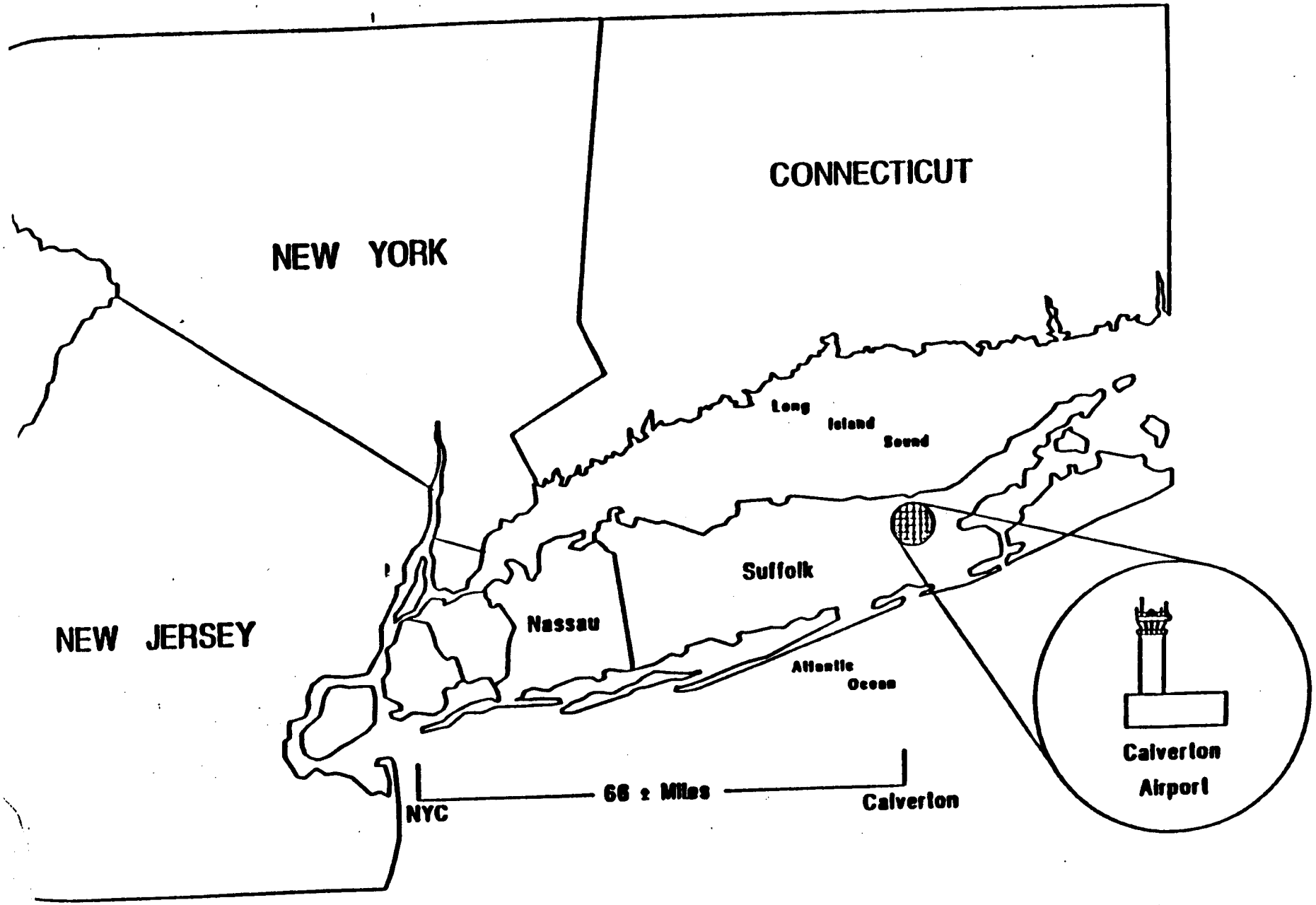
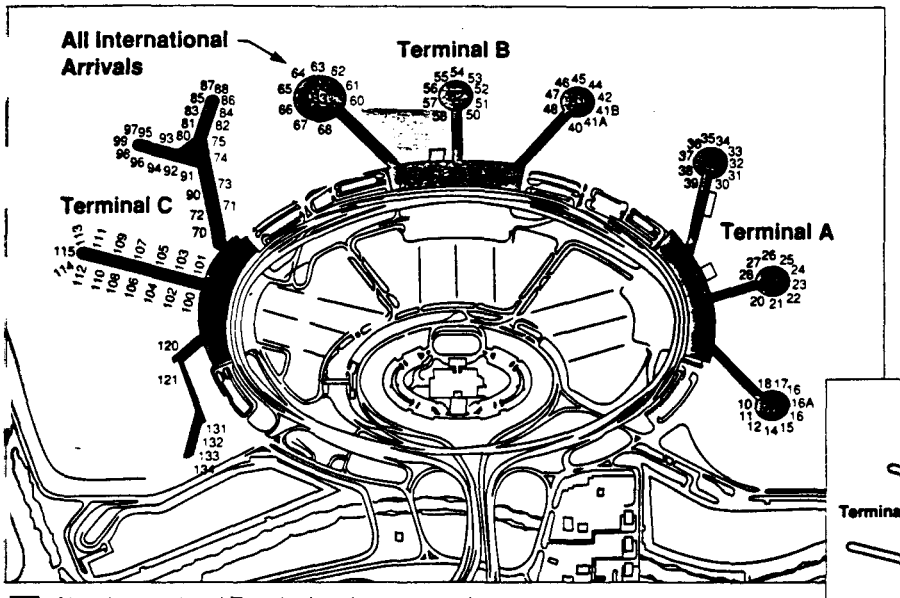


Location Map
Calverton/Peconic Airport

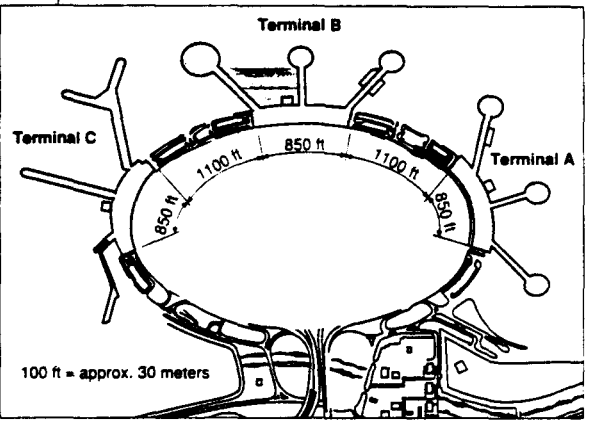
Calverton Airport
(Ref. "Airport Joint Use Feasibility Study")

EWR



New International Terminal under construction

Distances From End to End and Between Terminals



AIRLINES	IATA CODE	DEPARTURES	ARRIVALS
AEROJECUTIVO	AJ	Terminal B3	Terminal B3
AEROMEXICO	AM	Terminal B3	Terminal B3
AIR ALLIANCE	AC	Terminal C	Terminal B3
AIR ARUBA	FQ	Terminal B3	Terminal B3
AIR CANADA	AC	Terminal C	Terminal C
AIR FRANCE	AF	Terminal C	Terminal B3
AIR NOVA	AC	Terminal C	Terminal B3
AIR ONTARIO	AC	Terminal C	Terminal B3
ALITALIA	AZ	Terminal B3	Terminal B3
AMERICA WEST	HP	Terminal A3	Terminal A3
AMERICAN (Domestic)	AA	Terminal A3	Terminal A3
AMERICAN (International)	AA	Terminal A3	Terminal B3
BALAIR	BB	Terminal B3	Terminal B3
BRITISH AIRWAYS	BA	Terminal B3	Terminal B3
CARNIVAL	KW	Terminal B2	Terminal B2
COLGAN AIR	9L	Terminal A3	Terminal A3
CONTINENTAL (Domestic)	CO	Terminal C	Terminal C
CONTINENTAL (International)	CO	Terminal C	Terminal B3
CONTINENTAL EXPRESS	CO	Terminal C2	Terminal C2
DELTA (Domestic)	DL	Terminal B1	Terminal B1
DELTA (International)	DL	Terminal B1	Terminal B3
DELTA (Business Express)	DL	Terminal B1	Terminal B1
EAGLE AIRLINES	V9	Terminal B2	Terminal B2
EVA AIRWAYS	BR	Terminal B2	Terminal B3

AIRLINES	IATA CODE	DEPARTURES	ARRIVALS
KIWI INTERNATIONAL	KP	Terminal A3	Terminal A3
LOT POLISH	LO	Terminal B3	Terminal B3
LUFTHANSA	LH	Terminal B3	Terminal B3
MALEV HUNGARIAN*	MA	Terminal B2	Terminal B3
MARK AIR	BF	Terminal A1	Terminal A1
MARTINAIR	MP	Terminal B3	Terminal B3
MEXICANA	MX	Terminal B3	Terminal B3
MIDWEST EXPRESS	YX	Terminal B1	Terminal B1
NORTHWEST	NW	Terminal B1	Terminal B1
NORTHWEST AIRLINK	NW	Terminal B1	Terminal B1
SAS	SK	Terminal C1	Terminal B3
SUNJET INTERNATIONAL		Terminal A2	Terminal A2
TAESA	GD	Terminal B3	Terminal B3
TAP AIR PORTUGAL	TP	Terminal B3	Terminal B3
TURKISH	TK	Terminal B3	Terminal B3
TWA	TW	Terminal A3	Terminal A3
UNITED (Domestic)	UA	Terminal A1	Terminal A1
UNITED (International)	UA	Terminal A1	Terminal B3
UNITED EXPRESS	UA	Terminal A1	Terminal A1
USAIR	US	Terminal A2	Terminal A2
USAIR EXPRESS	US	Terminal A2	Terminal A2
VIRGIN ATLANTIC	VS	Terminal A1	Terminal B3
WESTATES	WS	Terminal A3	Terminal A3

* Moves to JFK May 1, 1994

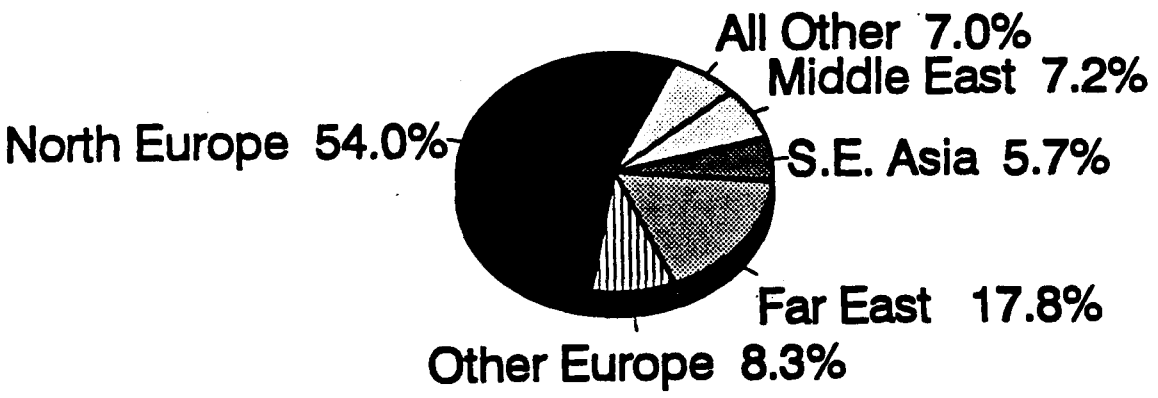
Based on information available at press time. Please confirm with airline.

INTERNATIONAL AIR CARGO -- 1993

N.Y. CUSTOMS DISTRICT'S MAJOR TRADE REGIONS

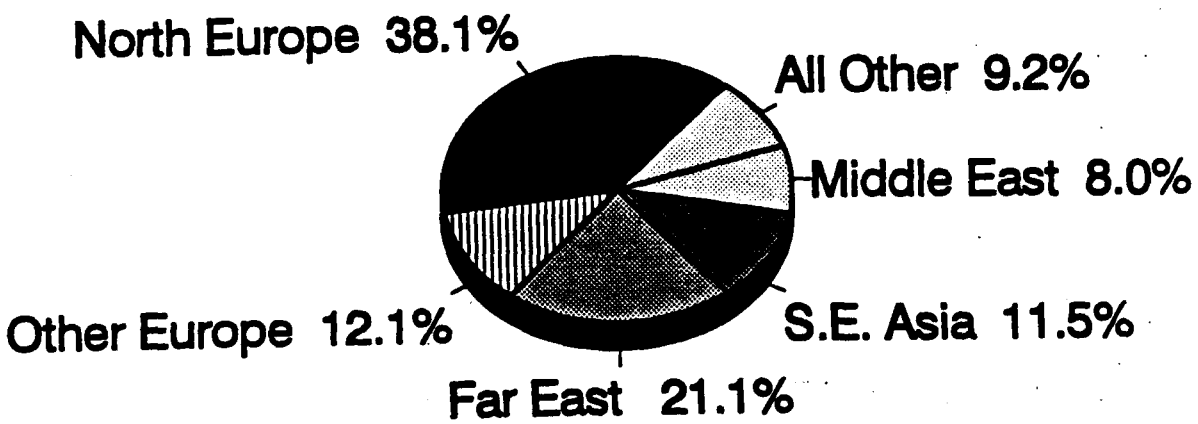
(Percentage distributions)

EXPORTS



Total value = $41.4 billion

IMPORTS



Total value = $34.8 billion

Reference: Port Authority of NY & NJ, International Air Cargo Statistics, Year-End 1993, prepared by the Aviation Department, April 1994

TABLE A-2

INTERNATIONAL AIR CARGO PERFORMANCE MEASURES
N.Y. & U.S. AIR CARGO EXPORTS
LEADING 2-DIGIT COMMODITIES: 1992 AND 1993
RANKED BY AIR TONS OF 1993

TWODIGIT	1992 AIR TONS (METRIC)	1992 AIR DOLS (000'S)	1993 AIR TONS (METRIC)	1993 AIR DOLS (000'S)	CHANGE 93/92 TONS	CHANGE 93/92 DOLS	% SHARE 1993 TONS	% SHARE 1993 DOLS	NY'S SHARE OF US 1992 TONS	1992 DOLS	1993 TONS	1993 DOLS
84 MACHINERY, OFFICE EQUIP./COMPUTER	87,220	9,681,853	80,367	9,477,780	-7.9%	-2.1%	19.0%	22.9%	23.4%	25.1%	21.3%	23.9%
85 ELECTRIC MACHINERY ETC SOUND EQU	48,690	6,014,261	50,422	6,818,840	3.6%	13.4%	11.9%	16.5%	24.5%	20.6%	24.4%	19.6%
90 OPTIC, PHOTO ETC, MEDIC OR SURGIC	28,095	4,465,540	26,686	4,302,192	-5.0%	-3.7%	6.3%	10.4%	29.4%	30.2%	26.8%	27.8%
48 PAPER & PAPERBOARD & ARTICLES (IN	18,101	58,161	20,089	65,112	11.0%	12.0%	4.7%	0.2%	34.6%	35.2%	33.6%	34.7%
03 FISH, CRUSTACEANS & AQUATIC INVER	13,278	90,770	18,801	131,282	41.6%	44.6%	4.4%	0.3%	36.7%	31.1%	43.1%	37.4%
49 PRINTED BOOKS, NEWSPAPERS ETC MA	15,057	590,265	17,056	707,366	13.3%	19.8%	4.0%	1.7%	32.5%	49.6%	33.6%	51.1%
39 PLASTICS AND ARTICLES THEREOF	16,796	281,006	16,090	282,417	-4.2%	0.5%	3.8%	0.7%	27.1%	31.1%	26.6%	28.9%
29 ORGANIC CHEMICALS	10,556	1,141,011	11,349	891,814	7.5%	-21.8%	2.7%	2.2%	36.7%	44.0%	37.8%	35.1%
87 VEHICLES EXCEPT RAILWAY OR TRAMWA	8,140	247,615	9,904	315,132	21.7%	27.3%	2.3%	0.8%	14.5%	21.0%	17.0%	25.8%
88 AIRCRAFT, SPACECRAFT, AND PARTS T	10,170	2,831,889	9,554	2,707,616	-6.1%	-4.4%	2.3%	6.5%	30.2%	33.7%	31.1%	30.9%
38 MISCELLANEOUS CHEMICAL PRODUCTS	7,884	314,463	9,162	392,348	16.2%	24.8%	2.2%	0.9%	27.1%	22.9%	27.6%	24.8%
98 SPECIAL CLASSIFICATION PROVISIONS	8,580	300,638	7,550	311,562	-12.0%	3.6%	1.8%	0.8%	15.5%	25.8%	15.8%	26.9%
30 PHARMACEUTICAL PRODUCTS	7,244	978,074	6,957	1,015,891	-4.0%	3.9%	1.6%	2.5%	30.4%	37.2%	29.6%	35.8%
96 MISCELLANEOUS MANUFACTURED ARTICL	7,348	110,032	6,477	109,806	-11.9%	-0.2%	1.5%	0.3%	25.5%	39.7%	24.7%	40.2%
72 IRON AND STEEL	5,728	18,569	6,125	18,219	6.9%	-1.9%	1.4%	0.0%	29.6%	36.3%	24.0%	28.8%
SUBTOTAL	292,887	27,124,147	296,589	27,547,377	1.3%	1.6%	70.0%	66.6%	25.7%	26.4%	25.3%	24.8%
OTHER	125,482	8,907,593	126,954	13,845,220	1.2%	55.4%	30.0%	33.4%	22.7%	49.2%	22.3%	58.2%
TOTAL	418,369	36,031,740	423,543	41,392,597	1.2%	14.9%	100.0%	100.0%	24.7%	29.8%	24.3%	30.6%

NOTE:TONNAGE IN METRIC TONS & VALUE IN THOUSANDS OF DOLLARS.
SOURCE: BUREAU OF CENSUS.
PREPARED BY: OFFICE OF ECONOMIC & POLICY ANALYSIS/STRATEGIC INFORMATION DIVISION.

Reference: Port Authority of NY & NJ, International Air Cargo Statistics, Year-End 1993, prepared by the Aviation Department, April 1994

TABLE A-2A

INTERNATIONAL AIR CARGO PERFORMANCE MEASURES
N.Y. & U.S. AIR CARGO IMPORTS
LEADING 2-DIGIT COMMODITIES: 1992 AND 1993
RANKED BY AIR TONS OF 1993

TWODIGIT	1992 AIR TONS (METRIC)	1992 AIR DOLS (000'S)	1993 AIR TONS (METRIC)	1993 AIR DOLS (000'S)	CHANGE 93/92 TONS	CHANGE 93/92 DOLS	% SHARE 1993 TONS	% SHARE 1993 DOLS	NY'S SHARE OF US 1992 TONS	1992 DOLS	1993 TONS	1993 DOLS
62 APPAREL ARTICLES AND ACCESSORIES,	97,026	3,146,259	108,182	3,361,910	11.5%	6.9%	19.2%	9.6%	48.5%	53.7%	50.0%	54.3%
61 APPAREL ARTICLES AND ACCESSORIES,	47,213	1,132,867	51,119	1,150,024	8.3%	1.5%	9.1%	3.3%	42.4%	47.4%	40.9%	44.9%
84 MACHINERY, OFFICE EQUIP./COMPUTER	47,558	3,873,655	47,604	3,990,582	0.1%	3.0%	8.5%	11.5%	20.3%	14.1%	17.7%	12.4%
85 ELECTRIC MACHINERY ETC SOUND EQU	37,521	2,873,214	37,887	3,039,223	1.0%	5.8%	6.7%	8.7%	19.9%	12.3%	16.9%	10.5%
64 FOOTWEAR, GAITERS ETC. AND PARTS	25,960	678,542	31,098	705,561	19.8%	4.0%	5.5%	2.0%	37.0%	50.0%	36.3%	46.8%
07 EDIBLE VEGETABLES & CERTAIN ROOTS	17,592	32,010	28,215	43,969	60.4%	37.4%	5.0%	0.1%	42.0%	48.2%	46.9%	50.4%
90 OPTIC, PHOTO ETC, MEDIC OR SURGIC	24,587	2,449,354	23,197	2,464,612	-5.7%	0.6%	4.1%	7.1%	36.3%	34.9%	33.2%	32.9%
42 LEATHER ART SADDLERY ETC HANDBA	16,306	558,303	17,397	576,055	6.7%	3.2%	3.1%	1.7%	51.7%	52.5%	49.7%	52.7%
49 PRINTED BOOKS, NEWSPAPERS ETC MA	16,117	176,669	17,191	206,695	6.7%	17.0%	3.1%	0.6%	58.1%	45.6%	58.3%	45.6%
29 ORGANIC CHEMICALS	9,599	1,453,358	15,707	1,618,702	63.6%	11.4%	2.8%	4.6%	55.0%	44.1%	61.0%	44.8%
03 FISH, CRUSTACEANS & AQUATIC INVER	12,570	64,485	13,661	70,905	8.7%	10.0%	2.4%	0.2%	14.6%	15.8%	13.9%	16.0%
39 PLASTICS AND ARTICLES THEREOF	10,582	185,476	10,522	193,278	-0.6%	4.2%	1.9%	0.6%	37.2%	38.9%	33.2%	37.2%
06 LIVE TREES PLANTS BULBS ETC CUT	8,864	48,466	9,761	51,477	10.1%	6.2%	1.7%	0.1%	5.8%	13.1%	6.3%	12.8%
71 NAT ETC PEARLS, PREC ETC STONES,	9,442	8,478,129	8,095	9,198,687	-14.3%	8.5%	1.4%	26.4%	58.7%	78.1%	54.4%	79.2%
98 SPECIAL CLASSIFICATION PROVISIONS	8,309	1,497,507	8,017	1,589,835	-3.5%	6.2%	1.4%	4.6%	27.8%	26.6%	23.2%	25.5%
SUBTOTAL	389,246	26,648,294	427,653	28,261,515	9.9%	6.1%	76.0%	81.1%	29.9%	29.6%	29.0%	27.3%
OTHER	132,825	6,174,719	134,944	6,577,625	1.6%	6.5%	24.0%	18.9%	34.3%	40.6%	31.7%	40.3%
TOTAL	522,071	32,823,013	562,597	34,839,140	7.8%	6.1%	100.0%	100.0%	30.9%	31.2%	29.6%	29.1%

NOTE:TONNAGE IN METRIC TONS & VALUE IN THOUSANDS OF DOLLARS.
SOURCE: BUREAU OF CENSUS.
PREPARED BY: OFFICE OF ECONOMIC & POLICY ANALYSIS/STRATEGIC INFORMATION DIVISION.

Reference: Port Authority of NY & NJ, International Air Cargo Statistics, Year-End 1993, prepared by the Aviation Department, April 1994

TABLE A-3
The Export/Import Markets of Long Island Firms*
(Percent of Firms)

Market	Exporters	Importers
Europe	73%	60%
Far East	40	30
South America	8	7
Canada	6	3
Middle East	18	7
Other	19	30

*Note Percentages do not add to 100 because many exporters and importers dealt with several markets.

Source: LIRPB employer survey

TABLE A-3A

Goods Exported/Imported by Long Island Firms
(Percent of Firms)

Type of Good	Exporters	Importers
High-Technology Equip/Medical Materials	19%	10%
Electronic Components	17	17
Machinery	17	13
Miscellaneous Retail	6	17
Art Design/Displays	4	7
Computers/Components	8	10
Clothing/Textiles/Fabrics	2	3
Telecommunications Equipment	4	3
Auto Parts	2	3
Plastics	2	7
Building/Construction/Packing Materials	4	3
Printed Materials	2	3
Other	13	4
Total	100	100

Source: LIRPB employer survey

Reference: Airport Joint Use Feasibility Study, Calverton Airport, by LIRPB, 1994

TABLE A-4

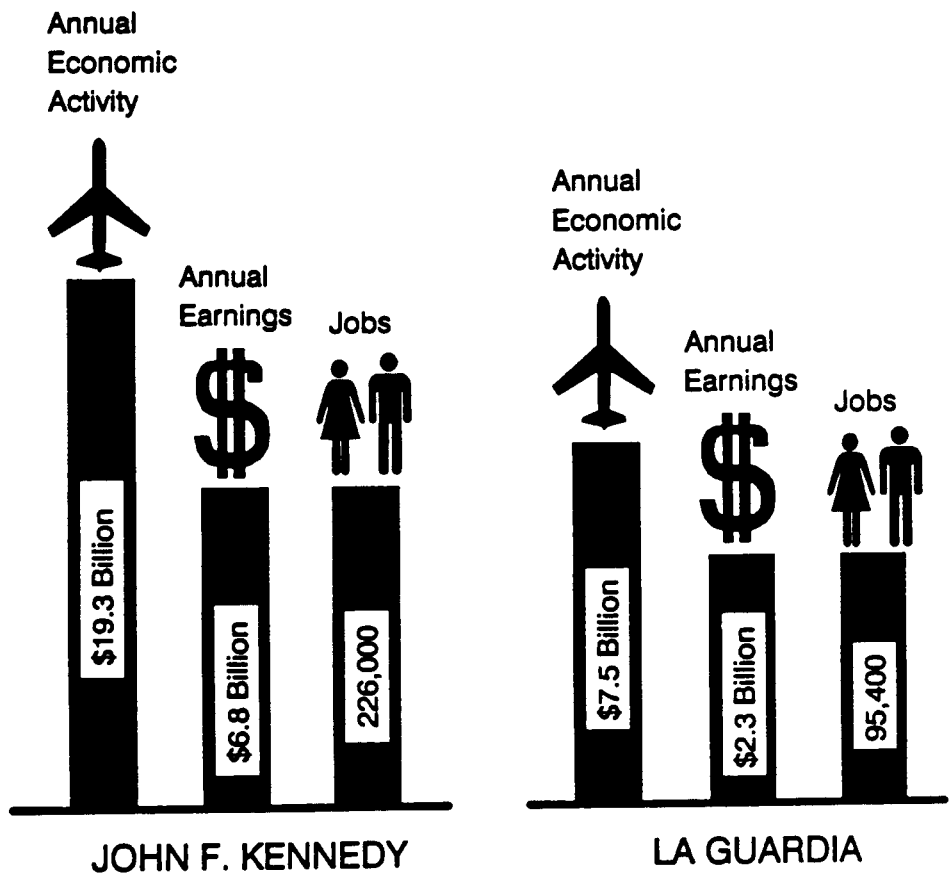
Concentration of the Manufacturing Base in Critical Export Commodities, 1989
Nassau-Suffolk, New York City, Northern Suburbs

SIC Code	Commodity	Nassau-Suffolk Employment	Nassau-Suffolk Estab.	New York City Employment	New York City Estab.	Northern Suburbs Employment	Northern Suburbs Estab.
282	Plastic Materials	350	4	0	0	0	0
2834	Pharmaceutical Preparations	3,758	41	1,535	7	3,804	11
271,272,273,274	Printed Matter	11,738	259	65,398	1,020	9,381	166
357	Office Machinery	684	17	1,378	25	7,680	15
35(ex.357)	Other Non-Electrical Machinery	11,599	593	8,915	443	13,682	224
3621	Electric Motors & Generators	550	6	0	0	0	0
366	Telecommunications Apparatus	5,898	56	483	17	725	13
36(ex.3621,366)	Other Electrical Machinery	20,593	342	13,155	255	24,407	138
372	Aircraft and Parts	19,128	54	1,115	15	175	4
381,382,384	Scientific Instruments	25,255	206	5,534	90	5,977	86
	Total-Critical Commodities	99,553	1,578	97,513	1,872	65,831	657
	Total Manufacturing	175,537	4,784	391,083	13,158	120,314	2,360
	Critical Commodities/Total Manufacturing	56.7%	33.0%	24.9%	14.2%	54.7%	27.8%

Source: Long Island Regional Planning Board based on County Business Patterns data

Reference: Airport Joint Use Feasibility Study, Calverton Airport, by LIRPB, 1994

TABLE A-5



Source: Port Authority of NY and NJ.

Reference: Economic Impact of Aviation in New York State, by NYSDOT, 1992

TABLE A-6A

International Traffic Results

Percent change over same period of previous year

Month	Monthly		Monthly Cumulative	
	Freight ton kilometers	Available ton kilometers	Freight ton kilometers	Available ton kilometers
December 1993	+12%	+5%	+10%	+5%
January	+14	+4	+14	+4
February	+12	+3	+13	+3
March	+11	+4	+12	+4
April	+14	+5	+13	+5
May	+12	+4	+13	+5
June	+16	+6	+13	+5
July	+13	+5	+13	+5
August	+13	+3	+13	+4
September	+13	+5	+13	+4
October	+15	+6	+14	+5
November	+15	+7	+14	+5

SOURCE: IATA Market & Economic Analysis

Traffic by Region

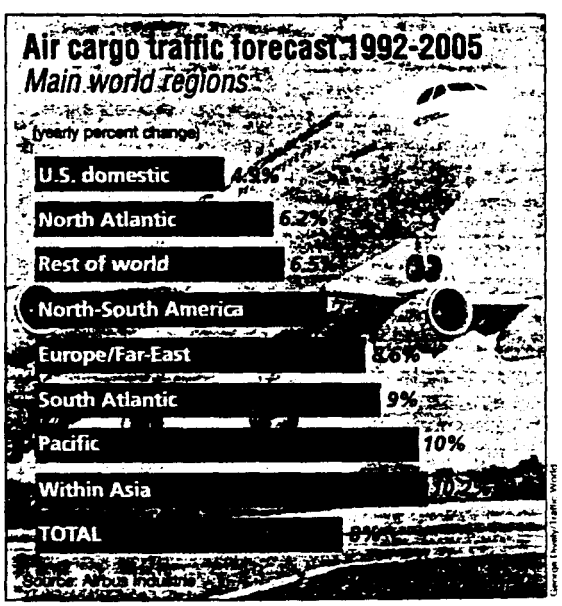
Percent change over same period of previous year

Region	November 1994		Year to November 1994	
	Freight ton kilometers	Available ton kilometers	Freight ton kilometers	Available ton kilometers
Europe	+16%	+6%	+14%	+5%
North America	+10	+3	+9	-1
South America	+5	+4	+10	+1
Far East	+22	+12	+17	+10
Overall	+15		+11	

SOURCE: IATA Market & Economic Analysis

Reference: Air Commerce, January 30,

TABLE A-6



Reference: Traffic World, Nov. 7, 1994

TABLE A-7

NWIRP Calverton Average Activity Trends, 1986-1991

Year	Operations	Flights
1986	9662	940
1987	7743	1194
1988	6503	1152
1989	6780	1352
1990	6596	1148
1991	5137	692

Source: NWIRP Calverton AICUZ Update, August 1992

Reference: Airport Joint Use Feasibility Study, 1993
Calverton Airport
Long Island Regional Planning Board (LIRPB)

NWIRP Calverton Annual Operations, 1982-1987

		CALENDER YEAR						Six Year
Operator	Task	1982	1983	1984	1985	1986	1987	Average
Grumman	Development	431	303	236	1,290	820	1,503	764
	Support	355	156	8	35	240	422	203
	Production	1,100	1,202	1,231	935	870	533	979
	Operational	918	1,048	967	874	755	1,180	957
	Commercial Test	1,874	12	200	10	3	—	350
	ILS	97	—	—	—	—	2	17
	TACAN	80	26	14	—	56	27	34
	VOR	42	28	2	19	8	42	24
	E-2C Training	—	—	—	—	4,852	1,482	1,056
Navy	Production	986	761	703	620	605	619	716
	Test	207	—	—	6	64	7	47
	Training	2	52	28	2	560	140	47
	Deliveries	98	97	77	62	73	48	76
	Itinerants	222	211	150	135	176	280	196
	ILS	5	—	—	—	—	—	1
	VOR	—	5	2	3	—	71	14
	TACAN	4	8	7	5	14	16	9
Military	Test/Training	1,518	1,948	1,099	1,160	788	578	1,182
	Itinerants	63	14	22	10	19	13	24
	ILS	62	—	—	—	—	—	10
	VOR	18	42	4	71	12	22	28
	TACAN	48	52	20	54	14	32	37
Air Force	Experimental	31	—	—	—	—	—	5
	Support	8	—	—	—	—	—	1
	Development	—	—	—	—	—	2	0
	Pre-Inspection	—	26	16	—	—	—	7
	Itinerants	12	10	9	—	—	—	5
	EF-111 Production	103	162	238	203	—	—	118
	Deliveries	5	9	12	9	1	—	6
Commercial	Airline	22	11	—	—	—	—	6
	Training	62	30	14	44	16	84	42
	ILS	494	—	—	—	—	—	82
	VOR	135	92	28	26	37	243	94
	Itinerants	147	142	198	140	183	397	201
	Totals	9,149	6,450	5,285	5,713	9,662	7,743	7,334

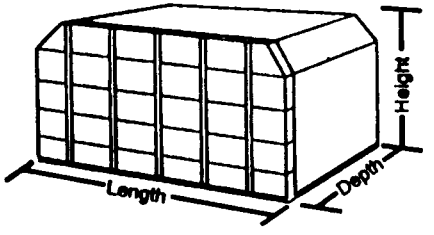
Source *NWIRP Calverton AICUZ Update*, August 1992

Air Containers Silhouettes

Fig. A-1

Air Container Specifications

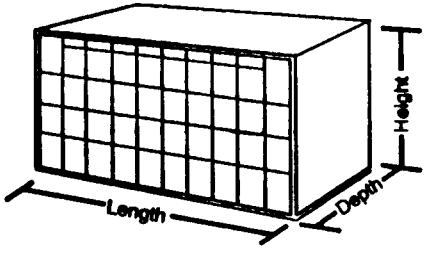
TYPE LD-7/9 (IATA Rate Class 5)



MAXIMUM DIMENSIONS

	External	*Internal*
Length: (in./cm.)	125.0/318	119.0/302
Depth: (in./cm.)	88.0/224	83.0/211
Height: (in./cm.)	64.0/163	59.0/150

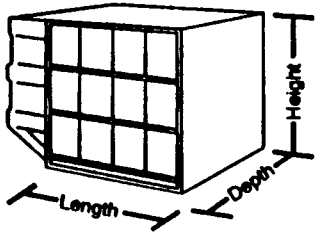
TYPE LD-11 (IATA Rate Class 6)



MAXIMUM DIMENSIONS

	External	*Internal*
Length: (in./cm.)	125.0/318	115.0/292
Depth: (in./cm.)	60.4/153	56.75/144
Height: (in./cm.)	64.0/163	57.0/145

TYPE LD-3 (IATA Rate Class 8)



MAXIMUM DIMENSIONS

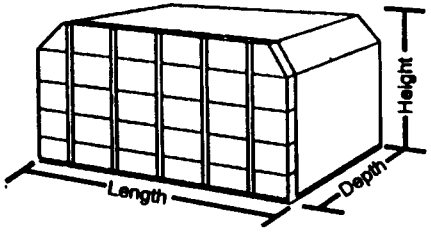
	External	*Internal*
Length: (in./cm.)	79.0/201	75.5/192
Base Length: (in./cm)	61.5/156	60.4/153
Depth: (in./cm.)	64.0/153	56.75/144
Height: (in./cm.)	64.0/163	59.0/150

Courtesy of Continental Air Lines

Source: Intermodal Good Movement

Air Containers Silhouettes

Fig. A-1

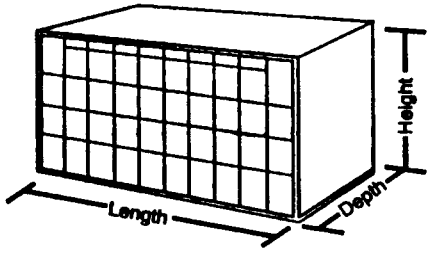


Air Container Specifications

TYPE LD-7/9 (IATA Rate Class 5)

MAXIMUM DIMENSIONS

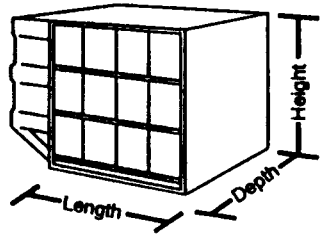
	External	*Internal*
Length: (in./cm.)	125.0/318	119.0/302
Depth: (in./cm.)	88.0/224	83.0/211
Height: (in./cm.)	64.0/163	59.0/150



TYPE LD-11 (IATA Rate Class 6)

MAXIMUM DIMENSIONS

	External	*Internal*
Length: (in./cm.)	125.0/318	115.0/292
Depth: (in./cm.)	60.4/153	56.75/144
Height: (in./cm.)	64.0/163	57.0/145



Courtesy of Continental Air Lines

TYPE LD-3 (IATA Rate Class 8)

MAXIMUM DIMENSIONS

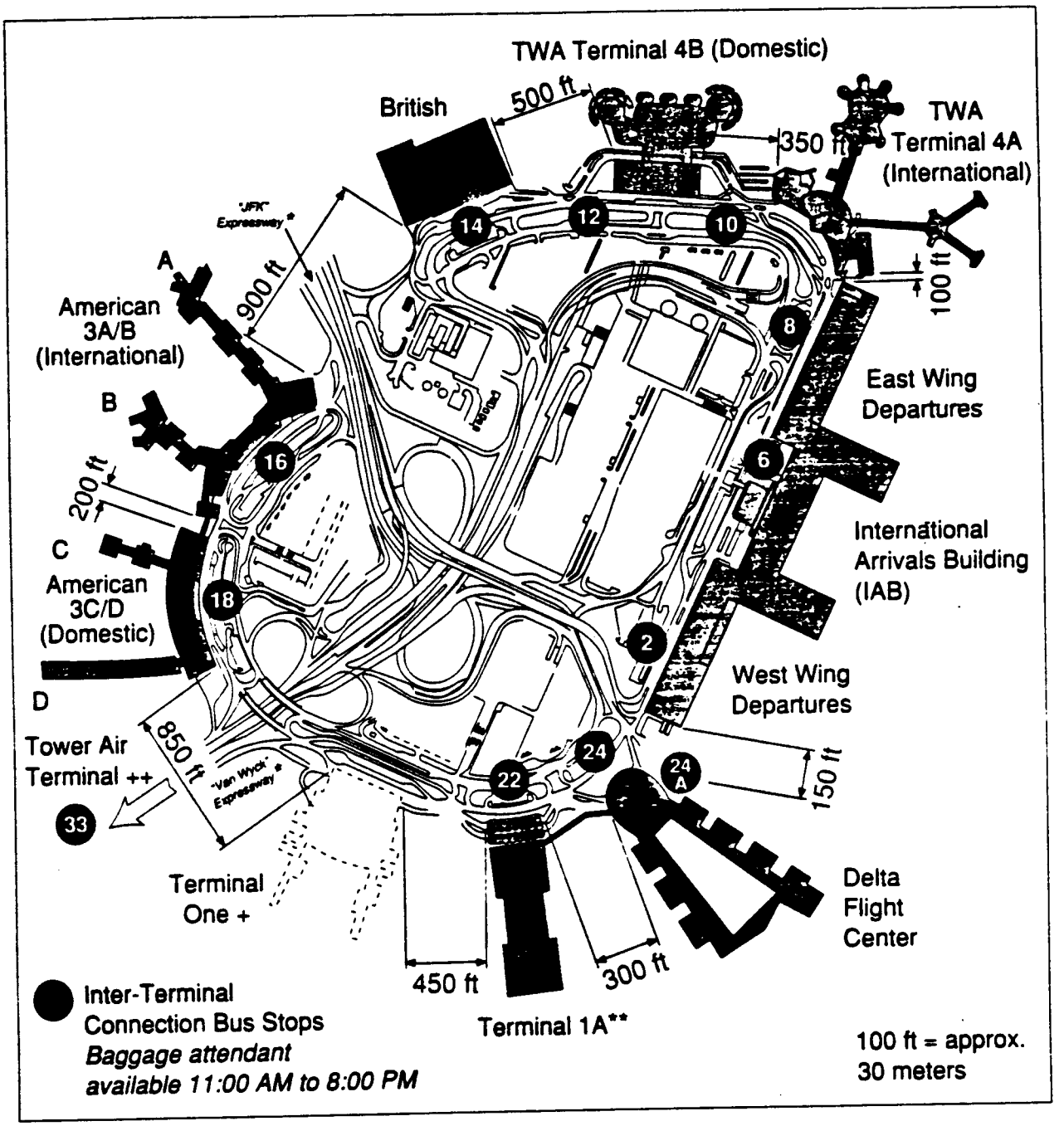
	External	*Internal*
Length: (in./cm.)	79.0/201	75.5/192
Base Length: (in./cm)	61.5/156	60.4/153
Depth: (in./cm.)	64.0/153	56.75/144
Height: (in./cm.)	64.0/163	59.0/150

Source: Intermodal Good Movement

Fig. A-2

JFK Layout

JFK



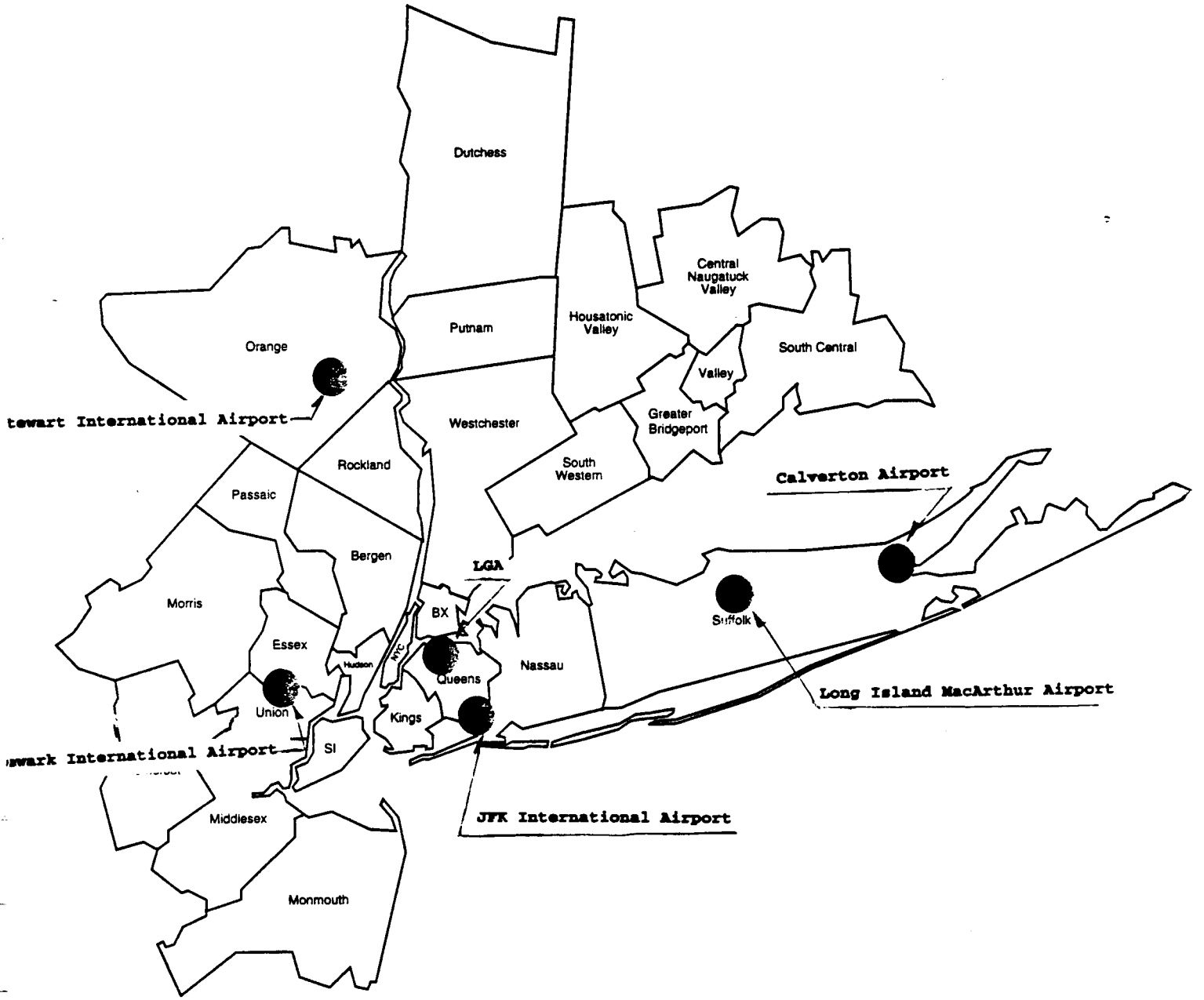
** No Pedestrian Crossing*

Free Connection Bus Stops

2,6,8	International Arrivals Building
10	TWA Terminal 4A (International)
12	TWA Terminal 4B (Domestic)
14	British
16	American 3A/B
18	American 3C/D
22	Terminal 1A
24 & 24A	Delta Flight Center
33	Tower Air Terminal

Fig. A-3

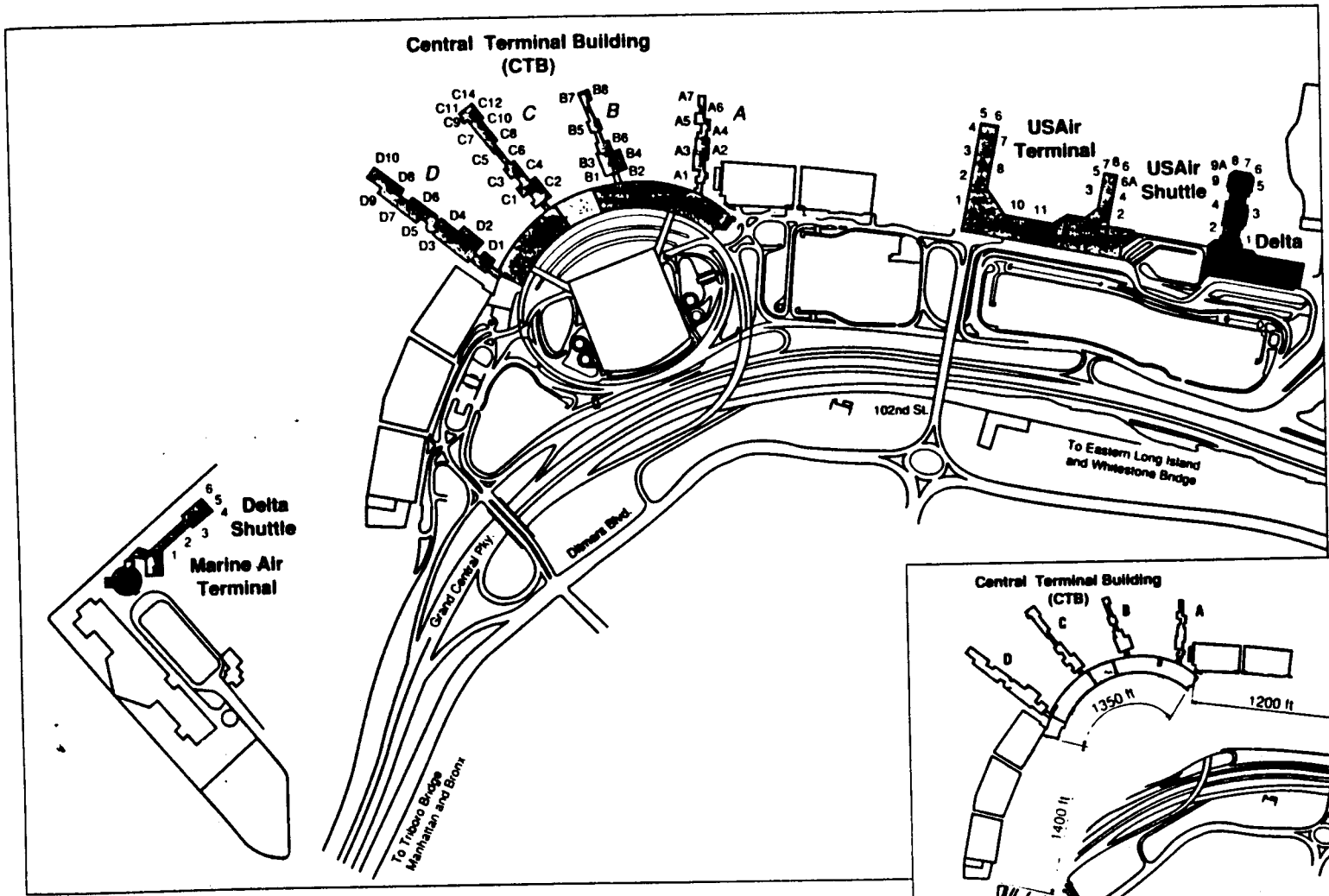
Metropolitan area, Airports location



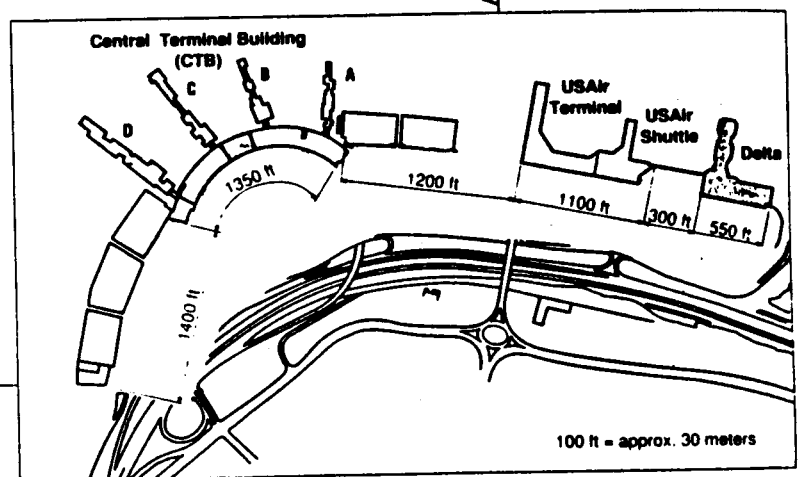
LGA

Fig. A-4

LGA Layout



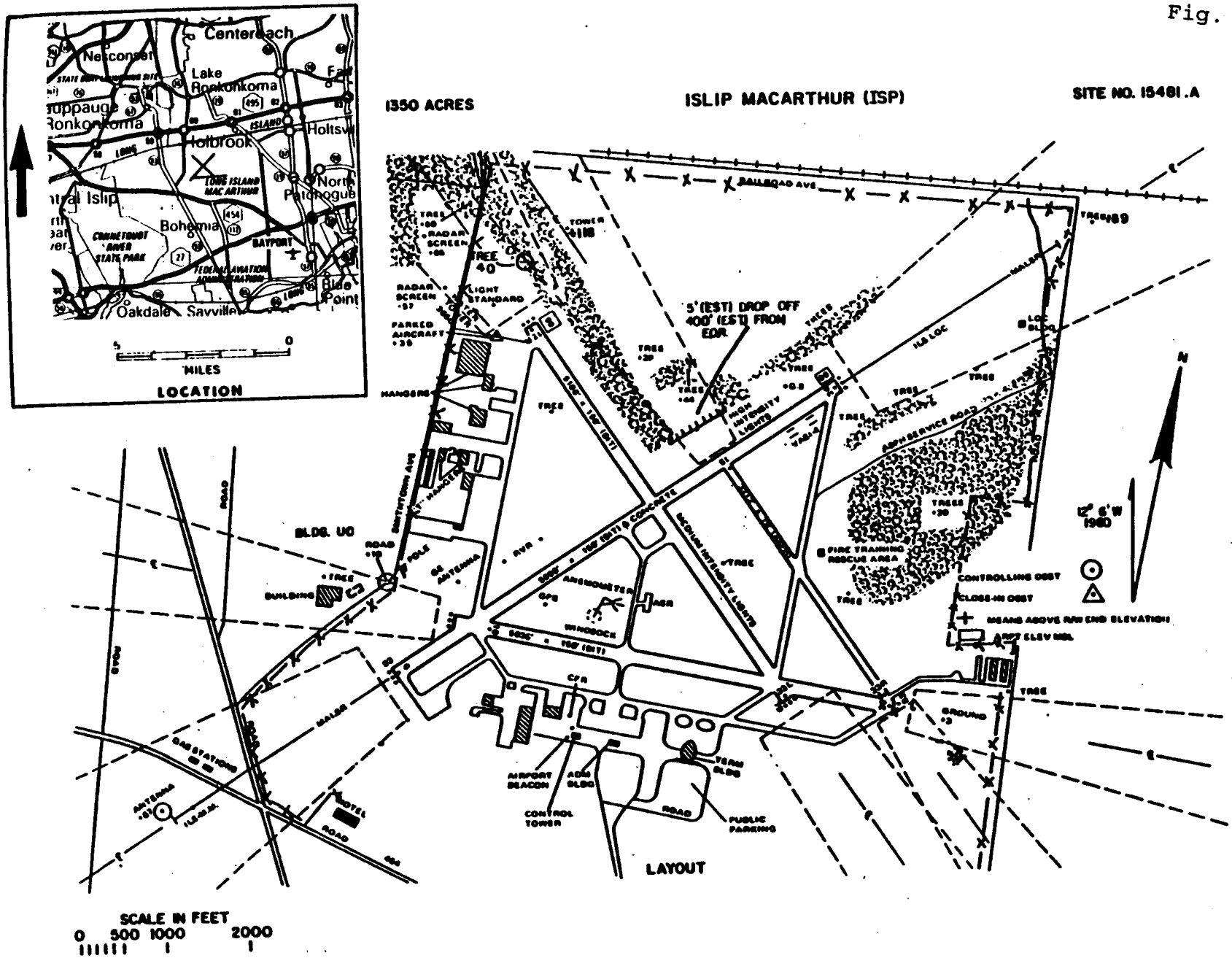
Distances From End to End and Between Terminals



Center Section under construction: Arrivals and Departures Levels

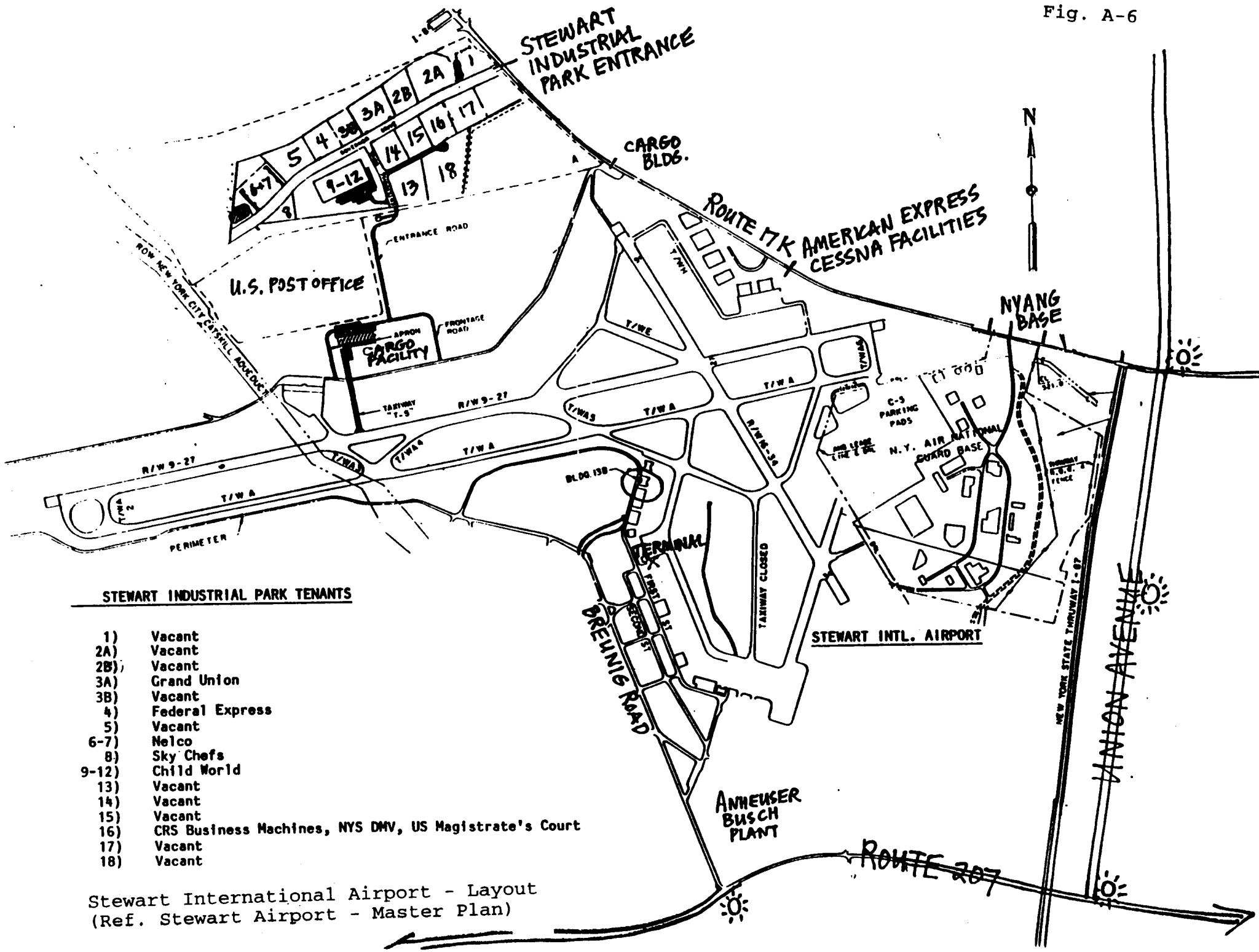
AIRLINES	IATA CODE	DEPARTURES	ARRIVALS
ACTION AIRLINES	XQ	Marine	Marine
AIR CANADA*	AC	CTB-A	CTB-A
AMERICA WEST	HP	CTB-A	CTB-A
AMERICAN*	AA	CTB-D	CTB-D
CONTINENTAL	CO	CTB-A	CTB-A
CONTINENTAL EXPRESS	CO	CTB-A	CTB-A
DELTA*	DL	Delta	Delta
DELTA (Business Express)	DL	Delta	Delta
DE	DL	Marine	Marine
MIDWEST EXPRESS	YX	CTB-B	CTB-B
MONTAUK (L.I. AIR)	YL	Marine	Marine
NORTHWEST	NW	Delta	Delta
NW AIRLINK	NW	Delta	Delta
TWA	TW	CTB-B	CTB-B
TW EXPRESS	TW	CTB-B	CTB-B
UNITED*	UA	CTB-C	CTB-C
UNITED EXPRESS	UA	CTB-C	CTB-C
USAIR*	US	USAir	USAir
USAIR EXPRESS	US	USAir	USAir
IR		U	rSh

Fig. A-5



MacArthur Airport - Layout
(Ref. Long Island MacArthur Master Plan)

Fig. A-6



STEWART INDUSTRIAL PARK TENANTS

1)	Vacant
2A)	Vacant
2B)	Vacant
3A)	Grand Union
3B)	Vacant
4)	Federal Express
5)	Vacant
6-7)	Nelco
8)	Sky Chefs
9-12)	Child World
13)	Vacant
14)	Vacant
15)	Vacant
16)	CRS Business Machines, NYS DMV, US Magistrate's Court
17)	Vacant
18)	Vacant

Stewart International Airport - Layout
(Ref. Stewart Airport - Master Plan)

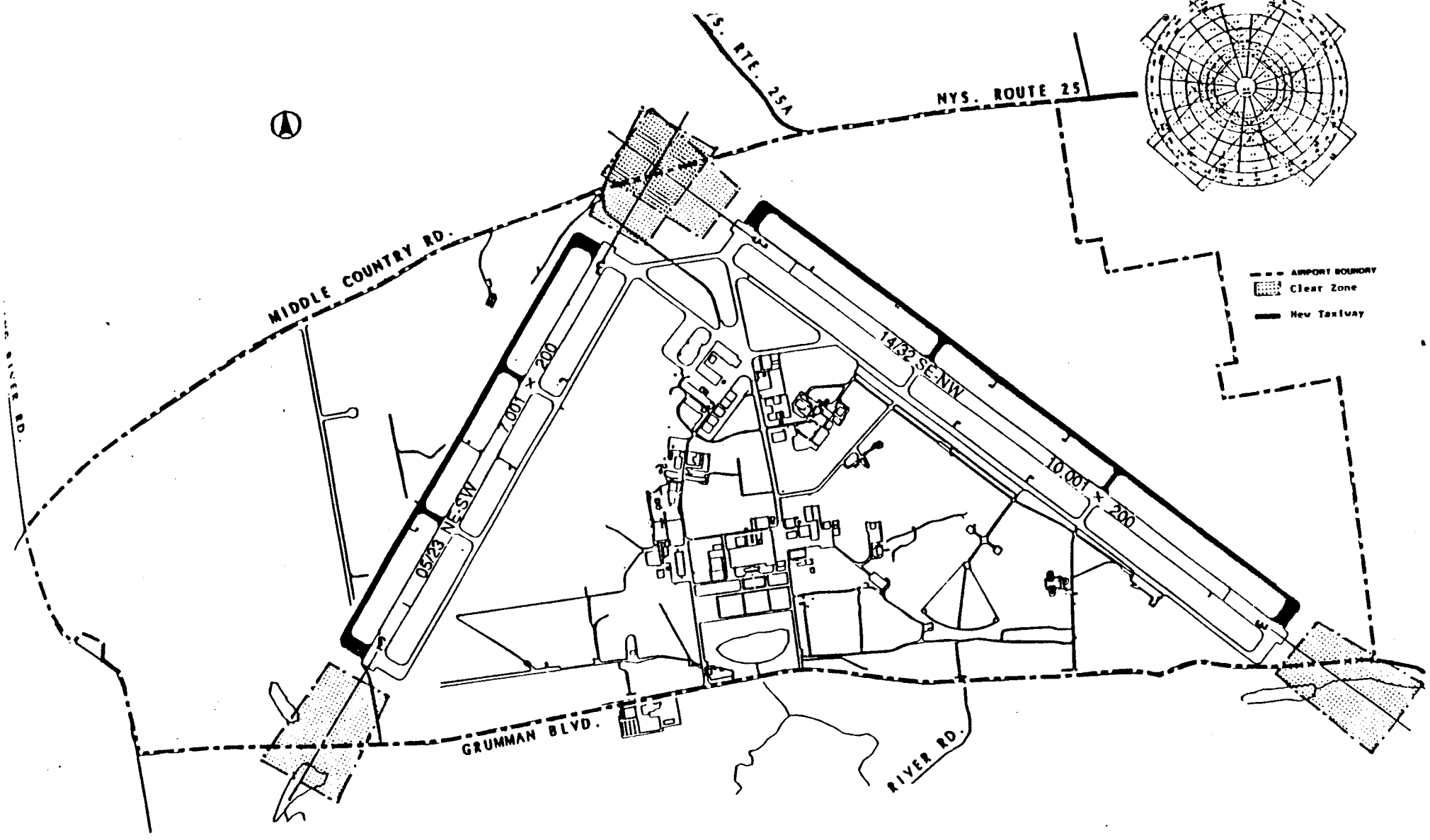
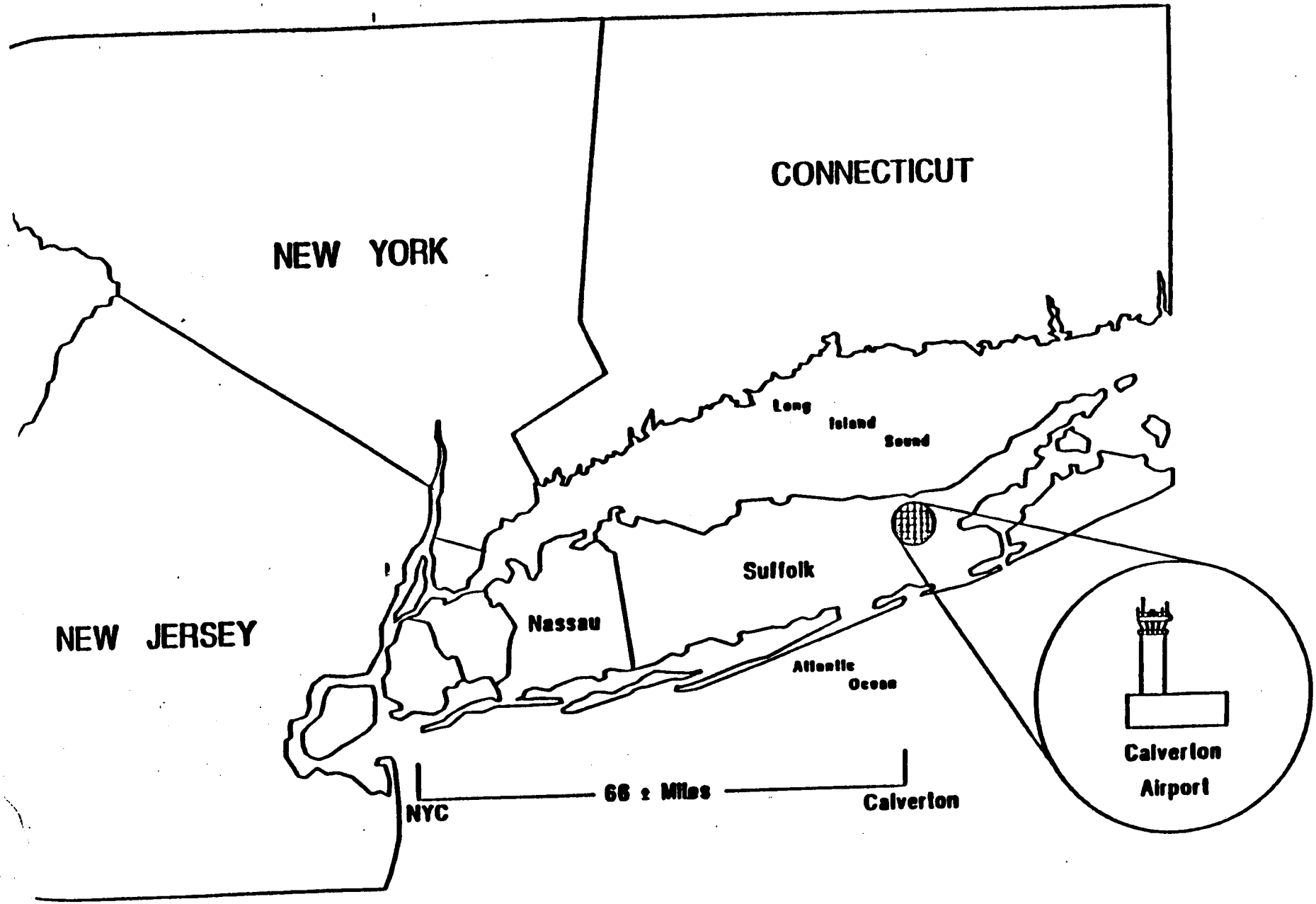


Fig. A-7

Calverton Airport
(Ref. "Airport Joint Use Feasibility Study")

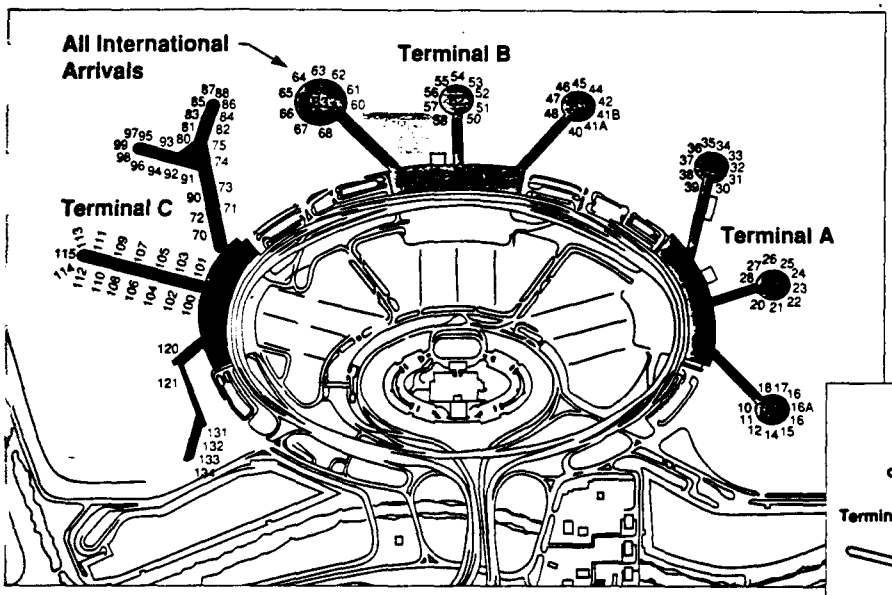


Location Map
Calverton/Peconic Airport

Calverton Airport
(Ref. "Airport Joint Use Feasibility Study")

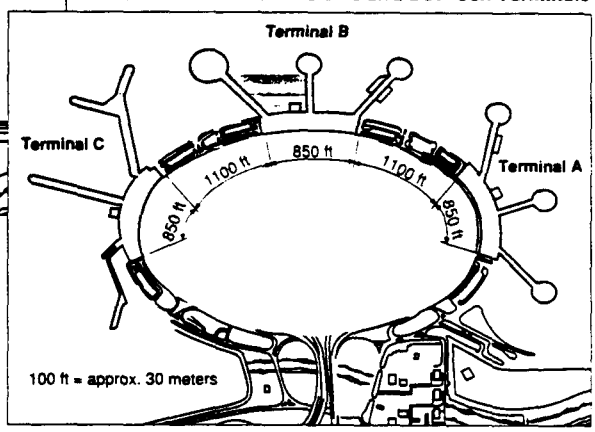
Fig. A-8
Newark International Airport - Layout

EWR



New International Terminal under construction

Distances From End to End and Between Terminals



AIRLINES	IATA CODE	DEPARTURES	ARRIVALS
AEROJECUTIVO	AJ	Terminal B3	Terminal B3
AEROMEXICO	AM	Terminal B3	Terminal B3
AIR ALLIANCE	AC	Terminal C	Terminal B3
AIR ARUBA	FQ	Terminal B3	Terminal B3
AIR CANADA	AC	Terminal C	Terminal C
AIR FRANCE	AF	Terminal C	Terminal B3
AIR NOVA	AC	Terminal C	Terminal B3
AIR ONTARIO	AC	Terminal C	Terminal B3
ALITALIA	AZ	Terminal B3	Terminal B3
AMERICA WEST	HP	Terminal A3	Terminal A3
AMERICAN (Domestic)	AA	Terminal A3	Terminal A3
AMERICAN (International)	AA	Terminal A3	Terminal B3
BALAIR	BB	Terminal B3	Terminal B3
BRITISH AIRWAYS	BA	Terminal B3	Terminal B3
CARNIVAL	KW	Terminal B2	Terminal B2
COLGAN AIR	9L	Terminal A3	Terminal A3
CONTINENTAL (Domestic)	CO	Terminal C	Terminal C
CONTINENTAL (International)	CO	Terminal C	Terminal B3
CONTINENTAL EXPRESS	CO	Terminal C2	Terminal C2
DELTA (Domestic)	DL	Terminal B1	Terminal B1
DELTA (International)	DL	Terminal B1	Terminal B3
DELTA (Business Express)	DL	Terminal B1	Terminal B1
EAGLE AIRLINES	V9	Terminal B2	Terminal B2
EVA AIRWAYS	BR	Terminal B2	Terminal B3

AIRLINES	IATA CODE	DEPARTURES	ARRIVALS
KIWI INTERNATIONAL	KP	Terminal A3	Terminal A3
LOT POLISH	LO	Terminal B3	Terminal B3
LUFTHANSA	LH	Terminal B3	Terminal B3
MALEV HUNGARIAN*	MA	Terminal B2	Terminal B3
MARK AIR	BF	Terminal A1	Terminal A1
MARTINAIR	MP	Terminal B3	Terminal B3
MEXICANA	MX	Terminal B3	Terminal B3
MIDWEST EXPRESS	YX	Terminal B1	Terminal B1
NORTHWEST	NW	Terminal B1	Terminal B1
NORTHWEST AIRLINK	NW	Terminal B1	Terminal B1
SAS	SK	Terminal C1	Terminal B3
SUNJET INTERNATIONAL		Terminal A2	Terminal A2
TAESA	GD	Terminal B3	Terminal B3
TAP AIR PORTUGAL	TP	Terminal B3	Terminal B3
TURKISH	TK	Terminal B3	Terminal B3
TWA	TW	Terminal A3	Terminal A3
UNITED (Domestic)	UA	Terminal A1	Terminal A1
UNITED (International)	UA	Terminal A1	Terminal B3
UNITED EXPRESS	UA	Terminal A1	Terminal A1
USAIR	US	Terminal A2	Terminal A2
USAIR EXPRESS	US	Terminal A2	Terminal A2
VIRGIN ATLANTIC	VS	Terminal A1	Terminal B3
WESTATES	WS	Terminal A3	Terminal A3

* Moves to JFK May 1, 1994

Based on information available at press time. Please confirm with airline.

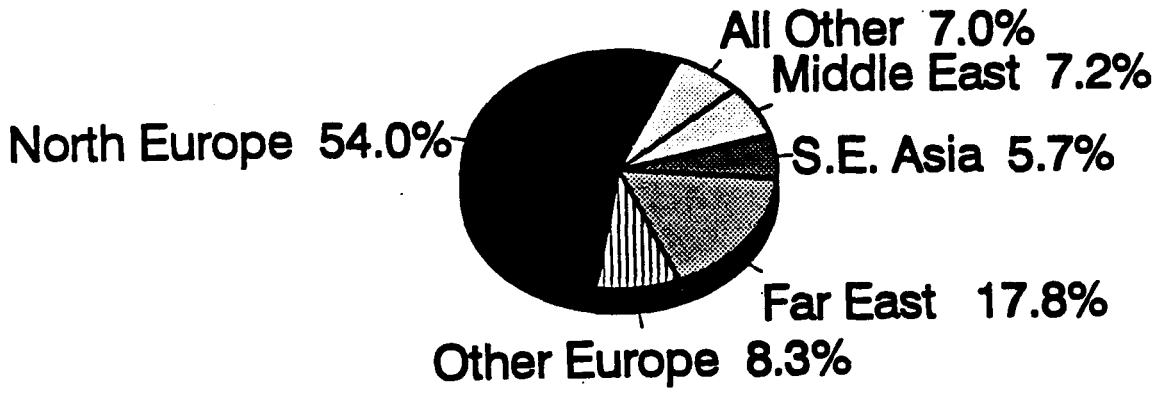
TABLE A-1

INTERNATIONAL AIR CARGO -- 1993

N.Y. CUSTOMS DISTRICT'S MAJOR TRADE REGIONS

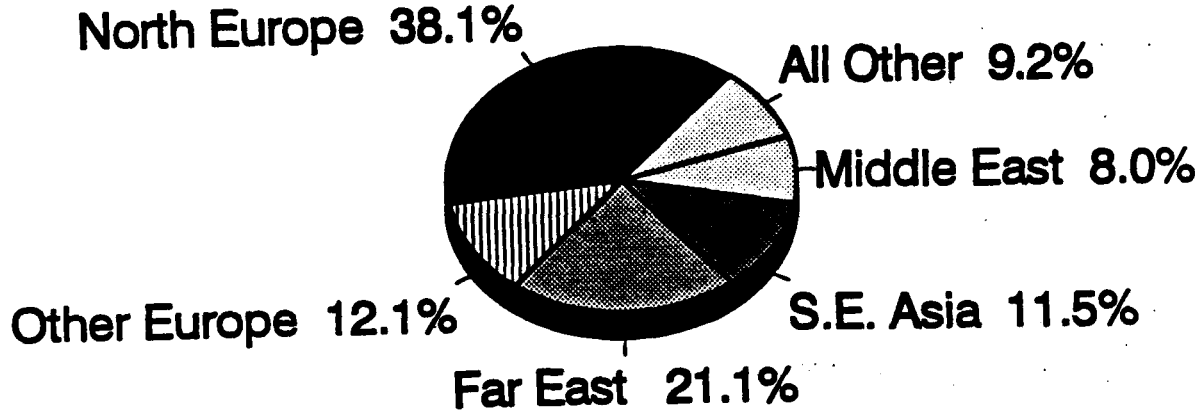
(Percentage distributions)

EXPORTS



Total value = $41.4 billion

IMPORTS



Total value = $34.8 billion

Reference: Port Authority of NY & NJ, International Air Cargo Statistics, Year-End 1993, prepared by the Aviation Department, April 1994

TABLE A-2

INTERNATIONAL AIR CARGO PERFORMANCE MEASURES
N.Y. & U.S. AIR CARGO EXPORTS
LEADING 2-DIGIT COMMODITIES: 1992 AND 1993
RANKED BY AIR TONS OF 1993

TWODIGIT	1992 AIR TONS (METRIC)	1992 AIR DOLS (000'S)	1993 AIR TONS (METRIC)	1993 AIR DOLS (000'S)	CHANGE 93/92 TONS	CHANGE 93/92 DOLS	% SHARE 1993 TONS	% SHARE 1993 DOLS	NY'S SHARE OF US 1992 TONS	1992 DOLS	1993 TONS	1993 DOLS
84 MACHINERY, OFFICE EQUIP./COMPUTER	87,220	9,681,853	80,367	9,477,780	-7.9%	-2.1%	19.0%	22.9%	23.4%	25.1%	21.3%	23.9%
85 ELECTRIC MACHINERY ETC SOUND EQU	48,690	6,014,261	50,422	6,818,840	3.6%	13.4%	11.9%	16.5%	24.5%	20.6%	24.4%	19.6%
90 OPTIC, PHOTO ETC, MEDIC OR SURGIC	28,095	4,465,540	26,686	4,302,192	-5.0%	-3.7%	6.3%	10.4%	29.4%	30.2%	26.8%	27.8%
48 PAPER & PAPERBOARD & ARTICLES (IN	18,101	58,161	20,089	65,112	11.0%	12.0%	4.7%	0.2%	34.6%	35.2%	33.6%	34.7%
03 FISH, CRUSTACEANS & AQUATIC INVER	13,278	90,770	18,801	131,282	41.6%	44.6%	4.4%	0.3%	36.7%	31.1%	43.1%	37.4%
49 PRINTED BOOKS, NEWSPAPERS ETC MA	15,057	590,265	17,056	707,366	13.3%	19.8%	4.0%	1.7%	32.5%	49.6%	33.6%	51.1%
39 PLASTICS AND ARTICLES THEREOF	16,796	281,006	16,090	282,417	-4.2%	0.5%	3.8%	0.7%	27.1%	31.1%	26.6%	28.9%
29 ORGANIC CHEMICALS	10,556	1,141,011	11,349	891,814	7.5%	-21.8%	2.7%	2.2%	36.7%	44.0%	37.8%	35.1%
87 VEHICLES EXCEPT RAILWAY OR TRAMWA	8,140	247,615	9,904	315,132	21.7%	27.3%	2.3%	0.8%	14.5%	21.0%	17.0%	25.8%
88 AIRCRAFT, SPACECRAFT, AND PARTS T	10,170	2,831,889	9,554	2,707,616	-6.1%	-4.4%	2.3%	6.5%	30.2%	33.7%	31.1%	30.9%
38 MISCELLANEOUS CHEMICAL PRODUCTS	7,884	314,463	9,162	392,348	16.2%	24.8%	2.2%	0.9%	27.1%	22.9%	27.6%	24.8%
98 SPECIAL CLASSIFICATION PROVISIONS	8,580	300,638	7,550	311,562	-12.0%	3.6%	1.8%	0.8%	15.5%	25.8%	15.8%	26.9%
30 PHARMACEUTICAL PRODUCTS	7,244	978,074	6,957	1,015,891	-4.0%	3.9%	1.6%	2.5%	30.4%	37.2%	29.6%	35.8%
96 MISCELLANEOUS MANUFACTURED ARTICL	7,348	110,032	6,477	109,806	-11.9%	-0.2%	1.5%	0.3%	25.5%	39.7%	24.7%	40.2%
72 IRON AND STEEL	5,728	18,569	6,125	18,219	6.9%	-1.9%	1.4%	0.0%	29.6%	36.3%	24.0%	28.8%
SUBTOTAL	292,887	27,124,147	296,589	27,547,377	1.3%	1.6%	70.0%	66.6%	25.7%	26.4%	25.3%	24.8%
OTHER	125,482	8,907,593	126,954	13,845,220	1.2%	55.4%	30.0%	33.4%	22.7%	49.2%	22.3%	58.2%
TOTAL	418,369	36,031,740	423,543	41,392,597	1.2%	14.9%	100.0%	100.0%	24.7%	29.8%	24.3%	30.6%

NOTE:TONNAGE IN METRIC TONS & VALUE IN THOUSANDS OF DOLLARS.
SOURCE: BUREAU OF CENSUS.
PREPARED BY: OFFICE OF ECONOMIC & POLICY ANALYSIS/STRATEGIC INFORMATION DIVISION.

Reference: Port Authority of NY & NJ, International Air Cargo Statistics, Year-End 1993, prepared by the Aviation Department, April 1994

TABLE A-2A

INTERNATIONAL AIR CARGO PERFORMANCE MEASURES
N.Y. & U.S. AIR CARGO IMPORTS
LEADING 2-DIGIT COMMODITIES: 1992 AND 1993
RANKED BY AIR TONS OF 1993

TWODIGIT	1992 AIR TONS (METRIC)	1992 AIR DOLS (000'S)	1993 AIR TONS (METRIC)	1993 AIR DOLS (000'S)	CHANGE 93/92 TONS	CHANGE 93/92 DOLS	% SHARE 1993 TONS	% SHARE 1993 DOLS	NY'S SHARE OF US 1992 TONS	NY'S SHARE OF US 1992 DOLS	NY'S SHARE OF US 1993 TONS	NY'S SHARE OF US 1993 DOLS
62 APPAREL ARTICLES AND ACCESSORIES,	97,026	3,146,259	108,182	3,361,910	11.5%	6.9%	19.2%	9.6%	48.5%	53.7%	50.0%	54.3%
61 APPAREL ARTICLES AND ACCESSORIES,	47,213	1,132,867	51,119	1,150,024	8.3%	1.5%	9.1%	3.3%	42.4%	47.4%	40.9%	44.9%
84 MACHINERY, OFFICE EQUIP./COMPUTER	47,558	3,873,655	47,604	3,990,582	0.1%	3.0%	8.5%	11.5%	20.3%	14.1%	17.7%	12.4%
85 ELECTRIC MACHINERY ETC SOUND EQU	37,521	2,873,214	37,887	3,039,223	1.0%	5.8%	6.7%	8.7%	19.9%	12.3%	16.9%	10.5%
64 FOOTWEAR, GAITERS ETC. AND PARTS	25,960	678,542	31,098	705,561	19.8%	4.0%	5.5%	2.0%	37.0%	50.0%	36.3%	46.8%
07 EDIBLE VEGETABLES & CERTAIN ROOTS	17,592	32,010	28,215	43,969	60.4%	37.4%	5.0%	0.1%	42.0%	48.2%	46.9%	50.4%
90 OPTIC, PHOTO ETC, MEDIC OR SURGIC	24,587	2,449,354	23,197	2,464,612	-5.7%	0.6%	4.1%	7.1%	36.3%	34.9%	33.2%	32.9%
42 LEATHER ART SADDLERY ETC HANDBA	16,306	558,303	17,397	576,055	6.7%	3.2%	3.1%	1.7%	51.7%	52.5%	49.7%	52.7%
49 PRINTED BOOKS, NEWSPAPERS ETC MA	16,117	176,669	17,191	206,695	6.7%	17.0%	3.1%	0.6%	58.1%	45.6%	58.3%	45.6%
29 ORGANIC CHEMICALS	9,599	1,453,358	15,707	1,618,702	63.6%	11.4%	2.8%	4.6%	55.0%	44.1%	61.0%	44.8%
03 FISH, CRUSTACEANS & AQUATIC INVER	12,570	64,485	13,661	70,905	8.7%	10.0%	2.4%	0.2%	14.6%	15.8%	13.9%	16.0%
39 PLASTICS AND ARTICLES THEREOF	10,582	185,476	10,522	193,278	-0.6%	4.2%	1.9%	0.6%	37.2%	38.9%	33.2%	37.2%
06 LIVE TREES PLANTS BULBS ETC CUT	8,864	48,466	9,761	51,477	10.1%	6.2%	1.7%	0.1%	5.8%	13.1%	6.3%	12.8%
71 NAT ETC PEARLS, PREC ETC STONES,	9,442	8,478,129	8,095	9,198,687	-14.3%	8.5%	1.4%	26.4%	58.7%	78.1%	54.4%	79.2%
98 SPECIAL CLASSIFICATION PROVISIONS	8,309	1,497,507	8,017	1,589,835	-3.5%	6.2%	1.4%	4.6%	27.8%	26.6%	23.2%	25.5%
SUBTOTAL	389,246	26,648,294	427,653	28,261,515	9.9%	6.1%	76.0%	81.1%	29.9%	29.6%	29.0%	27.3%
OTHER	132,825	6,174,719	134,944	6,577,625	1.6%	6.5%	24.0%	18.9%	34.3%	40.6%	31.7%	40.3%
TOTAL	522,071	32,823,013	562,597	34,839,140	7.8%	6.1%	100.0%	100.0%	30.9%	31.2%	29.6%	29.1%

NOTE:TONNAGE IN METRIC TONS & VALUE IN THOUSANDS OF DOLLARS.
SOURCE: BUREAU OF CENSUS.
PREPARED BY: OFFICE OF ECONOMIC & POLICY ANALYSIS/STRATEGIC INFORMATION DIVISION.

Reference: Port Authority of NY & NJ, International Air Cargo Statistics, Year-End 1993, prepared by the Aviation Department, April 1994

TABLE A-3
The Export/Import Markets of Long Island Firms*
(Percent of Firms)

Market	Exporters	Importers
Europe	73%	60%
Far East	40	30
South America	8	7
Canada	6	3
Middle East	18	7
Other	19	30

*Note Percentages do not add to 100 because many exporters and importers dealt with several markets.

Source: LIRPB employer survey

TABLE A-3A

Goods Exported/Imported by Long Island Firms
(Percent of Firms)

Type of Good	Exporters	Importers
High-Technology Equip/Medical Materials	19%	10%
Electronic Components	17	17
Machinery	17	13
Miscellaneous Retail	6	17
Art Design/Displays	4	7
Computers/Components	8	10
Clothing/Textiles/Fabrics	2	3
Telecommunications Equipment	4	3
Auto Parts	2	3
Plastics	2	7
Building/Construction/Packing Materials	4	3
Printed Materials	2	3
Other	13	4
Total	100	100

Source: LIRPB employer survey

Reference: Airport Joint Use Feasibility Study, Calverton Airport, by LIRPB, 1994

TABLE A-4

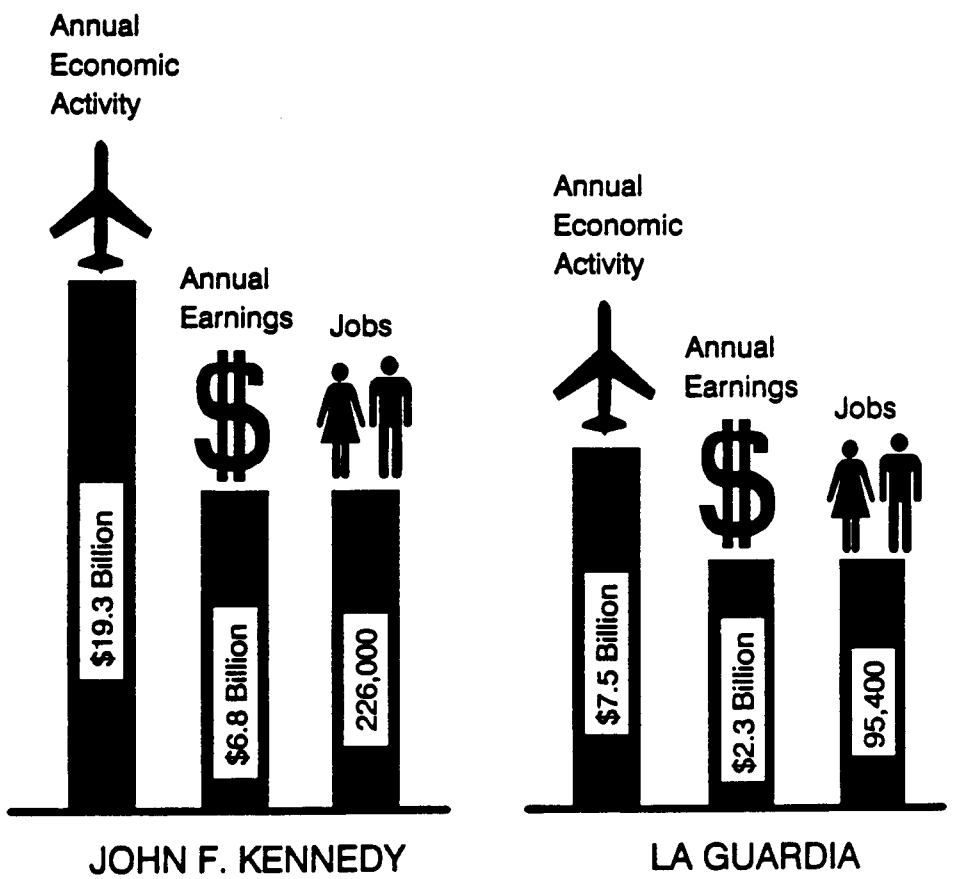
Concentration of the Manufacturing Base in Critical Export Commodities, 1989
Nassau-Suffolk, New York City, Northern Suburbs

SIC Code	Commodity	Nassau-Suffolk		New York City		Northern Suburbs	
		Employment	Estab.	Employment	Estab.	Employment	Estab.
282	Plastic Materials	350	4	0	0	0	0
2834	Pharmaceutical Preparations	3,758	41	1,535	7	3,804	11
271,272,273,274	Printed Matter	11,738	259	65,398	1,020	9,381	166
357	Office Machinery	684	17	1,378	25	7,680	15
35(ex.357)	Other Non-Electrical Machinery	11,599	593	8,915	443	13,682	224
3621	Electric Motors & Generators	550	6	0	0	0	0
366	Telecommunications Apparatus	5,898	56	483	17	725	13
36(ex.3621,366)	Other Electrical Machinery	20,593	342	13,155	255	24,407	138
372	Aircraft and Parts	19,128	54	1,115	15	175	4
381,382,384	Scientific Instruments	25,255	206	5,534	90	5,977	86
	Total-Critical Commodities	99,553	1,578	97,513	1,872	65,831	657
	Total Manufacturing	175,537	4,784	391,083	13,158	120,314	2,360
	Critical Commodities/Total Manufacturing	56.7%	33.0%	24.9%	14.2%	54.7%	27.8%

Source: Long Island Regional Planning Board based on County Business Patterns data

Reference: Airport Joint Use Feasibility Study, Calverton Airport, by LIRPB, 1994

TABLE A-5



Source: Port Authority of NY and NJ.

Reference: Economic Impact of Aviation in New York State, by NYSDOT, 1992

TABLE A-6A

International Traffic Results

Percent change over same period of previous year

Month	Monthly		Monthly Cumulative	
	Freight ton kilometers	Available ton kilometers	Freight ton kilometers	Available ton kilometers
December 1993	+12%	+5%	+10%	+5%
January	+14	+4	+14	+4
February	+12	+3	+13	+3
March	+11	+4	+12	+4
April	+14	+5	+13	+5
May	+12	+4	+13	+5
June	+16	+6	+13	+5
July	+13	+5	+13	+5
August	+13	+3	+13	+4
September	+13	+5	+13	+4
October	+16	+6	+14	+5
November	+15	+7	+14	+5

SOURCE: IATA Market & Economic Analysis

Traffic by Region

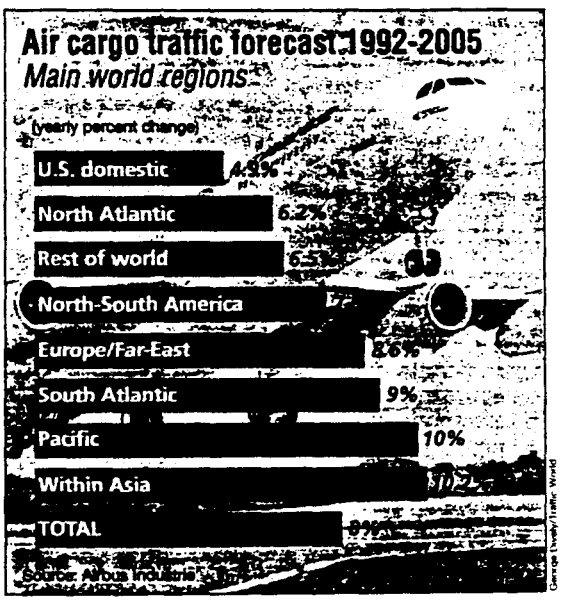
Percent change over same period of previous year

Region	November 1994		Year to November 1994	
	Freight ton kilometers	Available ton kilometers	Freight ton kilometers	Available ton kilometers
Europe	+16%	+8%	+12%	+5%
North America	+10	+3	+9	-1
South America	+6	+4	+16	+1
Far East	+22	+12	+17	+10
Overall	+15	+7	+11	+4

SOURCE: IATA Market & Economic Analysis

Reference: Air Commerce, January 30,1

TABLE A-6



Reference: Traffic World, Nov. 7, 1994

TABLE A-7

NWIRP Calverton Average Activity Trends, 1986-1991

Year	Operations	Flights
1986	9662	940
1987	7743	1194
1988	6503	1152
1989	6780	1352
1990	6596	1148
1991	5137	692

Source: NWIRP Calverton AICUZ Update, August 1992

Reference: Airport Joint Use Feasibility Study, 1993
Calverton Airport
Long Island Regional Planning Board (LIRPB)

NWIRP Calverton Annual Operations, 1982-1987

		CALENDER YEAR						Six Year
Operator	Task	1982	1983	1984	1985	1986	1987	Average
Grumman	Development	431	303	236	1,290	820	1,503	764
	Support	355	156	8	35	240	422	203
	Production	1,100	1,202	1,231	935	870	533	979
	Operational	918	1,048	967	874	755	1,180	957
	Commercial Test	1,874	12	200	10	3	—	350
	ILS	97	—	—	—	—	2	17
	TACAN	80	26	14	—	56	27	34
	VOR	42	28	2	19	8	42	24
	E-2C Training	—	—	—	—	4,852	1,482	1,056
Navy	Production	986	761	703	620	605	619	716
	Test	207	—	—	6	64	7	47
	Training	2	52	28	2	560	140	47
	Deliveries	98	97	77	62	73	48	76
	Itinerants	222	211	150	135	176	280	196
	ILS	5	—	—	—	—	—	1
	VOR	—	5	2	3	—	71	14
	TACAN	4	8	7	5	14	16	9
Military	Test/Training	1,518	1,948	1,099	1,160	788	578	1,182
	Itinerants	63	14	22	10	19	13	24
	ILS	62	—	—	—	—	—	10
	VOR	18	42	4	71	12	22	28
	TACAN	48	52	20	54	14	32	37
Air Force	Experimental	31	—	—	—	—	—	5
	Support	8	—	—	—	—	—	1
	Development	—	—	—	—	—	2	0
	Pre-Inspection	—	26	16	—	—	—	7
	Itinerants	12	10	9	—	—	—	5
	EF-111 Production	103	162	238	203	—	—	118
	Deliveries	5	9	12	9	1	—	6
Commercial	Airline	22	11	—	—	—	—	6
	Training	62	30	14	44	16	84	42
	ILS	494	—	—	—	—	—	82
	VOR	135	92	28	26	37	243	94
	Itinerants	147	142	198	140	183	397	201
	Totals	9,149	6,450	5,285	5,713	9,662	7,743	7,334

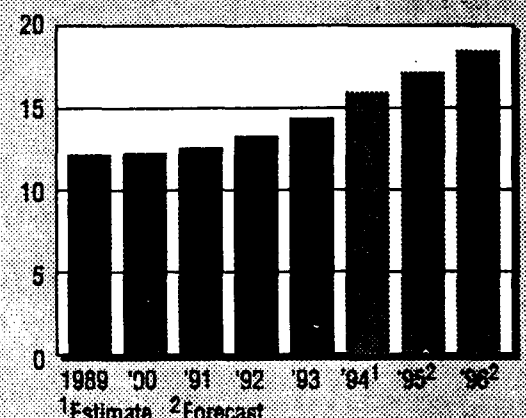
Source: NWIRP Calverton AICUZ Update, August 1992

TABLE A-8

The Air-Cargo Industry

Increased Traffic

World-wide air traffic, in millions of tons



Sources: MergeGlobal Inc., Air Transport Association

Major U.S. Players

Top cargo airlines, based on 1994 domestic traffic, measure in freight ton miles

AIRLINE	TON MILES (billions)
Federal Express	4.41
United Parcel Service	2.92
Northwest Airlines	2.02
American Airlines	1.62
United Airlines	1.59
Delta Airlines	1.08
Continental Airlines	0.43
Trans World Airlines	0.34

Source: The Wall Street Journal, June 2, 1995

MARINE TERMINAL

Cranes moving containers onshore

CHAPTER II

MARINE

Introduction

This chapter will identify the major marine terminals in the New York metropolitan region and their freight transportation activities.

The waterway network over which freight moves (Fig. M-16) is one of the most important economic assets of the region [Ref. M7]. The metropolitan region receives over 40% of its inbound tonnage by water with an average distance of 2,700 miles. Of its outbound tonnage, 13% is shipped out by water over a distance of 2,600 miles. A quarter of its local tonnage is distributed by barges and small tankers [Ref. M1].

The waterborne cargo movement is intermodal. Once the cargos arrive at the port destination they have to be transferred to different transportation modes such as trucks or rail. Because of containerization's rapid growth, waterborne shipping practice has been revolutionized. In 1993, the total container traffic in the Port of New York and New Jersey was 1.9 million TEUs equal to 1.2 million containers (this number includes the international and domestic freight, and loaded and empty containers). Before 1960, most waterborne cargo was carried in breakbulk ships. The rapid growth of the container trade has major economic implication for the ports. Based on the 3% annual growth rate in the gross national product, it is expected that the total international trade will grow faster (5%) than the general economic growth. As a result, the containerized trade is expected to grow by 6% [Ref. M2.] (see Fig. M-1, M-2, M-2A for container equipment and ship silhouette).

The shifting pattern for the liner trades shows that the market trend has shifted to the Pacific rim. Container movements to Japan and the South East Asian markets will continue to grow in the future. However, the Port of New York and New Jersey's main export markets are in Northern Europe. New York and New Jersey ports leading markets for oceanborne general and bulk cargo exports are presented in Table M-5. The leading import sources are shown in Table M-6 [Ref. M3]. According to the Bureau of the Census data, the 1993 value of the port's oceanborne freight trade was $56.3 billion (Table M-7).

Marine Terminal and Network Issues

All of the region's ports have access to the ocean through the channel network (see Fig. M-16A for marine terminals and access channel location). The efficiency of the port operations are restricted by existing bottlenecks. These bottlenecks can be in the form of infrastructure (substandard turning radius for trucks, narrow lanes, terminal state of disrepair), land use,

environmental and institutional impediments that reduce the efficiency of freight movements on the land access routes or the limited options to correct these impediments.

Among the above issues, dredging and landside access to the ports are the most important issues in the metropolitan areas.

Dredging

On the water side, channel depth, dredging and its environmental problem associated with it, are the main issues that can impede the efficiency of cargo movements to the port of destination. Due to the recent shift to a significantly larger container ship that requires channel depth of more than 41 feet, improvement of the channel is crucial to have a continuous deep-draft navigation throughout the metropolitan waterways. Port, besides serving the domestic marine traffic, also serves as an international gateway. Thus, for the port to be able to compete in the global market, it should be accessible. In order to be more cost effective, the competitive global market encourages larger vessels. By the year 2000, the marine forecast shows that 20% of vessels will require a waterway depth of 45 feet or more. In general, current vessels can carry 2,500 TEUs, but the bigger vessels can carry from 3,200 TEUs (20-foot equivalent units) and will be rising to 5,500 TEUs by the year 2020. Future larger vessels will also be designed to utilize fewer crew members. In addition, a new development of the 48-foot and 53-foot domestic container, which offers 13% more cubic capacity, will create a challenge to intermodal operations at the ports where a typical ocean carrier's container is 20 or 40 ft long and 96 inches wide [Ref. M2]. Several of the Post-Panamax ships (larger size vessels whose size precludes them from using the Panama Canal) are already in use or under construction in some other parts of the world. This type of vessel can hold 5,000 or more 20-foot containers, which represents 20% more capacity than the largest vessel currently in operation. Fully loaded, these vessels will require 42 to 45 feet of channel depth [Ref.M23].

As cargo activity in the metropolitan port continues to increase, the dredging problem has prevented its optimum growth. Basically, dredging is a problem when the sediment is contaminated with heavy metals, pesticides, and dioxin or other hazardous chemicals, which is the case in the New York metropolitan area. As a result the search to find an approved method of sediment disposal has caused a tremendous delay in dredging the harbor to a navigable depth.

The Association of Port Authorities is currently urging the adoption of a national dredging policy that will include the port as a key element in intermodal transportation. The House has passed The Clean Water Legislation. In this proposed legislation, the Environmental Protection Agency will not be involved in the permit review for navigational dredging. This change is intended to expedite approval of the dredging permit. Environmental groups are opposed to this modification. However, a balanced reform of the bill eventually should be achieved. Also, a comprehensive dredged material management strategy is needed in order

to protect the economical growth of the ports region. [Ref JOC 5/18/95]

Recently, President Clinton created a federal dredging task force. This effort reflects the Administration's high-priority treatment of this issue, which is critical for U.S. global competitiveness [Ref.M20].

Land Access to Ports

Growing traffic congestion on the major truck routes that serve port terminals is causing an increase in transportation costs and vehicular emissions which reduce air quality. Other issues that are causing bottleneck conditions to freight movements are at-grade rail crossings on local streets which can tie up traffic and increase accident rates, and missing or inadequate signs for truck routes. Traffic conflicts between automobiles and trucks and trains serving the port can increase the need for land and this issue should be solved in coordination with the local agencies. Increases in these conflict will also raise concerns about the future ability of ports to handle the massive movement of cargo required to support the U.S. military forces deployed abroad.

Because of these deficiencies in the freight network system, ISTEA started to provide a variety of new opportunities for responding to the port landside access problems. Some strategies to reduce truck traffic include increasing reliance on barge or intercostal vessel freight movement, expansion of rail service, development of freight corridors between terminals and major highways, and development of inland intermodal terminals, serving the ports.

With the expansion of double-stack train services, the container ports are trying to have direct railroad access to their facility. This improvement typically will be achieved by adding on-dock or near-dock rail transfer facilities. In addition. The expansion of double-stack services in many corridors will further enhance the popularity of the land-bridge concept. This land-bridge concept often helps the shipper to reduce costs and improve the port's competitive positions.

The land-use issue is an important factor for the future development of marine terminals. As commercial and residential development encroaches on port complexes, more needs to be done to preserve right-of-way around the current transportation corridors that serve the ports and the environmental concerns in the port area. Growing waterfront land values and the competition for this land with non-maritime commercial development are restricting the port's development and landside access improvements [Ref.M25].

Future Outlook

As the United States economy depends more and more on producers and consumers from all over the world, connections to the outside world should be maintained. As in the airports, the ports are the gateway to the world. The efficiency of the ports and airports is very critical.

Over the past 20 years, U.S. imports and exports have increased to a level equal to one-fifth of the U.S. gross domestic product. In 1990, all seaports in the U.S. handled approximately $450 billion in international cargo [Ref. M2, M6]. The Port of New York and New Jersey is ranked number three (source MARAD 1992 report Oct. 1994) in the U.S. with a total tonnage of 115 million tons. As a container port, this port handled 1,305,971 TEU's in 1993 and also ranked as number three in the U.S.(see Table M-1 and M-2).

The marine industry in the New York region contributes 2.5% to the share of gross regional product and regional employment. The industry generates 180,800 jobs in the region, $5.6 billion in wages and salaries, and 2.5 billion in business income (1993 data). The economic activities of the port industry are linked to other industries in the regional economy [M22,24]. About 60% of commodities shipped or received by the ports are produced or consumed by industries situated at the port or nearby locations [Ref. M24,M9]. Over 80% of the region's ocean-borne cargo is handled at the Port Newark/Elizabeth marine terminal on the New Jersey side of the Harbor. Whereas, the New York side marine facilities are in various states of decline [Ref. M5].

The total volume of general cargo, shipped through the metropolitan area, handled by NYC harbors declined from 75% prior to 1960 to about 15% in 1990. Most waterborne freight uses the New Jersey side of the harbor because of the land availability for storing containers, better access to the nations' rail and highway network, and better accessibility to warehouses.

However, better opportunities for the New York marine industry will arise in the future, especially with the opening of Howland Hook Terminal on Staten Island, the purchase of the Staten Island Railway Corporation by NYCEDC, the opening of Harlem River Yard, and the completion of the Oak Point Link. These developments may encourage further growth, such as improvement of road and rail access to the city's container ports, and modernization of warehouses. Currently, the only major fully active container terminal on the Brooklyn side is Red Hook Marine Terminal.

Cargo and Commodities

In 1993, the Port of New York and New Jersey handled approximately 41 million long tons oceanborne foreign trade for bulk and general cargo, whereas in 1991 the tonnage was 38 million long tons. Despite this increase in port tonnage, the port share of nationwide cargo compared to 1961 data has been declining. Whereas, in 1961 the Port of New York and New Jersey represented 14.4 percent of the nationwide ocean borne transaction, in 1993 it represents only 4.8 percent of the total national oceanborne foreign trade nationwide. This decline has resulted from the competition of the other big ports nationwide that can accommodate the increasing size of ocean vessels, the changing trend in the global market (the increasing of the Pacific rim trade), and the relocation of manufacturers to the west and the south of the United States [Ref.M22]. A large portion of tonnage is going to overseas destinations.

The dollar value of this total foreign trade for the year 1993 was $56 billion. The percentage of the trade values with various countries are as follows:

Europe - 48.4 %,
Far East - 23.4 %,
South America - 6.3 %,
South East Asia - 6.5 %,
Middle East - 5.0 %,
Central America and Caribbean - 2.3%,
Africa - 2.0 %,
North America - 0.4 %,
Australia - 0.3%
In transit cargo - 5.4 % [Ref. M8].

The oceanborne cargo is divided into two categories:

* General Cargo, which include breakbulk and container
* Bulk cargo

General cargo refers to all types of cargo that could be containerized, roll-on, roll-off, and other packaged cargo. Bulk cargo refers to homogeneous commodities shipped in large quantities, such as stone, sand, iron ore, coal, cement, and petrochemicals.

Oceanborne bulk cargo import tonnage for 1982 was 31.2 million with a value of $6.5 billion. In comparison, the oceanborne bulk cargo import tonnage for 1994 was 30.2 million with a value of $3.52 billion. Whereas the bulk cargo tonnage and dollar value for imports has declined, the general cargo import tonnage and dollar value has increased. In 1982 the tonnage was 7.3 million tons with a dollar value of $21.5 billion and in 1994 the tonnage was 9.52 million tons with a dollar value of $41.9 billion. This represents a 30% increase [Ref. M8,Via of July/August 1995].

However, the bulk cargo export tonnage has increased slightly, about 5% from 1982, which was 2.41 million tons with a dollar value of $569 million, to 2.53 million tons with a dollar value of $ 573.2 million in 1994. Whereas the general cargo export also has increased from 1982 where the tonnage was 3 million with a dollar value of $13.6 billion to 4.29 million in tonnage with dollar value of $ 16.7 billion in 1994 [Ref. M8,Via of July, 1995]. This represents a 4% increase.

Based on the PANY&NJ 1993 data [Ref. M8], the top 20 commodities (in descending order of magnitude - see Table M-8 for tonnage breakdown) for general cargo imports were in 1993 as follows: alcoholic beverages, road motor vehicles and parts, organic chemicals, bananas, paper and paperboard, vegetable oils, alcohols, fruit and fruit preparations, vegetable and vegetable preparations, clothing, furniture, fruit and vegetable juice, plastic and rubber, fish

and fish products, hydrocarbons, building materials, steel plates and sheets, lumber, and general machinery.

For general cargo exports the top 20 commodities are as follows [Ref. M9]: waste paper, plastic materials, lumber, road motor vehicles and parts, general machinery, hydrocarbons, organic products, miscellaneous food and food preparations, elem. oxides and halide, toilet preparations, textile waste, alcoholic beverages, printed matter, plastic materials, paper and paperboard, fish and fish products, steel plates and sheets, gas engines and diesels, and inorganic chemicals.

For bulk cargo imports the ten (10) top commodities are as follows: crude petroleum, residual and distillate fuel oils, gasoline, kerosene and jet fuels, gypsum, sugar, pitch and asphalt, salt, building cement and lime, sand, and graveled and crushed stone.

For bulk cargo exports the ten (10) top commodities are as follows: iron and steel scrap, residual and distillate fuel oils, wheat, corn, nonferrous scrap and slag, inedible tallow, pitch, petroleum coke and naphta, logs, animal feeds, and petroleum lubricants (see Table M-10 and M-11 for actual tonnage)[Ref. M8].

Localized Issues

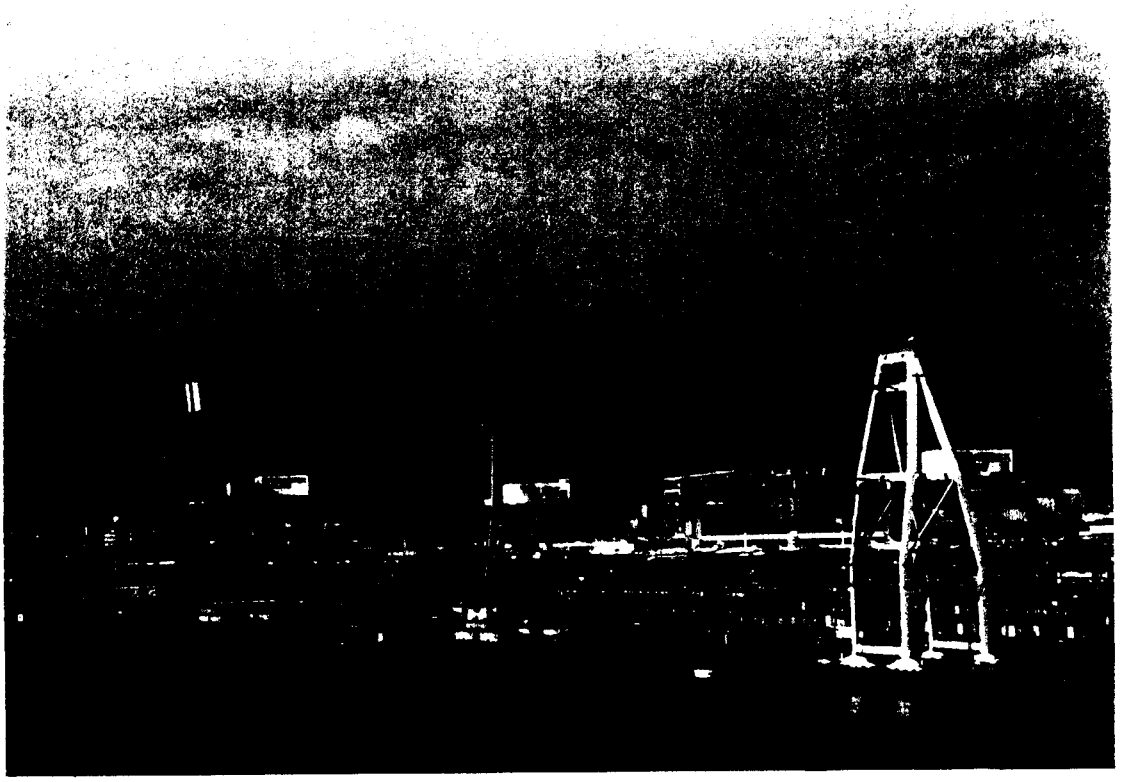
Key terminal issues and future improvement plans are described under each terminal description.

Existing and Potential Marine Terminals

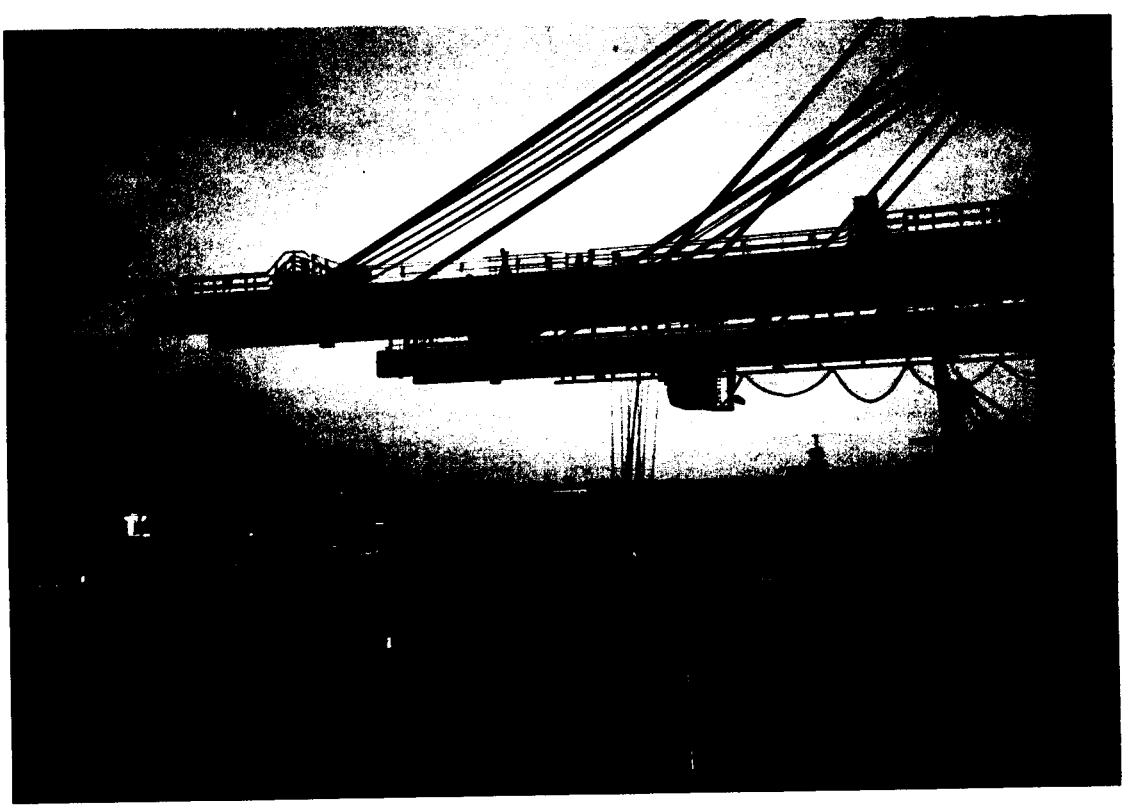
Based on the IMS workplan, the NYMTC Central Staff has identified the freight network in the metropolitan region that consists of major marine terminals and its connecting routes. These selected terminals are located in the NYMTC region (main network) and outside NYMTC region (the peripheral network):

Main network - New York (see Fig. M-7):

* Red Hook Container Terminal, Brooklyn
* South Brooklyn Marine Terminal, Brooklyn
* Brooklyn Port Authority Marine Terminal (not active)
* Howland Hook Marine Terminal, Staten Island
* Green Street Lumber Exchange Terminal, Brooklyn
* Brooklyn Navy Yard Terminal (potential)



Port of New York & New Jersey
Marine Terminal - General View



Port of New York & New Jersey
Marine Terminal -Containers transport

The Peripheral Network

North Jersey

* Port Newark/Elizabeth Marine Terminal (for the layout see Fig. M-5), covering terminals:

  - Bay Avenue Terminal
  - Maher Fleet Street Terminal
  - Maher Tripoli Street
  - Universal Terminal
  - Sea-Land Terminal
  - Maersk Line Terminal

* Other West-of-Hudson terminals (see Fig. M-7):

  - Global Marine Terminal, NJ
  - Auto Marine Terminal, NJ
  - Greenville Terminal, NJ

Connecticut (see Fig. M-3 and M-3A):

  - New Haven Terminal
  - Cilco Terminal
  - Gateway Terminal

Since the waterborne traffic movements depend on the water networks which include channels, this section also includes a channel inventory table - see Appendix D. These channels provide entrance to the Port of New York and New Jersey, thus, maintaining its navigable depth is very important.

RED HOOK CONTAINER TERMINAL

Red Hook Container Terminal (RHCT), owned by New York City, is managed by the PANY & NJ, which subleases the terminal to the American Stevedoring, Inc. (ASI), which is responsible for the operation of the facility. The former operator of this terminal was Universal (up to 1995).

Contact person:

* Ms.Victoria Cross Kelly or Arie Van Tol, from PANY & NJ
  or: Mr. Sal Catucci, President
  American Stevedoring Ltd.
  2170 North Fleet Street
  Port Elizabeth, NJ 07201

  Telephone: (718) 875-0777 ext. 240, or (908) 351-5600.

Facility location:

Red Hook Container Terminal
Hamilton Avenue at Van Brunt/ Bldg. 116
Brooklyn, NY 11231.

For terminal layout see Fig. M-4.

The Red Hook Container Terminal is located on the Atlantic Basin in Upper New York Bay in Kings County. The access channel is Buttermilk Channel with a current depth of 45 ft and width of 100 feet [Ref. M12]. This terminal lies at the foot of Hamilton Avenue, one-half mile from the Brooklyn Battery Tunnel and the Brooklyn Queens Expressway (I-278/BQE) junction. The RHCT is accessible from the BQE by using Atlantic Avenue or Hamilton Avenue [Ref. M11].

Physical Characteristics

The terminal covers 85 acres. The ship berth length is 3,030 ft. [Ref. M12] and the depth is 42 ft. MLW. This facility is equipped with a 50-acre container storage yard and two transit sheds of 177,000 sq. ft. and 168,000 sq. ft. respectively. Other available services are maintenance, repair and administration, ten truck inspection lanes equipped with scales, 150 reefer plug slots, and 600,000 sq. ft. of warehouse. There are seven berths, two equipped with two gantry cranes each [Ref. M11]. Eight ships are able to use the terminal simultaneously [Ref. M12].

The primary truck entrance is at the intersection of Van Brunt and Union Streets and the

secondary entrance is Congress Street at Columbia Street [Ref. M12]. This terminal can store up to 2,396 grounded twenty-foot equivalent unit (TEU) containers per stack, 330 TEU's on wheels, and 710 TEU's containers on chassis only. Top loaders are used to stack containers. The facility also has 35 reefer stations with two 480V jacks each [Ref. M11].

Handling equipment consists of:

4-Gantry Cranes (40-70 tons), 11-Top Loaders (45 tons), 115 Forklift Trucks (15 to 26 tons), 30-Yard Tractors, 20-Stevedoring Chassis, 4-15 ton Mobile Cranes, Tug, Payloader, Sweeper. For truck receiving and delivery, there is a 20 ft wide loading dock, 17 bay doors and a 420-ft rail siding [Ref. M11]. Recently, ASI has purchased additional handling equipments, such as caterpillar top lifts and yard hustlers [Ref. M3].

Berth and Pier size [Ref. M13]:

* Berths number 9A north and 9A South - length 1000 ft and depth 38 ft, are used as a container berth and as a Roll-on/Roll-off ramp.

* Berths number 9B North and 9B South - length 1000 ft and depth 36 ft, are used for break-bulk cargo handling.

* Berth number 10 - length 1500 ft and depth 42 ft is the main container berth.

* Pier 2 and 5 - length 700 ft and depth 32 ft, are used for coffee storage.

* Pier 8 - length 900 ft and depth 36 ft, leased from warehouse company, is used for general cargo handling.

* Pier 12 - length 700 ft and depth 36 ft is leased from the warehouse company and used for storage.

* Pier 11 - length 1400 ft and depth 38 ft is used for break bulk handling and small vessels berthing.

Operating Characteristics

Red Hook Container Terminal serves container and conventional vessel operation. There are Customs on-dock at Red Hook terminal. This terminal typically moves cargos that are directed to the final consumers; therefore, this port is a destination port rather than a port of entry used for further inland movement. The terminal is regularly served by 16 medium to small size shipping lines, the top five line accounts for 75% of the total trade [Ref. M11]. The main shipping lines are: Hoegh Lines, Pan-American Independent Lines, Torm Lines, Delmas African-American Lines, Nordana Line, Waterman Steamship Line [Ref. M13]. Approximately 25 ships

arrive each month. The employees are hired on a daily basis, from 200 to 600 people as needed. The parking facility can accommodate 1000 trucks but there is a limit to 200 trucks backing to the platform [Ref. M12]. For maintenance and repair purposes, the terminal has mobile units. Based on the NYMTC survey the current condition of the terminal, due to the current (slow) market or demand, is sufficient. However, for future trade growth in the region more terminals and their support system improvement will be needed.

Rail access can be provided in three ways [Ref. M12]:

1. Via carfloat service from the New York Cross Harbor RailRoad (NYCHRR).

2. Via barge connection, where the cargo container is received by rail in New Jersey (ExpressRail Terminal) and barged overnight to RHCT free of charge.

3. Via train service. There is currently no direct connection between RHCT and rail service. However, there are plans to connect this terminal by carfloat to the MTA-Long Island Rail Road at 65th Street Intermodal Terminal. The train service can use the Bay Ridge Line, which will connect the terminal to the Conrail network at Fresh Pond Junction.

For the Red Hook terminal's percentage of throughput moved by barge see Fig. M-17.

RHCT is accessible for trucks from the BQE (Brooklyn Queens Expressway), using the Atlantic or Hamilton Avenue exit/entrance. The designated local truck route is Van Brunt Street between DeGraw Street and Hamilton [Ref. M12].

Commodities

In 1987, Red Hook Container Terminal handled approximately 710,000 tons of general cargo [Ref. M11]. In 1993 this terminal handled 1 million tons of cargo [Ref. M12] or 70,000 TEUs. Based on ASI projection, this facility will handle approximately 36,000 containers in 1995. The primary types of cargo are containers, ro/ro, and break bulk. It is also estimated that The RHCT has a potential growth of handling 1.4 million tons of cargo per year [Ref. M11].

For RHCT projected volume (tons) see Fig. M-14.

Based on the PANY&NJ latest study [Ref. M11], the primary import commodities in Red Hook are coffee (18%), furniture (6.3%), vodka (3.2%), canned foodstuffs (3.1%), non alcoholic beverages (3.1%), candy/jam, confections (3.1%), copper/brass sheet strips (2.9%), paprika and pepper (2.5%), ceramic & mosaic tiles (2.5%), gums (2.3%), hides, skins, furs (2.2%), rugs/floor coverings (1.9%), still wines (1.9%), and other (47.3 %).

The primary exports are [Ref. M11]: paper & paperboards including waste (11.2%), apparels

(7.7%), general cargo (6.5%), sodium compound/bromide chlorate (5.7%), fabrics/raw cotton (5.5%), auto parts (4.9%), rags (4.3 %), synthetic resin (3.8%), shellac/varnishes/thinners (2.8%), rubber/synthetic (2.7%), milk/eggs/produce(2.2%), mineral oil (2.2%), photo equipment (1.9%), trucks/lifts/parts (1.7%), and other (36.9%).

For bulk/break bulk cargo the main commodities are wood and wood products, glass, paper, coffee, and salt (Table M-3 shows container volume handled in 1987).

Latin America is the main region that ships cargo through RHCT (55.2%) followed by Asia (19.9%), the Mediterranean (15.5%), and Africa (9.4%) (see Fig. M-6).

Issues

The main problem of the terminal's access is chronic congestion on the BQE (especially between Atlantic Avenue and Grand Central Parkway), LIE (Long Island Expressway), and the local truck routes in Brooklyn and Manhattan. Other access deficiencies are as follows: height restriction (12'9) in the Brooklyn Battery and Midtown tunnels (which resulted in trailer trucks using bridges for trips to and from Manhattan); the Gowanus Expressway closing for major repairs in the future; substandard local streets and access to highway geometry; and inadequate signaling.

In addition to the above external impedances, another barrier that could reduce future growth is the lack of modern refrigerated warehouse space in the New York City area. Refrigerated warehouses are crucial for the perishable cargo trade, especially fresh fruit.

Future Improvement Plans

Based on the PANY&NJ's study of the RHCT and the NYMTC survey results [Ref. M11, Ref. M12] the following are plans for the future:

* Improvement of the turning radii on 38th and 39th Streets in Brooklyn and signalization on the local streets.

* Extension of berth 1-2 at RHCT to 350'x150'.

* Filling in the Basin to built berths.

* Build high density container storage, consisting of reinforced concrete pads to support Rubber-Tired-Gantry-Cranes (RTG)

* Development of road facilities for equipment inspection and repairs. Also, modification of container yard activities by segregating long-term empty container storage to decrease dwell time and increase efficiency.

* Build an additional entrance at Congress Street for the handling of empty containers.

* Relocation of container crane from SBMT (completed).

* Additional crane along Buttermilk Channel.

* Development of fumigation facility for year-round operation in the Pier 11 shed.

* General improvement of lighting and hydrant systems.

* Modernization of the gate complex.

* Improvement of on-dock rail access.

SOUTH BROOKLYN MARINE TERMINAL

South Brooklyn Marine Terminal (SBMT) is owned by the New York City Economic Development Cooperation (NYCEDC) and was in the past operated by the Port Authority of New York and New Jersey (PANY&NJ). This terminal is currently underutilized, however it is the one of the most active marine terminals on the east side of Hudson River.

Contact person:

* Mr. Chris Ward, Senior Vice President
  Mr. Michael Canavan, NYCEDC

Address:

110 William Street/5th Floor,
New York, NY 10038.

Telephone:

(212) 312-3852 or 3669

Terminal location:

30th Street-39th Street
at Second Avenue, Brooklyn, NY 11232

Part of the South Brooklyn Marine Terminal (around one third of the area) is currently leased by Continental Corp.

Continental Terminal Corporation:

Contact Person:

* Mr. Ray Hutchinson
  Mr. Jerry Ponsiglione

Address:

738 Third Avenue (at 23rd Street)
Brooklyn, NY 11232
(718) 499-6300

For the terminal layout see Fig. M-8.

Physical Characteristics

The size of South Brooklyn Marine Terminal is 110 acres and it is located on the Erie Basin in the Upper New York Bay. Terminal access is by the Bay Ridge Channel with a depth of 35 feet. The terminal has 1,535 linear feet of container berths and 4,700 linear feet of break-bulk berths [Ref. M14]. Among the seven berths, one is for containers, five for general cargo, and one for Ro/Ro. All of these berths have a depth of between 32 and 35 feet.

The enclosed storage facilities for stuffing and stripping cargo, with a total area of 570,000 sq. ft, have two pier sheds and one building (Bldg. N). Building N (100,000 sq. ft.) and Building J (350,000 sq. ft.) are currently leased to Continental Terminal Corporation. There is a plan for revitalization of the cargo shed on berth 5 (across 35th Street) [Ref. M13].
The terminal's two container cranes with a load capability of 50 tons each have been removed. The gate at SBMT has eight entrance lanes equipped with six scales [Ref. M13].

The major highway that is nearest to the terminal is the Gowanus Expressway, within a distance of 0.25 miles. In order to enter this facility, there are five entrance points for access. The main entrances are 39th Street, 29th Street and Second Avenue. The gate complex at 39th Street has eight truck inspection lanes, six of them equipped with scales [Ref. M11]. Second and Third Avenues are the designated truck routes. Hamilton Avenue, 65th, and 39th Streets are the access roads to I-278 and to a portion of the Gowanus Expressway [Ref. M11].

There is rail on-dock access and the off-dock terminal is approximately 300 feet from the feeder terminal [Ref. M12]. For local truck routes see Fig. M-13.

Operational Characteristics

During its last full year of container operation (1985) SBMT handled over 35,000 loaded and empty containers (approximately 57,000 TEU's) and 212,000 tons of break bulk and LCL (less than container load) container cargo [Ref. M11]. This terminal is capable of handling containers, ro/ro, and breakbulk [Ref. M14]. Current operations are exclusively for break bulk.
Part of this terminal is operated by Continental Terminals with approximately seven ships arriving per year. The Continental Terminals Corp. is located on the 23rd Street Pier and has 85 employees [Ref. M12]. Various types of oceangoing vessels (charter liners only) come to this terminal mainly from South America (Brazil and Columbia) and West Africa.

Currently this terminal handles approximately 2,500 tons of cargo per month [Ref. M12]. The primary cargo is general cargo, cocoa beans and coffee that are imported from South America, West Africa, Indonesia and India [Ref. M13]. Cocoa beans, once delivered in the terminal, will be stored or shipped to the consignee by trucks. The main reason for delivery delay is the cocoa storage process for exchange and distribution [Ref. M12].

Berth container capacity is 60,000 moves per year and it is also estimated that the break bulk berths have the capacity to process 466,000 tons of break bulk per year and 143,000 containers per year (with slow turn around time). The storage yard of the terminal has the capacity to keep cargo of 2,700 grounded TEU's per level and 1,389 TEU's on wheeled chassis. This terminal is projected to be able to handle 1 million tons of cargo per year, or 120,000 TEUs/year. In addition, the terminal has 555,000 sq. ft. of covered storage space that can handle 707,000 tons of cargo per year [Ref. M11].

Cocoa beans are loaded and unloaded by ship cranes and light forklifts. This company utilizes modern technology such as computerized billing and tracking and a central security system.

Most of the terminal areas are currently not used, except for some short term tenants who are currently leasing a small portion of the land, such as the NYCPD towing service and Express Mail sorting service [Ref. M13].

Issues

Based on the NYMTC survey, the terminal's owner stated that infrastructure requires general improvements including the pier and pier sheds. Some of the support piles have termite problems. Future utilization of the rail connection to the 65th street yard will enhance the truck-ship modes in this terminal. In addition, difficulty in obtaining a dredging permit has caused a problem in maintaining sufficient berth and channel depth. Gowanus Expressway reconstruction in the near future will also hinder truck movements in and out of the terminals [Ref. M12, Ref. M13]. To expand its marketing strategy NYCEDC plans to attract additional breakbulk users, such as recycling companies.

Future Improvement Plans

Based on the PANY&NJ's study, the following need was suggested for future improvements (Ref. M11, Ref. M12).

* Reduce the congestion at the (39th Street entrance to BQE) access streets to SBMT.
* Build container berth at SBMT's 35th Street pier with a dimension of 1,000 ft. long x 200 ft. wide, and demolish the old 35th Street berth (currently is not a priority).
* Maintenance dredging.
* Improvement of existing structure.
* Rehabilitate the 33rd Street pier shed substructure.
* Rehabilitate the 35th Street pier shed substructure.

BROOKLYN PORT AUTHORITY MARINE TERMINAL

This terminal is lightly used as a marine facility. The facility is owned by the Port Authority of New York and New Jersey.

Facility Location:

90 Columbia Street
Brooklyn, NY 11201

Contact person:

* Ms.Victoria Cross Kelly or Mr. Arnie VanTol, Manager
PANY&NJ, 260 Kellog St, Port Newark, NJ 07114

Telephone:

(718) 330-2974

Physical Characteristics

The Brooklyn Marine Terminal comprises 10 acres and is located on the East River in New York Harbor in Upper New York Bay. This terminal is accessible through Buttermilk Channel, which has 40' depth and the berth is maintained at 32 feet deep. The entrances to the terminal gates are from the foot of Atlantic Avenue and from Congress Street (not in use). The primary function of this terminal is to handle breakbulk cargo. The closest major highway to the terminal is the Brooklyn Queens Expressway. The total length of the ship berth is 5,880

feet, for layout see Fig. M-11 [Ref. M14].

Operational Characteristics

The terminal has three cargo sheds (piers 6, 7, and 8). Based on the NYMTC survey, Piers 6 and 7 are currently leased by Continental Terminal Corp. and used as warehouses and barge storage, and for storing ships for repair. Occasionally pier 8 is used for breakbulk shipping by the contract charter lines and for temporary ship parking. The main commodities handled on this pier are Roll-on/Roll-off vehicles, coffee, paper, steel products, and break bulk general cargo. Imports are mostly from South America and the Caribbean [Ref. M15].

Future Improvement Plans

At present, the PANY&NJ has no plans to use this terminal for container trade.

HOWLAND HOOK TERMINAL

Howland Hook Marine Terminal is owned by the New York City Economic Development Corporation and managed by PANY & NJ. This terminal will be opened in fall 1995 and is operated by Howland Hook Marine Terminal Inc.

Contact Person:

* Ms V. Cross Kelly or Arie Van Tol, PANY & NJ,
or Mr. Michael Canavan, NYCEDC, 110 William Street, NY, NY 10038

Telephone:

(212) 312-3669

Facility location:

Howland Hook Marine Terminal
300 Western Avenue
Staten Island, NY 10303

Facility Manager:

Mr. Chris Ragucci, Vice President, Tel: (212) 952-1680
90 Washington Street, 16th Floor
New York, NY 10006

Physical Characteristics

Howland Hook Terminal comprises 187 acres [Ref.M15] and is located in Staten Island (Richmond County), just north of the Goethals Bridge [Ref.M14]. The Staten Island Expressway (SIE) is 0.5 miles away from the terminal. In addition, the terminal has excellent access to several interstate highways, besides the SIE (I-278), which are I-95, I-78, and U.S.1-9. It is also close to Newark International Airport and other intermodal facilities in the North Jersey region [Ref.M12]. The terminal has two entrances at the foot of Goethals Road North and Western Avenue (see Fig. M-11 for layout). Currently the terminal has 16 gates that are equipped with 13 scales. Four additional gates will be added in the future at the other entrance. All of these gates are computerized, so the cargo can move efficiently.

The terminal type is a container port and the primary cargo types that will be handled in the future are containers, general cargo, and breakbulk [Ref.M14]. The yard possesses a rail facility (Staten Island Railway - SIR) that is connected to Conrail at Cranford, New Jersey. Parallel to the wharf, this rail facility has a total of 3,800 ft. of rail track. This on-dock rail facility is an asset to the Howland Hook Terminal.

Arthur Kill Channel has 35' depth and 500 to 800' width with a future projected depth of 40'. The dredging of 150,000 cubic yards of sediment on the Arthur Kill is currently under way and will be completed tentatively in 1995 [Ref.M15]. The 2500 ft. long wharf has three deep berths. The berths are capable of handling three vessels simultaneously [Ref. M12] and will also be dredged to 40 feet deep, whereas the current depth is only 25 feet for the 500-foot berth and 30 feet for the 2000 foot berth [Ref. M14].

The available space for a stuffing and stripping facility is 208,000 square feet. One hundred fifty-one (151) acres of the space are open area for container storage and the remainder is shaded area for dry and hazardous cargoes [Ref. M15]. In addition, there is 22,000 square feet of refrigerated area. The terminal's parking spaces can accommodate up to 150 trucks simultaneously along the stripping facility [Ref. M15].

Equipment

The facility has seven container cranes, as well as yard hustlers, toploaders, hilos, and forklifts. The site contains 368 reefer outlets, and 13 scales [Ref. M16].

Operational Characteristics

During its peak operation in 1985, Howland Hook handled 110,000 containers. The terminal has the capacity to handle up to 400,000 containers annually [Ref. M15]. Within the first year of reopening the terminal is expected to handle 100,000 containers [Ref. M3], and the projected volume is 167,000 TEUs/year. The terminal is undergoing a renovation for $25 million. Once this facility is opened, the operator expects to have approximately 250 employees and

handle 250,000 to 400,000 cargo container's per year [Ref. M12]. Recently, the OOCL company purchased a share in the Howland Hook Marine Terminal (JOC 7/28/95). The port expert expected that, with the OOCL's investment, this terminal could become a mega terminal in the region.

The terminal is also equipped with a full maintenance/repair facility and roadability inspection station [Ref. M14]. There is an intermodal on-dock rail connection to SIR, wheeled and stacked. The most important intermodal linkages are ship/truck and ship/rail connections. The rail line that accesses this terminal can accommodate double stack trains [Ref. M12].

Issues

Some of the issues that may hinder the efficiency of the terminal are the federal and local policies on disposing of the contaminated sediment which results from the dredging. In the past, the contaminated sediment disposal issue caused a delay in the opening of Howland Hook. However, recently the issue of Howland Hook dredging that cost $ 17 million has been resolved. As per the Journal of commerce (7/28/95) the Port Authority and the City of New York are sending the contaminated sediment by barge and rail to a landfill in Utah. In addition, the terminal 's capability to handle double stack cargo is also dependent on the rehabilitation of the adjacent Staten Island Railroad. Without this rail connection the intermodal connection available is only between ship and truck.

Future Improvement Plans

The following are improvement plans for the terminal [Ref. M12,14,15]:

* Rehabilitation of the off-dock rail connection to Arlington Yard
* Rehabilitation of the adjacent Staten Island Railroad (15 miles)
* Rehabilitation of the terminal's electrical distribution system, including replacement of the 5KV station (completed)
* Paving restoration, repair of underdeck piles and support beams in the wharf area, restoration of the fender system, concrete deck rehabilitation, crane rehabilitation (completed)
* Installation of a new storm drainage system (completed)
* General terminal improvement (completed)
* Dredging and maintenance of Arthur Kill and Kill Van Kull channels
* Wharf renewal (completed)

The SIR is estimated to be operational in late 1996 or early 1997. Together with Howland Hook it is expected to generate 1700 jobs.

GREEN STREET LUMBER EXCHANGE TERMINAL

This terminal is operated and owned by the Lumber Exchange Terminal Inc. The facility is located in Greenpoint, Kings County, at the foot of Green and Huron Streets [Ref. M14].

Contact person:

* Mr. Stephen L. Stulman, Manager

Address:

171 West Street
Brooklyn, NY 11222,
Tel: (718) 383-5000.

For the facility layout see Figure M-8.

Physical Characteristics

This terminal covers 31 acres and is a bulk cargo type of terminal. The nearest major highway to the terminal is the Long Island Expressway and the Brooklyn-Queens Expressway, within a distance of a half mile[Ref. M12].

The primary access to the facility is from West Street and the secondary access is from Green Street. In addition, there is also access from Commercial, Dupont, Franklin, and Freeman Streets[Ref. M12].

The access channel is from East River - Newton Creek. The Green Street Pier has a 35 foot draft. Based on the NYMTC survey, the terminal operator stated that the terminal condition is acceptable. The terminal has two berths which are the south side, with a measurement of 700 feet long and 35 feet deep, and the north side, with a measurement of 700 feet long and 28 feet deep [Ref. M12].

The number of truck parking spaces are over 1000. The facility has one finger pier for vessel docking. Warehouses are available, but there are no refrigeration services or other special handling capabilities [Ref. M12].

Operating Characteristics

On average, there is one ship arriving per month and these ships are mainly bulk carriers with a typical capacity of 30 to 40,000 tons (gross)[Ref. M17]. The facility currently employs 20 to 30 persons, depending on the amount of work. The typical transfer time from one mode to another, which is typically from ship to truck, from rail (by barge) to truck, or truck to truck,

is 20 minutes plus five minutes for administrative processing time. The facility uses reliable low-technology for billing and other data processing [Ref. M12].

Commodities

The primary cargo is lumber that comes mostly from Western Canada arriving via water, rail, or truck with a typical volume of 2,000 tons of lumber per month for domestic and 8,000 tons per month for international shipment [Ref. M12].

The lumber shipping lines that are using the terminals are Saga Shipping, Gearbulk Inc., Canadian Transport Inc., Sanko Kisen Group, Star Shipping, West Ship International, and Western Bulk Carriers [Ref. M17].

Issue

The lack of a rail car-float bridge is a serious limitation to this facility, since the nearest rail siding from the terminal is one mile away. Other barriers listed as the hindrance for an optimum operation is competition from the Port of New York and New Jersey and the high cost of cargo transfer to MTA-LIRR [Ref. M12]. The terminal operator suggested, based on the survey's result, for the MPO to promote the New York waterfront development. Also, the operator commended the MPO's increasing interest in freight transportation.

Future Improvement Plans

* To build a car-float bridge [Ref. M12] with government financial assistance.

BROOKLYN NAVY YARD TERMINAL

This facility is operated by Brooklyn Navy Yard Development Corporation and is located at the Brooklyn waterfront. It is no longer a marine terminal.

Contact person:

* Mr. Richard Drucker, VP

Address:

Brooklyn Navy Yard Bldg.292/3rd Floor
Brooklyn, NY 11225
Tel: 718-852-0425.

Physical Characteristics

The Brooklyn Navy Yard Terminal covers 260 acres. The former marine terminal is presently used as a ship repair facility. The nearest highway is the Brooklyn-Queens Expressway.

The primary access roads to the facility are from Flushing and Clinton Avenues, and the secondary access roads are from Kent and Clymar Streets. These roads are in fair condition. The access channel is East River Channel. In addition, the terminal has a float bridge and an on-dock connection to the MTA-LIRR, which is currently not being utilized [Ref. M12].

Operating Characteristics

None, but this terminal may have a potential for future development depending on the general marine industry growth and the intermodal transportation trends in the New York City area. The terminal may also be used as a passenger ferry terminal in the future.

Peripheral Network (Marine Terminals outside of NYMTC region)

The port of Newark/Elizabeth is not only important at the local and state level, but at the national and international level as well. It handles more than 12 million long tons of container cargo a year and more than 900,000 containers. The Elizabeth Marine Terminal is the most active container port in North America. In addition, more than five million long tons of bulk and ro-ro cargo pass through Port Newark annually (see Fig. M-5 for layout)[Ref. M10].

New Jersey Terminals

Port Newark/Elizabeth Marine Terminals:

Contact person:

* Ms.Victoria Cross Kelly, PANY&NJ,260 Kellog St, Pt. Newark, NJ 07114, or Mr. R. Hoban, Tel: 201-589-7100

Bay Avenue Marine Terminal

This terminal is owned by the Port Authority of New York and New Jersey and operated by American Stevedoring Ltd. The terminal is located at the Port Newark/Elizabeth Marine Terminals complex in Union County, New Jersey.

Contact person:

* Ms. V. Cross Kelly, PANY&NJ, Tel: 201-589-7100
  or Mr. Don Hamm, American Stevedoring
  Tel: 908-351-5600

For the facility layout see Fig. M-12.

Physical Characteristics

The Bay Avenue Marine Terminal covers 94 acres and is a ro-ro/container cargo type terminal [Ref. M14]. The nearest highway is the New Jersey Turnpike (exit 13A) with a distance of less than one mile.

The primary access road is East Fleet Street and the secondary access road is from Bay Street. Access roads are in fair condition [Ref. M15]. The access channel is Newark Bay. This terminal has a ship berth with a total length of 2,825 feet. The depth at dock was dredged to 35 feet in 1994. Warehouse facilities are available, but without refrigeration services. However, there are approximately 212 reefer plug slots available [Ref. M14].

The terminal used to have three cranes, but last year the cranes were moved to Universal Terminal except one Paceco crane which is in good condition [Ref. M15]. The stuffing & stripping facility covers 62,680 sq. ft. An intermodal connection is made possible due to the connection with the adjacent ExpressRail intermodal facility. There is a maintenance/repair shop and roadability inspection service within the facility [Ref. M14].

Operating Characteristics

Based on the survey, the PANY&NJ representative stated that this terminal is currently inactive as a deep sea marine terminal, but they use it as a stuffing and stripping facility for the overflow demand from Maher Terminals or Universal Terminals. The terminal is also used for carfloat transport across the river to Brooklyn terminals. The typical cargo handled in the terminal is general cargo/containers.

Future Improvement Plans

The PANY&NJ plans to activate the terminal, possibly by 1996.

Maher Fleet Street Terminal

Maher Fleet Street Marine Terminal is owned by PANY&NJ and operated by Maher Terminals Inc. This terminal is located in the Port Newark/Elizabeth Marine Terminals complex, Union County, New Jersey.

Contact person:

* Mr. Frans VanRiemsdyk, Maher Terminal Inc.,
Journal Square Plaza,
Jersey City, NJ 07306.
Tel: 201-963-2100

For the facility layout see Fig. M-12.

Physical Characteristics

The Maher Fleet Street Terminal covers 200 acres and it is a ro-ro/containers cargo type terminal with the nearest major highway being the New Jersey Turnpike (I- 95, exit 13A), at a distance of 2.5 miles [Ref. M12].

The primary access is from Lyle King Street and the secondary access is from Corbin Street. Both streets need improvement [Ref. M15]. The access channel is Elizabeth Channel which has a width of 800 ft and a depth of 35 ft MLW.

There are eight ship berths with a total length of 4,200 feet. The depth at the dock is 35 feet. The terminal condition is fair and it has warehouses, but no refrigeration services available [Ref. M12]. Maintenance shops include on-site container and chassis repair, reefer maintenance/repair, and roadability inspection.

Intermodal connection is via the adjacent ExpressRail facility. The facility is capable of stacking 360 chassis vertically, and there is also a trucking maintenance service [Ref. M14]. The rail terminal is located 900 yards from the ship berths [Ref. M12].

Equipment

This facility is equipped with 2 Star cranes and 5 Paceco cranes. Other equipment are straddle carriers, yard hustlers, stackers, toploaders, empty-handlers, flat beds, and mafis 20/40 [Ref. M14].

Operating Characteristics

The terminal handles container ships, pure car carrier ships, and ro-ro ships. The available intermodal linkages are between ship and truck, ship and rail, and ship and barge. Presently, there are 450 employees in the terminal [Ref. M12]. Computer access is via on-line VAX Cluston, which is integrated with the terminal management systems and the steamships' accounts [Ref. M14].

Typically, there are sixty-five ship arrival/sailings per month. There are 22 regular steamship lines served by Maher. Both Maher terminals handle approximately 3,000 truck transactions per day or equivalent to 600,000 containers per year. The estimated volume of cargo is 400,000 TEUs per year. The transfer time between modes is seventy autos per hour or twenty-two units per hour for containers. The delay in the transfer process is insignificant. Advanced technologies used in the terminal are E.D.I (Electronic Data Interchange) and Barcoding [Ref. M12, M15]. The new chassis depot and empty-container station will further reduce the truck drivers delay in the terminal.

Future Improvement Plans

The operator plans to do general facility improvement and maintenance, dredging the ship's berth to 40 feet, to build a new gate complex and on-dock terminal in 1995. The interim on-dock terminal was opened in 1991 and operated by Maher Terminal Inc. The 32 acre permanent facility will be opened in fall 1995; the cost is $ 12.5 million. This on-dock rail facility will have 15,000 feet of track and 1,800 foot long loading tracks. In 1994, this on-dock rail facility handled 72,000 boxes and is expected to increase its handling capacity to 100,000 boxes in 1995 (JOC 3/7/95). Moving excess equipment to an off-terminal site is currently under evaluation.

Also, the operator would like the NJDOT to solve grade crossing problems and address insufficient turning radius for trucks on Corbin Street [Ref. M12].

Commodities

The commodities handled are general cargo (freight of all kinds) and automobiles [Ref. M12].

Maher Tripoli Street Terminal

This terminal is owned by the PANY&NJ and operated by Maher Terminals Inc. Maher Tripoli Street Terminal is located in the Port of Newark/Elizabeth Marine Terminals complex, Union County, New Jersey.

Contact person:

* Mr. Frans VanRiemsdyk, Maher Terminal Inc.

Address:

Journal Square Plaza,
Jersey City, NJ 07306.
Tel: 201-963-2100

For facility layout see Fig. M-12.

Physical Characteristics

The terminal covers 243 acres and it is a ro-ro/container cargo type terminal with the nearest highway being the New Jersey Turnpike (I- 95 exit 13A) at a distance of 2 miles [Ref. M12].

The primary access is from Tripoli Street and the secondary access is from Bay Street. Tripoli Street has a grade crossing for local train and the intersection with McLester Street has a narrow turning radius that creates a dangerous situation for large truck movements, especially in bad weather [Ref. M15]. The access channel is Elizabeth Channel with a 1,810 foot long pier head. There are five ship berths with a total length of 3,150 ft and the depth at the dock is 38 ft MLW.

Based on the survey's response the terminal's condition is fair [Ref. M12]. Warehouses are available, but without refrigeration services. A maintenance/repair shop including on-site container and chassis repair, reefer maintenance/repair, and roadability inspection are also available.

The terminal is equipped with 3-Morris (30 LT), 3-Paceco (40 LT), and 1-Canron (40 LT)

cranes. In addition, there are also yard hustlers, stackers, toploaders, forklifts, empty-handlers, flat beds, mafis and transtainers [Ref. M14].

The terminal has computer access via the on-line VAX Cluston system which is integrated with the terminal management systems that directly access the steamship's accounts.

The stuffing and stripping facilities cover 371,000 square feet [Ref. M14]. The available intermodal linkages are ship and truck, ship and rail, and ship and barge [Ref. M12].

This intermodal connection is adjacent to the ExpressRail facility. This terminal is capable of stacking 1,280 chassis in a vertical position [Ref. M14]. The rail terminal is located 1,800 yards from the ship berths. There are 2 outgoing trains per week day. The terminal is capable of handling doublestack operations. The trains destinations are mainly Chicago and Canada.

Operating Characteristics

The primary vessels docked in this terminal are containers and ro-ro ships. This terminal handles general cargo and containers. The number of employees is approximately 400 persons. Typically, the terminal receives about forty-five ships arrival/sailing per month. The transfer time from ship to shore is twenty-one containers per hour. Based on the survey's response, the delay during the transfer process is insignificant. The volume of cargo handled in this terminal is approximately 380,000 TEUs. The advanced technology that is currently being used in the terminal includes E.D.I (Electronic Data Interchange) [Ref. M12]. Based on the Port manager information, there are typically 1,500 - 2,000 gate transactions per day.

Future Improvement Plans

The improvement plans cover general facility improvement and maintenance, dredging of the berth to 40 feet, and building a new on-dock terminal that will be completed in fall 1995 [Ref. M12].

Universal Marine Terminal

The Universal Terminal is owned by the PANY&NJ and is operated by Universal Maritime Services Corp. (UMS). This terminal is located in the Port Newark/Elizabeth Marine Terminals complex, Essex County, New Jersey. This terminal is adjacent to Maersk terminal. According to the NYMTC survey both terminals are unified [Ref. M12].

Contact person:

* Ms. V. Cross Kelly, PANY&NJ, Tel: (201) 332-1166 or 589-7100

* Mr. Carmine Pizzariello, Vice President
UMS Corporation
Tel: (201) 817-5038

Address:

Universal Maritime Services Corp.
231 Tyler Street, Port Newark, NJ 07114

For the facility layout see Fig. M-10.

Physical Characteristics

This terminal covers 154 acres. Its primary cargo types are ro-ro and containers. The nearest highway to this facility is the New Jersey Turnpike (I-95, exit 14), within a distance of three miles [Ref. M12].

The entrance gate is on Calcutta Street. The primary access is from Tyler Street and the secondary access is from Corbin Street. These roads are in fair condition.

The access channel is Elizabeth Channel with an 800 foot pier. The total length of the six ship berths is 3,822 feet with the dock's depth of 35 feet to 37 feet. In September 1994, 1200 feet of dock space was sheeted down to 42 feet deep in order to accommodate deep-draft vessels [Ref. M3]. Based on the NYMTC survey response, the terminal condition is fair.
A warehouse is available, but there are no refrigeration services. However, this terminal has 248 reefer plug slots. In addition, this terminal has its own maintenance/repair facility, including roadability inspection and mobile units. The terminal is equipped with a comprehensive computer system (IBM).

The stuffing and Stripping Facilities cover approximately 250,000 sq. ft. [Ref. M14]. The truck parking facility has 6,000 container slots. The available intermodal linkages are between ship and truck, ship and rail, and ship and barge. The intermodal connection is provided by ExpressRail facility. The rail terminal is located less than 1 mile from the ship dock [Ref. M12].

Equipment

The available equipment are seven cranes and others, such as yard hustlers, toploader, and forklifts [Ref. M14]. Currently, the cranes are being upgraded to a 100 foot rail. These cranes improvement will cost $ 5 million [Ref. M3].

Operating Characteristics

The primary cargo types are containers and ro-ro. The commodity type is freight of all kinds.

The number of employees is approximately 500. There are approximately thirty-five ships arrival/sailing per month. In 1994, this terminal handled approximately 200,000 containers [Ref. M3], and the approximate volume was 350,000 TEUs per year. Based on the survey's response, the transfer times from ship to shore is twenty containers per hour. The delay time during the transfer process is insignificant [Ref. M12]. The steamship lines using the terminal are Maersk, NOL, Granco, Croatia, Argentine Lines and Sea-Land. Origin and destination of cargo are worldwide.

Future Improvement Plans

This plan covers general facility improvement and maintenance, to build an on-dock rail terminal, deepening the berths, and to maximize the use of advanced technology.

Maersk Line Terminal

Maersk Line Terminal [Ref. M18] is owned by the PANY&NJ and is located in Port Newark/Elizabeth Marine Terminals complex, Essex County, New Jersey.
Maersk and Universal are unified terminals, therefore most of the information, except about some physical characteristics should be read from the Universal terminal section [Ref. M12]. The operator of this terminal is the Universal Maritime Services Corp (for contact person see Universal Terminal section).

For facility layout see Fig. M-10.

Physical Characteristics

The terminal encompasses 64 acres, with its entrance gate located on Tyler Street and the nearest major highway being the New Jersey Turnpike. The length of the ship berth is 764 feet and the dock's depth is 37 ft MLW [Ref. M14]. The terminal's condition is fair and warehouses are available without refrigeration services. However, the terminal has 192 refer plug slots and it has a complete on-site maintenance facility with 8-bays maintenance/repair shop and roadability inspection, 6-bays garage, and one bay reefer shop. The stuffing and stripping facilities cover 175,000 sq. ft [Ref. M12]. The intermodal connection is provided by ExpressRail facilities.

Equipment

The terminal is equipped with 3-Paceco (50 and 40-ton), 1-Star (30/40-ton) cranes and other equipment, such as stackers, toploaders, and Hi-Los. Computer access is via IBM on-line system. There is an advanced Electronic Data Processing (EDP) system providing information on the position of any given cargo anywhere in the world [Ref. M14].

Operating Characteristics

The primary cargo types are containers and ro-ro, the commodity types are freight of all-kinds. The estimated volume of cargo handled in this terminal is 250,000 TEUs per year.

Future Improvement Plans

The plan covers general facility improvement and maintenance, to build an on-dock terminal, and to use more advanced technology in terminal operation [Ref. M12].

Sea-Land Terminal

This terminal is owned by the PANY&NJ and operated by Sea-Land Inc. This terminal is located in Port Newark/Elizabeth Marine Terminals complex, Essex County, New Jersey.

Contact person:

* Ms. Victoria Cross Kelly/Mr. R. Hoban, PANY&NJ
  Mr. Nick Taro, North-East Operations, Sea-Land Inc.
  Ms. Nancy Bartulewicz, Sea-Land

Address:

5080 Mc.Lester St, P.O. Box 2000
Port Elizabeth, NJ 07207
Tel: (908) 558-6001.

For facility layout see Fig. M-10.

Physical Characteristics

The terminal covers 265 acres and is a ro-ro/containers cargo type terminal. The nearest highway is the New Jersey Turnpike (I-95, exit 13A), at a distance of approximately 2 miles.

The primary access is from McLester Street and the secondary access is from Tripoli Street. Access condition is not good, as described in the previous section (Maher terminals) with narrow intersections with insufficient turning radius. In addition, there is an insufficient turning radius and congestion at North Avenue [Ref. M12].

The access channel is Elizabeth Channel with a depth of 35 ft MLW and the total length of the ship berths is 4,519 feet with the depth at the dock 40 feet MLW. The terminal's condition is fair. Warehousing is available without refrigeration services, but it has 468 reefer plug

slots. This facility has a complete on-site maintenance facility and roadability inspection [Ref. M14].

The stuffing and stripping facilities cover 306,000 sq. ft. The terminal can accommodate 6,000 container parking slots. Intermodal linkage is between ship/truck, ship/rail, and ship/barge. The rail intermodal connection is provided by ExpressRail facility. The rail terminal is located approximately 0.5 miles from the ship berths [Ref. M12].

Equipment

The facility is equipped with 1-Mitsubishi (40-ton) and 5-Paceco (30-ton) cranes and other equipment such as toploaders, forklifts, and transtainers [Ref. M14].

Operating Characteristics

The primary cargo types are containers and ro-ro. The commodity types are freight of all kinds. The Sea-Land facility serves more than 100 countries which primarily are Western Europe, the Caribbean, and the Middle East. Sea-Land owns 37 vessels out of 83 vessels that are operating in this port. Other main ship lines operating from this port are Hanjin, NedLLoyd (Danish flag), P&O, OOCL (Orient Overseas Container Line), and Maersk Lines. All these ships are foreign flags. Recently, Sea-Land and APL have been approved by MARAD to carry the foreign flag [Ref. M19].

Sea-Land employs approximately 600 people. The local stevedoring company serves 9-10 vessels per week. In 1994, Sea-Land terminal handled 385,000 container lifts (empties and full) and for 1995 417,000 container lifts were projected [Ref. M3]. In general, the terminal handles approximately 30 arrival/sailing ships per month, and the volume of cargo is estimated at 350,000 TEUs per year. The transfer time from ship to shore is approximately 27 containers per hour. Delays in the transfer process are insignificant. However, the operation could be more efficient if an on-dock rail terminal existed, whereas at present, containers are drayed to off-dock terminals [Ref. M12].

Presently, the advanced technology in operation is EDI. Sea-Land is in the process of installing a new gate system in their terminals (TAS - terminal automated system) and introducing the application of "Sea Link" magnetic card. This card will bring up the delivery information to the terminal's computer screen and a document will be printed with the information about the container's location or where the available space is to put the container. This method will enhance terminal operation tremendously and minimize the truck driver's waiting time. In addition, new trucker ID with photograph will also enhance the speed of security checks (this method will eliminate the regiscoping method which is currently being used and creates bottlenecks in the delivery windows) by doubling the current capacity of the gates [Ref. M20].

Computer-integrated terminal operation, with real-time access to an international computer network, is the other example of advanced technology in use [Ref. M14].

Future Improvement Plans

The operator's plan covers general facility improvement and maintenance such as paving, lighting, maintaining the water depth of 40 feet (so it can accommodate bigger ships), to build an on-dock terminal, and to use more advanced technology for its operation, such as an advanced gate system, electronic tagging, to monitor internal movement and speed up the administrative process for trucks.

Other New Jersey Marine Terminals

GLOBAL MARINE TERMINAL

This terminal is owned by the Global Terminal & Container Services Inc. and is operated by OOCL (Orient Overseas Container Line), Tung Group. The facility is located in the upper New York Bay, Jersey City, Hudson County, New Jersey.

Contact person:

* Mr. J. Kukucka, Manager

Address:

PO Box 273, 302 Port Jersey Blvd.
Jersey City, NJ 07305
Tel: 201-451-5200

For facility layout see Fig. M-9.

Physical Characteristics

Global Marine Terminal, which is the only privately owned container terminal in the Port District, covers 110 acres [Ref. M12]. The type of commodity handled by this port is freight of all kinds and the primary cargo types are containers, ro/ro, and heavy lift.

The nearest highways to the facility are the New Jersey Turnpike and Routes 1&9, within a distance of approximately 1.5 miles.

To reach this facility, the primary access is from Port Jersey Boulevard and the secondary accesses are Routes 1 and 9. The access channel is Port Jersey Channel with a depth of 35 feet MLW. There are two berths with a total length of 1800 feet and a depth of 40 feet MLW.

The channel will be dredged to 40 feet.

Based on the NYMTC survey response the terminal condition is fair. An enclosed warehouse is not available in the facility, but the stuffing and stripping facility encompasses 125,000 square feet [Ref. M14].

The terminal has 19 gates and the gates turn around time has improved significantly. The facility is equipped with the IBM real-time on-line system.

A truck parking facility is available for 5,860 spaces/grids [Ref. M12]. This facility has the capacity for 324 chassis with chassis flipper and horizontal chassis rotator [Ref. M14]. Intermodal linkages are available between ship and truck, ship and rail, and ship and barge.

There is a drayage service to the nearby ExpressRail intermodal rail terminal. There are 86 reefer plug slots available [Ref. M14].

Equipment

The facility is equipped with 3-Star (40-ton) and 1 Krupp (40 tons) cranes. The other equipment consists of mobile yard gantry cranes, toploader, sideloader, and forklifts. Additional equipment was added recently, such as top loaders and yard hustlers.

Operating Characteristics

The primary cargo types are containers, ro-ro, and heavy lift. The approximate volume of cargo handled in this terminal is 167,000 TEUs per year. The commodities are general cargo (freight of all kinds)[Ref. M14]. The type of vessels coming to the ports are container and cellular. There are approximately 21 ships arriving and sailing per month. In 1994, this terminal handled 100,000 containers with 10 to 15 percent projected growth for 1995 [Ref. M3]. The facility has approximately 50 employees [Ref. M12].

Future Improvement Plans

Currently there is no specific improvement plan except to maintain the channel to 40 feet, and regular maintenance of the facility. The terminal operator mentioned that the federal policies in dredging may create a barrier to efficient intermodal operations.

AUTO-MARINE TERMINAL

The Auto Marine Terminal is owned by the PANY&NJ and is operated by the North East Auto Terminal Inc. This terminal is located in Jersey City, Hudson County.

Contact person:

* Mr. J. Malone/R. Hoban, PANY & NJ
  or Mr. Dave Husak, Manager, NEAT Inc.

Address:

403 Port Jersey Boulevard
Jersey City, NJ 07305
Tel: 201-432-7335.

For the facility layout see Fig. M-9.

Physical Characteristics

Auto Marine Terminal covers 147 acres and its primary cargo is automobiles. The entrance gates are at Port Jersey Boulevard and the nearest highway is the New Jersey Turnpike Extension (I-95 exit 14C) at a distance of approximately 3 miles.

The primary access is from Port Jersey Boulevard and the secondary access is from Berth Access Road. The access channel is Port Jersey Channel which measures 375 feet wide and 35 feet deep at MLW. The total lengths of the two ship berths are 1800 feet with depth at dock of 32 feet MLW which is sufficient for car ships [Ref. M12, 14].

Presently, based on the survey response, the terminal's condition is fair. The terminal has one warehouse with a size of 100,000 square feet, that stores auto parts. The facility also has an on-site maintenance/preparation facility and a separate area for auto distribution and auto services. The intermodal linkages are between ship and truck and ship and rail. An off-dock rail connection exists within an approximate distance of 1 mile from the dock [Ref. M12].

Operating Characteristics

The major cargo type is automobiles (import and export). Mostly these cars are imported from Germany and Japan [Ref. M14]. This facility employs 91 people.

About 20 ships arrive and sail from this port every month and all the vessels are pure auto carriers. Typically, the transfer time per car from ship to shore is around 75 autos per hour. Delay during transfer from one mode to another is insignificant. The facility does not have any crane, but it utilizes barcoding technology to speed-up the car turnaround time, electronic billing, and a full security system [Ref. M12]. The trucks that distribute the cars park on the site, typically 500 trucks at a time [Ref. M14].

Future Improvement Plans

The improvement plan covers general facility improvement and maintenance, to build an on-dock terminal, and to use more advanced technology for its operation.

GREENVILLE TERMINAL

This terminal is located on the New Jersey shore and is an intermodal terminal servicing both marine and land customers. In the future this terminal will provide an important link between ship and rail. There is a constant flow of carfloats to Brooklyn shore terminals carrying various cargo, which includes a large amount of waste. This waste is loaded on trains and moved to the final destination which is Sierra Blanca in Texas. A connection to Staten Island shore is also planned.

For more information see rail terminal inventory report (chapter 3).

Connecticut Shore Terminals

The Port of New Haven in Connecticut includes several terminals operating on Long Island Sound. Most of these terminals handle petroleum tankers for U.S. oil companies. Three important marine terminals located on the eastern shore of New Haven Harbor about 0.5 mile south of Interstate Route I-95, handle various types of dry and liquid bulk cargoes and some containers. They are owned and operated by New Haven Terminal Inc. and Gateway Terminal Inc.

NEW HAVEN TERMINAL

This terminal is located in Connecticut and this facility is owned and operated by New Haven Terminal Inc.

Contact Person:

* Mr. Martin Tristine, Vice President
  or Mr. Hank St.Lauren

Address:

PO Box 9429
100 Waterfront Street
New Haven, Conn. 06534-0423
Tel: 203-469-1391

For the facility location see Fig. M-3.

Physical Characteristics

New Haven Terminal is located on the New Haven harbor. The closest major highway is I-95 exit 49 within a distance of 500 yards from the terminal. Also, Route I-91 and Route 1 are nearby [Ref. M12].

This terminal type is a mixed cargo terminal. It is the largest independent liquid terminal in New England with over 2.5 million barrels of storage for chemicals and petroleum. The primary access to the facility is Stile Street and the secondary access is from Route 1. The access channel is New Haven Harbor channel, which is 35 feet deep. Originally this terminal was only a warehouse with one tank and one deep water berth. Currently, this terminal has docking facilities that can accommodate six ships, 700,000 sq. ft. of warehouse space, and 65 acres of outside storage.

This facility has 3 ship berths with 35 feet and 39 feet draft MLW. These berths are 650 feet long each and can accommodate ships up to 750 feet long. The truck loading facilities can accommodate up to 200 trucks per day . They have two 60 ton truck scales and 33 tank truck loading positions. Truck parking facilities can accommodate up to 30 trucks at one time.

In addition, this facility is equipped with 6 cranes, 100 forklifts, 5 straddle carriers, 24 flatbed trailers, 12 tractors, 2 hustlers, and 2 dump trucks. Intermodal connections available from this terminal are: between ships, barges, rail, truck, and jet fuel pipelines. The on-dock rail has a capacity for 5 rail tank cars and a private siding for loading and unloading with services provided by P & W.

Operating Characteristics

New Haven Terminal receives 20 ships per month, which mainly are breakbulk ships with an average capacity of 45,000 tons. The facility employs 85 persons. Origin and destination of these ships are worldwide and the typical tonnage is 60-80,000 tons per month [Ref. M21].

Commodities

Main commodities that are coming and going from this terminal are petroleum, chemicals, copper, aluminum, zinc, lead, tin, nickel, steel, paper products, woodpulp, crane parts, automobile, containers, pig iron, pumice, ferrous scrap, non-ferrous scrap, heavy lift, and lumber (Table M-4).

GATEWAY TERMINAL

This facility is situated approximately 68 miles from New York City and 179 miles from Boston and is owned and operated by Gateway Terminal, Inc. [Ref.M4].

Contact person:

* Mr. Orest T. Dubno, Tel: (203) 469-5956

Address:

Gateway Terminal, 400 Waterfront Street,
New Haven Connecticut 06512

For the terminal layout see Fig. M-15 and M-15A.

Physical Characteristics

This terminal is located on the eastern shore of New Haven Harbor. The nearest major

highways are I-95 at a distance of 0.3 miles, I-91. The most important intermodal linkages are between ship and truck, ship and barge, and ship and rail. The terminal is linked by an off-shore dock in New Haven to the Conrail rail system. The Boston & Maine Railroad offers service to Canada, Buffalo, and Washington, D.C.

This facility is equipped with a petroleum tank farm and oil discharge facility, cement silo storage and freight handling complex, and a newly constructed concrete pier (750 feet) that can provide berthing for 2-3 vessels at the same time.

The equipment available includes a gantry and crawler cranes, two manitowoc crawler cranes, and two new high-speed/high lift capacity link-belt cranes. Dry bulk facilities include three berths for ocean-going vessels up to 35' draft MLW (mean low water).

Operating Characteristics

This facility has its own petroleum transfer and oil storage tank farm with a capacity of approximately 500,000 barrels and has an arrangement with nearby Gulf Oil to utilize their equipment. The terminal handles not only oil products, but also a wide range of dry cargos.

The types of dry bulk and semi-bulk cargos handled are:

> Agricultural Products, coal, ferrous ores and alloys, fertilizers, forest products, heavy duty vehicles, metal, minerals, and miscellaneous palletilized, pre-slung or strapped cargos.

CILCO TERMINAL

Cilco terminal is situated at 535 Seaview Avenue, Bridgeport, Connecticut [ref.M21].
This terminal is owned and operated by New Haven terminal Inc.

Contact person:

* Mr. Hank St.Laurent, Tel: (203) 469-1391 ext.255.

Address:

> 100 Waterfront Street, New Haven, CT 06534

Physical Characteristics

This terminal is located on Bridgeport Harbor. The nearest major highways are I-95, exit 29 within a distance of 0.25 miles, I-91, and Route 1. The terminal covers 27 acres. There are

80,000 sq. ft. of temperature controlled warehouse space, 20,000 sq. ft. of heated warehouse space, 100,000 sq. ft. of covered dry space, and 20 acres of open land for storage. The intermodal linkages are among ship, barge, and truck. The truck loading facility has the ability to serve 140 trucks per day. The stevedoring equipment consists of 2 dockside cranes (up to 250 ton capacity), 48 forklift trucks including 30 electric forklifts, and 2 hustler yard jockeys for container yard shifting. The facility has a 110 ft. dock with 33' draft MLW.

Operational Characteristics

The main cargos handled are fruits, juices, containers, paper, automobiles, and project cargo. This terminal is capable of handling 140 trucks per day and handles approximately 700,000 tons of cargo per year.

References for chapter II - Marine

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M2 "Port of the Future", Containers News, October 1990
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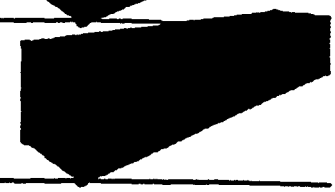
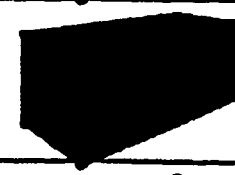
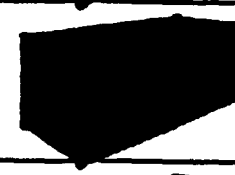
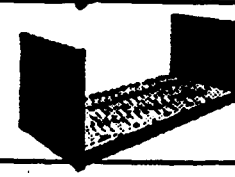
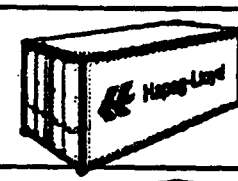
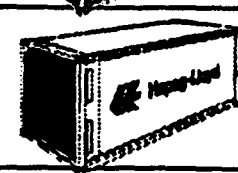
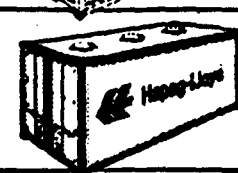
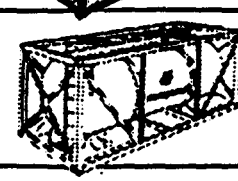
M4 Gateway Terminal - Brochure
M5 Good Movement Characteristics in the NYC Region, UTRC, 1993
M6 Journal of Commerce, October 13, 1994
M7 Intermodal Coordination Study, 1994
M8 Oceanborne Foreign Trade Handbook, PANY&NJ, 1994
M9 Via International, May 1994, PANY&NJ
M10 "More Ships, More Trains, More from the PANY&NJ" Brochure
M11 Study of Brooklyn and East River Marine Terminals, by PANY&NJ, July 1989
M12 NYMTC's Intermodal Freight Inventory Questionnaire, October 1994
M13 Note of Conversation regarding Marine Facilities with Mr. Hamm and others, on January 31, 1995
M14 1991-92 Port of New York & New Jersey Guide, by PANY&NJ
M15 Note of Conversation regarding Marine Facilities with Mr. D. Lombardi, D. Lotz and others, on January 31, 1995
M16 Howland Hook Marine Terminal - the PANY&NJ brochure issued by Express Port
M17 Note of Conversation with Mr. Stulman from Lumber Exchange Terminal Inc., on 2-2-95
M18 "Logistics", January 1995
M19 Note of Conversation regarding Marine Facilities with Mr. W. Hamlin from Sea-Land Services, on February 6, 1995
M20 Journal of Commerce, February 8 and July 17, 1995
M21 New Haven Terminal and Cilco Terminal - brochure
M22 Economic Impact of the Port Industry on the New York - New Jersey Metropolitan Region, PANY&NJ, 1990
M23 The Technology Review Study, PANY&NJ, 1994
M24 Port of NY & NJ, Oceanborne Foreign Trade Handbook, 1993
M25 Landside Access to U.S. Ports, USDOT, Maritime Administration, 1993

List of Figures and Tables for Chapter II - Marine

Fig. M-1

Source: Intermodal Coordination Study, North Jersey Transportation Planning Authority Inc., March 1994

Container-Equipment

Standard Container	20' 40'	
High Cube Container Specially for light-weight, voluminous cargo.	40'	
Hard Top Container With removable steel roof. Specially for heavy cargo and excessively high cargo. For loading from above or from the door with door header swung out.	20' 40'	
Open Top Container With removable tarpaulin. Specially for excessively high cargo. For loading from above or from the door header swung out.	20' 40'	
Flat Specially for heavy cargo and excessively wide cargo.	20' 40'	
Platform Specially for heavy cargo and extra large cargo (not for inland transport).	20' 40'	
Ventilated Container Specially for cargo which has to be ventilated.	20'	
Insulated Container Specially for cargo which must be kept at a constant temperature. Temperature control via the ship's refrigeration plant, terminal refrigeration plant or a "clip-on" refrigeration plant.	20' 40'	
Reefer Container With integrated refrigeration plant. Specially for cargo which must be kept at a constant temperature.	20' 40'	
High Cube Reefer Container With integrated refrigeration plant. Specially for light-weight, voluminous cargo which must be kept at a constant temperature above or below freezing point.	40'	
Bulk Container Specially for bulk cargo, e.g. malt.	20'	
Tank Container Specially for liquid chemicals. Selected containers are used exclusively for the transport of liquid foodstuff.	20'	

Hapag-Lloyd Containerships

Fig. M-2

Source: Intermodal Coordination Study, Commissioned by the North Jersey Transportation Planning Authority, Inc., March 1994

	TEU
CMS Humboldt Express	2181

CTS Canada Express	1685

CMS Canbia Express	1386
CMS Sierra Express	1474

CMS Berlin Express	2716

CMS Düsseldorf Express	2594
CMS Nürnberg Express	2594
CMS Köln Express	2594

CMS Bonn Express	2803
CMS Heidelberg Express	2803

CTS Bremen Express	2986
CTS Tokio Express	2986

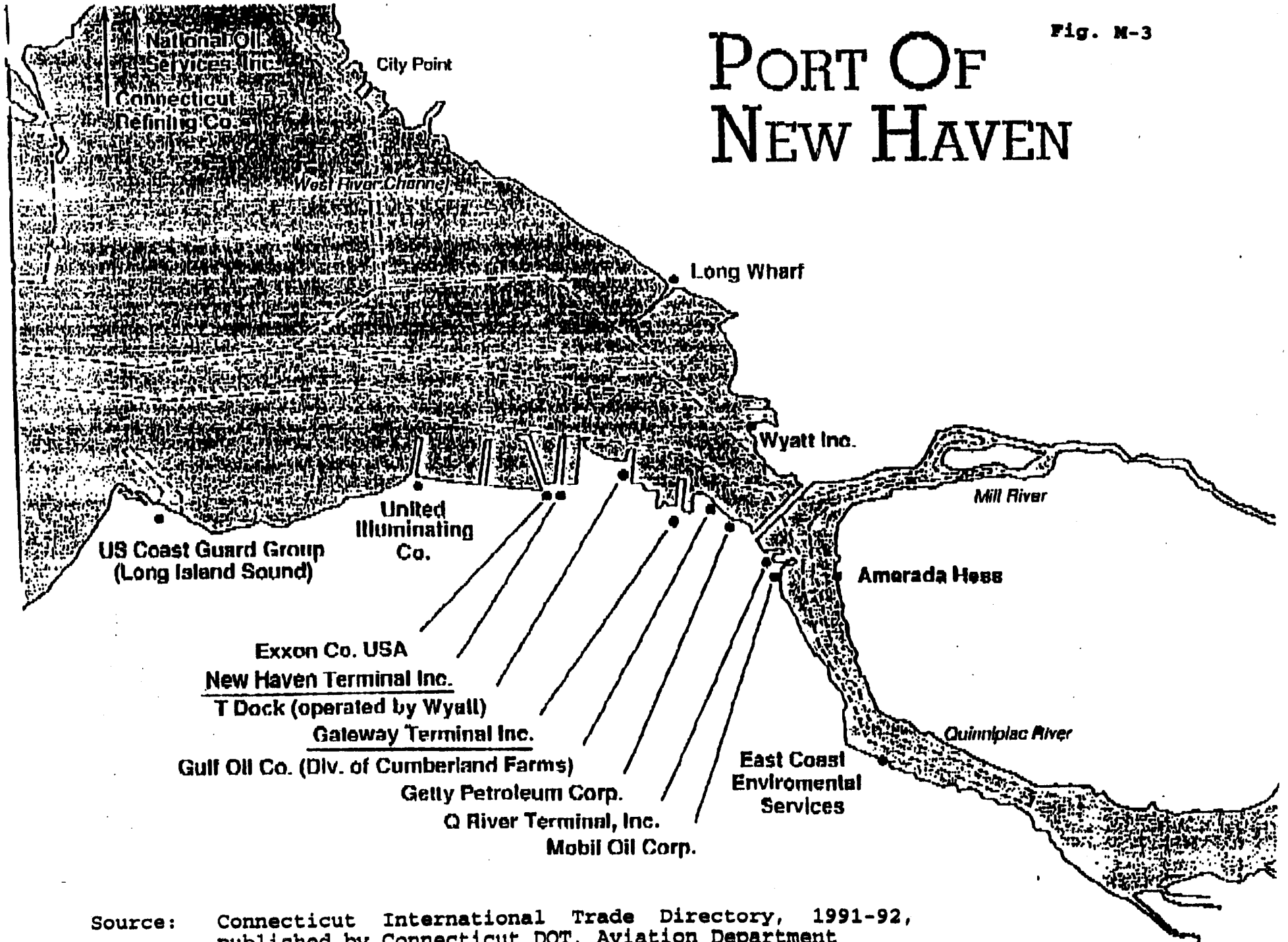
CMS Frankfurt Express	3430

CMS Hannover Express	4409
CMS Leverkusen Express	4409
CMS Dresden Express	4422
CMS Hoechst Express	4422
CMS Ludwigshafen Express	4422
CMS Essen Express *	4422
CMS Stuttgart Express **	4422
CMS Hamburg Express**	4422

* Delivery 1993
** Delivery 1994

Fig. M-3

PORT OF NEW HAVEN

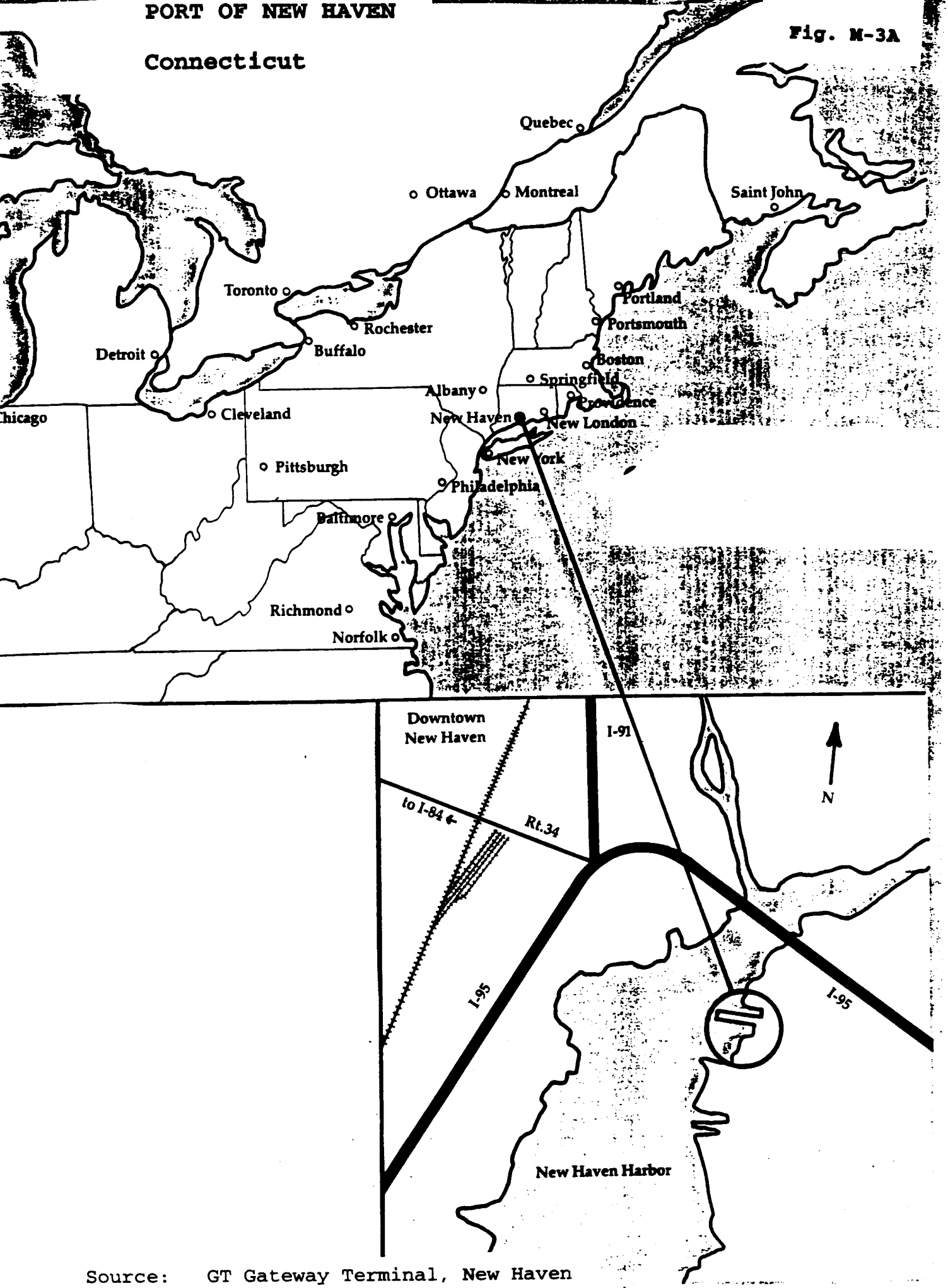


Source: Connecticut International Trade Directory, 1991-92, published by Connecticut DOT, Aviation Department

PORT OF NEW HAVEN

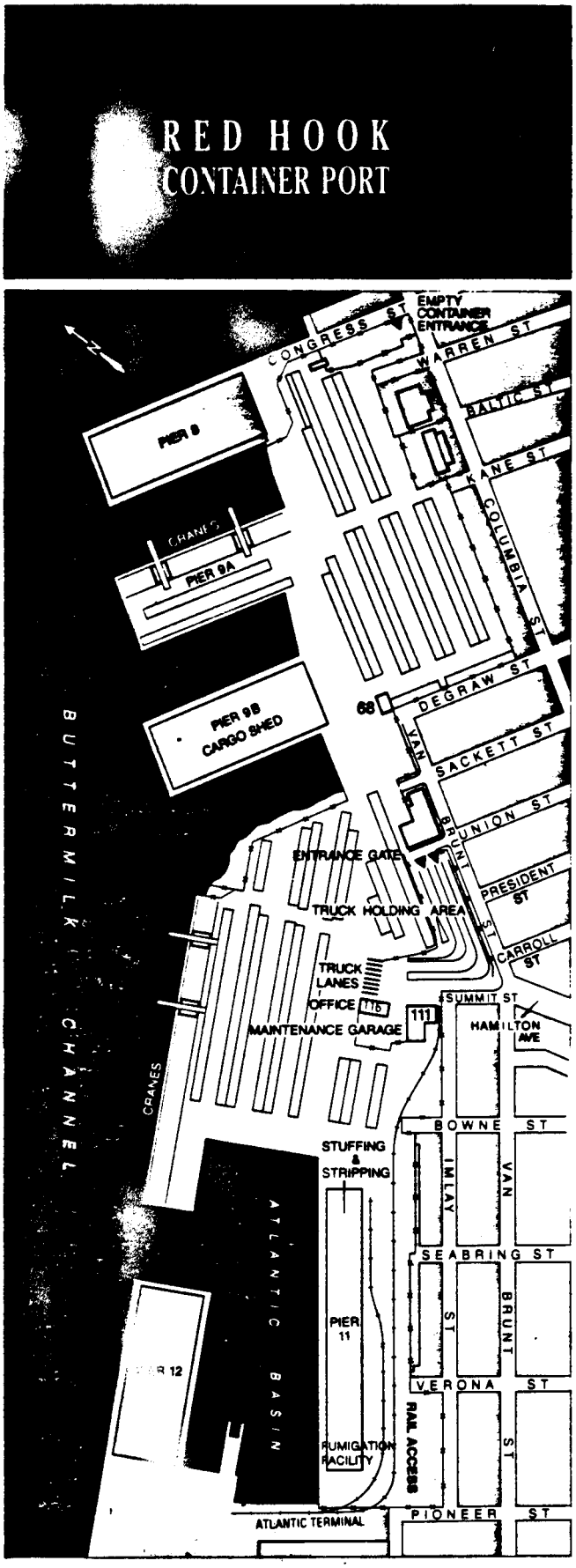
Connecticut

Fig. M-3A



Source: GT Gateway Terminal, New Haven Brochure

Fig. M-4



Source:

1991-92 Port of New York & New Jersey Guide published by VIA, PANYNJ

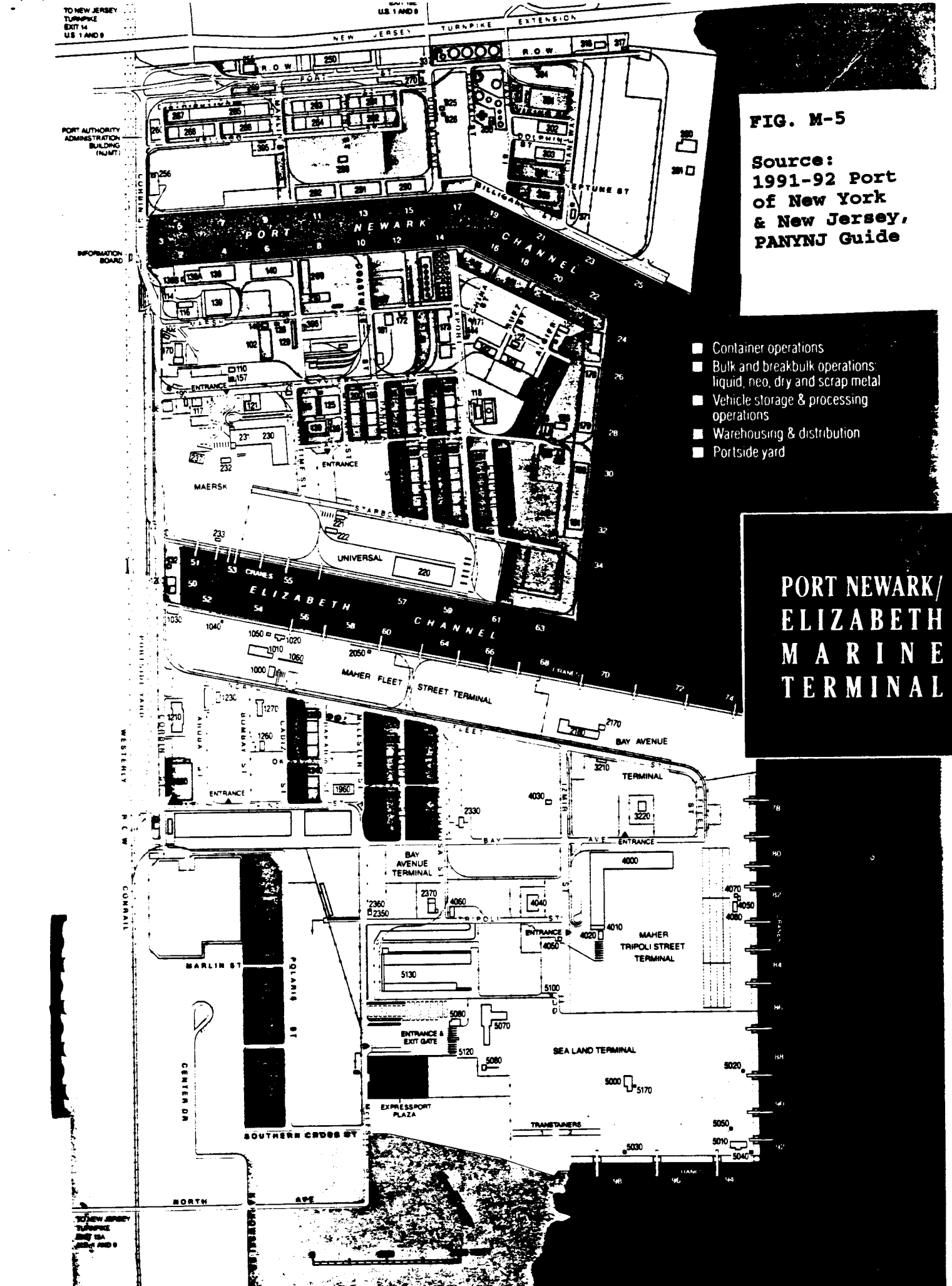


FIG. M-5

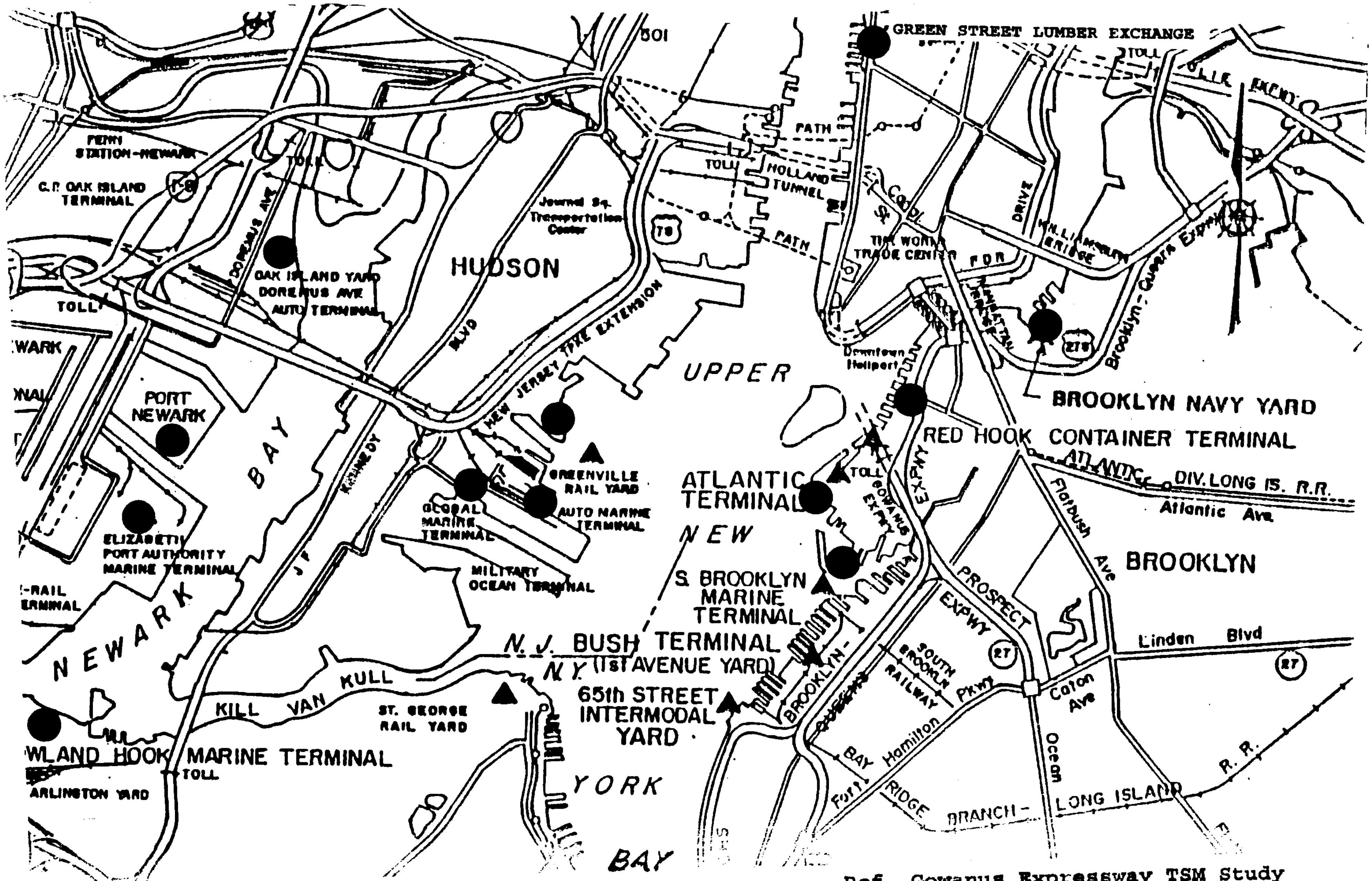
Source: 1991-92 Port of New York & New Jersey, PANYNJ Guide

Source: Study of Brooklyn and East River Marine Terminals, PANYNJ, 1989

FIG. M-6

MARINE TERMINAL LOCATION

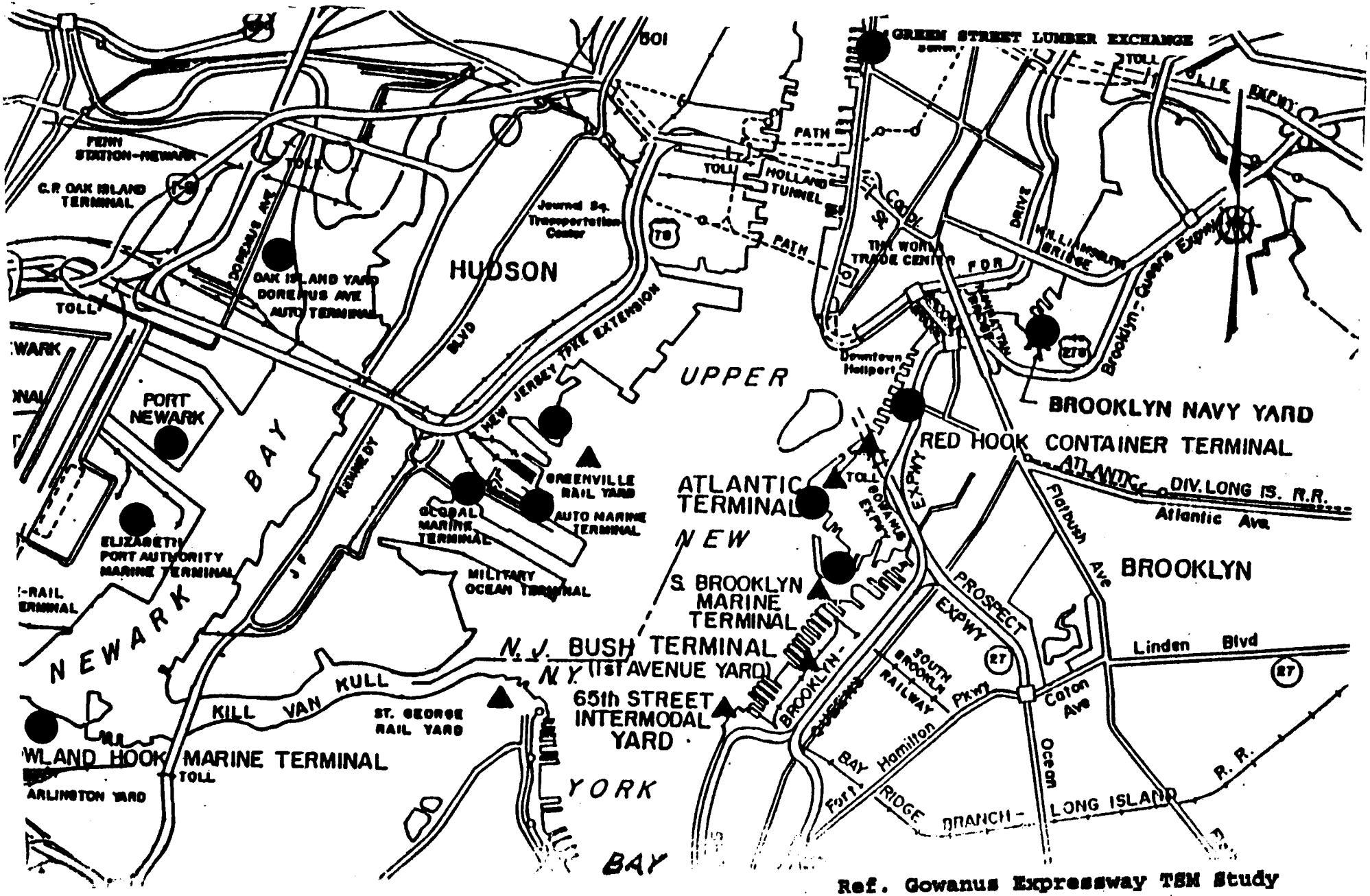
FIG.M-7



Ref. Gowanus Expressway TSM Study

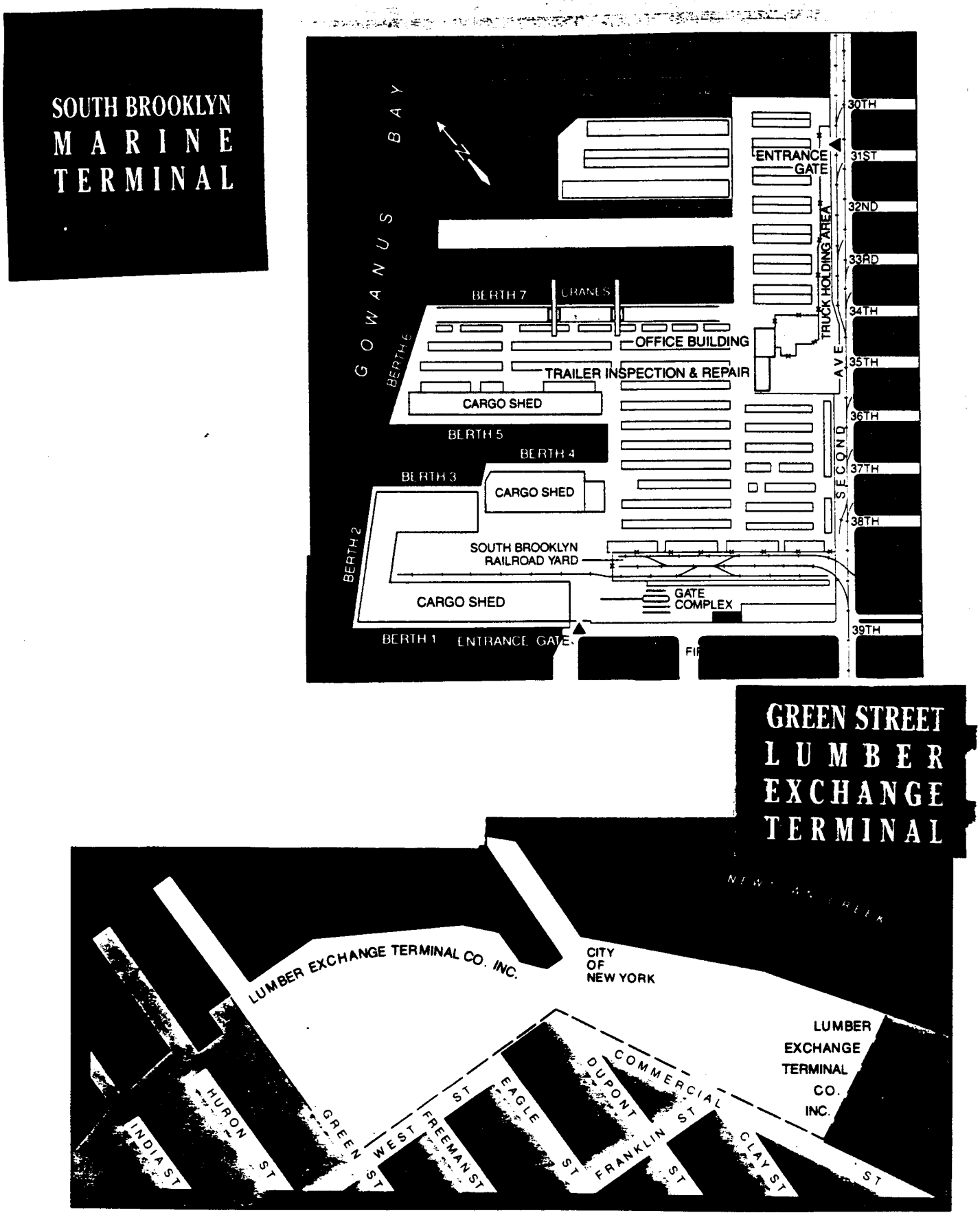
MARINE TERMINAL LOCATION

FIG.M-7



Ref. Gowanus Expressway TSM Study

Fig. M-8

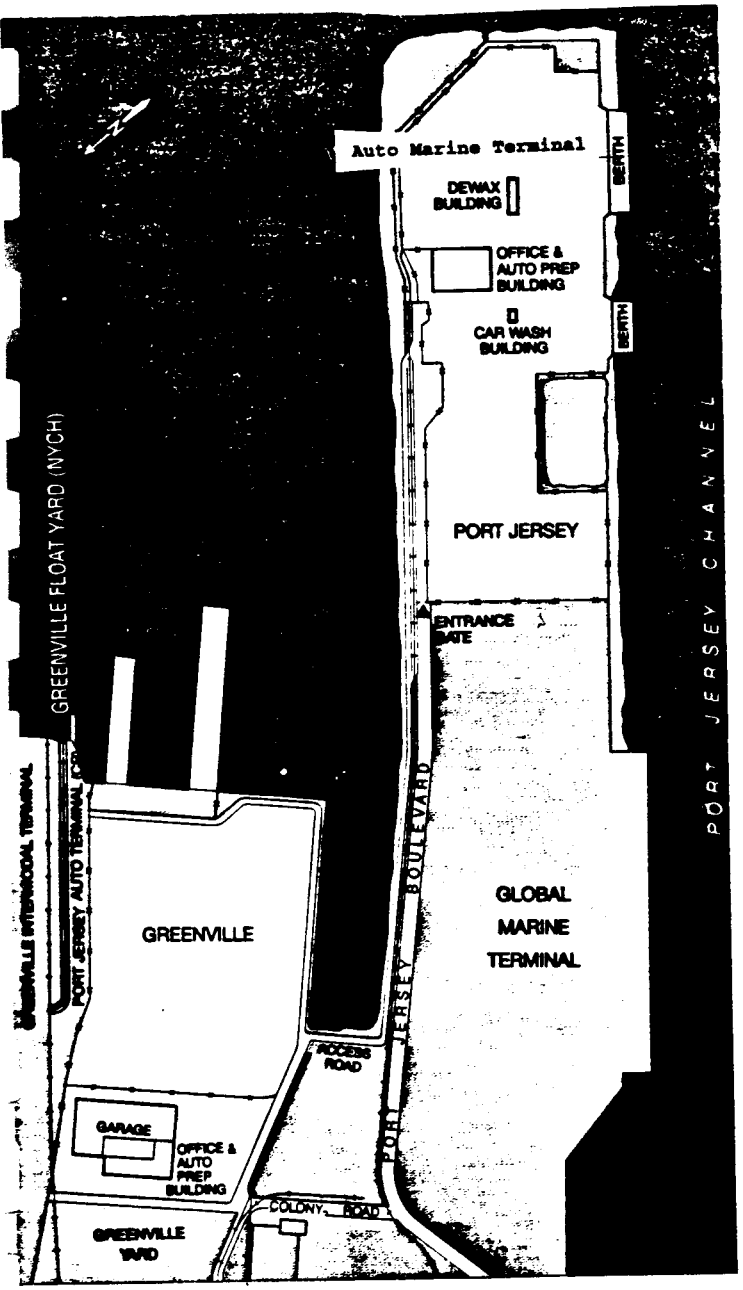


Source: 1991-92 Port of New York and New Jersey Guide, published by Via, PANYNJ

Source: 1991-92 Port of New York and New Jersey Guide, published by Via, PANYNJ

GLOBAL MARINE TERMINAL

FIG. M-9



AUTO MARINE TERMINAL

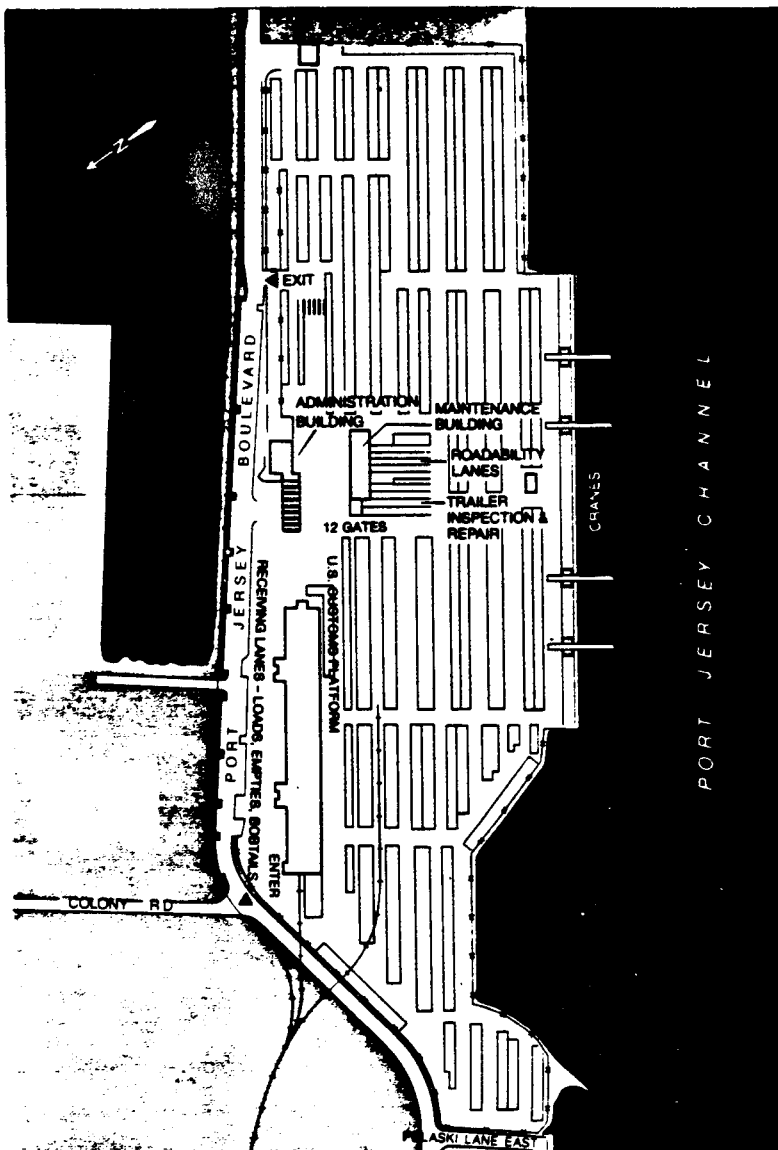
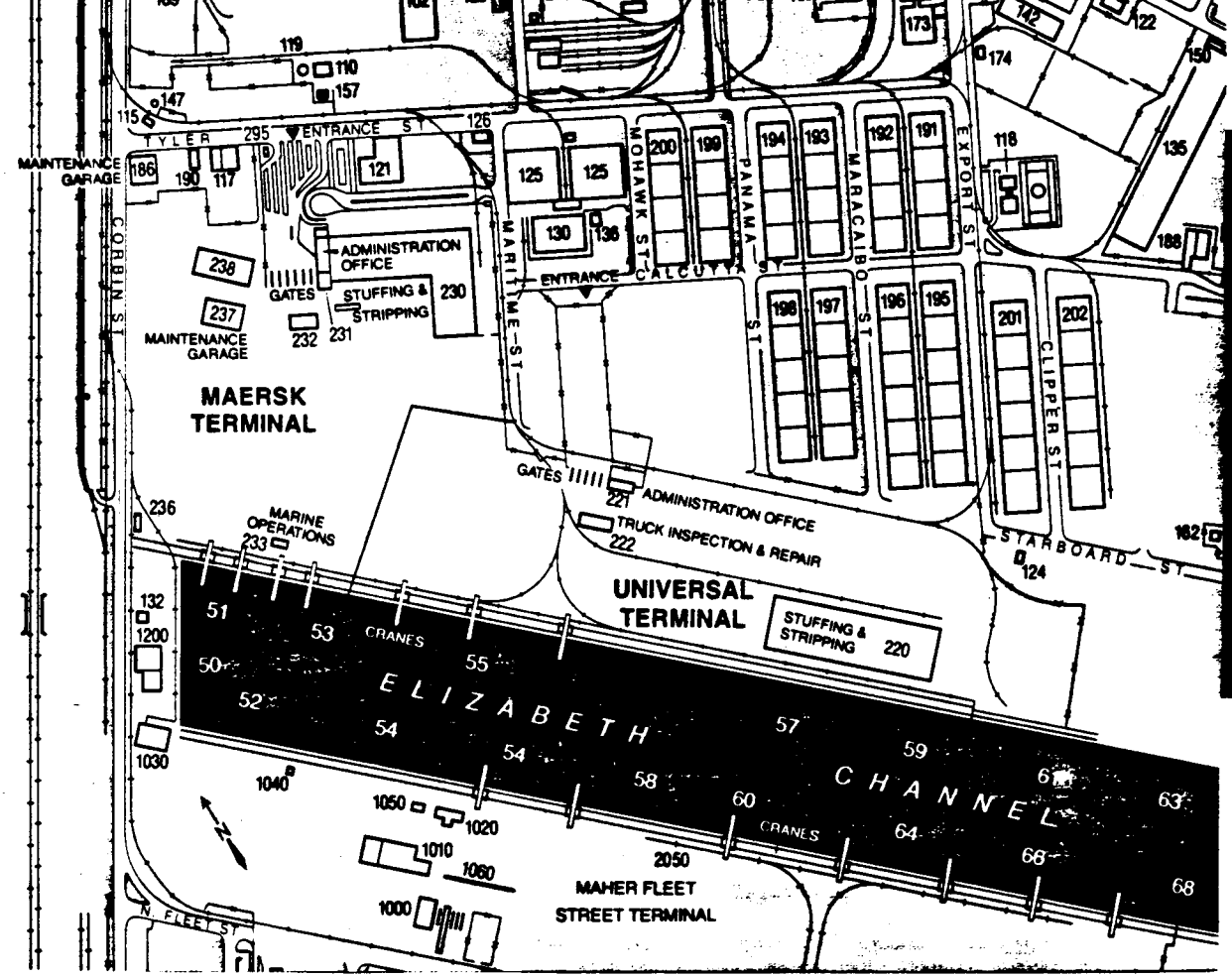
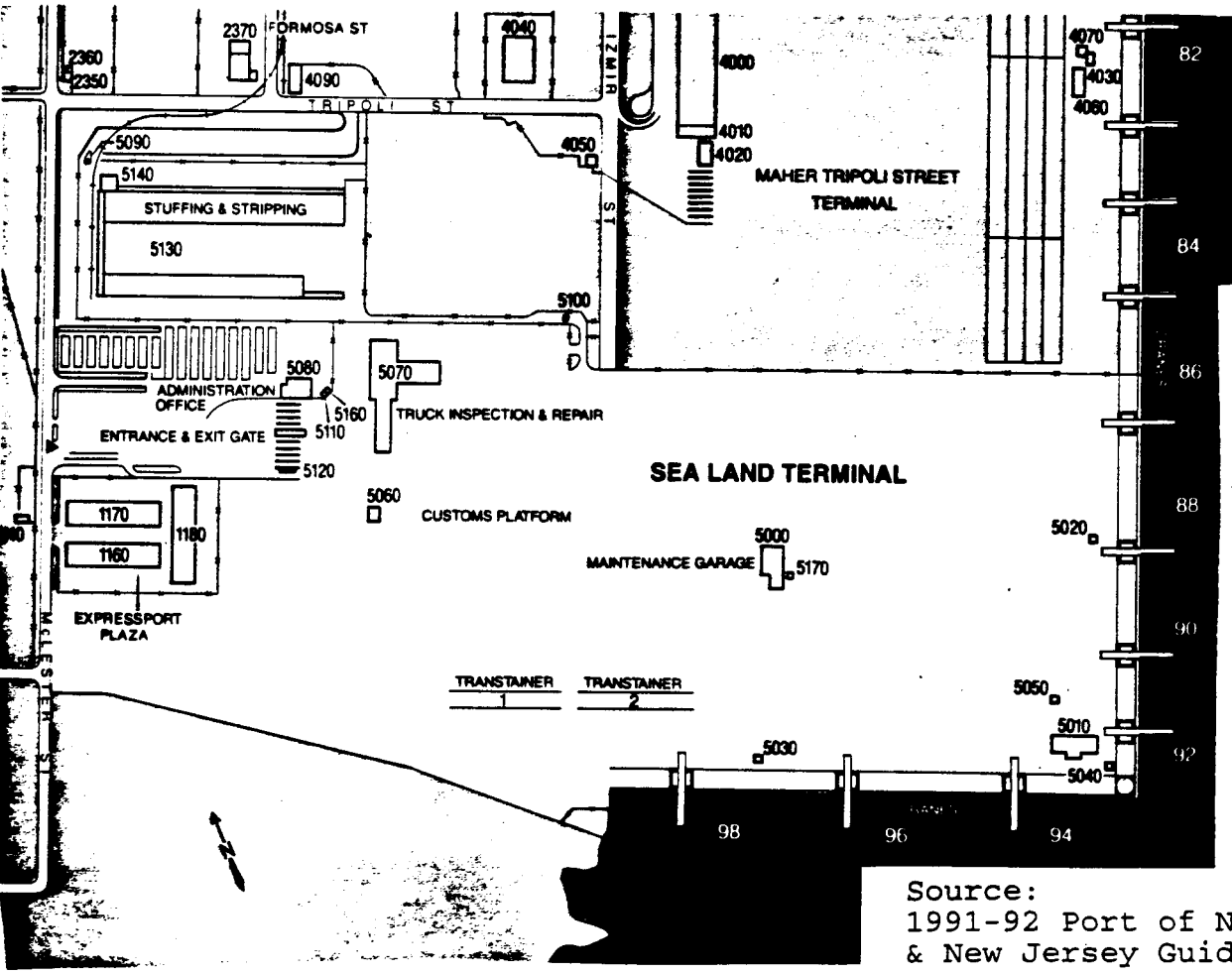


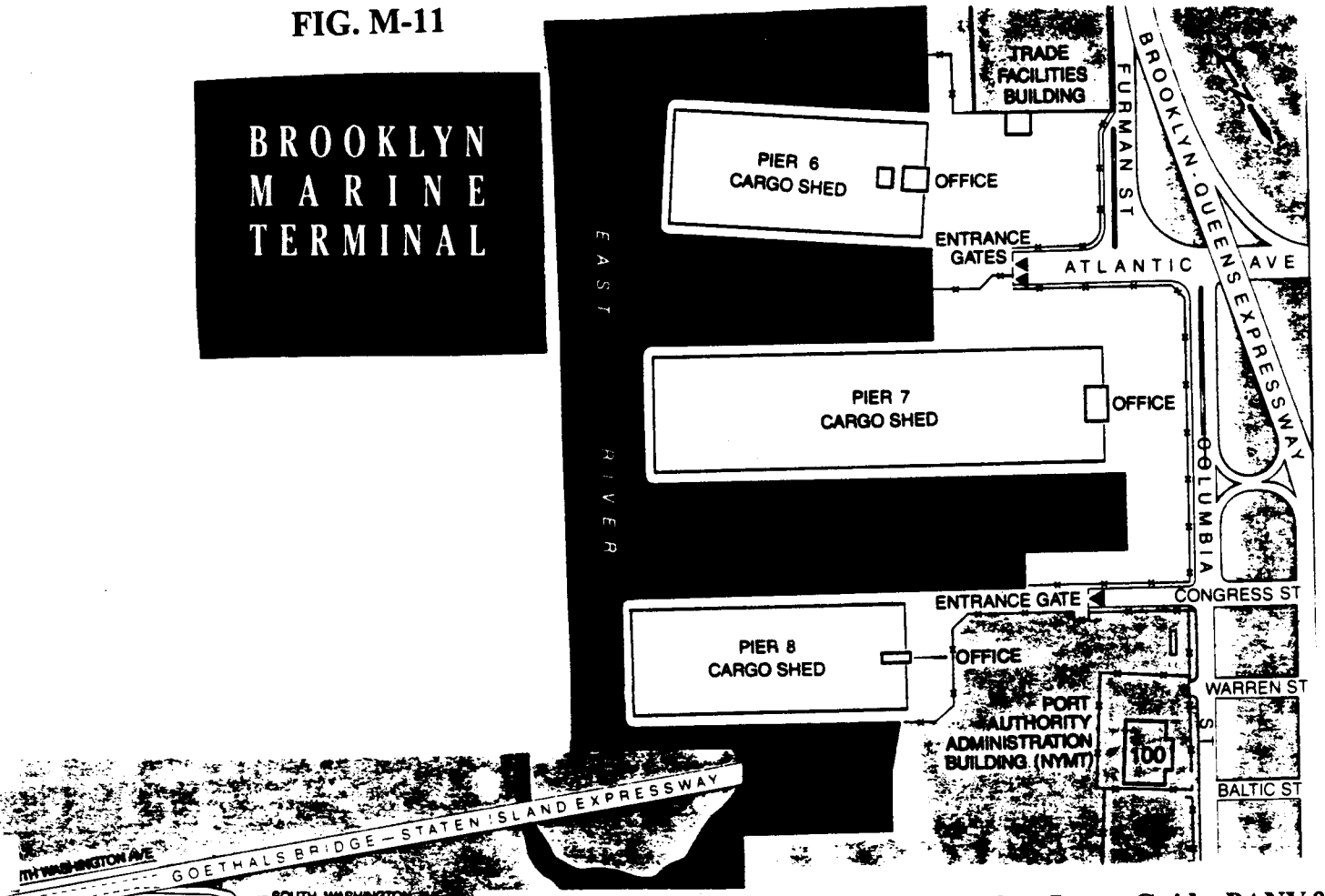
Fig. M-10





Source:
1991-92 Port of New York
& New Jersey Guide, VIA, PANYNJ

FIG. M-11



Source: 1991-92 Port of New York & New Jersey Guide, PANY&NJ

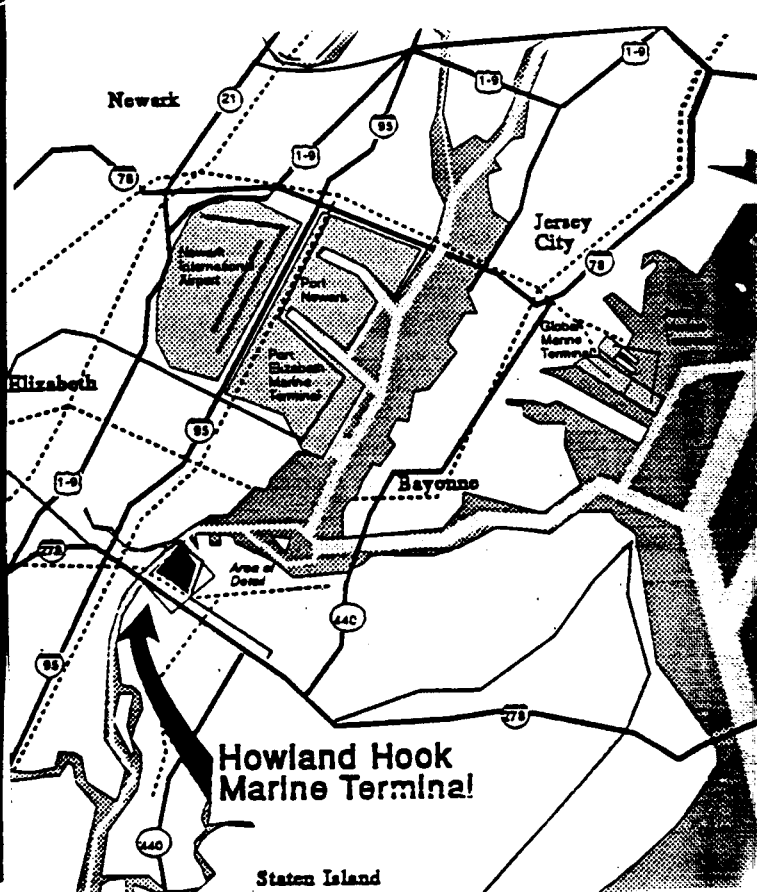
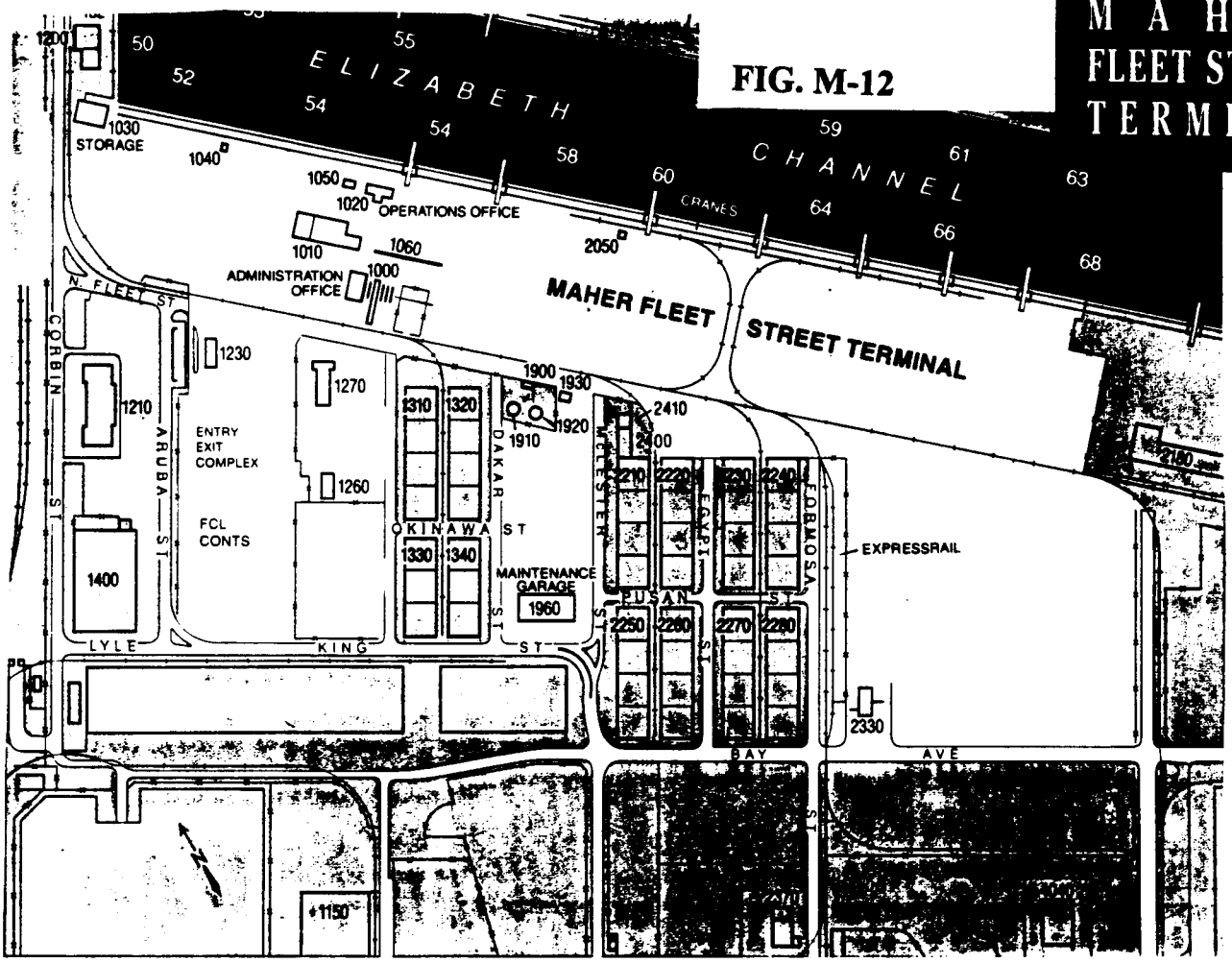
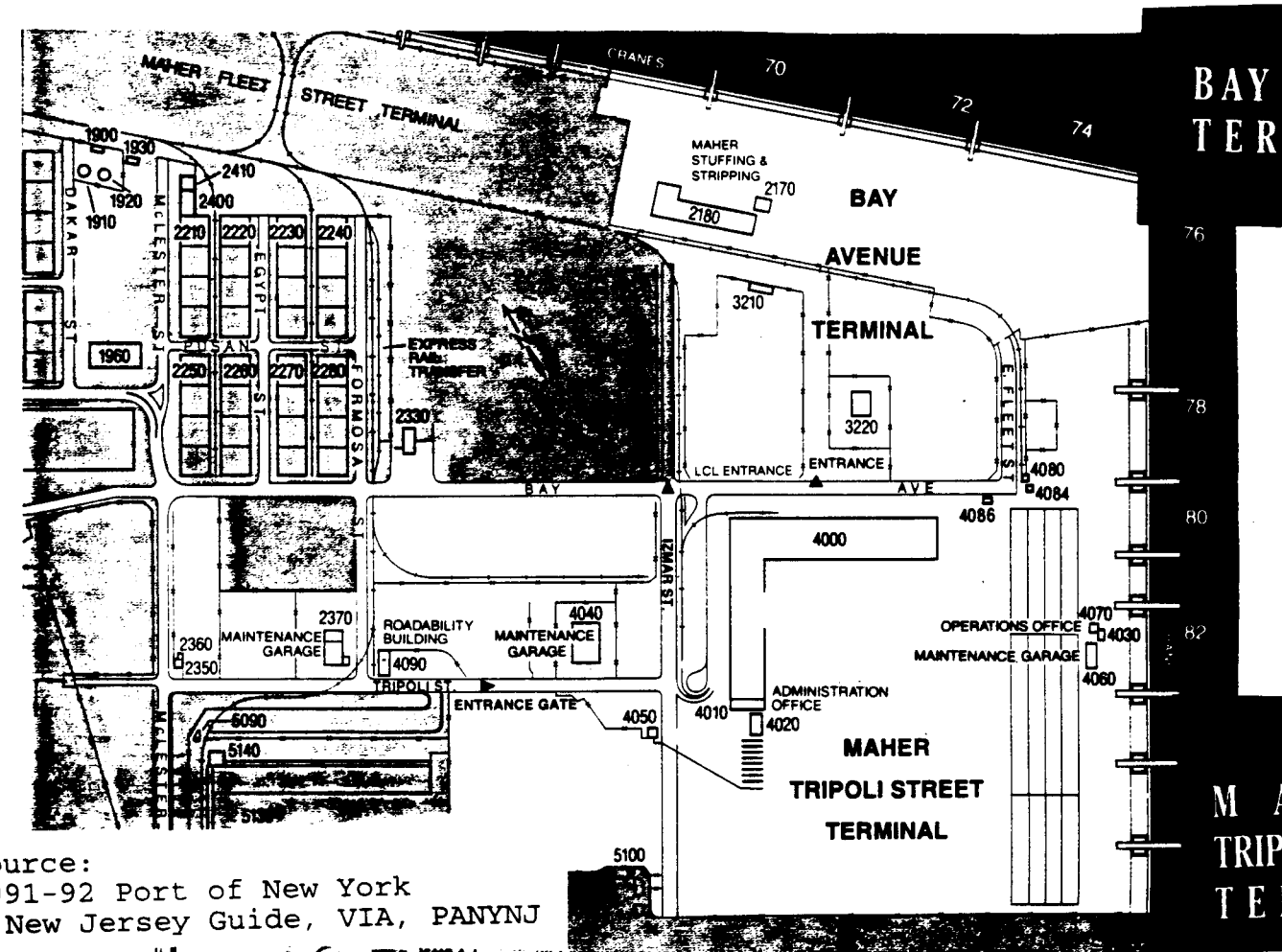


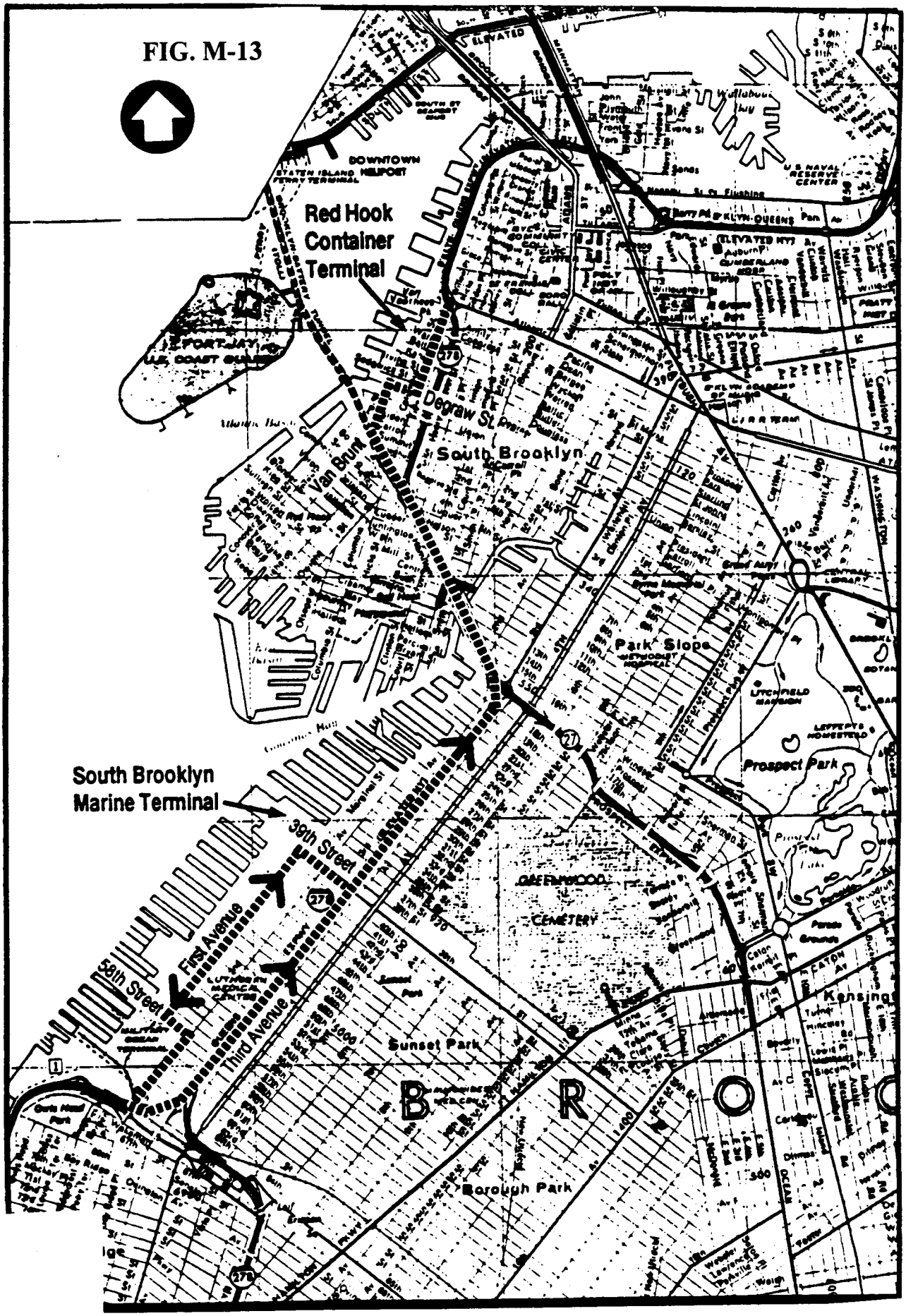
FIG. M-12





Source:
1991-92 Port of New York & New Jersey Guide, VIA, PANYNJ

FIG. M-13



Brooklyn Marine Terminals Truck Routes

m: Study of Brooklyn and East River Marine Terminals, PANYNJ, July 1989

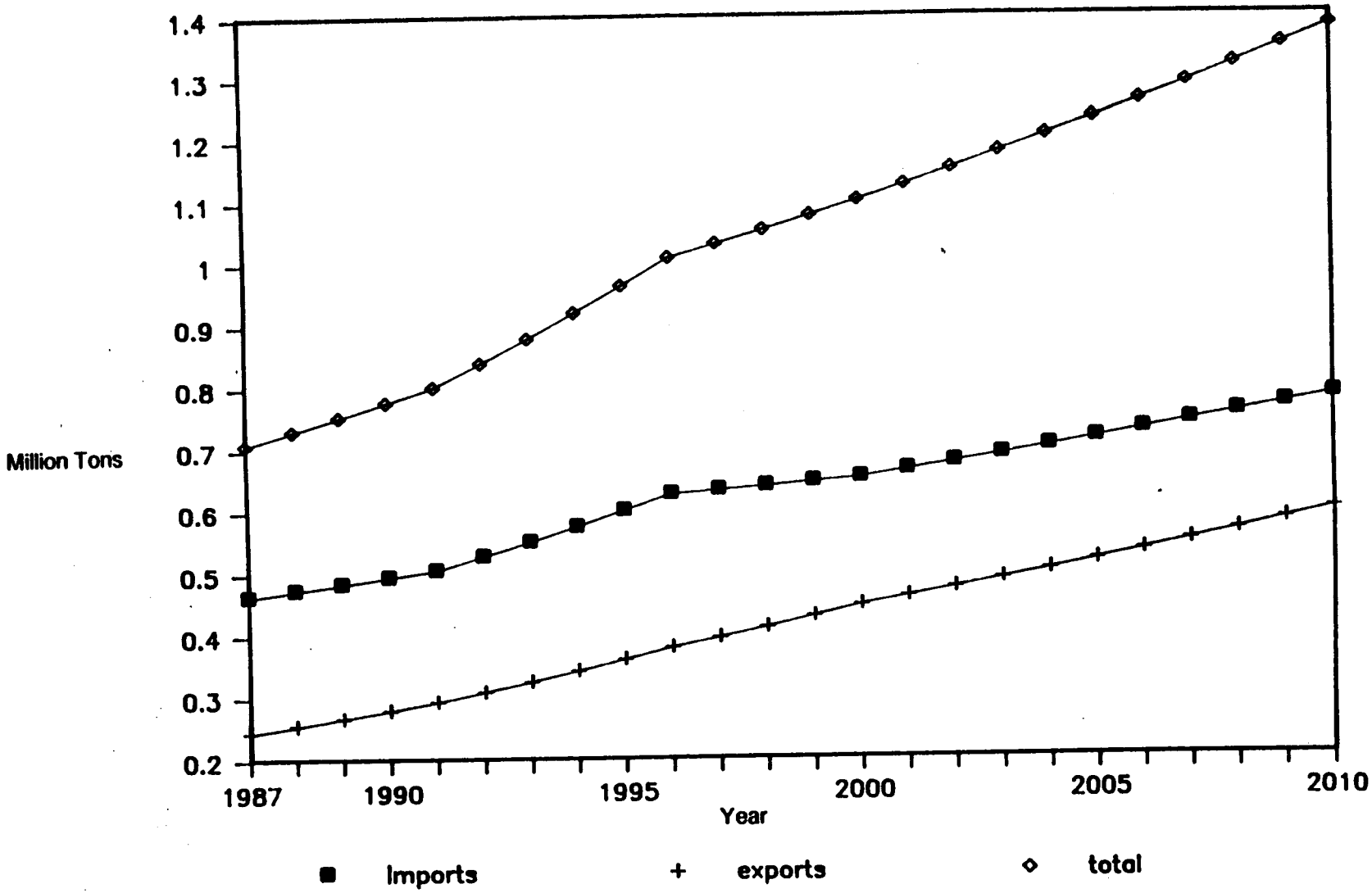
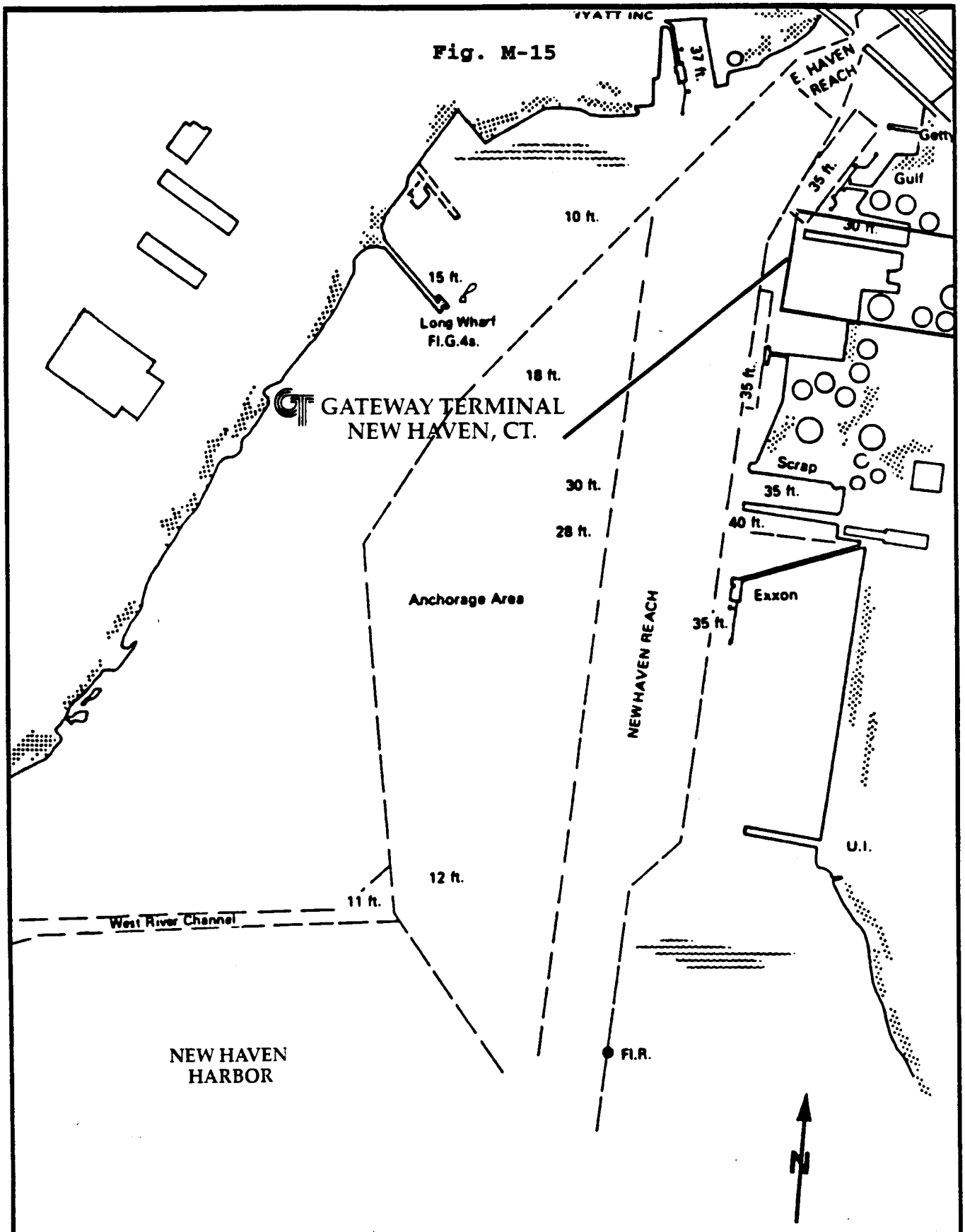


Figure M-14

Red Hook: Expected Volume

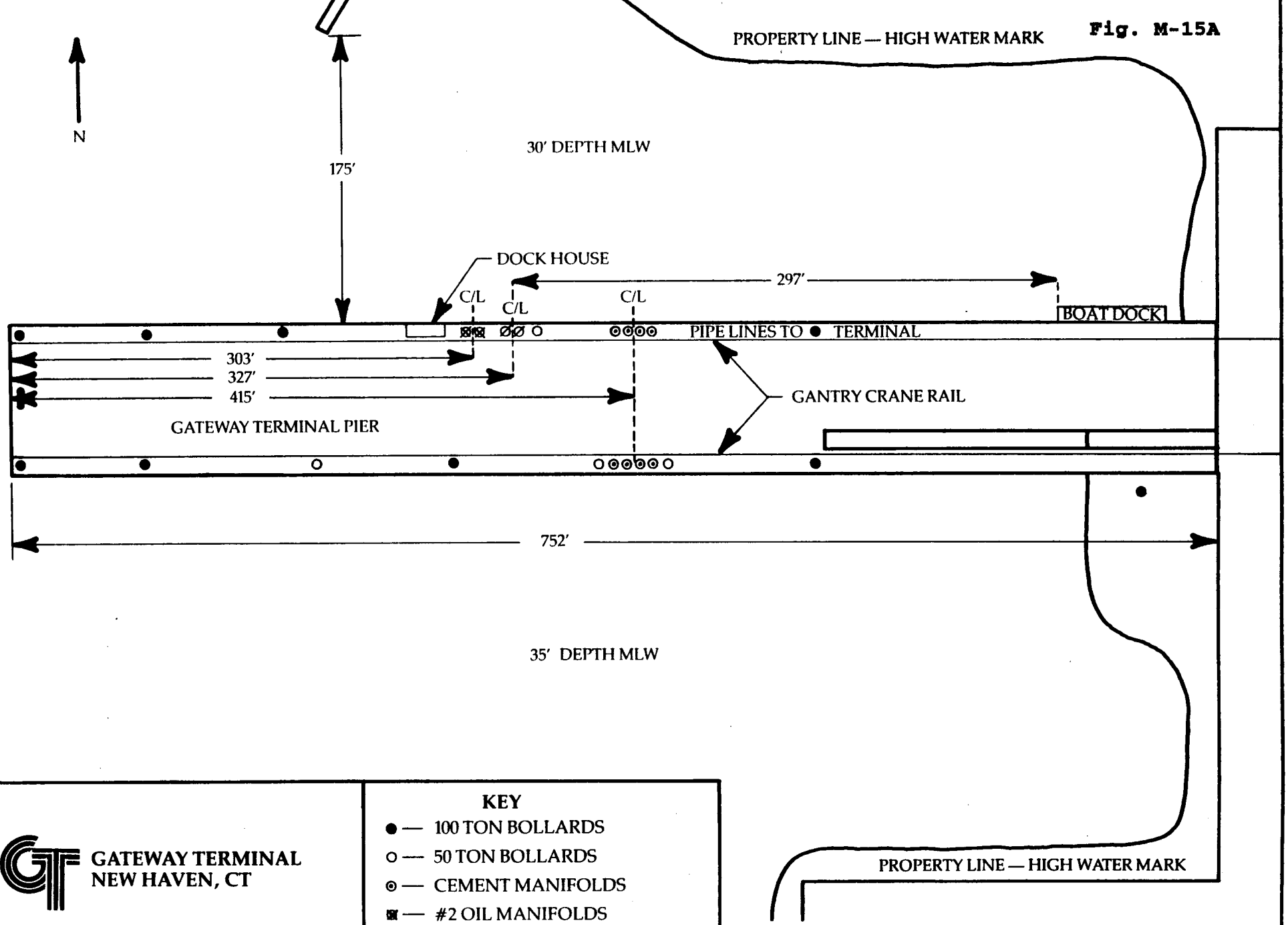
Source: Study of Brooklyn and East River Marine Terminals, PANYNJ, 1989

Fig. M-15



Source: GT Gateway Terminal, New Haven Brochure

Fig. M-15A



GATEWAY TERMINAL
NEW HAVEN, CT

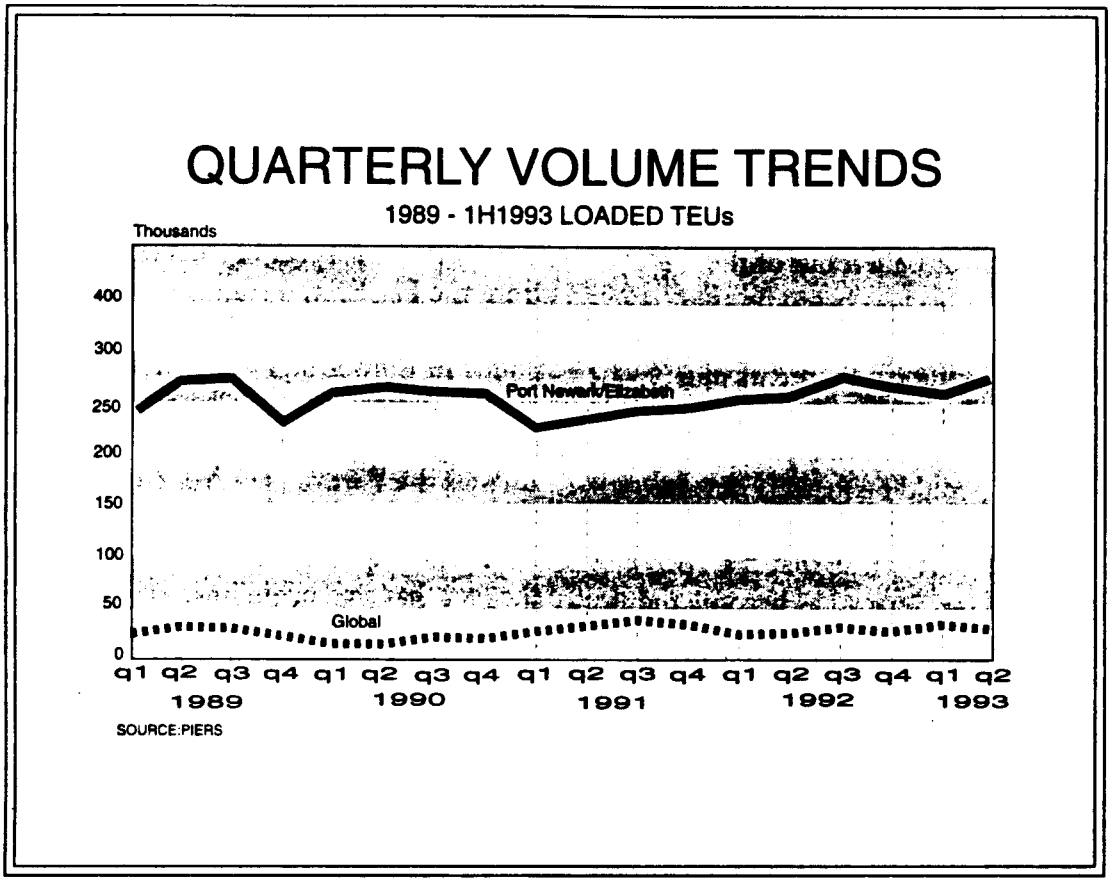
NOT TO SCALE: ALL PARTICULARS BELIEVED TO BE CORRECT BUT NOT GUARANTEED.

KEY

- ● — 100 TON BOLLARDS
- o — 50 TON BOLLARDS
- ⊙ — CEMENT MANIFOLDS
- ◙ — #2 OIL MANIFOLDS
- ⌀ — #6 OIL MANIFOLDS

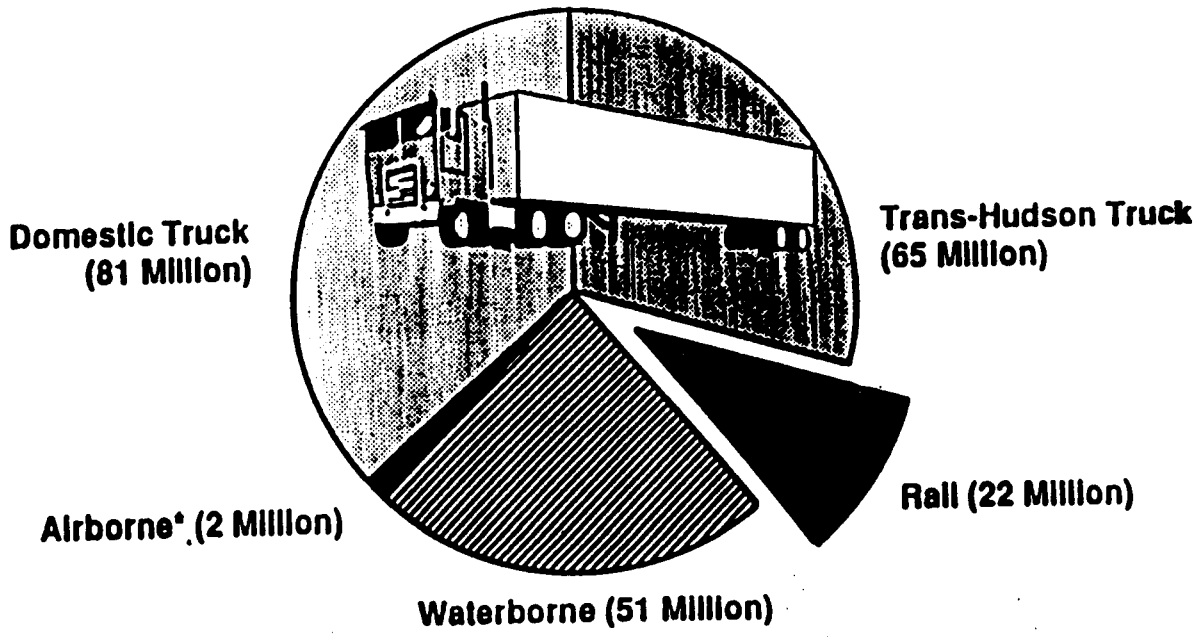
Source: GT Gateway Terminal, New Haven Brochure

Fig. M-16



Intermodal Goods Movement

Inbound and Outbound Annual Tonnage Flows, 1990 Data

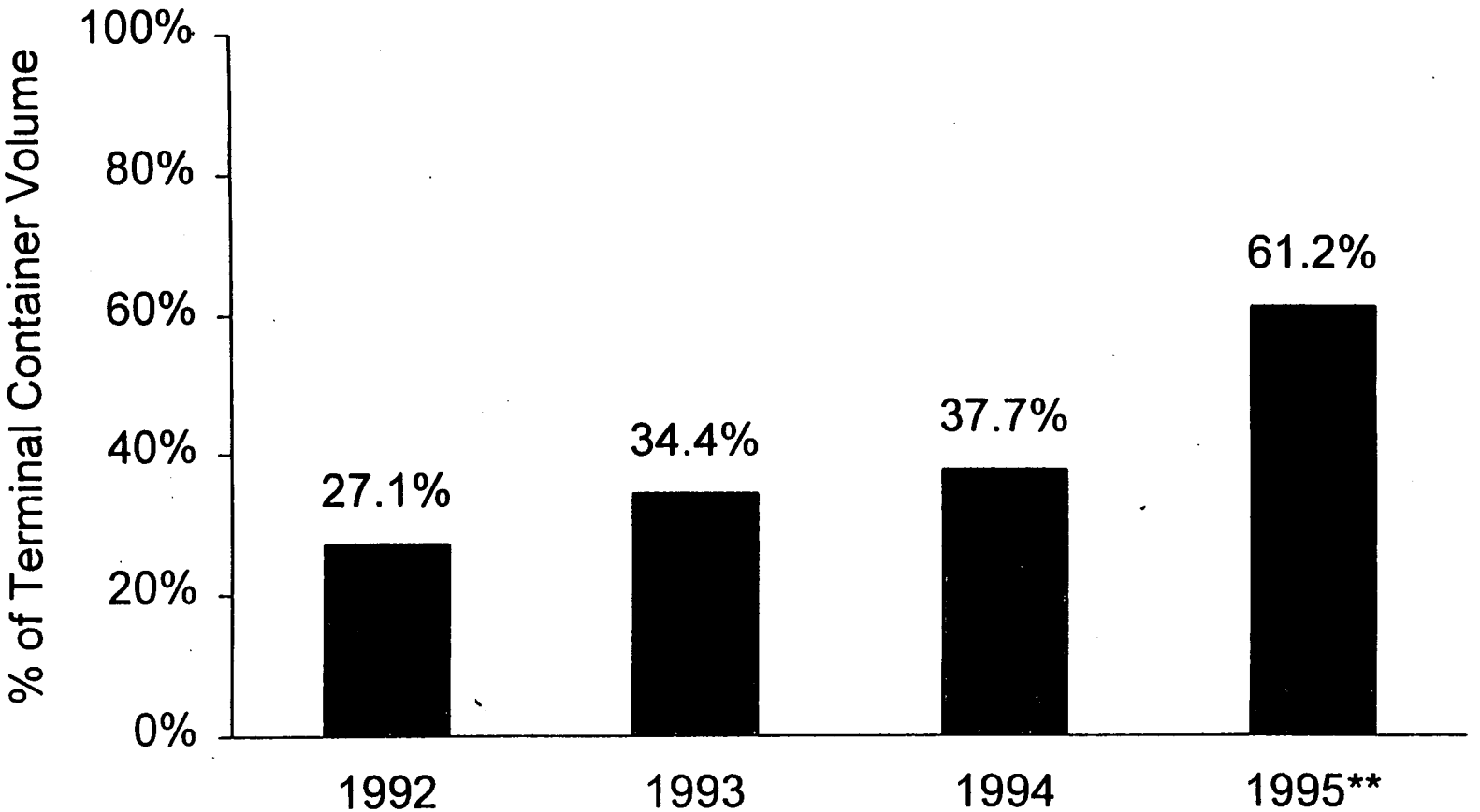


* *Domestic and International*

Source: Intermodal Coordination Study, Commissioned by the North Jersey Transportation Planning Authority, Inc., March 1994

Red Hook Barge

Percentage of Terminal Throughput Moved on the Barge



**Projected

UMS terminated lease in December, 1993. ASI commenced operations at Red Hook in January, 1994.

Source: PANY&NJ

Table M-1

Top U.S. Container Ports for 1992 and 1993

1993 Rank	Port	1993 TEUs	1992 Rank	Port	1992 TEUs
1	Los Angeles, CA	1,626,377	1	Los Angeles, CA	1,630,653
2	Long Beach, CA	1,543,323	2	Long Beach, CA	1,348,562
3	New York/New Jersey	1,305,971	3	New York/New Jersey	1,300,155
4	Seattle, WA	780,476	4	Oakland, CA	746,637
5	Oakland, CA	772,115	5	Seattle, WA	743,017
6	Charleston, SC	578,837	6	Charleston, SC	563,678
7	Tacoma, WA	547,440	7	Tacoma, WA	556,961
8	Miami, FL	468,780	8	Miami, FL	417,714
9	Savannah, GA	406,263	9	Savannah, GA	386,420
10	Houston, TX	392,442	10	Houston, TX	367,622
11	Norfolk, VA	341,101	11	Norfolk, VA	326,104
12	Baltimore, MD	291,266	12	Baltimore, MD	289,827
13	Port Everglades, FL	229,748	13	Port Everglades, FL	209,605
14	New Orleans, LA	188,493	14	Portsmouth, VA	192,620
15	Portland, OR	179,039	15	New Orleans, LA	190,062
16	Portsmouth, VA	177,981	16	Jacksonville, FL	165,151
17	Jacksonville, FL	141,992	17	Portland, OR	154,210
18	Wilmington, DE	99,070	18	San Francisco, CA	151,845
19	Gulfport, MS	89,862	19	San Juan, PR	98,374
20	San Francisco, CA	89,580	20	Galveston, TX	93,033
21	W. Palm Beach, FL	88,743	21	Wilmington, NC	81,062
22	Wilmington, NC	83,084	22	Philadelphia, PA	79,904
23	San Juan, PR	81,846	23	W. Palm Beach, FL	74,543
24	Philadelphia, PA	81,690	24	Gulfport, MS	70,681
25	Galveston, TX	81,351	25	Wilmington, DE	67,381
	Total - Top 25 Ports	10,666,870		**Total - Top 25 Ports**	10,305,821
		97.3%			97.7%
	Total - All Ports	10,961,073		**Total - All Ports**	10,550,569

Source: PIERS, Ports Import/Export Reporting Service, Journal of Commerce

Notes:

1 Total includes the 50 states and Puerto Rico
2 Data includes only loaded containers moving in foreign trade
3 Data excludes military cargo as required by law
4 Twenty-foot equivalent units (TEUs) are the number of containers measured in twenty-foot equivalents

Source: Report to Congress on the Status of the Public Ports of the United States, 1992-1993, by U.S. Department of Transportation, Maritime Administration, Office of Ports and Domestic Shipping

Table M-2 Selected U.S. Ports by Port Name, 1992
(tons)

Rank	Port Name	Total	Foreign	Imports	Exports	Domestic
110	Guntersville, AL	2,051,456	-	-	-	2,051,456
107	Helena, AR	2,185,788	-	-	-	2,185,788
125	Hilo, HI	1,587,795	35,171	35,171	-	1,552,624
51	Honolulu, HI	11,521,923	845,999	701,714	144,285	10,675,924
135	Hopewell, VA	1,278,448	494,022		494,022	784,426
2	Houston, TX	137,663,612	72,784,339	45,959,450	26,824,889	64,879,273
134	Humboldt, CA	1,311,040	862,373	37,845	824,528	448,667
29	Huntington, WV	21,833,428	-	-	-	21,833,428
36	Indiana Harbor, IN	15,325,931	100,857	66,945	33,912	15,225,074
34	Jacksonville, FL	17,208,707	7,383,171	5,153,381	2,229,790	9,825,536
103	Kahului, Maui, HI	2,357,171	78,767	78,064	703	2,278,404
70	Kalama, WA	6,675,519	6,034,069	32,072	6,001,997	641,450
111	Kansas City, MO	1,988,291	-	-	-	1,988,291
112	Ketchikan, AK	1,986,221	887,568	52,540	835,028	1,098,653
12	Lake Charles, LA	44,038,688	25,117,231	19,413,184	5,704,047	18,921,457
10	Long Beach, CA	52,048,625	29,317,271	12,850,838	16,466,433	22,731,354
73	Longview, WA	6,309,032	4,878,994	561,427	4,317,567	1,430,038
43	Lorain, OH	13,282,176	137,164	110,391	26,773	13,145,012
15	Los Angeles, CA	40,103,692	23,432,608	12,401,748	11,030,860	16,671,084
62	Louisville, KY	8,328,627	-	-	-	8,328,627
148	Ludington, MI	846,150	29,330	24,920	4,410	816,820
116	Marblehead, OH	1,789,302	-	-	-	1,789,302
24	Marcus Hook, PA	26,569,805	12,584,896	12,409,926	174,970	13,984,909
91	Marine City, MI	3,174,114	-	-	-	3,174,114
77	Matagorda Ship Channel, TX	5,389,932	3,697,245	3,651,955	45,290	1,692,687
44	Memphis, TN	13,281,285	-	-	-	13,281,285
72	Miami, FL	6,451,331	5,494,422	1,975,190	3,519,232	956,909
109	Milwaukee, WI	2,153,481	762,342	594,382	167,960	1,391,139
119	Minneapolis, MN	1,741,963	-	-	-	1,741,963
14	Mobile, AL	40,482,387	19,912,102	7,635,758	12,276,344	20,570,285
118	Monroe, MI	1,778,312	-	-	-	1,778,312
83	Morehead City, NC	4,400,419	2,569,359	524,986	2,044,373	1,831,060
64	Mount Vernon, IN	7,221,526	-	-	-	7,221,526
126	Muskegon, MI	1,562,478	118,054	110,016	8,038	1,444,424
89	Nashville, TN	3,388,265	-	-	-	3,388,265
138	Nawiliwili, Kauai, HI	1,143,475	8,427	8,427	-	1,135,048
50	New Castle, DE	11,831,119	6,390,299	6,370,922	19,377	5,440,820
60	New Haven, CT	8,429,527	2,263,082	2,075,589	187,493	6,166,445
6	New Orleans, LA	66,441,189	28,940,844	11,638,524	17,302,320	37,500,345
3	New York, NY and NJ	115,310,756	40,569,586	33,042,416	7,527,170	74,741,170
25	Newport News, VA	24,450,445	20,753,799	810,072	19,943,727	3,696,646
79	Nikishka, AK	5,152,584	1,319,248	35,977	1,283,271	3,833,336
9	Norfolk Harbor, VA	53,496,276	43,977,558	4,758,785	39,218,773	9,518,718
45	Oakland, CA	13,211,391	8,618,583	3,690,444	4,928,139	4,592,808
97	Palm Beach, FL	2,646,147	827,453	275,585	551,868	1,818,694
95	Panama City, FL	2,734,001	816,730	48,258	768,472	1,917,271
22	Pascagoula, MS	29,245,347	19,777,698	16,136,042	3,641,656	9,467,649
31	Paulsboro, NJ	20,254,199	10,478,510	10,383,730	94,780	9,775,689

Source: Waterborne Commerce of the United States, Calendar Years 1991-1992, Part 5 - National Summaries, Department of the Army, Corps of Engineers, Water Resources Support Center.

TABLE M-3

VOLUME HANDLED AT RED HOOK CONTAINER TERMINAL JANUARY - DECEMBER 1987

	NUMBER T.E.U.'s	TONS WEIGHT	TONS REVENUE
20' Full	28,628	41,115	66,873
40' Full	32,548		
Subtotal	61,176		
20' M/T	9,532	21,058	33,122
40' M/T	14,672		
Subtotal	24,204		
Break-Bulk*		115,819	153,773
TOTAL	85,380	177,992*	253,768*

*Excludes 315 vehicles - 5,540 weight tons: 4,476 revenue tons.

Note: The six largest container carriers handled 65,795 units or 77 percent of the total.

The six largest break-bulk carriers handled 101,000 tons of the break-bulk cargo.

Source: Universal Maritime Service Corporation.

From: Study of Brooklyn and East River Marine Terminals, PANYNJ, July 1989

Table M-4

List of Products Handled by New Haven Terminal, Inc.

Source: New Haven Terminal, Inc. Brochure, 1994

New Haven Terminal

Affiliated Companies:
The Excello Corporation
Harbor Transportation Company

Cargo Handled	Liquid Products in Bulk *includes Excello Corporation*	Dry Cargo
		Steel
	Petroleum products:	Copper
	Avjet "A"	Zinc
	#2 diesel oil	Aluminum
	#2 heating oil (2 grades)	Tin
	Gasoline (5 grades)	Containers
	Kerosene	Paper products
	Chemicals	Pumice
	Ethyl acetate	Woodpulp
	Vinyl acetate	Lumber
	Butyl acrylate	Ferrous scrap
	Methyl methacrylate	Non-ferrous scrap
	Methanol	Heavy lifts
	Hexanol	Crane parts
	Oxo-alcohols	Automobiles
	Styrene monomer	Pig iron
	Caustic soda	OCC
	Phthalate esters	
	Lignin sulfate	

Cilco Terminal

Products Handled		
	Bananas	Containers
	Plantains	Paper
	Pineapples	Automobiles
	Melons	Project cargo
	Clementines	
	Oranges	
	Apples	
	Juice Concentrate	

The Port's Leading Markets for Oceanborne General and Bulk Exports (millions of dollars)

Market	1993	1992	Percent Change
1. Germany	$1,779	$1,695	5.0
2. United Kingdom	1,695	1,820	- 6.9
3. Netherlands	1,166	1,270	- 8.2
4. Japan	757	1,033	- 26.7
5. Taiwan	740	771	- 4.0
6. Belgium & Luxembourg	732	816	- 10.3
7. France	684	781	- 12.4
8. South Korea	665	704	- 5.5
9. People's Republic of China	588	375	56.8
10. Israel	571	495	15.4
11. Saudi Arabia	546	433	26.1
12. Egypt	375	401	- 6.5
13. Hong Kong	334	299	11.7
14. Italy	334	438	- 23.7
15. Brazil	314	289	8.7
16. Russia-Ukraine-Belarus	306	154	98.7
17. Singapore	267	251	6.4
18. Republic of South Africa	236	244	- 3.3
19. Spain	233	308	- 24.4
20. Chile	226	188	20.2

Germany moved to first place rank among New York-New Jersey's markets for total oceanborne exports in 1993 under the value criterion replacing the United Kingdom. Exports to Germany reached $1.8 billion, up 5.0% from 1992.

The Port's Leading Markets for Oceanborne General Cargo Exports (long tons)

Market	1993	1992	Percent Change
1. South Korea	523,633	473,479	10.6
2. United Kingdom	296,828	334,057	- 11.1
3. Germany	229,093	219,834	4.2
4. Taiwan	209,253	232,380	- 10.0
5. Netherlands	142,204	186,630	- 23.8
6. Belgium & Luxembourg	137,193	153,622	- 10.7
7. Indonesia	131,783	97,251	35.5
8. Thailand	124,779	137,021	- 8.9
9. Spain	122,651	131,779	- 6.9
0. Japan	113,601	119,105	- 4.6
1. Hong Kong	112,570	121,944	- 7.7
2. France	111,220	109,703	1.4
3. Saudi Arabia	104,049	82,107	26.7
4. Israel	102,732	123,062	- 16.5
5. Italy	85,854	97,728	- 12.2
6. People's Republic of China	79,491	123,524	- 35.6
7. Russia-Ukraine-Belarus	74,757	33,547	122.8
8. Brazil	67,726	52,799	28.3
9. India	61,386	42,353	44.9
0. Singapore	51,698	60,085	- 14.0

South Korea, with a 10.6% increase in general cargo exports to 523,633 long tons, maintained its position in 1993 as the bistate port's leading export general cargo market. Export gains were registered by Germany, Indonesia, France, Saudia Arabia, Brazil, and India. Combined reporting of Russia-Ukraine-Belarus shows an increase of 122.8% to 74,757 long tons.

Source: Via International, Port of New York and New Jersey, July 1994

The Port's Leading Sources of Oceanborne General Cargo Imports (long tons)

Source	1993	1992	Percent Change
1. Germany	711,051	676,528	5.1
2. People's Republic of China	628,133	549,228	14.4
3. Italy	595,453	560,851	6.2
4. Japan	584,606	557,650	4.8
5. France	509,000	453,645	12.2
6. Netherlands	486,530	392,889	23.8
7. United Kingdom	459,790	404,284	13.7
8. Brazil	416,050	488,704	- 14.9
9. Ecuador	297,508	272,109	9.3
10. Taiwan	295,911	342,241	- 13.5
11. Canada	243,963	191,190	27.6
12. India	229,577	169,898	35.1
13. Spain	215,191	220,287	- 2.3
14. Thailand	208,505	223,543	- 6.7
15. Philippines	207,239	177,966	16.4
16. Sweden	188,414	157,794	19.4
17. Chile	179,812	109,082	64.8
18. Venezuela	150,414	90,157	66.8
19. Malaysia	133,349	123,060	8.4
20. South Korea	130,829	158,425	- 17.4

Germany remained the Port's leading source of general cargo import tonnage in 1993 with 711,051 long tons, an increase of 5.1%. The People's Republic of China, up 14.4% with 628,133 long tons, moved to second place, ahead of Italy.

The Port's Leading Sources of Oceanborne General and Bulk Imports (millions of dollars)

Source	1993	1992	Percent Change
1. Japan	$5,770	$5,370	7.4
2. Germany	4,636	4,388	5.7
3. United Kingdom	2,312	2,290	1.0
4. People's Republic of China	2,229	2,035	9.5
5. Italy	2,196	2,352	- 6.6
6. France	2,029	2,068	- 1.9
7. Brazil	1,160	1,132	2.5
8. Taiwan	1,116	1,294	- 13.8
9. Netherlands	1,032	1,006	2.6
10. Sweden	1,000	1,081	- 7.5
11. Switzerland	920	898	2.4
12. Belgium & Luxembourg	792	651	21.7
13. Norway	716	525	36.3
14. Spain	668	699	- 4.4
15. South Korea	640	836	- 23.4
16. India	607	506	20.0
17. Dominican Republic	445	411	8.3
18. Denmark	429	450	- 4.7
19. Thailand	421	397	6.0
20. Israel	401	370	8.4

Japan, up 7.4% to $5.8 billion, continued to rank first as the Port's leading source of total oceanborne imports in value. Germany remained second with $4.6 billion.

Source: Via International, Port of New York and New Jersey, July 1994

Table M-7

Summary of the Port's Foreign Trade

Oceanborne	Long Tons			Millions of Dollars		
	1993	1992	% Change	1993	1992	% Change
Bulk Exports	2,475,307	2,242,371	10.4	$ 573.2	$ 511.3	12.1
Bulk Imports	25,322,883	23,044,515	9.9	3,271.7	3,281.0	- 0.3
Total Bulk Cargo	27,798,190	25,286,886	9.9	$ 3,844.9	$ 3,792.3	1.4
General Cargo Exports	4,096,189	4,353,959	- 5.9	17,135.7	17,739.4	- 3.4
General Cargo Imports	8,806,487	8,382,894	5.1	35,328.3	33,152.0	6.6
Total General Cargo	12,902,676	12,736,853	1.3	$52,464.0	$50,891.4	3.1
Total Exports	6,571,496	6,596,330	- 0.4	$17,708.9	$18,250.7	- 3.0
Total Imports	34,129,370	31,427,409	8.6	$38,600.0	$36,433.0	5.9
Total Oceanborne Cargo	40,700,866	38,023,739	7.0	$56,308.9	$54,683.7	3.0

Oceanborne Transportation Facts (reported by pier facilities)

	1993	1992	% Change
Containers Handled			
Units	1,180,861	1,205,338	- 2.0
TEUs*	1,972,692	2,014,052	- 2.1
Motor Vehicles Handled (units)			
Exports	56,200	58,700	- 4.3
Imports	330,200	314,000	5.2
Total	386,400	372,700	3.7
Shipping Activity			
Ship Arrivals	4,243	4,420	- 4.0
Vessel Passengers	427,418	311,053	37.4
Passenger Voyages	214	172	24.4

*Twenty-foot Equivalent Units

Source: Bureau of the Census. This data differs from international air cargo tonnage reported by the Port Authority based on direct submission by individual air carriers. These differences are due to a variety of factors, including the definition of international air cargo, changes in the Government's commodity classification system in January, 1989, Government procedures for estimating unreported volumes, and higher exemption levels for low value shipments implemented in October 1989. Container, motor vehicle, and passenger data are from reports of pier facilities. Ship arrivals are reported by The Maritime Association of the Port of New York/New Jersey.

From: Via International, Port of New York-New Jersey, July 1994

TABLE M-8
LEADING OCEANBORNE GENERAL CARGO IMPORTS
(long tons)

COMMODITY	1993	1992	1991	1990
1. Alcoholic Beverages	649,534	680,367	599,723	641,840
2. Road Motor Vehicles and Parts	472,442	448,606	364,639	375,133
3. Organic Chemicals	325,411	292,467	198,369	197,473
4. Bananas	249,102	208,986	181,643	186,579
5. Paper & Paperboard	223,216	152,318	120,260	120,282
6. Vegetable Oils	217,675	180,665	132,170	158,742
7. Alcohols	207,674	168,869	181,032	174,669
8. Fruit & Fruit Preps.	206,442	222,981	174,088	156,864
9. Veg. & Veg. Preparations	195,734	206,095	199,517	236,764
10. Clothing	191,711	157,993	118,762	136,261
11. Furniture	178,669	170,060	158,646	163,710
12. Fruit & Veg. Juices	178,442	209,169	171,221	282,178
13. Plastic & Rubber Materials	170,480	167,665	151,030	165,567
14. Plastic & Rubber Mfrs.	164,998	143,918	134,437	137,732
15. Fish & Fish Products	163,999	182,637	169,589	163,283
16. Hydrocarbons	162,629	142,224	133,100	147,368
17. Building Materials	157,012	108,670	153,750	510,355
18. Steel Plates & Sheets	142,111	107,477	96,334	89,003
19. Lumber	139,245	132,292	102,554	102,064
20. Machinery (General)	139,217	129,981	121,252	150,960

Source: Port of New York and New Jersey Oceanborne Foreign trade Handbook - 1993, published by PANYNJ Port Department, October 1994

TABLE X-9
LEADING OCEANBORNE GENERAL CARGO EXPORTS
(long tons)

COMMODITY	1993	1992	1991	1990
1. Waste Paper	948,308	1,069,304	1,219,060	1,297,194
2. Plastic Materials	243,064	267,424	267,901	259,472
3. Lumber	202,924	146,139	104,157	73,968
4. Road Motor Vehicles and Parts	190,022	181,459	119,062	93,405
5. Paper & Paperboard	136,980	99,868	87,319	77,825
6. Machinery (General)	107,095	107,617	99,905	96,154
7. Hydrocarbons	79,734	92,874	83,538	99,839
8. Organic Products	64,480	65,658	63,497	65,782
9. Misc. Food & Food Preps.	62,136	75,073	41,842	35,049
10. Elem. Oxides & Halides	60,106	62,380	46,993	44,161
11. Toilet Preparations	59,854	60,228	51,812	47,804
12. Textile Waste	57,623	71,640	51,232	55,033
13. Alcoholic Beverages	50,167	36,526	22,159	13,131
14. Printed Matter	41,781	35,678	33,065	28,282
15. Plastic Mfrs.	41,613	47,110	39,046	28,334
16. Paper & Paperboard Mfrs.	41,180	39,790	53,473	26,325
17. Fish & Fish Products	39,779	41,699	42,509	24,550
18. Steel Plates & Sheets	38,340	28,436	34,734	32,980
19. Gas Engines & Diesels	34,118	40,196	32,437	31,957
20. Inorganic Chemicals	33,601	40,550	37,288	42,607

Source: Port of New York and New Jersey Oceanborne Foreign trade Handbook - 1993, published by PANYNJ Port Department, October 1994

TABLE M-10
LEADING OCEANBORNE BULK CARGO IMPORTS
(long tons)

COMMODITY	1993	1992	1991	1990
1. Crude Petroleum	9,990,453	7,273,712	7,127,552	6,289,150
2. Residual & Distillate Fuel Oils	7.901,571	7,661,929	10,137,953	14,822,631
3. Gasoline	3,669,738	4,593,048	4,528,500	6,377,825
4. Kerosene & Jet Fuel	1,019,606	668,986	1,616,813	1,809,194
5. Gypsum	799,918	798,222	713,902	867,374
6. Sugar	510,663	398,200	506,045	448,054
7. Pitch & Asphalt	264,580	187,347	141,476	202,240
8. Salt	239,182	344,255	690,785	609,353
9. Building Cement & Lime	226,209	191,354	459,445	760,773
10. Sand, Gravel & Crushed Stone	196,564	221,924	251,177	3,824

COMMODITY	1989	1988	1987	1986
1. Crude Petroleum	8,132,384	7,092,270	6,183,243	6,405,645
2. Residual & Distillate Fuel Oils	17,588,952	20,157,596	17,149,613	19,557,124
3. Gasoline	8,024,602	10,332,383	9,815,895	7,956,457
4. Kerosene & Jet Fuel	1,388,896	421,730	247,135	728,937
5. Gypsum	1,006,799	1,179,141	1,049,586	930,759
6. Sugar	406,907	539,525	564,294	592,339
7. Pitch & Asphalt	300,801	429,687	306,674	339,745
8. Salt	555,512	184,191	508,388	320,576
9. Building Cement & Lime	877,175	1,103,350	1,179,492	1,176,660
10. Sand, Gravel & Crushed Stone	19,551	2,487	33,506	10,478

Source: Port of New York and New Jersey Oceanborne Foreign trade Handbook - 1993, published by PANYNJ Port Department, October 1994

TABLE M-11
LEADING OCEANBORNE BULK CARGO EXPORTS
(long tons)

COMMODITY	1993	1992	1991	1990
1. Iron & Steel Scrap	1,572,891	1,373,410	1,676,212	1,930,484
2. Residual & Distillate Fuel Oils	328,659	291,908	306,528	719,359
3. Wheat	161,309	43	40,443	65
4. Corn	75,135	107,794	267,735	99,732
5. Nonferrous Scrap & Slag	45,651	54,608	83,257	86,550
6. Inedible Tallow	41,922	87,277	62,684	76,227
7. Pitch, Petroleum Coke & Naphtha	41,041	25,283	15,535	11,834
8. Logs	30,642	19,899	14,455	16,967
9. Animal Feeds	26,385	27,440	17,612	13,946
10. Petroleum Lubricants	22,604	26,448	34,258	23,438

COMMODITY	1989	1988	1987	1986
1. Iron & Steel Scrap	1,751,575	1,588,183	1,561,561	1,913,057
2. Residual & Distillate Fuel Oils	162,357	5,278	41,005	75,527
3. Wheat	5,533	0	0	30,116
4. Corn	240,244	41,267	86,091	3,145
5. Nonferrous Scrap & Slag	114,078	93,813	94,477	111,253
6. Inedible Tallow	44,112	62,365	67,074	89,134
7. Pitch, Petroleum Coke & Naphtha	69,048	7,325	24,421	6,414
8. Logs	13,199	10,718	4,479	9,046
9. Animal Feeds	14,876	32,500	25,703	49,273
10. Petroleum Lubricants	28,883	26,245	29,436	31,381

Source: Port of New York and New Jersey Oceanborne Foreign Trade Handbook, 1993, published by PANYNJ Port Department, October 1994

CHAPTER III

RAILROADS

Introduction

The major economic advantage in land side intermodalism is gained through the combined services of rail and highway modes. This combination is used to maximize the efficiency of both modes. Motor carriers have greater flexibility and nearly unlimited access to industrial and commercial freight locations and the railroad is less expensive than motor carriers in long haul. Typically, in delivery to a destination of more than 300-500 miles it would be more cost effective to use rail as a mode of shipment [Ref.R39].

Despite the strong competition between rail and motor carrier industries in specific markets, rail and motor carriers have been working closer together to serve customers with their intermodal service. Rail intermodal shipping has grown to become the second largest rail serving component, generating $4.3 billion in rail revenue, or 16% of the 1991 total rail revenue. Also, the increasing demand for rail transport for farm products, coal, lumber, chemicals, metals, and, in particular, automobiles, contributes to the growth of rail intermodal business [Ref.R17].

In 1993, over 7.1 million containers or trailers were loaded onto rail cars in the United States [Ref.R7]. The intermodal traffic covered 1,109,309 million revenue ton-miles, which is 10% more than in 1992 [Ref.R42]. According to Journal of Commerce (9-14-1994) intermodal rail traffic was up 16.2% in August 1994 compared to August 1993. U.S. railroads (nationwide) have a 37% share of the freight market (all cargo) measured in ton-miles, whereas the motor carriers have a 29% share (ton-miles) [Ref.R18]. New York rail lines carry only a small portion of the region's freight tonnage. Between 1973 and 1989 the New York metropolitan area rail freight car loading declined by approximately 75%, whereas the nationwide rail freight decline in this period was only 20% (from 27 million to 18.6 million tons) [Ref.R5,R9,R42]. However, the rail intermodal loading in New York, as well as nationwide, is rising. In 1994, according to Journal of Commerce of January 12,1995 [Ref.R17], intermodal rail traffic nationwide increased over 30% in comparison to 1993. According to the DRI/McGraw Hill study forecasting domestic freight trend through 2003, rail freight intermodal revenue will grow at 61.4% over a10-year period (Traffic World, May 22, 1995).

New York State has a total of 37 railroads in operation and these railroads cover a total of 4,012 miles. As per 1992 data, they handled a total of 1.5 million carloads weighing approximately 65 million tons [Ref.R6]. In the metropolitan area the dominated Class I railroad (revenues over $251.4 million) in operation is Conrail. Based on the 1992 statistics from Economics and Finance Department of the Association of American Railroads, the top commodities rail tonnage in New York State [Ref.R6] were:

Originated within New York State:

petroleum or coal products (2.8 million tons); chemicals (2.0 million tons); nonmetallic minerals (1.7 million tons); food products (1.5 million tons); waste & scrap (915,180 tons).

Terminated within New York State:

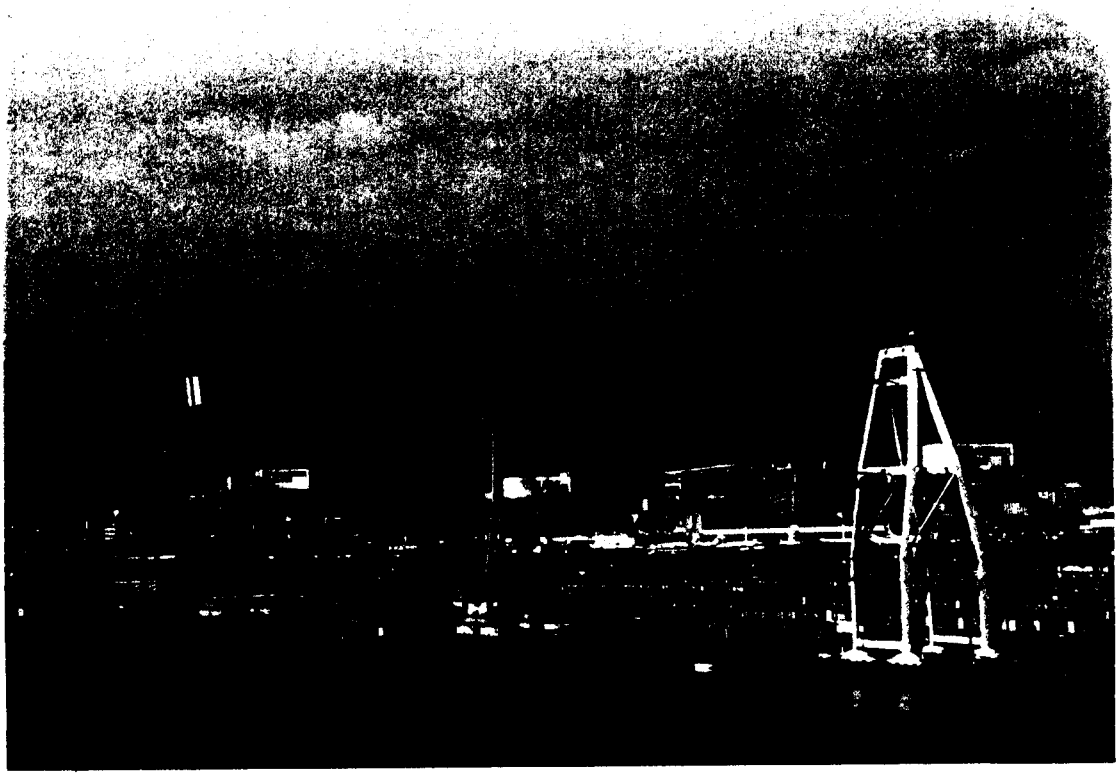
coal (12.4 million tons); food products (3.1 million tons); farm products (2.4 million tons); chemicals (2.2 million tons); pulp and paper (1.8 million tons) [Ref.R6].

In the metropolitan area, railroads are an important component of the intermodal freight transportation network, which strongly influences the economic vitality of the region. The local rail system is composed of various mainlines and branch lines. Railroad companies which operate in the metropolitan area network include: Consolidated Rail Corporation (Conrail), CP, MTA-Long Island Rail Road (LIRR), New York Cross Harbor Railroad (NYCHRR), South Brooklyn Railway (SBK), Staten Island Railroad (SIR)(which is being revitalized), East Jersey Railroad Co., New Jersey Shortline Railroad, and New York Susquehanna and Western (NYS&W). The main railroads are shown in Fig.R-1, the regional rail freight gateways and yard facilities are shown in Fig.R-2.

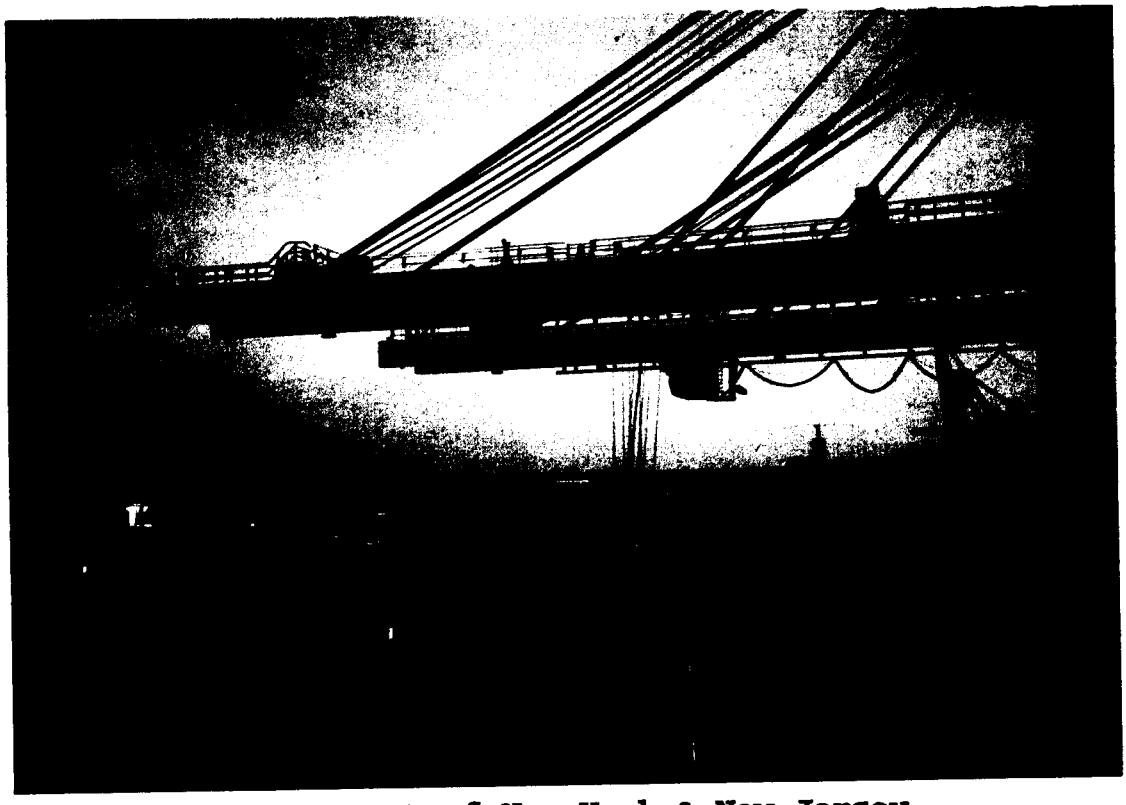
The current rail system in the metropolitan area is obsolete and has many weaknesses. Some of the problems are conflicts with passenger service, operating inefficiencies, such as line-haul/short-haul transfer, substandard clearances, and lack of direct river crossing, except by barge. In some areas there are no rail services. In other places the absence of state-of-art rail technology, such as double-stack containers and trailer/containers-on-flat-car (TOFC, COFC) capabilities contributes to the low utilization of rail in the region. Also, the decline of New York railroads is magnified by the lack of the demand for the rail market and the shift in the industrial base. Several freight branch lines, as well as the yards, have been inactive, abandoned, or underutilized. Some of these properties should be revitalized in the future (according to the NYCDCP "Inactive Right-of-Way Study")[Ref.R4].

In New York City, rail carries only 2.8 percent of the total freight volume (tons), whereas the rest of the nation has 26% of their freight volume (tons) moved by rail [Ref.R5,R9]. The New York metropolitan region is principally a freight consumer. Terminating traffic far exceeds origination traffic by a ratio of almost 7 to 1.

Overall, the principal inbound commodities for New York City are food, farm products, and pulp/paper. Long Island chief imports include food, pulp/paper and lumber/wood products. The New York City area originating rail traffic includes primarily waste/scrap shipments. Over 80% of the commodities are carried in boxes, refrigerators or hopper cars. The current restriction of overhead clearance on rail access routes to the



Port of New York & New Jersey
Marine Terminal - General View



Port of New York & New Jersey
Marine Terminal -Containers transport

metropolitan area prevent the national car fleet from entering the NYC and LI market [Ref.R3] See Figure R-29 for percentage of national rail car fleet exceeding New York access height restrictions. One of the projects that may improve rail freight accessibility and overall performance is the proposed new rail tunnel linking New Jersey and Queens [Ref.R21].

The next section will describe the physical and the operational characteristics of the rail network, and existing and potential railroad freight intermodal facilities/yards located within the metropolitan area. Due to the nature of the railroad system, this section concentrates on the description of rail companies and organizations who own yards and terminals in the metropolitan region.

Main Rail Network (within NYMTC region)

CONRAIL

Conrail is a class I railroad.

Contact person:

* Ms. Paige E. Kane, Executive Director

Address:

* 303 Congress Street
  Boston, MA 02110
  Tel. 617-783-6200

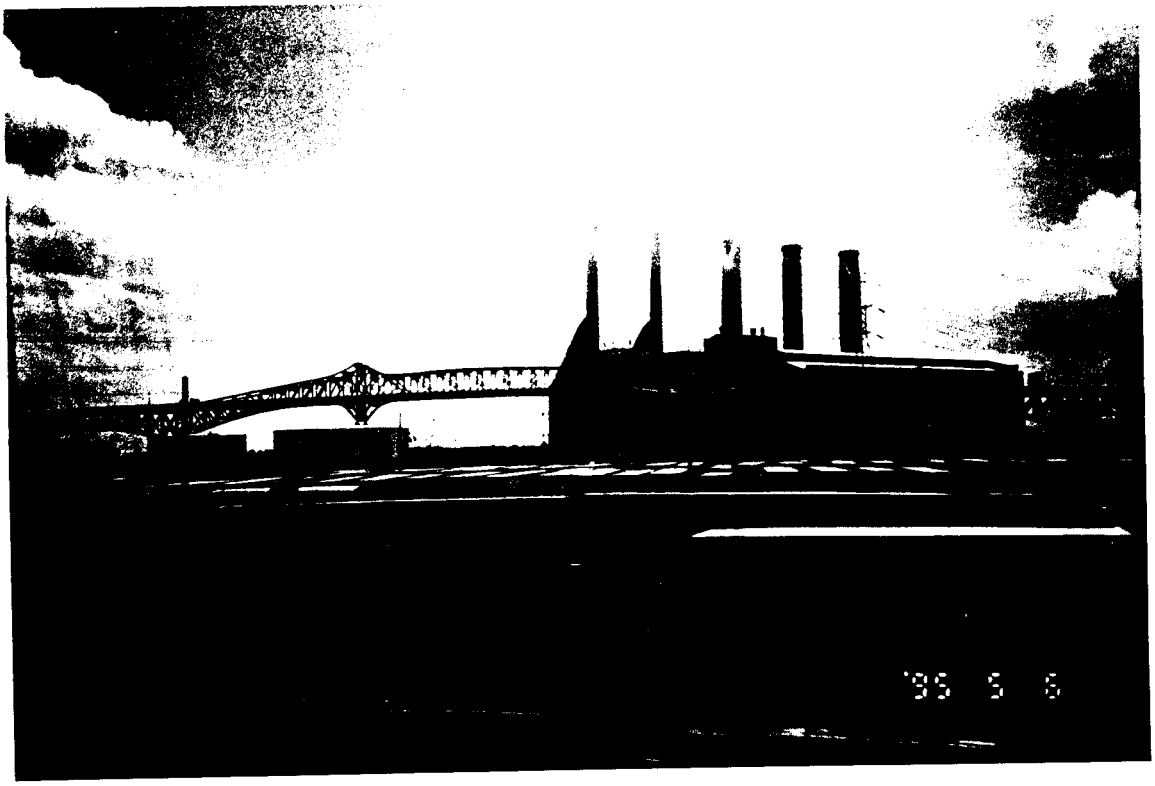
Physical Characteristics

In the New York metropolitan area, Conrail has trackage rights on the MTA rail line branches which are the Hudson Division, the Harlem Division, and the New Haven Division. In addition Conrail owns approximately 10 miles of tracks in Queens called the Fremont Industrial Track. Conrail primarily utilizes the Hudson Line (east of the Hudson) and the River Line (west of the Hudson) to serve the New York metropolitan area.

Conrail has completed the West Shore (River Line) clearance project to allow the passage of two domestic containers, 9'6" height, double-stacked (which requires a minimum clearance of 22-23 feet). On the east side of the Hudson, clearance is only sufficient for tri-level auto carriers from Selkirk to Tarrytown (GM plans to move-out of Tarrytown). Conrail is currently expanding the "Triple Crown" Road Railer network.

Operational Characteristics

In 1992, in the New York metropolitan area Conrail carried almost 600,000 carloads or containers with approximately a 60-40 inbound/outbound split [Ref.R22]. In the New York metropolitan area Conrail's intermodal traffic has increased18.4% in the first quarter of 1994. The forecast for 2000 is 907,000 unit cars per year which represent a 35% increase from 689,000 unit cars in 1994 [Ref.R2,R38]. In 1990 Conrail ran130 trains weekly and handled almost 800,000 tons of cargo annually in metropolitan area[Ref.R2A]. Nationwide, in 1993 Conrail operated 11,831 miles of road, owned 10,017 miles, had 62,700 freight cars and 2,134 locomotives in service, and its traffic covered 89,953 million ton-miles [Ref.R42]. Based on an ICC report, in 1994 the revenue was 95,487 million ton-miles. To meet the growing demand, Conrail continues to invest in new rolling stock. However, based on the JOC 7/24/95, Conrail is reducing the volume and revenue forcasts



INTERMODAL TERMINAL

Double Stack on the Flat Car

for the remaining year of 1995. The forecast also mentioned a1% growth in automotive traffic and 4 to 6% decline in intermodal and other traffic. In order to balance its revenue and maximize its profits, Conrail trimmed its operating expense (by $19 million in the second quarter of 1995) and is planning to sell some of the non-profitable tracks.

Based on the MTA-LIRR downstate study [Ref.R41], in 1994 Conrail operation in the New York area represented 17% of total activities and generated 9% of their total income. From its intermodal traffic Conrail generated $ 1.7 million revenue in 1994. Total Conrail rail revenue in 1994 was $3,733 million in comparison to $3,453 million in 1993 [Ref.R17]. Conrail currently operates four to five local trains per day in the New York City area [Ref.23]. Conrail's intermodal activity increased 71% in 1994 from 1993, and is expected to grow to 100,000 loaded rail container movements per year [Ref.26].

In 1989 Conrail entered a joint venture with OHM Corporation to operate state of the art equipment for hazardous waste recovery, treatment, transport, and disposal. Currently Conrail operates 36 intermodal terminals in Canada and the United States [Ref.26].
According to the New York State annual report for railroads, Conrail has 4,461 track miles, 34,159,928,000 GTM (gross ton miles), and 20,313,060 gallons of locomotive fuel consumption in the New York metropolitan area [Ref.R1].

Commodities

In our region, the main inbound cargos for Conrail are food, kindred products, transportation equipment, and chemical and allied products.

The top five commodities handled in 1992 [Ref.R22] were:

Inbound Traffic:

misc. mixed shipments (48.6%), food/kindred products (13.1%), transportation equipment (7.4%), chemical/allied products (5.9%), pulp paper (5.8%), total all commodities: 361,290 carloads or containers;

Outbound Traffic:

misc. mixed shipments (47.2%), containers returned empty (25.1%), waste or scrap materials (5.4%), mail & express traffic (4.7%), transportation equipment (2.9%), total all commodities: 228,158 carloads or containers.

Conrail's three New York mainlines are as follows: [Ref.R9]

Hudson Division

Physical Characteristics

The Hudson Line route starts from Selkirk Yard (south of Albany) and is the only direct railroad route to locations west and north of New York City. This line continues to Poughkeepsie, Spuyten Duyvil, Highbridge, Mott Haven Junction interlocking, Port Morris and terminates at Oak Point Yard (Bronx). Oak Point Yard is Conrail's chief classification facility in NYC. The existing low bridge clearances limit freight car movement such as double stack and container service. With the completion of Oak Point Link in1995, clearance will improve, although it will still be a problem to accommodate the double stack trailers (DST) and Hi-Cube Double freight. At the rail tracks north of Tarrytown the clearance is 19'6, which is sufficient for auto carriers (such as the GM plant in Tarrytown), and the clearance between Oak Point Link and Harlem River Yard is also 19'6. However, in the portion between Tarrytown and Oak Point Link there is a height restriction of 17'6 in three places. This height clearance is not sufficient to accommodate double stack operation. The national standard for intermodal rail clearance is 23 feet (see Fig.R30 for the intermodal rail clearance standard). In New York State the new construction and rehabilitation are required to accommodate a 20'6 clearance.

Starting south of Poughkeepsie the Hudson Line right of way is owned by MTA Metro-North Railroad.

Operational Characteristics

On the Hudson Line, Conrail operates two trains per day in each direction [Ref.R23]. Its freight delivery schedule is unreliable because of passenger service priority (MTA-Metro North Railroad and Amtrak). However, according to the "Goods Movement in Westchester County, Final Report" [Ref.R24], the recent trend in freight movement is for truckers such as J.B. Hunt and UPS to contract with the railroads for their long haul transportation, especially between their loading centers. This trend will eventually encourage the revitalization of freight movement by rail in the region.

Harlem Division

Physical Characteristics

This division starts from Wassaic in Dutchess County and ends at Mott Haven Junction in the Bronx, where it links to the Hudson River Division. This line, shared with MTA-Metro North Railroad, provides local freight service [Ref.R9].

Operational Characteristics

Conrail also conducts four to five local operations on weekdays from Oak Point to White Plains via the Harlem Line, to Pelham via the Amtrak/Hell Gate Line, and to Stamford (Connecticut) via the New Haven Line.

New Haven Division

Physical Characteristics

The New Haven Line goes through Connecticut and enters the Bronx in Pelham Bay Park, then passes through Hunts Point to go over Hell Gate Bridge and to continue into Queens to connect with the MTA-LIRR. Conrail, Amtrak, and MTA Metro-North Railroad share this route. This line provides limited access to the northern and eastern markets.

Operational Characteristics

The Hell Gate Line serves as an important rail link for freight traffic moving to and from Long Island. This line is underutilized, however, NYSDOT has considered the feasibility of using it for dual highway and rail service with a possibility of an extension to the Trans-Brooklyn Freightway. This right-of-way serves as a vital link in the Northeast Corridor high speed intercity rail network [Ref.R4].

The remainder of the New Haven Line is in Connecticut. It is connected to the Housatonic Valley branch tracks (now sold to the MTA Metro-North Railroad for operational purposes only). In Connecticut, starting from South Norwalk and Danbury Terminal, the Providence & Worcester (P&W) regional railroad shares trackage and overhead rights with Conrail, MTA Metro-North, and Amtrak.

The P&W rail has increased its operation from 43 miles to 406 miles. P&W rail moves asphalt from Danbury plant to serve shippers on Metro North's Danbury branch and on the Devon-Derby Junction segments. The operations hub for P&W is in South Worcester, Massachusetts. Conrail continues to serve customers between New Haven and South Norwalk [Ref.R25].

Other Conrail branch lines serving different sections of New York City include:

Putnam Industrial Line

This line runs parallel to the Hudson Line and was abandoned in 1982 and partly removed. Based on the Westchester Goods Movement Study [Ref.R24], rail freight movement

within the Westchester area has a limited potential for expansion and, therefore, the revitalization of this line is very unlikely [Ref.R9,R24].

West Side Line

This line branches off the Hudson Division at Spuyten Duyvil and follows Manhattan's west shore south down to 14th Street. Conrail has operating rights, but this line is currently not utilized. The portion below 30th Street is partly demolished. Conrail in the past has considered the possibility of reactivating 1.5 miles of this line for the carrying of recycled material [Ref.R4].

Bay Ridge Branch

This line starts from Oak Point Yard in the Bronx, passes Fresh Pond (Queens) and ends at Bay Ridge Yard in Brooklyn. Fremont Industrial Line (Oak Point-Fresh Pond) is owned by Conrail. MTA-LIRR owns and operates the Fresh Pond-Bay Ridge section. This line is connected with the MTA-LIRR system at Fresh Pond [Ref.R9].

Port Morris Branch

This branch connects the Hudson and Harlem Divisions with Oak Point Yard [Ref.R9].

Conrail Yards/Rail Stations - NYC area

The following are stations within the New York City area mainlines that receive services from Conrail:

Tarrytown - Westchester County
Yonkers - Westchester County
Kings Bridge - Bronx
Bronx Terminal - Bronx
Oak Point Yard - Bronx
Port Morris - Bronx
Harlem River Yard - Bronx
Hunts Point Market - Bronx
Port Chester - Westchester County
Cross Harbor Landbridge (39th Street Float Bridge) - Brooklyn, NYC
Fresh Pond Jct/Fremont (interchange with MTA-LIRR) - Queens, NYC

INTERMODAL RAILROAD YARD

Triple Crown Road Railer: switch from road to rail

Harlem River Yard

This terminal is owned by the New York State Department of Transportation and is leased to Harlem River Yard Ventures located at East 132 Street, Bronx, NY 10474.

Contact person:

* Mr. Anthony M. Riccio, Vice President

Address:

* Galesi Group
  110 E 59th Street
  New York, NY 10022,
  tel: (212) 755-3700.

Access to the facility is via East 132nd St. and Bruckner Blvd. For layout of this yard see Fig. R-9. A renovation for this yard, with a cost of $70 million, is planned. In the future, the yard will accommodate 5 million cu. ft. of warehouse space, a paper recycling plant, and a bulk transfer cargo terminal and a solid waste transfer center.

As of September 1994 (NYSDOT, Harlem River Yard paper) this yard covers 28 acres. Originally there were 40 acres [Ref.R11]. The paper recycling facility will occupy 17 acres on the eastern end of the yard, using waste paper from NYC to produce pulp for the writing paper industry. Refrigerated warehousing and food distribution activities are located in the central portion of the yard, and containerized municipal solid waste will be handled at a 6 acre bulk terminal area at the west end of the yard [Ref.R27]. The nearest major highways are I-87 (Major Deegan Expressway), and I-278 (Bruckner Expressway). Conrail serves this terminal [Ref.R11].

The facility plans to have two unloading tracks and 500 parking spaces for railcars. The equipment available is one piggypacker. Due to a clearance problem on the New York routes and the non-existence of rail- freight connection from New Jersey and New York City, this facility can not be accessed by double stack trains [Ref.R11]. The completion of Oak Point Link will not include the improvement of existing bottleneck (clearance between Tarrytown and OPL, which is 17' 6"). However, the Oak Point Link is expected to be able to divert over 700 trailers daily from New Jersey terminals [Ref.R40].
In March 1995, the development of the terminal was delayed by the Bronx Supreme Court decision which revoked the NY State lease of this facility to the Harlem River Yard Venture [Ref.R18]. This decision has been appealed, and the final decision is in favor of the New York State DOT. Therefore, the construction of Harlem River Yard can proceed.

Operational Characteristics

At present, the yard is not active. According to "Oak Point Link Market Development Initiative" (May 1994), this terminal has a potential to handle 2 trains outbound and 2 trains inbound per day, to load/unload 600 trailers in 10 hours, and to store 900 trailers.

Hunt Points Terminal Market

The Hunts Point Market has access via East 149th St. and Bruckner Blvd. This facility covers 329 acres and generates 10,000 jobs. It is the primary food distribution center for NYC and Long Island [Ref.R35]. This yard is located on the city owned land at Hunts Point, Bronx, between E. 149th Street, Barry and Market Street, and Randall Avenue. The nearest highway is the Bruckner Expressway (I-278). Conrail owns and operates the Big Apple Bulk Transfer Terminal, located at the Market. The facility handles the bulk transfer of flour and other bulk food ingredients between railcars and trucks. Fruits and vegetables are important transfer products. The Market has parking spaces for approximately 500 piggyback vans and trucks, and 2,000 automobiles. The Market has 270 warehouse units (refrigerated storage) covering 475,000 sq. ft. of warehouse space, and 330,000 sq. ft. of office space. The Market has 21 rail spurs servicing the merchant warehouses and 13 spurs used as storage tracks at the eastern end of the terminal [Ref.R27].

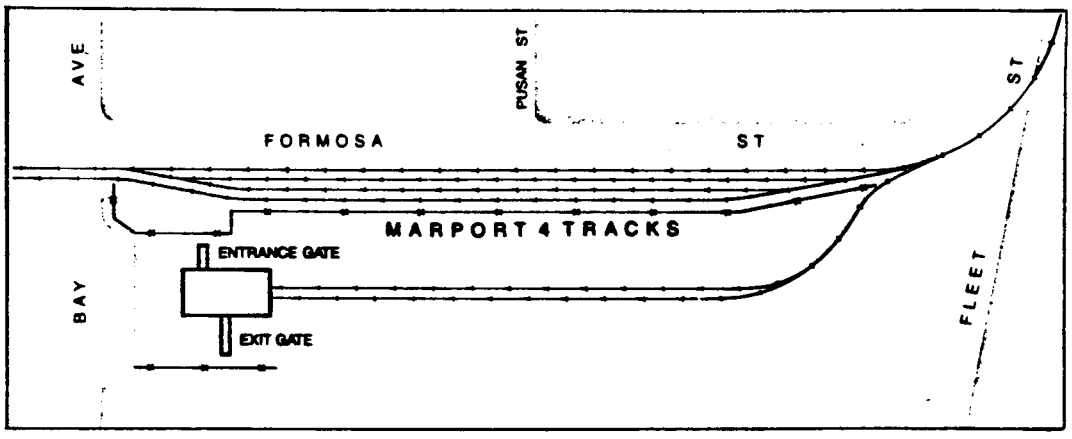
Oak Point Yard

This yard is located close to the Harlem River Yard (for map see Fig. R-31). The Oak Point Link will connect the Conrail Hudson Division line with the Oak Point Yard. The owner of the land is Baldwin Corp. The yard covers 5 acres. With the completion of Oak Point Link and Harlem River Yard the Oak Point Yard may grow into an intermodal yard also. [Ref. R-40, R-41]. The nearest major highway to the yard is the Bruckner Expressway, which is congested.

This yard is currently used as a classification yard. Conrail has 45 employees working in this yard. The yard is equipped with 39 tracks that has a capacity to accomodate 450 railcars. There are no warehouses in this yard.

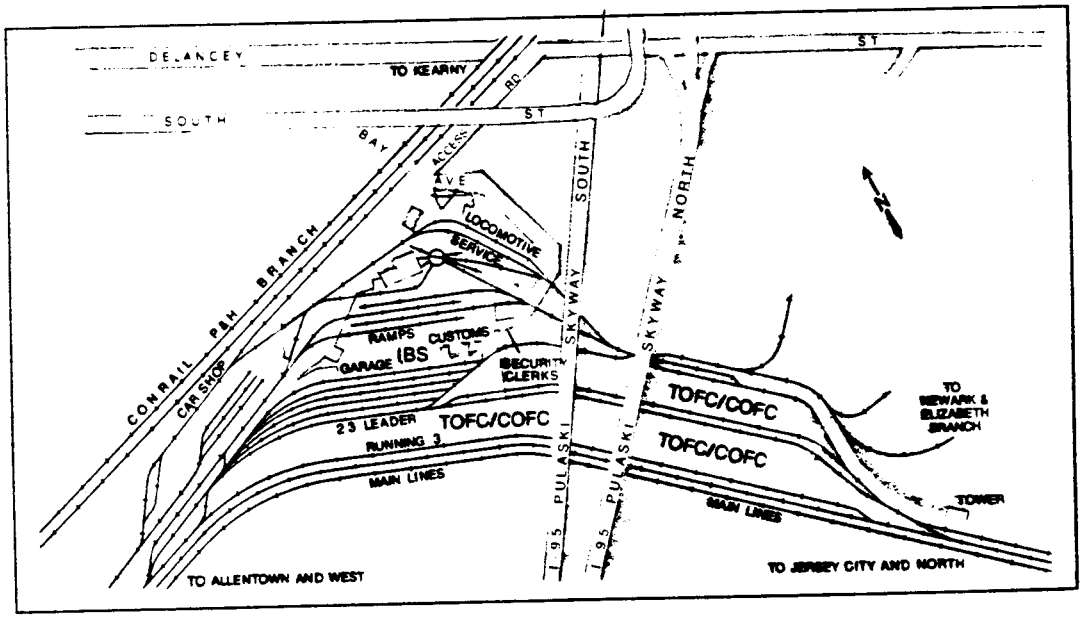
Bronx Terminal Market

This terminal which functions as a wholesale food market, is located near Yankee Stadium and along the Harlem River. For lay-out see Fig. R-31.

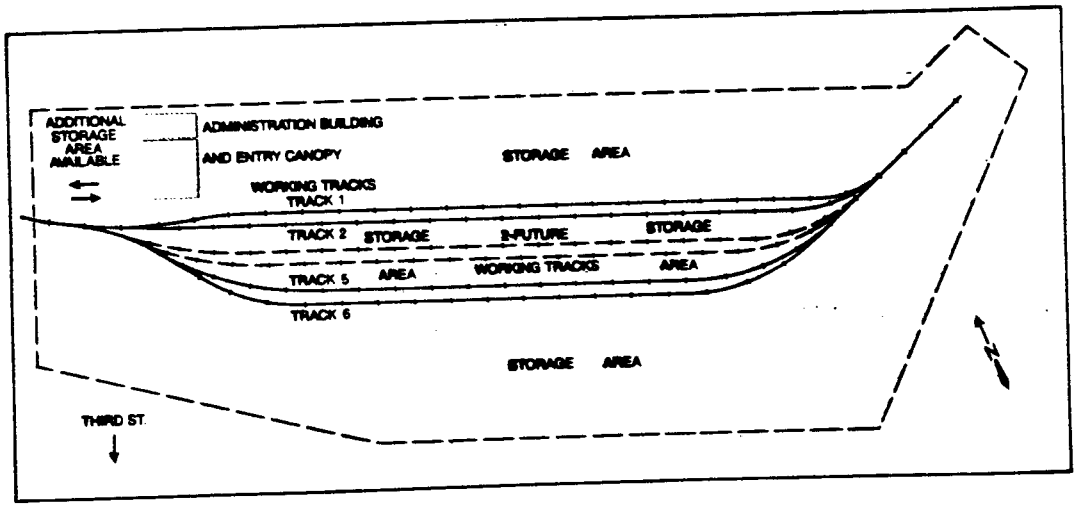


MARPORT/MAHER FLEET STREET TERMINAL

Elizabeth, NJ

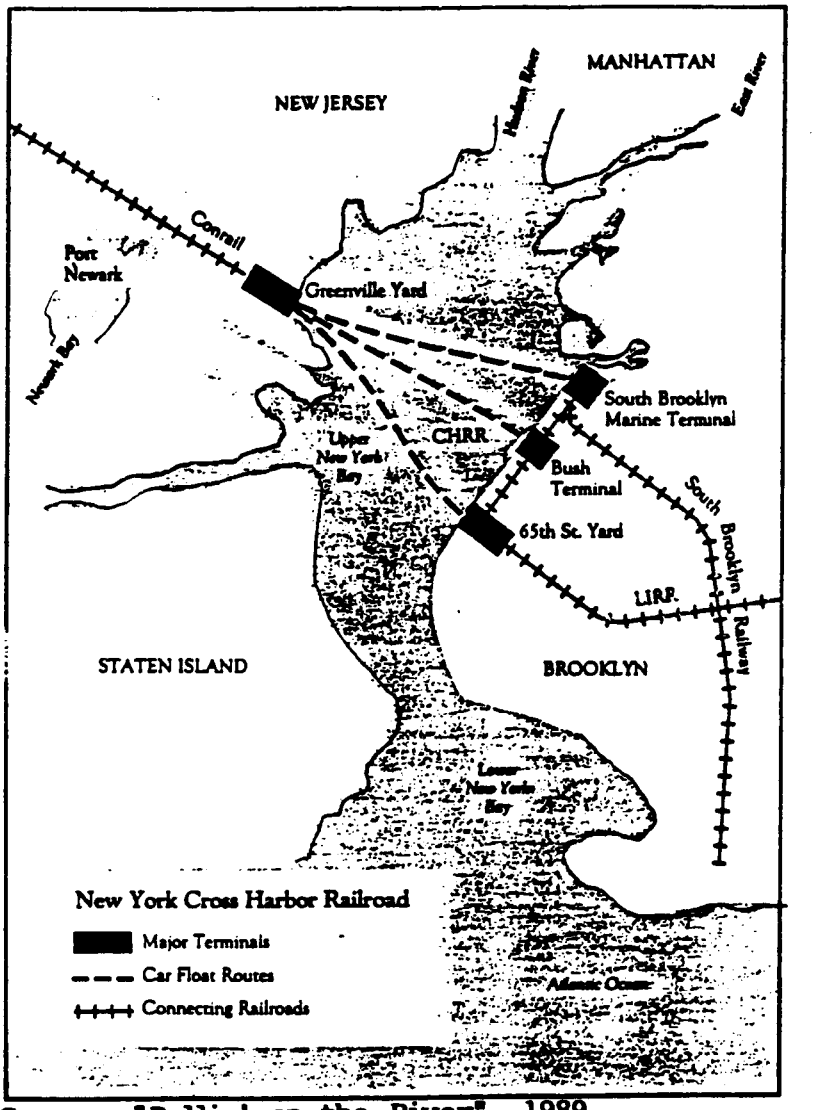


OAK ISLAND TERMINAL



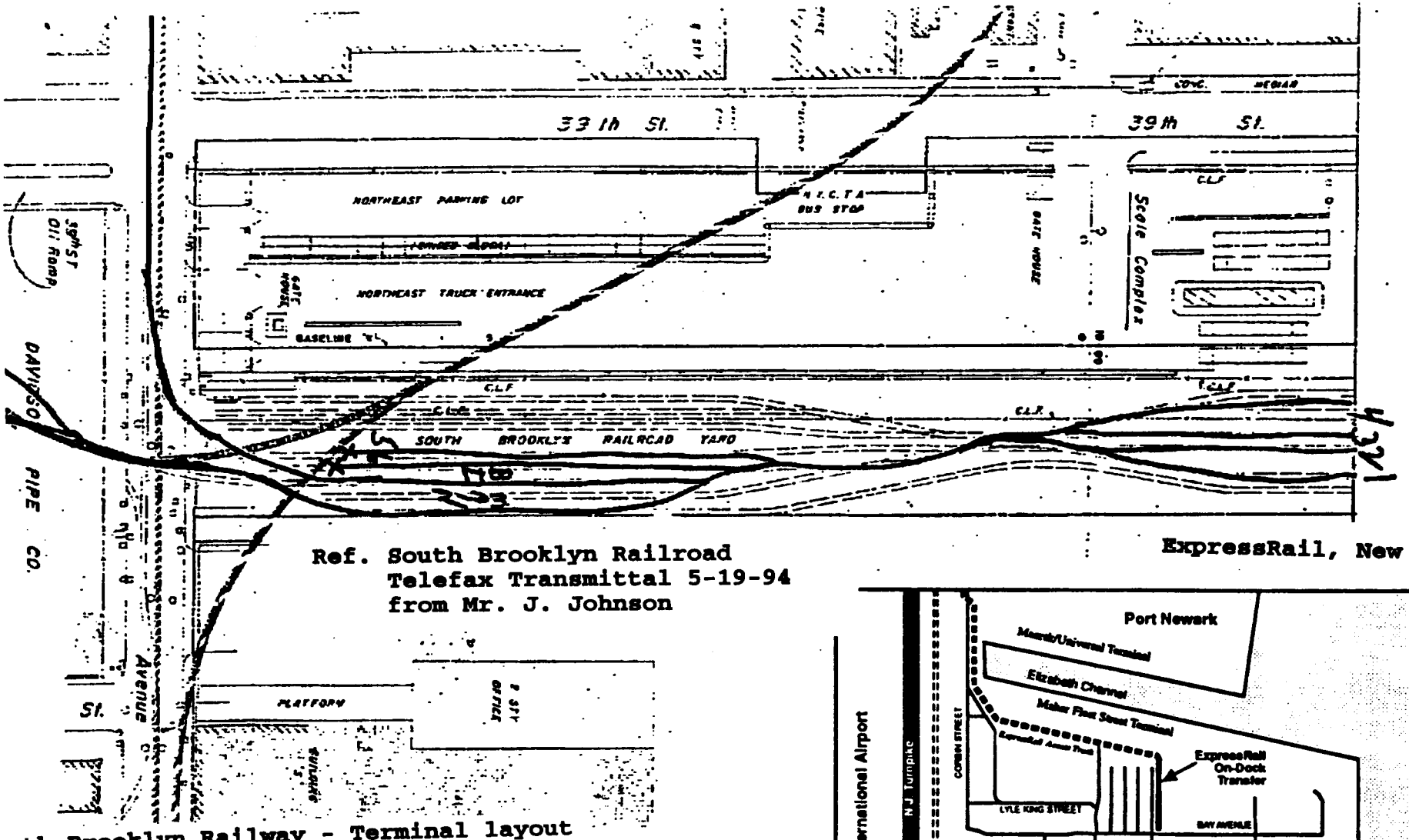
E-RAIL TERMINAL

NEW YORK CROSS HARBOR RAILROAD NETWORK



Source: "Rollin' on the River", 1989.

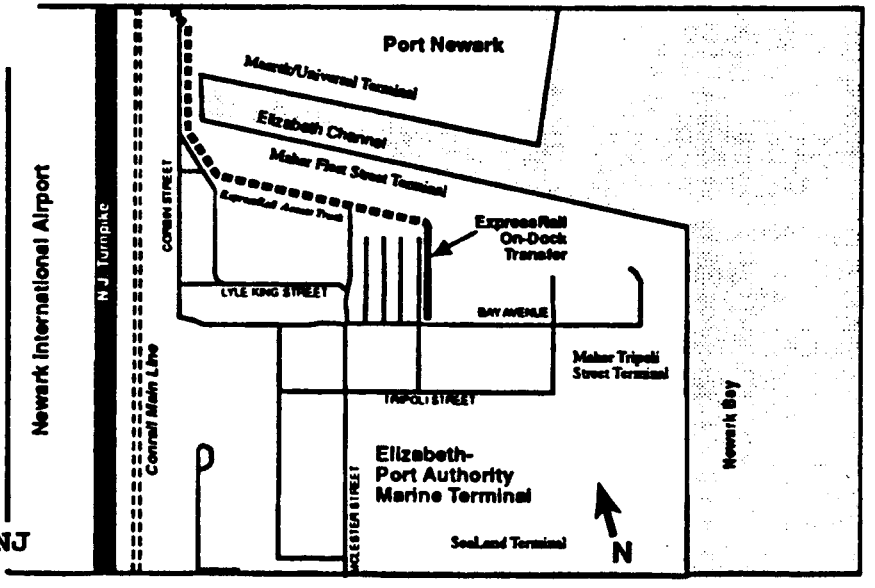
Source: Goods Movement Characteristics, UTRC, Jan.1993



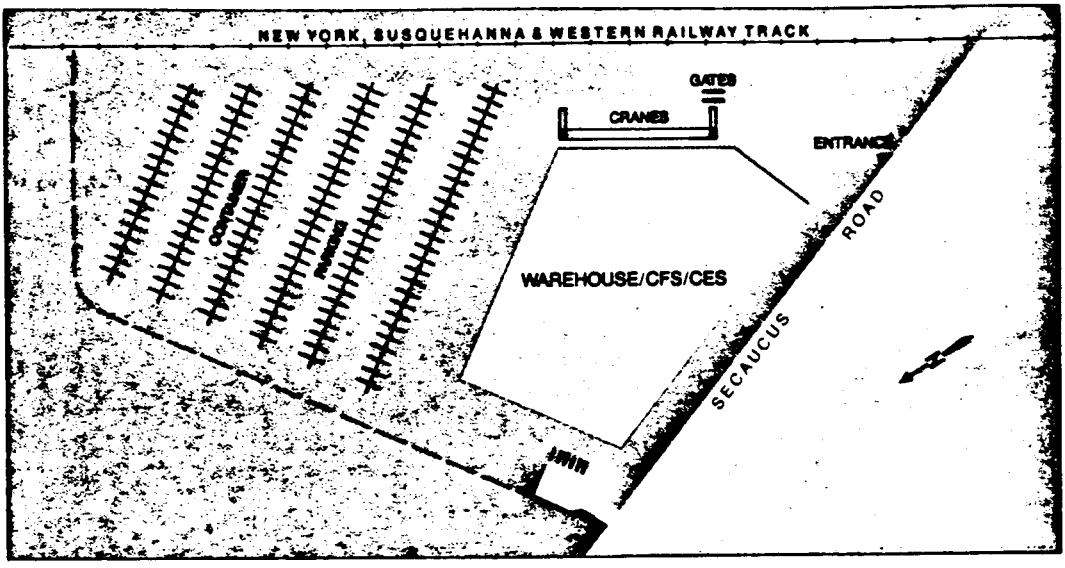
Ref. South Brooklyn Railroad
Telefax Transmittal 5-19-94
from Mr. J. Johnson

South Brooklyn Railway - Terminal layout

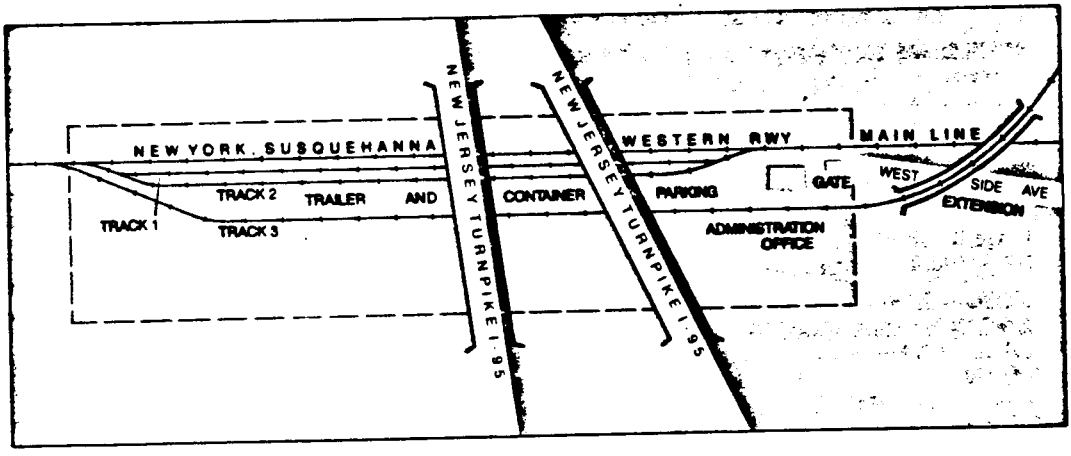
ExpressRail, New Jersey



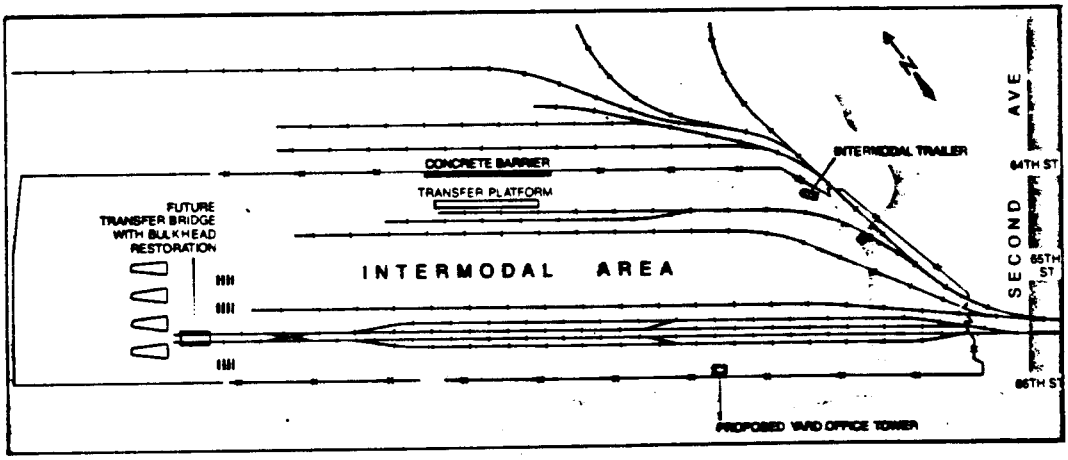
Ref. EXPRESSRAIL FACT SHEET, PANYNJ



RESOURCES



SEA-LAND/CSX LITTLE FERRY TERMINAL

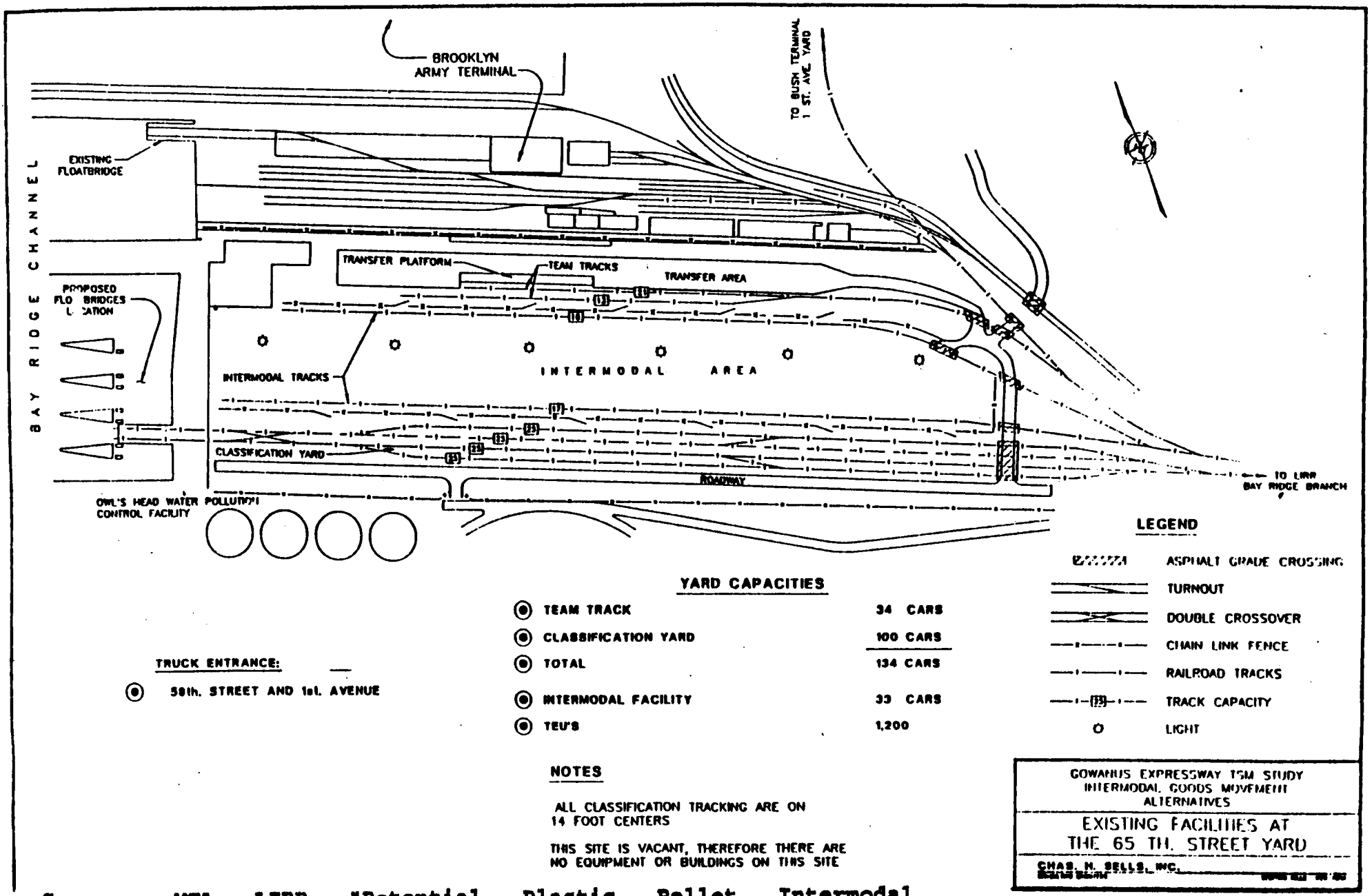


SOUTH BROOKLYN TERMINAL (65TH STREET)

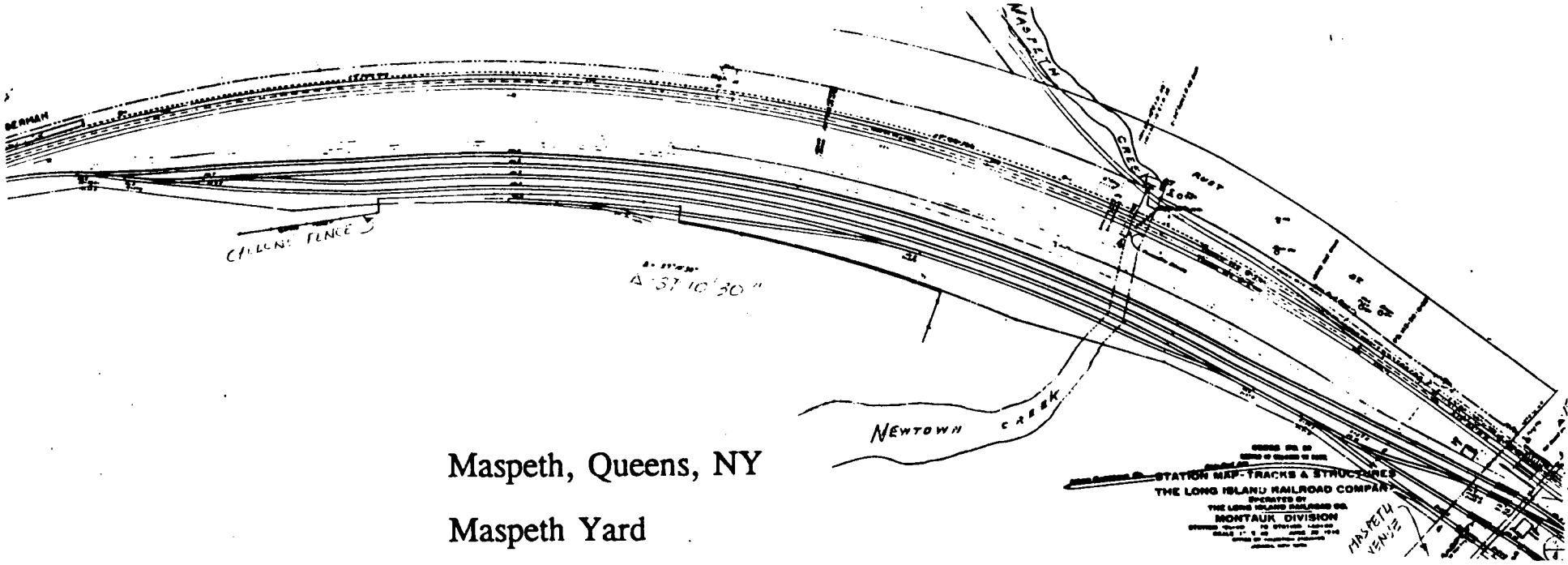
New York Cross Harbor RR Terminal Corp.

Source: 1991-92 Port of New York & New Jersey Guide, PANYNJ

Fig.R-15 LIRR, Bay Ridge, 65th Street Yard, Layout



Source: MTA LIRR "Potential Plastic Pellet Intermodal Distribution Sites", June 1993



Maspeth, Queens, NY

Maspeth Yard

Source: MTA LIRR "Potential Plastic Pellet Intermodal Distribution Sites", June 1993

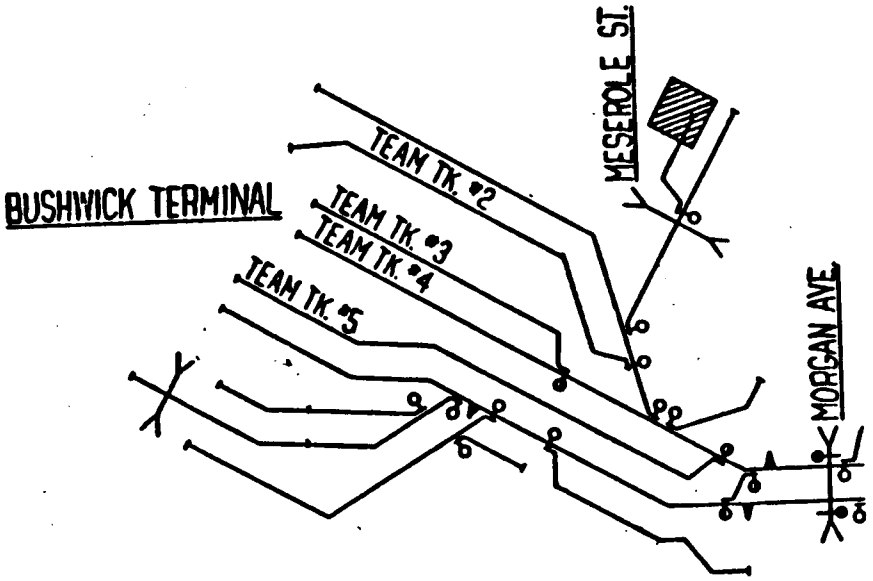
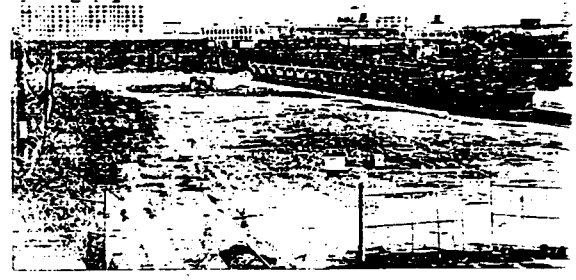
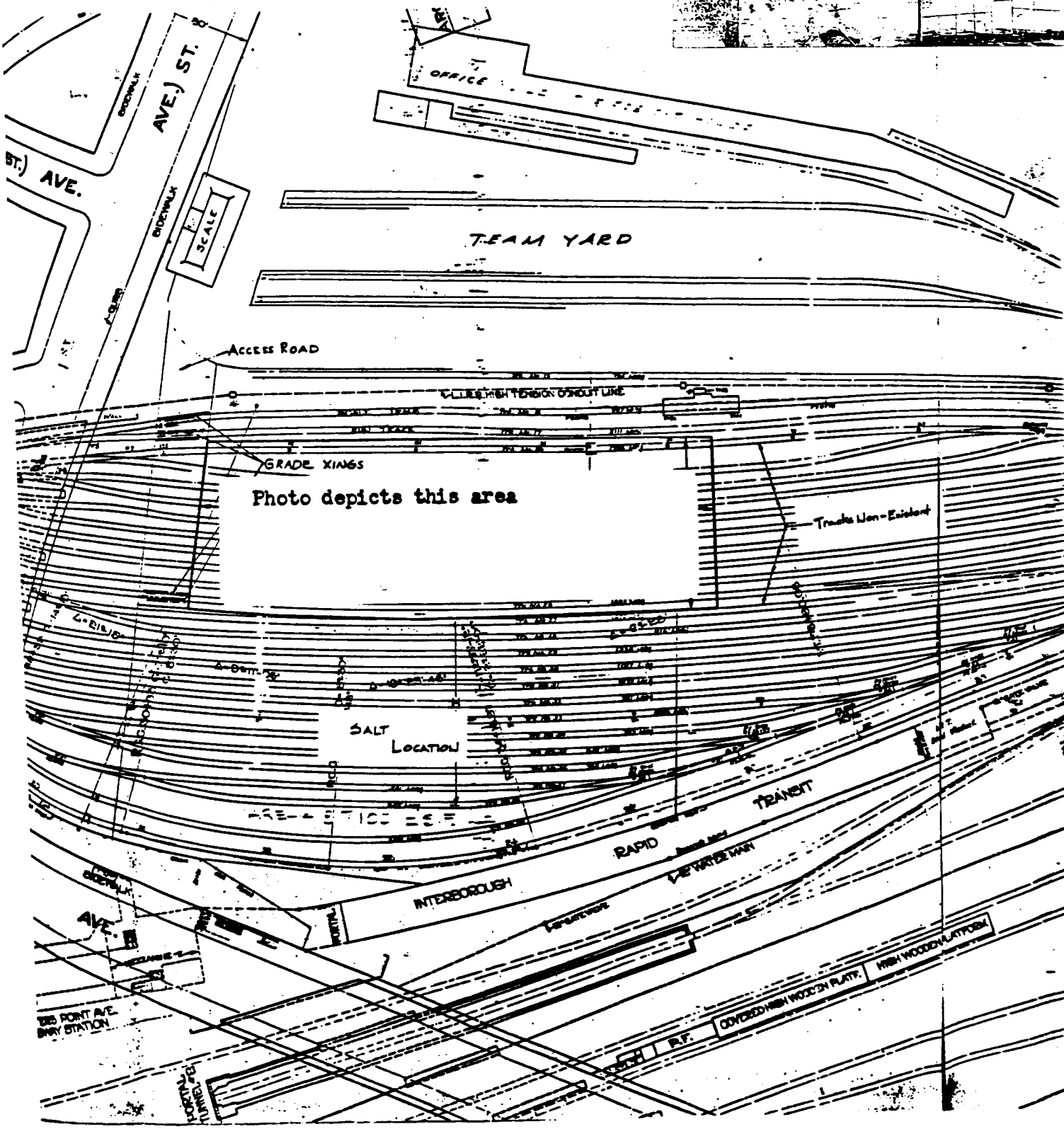


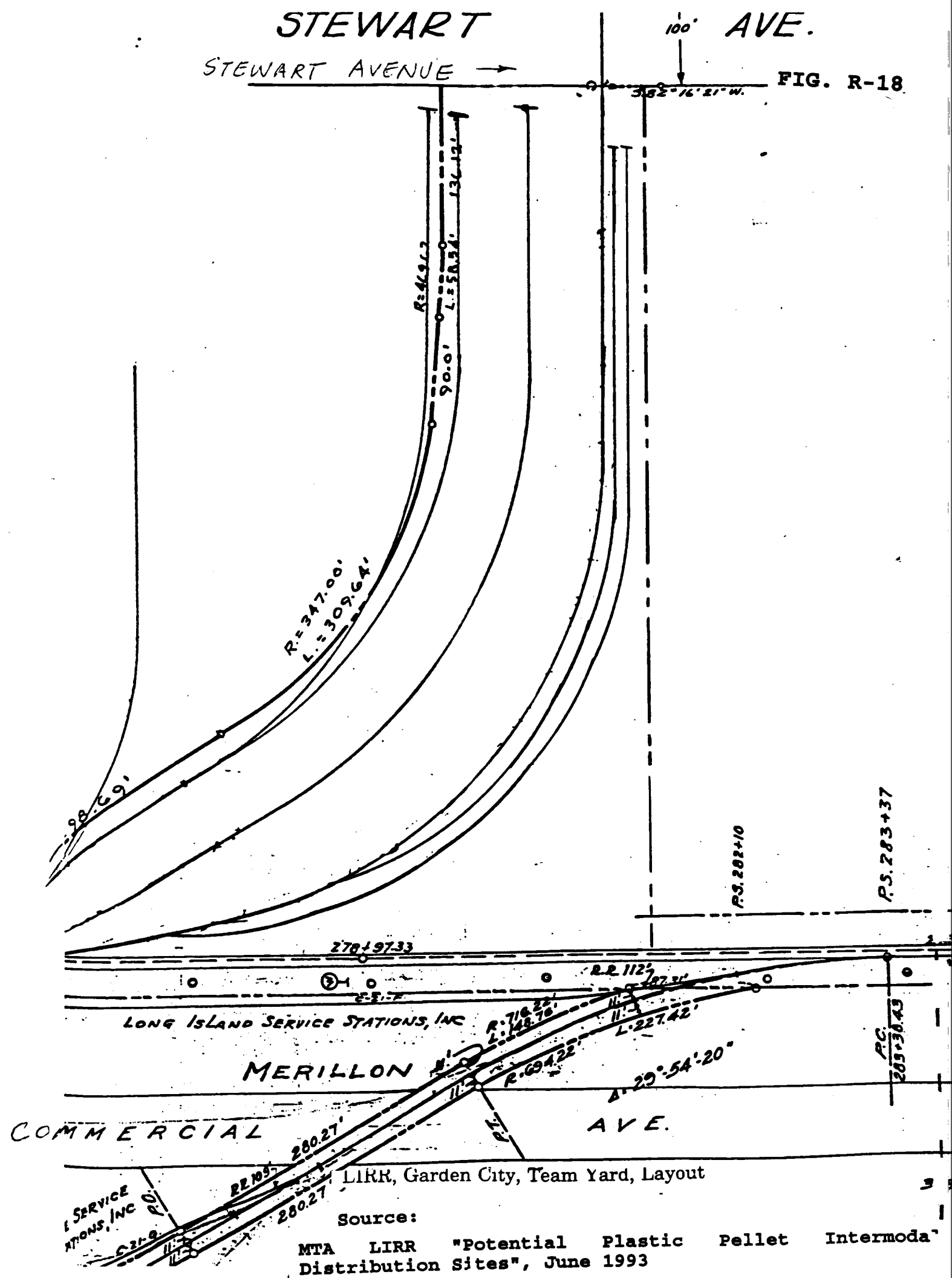
Fig.R-17 LIRR, Long Island City. Team Yard, Layout





Source: MTA LIRR "Potential Plastic Pellet Intermodal Distribution Sites", June 1993

FIG. R-18



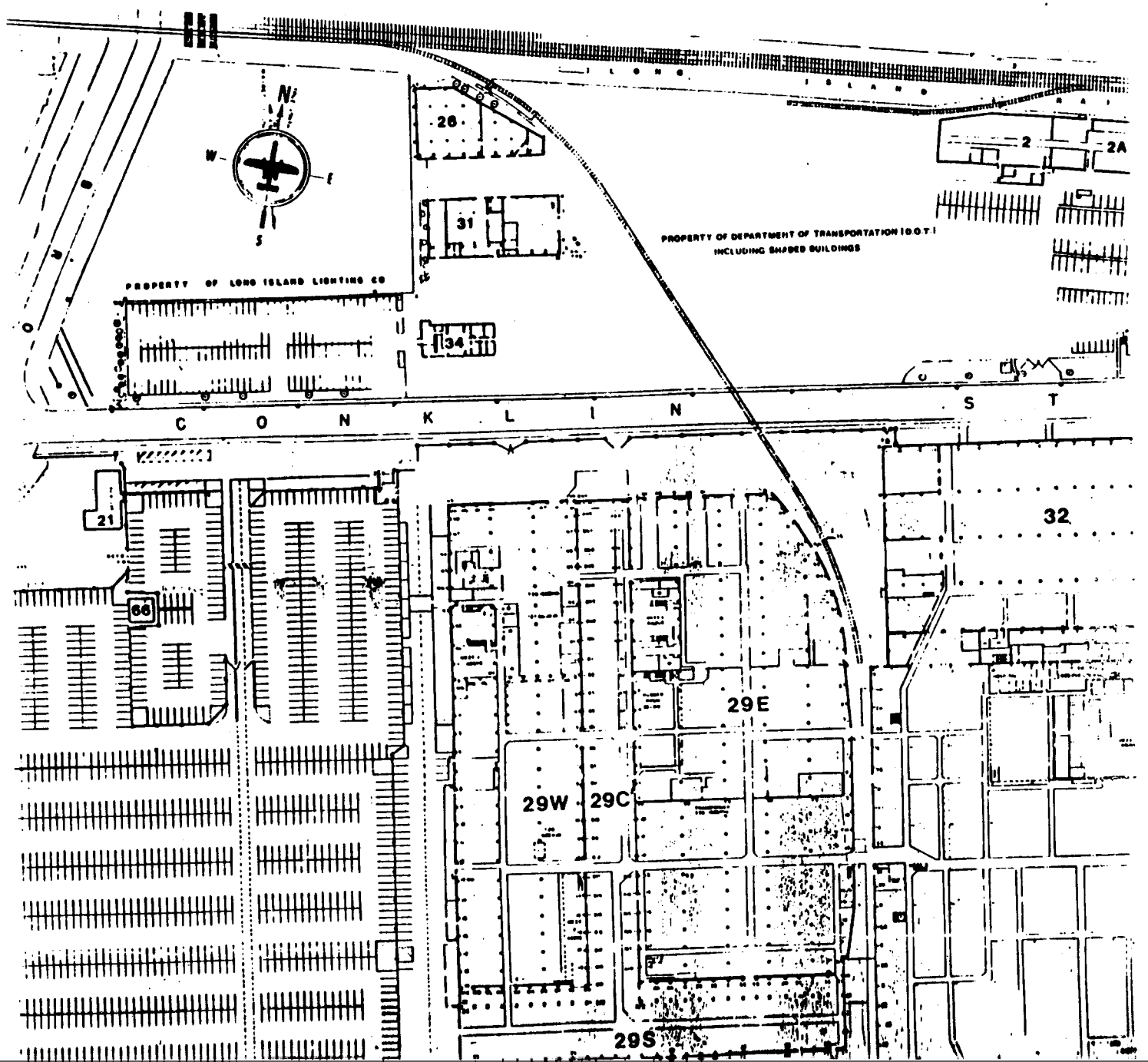
LIRR, Garden City, Team Yard, Layout

Source:

MTA LIRR "Potential Plastic Pellet Intermoda" Distribution Sites", June 1993

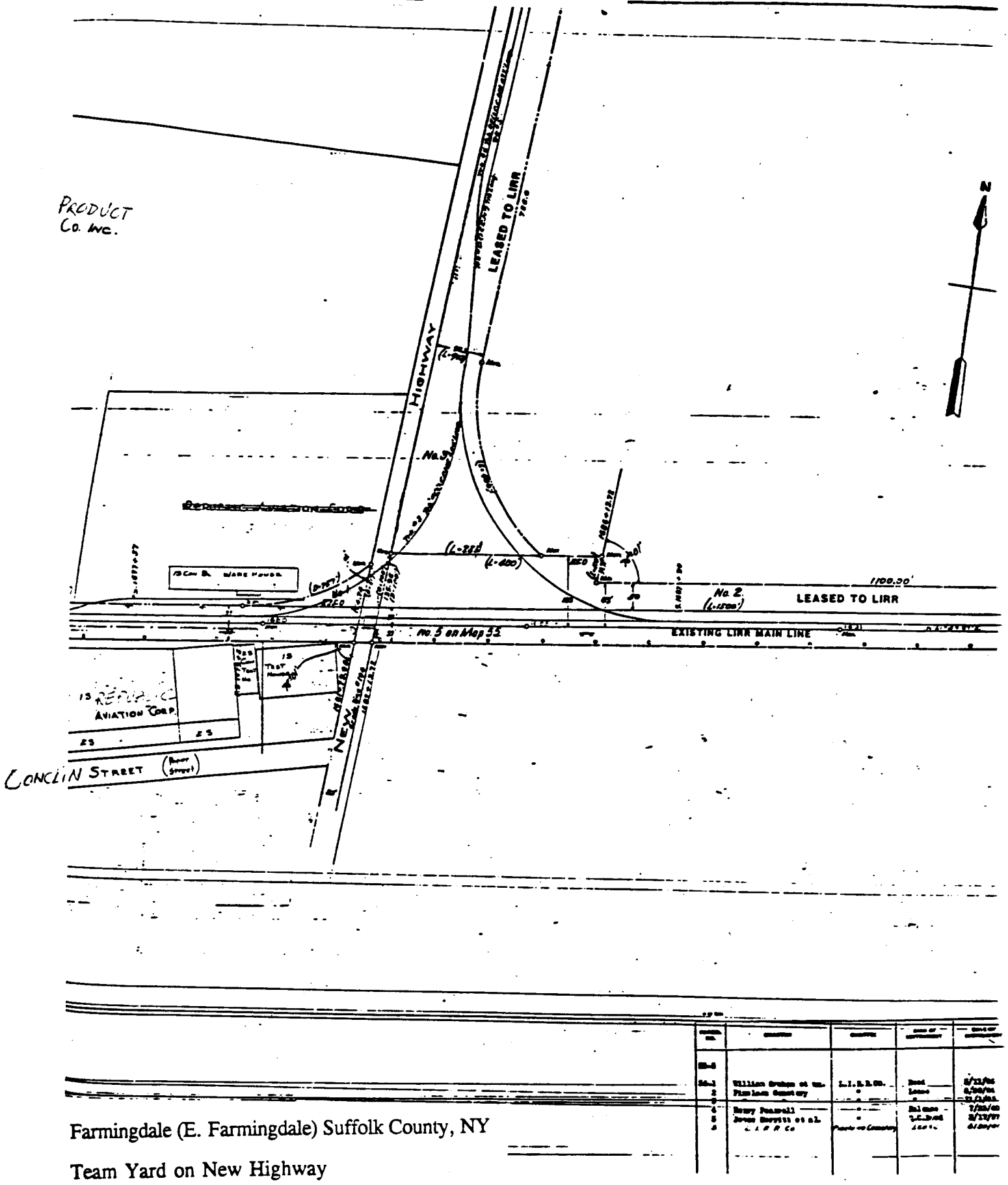
Farmingdale Yard, Suffolk County
Site: Republic Airport Property

FIG. R-19



Source:
MTA-LIRR "Potential Plastic Pellet Intermodal Distribution Sites" 1993

FIG. R-19A



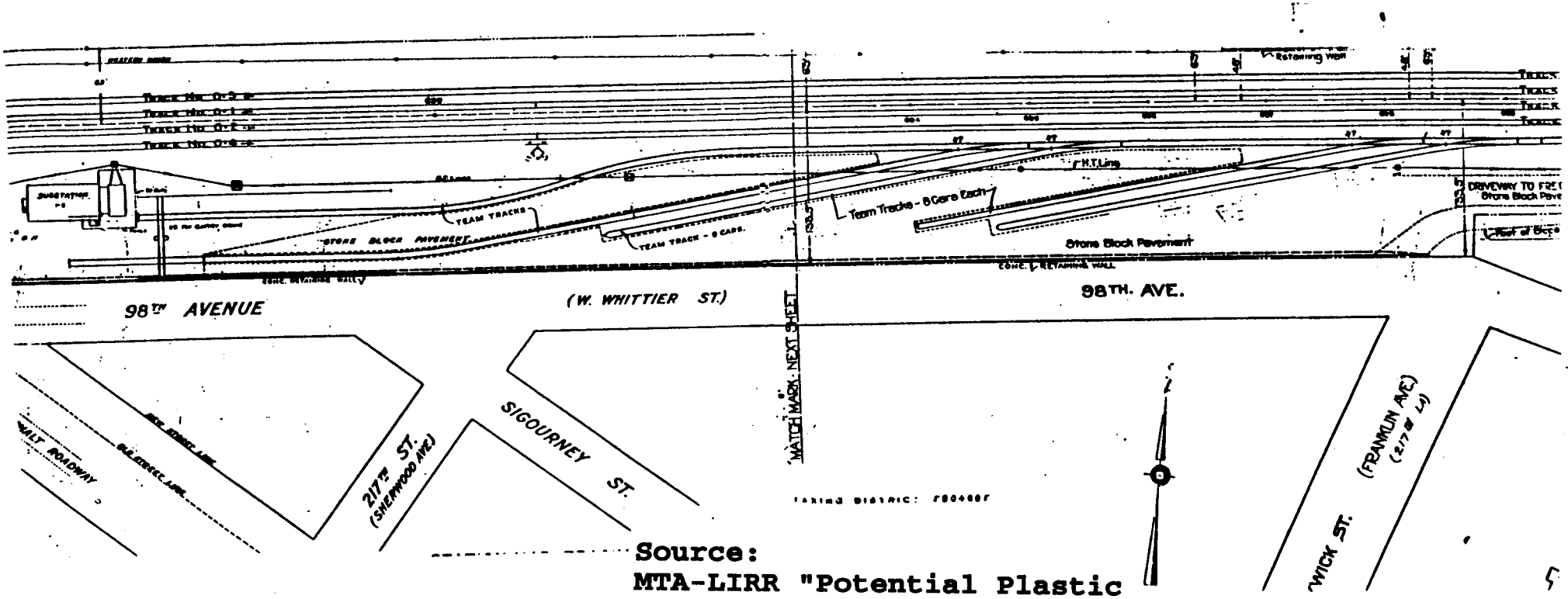
Farmingdale (E. Farmingdale) Suffolk County, NY

Team Yard on New Highway

Source: MTA LIRR "Potential Plastic Pellet Intermodal Distribution Sites", June 1993

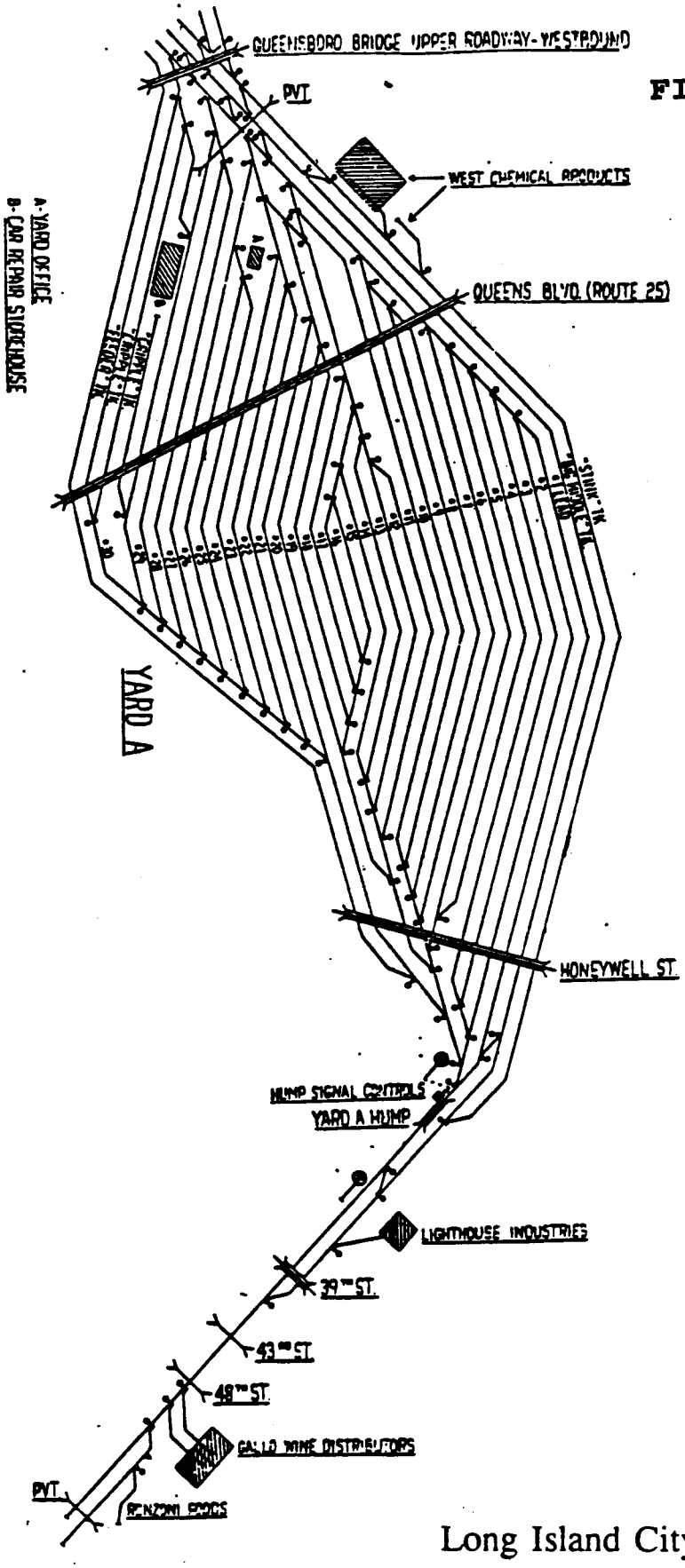
Queens Village, Queens, NY
Site: Team Yard

FIG. R-20



Source:
MTA-LIRR "Potential Plastic Pellet Intermodal Distribution Sites" 1993

FIG. R-21

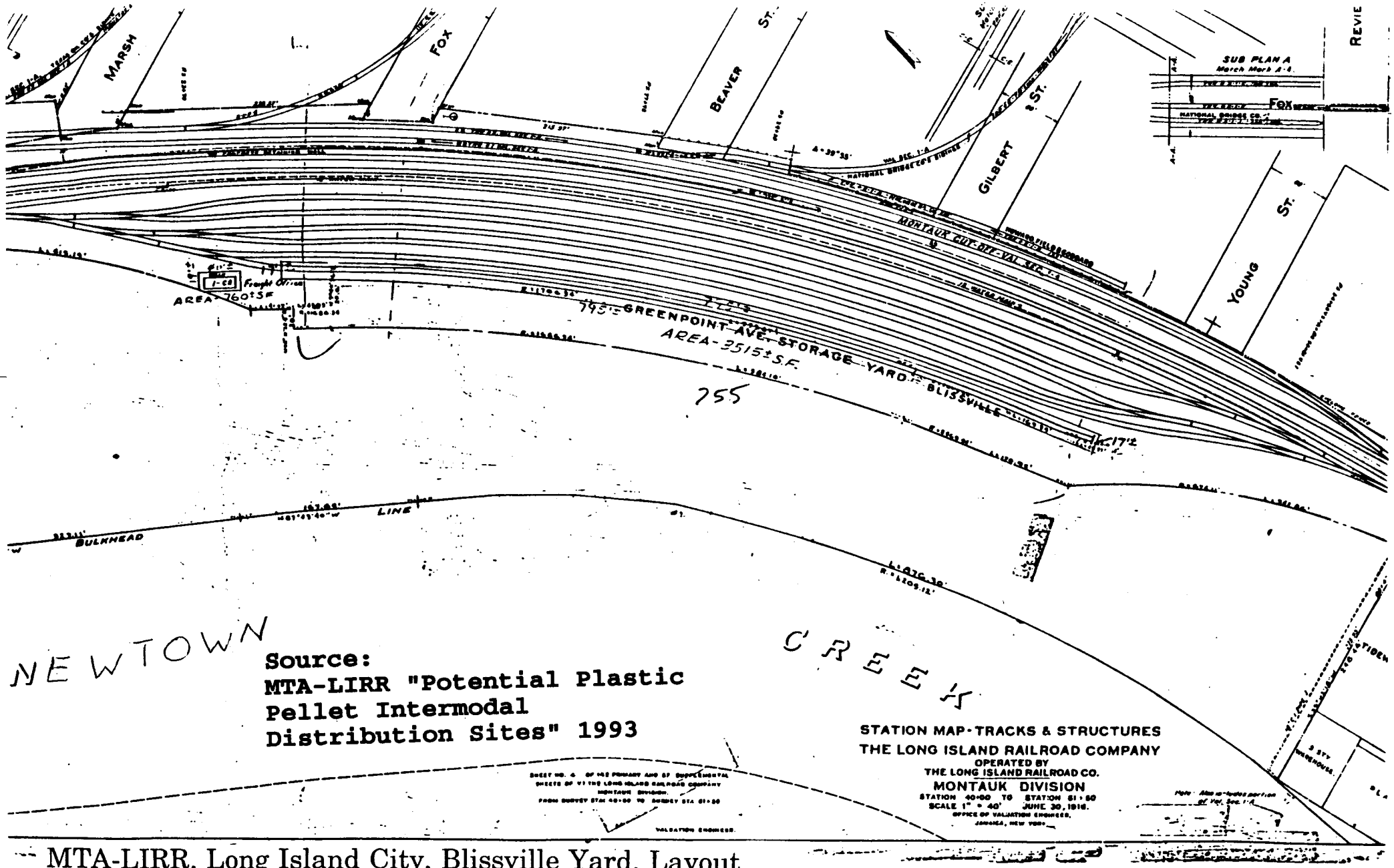


Long Island City, Queens, NY

Yard-A

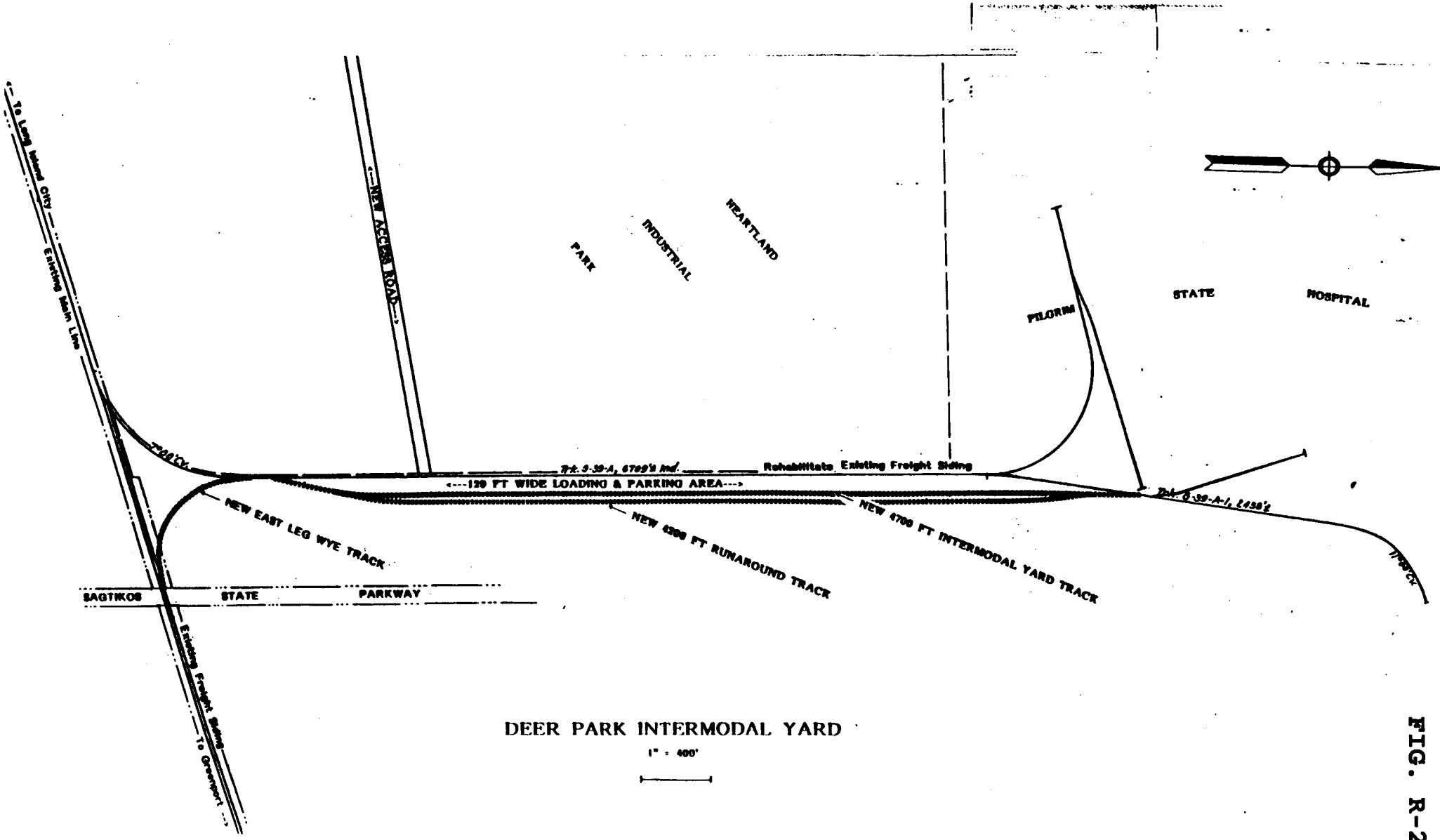
Source: MTA LIRR "Potential Plastic Pellet Intermodal Distribution Sites", June 1993

FIG. R-21 A



Source:
MTA-LIRR "Potential Plastic Pellet Intermodal Distribution Sites" 1993

MTA-LIRR, Long Island City, Blissville Yard, Layout



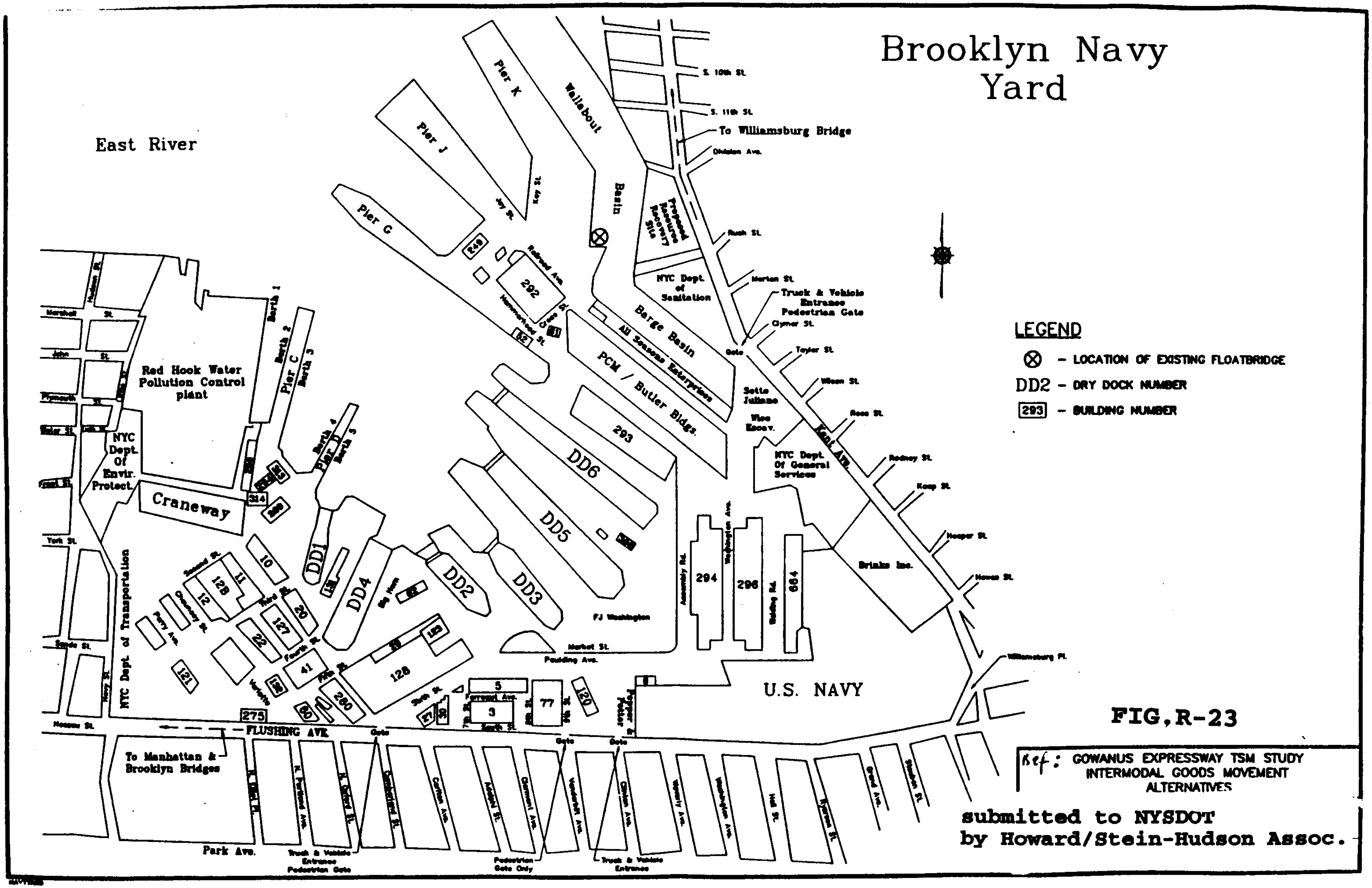
DEER PARK INTERMODAL YARD

1" = 400'

Source: MTA LIRR "Potential Plastic Pellet Intermodal Distribution Sites", June 1993

FIG. R-22

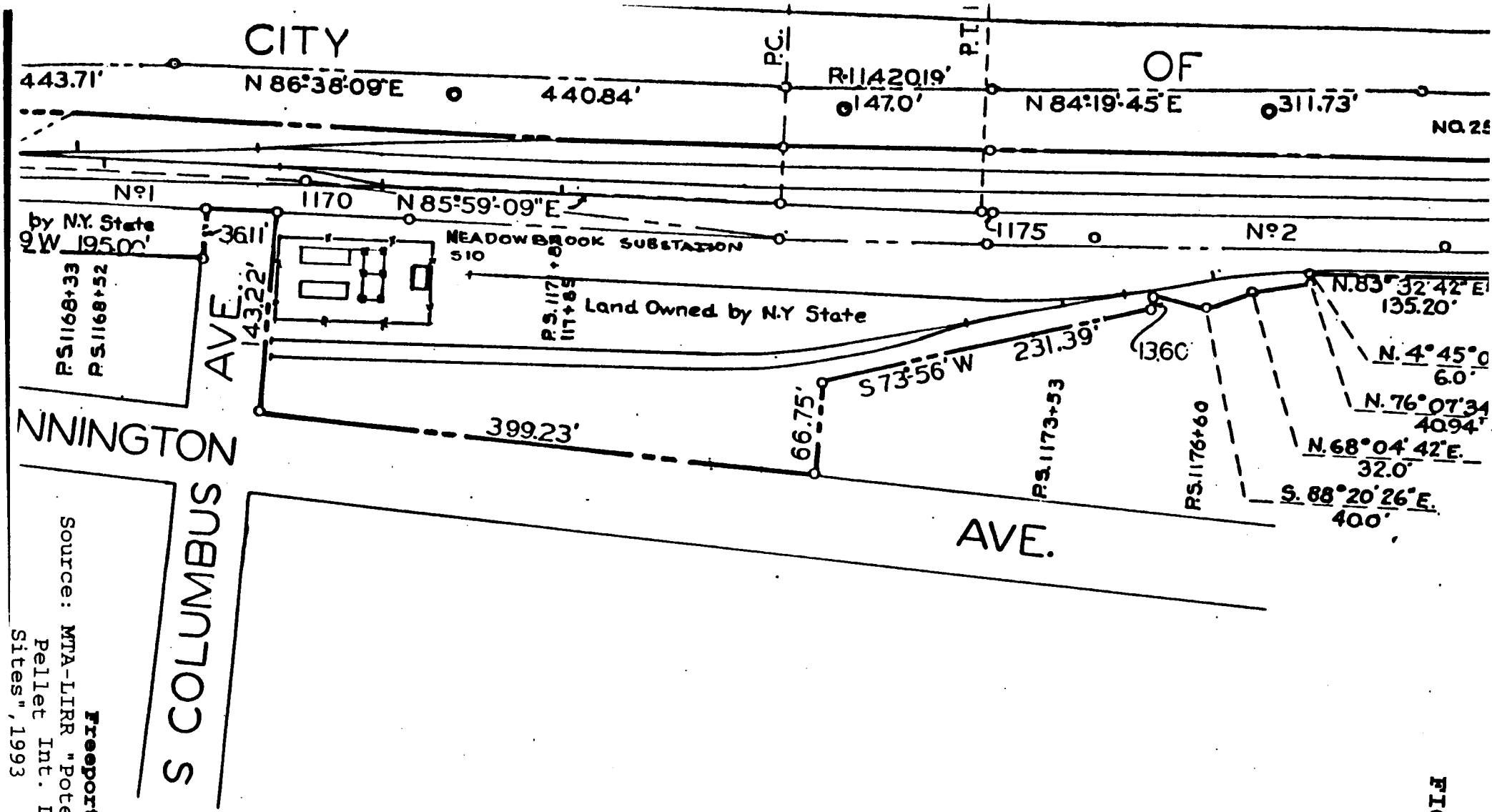
Brooklyn Navy Yard



FIG,R-23

Ref: GOWANUS EXPRESSWAY TSM STUDY INTERMODAL GOODS MOVEMENT ALTERNATIVES

submitted to NYSDOT
by Howard/Stein-Hudson Assoc.

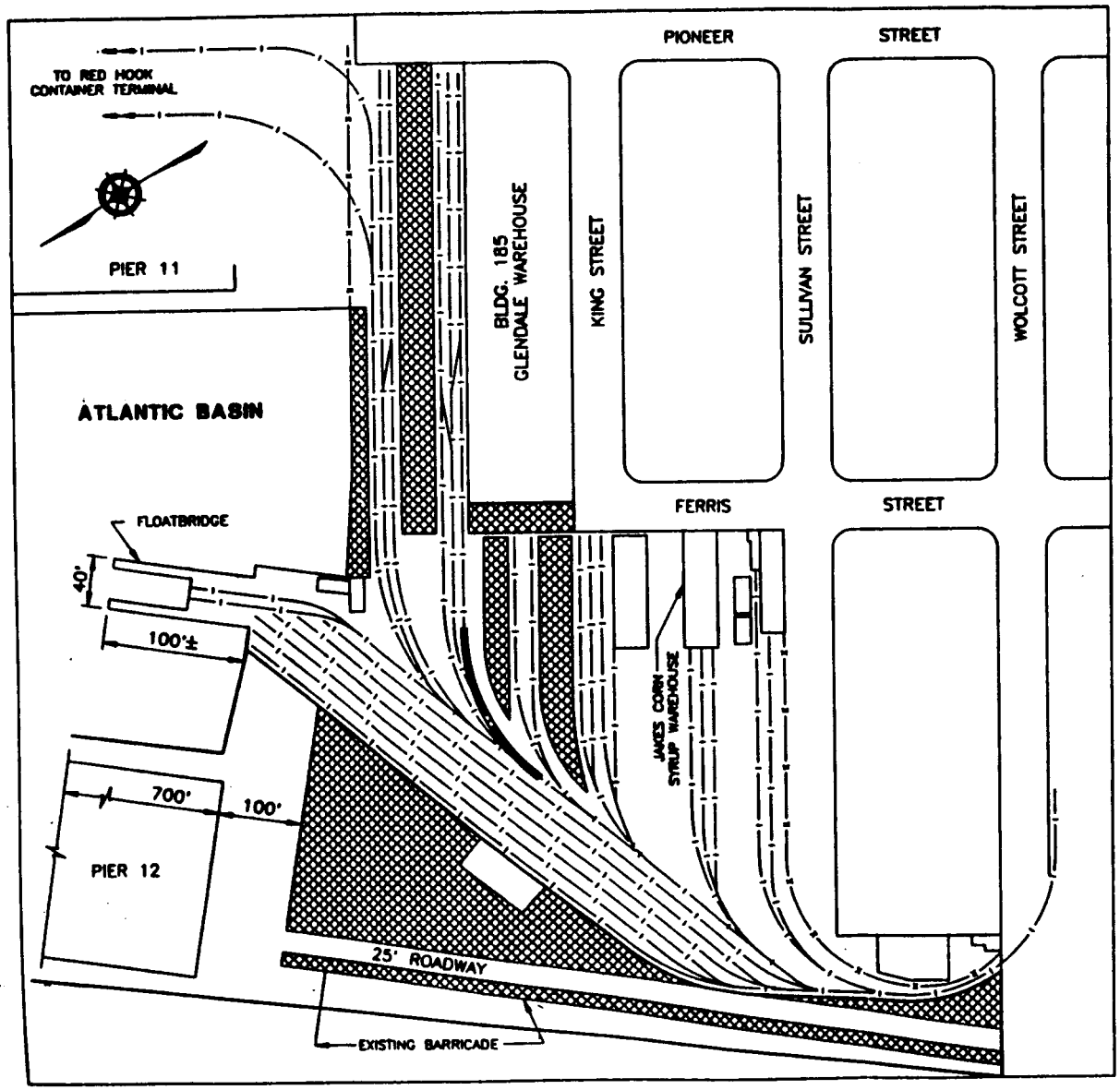


Source: MTA-LIRR "Potential Plastic Pellet Int. Distribution Sites", 1993

Freeport, Team Yard

FIG. R-24

LIRR, Freeport Team Yard, Layout



LEGEND

- BOUNDRY LIMITS – DOES NOT INCLUDE NYCHRR OPERATIONS
- CHAIN LINK FENCE
- RAILROAD TRACKS

NOTE:

THE ONLY EQUIPMENT ON SITE IS A DIESEL LOCOMOTIVE ENGINE.

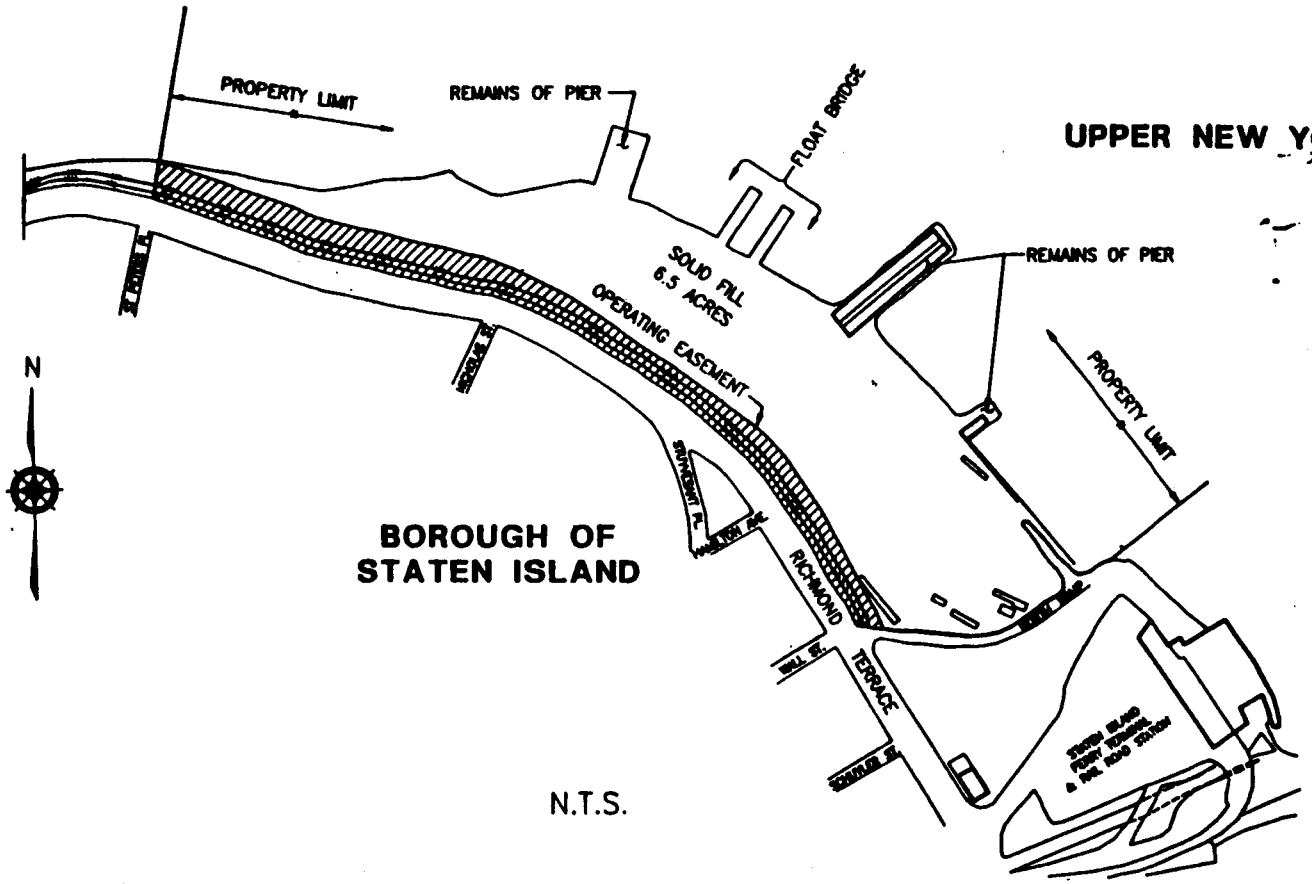
EXISTING FACILITIES AT ATLANTIC TERMINAL

Atlantic Terminal, Layout N.T.S.

Ref. Gowanus Expressway TSM Study

EXISTING SITE PLAN
ST. GEORGE YARD, S.I.

FIG.R-26



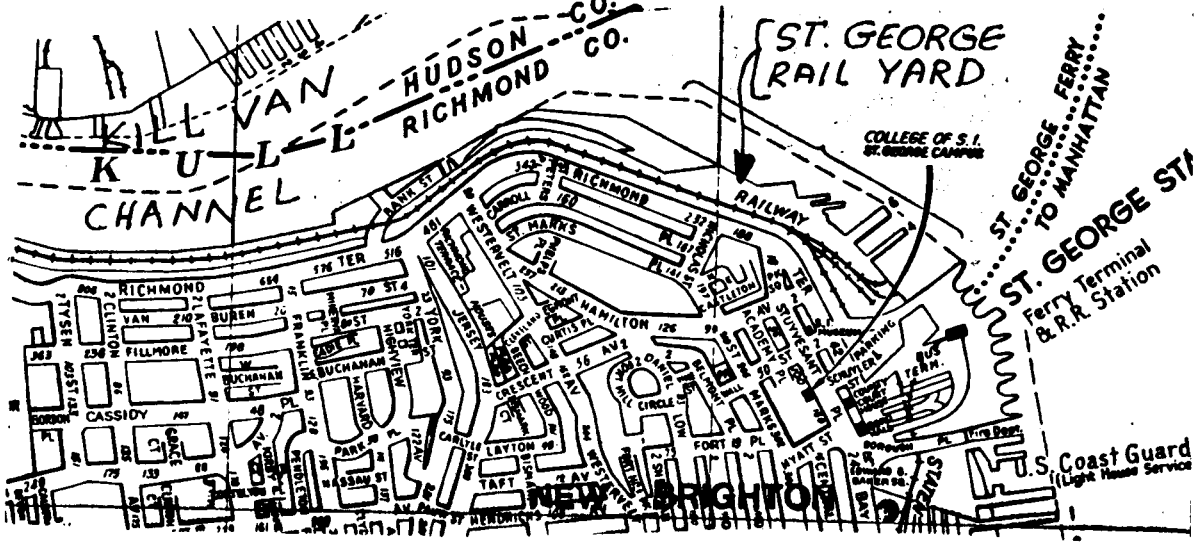
N.T.S.

LEGEND

EASEMENT TO BE RESERVED FOR RAILROAD PURPOSES

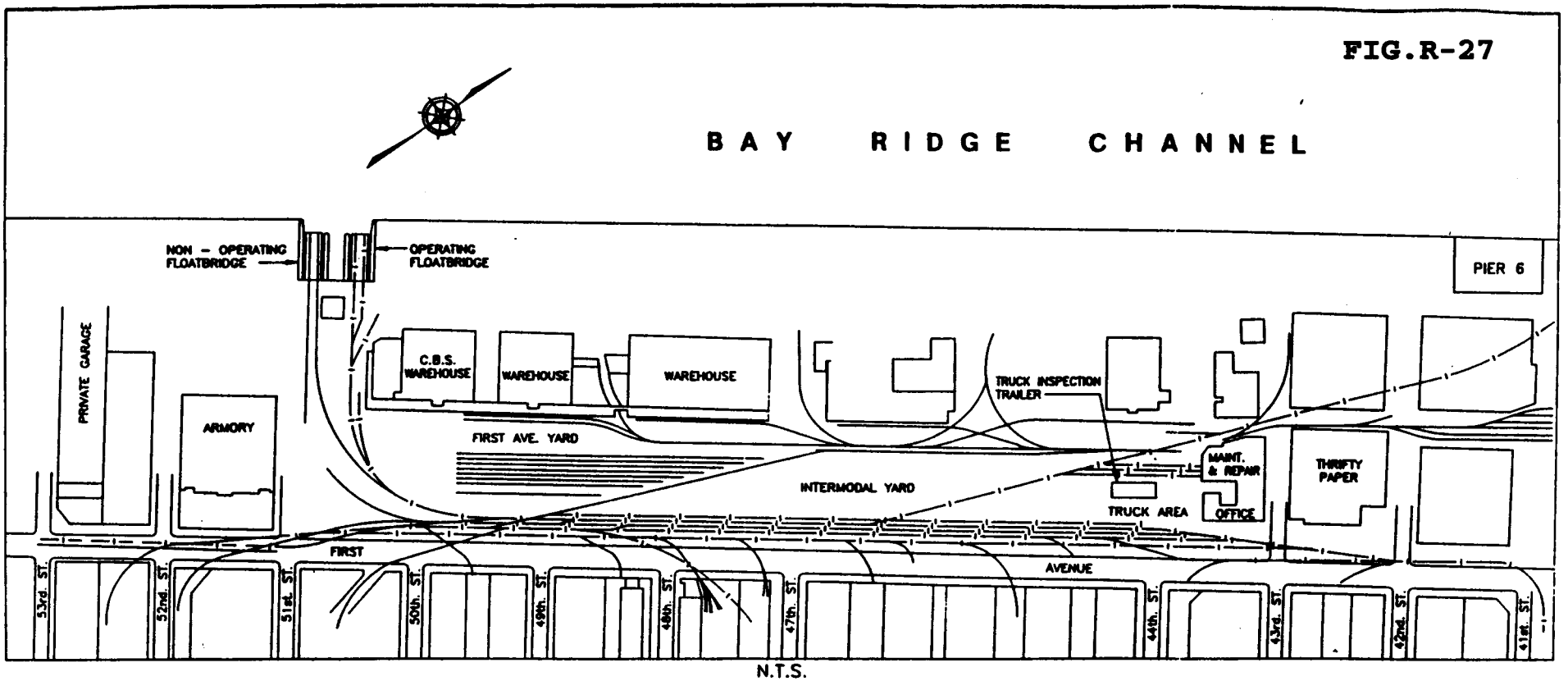
EXISTING RAIL TRACK

LOCATION MAP



Ref. Gowanus Expressway TSM Study.

FIG.R-27



N.T.S.

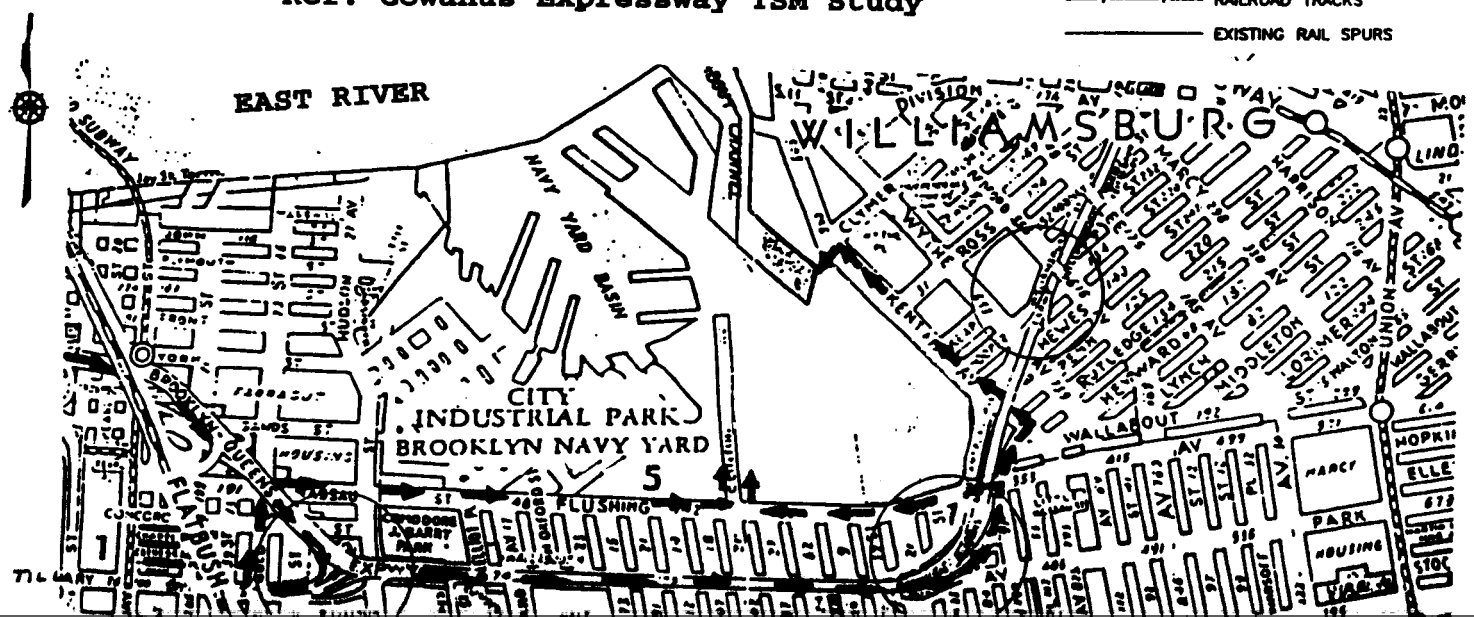
EXISTING FACILITIES AT
BUSH TERMINAL – 1 ST. AVE. YARD

Ref. Gowanus Expressway TSM Study

LEGEND

RAILROAD TRACKS

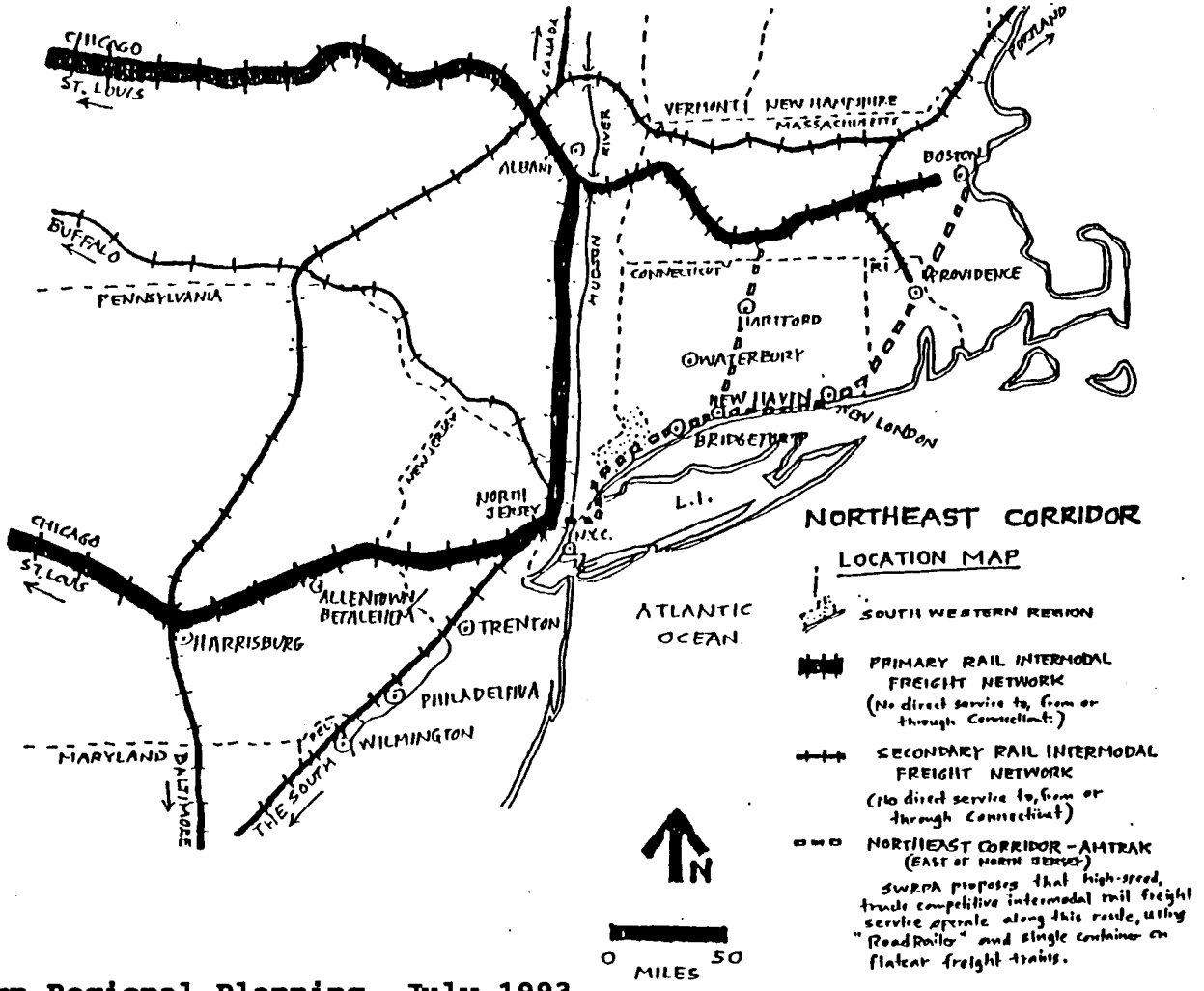
EXISTING RAIL SPURS



BROOKLYN NAVY YARD

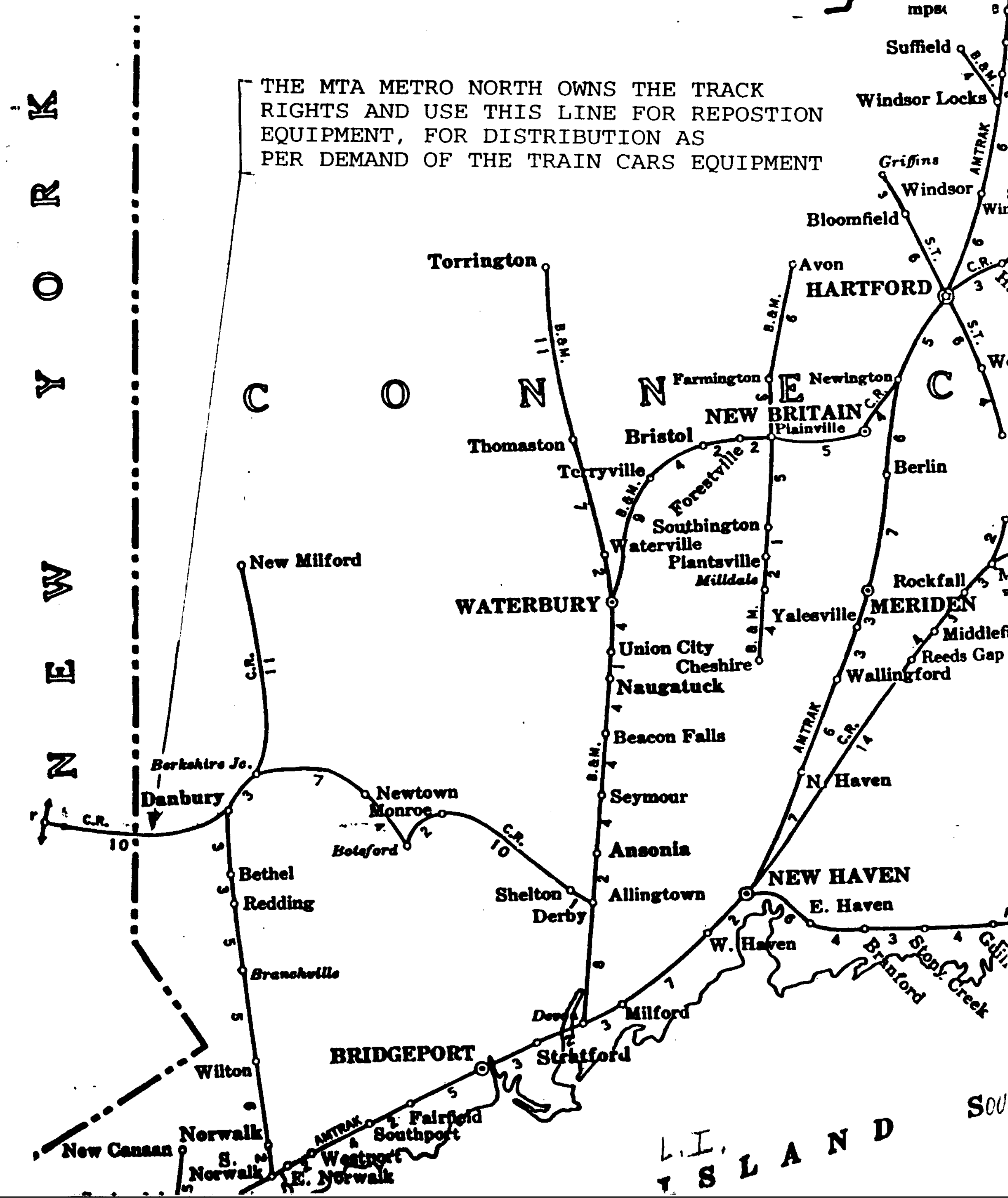
LOCATION MAP

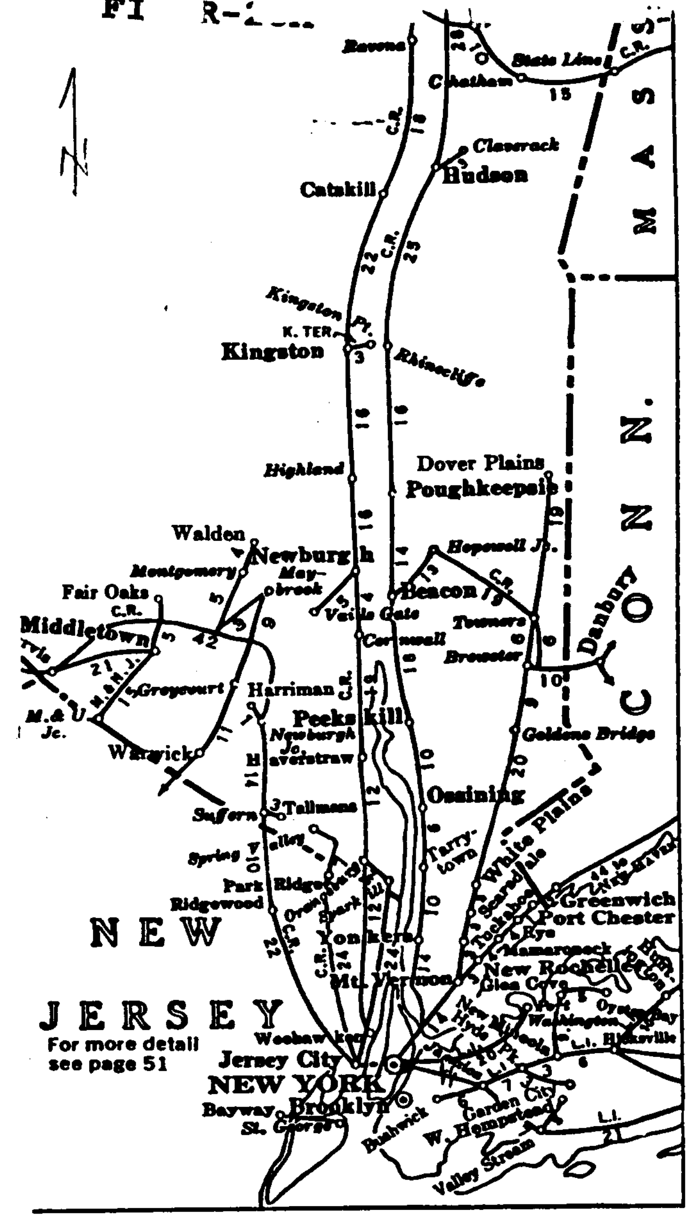
FIG. R-28



Source:

Connecticut, South Western Regional Planning, July 1993

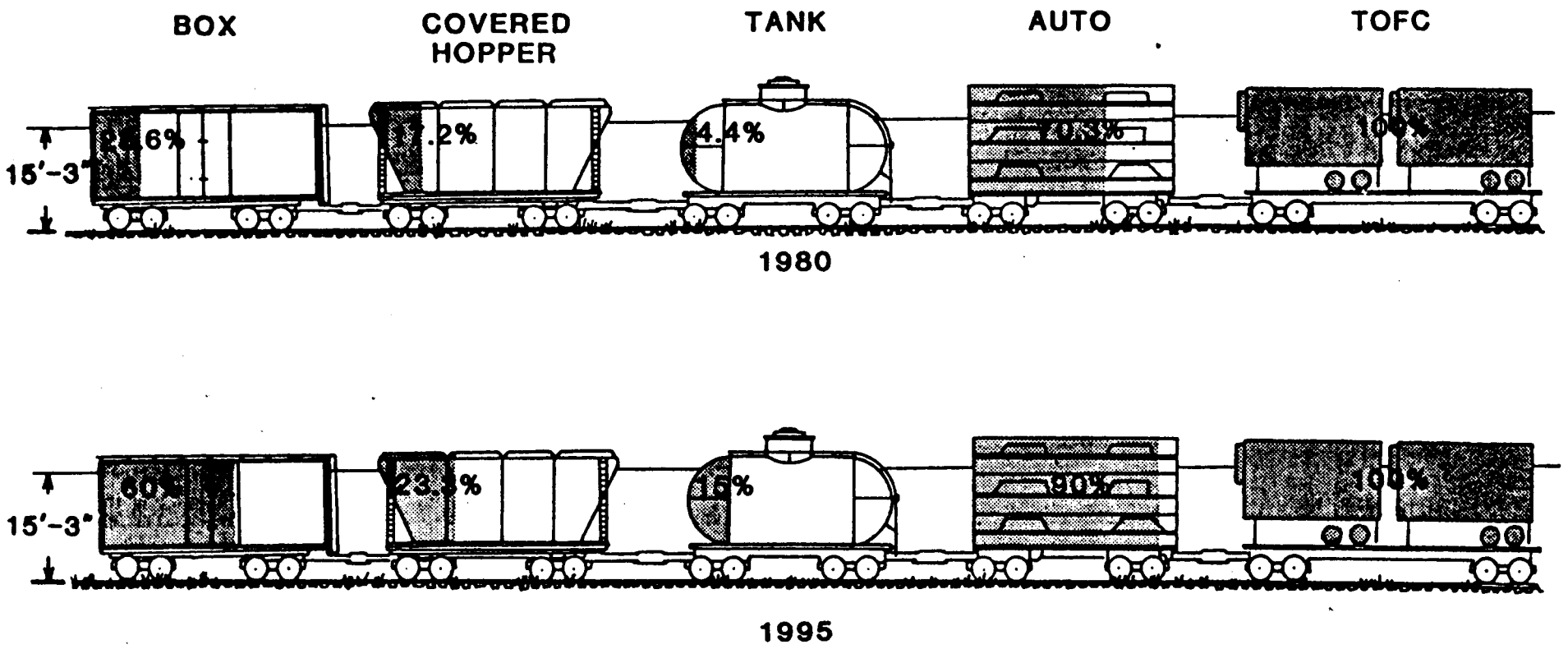




THE CONRAIL TRANSPORTATION SHUTTLE BETWEEN BREWSTER, NY, and DANBURY, CT.

Source: PANYNJ, 1993

FIG. R-29

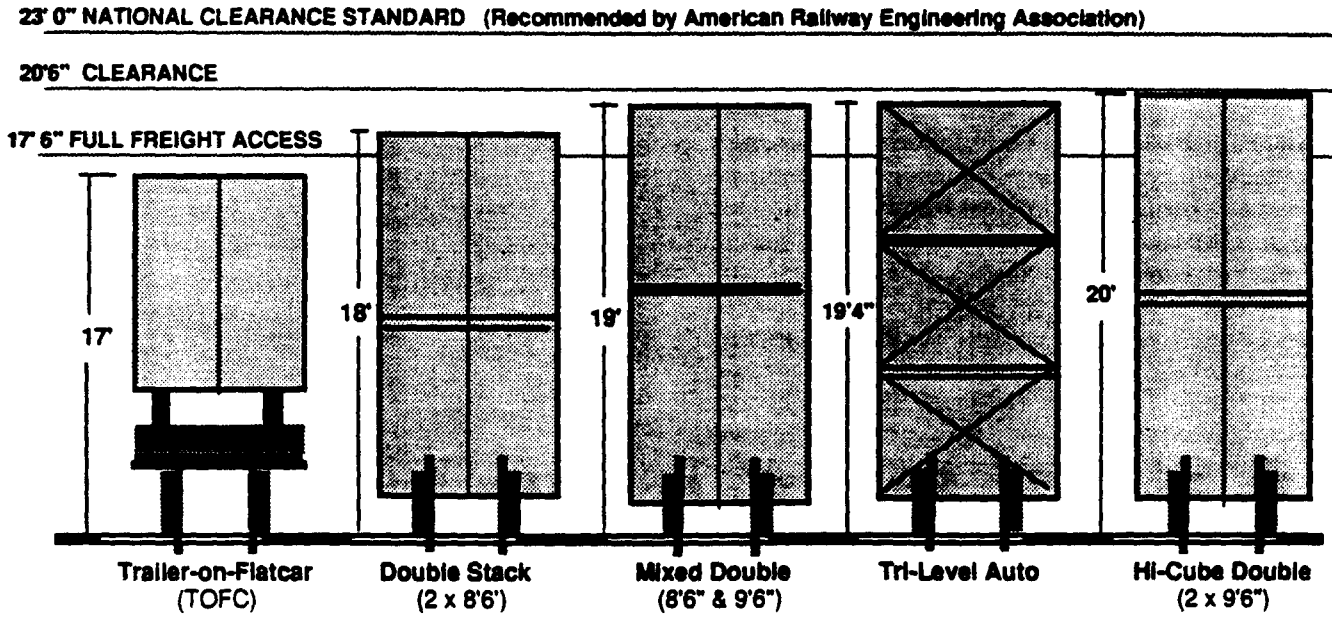


PERCENTAGE OF NATIONAL RAIL CAR FLEET
EXCEEDING NEW YORK ACCESS HEIGHT RESTRICTIONS OF 15'-3"

Sources: Oak Point Link Study

Fig.R-30

Intermodal Rail Clearances

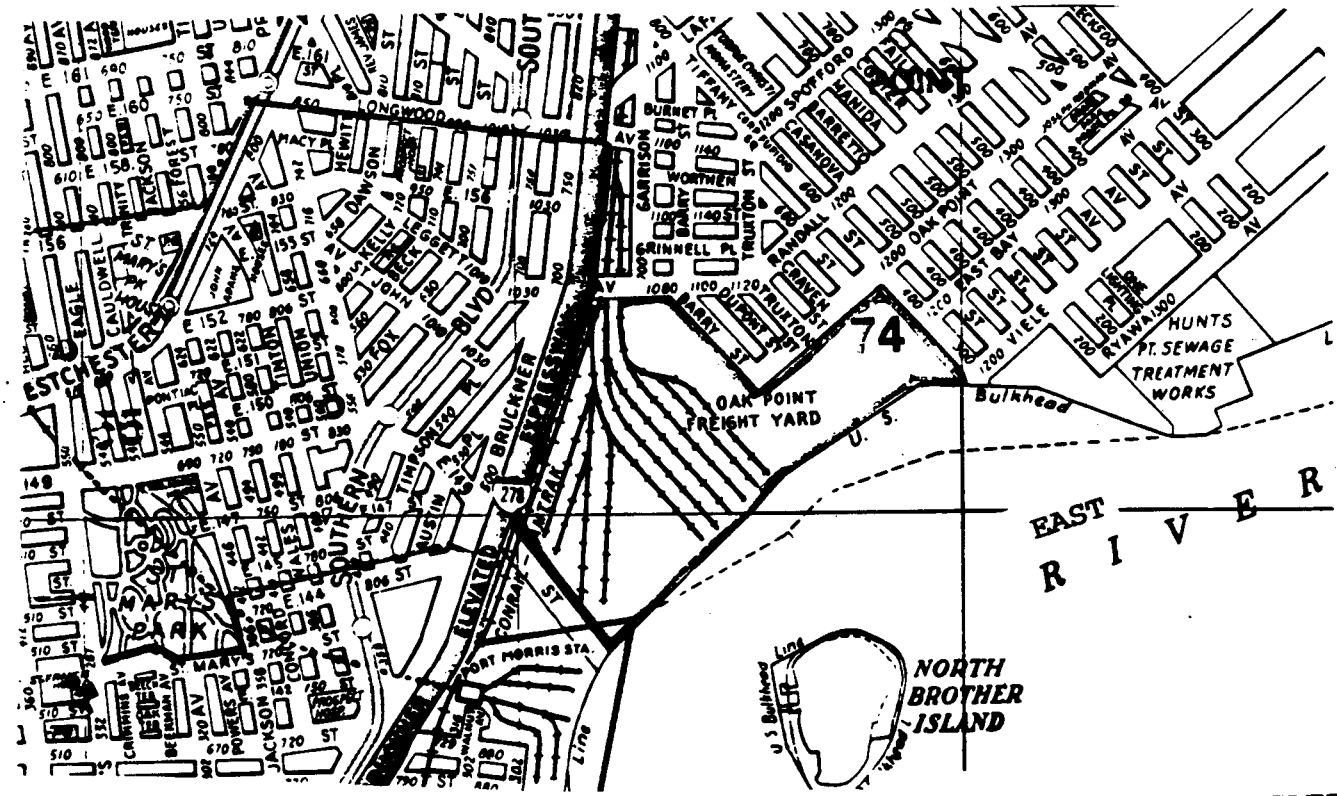


Rail clearances for various types of intermodal rail equipment

Source: Port Authority of New York and New Jersey

Ref: Intermodal Freight Transportation, 3rd Edition, by Gerhardt Muller

FIG. R-31



OAK POINT YARD - LOCATION

BRONX TERMINAL MARKET

Source: Hagstrom, New York City 5 Borough Atlas, 1992

CHAPTER IV

TRUCK FACILITIES

Introduction

The commercial transportation system in the New York metropolitan area begins with the regional highway network. Freight movement in the New York metropolitan area is dominated by truck transport that represents 95% of all freight movement in the area. This number is two times higher than the national percentage which is 42 percent per Regional Plan Association (RPA) 1992 data [Ref.T8]. Most of the trucks that come from the west side of the Hudson River will cross the river via the George Washington Bridge, Staten Island bridges, or via the Lincoln and Holland tunnels. The main commodities crossing the Hudson River eastbound (PANY&NJ, 1987 data) are shown in Fig. T-9.

Trucks crossing in eastbound direction carried 65 million tons of commodities (1985 data), which exceeds the combined total tonnage of general cargo (import/export) shipped through marine facilities of PANY&NJ (14 million tons in 1982) and cargo tonnage handled by the region's three major airports (about one million tons) in the same year [Ref.T2]. Approximately 30,000 truck trips are made across the Hudson River each day. Most of the larger size trucks cross the river by using the George Washington Bridge, whereas the smaller size trucks mostly use the tunnels, which have limited clearance [Ref.T8]. For regional truck weight restriction and facilities limitations see Fig.T-3.

Based on the PANY&NJ 1993-1994 regional truck cordon survey [Ref.T1], the main commodities that trucks carry are food, or kindred products, and mixed shipments (see Table T-1). For main destinations and origins of freight see Table T-2. On Long Island, 52 million tons of freight moves in-bound and 41 millions tons move outbound per year, and most of this tonnage is carried by trucks [Ref.T3].

Based on the NYSDOT (New York State Department of Transportation) statistics, 1 in 13 jobs in New York is supported by the trucking industry with annual wages that are approximately $ 2,600 higher than the average industry worker. The total number of trucks entering the New York City area has steadily increased over the years, but has decreased as a percent of total vehicles due to the large increase in automobile usage. Trucks in NYC must share the highway network with automobiles and are prohibited from using certain roads, such as parkways. For a regional highway system map and a map of roads restricted to trucks see Fig.T-7 & 7A.

In 1990 there were approximately 1.5 million trucks registered in the region, compared with 9.8 million automobiles. Vans and small trucks are the fastest growing segment of truck traffic in the region. This trend reflects the shift in business toward financial and service-related

industries rather than the manufacturing industry [Ref.T8]. Typical commercial vehicle silhouettes are shown in Fig.T-6. For citywide location of some terminals [Ref.T9] see Fig.T-8.

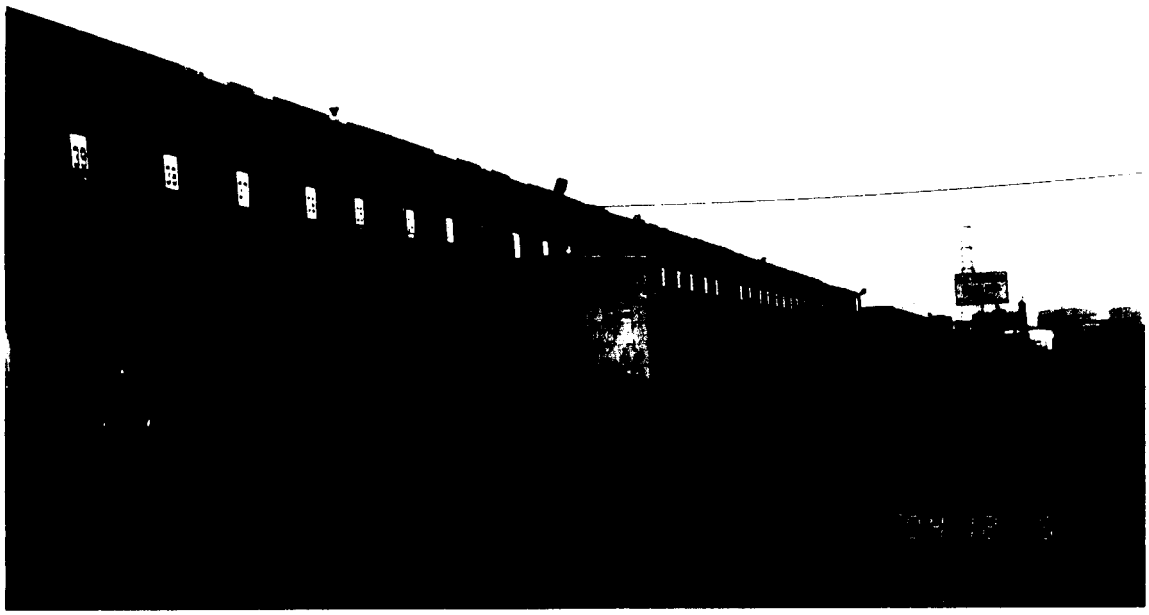
Trucks play an important role in intermodal traffic in the New York metropolitan area, since trucks can provide a continuous segment of door-to-door service, where the just in time delivery is the latest trend in business. In the New York metropolitan area, most of the intermodal connections are between other modes and trucks, such as airplane and truck, ship and truck, and rail and truck. To access the CBD (Central Business District) area, vans continue to be the choice of many companies due to their smaller size. As a result, they can more easily penetrate congested routes in Manhattan, restricted curb areas, and parking space limitations.

Today, the largest interstate trucks are 102" wide with trailers up to 48' and 53' long. Per American Trucking Association Standard, vans and panels had from 8'4" to 11'6" axle spacing and trucks had from 11'9' to 21' axle spacing [Ref.T7]. Based on NYMTC's weigh in motion study, the average load for trucks is 15 tons and an average 85% of trucks are loaded (see Fig.T-4 and T-5) [Ref.T6]. Since the city is reliant on truck freight traffic, various bottlenecks should be eliminated using improved signage, new designated truck routes, and improvement of chronic congested truck route segments.

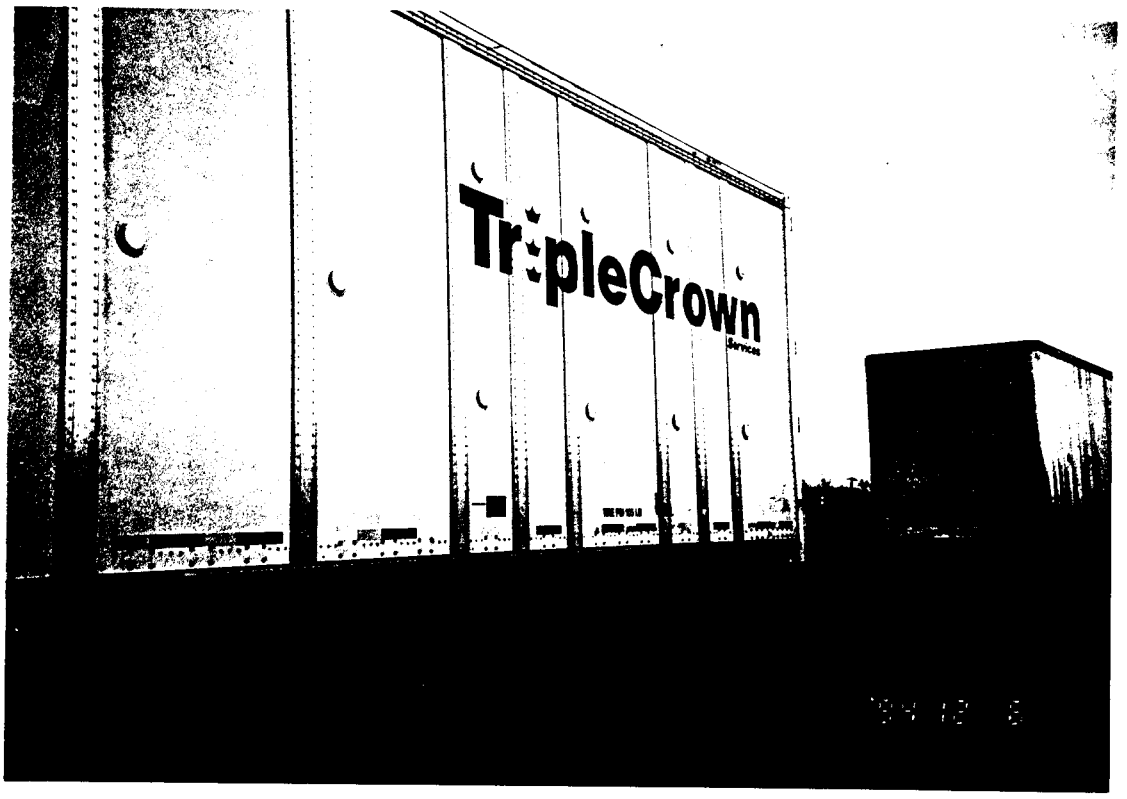
The truck terminals, together with other freight terminals, form an important link in the movement of cargo in the urban area. There has been little change in the total number of truck terminals in recent years within the metropolitan area due to the trend toward larger terminal size and movement of terminals to west of the Hudson River. While the average size is increasing, most of the terminals are still of moderate size, with 75% having fewer than 20 truck bays. As per Wilbur Smith & Association's report "Transportation and Parking for Tomorrow's Cities", in 1966 there were 300 Class I and II terminals in the metropolitan area, where a Class I carrier is classified as having an annual gross income of over $1 million and a Class II carrier as having a $200,000 to $1 million annual gross income. At present, there are no recent studies that give an estimated number of truck terminals in the New York metropolitan area.

One of the main issues that is currently facing the trucking industry is the lack of qualified drivers. Based on "Transportation Topics" from January 20, 1995, [Ref.T5], American truck carriers need 30,000 new drivers a year for the next ten years in order to meet the current demand. Currently, the trucking firms have to turn down business because of the lack of drivers.

The location of truck terminals is dependent on the road system, particularly the freeway system. Truck terminals seek to maximize access to major routes, both to the central business district (CBD) and to the region as a whole. RPA estimated in 1992 that a total of 85,000 truck movements (or 6% of total vehicle movements) are made in and out of the CBD every day [Ref.T8].



Marine Terminal
Truck Bays



Intermodal Yard - Road Railer
(Wheels transferable)

Contact Person:

* Mr. Michael Pride, NYCEDC
  (212) 312-3873

The terminal covers 32 acres and it has 2 rail tracks that extend from Highbridge yard. Rail access is provided by Conrail, but currently is not active. Freight traffic is mainly handled by trucks. The terminal operator estimated that there are 300 truck trips per day. The terminal is operated by Strategic Development Corporation (Contact person: Mr. Robert Franze 718-665-5100), that has 400 employees. This terminal has nine warehouses with refrigeration service. The nearest major highway is the Major Deegan Expressway which is congested. The access road is Exterior St. that connects to 149th Street and the north bound ramp of the Major Deegan Exp. Exterior Street (one lane in each direction) is in poor condition. It needs pavement, lighting, and signage improvement.

Conrail Network in New Jersey

River Line

This line runs from Selkirk through Kingston and Newburgh to northern New Jersey.

Conrail major intermodal facilities in northern New Jersey (peripheral network) are located mainly within the Port Newark/Elizabeth area:

Portside Terminal
South Kearny Terminal
APC South Kearny Terminal
ExpressRail Terminal
E-Rail Terminal
North Bergen Terminal
Doremus Avenue Auto Terminal
Conrail North Jersey Intermodal Terminal (Croxton Yard)
Oak Island Terminal
Greenville Terminal in Jersey City (connection with NYCHRR)

The River Line main freight handling stations are Blauvelt, Orangeburg, Harrington Park, Bergenfield, Teaneck.

In the first six months of 1994 this area handled more than 50,000 loaded rail containers, an increase of 40% over 1993. Rail activity in this region is projected to exceed 100,000 units per year [Ref.R26].

A description of rail facilities in the Port Newark/Elizabeth area follows:

Portside Terminal

This terminal is located at Corbin & Lyke Streets, in Elizabeth, Union County, NJ 07207. It is owned by PANY&NJ and leased to Conrail, which subleased part of the terminal to Triple Crown Services. The contact person is Mr. Robert J. Rich, VP for Operations, Triple Crown Services, 6920 Pointe Inverness Way, Suite 300, Fort Wayne, IN 46804, tel. (219) 434-3608 or (908) 820-5525.
For layout of this yard see Fig. R-8.

Characteristics:

The yard size is 25 acres and the nearest major highway is the New Jersey Turnpike, which is congested. Conrail serves this terminal, and double stack cars can access this terminal. This terminal has three tracks and parking space for 650 railcars. The

terminal activities are five outbound trains per week [Ref.R11]. There are 1,700 roadrailers (truckloads) movement per month. Based on Triple Crown manager information, the average cargo volume is 286,000 tons per year. The main commodities are automobiles and food products. The intermodal connection is between rail, trucks, and ships.

South Kearny Terminal

This terminal is located at 700 Fish House Road, South Kearny, Hudson County, NJ 07302.
The contact person is Mr. Robert Ferry, tel. 201-578-4103.

For layout of this yard see Fig. R-8. The terminal size is 182 acres with double stack capability and the nearest major highways are Routes 1 & 9, which are congested. Conrail serves the South Kearny Terminal, and there are six tracks in the facility with 1,963 parking spaces available. The equipment available is six piggypackers. The terminal activities are 45 outbound trains per week.

The five major commodities handled by this terminal in 1992 were:

miscellaneous mixed shipments (60.1%)
mail/express traffic (9.9%)
food/kindred products (6.3%)
containers/trailers returned empty (3.7%)
farm products (3.7%)

In 1992, the total amount of the five top commodities was 155,592 carloads/containers and 180,834 carloads/containers for all types of commodities [Ref.R11,R22], with an estimated freight volume of one million tons per year.

APC South Kearny Terminal

This terminal is located at 123 Pennsylvania Avenue, South Kearny, Hudson County, NJ 07302.
The contact person is Mr. Jim Merritt, General Manager, telephone number: 201-465-6828. For layout of this yard see Fig. R-7.

This $30 million intermodal facility, capable of handling doublestack cars was opened in 1989 and covers 100 acres. The nearest major highways are Routes 1 & 9, which are congested. Conrail serves this terminal and there are three tracks in the facility with 2,600 parking spaces available. The equipment in the facility includes three piggypackers and three high-speed gantry cranes, capable of unloading 280 containers in 5 hours. The activity in this terminal is four outbound trains per week

[Ref.R11,R2A], and the approximate volume is 255,000 container movements per year.

ExpressRail

This terminal, located in Elizabeth, Union County, was opened in 1991, and is operated by Maher Terminals. The contact person is Mr.Frans van Riemsdyk, tel. 201-963-2100. For layout of this on-dock port's rail terminal, which replaced the former Marport/Maher Fleet Street Terminal, see Fig. R-10.

Physical Characteristics

This terminal is the PANY&NJ's on-dock intermodal rail transfer facility that provides connections to major markets in the Midwest and eastern Canada. The area covers 16 acres and will be expanding to 33 acres with the opening of ExpressRail II, which currently is under construction. Based on the questionnaire [Ref.R12] this terminal is in fair condition.

The nearest major highways are Routes 1 & 9 and the New Jersey Turnpike exit 13A with a distance of 2.5 miles; the access roads are congested. The gate entrance to existing terminal is from Formosa Street. The primary access for the new ExpressRail II will be from East Fleet Street, and the secondary access will be from Bay Avenue.

Operational Characteristics

The current facility can accommodate 31 conventional flat cars, 10 double stacked cars, and 700 TEU of containers [Ref.R12]. An expansion of the on-dock facility (Express Rail II) will increase its capacity to 150,000 containers per year [Ref.R2B] as per PANY&NJ "Regional Rail Freight Gateways and Yard Facilities" report, and is expected to be completed in the last quarter of 1995. Based on the survey, this facility handled 1,320 carloads per month in double stacks and COFC (containers on flat car). Container traffic carried in 1994 was 75,000 units, compared to 56,000 units in 1993 (a 34% increase) [Ref.R26]. In a joint undertaking with Conrail, CP Rail System provides daily doublestack container service between the Express Rail facility and Montreal/Toronto [Ref.R26].

The most important intermodal linkages are between rail and ship, barge, and truck. Based on the survey's response, the major barriers to improving intermodal freight movement are terminal congestion, limited storage space, excessive switching, substandard clearance in Waldo Tunnel (Jersey City), and the limited capacity to handle future growth, which will be corrected with the completion of the ExpressRail II in the fall of 1995.

The terminal has 12 employees and handles various types of commodities in the amount of approximately 5,000 containers per month. The average transfer time to and from the train is approximately 25 containers per hour.

This terminal has 5 loading/unloading central tracks, plus track for waiting cars. It is equipped with 3 piggypackers and 5 straddle carriers. There are 12 trains per week operating in this terminal.

Advanced technologies used in the facility are EDI (electronic data interchange) and barcoded way bills. At present, the track utilization is 100 percent with automatic block signaling. Based on the survey response, the track needs improvement, and is congested due to the limited rail car storage space. Occasionally the delay of freight delivery is amplified due to the existence of one rail grade crossing.

A future improvement project is the completion of new terminal ExpressRail II, which is under construction and will replace the current on-dock terminal [Ref.R12].

E-Rail Terminal

This terminal is located in Union County, New Jersey at 322 Third Avenue, Elizabeth, NJ 07206. The access to the facility is via Third Ave, Dowd Ave, and Trumbell Street.

Contact person:

* Mr. Mark Shepp
  tel. (908) 558-0950.

E-Rail Terminal is operated by Rail-Bridge Terminals Inc. which is a subsidiary of K-Line. For layout see Fig. R-12.

Physical Characteristics

This terminal is a main terminal that functions as a doublestack transcontinental terminal. E-Rail Terminal covers 55 acres and the nearest highways to this facility are I-95 (New Jersey Turnpike) and US Route 1&9 with a distance of 1.5 miles. The primary access to this facility is Third Street, and the secondary accesses are Dowd Avenue and Trumbull Street.

The main access problems are the congestion on the New Jersey Turnpike and Rt. 1-9 and the clearance restriction (to 13' height) under the bridges on Trumbull Street. Based on the survey response, the terminal condition is acceptable, however there is no warehouse or special services, such as refrigeration, and animal handling. The

facility has thirty employees, 150 parking spaces for trucks, 1200 storage spaces for containers, and can accommodate 44 double-stack cars [Ref.R12].

Operational Characteristics

This facility has 4 tracks and has a capacity to handle 80 double-stack cars per month. There are 5 outgoing trains per week. Since this facility is a subsidiary for K-line, most of the commodities come from the Far East. In addition, domestic freight movement is served by Triple Crown Service that provides roadrailers service. The type of commodities are freight of all kinds (for example Kraft products, Budweiser, automobile parts), with a typical volume of 1,500 trailers for domestic and 2,000 containers for international freight movement.

The intermodal links that are provided by this terminal are rail-to-truck and rail-to-ship. The major barrier to improve their intermodal movement is the clearance problem on the Conrail line south of South Kearny. The clearance is low, and the double hi-cube can not be handled. The E-Rail terminal is currently utilizing EDI (electronic data interchange) technology. The equipment available in the terminal includes ten hostlers, two rubber tire gantry cranes, one port packer, one trackmobile, and two forklifts. To improve its operation the operator needs to acquire more equipment, such as one port packer and three hustlers.

The rail lines leading to the terminal are track class 1 (10 mph) with manual block signals. There is one grade crossing on Third Street before the access on the track leading to the terminal. The track is in good condition, but congested, and the communication network needs improvement [Ref.R11,R12].

North Bergen Terminal

This terminal is located at 6201 Tonnelle Avenue, North Bergen, NJ 07032. Conrail is the operator of this high speed intermodal terminal. For layout of this facility see Fig. R-12.

The facility, capable of double stack handling, covers 50 acres and the nearest major highways are Routes 1 and 9, which are congested. There are four rail tracks in the facility and 500 parking spaces. The equipment in the facility are four piggypackers [Ref.R11]. The terminal operations are 25 outbound trains per week.

The five major commodities handled by the terminal in 1992 were:

misc. mixed shipments (86.9%),
containers returned empty (2.6%),

mail/express traffic (2.3%),
food/kindred products (1.9%),
small package freight shipment (1.9%).

Based on the 1992 Port District Data [Ref.R22], the total for five top commodities was 81,600 carloads/containers and the total amount of all commodities was 85,434 carloads/containers. In 1994 there were approximately 92,000 container movements.

Doremus Avenue Auto Terminal

This terminal is located at 860 Doremus Avenue, Newark, Essex County, NJ 07114.

Contact person:

* Mr. Arthur Irvins Jr,
  Tel. (215) 209-7556.

This terminal is the largest rail automobile loading facility in the metropolitan area which Conrail operates and provides service to. The approximate volume is 100,000 tons per year. For layout of Doremus One and Two terminals see Fig. R-10.

Doremus One

The terminal size is 30 acres and the nearest major highways are the New Jersey Turnpike extension and Routes 1 & 9, which are congested. This terminal has four holding tracks that can accommodate 68 railcars and four unloading tracks that are capable of spotting twenty railcars including bay capacity of 2,765 vehicles [Ref.R11].

Doremus Two

The terminal size is 26 acres and the nearest major highways are the New Jersey Turnpike extension and Routes 1 & 9. This terminal has four holding tracks that can accommodate 178 railcars and three unloading tracks that are capable of spotting 30 railcars including a bay capacity of 3,300 vehicles [Ref.R11].

North Jersey Intermodal Terminal (Croxton Yard)

This terminal is located at 125 County Road, Jersey City, Bergen County, NJ 07307. Conrail serves this terminal which has doublestack capability. For a layout of this terminal see Fig. R-9.

Contact person:

* Mr. Charles J. Connor,
  tel. (201) 216-8404

The terminal covers 75 acres with three center tracks and it provides international and domestic container shipment. The nearest major highways are Routes 1 & 9 and the New Jersey Turnpike. This facility has 1,965 parking spaces and is equipped with three piggypackers. The typical operation of this terminal is nine outbound trains per week [Ref.R11].

In 1992, the five major commodities handled were as follows:

misc. mixed shipments (61.6%),
containers returned empty (29.1%),
shipper association traffic (2.4%),
food/kindred products (1.6%),
freight forwarder traffic (1.3%).

Based on the 1992 Port District Data, the total amount of commodities handled was 143,277 carloads/containers and was 137,453 carloads/containers for the top five commodities [Ref.R22].

Oak Island Intermodal Terminal

This terminal is located at 91 Bay Avenue, Newark, Essex County, NJ 07105. The operator is Delaware & Hudson Railroad (CP Rail System). This terminal has COFC and TOFC service.

Contact person:

* Mr. Jim Mason
  tel. (201) 589-2344.

The terminal covers 50 acres; the nearest major highways are Routes 1 and 9 and the New Jersey Turnpike. The facility is not yet doublestack capable and operates only as needed. It features four container tracks, parking space for 600 containers, two piggypackers, and handles seven inbound trains each week [Ref.R11,R26]. Based on the D & H information, between December 1993 and February 1994, there were 4,064 containers/trailers handled for domestic and 4,028 containers/trailers handled for non-domestic traffic. In addition, the total inbound traffic for Canadian Pacific is 388 containers/trailers and the outbound traffic is 458 containers/trailers.

MTA-LONG ISLAND RAIL ROAD (MTA-LIRR)

The MTA-LIRR provides freight service in Queens, Brooklyn, and on Long Island. Most of its network is shared with the MTA-LIRR passenger. Within the New York City area the MTA-LIRR's freight cars are collected at the Oak Point Yard and continue their routing via Conrail's Hudson and New Haven lines or continue their route to New Jersey by exchanging their route from Bay Ridge Branch to the Cross Harbor Rail Road that starts at Bush Terminal in Brooklyn. The LIRR meets with the Conrail system at Fresh Pond Junction and continues north through the Hell Gate Bridge to the Oak Point Yard.

Contact Person:

* Mr. Parvesh Swani
21-16 Jackson Avenue
Long Island City, NY 11101
Tel. (718) 784-6582

The LIRR tracks are mostly shared between passengers and freight. The railroad consists of several branches: the Montauk Branch, the Port Washington Branch, the Atlantic Division, the Bushwick branch, and the Bay Ridge branch. The Bushwick Branch is connected to the LIRR Montauk Branch.

The LIRR has 326 track miles in the New York metropolitan area, 30,008,000 GTM (gross ton miles), and 182,448 gallons of locomotive fuel consumption [Ref.R2].

Operating Characteristics and Commodities

In 1993, the MTA-LIRR handled 10,707 carloads that terminated in the region and handled 4,419 carloads that originated from the region. The total amount of carloads is 15,126 which represents a 19.8 % increase from 1992. In 1994 the total amount of carloads was 11,588.

The major type of commodities that originate in the region are waste or scrap materials.

According to the 1994 MTA-LIRR data, the major 2-digit STCC commodities terminated in the region and handled by MTA-LIRR were:

STCC number	Product	Volume
1	Farm Products	154 carloads (a13.2% increase from 1993)
14	Non-metallic minerals	2,194 carloads
20	Food or Kindred Products	669 carloasds
24	Lumber/Wood Products	1,751 carloads
26	Pulp Paper/Allied Products	2,286 carloads
28	Chemicals or Allied Products	798 carloads (a14.2% increase from1993)
29	Petroleum or Coal Products	180 carloads (a33.3% increase from 1993)
32	Clay, Concrete, Glass, Stone	279 carloads (a12% increase from 1993)
40	Waste/Scrap Materials	63 carloads (a 200% increase from 1993)

MTA-LIRR major freight terminals are:

65th Street Intermodal Yard, (future, see the NYCEDC section)
Bushwick
Long Island City
Fresh Pond
Richmond Hill
Garden City Terminal
Farmingdale
Deer Park
Maspeth, Queens

Presently, only two of the terminals handle intermodal activity (Farmingdale and Garden City), with Deer Park as a future intermodal facility. MTA-LIRR, as part of the state and federally funded Intermodal Demonstration Projects, is developing a new terminal in Deer Park [Ref.R4]. None of the existing MTA-LIRR stations has doublestack capacity. The MTA-LIRR operates an average of 7 freight trains per week.

The following terminal descriptions are based on the MTA-LIRR report [Ref.R29].

Bushwick Terminal

The access to this terminal is via Masserole/Morgan Avenue. This team yard, which has five tracks in service and three tracks not in service, is located in Brooklyn and is owned by the MTA-LIRR. For layout see Fig.R-16. The yard size is 2 acres with a capacity to store 45 freight cars. This site does not need improvement. It has one rail service daily on weekdays [Ref.R29]. The nearest highway is the BQE at a distance of 3 miles. The rail interchange is between the MTA-LIRR, NYCHRR, and Conrail. The estimated volume is 2,055 carloads/year. The major commodities handled in this terminal are: lumber, plastics, municipal solid waste, waste paper. The serving freight cars are type YF301[Ref.R41].

Future Improvement Plans [Ref.R30]

* Rehabilitation of the existing track at Varick Avenue Yard, located on the Bushwick Branch, that will be used for freight service only. This project will retain the current operational level which is 2,055 carloads.

* Installation of grade crossing protection at six locations at the Bushwick Branch between Fresh Pond Yard and Varick Avenue.

Long Island City

The yard is located in Queens County, with primary accesses at Fifth Street and 48th Avenue, and the secondary access is at Queens Blvd. It is owned by the MTA-LIRR [Ref.R29]. The nearest highway is the Long Island Expressway at a distance of 2 miles. The freight serving cars are types YFD100, RF30, and RF60. The main commodities are brick, salt, lumber, wine, chemicals, paper. The estimated freight volume is 1,863 carloads/year (1993 data). The interchange carrier is Conrail. There are 5 outbound trains per week [Ref.R41].

I. TEAM YARD

The yard size is 12 acres and it has six tracks that can accommodate 77 freight cars. This team yard does not need improvement. Rail service frequency is once daily on weekdays. For layout see Fig. R-17.

II. YARD A

This yard covers 17 acres with a capacity to accommodate 100 freight cars (For layout see Fig.R-21). There are six tracks in service and one rail service daily on weekdays. This site needs minor improvement such as removal of excess yard tracks and rehabilitation of road surface.

III. BLISSVILLE YARD

This yard covers 2.4 acres with a capacity to accommodate 100 freight cars. The entrance is from the BQE at a distance of 2.5 miles, and from Greenpoint Avenue. For layout see Fig.R-21A. The freight volume in 1994 was 223 carloads/year [Ref.R41]. The serving freight cars were type YFD100. The major commodity is plastics. There are eight tracks that are not used. There is a height restriction of 15'9 in this terminal. This terminal needs major reconstruction, such as removal of unwanted tracks, repair of needed tracks, and rehabilitation of road surface.

Future Improvement Plans

* Construction of a new intermodal bulk transfer facility at the abandoned Blissville Yard with an estimated cost of $1,417,000. This future project involves building two new tracks and removing six existing tracks, paving the roadway alongside the new yard tracks, and building a new high-level loading dock. The new Intermodal Bulk Transfer Center will be equipped with pneumatic unloading equipment to transfer bulk commodities from railroad cars to trucks for delivery to local industries [Ref.R30].

* Construction of a new intermodal food-grade bulk transfer facility at LIC yard at an estimated cost of $2,200,000. This intermodal facility will provide service to bakeries and food production companies located throughout New York City,

* Upgrading the tracks on Yard-A at an estimated cost of $203,400.

* Rehabilitation of the Dutch Kills Drawbridge that is located over the Dutch Kill (off Newton Creek) at an estimated cost of $2,112,900. This project will improve the access to the Long Island City Yard-A, LIC Team Yard, and to the individual customer sidings in Queens.

Garden City Yard

Garden City Yard is presently an intermodal facility. This team yard is located in Nassau County and is owned by the MTA-LIRR. The access is from Hempstead Turnpike. For layout see Fig.R-18. This team yard, which has five tracks plus extensions, covers 4 acres

with a capacity to accommodate 50 freight cars. It is equipped with a truck scale. The nearest highway is the LIE at a distance of 5 miles. The major commodity handled in this yard is frozen food [Ref.R41].

This yard does not need any improvement; weekday rail service is currently based on demand only [Ref.R29].

Farmingdale Yard

Farmingdale yard is presently an intermodal facility and is equipped with one crane lifter. The team yard is located in Suffolk County and is partially owned by the MTA LIRR. The access to the facility is via Broad Hollow Road. For layout see Fig.R-19 and 19A. This team yard covers 2 acres, has 2 tracks, and has a capacity to accommodate 16 freight cars. This yard is paved, has truck scale, and does not need improvement. Rail service frequency is twice daily on weekdays [Ref.R29]. The nearest highways are the LIE at a distance of 3 miles, and Rt.110. The interchange carriers are CR and NYCHRR. The estimated freight volume is 82 carloads/year, and the major commodities are lumber, plastics, and paper. The serving freight cars are type RF70 and 90 [Ref.R41].

In the future, the MTA-LIRR may acquire some of the Republic Airport property (11 acres) to build an intermodal yard.

Future Improvement Plan [Ref.R30]

* To build new switching leads at Farmingdale to form an intermodal bulk transfer facility with an estimated cost of $250,000. The specific location for this project is on a plot of railroad owned property adjacent to Pinelawn North Siding, between New Highway and Wellwood Avenue.

Maspeth Yard

This yard is located in Queens, the access to facility is via Grand Avenue, and the terminal is owned by the MTA LIRR. For layout see Fig.R-16. The yard size is 3.3 acres. The nearest highway is the LIE. The yard has two unloading tracks plus five - 160' storage tracks and can accommodate 50 freight cars. At present, the tracks at Maspeth are used for switching rail to serve industries in Queens and Brooklyn. This yard needs minor improvement, such as rehabilitation of the number 5 track [Ref.R29].

Deer Park Intermodal Yard

This yard is located in Suffolk County and is owned by the State of New York, therefore, to have further improvement it requires state approval. The future yard size will be 23 acres. Currently, it has only one track with a capacity to store 100 freight cars. In order

to be used as a full intermodal yard, the yard needs major construction, such as rehabilitation of the roadway surface adjacent to track and to clear out the area. In the future there will be COFC and TOFC service. This yard is potentially one of the major intermodal facilities in the metropolitan area. Currently, rail service frequency is twice daily on weekdays. For layout see Fig.R-22 [Ref.R29] . The nearest highway is the LIE at a distance of 4 miles. The interchange carriers are Conrail and NYCHRR. The estimated freight volume handled in this yard is 1,027 carloads/year. The major commodities are paper and lumber. The freight cars are type RF60, RF90 [Ref.R41].

Future Improvement Plans

Based on the LIRR Freight Service Capital Program [Ref.R30] the following improvements are proposed:

* Construction of a new intermodal facility alongside the existing freight spur serving Pilgrim State Hospital, on land owned by New York State, with an estimated cost of $5,085,920. This project will enable piggyback container/trailer trains to operate directly into Long Island.

* Providing, in conjunction with the Deer Park Intermodal project, new equipment, such as two - 3,000 HP Locomotives, twenty articulated Budd Lo-Pac flatcars, one piggy-packer crane, and one in-ground truck scale. The estimated cost is $7,125,000.

Fresh Pond Yard

Fresh Pond terminal is owned and operated by the MTA-LIRR. This terminal is located in Queens, with access via Metropolitan Ave/Fresh Pond Road, and is an important site for freight classification and transfer between Conrail and the MTA- LIRR. There is also an interchange with NYCHRR. The estimated freight volume handled in this yard is 117 carloads per year. The main commodities are lumber, building material, and cars. The types of rail freight cars are YF301, RF60, RF30. The freight rail service is 5 days per week [Ref.R41]. The nearest major highways are the BQE (6 miles) and the Long Island Expressway (5 miles). There is one operation track and 15 classification tracks, with one train in operation per day. There are 200 parking spaces. This terminal has no doublestack capacity [Ref.R29].

Future Improvement Plans

* Upgrading the main track from Fresh Pond to Varick Avenue in order to handle the additional volume of rail freight from existing industries in the Maspeth (Queens) and Varick Avenue (Brooklyn) areas.

* Upgrading the existing tracks, infrastructure, and facilities along the two miles of Bushwick Branch in the Maspeth Industrial Area. The Bushwick Branch currently handles the equivalent of 10,000 truckloads of freight per year, and has the potential to handle more volume with this infrastructure improvement.

* Installing a track connection in the Fremont/Fresh Pond areas [Ref.R30].

In addition, the MTA-LIRR is considering revitalization of the Rockaway Branch in conjunction with the possible development of the off-airport warehouse/distribution facilities at Aqueduct Race Track. A track connection, from the interchange point of the existing LIRR Montauk Branch (south of the air cargo facility), may be constructed on the Rockaway branch.

Freight traffic could interchange with Conrail at the Fresh Point Junction at the Montauk Branch [Ref.R4].

NEW YORK CROSS HARBOR RAILROAD

The New York Cross Harbor Railroad (NYCHRR) formerly was the New York Dock Railway and Brooklyn Eastern District Terminal.

The NYCHRR is the only freight carfloat operation left in the region. This company provides a unique service that facilitates truck to rail to floatbarge intermodal transportation. This carfloat operation helps the movement of freight cars from New York City to New Jersey directly, avoiding the lengthy route from New Jersey to Albany. In New Jersey, the NYCHRR is connected with the Conrail system and in Brooklyn and Queens it is connected with the MTA LIRR system.

Contact Person:

* Mr. Robert Crawford, Vice President
  Tel. (718) 788-3690

NYCHRR has 3.5 track miles in the New York metropolitan area, 2,667,280 GTM (gross ton miles), and 33,722 gallons of locomotive fuel consumption [Ref.R2].

Freight cars from the south and west of the USA are floated onto barges across the harbor from the Greenville Float Yard in New Jersey to various carfloat terminals in Queens and Brooklyn. In New Jersey the line is connected with Conrail.

The terminals that are connected with the carfloat/barge service are:

Greenville Yard, New Jersey
Bush Terminal, Brooklyn
39th Street Container Port, Brooklyn
Atlantic Avenue, Brooklyn
Brooklyn Navy Yard (accessible by carfloat but the rail tracks were removed)
Brooklyn Army Terminal
Future - 65th Street Intermodal Yard

The 65th Street Marine Terminal is located on the Brooklyn waterfront and is expected to be utilized shortly for intermodal activity, after completion of the carfloat bridge.

At present, the NYCHRR owns 5 floatbridges of which 3 are operational and the other two are in need of rehabilitation and 4 carfloats, of which two have 8 rail car capacity and the other two have 14 rail car capacity. In addition, the NYCHRR has two tugboats of which one is subcontracted and the other one is under rehabilitation. The NYCHRR has three rail yards: one is Greenville Yard in Jersey City and the others are Bush Terminal and the 39th Street Terminal. Total there are 11 track miles of the rail on the yards and approximately 3.5 miles of track are on the local streets.

Commodities

In 1988 the NYCHRR handled 4,600 carloads [Ref.R9]. In 1993, the NYCHRR floated 6000 to 6500 railcars. This represents over a 30% increase. The commodities handled are bricks, lumber, pulpboard, flour, paper, chemical, plastic, transit equipment, and waste. Currently, sixty percent of the railroad's carloads consist of municipal sludge that is transported to Texas facilities and solid waste that is transported in containers to Virginia.

Future Improvement Plans

The NYCHRR plans to make the following improvements:

* rebuild the Greenville floatbridge due to the recent steel structure collapse. [Ref.R17]
* rehabilitate the Bush Terminal Yard infrastructure, track realignment, and floatbridge repair with an estimated cost of $ 500,000.
* replace two locomotives.
* replace one self propelled carfloat with an estimated cost of $5 M.

Greenville Rail Yard

This terminal is located in Jersey City, Hudson County, New Jersey and is operated by New York Cross Harbor Rail Road. The interchange carrier is Conrail. For layout see Fig.R-10.

Contact person:

* Robert Crawford, Vice President,
  Tel: (718)788-3690

The yard is owned by Conrail and leased to NYCHRR. This is an exchange terminal between carfloat service from NYCHRR with Conrail, where Conrail will continue to transport the containers to their final destination. In 1993 the freight volume was 600 carloads. The major commodities are municipal solid waste, steel, waste oil, chemicals, plastic, lumber. There are five outgoing trains per week [Ref.R41]. The yard has 10 tracks, 4 floatbridges (only floatbridge #11 is currently in operation), and is equipped with a diesel engine, a forklift, and a lift crane. The crane is used to load/unload trailers onto rail flatcars. The NYCHRR estimates the carfloat capacity of this yard is 79,000 railcars per year and that the intermodal area can store up to 5,000 TEU's at a time [Ref.R32]. The yard size is 33 acres with one rail track in operation and has 500 parking spaces.

The nearest major highway is the New Jersey Turnpike Extension, less than one mile away, and the access road is Colony Road/Port Jersey Boulevard. The yard is not capable of handling double stack trains and the outbound train frequency is as needed [Ref.R11].

NYCHRR plans to expand the terminal's capacity and improve its activity. [Ref.R31,R32].

Future Improvement Plan

Based on meetings with the NYCHRR [Ref.R33] the following are the improvement plans:

* To expand the NYCHRR operations by creating (with Conrail and Susquehanna participation) an "East Sider" freight train that will collect cargo from intermodal terminals in North Bergen, Croxton, South Kearny, and Oak Island, to be interchanged daily at the upgraded Greenville Yard.

* To upgrade the Greenville floatbridges and to expand trackage at Greenville Piers to increase car storage.

Brooklyn Navy Yard

This former military terminal is owned and operated by the Brooklyn Navy Yard Development Corporation. It has been turned into a 260 acre industrial park occupied by a variety of businesses.

Contact person:

* Mr. Richard Drucker, Senior Vice-President, BNYDC, Bldg.292/3rd Fl, Brooklyn, NY 11205, Tel.: (718) 852-0425

This yard is located on the East River between the Manhattan and Williamsburg Bridges, bordered by Flushing and Kent Avenues and is currently inactive as a marine/rail facility. The nearest highway is the Brooklyn-Queens Expressway which is a half mile away. It has 4.3 million sq. ft. of building space, six dry docks, and five piers with overhead cranes.

Even though it has limited rail facilities, the existing rail yard and tracks have been paved and partially removed. The existing floatbridge is abandoned and in a state of disrepair. The yard is accessible by the carfloat railroad system, however it needs repair work and new tracks installed through the park. The NYCHRR plans to start carfloat operations from the Brooklyn Navy Yard after the completion of New York City Department of Sanitation (NYCDOS) resource recovery site on Wallabout Basin (expected date - year 2000) [Ref.R12,R32].

NEW YORK CITY ECONOMIC DEVELOPMENT CORPORATION (NYCEDC)

NYCEDC is a non-profit organization, designated by the City of New York to promote economic development in New York City. Currently, NYCEDC is conducting a study of rail freight access to the region [Ref.R43].

The following are rail freight terminals that are owned by the NYCEDC and operated by NYCHRR and MTA-LIRR.

Brooklyn - 65th Street Intermodal Rail Yard

This terminal is owned by the NYCEDC and in the future this facility will be operated by the MTA-LIRR. The intermodal terminal is under construction and its opening is scheduled for 1996. This terminal is located at 65th street and 1st Avenue, in Brooklyn. For layout see Fig.R15.

Contact person:

* Ms. Bridget M. Wieghart, NYCEDC
  Tel. (212) 312-3843.

Physical and Operating Characteristics

This facility covers 33 acres with 20 acres of unloading sites. The nearest highway is the BQE at a distance of two miles. The primary access is 63rd street and the secondary access is 1st Avenue. The facility is not capable of handling double stack trains [Ref.R11]. Terminal condition is acceptable, but substantial improvement is being done in order to make the terminal more modern. Presently, there are no warehouse or other services available. The most important intermodal linkages are rail/truck and rail/barge. Based on NYMTC's survey the major barrier to improved intermodal freight movement is the lack of connection with adequate clearance to the north, however, with the completion of Oak Point Link this situation will be improved [Ref.R12]. The NYCHRR estimates that this terminal has a capacity to move 79,000 railcars annually and to store approximately 40,000 railcars per year [Ref.R32].

The unloading site, which has 11 tracks, can accommodate 54 freight cars and the classification yard can accommodate 225 freight cars. This future modern facility will provide bulk and intermodal transfer service directly to Brooklyn, and also serve as an intermodal transfer point from trailer on barges to trailer on flat cars. Presently there is one rail service daily on weekdays. Currently this terminal is served by the NYCHRR with an interchange with LIRR at Bay Ridge/Bush Junction. In 1993 the freight volume was 700 carloads, and the major commodities were building material and paper [Ref.R41].

Another potential intermodal terminal is the site between 8th and 15th Avenues that covers 10.5 acres with one track; the yard can accommodate 100 freight cars. In order to make this yard useable it needs major improvements which are: entrance and exit roadway ramps to street level, sidetrack installation, and road surface improvement.

Future Improvement Plans

Based on the MTA-LIRR Freight Services Capital Project Report [Ref.R30], the following are the improvement plans:

* Installation of a new 3,000 ft. siding on the Bay Ridge Line between Ralph Avenue and Kings Highway. This new $630,400 facility will consist of a double-ended rail siding with a crossover to serve major NYC industries, including the the Brooklyn Resource Recovery. At present, the lack of rail siding severely limits rail freight usage in this area since the loading/unloading of freight cars cannot be done on the Main Line.

* Installation of the occupancy indicator on the East New York Tunnel Track-1 on the Bay Ridge Branch which will help freight movement and will eliminate the potential for collision. The cost of this project will be $75,000.

Based on the NYMTC survey and various meetings with the NYCHRR [Ref.R12,R33], the following improvements needed are:

* construct a new truck ramp to access site

* construct two new float bridges

* promote municipal solid waste transfer by rail

* modify the carfloat by adding a deck to allow transport of railcars and trailers

* build a new Roll-On-Roll-Off (RO-RO) floatbridge at South Kearny and North Brooklyn.

* build a floatbridge at Howland Hook Terminal for intermodal connection with 65th Street Intermodal Yard and Bushwick in Brooklyn.

* upgrade the Staten Island Railroad's lead track into Howland Hook to connect to the floatbridge.

Atlantic Terminal

This terminal, adjacent to Red Hook Container Marine Terminal, is owned by NYCEDC and covers 14 acres. The access to facility is from Wolcott Street/Ferris Street. For layout see Fig.R-25. This rail yard, with the capability of storing 250 rail cars, is only accessible by carfloat and currently is used as a rail storage yard since there is no connecting rail track. The NYCHRR operates a carfloat operation from Glendale Warehouse and Jake's Corn Syrup Warehouse, and possibly Safety Kleen warehouse in the future. Due to the reduced length of Pier 12, this terminal can only accommodate 295 foot long carfloats. There are 5 outbound trains per week serving the terminal. The nearest highway is the BQE at a distance of a half mile. The highway is congested. The interchange carriers are Conrail and MTA-LIRR. In 1993 the freight volume was 500 carloads. The major commodities were salt, food, building material, steel, corn, and sugar [Ref.R41]. The NYCHRR plans to add two more floatbridges to this site, and to straighten the curvature of the existing floatbridge [Ref.R32].

Bush Terminal (First Avenue Yard)

This terminal is located in Brooklyn at 1st Avenue, from 42nd Street to 50th Street. The owner is the New York City Economic Development Corporation. The NYCHRR, which is currently leasing a portion of it, owns the rail track.

The facility size is 11 acres and it is capable of handling double stack containers. The yard has 5 container tracks and 425 TEU container spaces. The equipment on site consists of a top loader - 45 tons, yard tractors, diesel locomotives, 4 carfloats (2-360'L - 2-295'L2), and tug boats. The yard operating capacity is 12 hours per day, 6 days per week, with current traffic around 12 intermodal inbound carfloats and 10 conventional railcars on carfloats per week [Ref.R32]. The yard capacity is 60,000 TEUs per year and currently is handling only 17,000 TEUs. The nearest major highway is the BQE at a distance of a half mile. The highway is congested. The primary access is 43rd Street and 1st Avenue. The transfer time from truck to barge is typically 30 minutes and the transit time for the carfloat is typically 1.5 hours [Ref.R32]. The terminal is served by NYCHRR. The Bush Junction is located 2 miles north of 65th Street Yard and provides an interchange with the Bay Ridge Branch of MTA-LIRR, and with CR at Fresh Pond. In 1993 the freight volume was 4,000 carloads per year. Major commodities were municipal solid waste, sludge, waste oil, chemicals, lumber, plastics, cocoa, steel. Bush Terminal also has a station at 38th St. and 2nd Avenue, which can handled 200 carloads. The major commodities are cocoa, steel, and subway cars [Ref.R41]. For layout see Fig.R-27.

Brooklyn Army Terminal

This terminal, which is located at First Avenue and 58th Street, is currently inactive. This former military terminal has been turned into an industrial park, even though it has rail facilities. The current owner is the New York City Economic Development Corporation[Ref.R12].

Contact Person:

* Mr. Paul Wolf
  Tel.(212) 312-3866

STATEN ISLAND RAILROAD (SIR)

This railroad is owned by the the New York City Economic Development Corporation and NJDOT.

The NYCEDC has purchased the North Shore Rail Line (previously Staten Island Railway) that was abandoned. The New Jersey Department of Transportation has purchased the 5 mile portion that is located in New Jersey. This 15-mile track runs on the north shore of Staten Island. It starts at the St. George terminal and goes past the Howland Hook Marine Terminal and over the Arthur Kill Drawbridge to Cranford Junction in New Jersey where it links with Conrail.

The Travis Line branches out from the Staten Island Railroad at Arlington Yard going south to the Con Edison Plant that is located close to Victory Boulevard (by Arthur Kill).

The success of this rail line will depend on the activity of Howland Hook marine terminal once it is open.

Below are listed the freight terminals (at present all are inactive) that have access to this rail line :

St. George Rail Yard - Eastern Terminal, Staten Island
Arlington Yard, Staten Island
Cranford Junction - Western Terminal, New Jersey

Arlington Yard

This yard is owned by the City of New York and currently is not active. However, with the reopening of the Staten Island Railway, this yard may be revitalized and may handle COFC and TOFC in the future. This yard has a direct connection with Howland Hook Marine Terminal, scheduled for opening this year.

Contact person:

* Mr. Michael Canavan, NYCEDC,
tel.(212) 312-3669

Physical Characteristics

The yard size is 50 acres and the nearest highway is the Staten Island Expressway at a distance of 0.5 miles. This yard is just a few yards from the rail bridge that connects Staten Island and New Jersey. This Arthur Kill rail bridge is 556 ft. long and according

to the Journal of Commerce from Nov. 7,1994 [Ref.R18] was recently purchased by the NYCEDC from the CSX for $ 10.3 M. The cost of fixing the bridge and its control room is estimated at $1 M. The PANY & NJ has agreed to operate the bridge for the next five years, or until a railroad carrier assumes responsibility. The interchange with Conrail is at an intersection in Cranford, New Jersey. The yard can hold 100 cars [Ref.R41].

The primary access to the facility is via South Avenue and the secondary access is via Western Avenue. The accesses need major improvements since they are not paved. In addition, the South Avenue Bridge has a clearance problem and on the Arthur Kill Bridge there is a substandard clearance and weight restriction for trucks. The terminal and rail tracks also need improvement and a warehouse is not available on the site. The future intermodal linkages will be between rail and ship and rail and truck.

This facility needs major renovation in order to function again.

Some of the improvement plans are:

* provide truck access
* repair the rail connection to Howland Hook Marine Terminal
* rehabilitation of the site to accommodate double-stack (short term)
* construct a modern intermodal facility (long-term)[Ref.R12]

St. George Yard

This yard is owned by City of New York and currently is not active. But, with the reopening of the Staten Island Railway (North Shore Rail Line), this yard may be revitalized. For layout see Fig.R-26.

Contact person:

* Mr. Michael Canavan, NYCEDC
  tel: (212) 312-3669

Physical Characteristics

This yard covers 51 acres (25 acres of solid land and 26 acres underwater in Upper New York Bay) and is located on Richmond Terrace, adjacent to the St. George Ferry Terminal and railroad station. The yard is deteriorated, but it is equipped with two railroad tracks that are located along the south end of the yard, a floatbridge, and two concrete piers. The yard is accessible by rail, carfloat, and truck. The nearest major highway is the Staten Island Expressway (I-278) at a distance of 3 miles from the yard. The truck access problem is caused by the congestion of the SIE and the condition of the north ramp access

road which is short and steep making a turn onto Richmond Terrace difficult. There are no buildings on the site and the yard is presently being utilized as a parking lot for ferry commuters [Ref.R32,R12].

The future intermodal linkage will be between rail and ship and rail and truck.

SOUTH BROOKLYN RAILWAY (SBK)

This terminal is owned by the City of New York and is operated by MTA-New York City Transit. This railway interchanges with the NYCHRR at 39th Street where the line is terminated.[Ref.R9] For terminal layout see Fig.R-14.

Contact person:

* Mr. John J. Johnson, Director,
  Tel:(718) 788-1799

Address:

990 Third Avenue,
Brooklyn NY 11232

According to the New York State annual report for railroads, [Ref.R2] SBK owns 1.5 track miles in the New York metropolitan area, 28,650 gross ton miles, and locomotive fuel consumption was 224 gallons, which represents the profile of a small rail freight carrier [Ref.R34].

Physical and Operating Characteristics

This line has three main terminals which are the Second Avenue Interchange and Storage Yard in Brooklyn, the Fourth Avenue Yard and the Ramp Facility at 37th/39th Street, and the Tenth Avenue Interchange, Storage Yard, and Private Siding for Roberts Foods, Inc. at 37th Street, Brooklyn. For SBK rail yard proposed rail alignment at 37-39th Streets see Fig.R-13.

This switching type of facility covers one acre, and the nearest highway is the Gowanus Expressway (I-278) with a distance of 1/20 of mile. The primary access to this terminal is from Third Ave and 39th Street, and the secondary access is from Second Ave and 39th Street. The access road condition is acceptable, however, there is congestion on the Gowanus Expressway. Warehouse and special services are not available. The terminal condition needs improvement. The interchange carrier is NYCHRR. Major commodities handled by this terminal are wrought iron pipe, subway cars, and railroad material. The

serving freight car types are N1 and N2 [Ref.R41].

According to the NYMTC survey, the company has two permanent employees, and the facility can accommodate 15 freight cars. The operational activity is 5 train per week, 10 carloads per month. Equipment available in the facility are two-50 ton Diesel/Electric Locomotives.

The rail lines leading to the terminal are track class 1 (10 mph) and the block signals are manual. There are two grade crossings. The track is not congested since it has only a 5 % level of track utilization, but it needs some repair. Time window for track availability is 24 hours, and the communication network needs improvement. Abandoned tracks are from Fort Hamilton Parkway and McDonald Avenue to Avenue X and Shell Road [Ref.R12].

At present, they do not have any plan for improvement, however they would like to see the MPO (Metropolitan Planning Organization) effort to improve rail freight traffic in Brooklyn.

PERIPHERAL NETWORK (Outside of the NYMTC region)

The following are descriptions of other rail companies and their major rail terminals in the New Jersey area, where the traffic generated by those terminals affects the NYMTC's freight traffic.

CSX Intermodal (CSXI)

CSX is a company based in Virginia which owns CSXT (rail operations), CSXI (intermodal), and other subsidiaries. Its subsidiary CSXI owns the Little Ferry Terminal, which is CSXI only New Jersey rail facility. The rail operator is NYS&W.

Contact person and address:

* Mr.Dan Murphy, CSXI Public Relations
  200 International Circle suite 4500, Hunt Valley, Maryland 21030
  Telephone: (410) 584-0119

CSXI has a revenue of $800 million a year, which represents 9% of the total CSX annual revenue. The New Jersey service is expected to divert some freight traffic that is now mainly handled by the Philadelphia terminal.

In the first seven months of 1994, the CSXI freight volume increased 11% compared to the previous year. Lately, CSXI has introduced a pier-to-ramp service that provides international shippers with chassis management, drayage, and rail line-haul on a single bill of lading.

CSXI maintains a North American network of 33 terminals. The largest one is located in Chicago. In the metropolitan area, CSXI owns the Little Ferry Terminal in New Jersey. It completed a $5.4 million expansion to double its annual capacity to 50,000 units and to bring 12 trains in and out of Little Ferry every week. [Ref.R16,R17,R18,R19,R20].

Sea-Land/CSX Little Ferry Terminal

This terminal is located near the George Washington Bridge in North Bergen, New Jersey (Bergen County). For layout see Fig.R-14.

Facility address:

2200-83rd Street, North Bergen, NJ 07047, Tel.201-941-9530

Physical Characteristics

This terminal is a main terminal that covers 23 acres and will be expanded to 50 acres. The rail operation is conducted by NYS&W (New York Susquehanna and Western Railway) in conjunction with Conrail.

The nearest major highways are the New Jersey Turnpike (I-95) and Routes 1 and 9 at a distance of 1 to 5 miles. This terminal has three center tracks with 13,000 feet of track space. There are 500 railcar parking spaces. Currently 700 truck parking spaces are available. The facility is equipped with lift equipment, hostler, and tractors.

The primary access to the facility is Western Avenue. The main problem with access to the facility is congestion on Routes 1 and 9 at the Western Avenue interchange. The terminal condition is fair. There is no warehouse available, but there are refrigeration and perishable cargo service [Ref.R11,R12].

Operational Characteristics

The terminal is operated seven days a week and the NYS&W operates five dedicated doublestack trains per week (in conjunction with Conrail) between Chicago and Buffalo with a total transit time of 34 hours. This terminal typically handles 4000 containers/trailers per month. The type of commodities handled are freight of all kinds with domestic and international destinations. As per NYS&W Railway data for 1994, the total international traffic in this terminal involved 36,576 containers (4,088 cars), with a split of 16,586 containers inbound and 19,990 containers outbound. Domestic traffic in 1994 was 16,058 containers (5,781 cars), with a split of 8,141 containers (3,005 cars) inbound and 7,917 containers (2,776 cars) outbound.

This facility can handle piggyback and double stack operations (since 1985). The most important intermodal linkage is between rail and truck. The facility has 500 center parking spaces and 3 piggypackers. The advanced technology presently used in the facility is the Electronic Data Interchange (EDI) billing system [Ref.R11,R12].

Future Improvement Plans

Based on the CSXI News, October 1993, the Little Ferry Terminal will be expanded to 50 acres, increase container and trailer parking spaces from 500 to 800 bays, expand the double-stack car spot from 25 to 70 spaces, and construct 14,000 feet of new tracks and chassis rack systems that will be able to accommodate 180 chassis. The projects are already in the construction phase [Ref.R10].

Issues

Based on the NYMTC survey response, CSX mentioned that the major barriers to improve intermodal freight movement are insufficient condition of the road access and limited unit storage capacity [Ref.R12].

CSX also mentioned that the MPOs should push for a nationwide rail intermodal system in order to minimize the use of interstate highways and other major highways for long haul, even though this issue may not yield localized benefits [Ref.R12].

NEW YORK SUSQUEHANNA & WESTERN RAILWAYS CORPORATION (NYS&W)

The NYS&W has its head-quarters in Cooperstown, New York 13326, Tel. 607-547-9834. This rail company serves central New York State, northeastern New Jersey, and the New York metropolitan market.

Contact Person:

* Mr. Robert Kurdock
  NYS&W Southern Division Office
  3 Railroad Avenue
  Rochelle Park, NJ 07662
  Tel.201-845-3939

The NYS&W recently extended its service to Montreal, Quebec (see Fig.R-6 for the intermodal network), and has connections at Buffalo with Norfolk Southern, CSX, and Conrail.

In 1993, the company's operating revenue was $22,610,000, approximately $457,000

higher than in 1992, which represents over a 2% increase. The company handled over 72,000 containers in 1993. The NYS&W operates two intermodal terminals in New Jersey: The CSXI-owned terminal in Little Ferry, which handled 4,327 cars or 41,647 containers in 1993, nearly all in double-stack service, and the Resources International Terminal in North Bergen. NYS&W also operates several bulk terminals.

Commodities

Based on 1994 data from NYS&W Railway Southern Division information, the total cargo handled was 20,136 total carloads (a 46.5% increase from 1993, when 13,747 carloads were handled), with the following breakdown:

Containers - 14,158 (up from 7,961 carloads in 1993, 77.8% increase)
Plastics - 2,042 carloads
Paper - 1,565 carloads
Food Products - 630 carloads
Lumber/Building Materials - 562 carloads
Motor Vehicles - 395 carloads
Chemicals - 351 carloads
Stone - 178 carloads
Metals - 35 carloads
Waste - 28 carloads

NYS&W provides services to the following terminals:

I. North Bergen Terminals, New Jersey

The NYS&W rail customers and their facility in North Bergen are:

*** Bulk Transfer and Transportation Terminal**

Contact person:

* Mr. Larry Thomac, Manager

Address:

Bulk Transfer & Transportation Inc. Intermodal Distributors
5600 West Side Avenue,
North Bergen, NJ 07047,
Tel:(201) 295-1600 or 295-1161.

This company's terminal is located on Westside Avenue, North Bergen and covers 15 acres. This terminal handles bulk transfer for plastic industries. The facility has 6,500 sq. ft. of building spaces for offices, and maintenance of cars, and is equipped with a 100-ton truck scale. Rail cars are unloaded in the 150 unloading spots [Ref.R15].

*** NYS&W Lumber Reload**

Contact person:

* Mr. Robert Kurdock

Address:

* 3 Railroad Avenue, Rochelle Park, NJ 07662
Tel:(201) 845-3939.

This reload facility for lumber is located in North Bergen, NJ. It is owned by NYS&W and operated by National Distribution with headquarters in Niagara Falls, Ontario. The railroad is presently in the process of expanding this facility to meet future demand [Ref.R15].

*** NYS&W Automobile Terminal**

Contact person and address:

* Mr. Robert Kurdock,
3 Railroad Avenue,
Rochelle Park, NJ 07662
Tel:(201) 845-3939.

This twelve acre automobile terminal, paved, fenced, and equipped with a perimeter security system, is managed by the NYS&W [Ref.R15].

*** Resources Int.,Warehousing and Consolidated Services**

Contact person and address:

* Mr. Frank Folise, President
2200 Secaucus Road,
North Bergen, NJ 07047,
Tel:(201) 0348-6300.

a. Meadow Land Terminal

This company's terminal is located in North Bergen, Meadow Land. The nearest major highways are Routes 1 and 9. The terminal is capable of holding 1,200 TEU's. The operator has an exclusive right to use the 8 mile track, which is capable of handling double stack trains. The yard can hold 30 double stack cars. The 20 acre terminal will expand with the purchase of 9 more acres of property [Ref.R13]. The terminal has 3 piggypackers, and its parking space can accommodate 700 cars [Ref.R11].

b. Land Bridge Terminal

This terminal is owned by Resources Warehousing and Consolidated Services; the rail service is provided by NYS&W.

This facility is located in North Bergen and covers 54 acres. The nearest major highways are the New Jersey Turnpike and Routes 1 & 9 with a distance of 0.5 to one mile. The primary access is Rts. 1 & 9 and the secondary access is Route 3 and Route 17. This facility can store 200 40 foot containers and can store 27 doublestack cars.

The typical operation is seven inbound trains per week. According to 1994 data from NYS&W Railway Southern Division, there were 17,104 containers and 1,961 cars inbound and 16,515 containers and 1,951 cars outbound in operation. This number represents an 8.1% increase from 1993 for total inbound traffic, and a 9.8% increase for total outbound traffic. The total number was 33,619 containers (3,912 cars), an 8.9% total increase from 1993, when the total number of containers was 30,858 (3,634 cars). The transfer time from container to truck is 30 minutes and the facility handles freight of all kinds. Warehouses and perishable freight handling services are available. There are 700 center parking spaces, one center track, and three "Piggypackers". [Ref.R11,R12,R13,R16]

Based on the NYMTC survey response, the facility has not encountered any problem with access, and the terminal is in fair condition. The intermodal linkage is between rail and truck. Advanced technology used in the facility is Electronic Data Interchange (EDI). The site is equipped with three top lifter and 10 yard tractors. The track leading to the facility is Class 3 (40 MPH) with a manual block signal.

The future improvement plan is to develop an additional 70 acres. Dealing with municipalities is considered by the operator as a major barrier, therefore the operator would like help from the MPO in this aspect. As a result, expansion of their freight services would be possible. [Ref.R12]

II. Sparta Junction Terminal, New Jersey [Ref.R15]

The rail customers on this terminal are:

* **The Eastern Propane Inc.**

Contact person and address:

* Mr. Robert Nicholson, President
  255 Oak Ridge Road, Oak Ridge, NJ 07438
  Tel. 201-697-3111

This terminal distributes liquified petroleum gas products from the Sparta Junction Terminal and the NYS&W provides transportation services for its products [Ref.R15].

* **Nutritive Sweeteners Inc.**

Contact person:

* Mr. John Vaughan, Manager
  RD.1, Box 295N, Lafayette, NJ 07848
  Tel. 201-579-7477, or
  Mr. Bill Elrod, Tel.(1-800) 444-4805

This two-acre terminal comprises a 5,000 square foot facility equipped with a 100 ton scale. This facility is a food-grade bulk transfer facility for dry commodities, which are sugar and corn starch. The typical operational characteristic is 12 carloads per month, which amounts to 1200 tons of commodity per month [Ref.R12,R15].

The nearest major highway is Route 15, with a distance of one mile. The facility has one track and can accommodate 15 freight cars and 3 trucks, The car types are hopper or airslide. There are 4 employees in the facility. The tracks are Class 1 (10 MPH) with manual block signals. Two grade crossings exist on the tracks. The track is in good condition and is not congested.

III. Oakland Facility

* **Bergen Transfer Terminal**

Contact Person and address:

* Mr. Peter Van Lenten, President
  Bergen Transfer Inc., P.O. Box 115
  West Oakland Avenue, Oakland, NJ 07436
  Tel. 201-0405-0299

This terminal is located in Oakland, New Jersey and was built in cooperation with North Jersey Tank Lines. This is the NYS&W food-grade bulk transfer facility that is dedicated to liquid food-grade commodities. It has twenty unloading stations, a truck scale, and is equipped with an innovative hot water heating system to heat edible liquid, to be transferred into highway trailers [Ref.R15].

IV. Saddle Brook Facility

* **The Mirrer's Trucking Company**

Contact Person and address:

* Mr. William Mirier, President
  100 East 25th Street, Peterson, NJ 07514
  Tel. 201-278-0811

This terminal delivers bulk commodities and is located at the NYS&W Passaic Junction at Saddle Brook. It is located close to the New Jersey Turnpike and Interstate Route 80. This facility can hold over 150 rail cars and has a one 100- ton truck scale [Ref.R15].

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R2B PANY & NJ, Regional Rail Freight Gateways and Yard Facilities, 1993

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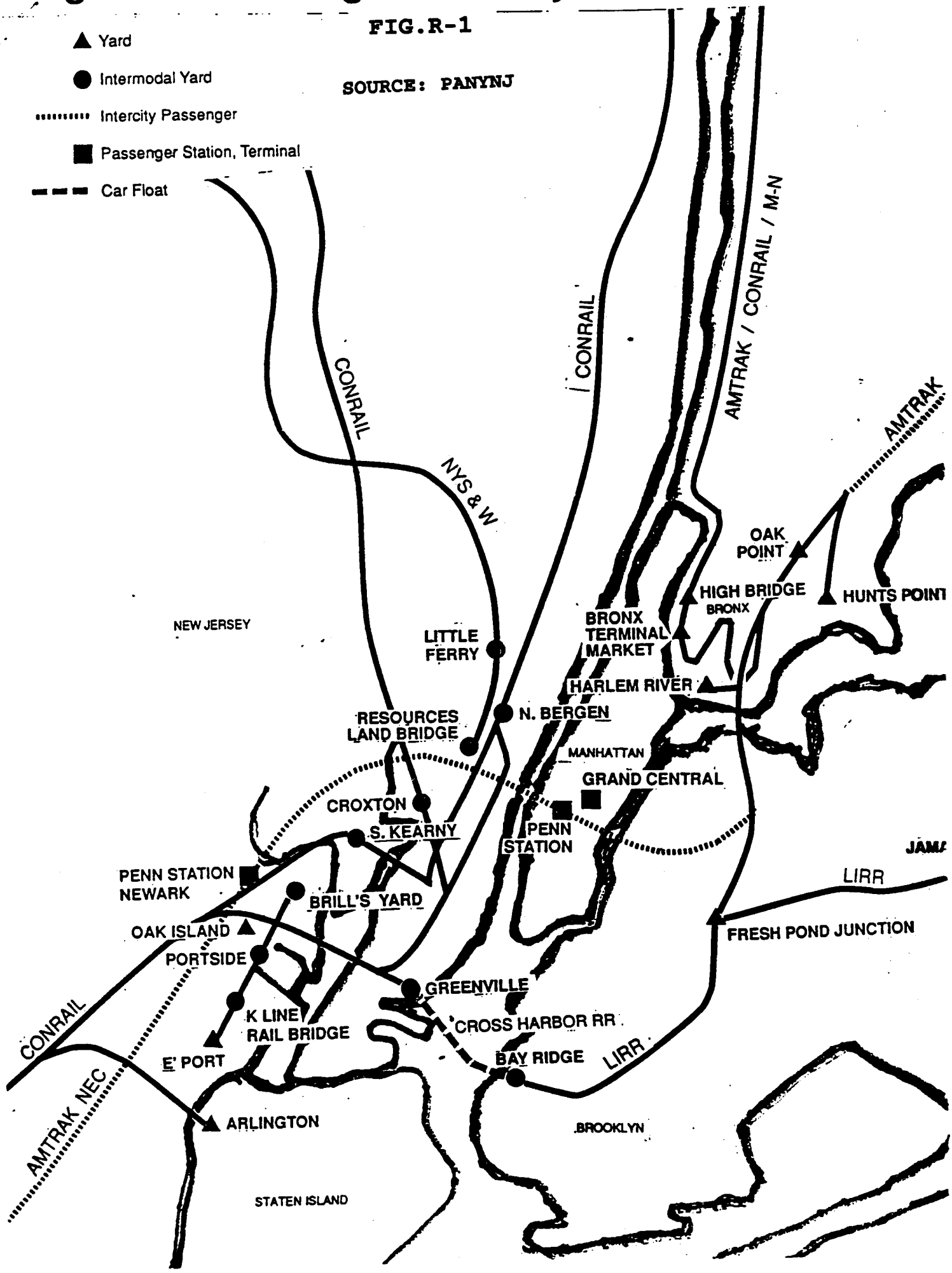
Figures for Chapter III - Railroads

Regional Rail Freight Gateways and Yard Facilities

FIG.R-1

SOURCE: PANYNJ



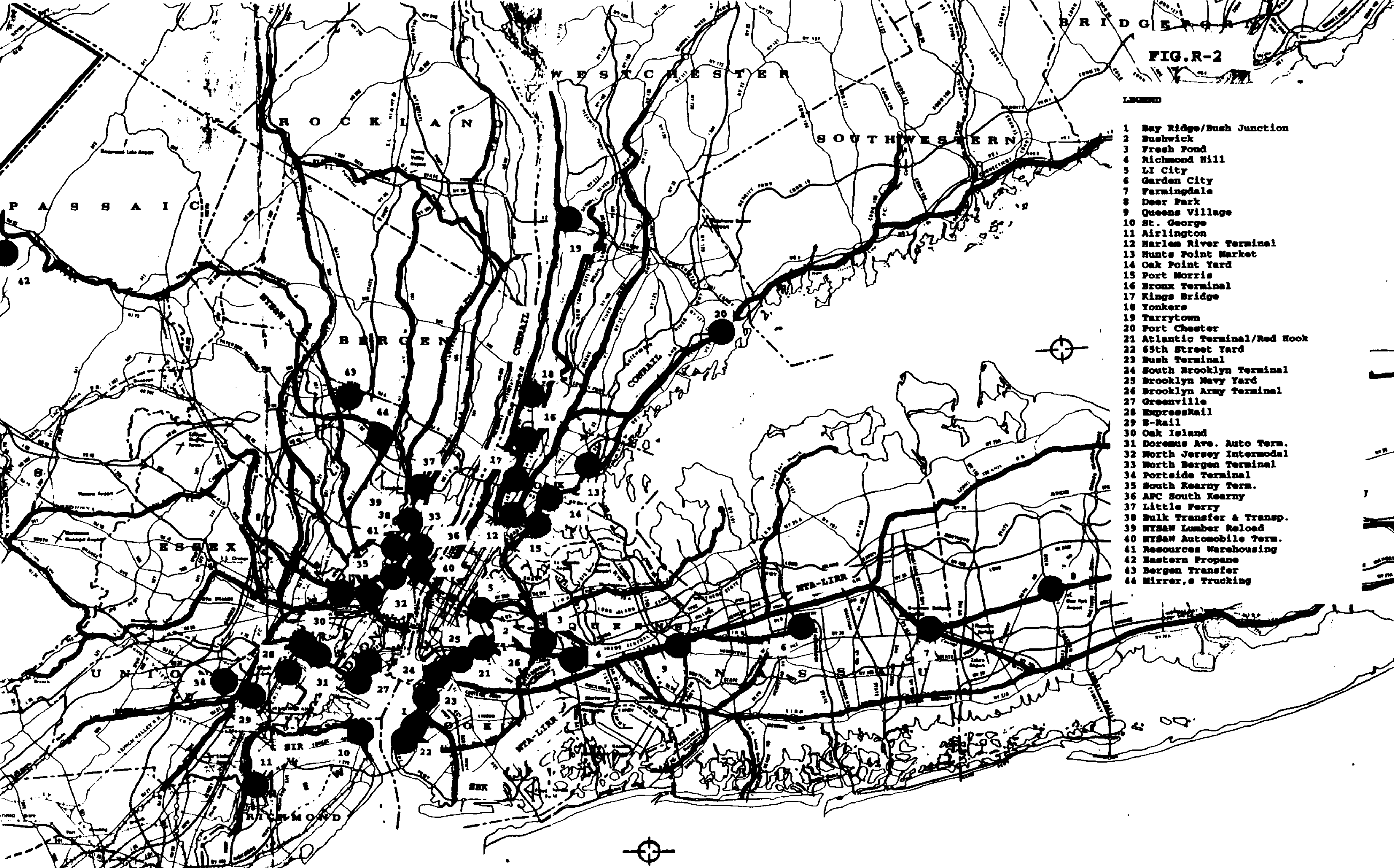

LEGEND
1 Bay Ridge/Bush Junction
2 Bushwick
3 Fresh Pond
4 Richmond Hill
5 LI City
6 Garden City
7 Farmingdale
8 Deer Park
9 Queens Village
10 St. George
11 Airlington
12 Harlem River Terminal
13 Hunts Point Market
14 Oak Point Yard
15 Port Morris
16 Bronx Terminal
17 Kings Bridge
18 Yonkers
19 Tarrytown
20 Port Chester
21 Atlantic Terminal/Red Hook
22 65th Street Yard
23 Bush Terminal
24 South Brooklyn Terminal
25 Brooklyn Navy Yard
26 Brooklyn Army Terminal
27 Greenville
28 ExpressRail
29 E-Rail
30 Oak Island
31 Doremus Ave. Auto Term.
32 North Jersey Intermodal
33 North Bergen Terminal
34 Portside Terminal
35 South Kearny Term.
36 APC South Kearny
37 Little Ferry
38 Bulk Transfer & Transp.
39 NYS&W Lumber Reload
40 NYS&W Automobile Term.
41 Resources Warehousing
42 Eastern Propane
43 Bergen Transfer
44 Mirrer,s Trucking
WESTCHESTER
ROCKLAND
SOUTHWESTERN
PASSAIC
BERGEN
ESSEX
RICHMOND
MTA-LIRR
CONRAIL
SIR
SBK

FIG.R-2

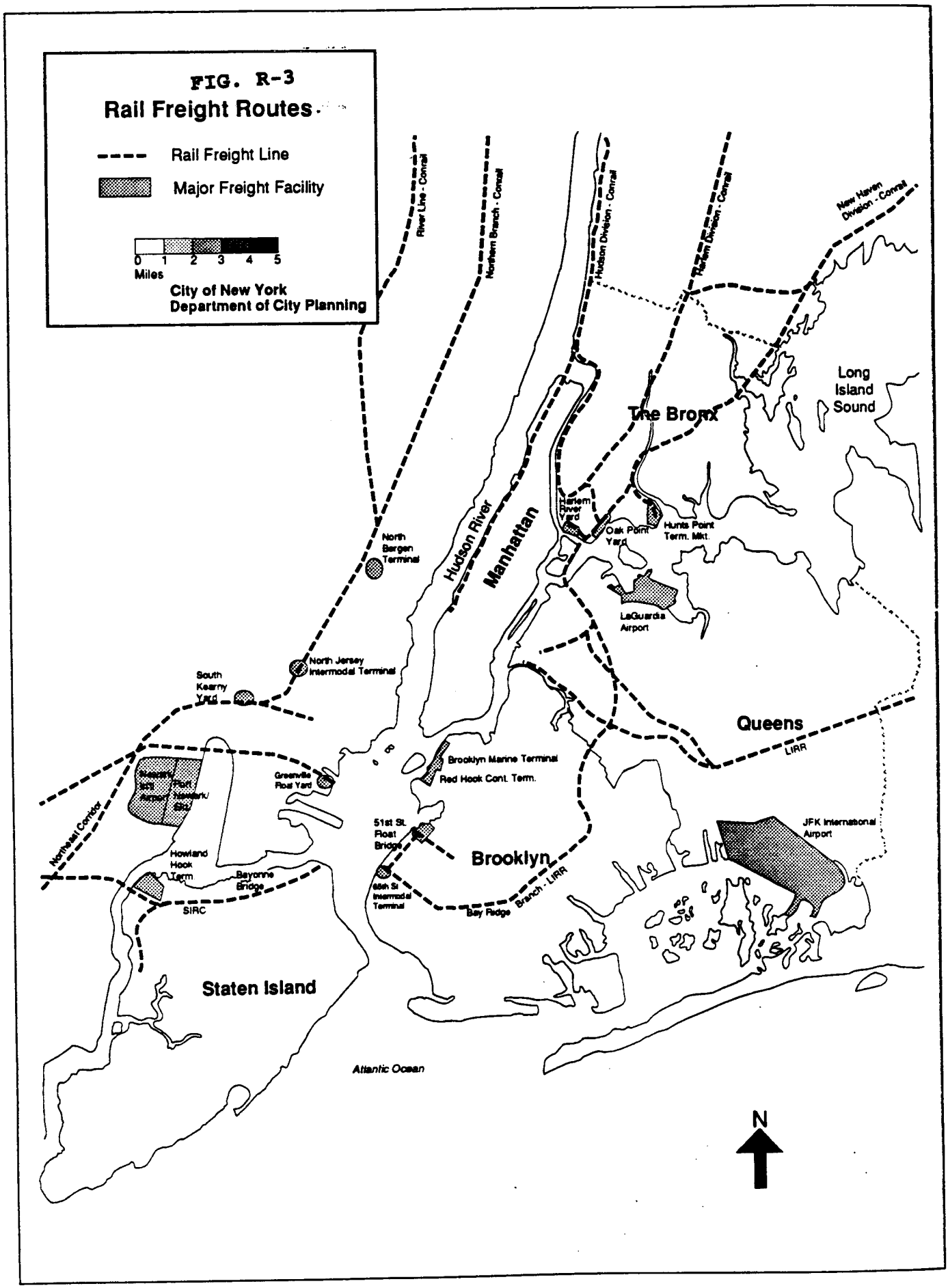
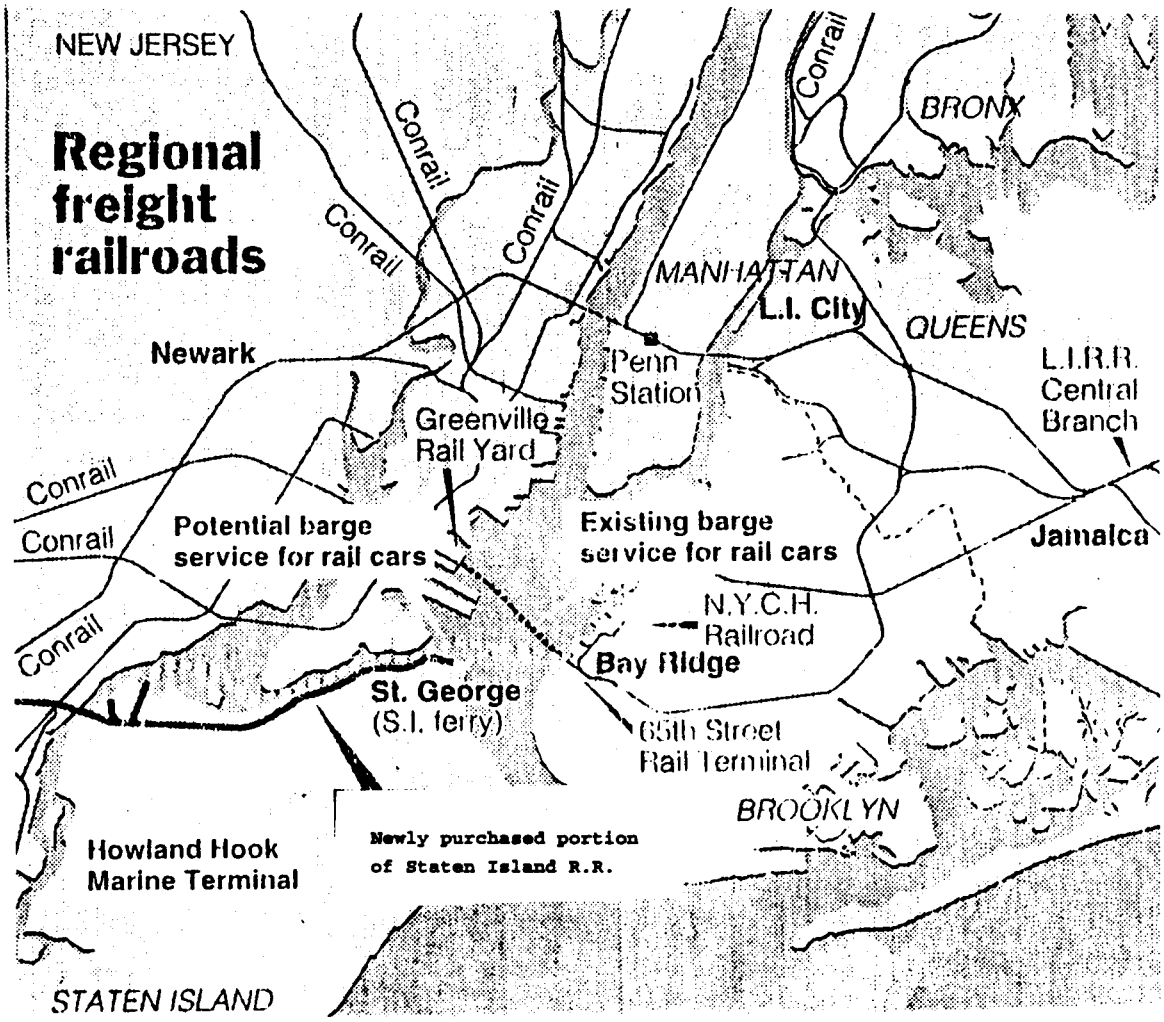


FIG. R-3
Rail Freight Routes
Rail Freight Line
Major Freight Facility
0 1 2 3 4 5
Miles
City of New York
Department of City Planning
River Line - Conrail
Northern Branch - Conrail
Hudson Division - Conrail
Harlem Division - Conrail
New Haven Division - Conrail
The Bronx
Long Island Sound
Hudson River
Manhattan
Harlem River Yard
Oak Point Yard
Hunts Point Term. Mkt.
LaGuardia Airport
North Bergen Terminal
North Jersey Intermodal Terminal
South Kearny Yard
Queens
LIRR
Brooklyn Marine Terminal
Red Hook Cont. Term.
Greenville Road Yard
51st St. Float Bridge
Brooklyn
65th St. Intermodal Terminal
Bay Ridge Branch - LIRR
JFK International Airport
Northeast Corridor
Howland Hook Term.
Bayonne Bridge
SIRC
Staten Island
Atlantic Ocean
N

FIG. R-4



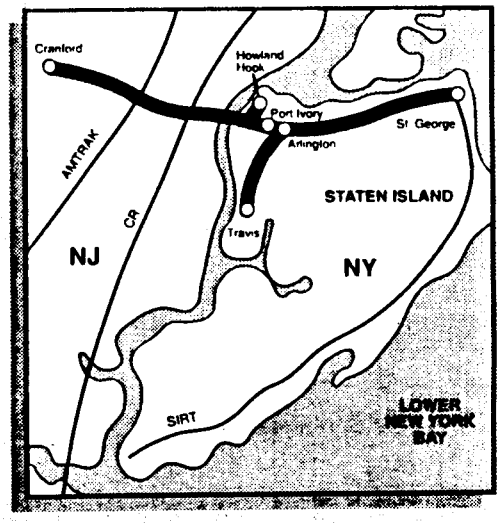
Source: **Crain's New York Business, Sept. 5, 1994 and Journal of Commerce, Sept.12,1994**

The Staten Island Railway

Eastern terminus:
St. George, Staten Island

Western terminus:
Cranford, N.J.

Total trackage:
Ten miles in Staten Island; five miles in New Jersey



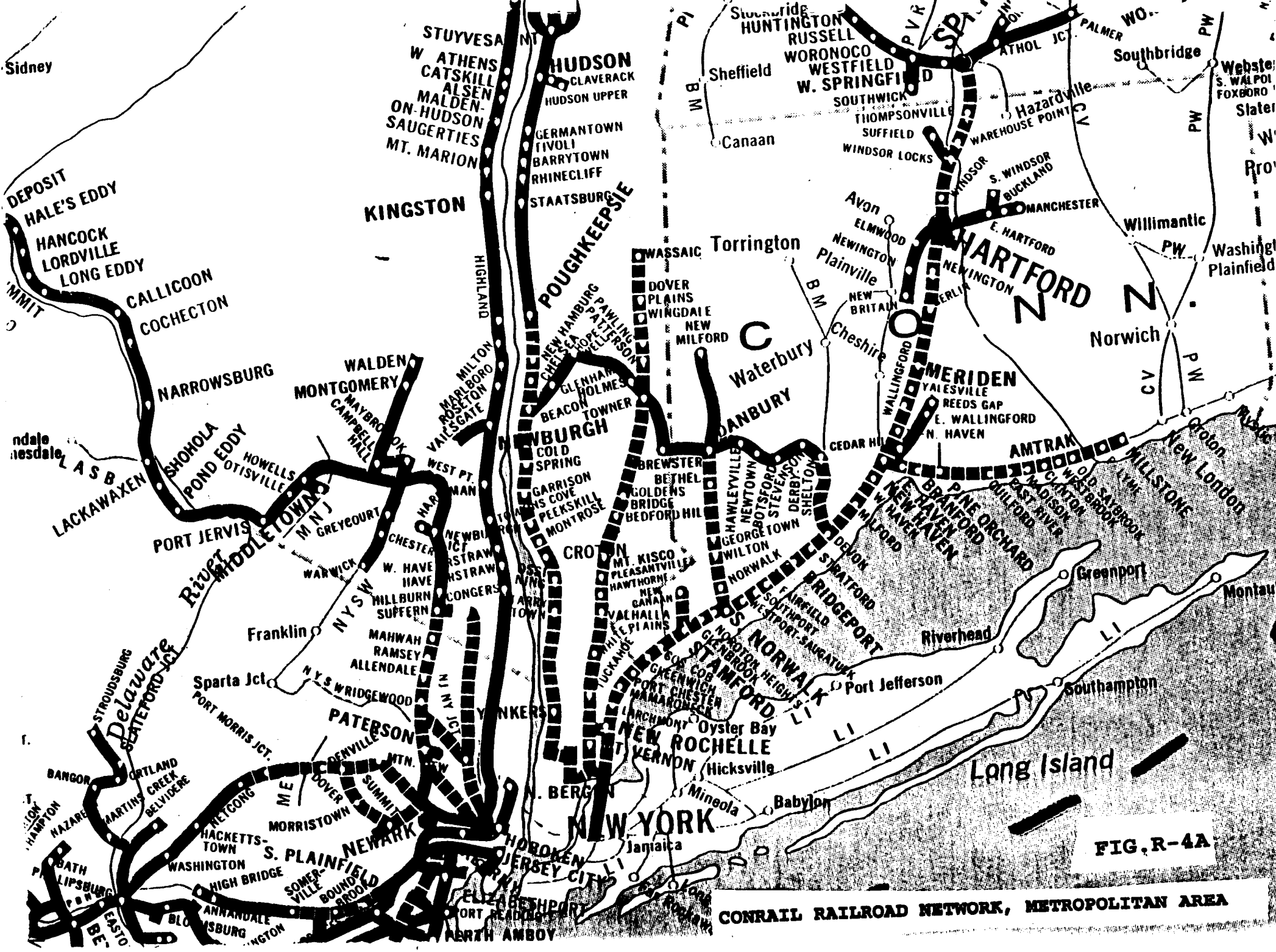
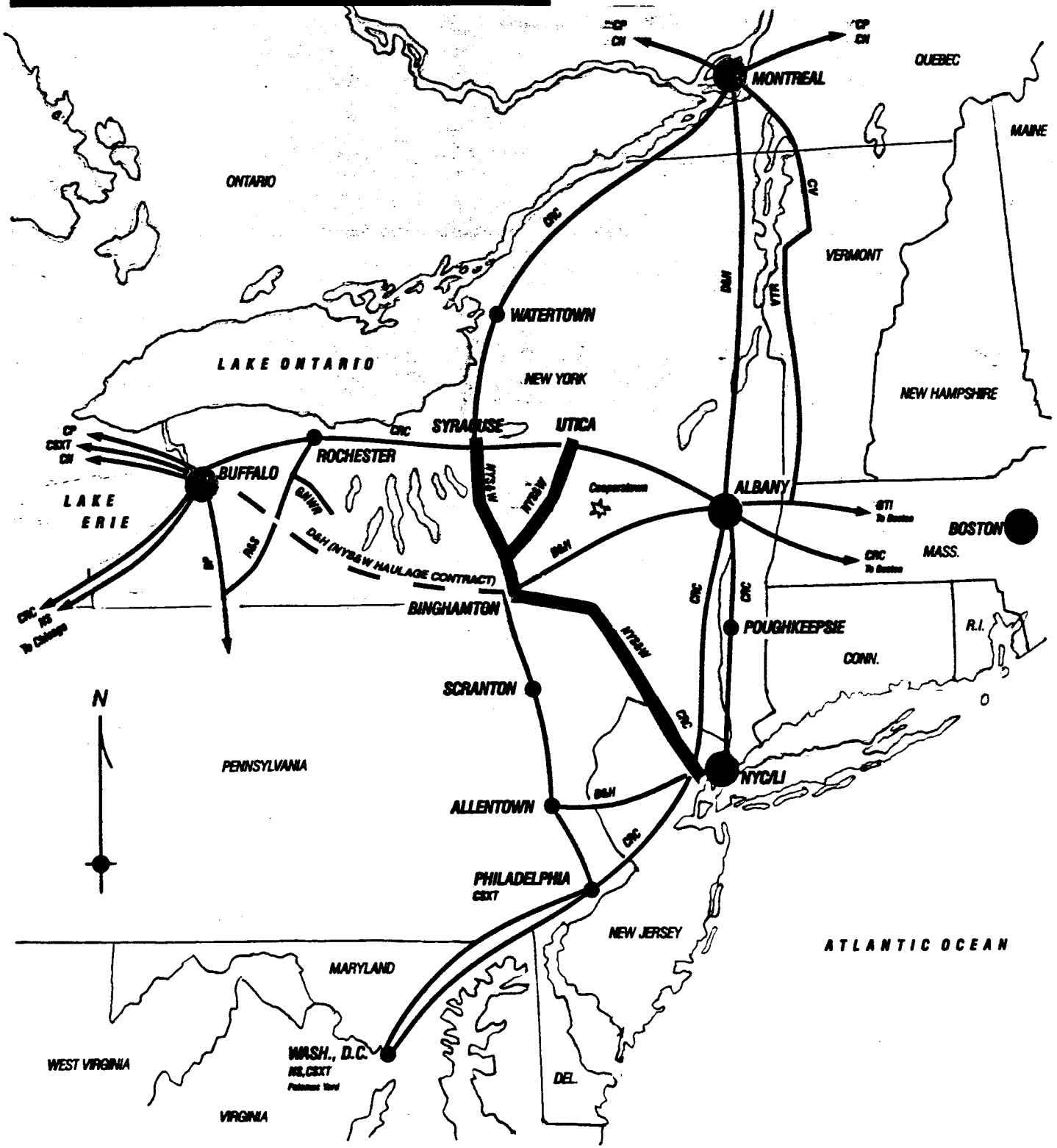


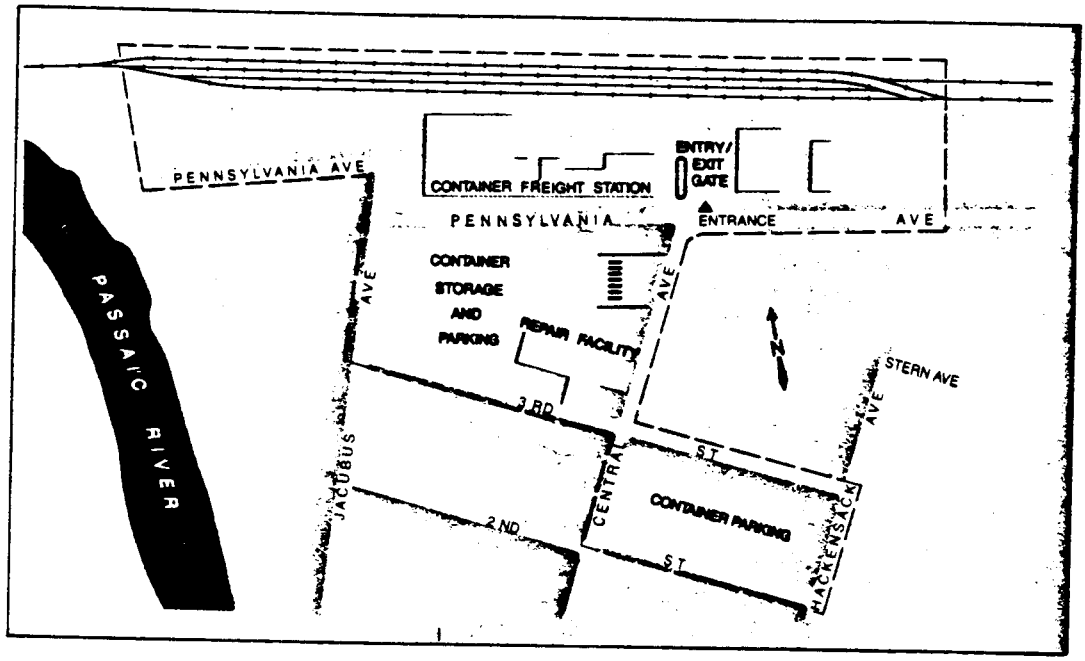
FIG. R-4A

CONRAIL RAILROAD NETWORK, METROPOLITAN AREA

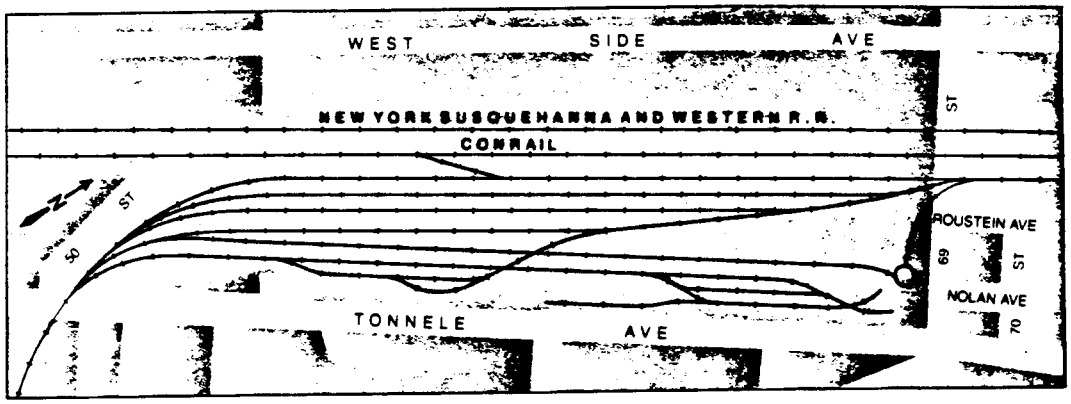
The NYS&W Railway Corporation

Fig.R-5



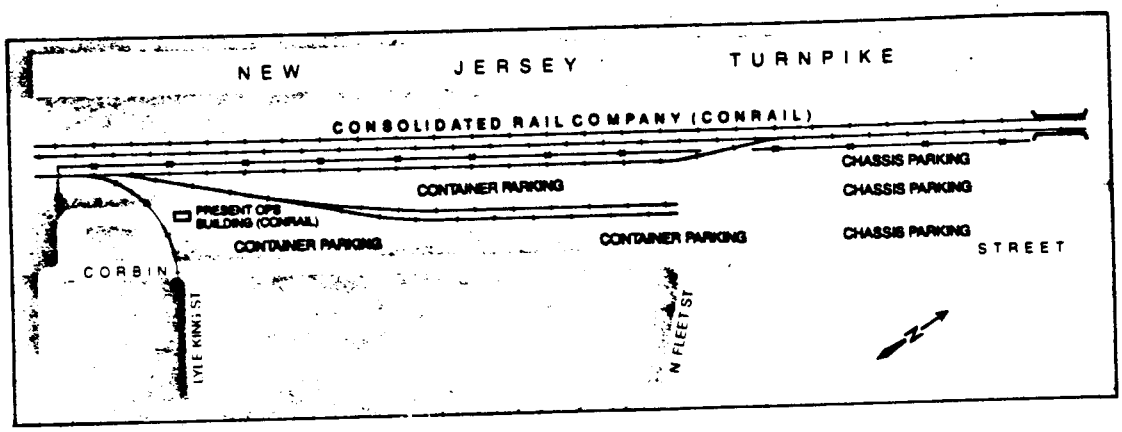


APC SOUTH KEARNY TERMINAL
American President Corporation

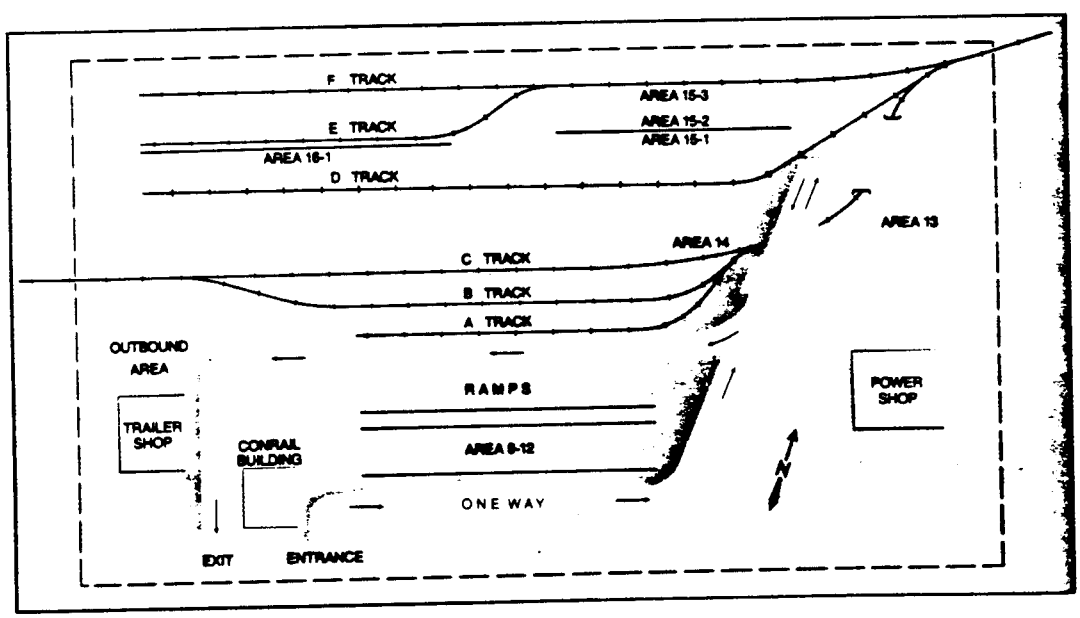


NORTH BERGEN TERMINAL
Consolidated Rail Corp. (Conrail)

Source: 1991-92 Port of New York & New Jersey Guide, PANYNJ

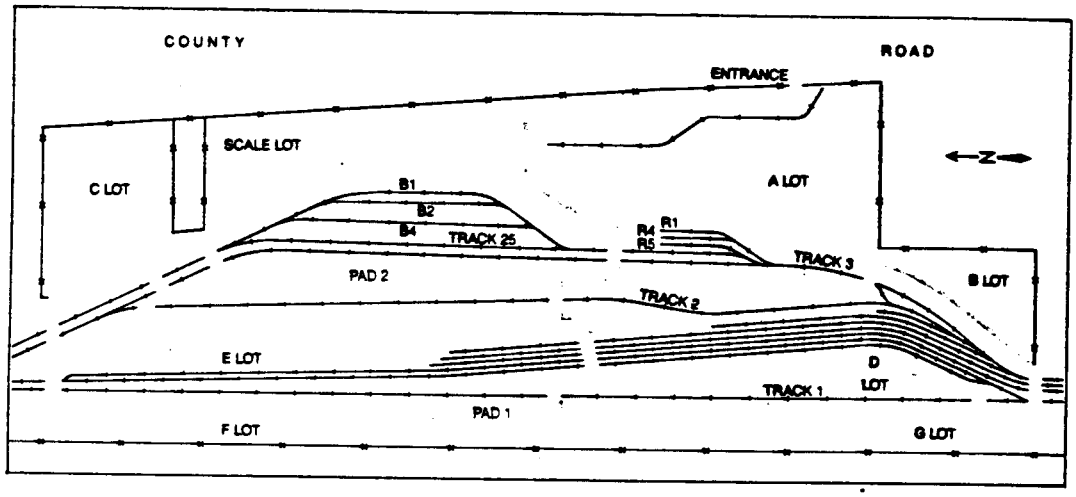


PORTSIDE TERMINAL
Consolidated Rail Corp. (Conrail)



SOUTH KEARNY TERMINAL
Consolidated Rail Corp. (Conrail)

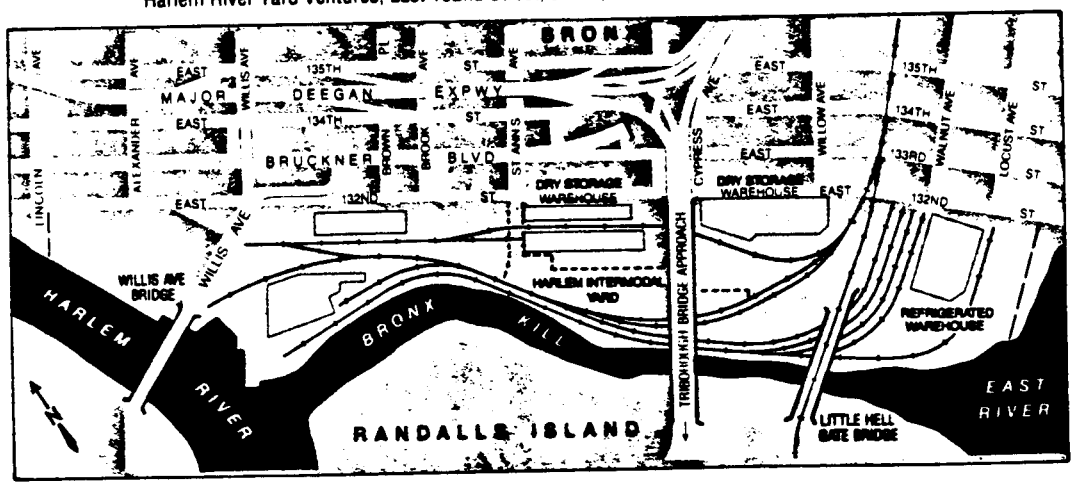
Source: 1991-92 Port of New York & New Jersey Guide, PANYNJ



CONRAIL NORTH JERSEY TERMINAL

HARLEM RIVER YARD

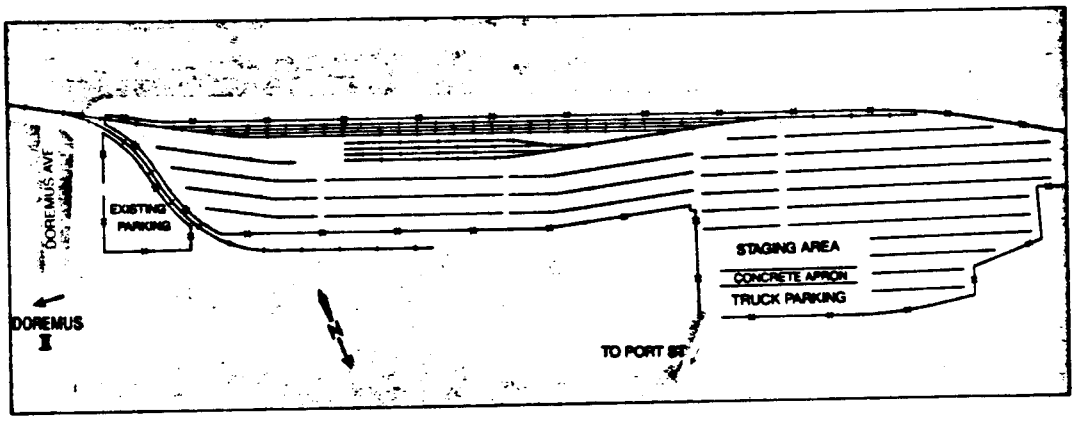
Harlem River Yard Ventures, East 132nd Street, Bronx, NY



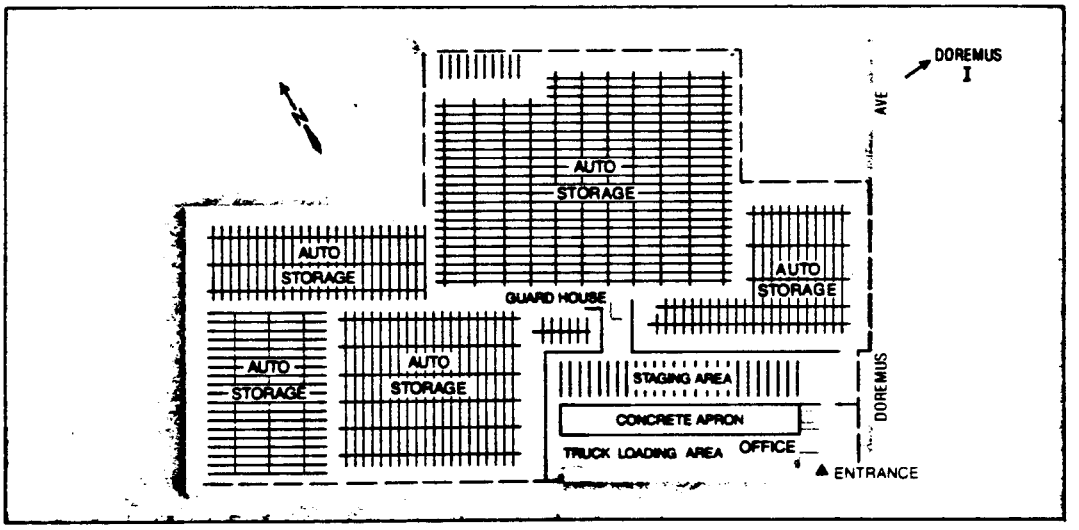
Source: 1991-92 Port of New York & New Jersey Guide, PANYNJ

Fig.R-10

DOREMUS AVENUE AUTO TERMINALS

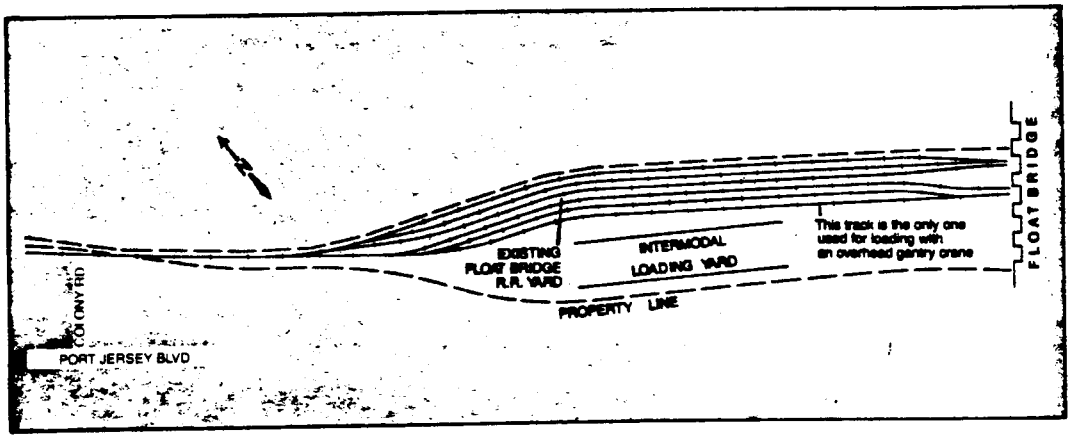


Doremus One



Doremus Two

GREENVILLE RAIL YARD



Source: 1991-92 Port of New York & New Jersey Guide, PANYNJ

Ideally, a location on the fringe of the CBD with easy access to major freeways, is desired [Ref.T4]. However, trucking companies that provide local service are typically located near the downtown area. Terminal location and its design evolve with the changes in technology of cargo movement such as advances in vehicle design, expansion of freeway systems, improvement of loading/unloading facilities, and the concept of containerization of freight. In New York City truck bays require 33 foot by 12 foot berths. For location of optimum urban distribution points and for loading space requirement/truck berth criteria see Fig.T-10.

PARKING

Parking for commercial vehicles (trucks or vans) in the Central Business District is a major challenge for the just-in-time delivery process which is the latest trend for businesses. In addition to the existing congestion, the limited curb spaces and the limited time for parking in the city, loading and unloading of cargo or mail are becoming a real issue. One major delivery company representative mentioned the significant amount of penalty they have to pay each year for their truck drivers parking violations in the city.

A study conducted by UTRC (University Transportation Reseach Center) found that one third of the drivers spend more than five minutes (10 -15 minutes) in search of parking space. Most of these commercial vehicles typically park for less than an hour. As a result, more congestion is created by these commercial vehicles that circle the block to locate parking space. The study also estimated that fifteen percent of the VMT (vehicle mile of travel) is made up by these vehicles that are looking for curb parking [Ref. T13].

In May, 1995, the New York City Department of City Planning conducted a study on Manhattan CBD Parking, which study is still ongoing.

The next chapter lists some of the major truck terminals for United Parcel Service (UPS), U.S. Postal Service (USPS) and Federal Express, which are located within the New York metropolitan area and act as part of the intermodal freight transportation network. In the second phase of study, NYMTC Central Staff, with the help of the subregions, will expand the trucks inventory to cover more terminals and also to include major warehouses in the metropolitan area.

UNITED STATES POSTAL SERVICE

The USPS owns their own cargo processing and distribution centers, which include truck facilities. The contact person is Mr. David Duffin, the U.S. Postal Service Manager of the Distribution, Network Office, JAF Building Room 459, New York, NY 10199-9792, Tel. (212) 330-3114. The USPS facilities are as follows:

Queens Processing and Distribution Center

This center is located in Flushing, Queens County.

Contact person:

* Mr. Ambra Turner Jr.

Address:

* 142-02 20th Avenue,
  Flushing, Queens 11351-9706.
  Tel: (718) 321-5068

Physical Characteristics

The terminal type is class I (annual revenue over $1 million) and the size covers 24.1 acres. The nearest major highways are the Whitestone Expressway (I-678), Grand Central Parkway, and the Long Island Expressway (I-495) at a distance of less than 1 mile. The primary access is via 20th Avenue. This terminal is in very good condition. It has no warehouses available but it can handle perishable cargo. There are 136 truck parking spaces and 44 truck bays in the facility.

Operating Characteristics

This terminal generates 300 truck trips per day that vary from van to large trucks/trailers. This center has 1,958 employees. This facility is a stop for the intermodal connection from truck to rail, to ship, and to airplane.

The commodity is mail with a volume of 45,000 tons per day. Based on NYMTC's survey [Ref.T9], the typical reasons for delay are weather conditions, traffic congestion, incidents, and road construction.

The advanced technology that is currently used is electronic billing, and video camera systems for security. Forklifts, elevator, and sidewinder (a forklift-like device designed to pick-up loaded pallets and sacks to be reloaded into a trailer) are the typical equipment used in the

facility.

Future Improvement Plan

The agency intends to modify the terminal platform and install new elevators.

Morgan General Mail Facility (GMF) Terminal

This terminal is located in Manhattan with an address of 341 9th Avenue.

Contact person:

* Mr. Carlos A. Knight

Address:

* 341 9th Avenue Room 1042
  New York, NY 10199-9704
  Tel. (212) 330-3161

Physical Characteristics

This terminal is Class I and the condition is acceptable. The nearest major highways are the West Side Highway (Manhattan) and New Jersey Turnpike (I-95). The primary accesses are via 9th Avenue and 10th Avenue and the secondary accesses are via 29th Street and 30th Street. This site has limited parking spaces (12) and has 130 truck bays.

Operating Characteristics

This terminal generates 670 truck trips per day and the number of employees are 5000 people. The type of commodity is mail with a volume of 3,350 tons per day. From this terminal the mail is forwarded to different modes of transport such as rail, ship, and airplane. The estimated transfer time is 4 hours.

Advanced technologies utilized in the facility are facer cancelers (piece of equipment that cancel postmarks and separate collection mail), robotics processing equipment, and barcode readers.

The operator states that the major issue for truck movements is substandard clearance for Holland, Lincoln, Battery, and Midtown tunnels. The major reason for truck delays is congestion in intra city traffic [Ref.T9].

Mid Island Processing and Distribution Center

This center is located in Melville, Long Island, Suffolk County.

Contact person:

* Mr. Mike Burd

Address:

* 160 Duryea Road
  Melville, NY 11747
  Tel: (516)-755-2509

Physical Characteristics

The center size is 39.6 acres and the building space is 257,000 square feet. The facility is in fair condition but crowded. The nearest major highway is the Long Island Expressway (I-495), at a distance of one mile. The primary access to the facility is via Route 110 which is congested, and the secondary access is via Duryea Road. The terminal needs to be expanded, currently it has 28 truck bays and there are 200 truck parking spaces.

Operating Characteristics

This facility generates approximately 650 truck trips per day that vary from vans to large truck/trailers. There are 2,000 employees on the site. This facility is a distribution center that forwards all classes of mail (1st up to 4th class, priority, express mail and parcels (up to 70 lbs) to the rail terminals and airport [Ref.T9]. On average, this facility handles 6 million pieces of mail per day.

Future Improvement Plans

There are plans to expand this facility by expanding the production buildings and by adding truck bays. General renovation of facility, including internal roads infrastructure, is planned.

USPS Air Mail Center (AMC) at JFK International Airport Terminal

This terminal is located in John F. Kennedy International airport.

Contact Person:

* Mr. John De Lisso

Address:

* JFKIA Building #250
  Jamaica, NY 11430-9994
  Tel. (718)-917-9994

Physical Characteristics

This terminal covers 27 acres. The nearest major highways are the Belt Parkway, South Conduit Avenue and the Van Wyck Expressway (I-678), at a distance of one mile. The primary access to the facility is via North Boundary Road and other access is from the Port Authority Ramp. There are no problems with accesses, according to the NYMTC survey [Ref.T9]. The number of truck parking spaces is 50, and the number of truck bays is 100.

Operating Characteristics

This site generates approximately 160 truck trips per day that vary from van to larger trucks/trailer. The facility has 2,100 employees. The intermodal connection in this facility is between truck and airplane. The commodity type is mail with a volume of 150,000 tons per day.

The operational delay is due to the large volume of mail and the time needed for coordination.

The advanced technologies used in the facility are electronic billing and video camera systems for security. Tugs, jitneys, forklifts, and portable conveyers are the equipment utilized in the center.

Future Improvement Plans

The agency plans to acquire new parcel sorting machines, and to improve the terminal by installing doors, dock plates, and siccor lifts [Ref.T9].

USPS Dominick V. Daniels Processing and Distribution Center

This terminal is located in Kearny, Hudson County, New Jersey.

Contact Person:

* Mr. Louis R. Rizzolo

Address:

* 850 Newark Turnpike
  Kearny, NJ 07099-9998
  Tel. (201)-955-9601

Physical Characteristics

This class I terminal covers 40 acres and its condition is acceptable. The nearest major highways are Route 280 and the New Jersey Turnpike. The primary access is Newark Turnpike. There are 300 truck parking spaces available and this facility can handle perishable cargo and also animals. This terminal has 186 truck bays.

Operating Characteristics

The facility generates 785 truck trips per day, ranging from vans to trailers of average 7 ton capacity. There are 2,208 employees in the center. Intermodal connections are between truck and rail and truck and airplane. The facility is equipped with comprehensive tracking and tracing (CTT), scanning, and barcoding. The major commodities handled in this terminal are mail (first to third class), priority mail with an average weight of 11 oz. or more, and parcels (third class, up to one lb). There are, on average, 3.5 million pieces of mail per day plus an additional 80,000 sacks of mail. The intermodal connection is between truck and plane (for mail/parcels distributed to all U.S. destinations) and truck to trailer (for domestic destinations). No international traffic is handled from this center, but the facility has a shipping connection with Newark Airport.

Major issues for freight movement are trailer height restriction in the Holland Tunnel which is 12'6", and Lincoln Tunnel, which is 13", and the flooding of the Newark Turnpike.

Future Improvement Plans

The operator plans to install a tracking information system, roadway maneuvering, yard pavement, and improved roadway lighting.

UNITED PARCEL SERVICE (UPS)

United Parcel Service, the nation's largest transport company, is expanding its activity. UPS service covers domestic and international territory with 2,400 operating facilities, hubs, and centers. As of 1992, UPS had a total of 2.94 billion parcels/documents delivered, and it had 1.2 million customers [Ref.T12].

UPS has a total of 116,000 vehicles for ground delivery. In 1992 UPS created a European ground delivery network by acquiring several European parcel delivery services.

The company's revenue for the first three quarters of 1994 reached $14.2 billion, a 10% increase over the same period in 1993. The operating profit, as per "Traffic Word" from 11-21-94 and 10-31-94 [Ref.T11], grew 13.1% to $1 billion through the first 9 months of 1994. In the third quarter of 1994 the international export volume grew 41% and U.S.-origin export business grew 15.3%. At the same time, the UPS Air Express traffic grew 23.7% compared to the same period in 1993. Recently, UPS invented UPS Worldwide Logistics operation, specializing in international distribution. UPS developed telephone centers for help lines and marketing, as well as an unique repair service for electronic manufacturer customers [Ref.T11]. Also, UPS expanded the use of Maxicode, its two-dimensional (2-D) package label code, designed for high-speed sorting [Ref.R10].

The following are some major terminals for UPS in the metropolitan area:

Maspeth Hub

This terminal is located at 46-05 56th Road, Maspeth, Queens.

Contact person:

* Mr. James R. Teague
UPS, Public Affairs Manager

Address:

645 West 43rd Street (8th floor)
NY, NY 10036
Tel: (212)-631-6565
Fax: (212)-631-6256

Physical Characteristics

This class I terminal covers 20 acres; the condition is acceptable. The nearest major highways are the Long Island (I-495) and the Brooklyn Queens Expressways (I-278), at a distance of three miles. The primary access to the facility is via Laurel Hill Boulevard and Meeker Avenue.

The main purpose of the facility is the sorting, unsorting, loading, unloading, and distribution of mail/packages including small packages (1-150 lb). There are 150 parking spaces for trucks and 290 spaces for vans and the facility has 125 truck bays.

Operating Characteristics

The site generates 780 truck trips per day by various types of truck, from van to multi trailer. The facility has a total of 1,590 employees, including 289 drivers. The intermodal connection is between truck and airplane (from JFK International Airport).

The main commodity is small packages with a volume of 300,000 packages per day and transfer time of 15 hours. The origin and destination of these packages are all points in the United States.

The main reason for freight delays is congestion on the Long Island Expressway.

Based on NYMTC's survey, the major barrier to improvement of freight movements is the unavailability of the rail TOFC service from Selkirk and New Jersey to Brooklyn, Queens, and Long Island. If this service was available, this could remove some of the UPS truck traffic from the LIE and other roads, such as the Cross Bronx Expressway. The advanced technologies used in this hub are electronic scanning of barcoded packages, and special equipment to sort, load, and unload small packages. At the moment no improvements are planned [Ref.T9].

Melville Hub

This terminal is located at 75 Smith Street, Farmingdale, Long Island.

Contact person:

* Mr. James R. Teague
  UPS, Public Affairs Manager

Address:

* 645 West 43rd Street (8th floor)
  NY, NY 10036

Tel: (212)-631-6565
Fax: (212)-631-6256

Physical Characteristics

This class I terminal covers 15 acres in Suffolk County. The nearest major highways are the Long Island Expressway (I-495) at a distance of 3 miles, and Northern State Parkway. The primary access to the facility is from Broad Hollow Road/Smith Street, The purpose of this terminal is to sort, load, unload, and distribute small packages (1-150 lb). The facility can accommodate 150 trailers and 220 vans, and it has 100 truck bays.

Operating Characteristics

Typically, this facility generates about 75 trucks trips and 440 vans trips per day (a total of 515 trips per day). The number of employees is 722 persons, including 220 drivers. Based on NYMTC's survey, the operator stated that the terminal condition is acceptable and no major deficiencies were cited. The intermodal connection is between truck and airplane. From this center the packages are forwarded for air transport.

This facility handles 125,000 packages per day with an average transfer time of 7 hours. These packages are destined for all points in the USA. The advanced technologies utilized are electronic scanning for barcoded packages, and automatic equipment for loading, unloading, and sorting small packages.

From the survey response, it is also cited that the congestion on the Long Island Expressway is one of the major barriers for efficient freight transportation [Ref.T9].

Nassau Hub

This terminal is located at 300 Oak Street, Uniondale, Long Island.
The purpose of this terminal is to sort, load, unload, and distribute small packages (1-150 lb).

Contact person:

* Mr. James R. Teague
UPS, Public Affairs Manager

Address:

645 West 43rd Street (8th floor)
NY, NY 10036
Tel: (212)-631-6565
Fax: (212)-631-6256

Physical Characteristics

This class I terminal covers 20 acres in Nassau County. The condition is acceptable. The nearest major highway is the Long Island Expressway (I-495), at a distance of 3 miles. The primary access to this hub is from Hempstead Turnpike. This hub can accommodate 150 trailers and 320 vans. It has 120 truck bays.

Operating Characteristics

This hub generates 790 truck trips per day (150 trailer and 640 van trips per day). There are 980 employees, including 320 drivers, in this hub. The intermodal connection is between truck and airplane through JFK International Airport. The facility processes 250,000 small packages per day, with an average transfer time of 15 hours. These packages are shipped to all points in the USA.

Technologies used in the hub are electronic scanning for barcoded packages, and automatic equipment for loading, unloading, and sorting small packages. No major deficiencies at this terminals are cited. However, external problems that were mentioned include congestion on the Long Island (I-495) and the Cross Bronx (I-95) Expressways, restriction for large trucks on the Hempstead Turnpike, the non-existence of a direct rail connection from New Jersey and the lack of intermodal TOFC from Selkirk (north of state) to Long Island [Ref.T9].

Foster Avenue Terminal

This terminal is located at 10400 Foster Avenue, Brooklyn. The purpose of this terminal is to sort, load, unload, and distribute small packages (1-150 lb).

Contact person:

* Mr. James R. Teague
  UPS, Public Affairs Manager

Address:

645 West 43rd Street (8th floor)
NY, NY 10036
Tel: (212)-631-6565
Fax: (212)-631-6256

Physical Characteristics

This class I terminal covers 250,000 square feet. Its condition is acceptable. The nearest major highways are the Long Island (I-495) and Van Wyck (I-678) Expressways at a distance of 5 miles. The primary accesses to this hub are from Foster Avenue, Linden Boulevard and Atlantic Avenue. This hub can accommodate 25 trailers and 200 vans. It has 60 truck bays.

Operating Characteristics

This terminal generates 265 truck trips per day (65 trailer truck and 200 van trips per day). The truck types are van, single trailer, and multi trailer trucks. There are 600 employees at this facility. The intermodal connection is between truck and airplane via JFK International Airport. This terminal handles 100,000 small packages per day , with an average transfer time of 7 hours. These packages are destined for all points in the USA. A condition/issue that prevent an efficient intermodal freight connection is the restriction of commercial vehicles on the Belt Parkway.

The major reasons for delay are congestion on the Van Wyck Expressway and Linden Boulevard and the lack of "trailer on flat car" (TOFC) service onto Long Island. The facility utilizes electronic scanning for barcoded packages, and automatic sorting, loading, and unloading equipment [Ref.T9].

Suffolk Hub

This terminal is located at Horse Block Road, Farmingsville, Suffolk County.
The purpose of this terminal is to sort, load, unload, and distribute small packages (1-150 lb).

Contact person:

* Mr. James R. Teague
  UPS, Public Affairs Manager

Address:

* 645 West 43rd Street (8th floor)
  NY, NY 10036
  Tel: (212)-631-6565
  Fax: (212)-631-6256

Physical Characteristics

This class I terminal covers 15 acres. Its condition is acceptable. The nearest major highway

is the Long Island Expressway (I-495) at a distance of one mile, and the primary access is via Horse Block Road. This hub can accommodate 75 trailers and 200 vans, and it has loading/unloading doors for 50 trailers and 200 vans.

Operating Characteristics

This hub generates 100 trailer trips and 408 van trips per day, totaling 508 truck trips per day. There are 490 employees including 204 drivers. The intermodal connection is between truck and airplane via JFK International Airport. Commodities are small packages and freight of all kinds destined for all points in the USA. The typical volume is 75,000 packages per day. Major issues for intermodal freight are the unavailability of TOFC service onto Long Island, and congestion on the LIE. The facility utilizes electronic scanning for barcoded packages, and automatic equipment for loading, unloading , and sorting the packages [Ref.T9].

Laurelton Hub

This terminal is located at 132-20 Merrick Boulevard, Springfield, Queens County.
The purpose of this terminal is to sort, load, unload, and distribute small packages (1-150 lb).

Contact person:

* Mr. James R. Teague
  UPS, Public Affairs Manager

Address:

* 645 West 43rd Street (8th floor)
  NY, NY 10036
  Tel: (212)-631-6565
  Fax: (212)-631-6256

Physical Characteristics

This class I terminal covers 183,000 square feet. Its condition is acceptable. The nearest major highways are the Long Island (I-495) and Van Wyck (I-678) Expressways, at a distance of three miles. The major access is via Farmer Blvd. in Springfield Garden. This hub can accommodate 20 trailers and 180 vans and It has 40 truck bays.

Operating Characteristics

This hub generates 420 truck trips per day (60 trailer and 360 van trips per day). There are 452 employees in the facility, including 182 drivers. The typical operation is 50,000 small

packages per day with five hours transfer time. Packages are shipped to all points in the USA via intermodal connection with air (JFK International Airport).

The major issues for intermodal freight transportation are congestion of the Van Wyck Expressway and the non-existence of TOFC service onto Long Island. The facility utilizes electronic scanning for barcoded packages, and automatic equipment for loading, unloading, and sorting packages [Ref.T9].

UPS 43rd Street Hub

This terminal is located at 643 West 43rd Street, New York City.
The purpose of this terminal is to sort, load, unload, and distribute small packages (1-150 lb).

Contact person:

* Mr. James R. Teague
  UPS, Public Affairs Manager

Address:

* 645 West 43rd Street (8th floor)
  NY, NY 10036
  Tel: (212)-631-6565
  Fax: (212)-631-6256

Physical Characteristics

This class I terminal, the size of one square city block in Manhattan, is in acceptable condition. The nearest major highway is the West Side Highway, which is three blocks away from the Lincoln Tunnel. The primary access is from 43rd Street/12th Avenue, and from New Jersey Turnpike via Lincoln Tunnel and the George Washington Bridge. This hub can accommodate 50 trailers (staging) and 400 vans, and has 75 truck bays.

Operating Characteristics

This hub generates 890 truck trips per day (150 trailer and 740 van trips per day). There are 2,230 employees in this facility, including 400 drivers. The typical operation in this hub is 225,000 small packages per day with fifteen hours transfer time. These packages are shipped to all points in the USA via intermodal connection with air through Newark International Airport.

The major issues for intermodal freight transportation are congestion on the route from

Newark Airport to the hub and the non-existence of direct rail connection across the Hudson River. The facility utilizes electronic scanning for barcoded packages and automatic equipment for loading, unloading, and sorting packages.

Based on UPS feeder(trailer) operation analysis for New York City the following are the general issues to be resolved to achieve efficient freight operations:

* Congestion and parking shortages should be eliminated
* Construction must include self contained adequate parking
* The 43rd Street facility should have additional staging areas
* Trailer routes via Williamsburg Bridge, Brooklyn Battery Tunnel, Triboro Bridge, Brooklyn Queens Expressway, Foster Avenue, and West Side Highway (around 44th Street) need to be improved
* The parking regulation for trailers on 30, 36, 37, and 39th Streets between 6th and 9th Avenues should be improved
* The larger size trailers need to be allowed to enter the Queens Midtown Tunnel.

FEDERAL EXPRESS (FedEx)

In 1994, Federal Express, based in Memphis, showed strong improvement in its operation and revenue. After more than 20 years of air operation, FedEx is expanding its ground operations. This company's net income was $31.2 million in the first three months of 1994 , which reflects an $8.5 million increase from 1993. The company invented the overnight express business, which grew 13.4% per month. [Ref.T11] In February 1995, total packages handled were 46 millions pounds and international airfreight packages handled were 43.3 million pounds. Based on the May, 1995 Traffic World, the FedEx's International Priority mail traffic has increased 23.3 percent in the last 11 month. In April, 1995, the overall growth increase for Federal Express volume was 16 percent. The Economy Two-Day service volume was up 22.8% in the last 11 months (ending April, 1995) [Ref.T11A].

Recently the company won a $1.5 million contract for preparation of defense logistics and also FedEx is now making some of its services available through America OnLine. FedEx took a big step into one of the world's largest markets when it reached agreement with Evergreen International Airlines to buy the carrier's all-cargo route authority to China [RefT10].

The following are some major terminals for FedEx:

Federal Express Hub at JFK International Airport

This terminal is located at Building 262, JFK International Airport, Jamaica, NY 11430

Contact person:

* Mr. John Hirt, Operation Manager

Address:

JFKIA, Bldg. 262, Jamaica, NY 11430
Tel: (718)-917-3814
Fax: (718)-995-3382

Physical Characteristics

This class I terminal is in acceptable condition. The nearest major highways are the Nassau and Van Wyck (I-678) Expressways, at a distance of less than a half mile, and LIE (I-495) at a distance of 5 miles. The primary access to the facility is from the Nassau Expressway. The main purpose of the facility is for sorting, unsorting, loading, unloading, and distribution of time-sensitive packages, including small packages. This facility has warehouse, refrigeration service, and other specialized services such as animal/perishable handling services.

Various truck categories operate within this facility, such as vans, trucks, and single trailer trucks. There are approximately 50 parking spaces for trucks and vans [Ref.T9].

Operating Characteristics

The site generates over 100 truck trips per day. The facility has a total of 320 employees, and has an intermodal connection with airplanes.

The main commodity is small packages, with a volume of 100,000 packages per day, and 50,000 packages per day for large size packages. The origin and destination of these packages are all points in the United States and internationally as well.

The main reasons for freight delay are congestion on the Van Wyck Expressway and, occasionally, delays due to late plane arrival.

Based on NYMTC's survey, the major barrier to improvement of freight movements is highway congestion, often due to day-time construction work [Ref.T9]. The advanced technologies used are electronic scanning of barcoded packages, and special equipment to sort, load, and unload small packages. FedEx invented new software designed to prepare complete export documents, called Document Preparation Software [Ref.T10]. At the moment no terminal improvement is planned.

Federal Express Hub at Newark International Airport

This terminal is located at the Newark International Airport, Bldg.10, Tower Road, Newark, NJ 07114

Contact person:

* Mr. Dave Dempsey
  Tel: (908)-965-3000
  Fax: (908)-351-0316

Physical Characteristics

This class I terminal located in Union/Essex counties, is in acceptable condition. The nearest major highways are the New Jersey Turnpike (exit 13A) and Routes 1 and 9. The purpose of this terminal is to sort, load, unload, and distribute freight and small packages (1-150 lbs). The facility can accommodate 100 trailers and has 100 truck bays.

Operating Characteristics

Typically, this facility generates about 300 truck trips per day. The number of employees is 500 persons. Based on NYMTC's survey, the operator mentioned that the terminal condition has no major deficiencies and its main problem is the New Jersey Turnpike congestion and clearance restriction at the tunnels under the Hudson River. The intermodal connection is between truck and airplane. This facility handles 125,000 packages per day. These packages are destined for all points in the USA and overseas as well. The advanced technology utilized is electronic scanning for barcoded packages and automatic equipment for loading, unloading, and sorting small packages [Ref.T9].

Trucking Regulations

Lately, some rules and regulations that effect the trucking industry have been passed by Congress.

The following are those rules and regulations:

* Overweight container rules were scheduled to take effect June 27, 1995. However, the effective date has been delayed for 90 days by the Secretary of Transportation- to January 1, 1996. This rule basically requires shippers to inform the trucker of the container's content and to provide a written certification of gross cargo weight. This rule also prohibits coercion of the trucker into accepting a container without the required certificate.

* Trucking deregulation effective January 1, 1995. This deregulation will allow any motor carrier to operate anywhere within the state borders; eliminate the state authority to dictate what routes the truckers can use to carry freight; allow any motor carrier to set rates and eliminate a state's ability to dictate rates; allow states to continue regulation of safety and insurance programs.

* Transportation Industry Regulatory Reform Act of 1994 (TIRRA) effective August 26, 1993, abolished the Interstate Commerce Commission supervision of most trucking rate-making activities and eliminated the requirement for filling any rates, classifications, and rules set by individual motor carriers rather than rate bureaus to set rates collectively.

Future outlook

The intermodal industry will be more seamless in the future, especially with its motor carriers' connections. To achieve these seamless connections more advanced technology should be adopted by motor carriers, such as electronic communications, modern supply chain management, and real time tracking, and the creation of new rules and regulations that will remove the barrier for the trucking industry to grow. In addition, recent efforts to increase the wages of truck drivers, employer support, and improved government regulations to better understand the drivers working conditions, may be factors to entice more people into entering the profession. As a result, this will help to reduce driver shortages and, indirectly it will improve freight transportation.

References for chapter IV - Truck Facilities

T1 1993-94 Regional Truck Survey, Phase II, Technical Report, PANY&NJ, December 1994

T2 Citywide Industry Study, Transportation Technical Report, NYCDEP, Jan.1993

T3 The Long Island Rail Road, Freight Service, brochure

T4 Transportation and Traffic Engineering Handbook, Second Edition, by W.S. Homburger, Institute of Transportation Engineering

T5 "Transportation Topics", January 20, 1995

T6 Truck Weight Study, draft, by NYMTC, February 21,1995

T7 Off-Street Truck Loading Study, Final Report, NYCDOT, January 1992

T8 Goods Movement Characteristics in the NYC Region, January 1993, by UTRC

T9 NYMTC's Intermodal Freight Inventory Questionnaire, October 1994

T10 Journal of Commerce, November 28, December 9, 1994, Feb. 27, 1995

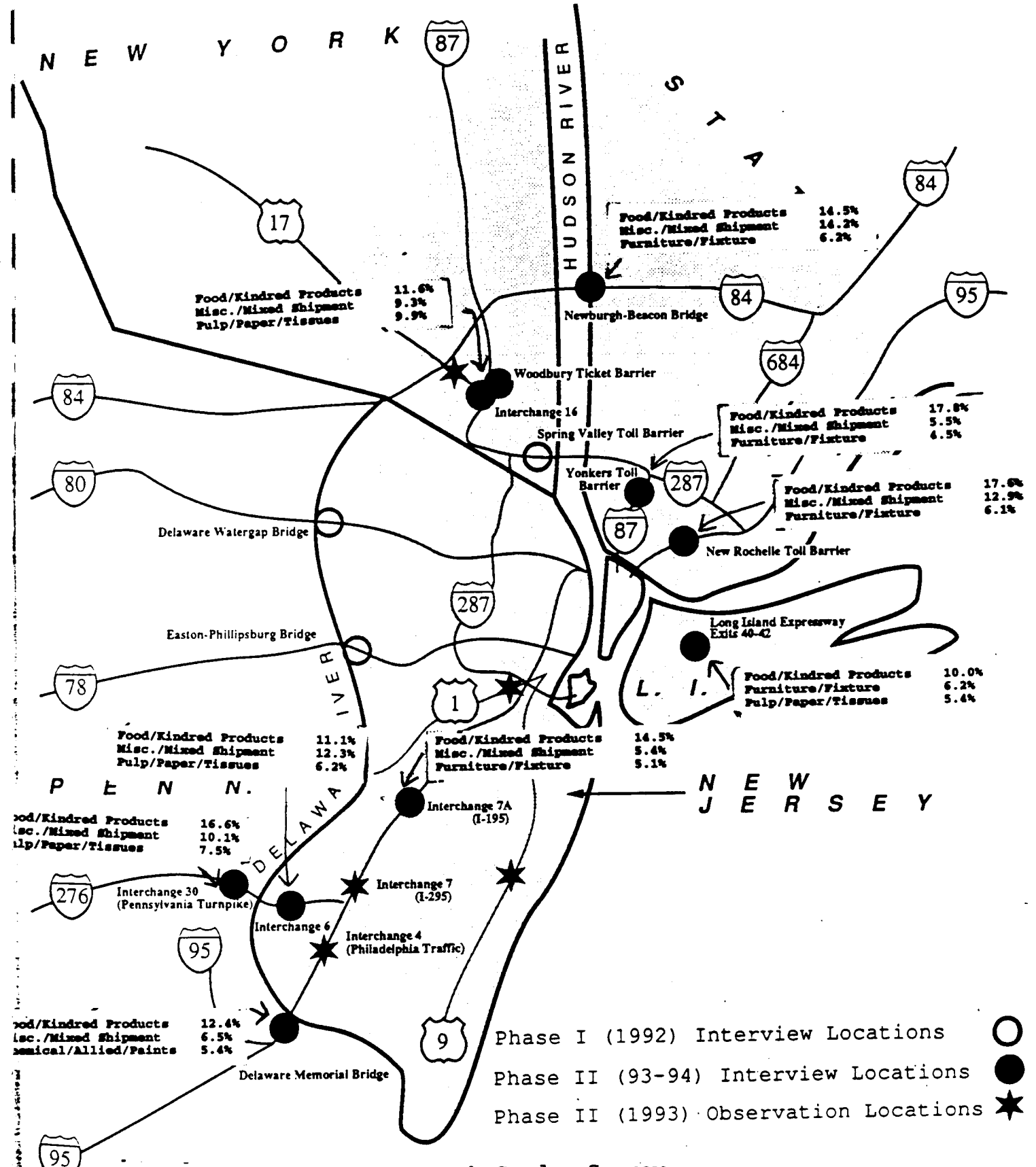
T11 Traffic World, March 21, October 17, 24, and 31, November 21, Dec.12, 1994, January 23, 1995, May 1995

T12 VIA, September, 1993

List of Figures for Chapter IV - Truck Facilities

1992 - 1994 TRUCK CORDON SURVEY MAP + COMMODITIES

FIG.T-1



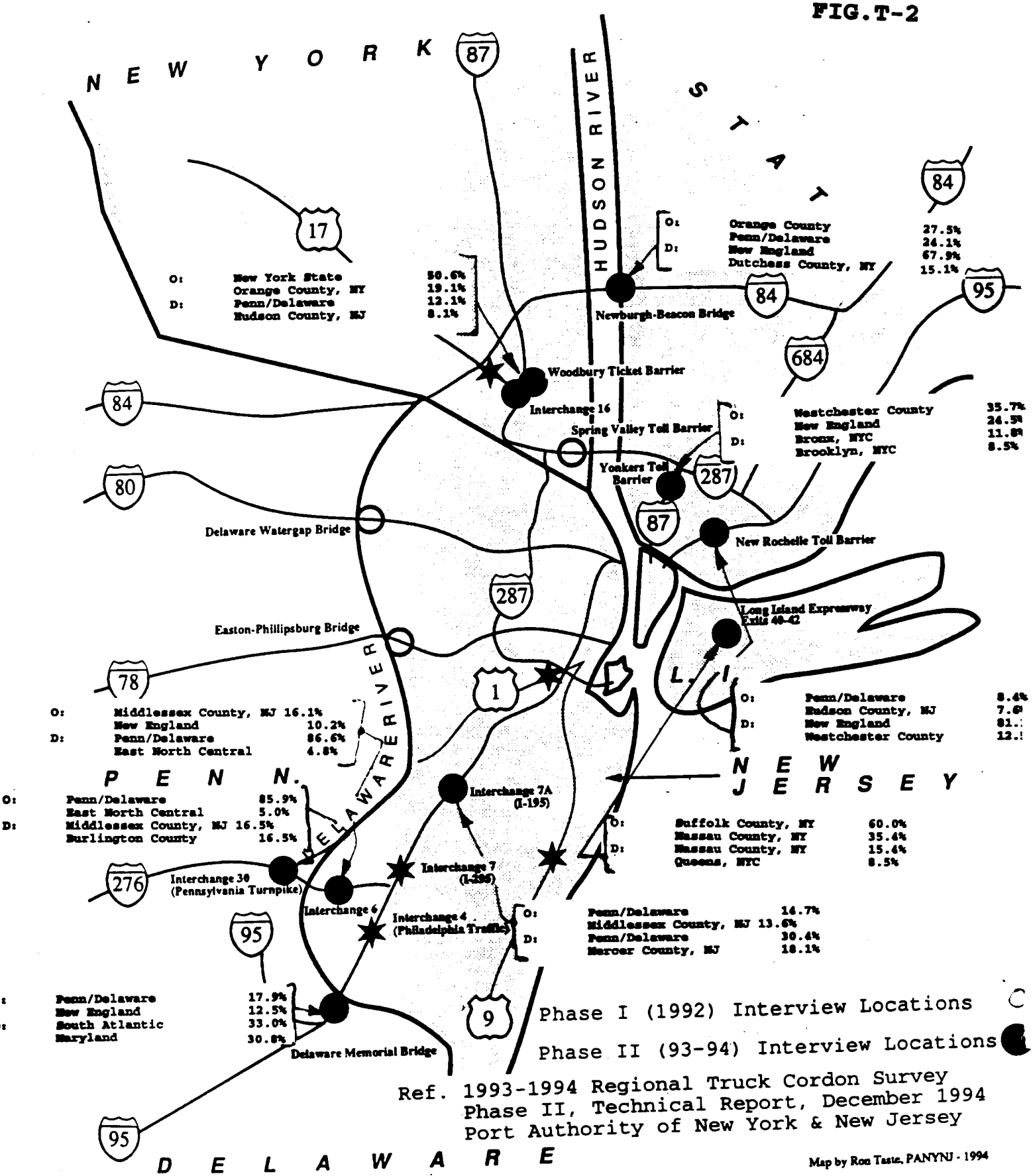
Ref. 1993-1994 Regional Truck Cordon Survey
Phase II, Technical Report, December 1994
Port Authority of New York & New Jersey

Map by Ron Taste, PANYNJ - 1994

1992 - 1994 TRUCK CORDON SURVEY MAP

Origin/Destination

FIG.T-2



Ref. 1993-1994 Regional Truck Cordon Survey
Phase II, Technical Report, December 1994
Port Authority of New York & New Jersey

Map by Ron Taste, PANYNJ - 1994

FIG. T-3

PORT AUTHORITY FACILITY RESTRICTIONS

FACILITY	Width	Height	Hazardous
Holland Tunnel	8'0"	12'6"	No
Lincoln Tunnel	8'6"	13'0"	No
GWB Upper Level	8'6"	14'0"	Yes
GWB Lower Level	8'6"	13'6"	No
Sten Island Brs.	8'6"	14'0"	Yes

REGIONAL TRUCK WEIGHTS, 1988

	AXLE LIMITS			MAX. GROSS WEIGHT	
STATE	Single	Tandem	Triple	Interstate	Other Roads
Connecticut	22,400	36,000	53,000	80,000	80,000
New Jersey	22,400	34,000	56,400	80,000	80,000
New York	20,000	34,000	42,500	80,000	80,000

SOURCE: Truck Weight Limits, 1990.

Source: Goods Movement Characteristics in the New York City Region, UTRC, January 1993

FIG. T-4

Source: Truck Weight Study, Draft, NYMTC, February 1995

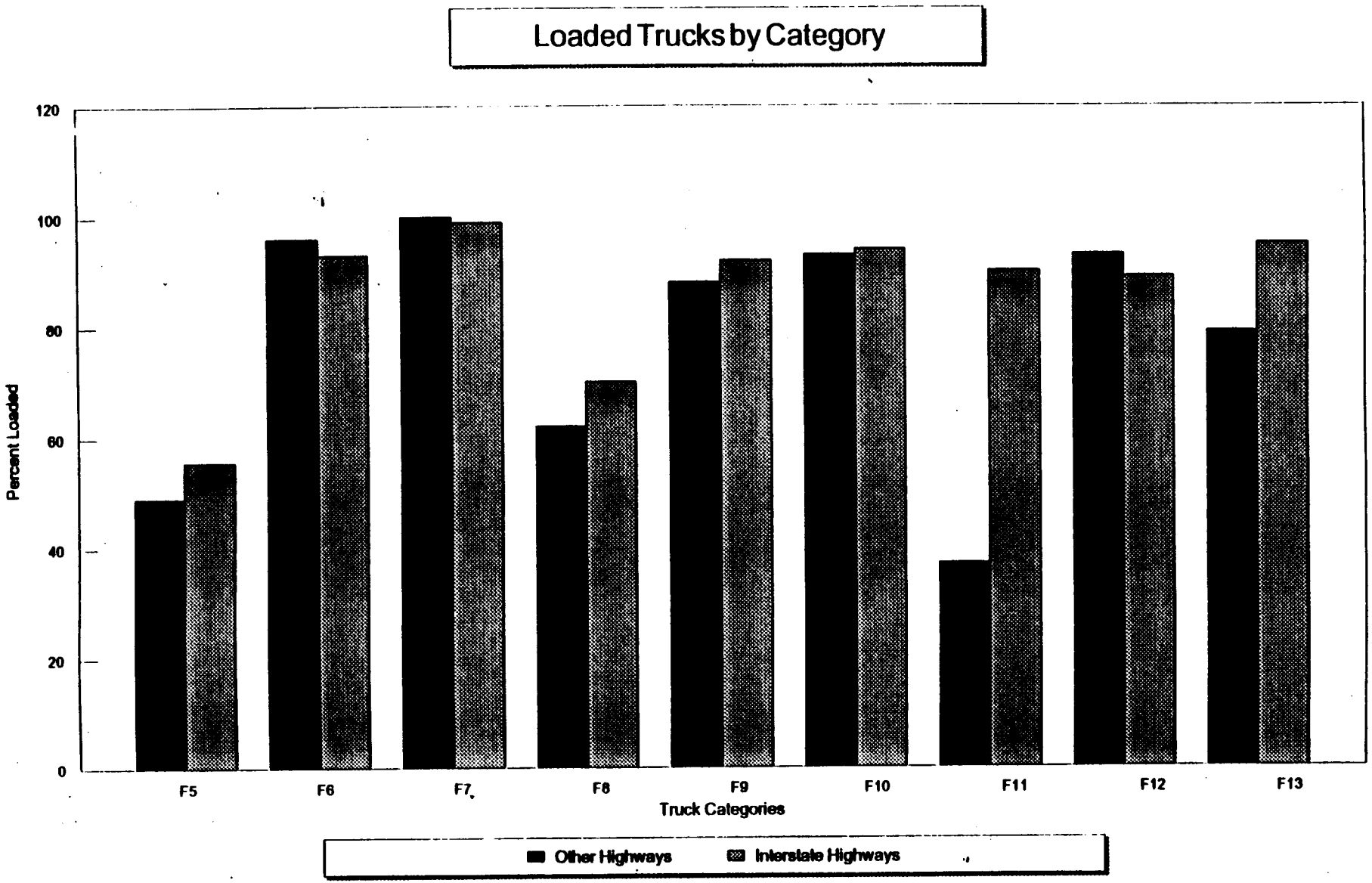


FIG. T-5

Cargo Weight by Truck Category

Source: Truck Weight Study, Draft, NYMTC, February 1995

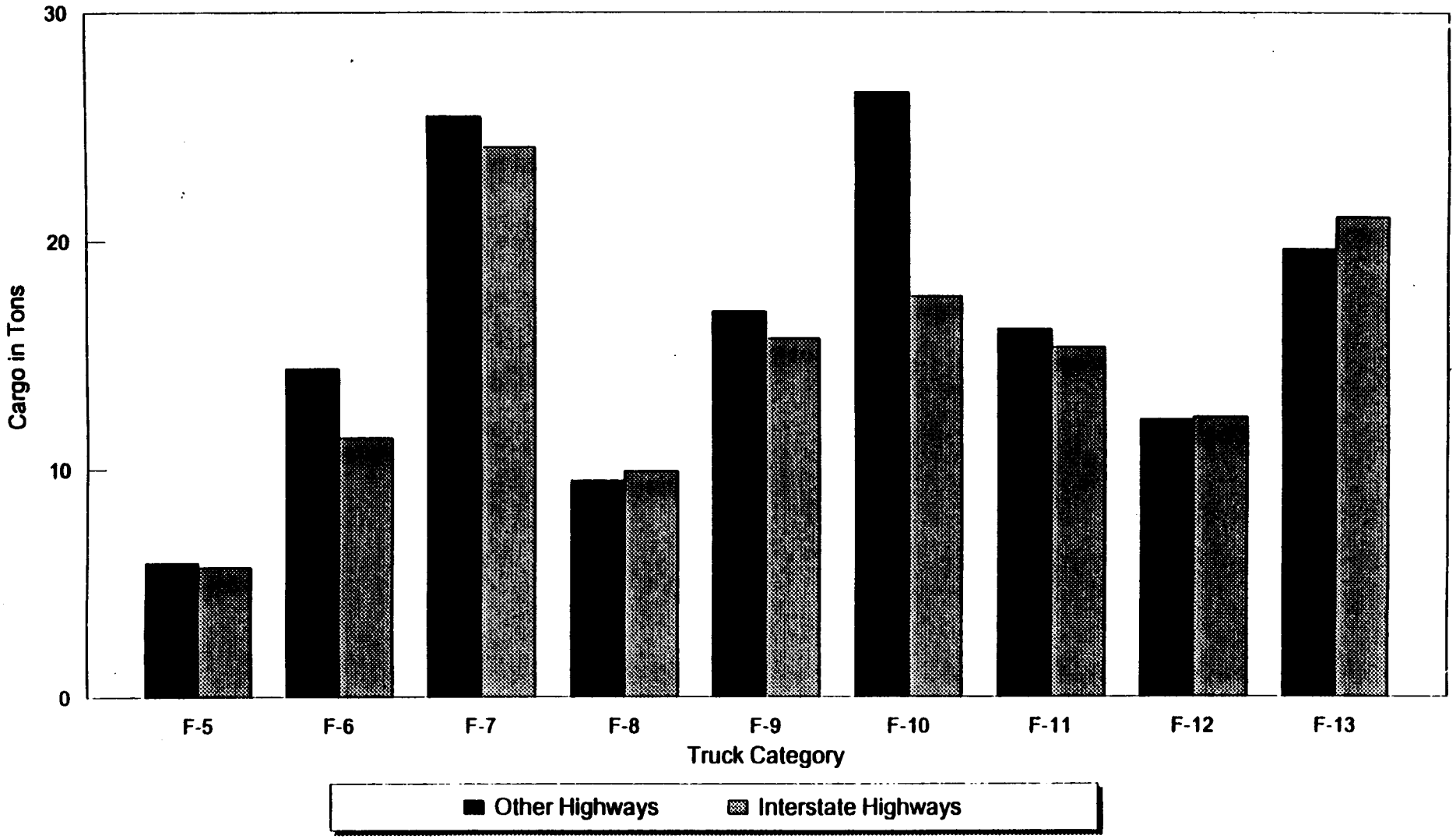


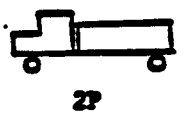
FIG. T-6

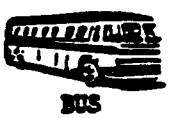
TYPICAL VEHICLE SILHOUETTES

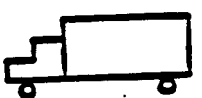
FHWA SCHEME F CLASSIFICATION

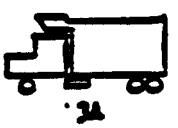
F1 

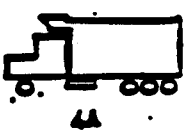
F2 

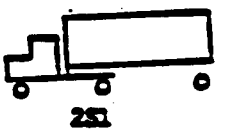
F3 

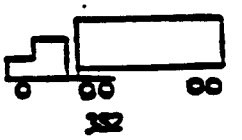
F4 

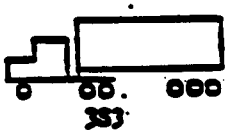
F5 

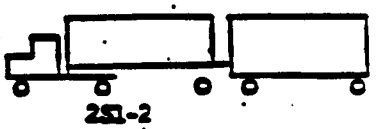
F6 

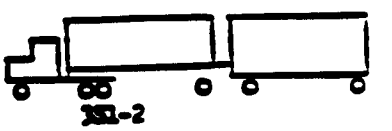
F7 

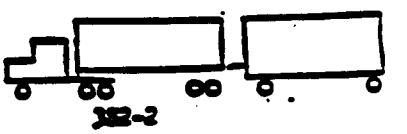
F8 

F9 

F10 

F11 

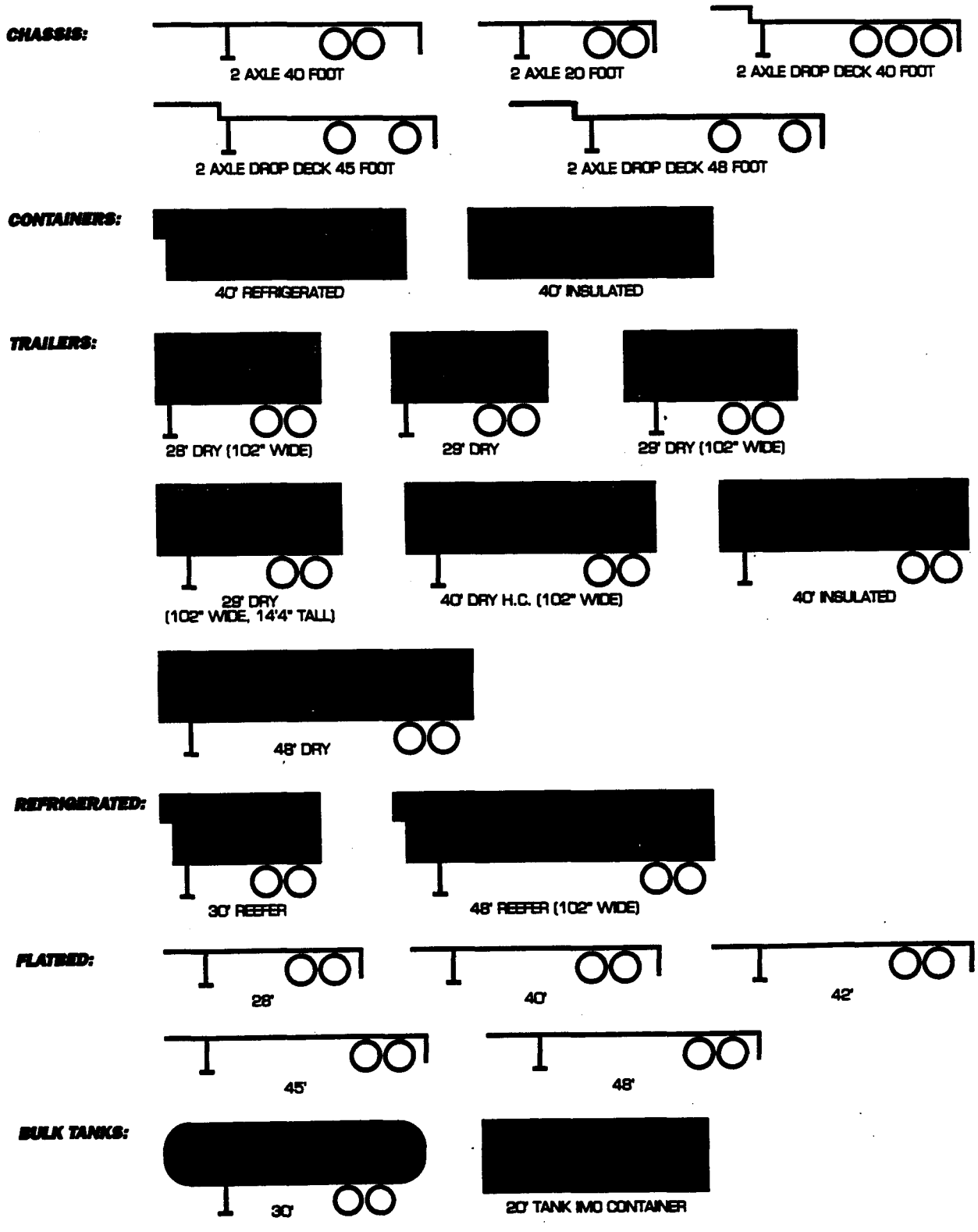
F12 

F13 

Source: Truck Weight Study, Draft, NYMTC, February 1995

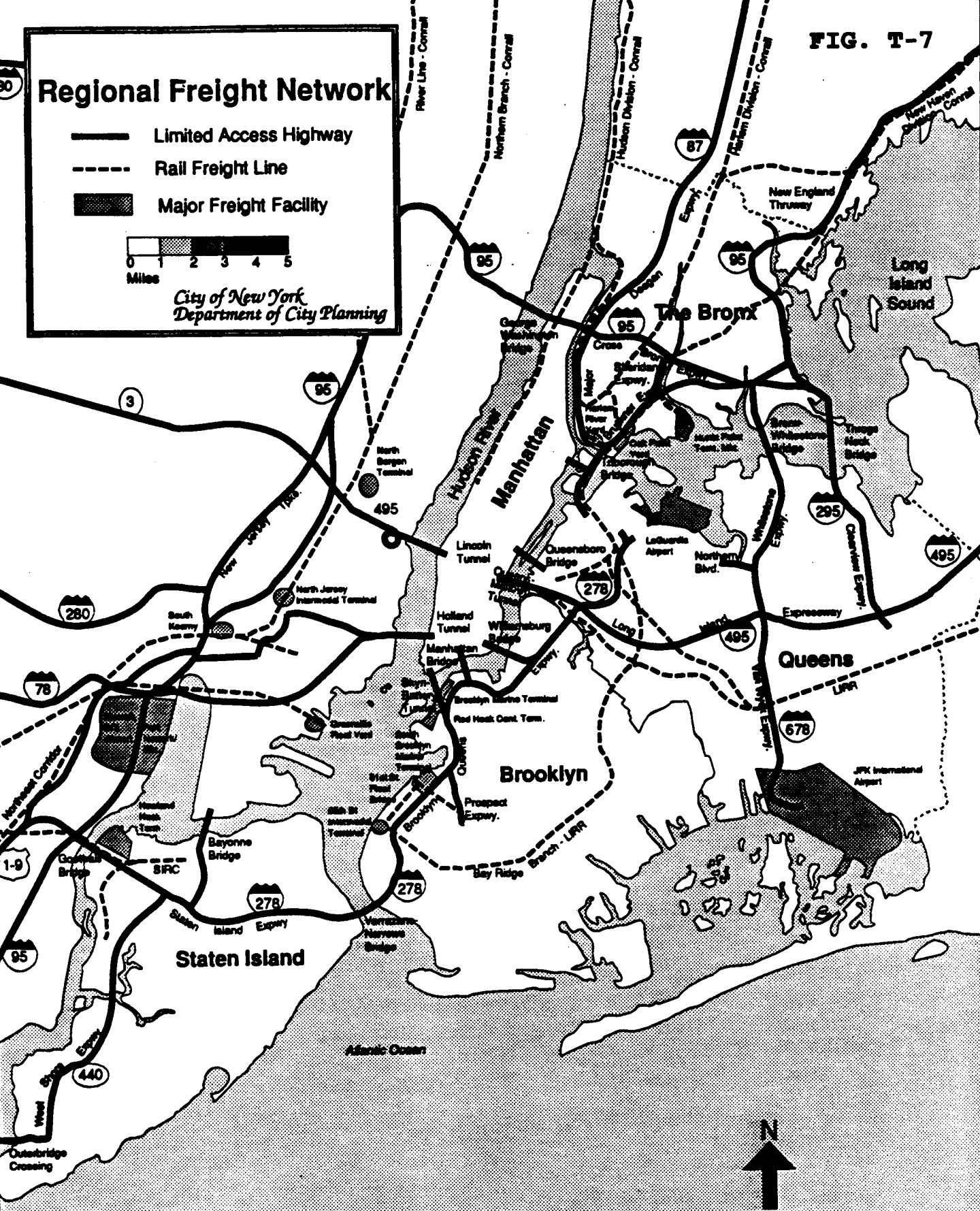
INTERMODAL TRANSPORTATION EQUIPMENT FIG. T-6A

Ref: "Intermodal Freight Transportation" 3rd Edition, by Gerhardt Muller



Diagrams illustrating different types of intermodal chassis, trailers and containers.
Source: K&W Equipment

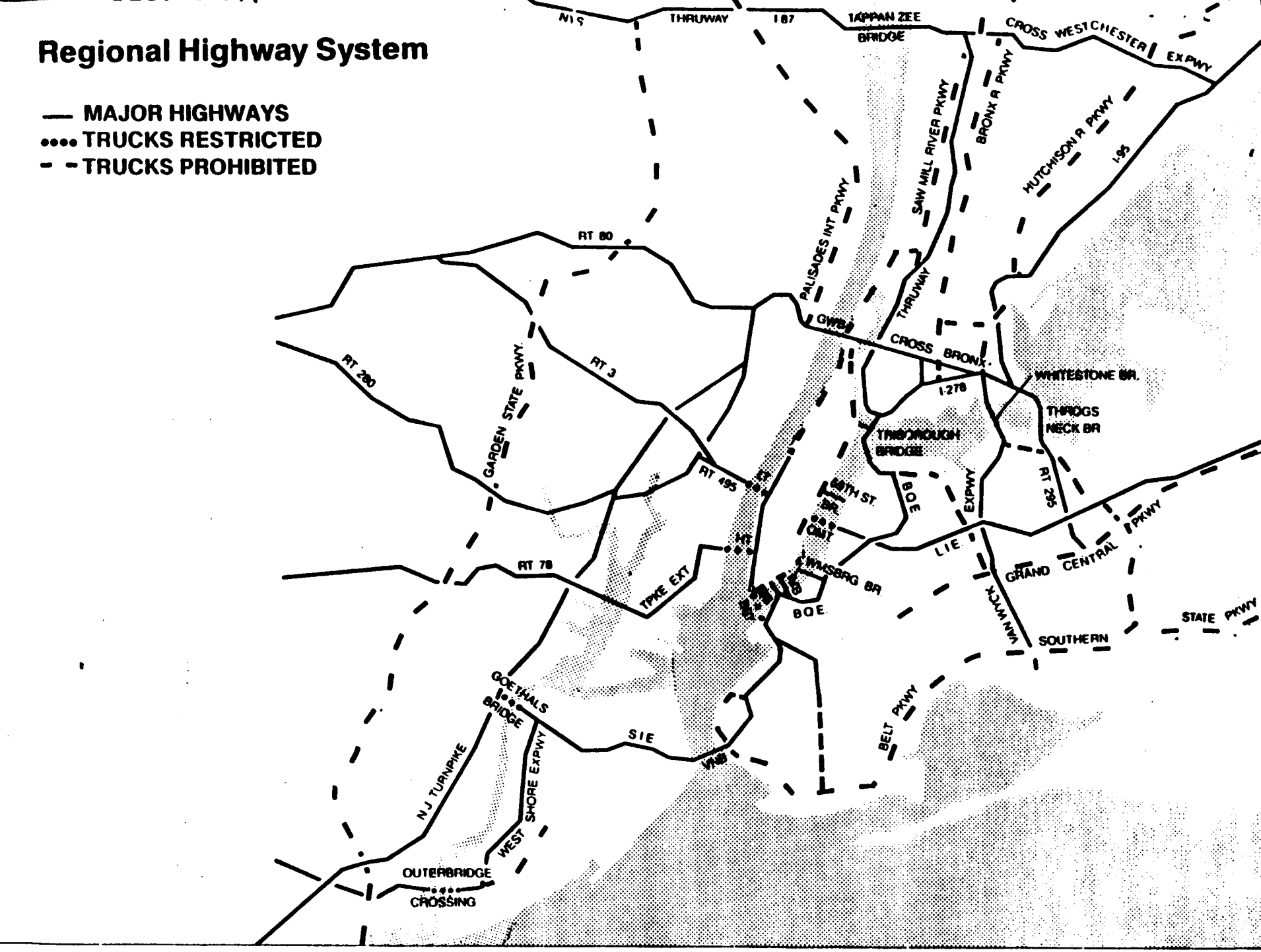
FIG. T-7



Source: Citywide Industry Study
Transportation Technical Report
NYCDOCP, January 1993

Regional Highway System

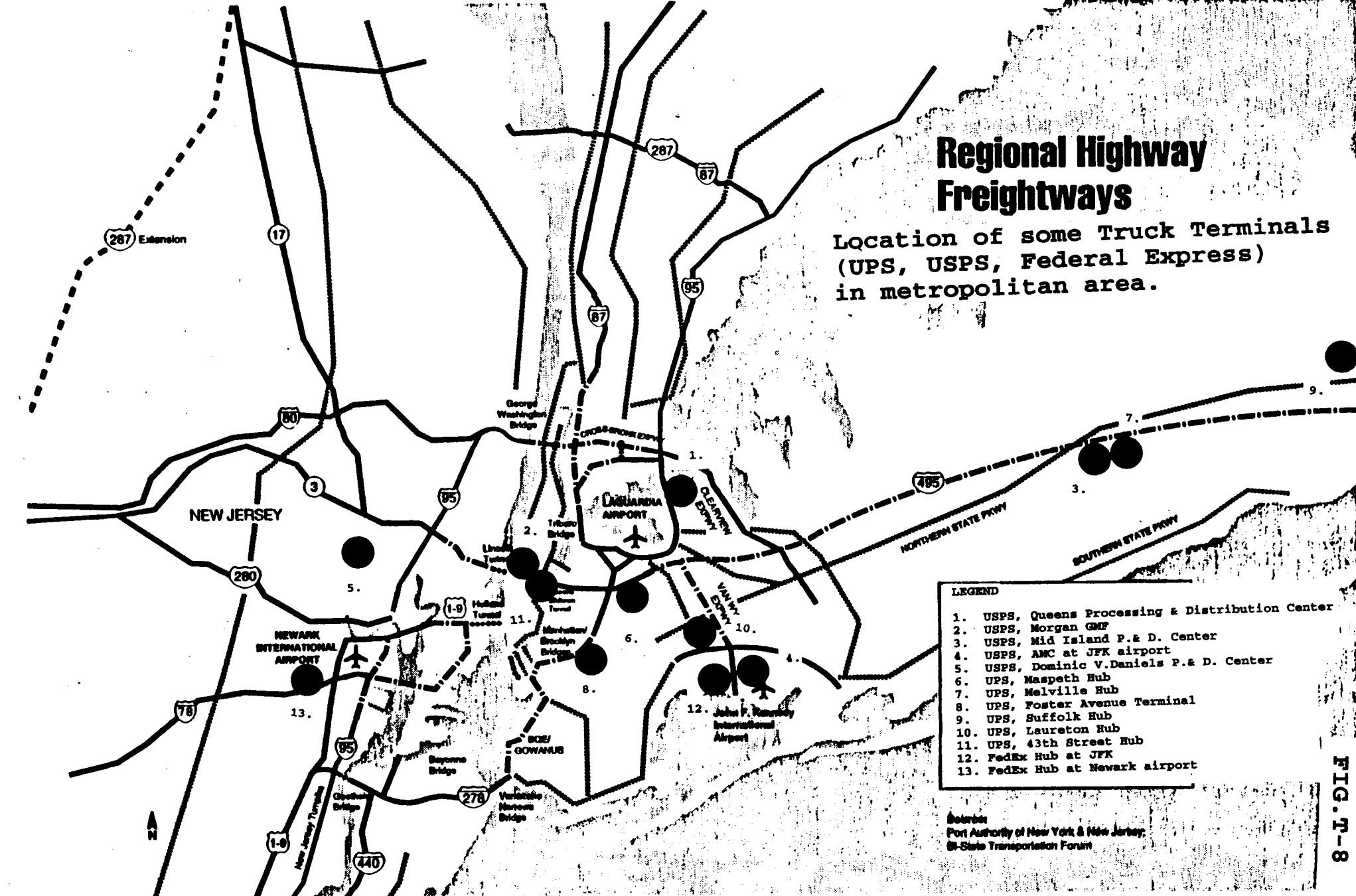
— MAJOR HIGHWAYS
•••• TRUCKS RESTRICTED
- - TRUCKS PROHIBITED



Source: Goods Movement Characteristics in the New York City Region, UTRC, January 1993

Regional Highway Freightways

Location of some Truck Terminals (UPS, USPS, Federal Express) in metropolitan area.



LEGEND

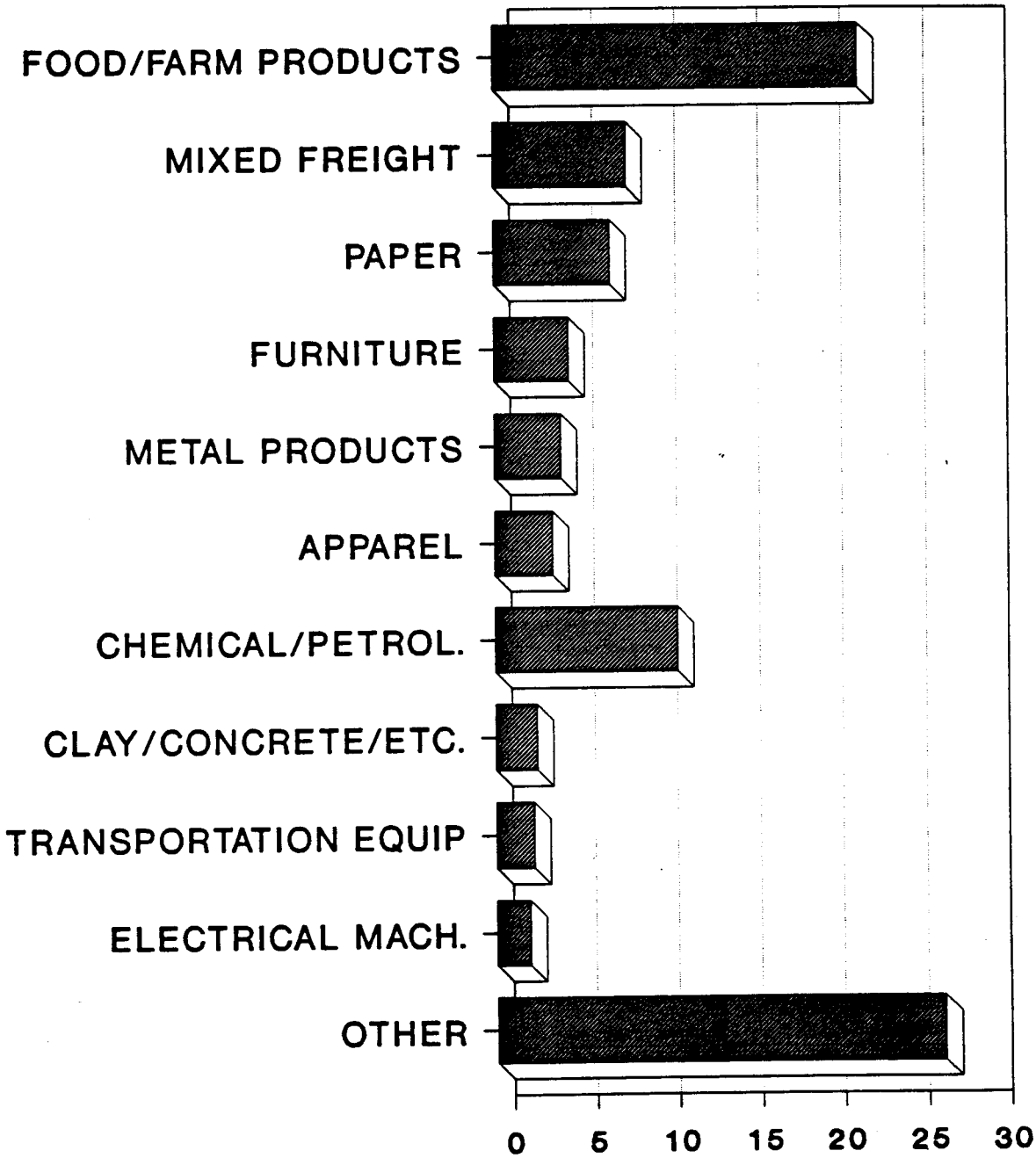
1. USPS, Queens Processing & Distribution Center
2. USPS, Morgan GMF
3. USPS, Mid Island P.& D. Center
4. USPS, AMC at JFK airport
5. USPS, Dominic V.Daniels P.& D. Center
6. UPS, Maspeth Hub
7. UPS, Melville Hub
8. UPS, Foster Avenue Terminal
9. UPS, Suffolk Hub
10. UPS, Laureton Hub
11. UPS, 43th Street Hub
12. FedEx Hub at JFK
13. FedEx Hub at Newark airport

Source:
Port Authority of New York & New Jersey;
Bi-State Transportation Forum

FIG. T-8

FIG. T-9

COMMODITIES BY CLASS
HUDSON RIVER CROSSINGS - EASTBOUND



Source: Citywide Industry Study
Transportation Technical Report
NYCDOCP, January 1993

Summary of Loading Space Requirements

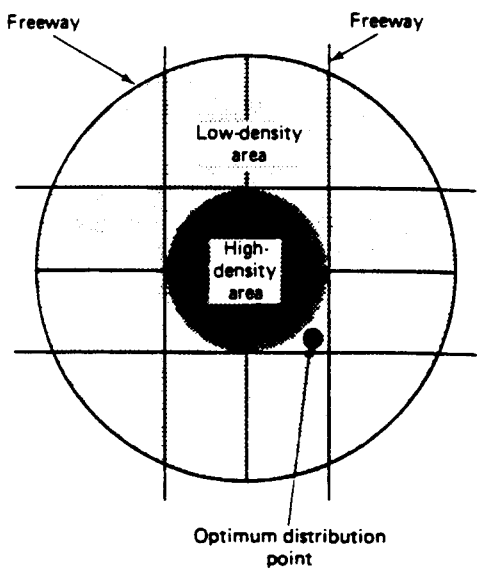
Land Use	Total Floor Area (1000 ft²) Requiring: First Loading Space	Second Loading Space
Commercial, industrial	7–10	27–35
Institutional	12–15	75–80
Hotels, office, residential	20–30	80–113

SOURCE: GEORGE E. KANAAN AND DAVID K. WITHEFORD, "Zoning and Loading Controls," *Traffic Quart.*, *25*(3), 452 (1971).

Suggested Truck Berth Criteria for Commercial and Industrial Land Uses

Floor Area (ft²)	Number of Truck Berths
<8000	1
8000–25,000	2
25,000–50,000	3
50,000–100,000	4
100,000–250,000	5
Each additional 200,000	1

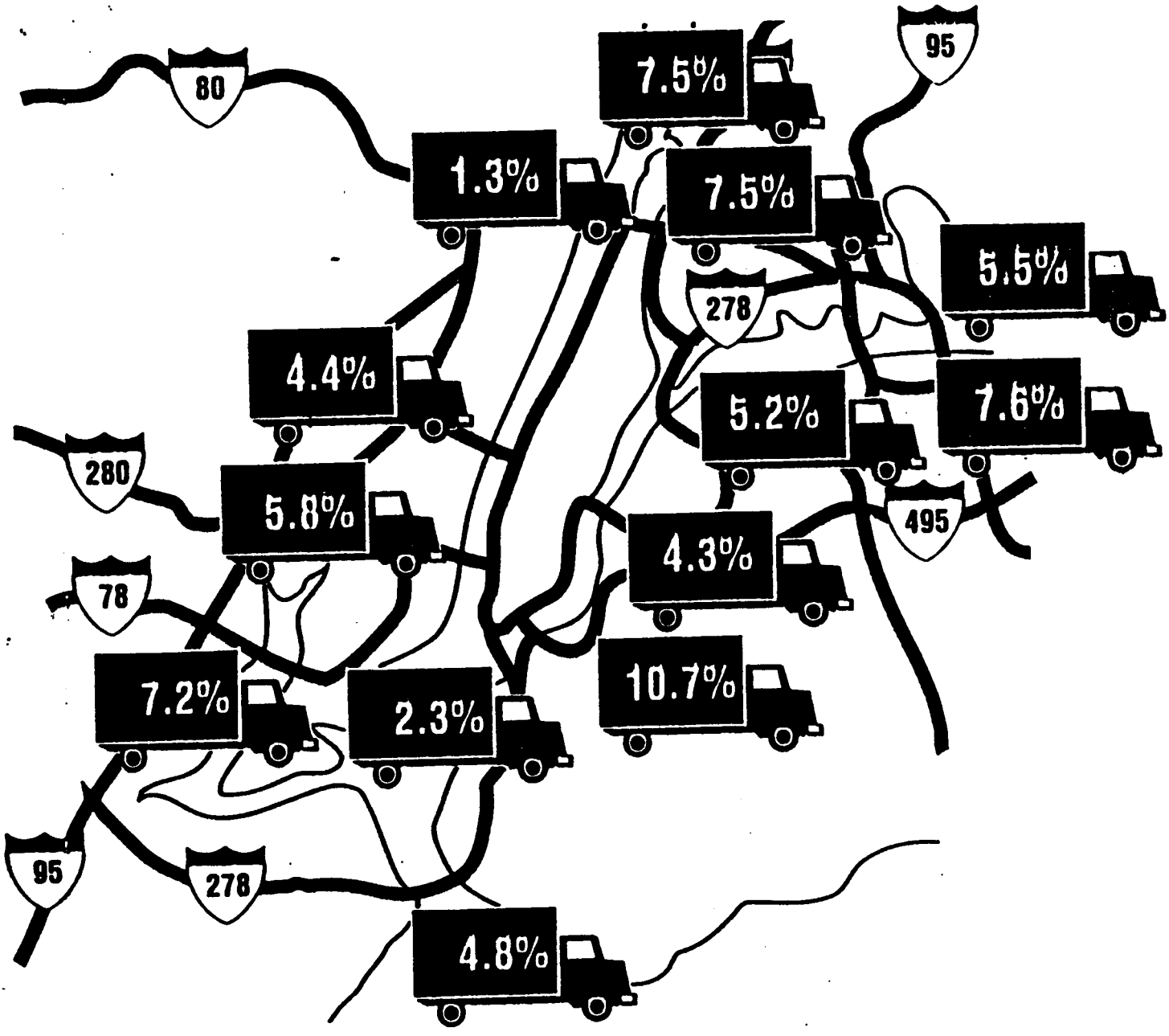
SOURCE: WILBUR SMITH & ASSOCIATES, *Transportation and Parking for Tomorrow's Cities*, New Haven, Conn., 1966, p. 265.



Generalized location of optimum distribution point for urban motor freight terminals (theoretical). SOURCE: Wilbur Smith & Associates, *Transportation and Parking for Tomorrow's Cities*, 1966, p. 264.

FIG. T-11

Trucks' Share of Traffic - Bridges and Tunnels Area's



Sources: Triborough Bridge and Tunnel Authority; PANYNJ; NYCDOT

APPENDIX A

These customer surveys were used to develop the overall transportation market size in the downstate region for most commodity groups. Additional industry research was used to refine the information as necessary.

Total Downstate Region Market Size
(millions of tons)

Commodity	Total
Automotive	0.6
Chemicals and Hazardous Materials	11.2
Food	19.9
Intermodal	2.0
Lumber	1.9
Minerals and Metals	34.9
Paper	6.3
Waste	13.8
Total	90.6

DATA FOR ALL MODES

Part: Total
STCC: Total
Orig: All Orig
Mode: Total

Dest	Total	US/CA	ExpWater	ImpWater	ExpAir	ImpAir
Bergen, NJ	15036.2	12175.0	NA	2851.5	NA	9.8
Essex, NJ	18986.5	11224.0	7350.3	385.2	19.8	7.2
Hudson, NJ	11589.2	10620.1	NA	958.5	NA	10.5
Hunterdon, NJ	1606.6	1599.7	NA	6.0	NA	0.9
Middlesex, NJ	14528.0	13336.1	NA	1187.0	NA	4.9
Monmouth, NJ	5880.8	5638.6	NA	239.7	NA	2.4
Morris, NJ	7943.6	6971.9	NA	968.4	NA	3.4
Ocean, NJ	4224.0	4206.5	NA	16.8	NA	0.7
Passaic, NJ	6813.7	6499.7	NA	305.9	NA	8.1
Somerset, NJ	4150.4	3923.3	NA	225.3	NA	1.8
Sussex, NJ	1092.1	1039.3	NA	52.3	NA	0.5
Union, NJ	19399.0	9009.1	NA	10385.7	NA	4.3
Warren, NJ	1694.4	1679.3	NA	14.6	NA	0.5
Subtotal	112944.5	87922.6	7350.3	17596.9	19.8	55
Richmond, NY	3329.2	3270.9	NA	57.3	NA	1.1
Queens, NY	20005.6	18818.7	NA	964.8	211.3	10.8
Kings, NY	15976.5	15554.8	NA	402.7	NA	19.0
Bronx, NY	7571.2	7399.3	NA	169.0	NA	3.0
New York, NY	44927.9	26507.9	NA	18367.8	NA	52.2
Rockland, NY	4200.4	4108.1	NA	90.9	NA	1.3
Westchester, NY	13861.4	13033.7	NA	823.5	NA	4.2
Nassau/Suffolk	30681.1	28977.7	NA	1685.4	NA	18.0
Subtotal	140553.3	117671.1	0.0	22561.4	211.3	109.6
GRANDTOTAL	253497.8	205593.7	7350.3	40158.3	231.1	164.6

Source: NJDOT

Unit: Thousand of metric tons

NOTE: The data reflects only cargo movements which are traveling through New Jersey, despite the county of origin and/or destination

NY METro Origins Vs Mode

Part: Total
STCC: Total
Dest: All Dest
Data: Total

Origin	Total	Truck	Rail	Air	WaterOther
Bergen, NJ	7195.4	6250.6	414.1	14.9	530.8
Essex, NJ	46446.2	32398.8	8695.7	8.1	5351.7
Hudson, NJ	9327.8	7773.1	1546.8	4.8	7.9
Hunterdon, NJ	1163.9	1127.2	31.4	1.1	5.3
Middlesex, NJ	16922.1	15338.3	1236.9	6.9	346.8
Monmouth, NJ	1768.2	1725.9	34.0	5.1	8.2
Morris, NJ	5529.1	5421.3	102.7	6.2	5.1
Ocean, NJ	1913.5	1862.3	49.5	2.0	1.6
Passaic, NJ	4408.1	4309.2	93.1	5.3	5.9
Somerset, NJ	8226.5	8181.5	44.3	3.0	0.7
Sussex, NJ	3857.3	3855.2	1.5	0.8	0.5
Union, NJ	6844.4	6245.6	574.1	6.1	24.7
Warren, NJ	2703.4	2517.8	66.6	0.7	119.1
Subtotal	116305.9	97006.8	12890.7	65.0	6408.3
Richmond, NY	970.3	883.1	53.9	1.4	33.3
Queens, NY	12458.6	12142.3	269.9	10.9	46.4
Kings, NY	14488.2	13931.0	547.8	10.8	9.4
Bronx, NY	2589.9	2532.0	55.8	2.7	2.1
New York, NY	43457.7	35186.5	5689.7	74.7	2581.5
Rockland, NY	5425.8	5314.4	91.7	2.9	19.8
Westchester, NY	8641.8	7072.6	796.7	9.9	772.5
Nassau/Suffolk	12588.2	11823.2	698.7	33.2	66.2
Subtotal	100620.5	88885.1	8204.2	146.5	3531.2
GRANDTOTAL	216926.4	185891.9	21094.9	211.5	9939.5

Unit: Thousand of metric tons

NOTE: The data reflects only cargo movements which are traveling through New Jersey, despite the county of origin and/or destination

Source: NJDOT

NY METro Origins Vs Mode

Part: Total
STCC: Total
Dest: All Dest
Data: Total

Origin	Total	Truck	Rail	Air	WaterOther
Bergen, NJ	7195.4	6250.6	414.1	14.9	530.8
Essex, NJ	46446.2	32398.8	8695.7	8.1	5351.7
Hudson, NJ	9327.8	7773.1	1546.8	4.8	7.9
Hunterdon, NJ	1163.9	1127.2	31.4	1.1	5.3
Middlesex, NJ	16922.1	15338.3	1236.9	6.9	346.8
Monmouth, NJ	1768.2	1725.9	34	5.1	8.2
Morris, NJ	5529.1	5421.3	102.7	6.2	5.1
Ocean, NJ	1913.5	1862.3	49.5	2	1.6
Passaic, NJ	4408.1	4309.2	93.1	5.3	5.9
Somerset, NJ	8228.5	8181.5	44.3	3	0.7
Sussex, NJ	3857.3	3855.2	1.5	0.8	0.5
Union, NJ	6844.4	6245.6	574.1	6.1	24.7
Warren, NJ	2703.4	2517.8	66.6	0.7	119.1
Richmond, NY	970.3	883.1	53.9	1.4	33.3
Queens, NY	12458.6	12142.3	269.9	10.9	46.4
Kings, NY	14488.2	13931	547.8	10.8	9.4
Bronx, NY	2589.9	2532	55.8	2.7	2.1
New York, NY	43457.7	35186.5	5689.7	74.7	2581.5
Rockland, NY	5425.8	5314.4	91.7	2.9	19.8
Westchester, NY	8641.8	7072.6	796.7	9.9	772.5
Nassau/Suffolk	12588.2	11823.2	698.7	33.2	66.2

Source: NJDOT

Thousand of metric tons

Truck Origins By Partner

Mode: Truck
STCC: Total
Dest: All Dest
Data: Total

Origin	Canada	NEurope	SEurope	EEurope	Mexico	OtherLA	Mideast/I	Japan	Asia/Other
Bergen, NJ	217.7	370.1	30.1	8	12.5	154.3	130.2	79.3	492.5
Essex, NJ	1144.2	5854.1	2657.2	321	694.6	6749.3	4265.6	336.9	2221.8
Hudson, NJ	3.6	69.2	11.6	3.5	1.1	26.8	41.4	9.6	57.2
Hunterdon, NJ	0.2	3.9	0.4	0.1	0	1.6	2.4	0.7	2.1
Middlesex, NJ	30.1	332.7	78.4	11.3	15.7	47.6	54	241.6	116.2
Monmouth, NJ	20.9	9.2	6.3	0.4	0.2	6.9	6.1	0.7	6.8
Morris, NJ	31.2	77.2	16.2	1.2	1.2	96.3	24.2	39.7	129.8
Ocean, NJ	0.1	1.1	0.2	0	0.1	0.3	0.9	0.5	0.2
Passaic, NJ	0.5	54.4	15.5	1.8	0.5	30.3	21.3	7	29.2
Somerset, NJ	0.5	16.3	5.8	0.3	0.9	16.7	4.4	6.3	16.7
Sussex, NJ	0.1	0.7	0.4	0.1	0	1.5	0.4	0.4	0.4
Union, NJ	9.6	52.3	63.9	4.4	0.4	31.1	53.6	8.6	25.2
Warren, NJ	2.1	77.9	1.1	1.8	0.1	11.5	7.2	10.3	16
Richmond, NY	3.8	3	0.4	46.6	0.1	7.8	23.3	0.2	0.8
Queens, NY	6.8	76	30	4.6	17.9	29.9	42.8	96	112.1
Kings, NY	0.8	9.8	29.5	3.4	1.7	19.2	20	5.1	22.8
Bronx, NY	0.2	2.5	0.5	0.2	0.2	6.3	1.8	0.4	2.2
New York, NY	674	2696.1	3079.3	2714.8	487.6	1894.8	4063.3	5381.4	3679.4
Rockland, NY	0.1	4.8	0.5	0.1	0.1	6.3	1.1	0.5	6.7
Westchester, NY	32.4	76.3	144.7	102.3	177.7	661.3	88.9	76.3	108.2
Nassau/Suffolk	5.5	217.3	25	10.8	3.7	45.5	46.1	44.4	109.4

Unit: Thousand of metric tons

NOTE: The data reflects only cargo movements which are traveling through New Jersey, despite the county of origin and/or destination

Source: NJDOT

Rail Origins By Partner

Mode: Rail
STCC: Total
Dest: All Dest
Data: Total

Origin	Canada	NEurope	SEurope	EEurope	Mexico	OtherLA	Mideast/I	Japan	Asia/Other
Bergen, NJ	27.6	57.8	3.5	1.8	1.2	18.6	26.8	21.1	97.3
Essex, NJ	241.2	2804.2	1107.6	45.8	466.5	1030	785.6	296.1	1600.5
Hudson, NJ	1.2	7.3	0.7	0.2	0	2.2	13.6	2.1	32.6
Hunterdon, NJ	0	0.3	0.1	0	0	0.6	0.1	0.2	0.2
Middlesex, NJ	8.8	161.3	57.3	7.9	3.7	7.6	13.9	180	50.9
Monmouth, NJ	0.6	0.6	0.3	0.1	0	0.8	1.8	0.1	1
Morris, NJ	7.7	17.5	1.8	0.5	0.1	8.5	7.3	10.4	30.2
Ocean, NJ	0	0.1	0	0	0	0	0	1	0.1
Passaic, NJ	0	3.3	2.1	0.1	0	1.4	0.7	0.5	4.1
Somerset, NJ	0.1	1.5	1.4	0.1	0.1	1.5	0.4	0.5	2
Sussex, NJ	0	0.2	0.1	0	0	0.3	0	0	0.1
Union, NJ	1	8.3	9.7	1.2	0	3	4.1	2.4	6.1
Warren, NJ	0.4	6.5	0.1	0.1	0	0.6	1	1.1	2.2
Richmond, NY	1.4	0.8	0.1	15.1	0	2.2	5.2	0	0
Queens, NY	0	2	1.8	0.9	0	1.8	2.7	0.4	3.4
Kings, NY	0	1.3	0.3	0.2	0	1.3	2	0.1	1.2
Bronx, NY	0	0.4	0.2	0	0	0.3	0.2	0	0.1
New York, NY	76.1	440.7	334.6	893.8	135.3	251.9	1066.2	1283.4	715.7
Rockland, NY	0	2.7	0.2	0	0	0.4	0.1	0.1	1.4
Westchester, NY	0.9	7.8	4.8	0	0.1	12.1	3.3	0.8	5.3
Nassau/Suffolk	0.1	47.4	19.1	11.3	0	5	5.8	2.1	7.4

Unit: Thousand of metric tons

NOTE: The data reflects only cargo movements which are traveling through New Jersey, despite the county of origin and/or destination

Source: NJDOT

Water Other Origins By Partner

Mode: Water Other
STCC: Total
Dest: All Dest
Data: Total

Origin	Canada	NEurope	SEurope	EEurope	Mexico	OtherLA	Mideast/I	Japan	Asia/Other
Bergen, NJ	166.9	243	0.7	1.8	0.1	42.8	6.1	0.1	11.7
Essex, NJ	58.4	1571.9	179.7	24.6	459.4	1076.6	1305.2	0.3	667.4
Hudson, NJ	0	1.9	1.3	0.1	0	0.7	0.1	0.1	0.2
Hunterdon, NJ	NA	0	NA	0	NA	0	0	NA	0
Middlesex, NJ	0	25	0.5	0.2	11.2	0.3	0.4	6.7	1
Monmouth, NJ	NA	0.3	2.2	0	0	0.5	1.7	0	1.1
Morris, NJ	0	0.2	0	0	0	1.1	0.5	0.1	0.5
Ocean, NJ	NA	0	NA	0	NA	0	0	NA	NA
Passaic, NJ	NA	0.2	0	0	0	1.2	0	0	0.2
Somerset, NJ	NA	0.2	NA	0	0	0	0	0.2	0.2
Sussex, NJ	0	0	NA	0	NA	0	0	0.2	0.2
Union, NJ	NA	2.8	3.4	0	NA	4.6	9.6	0.3	0.5
Warren, NJ	NA	0.4	0	0	NA	0.4	0.4	0.2	0.2
Richmond, NY	NA	0	NA	0	0	0	27.3	NA	0
Queens, NY	NA	0	0.9	0	1	0.4	0.6	0.2	0.2
Kings, NY	0	0	NA	0	0	0	0	0	0
Bronx, NY	NA	0	NA	0	NA	0	0	NA	0
New York, NY	139.8	296	1577.2	0.6	63.2	36.2	97.7	88.2	259.7
Rockland, NY	NA	0	NA	0	NA	0	0	NA	NA
Westchester, NY	28.2	37.6	38.5	1	153.1	429.1	39.4	29.9	0
Nassau/Suffolk	0.6	0.4	4	0.4	0	1.4	1.6	0.1	2

Unit: Thousand of metric tons

NOTE: The data reflects only cargo movements which are traveling through New Jersey, despite the county of origin and/or destination

Source: NJDOT

Unit: Thousand of metric tons

NOTE: The data reflects only cargo movements which traveling through New Jersey, despite the county origin and/or destination

All Modes By Data

Mode: Total
STCC: Total
Dest: All Dest
Part: Total

Origin	Total	US/CA	ExpWater	ImpWater	ExpAir	ImpAir
Bergen, NJ	7195.4	4949.5	2236.6	NA	9.4	NA
Essex, NJ	46446.2	8407.5	1297.7	36710.7	7.2	23
Hudson, NJ	9327.8	9039.8	283.3	NA	4.7	NA
Hunterdon, NJ	1163.9	1150.9	12	NA	0.9	NA
Middlesex, NJ	16922.1	15457.6	1458	NA	6.4	NA
Monmouth, NJ	1768.2	1695.5	69.5	NA	3.2	NA
Morris, NJ	5529.1	5025.6	499	NA	4.5	NA
Ocean, NJ	1913.5	1908.9	3.3	NA	1.2	NA
Passaic, NJ	4408.1	4233.9	168.9	NA	5.3	NA
Somerset, NJ	8226.5	8150.4	73.8	NA	2.3	NA
Sussex, NJ	3857.3	3852.1	4.6	NA	0.5	NA
Union, NJ	6844.4	6538.3	300.6	NA	5.5	NA
Warren, NJ	2703.4	2559.7	142.9	NA	0.7	NA
Richmond, NY	970.3	832.5	137.4	NA	0.5	NA
Queens, NY	12456.6	12024.1	181.4	NA	7.4	245.7
Kings, NY	14488.2	14369.3	109.3	NA	9.5	NA
Bronx, NY	2589.9	2574.3	13.6	NA	1.9	NA
New York, NY	43457.7	10841.6	32596.6	NA	19.5	NA
Rockland, NY	5425.8	5400.8	23.4	NA	1.6	NA
Westchester, NY	8641.8	6373.3	2263.6	NA	4.9	NA
Nassau/Suffolk	12588.2	11971	596	NA	21.1	NA

Source: NJDOT

NY METro Destinations Vs Mode

Part: Total
STCC: Total
Orig: All Orig
Data: Total

Dest	Truck	Rail	Air	WaterOther
Bergen, NJ	13036	1348	14.9	652.2
Essex, NJ	14544.1	3978.5	8.1	463.8
Hudson, NJ	6824.7	4763.1	4.8	1.3
Hunterdon, NJ	1557.9	48.7	1.1	0
Middlesex, NJ	12099.6	2293.6	6.9	134.8
Monmouth, NJ	5761.2	119.4	5.1	0.2
Morris, NJ	7415.3	336.8	6.2	191.5
Ocean, NJ	4204.9	19	2	0
Passaic, NJ	6491.4	322.2	5.3	0.1
Somerset, NJ	3923.3	226.8	3	0.3
Sussex, NJ	1081.2	10.9	0.8	0
Union, NJ	12316.2	1338.5	6.1	5744.3
Warren, NJ	1586.9	107.4	0.7	0
Richmond, NY	3125.4	203.8	1.4	0
Queens, NY	18637.7	1387.6	10.9	0.2
Kings, NY	14692.8	1283.6	10.8	0.1
Bronx, NY	6820.6	750.5	2.7	0.1
New York, NY	39548.2	3576.5	74.7	1805.2
Rockland, NY	3530.5	669.8	2.9	0.1
Westchester, NY	12507.6	1295.7	9.9	58.1
Nassau/Suffolk	28966.8	1686.7	33.2	27.6

Unit: Thousand of metric tons

NOTE: The data reflects only cargo movements which are traveling through New Jersey, despite the county of origin and/or destination

Source: NJDOT

Truck Mode By Partner

Mode: Truck
STCC: Total
Orig: All Orig
Data: Total

Dest	Canada	NEurope	SEurope	EEurope	Mexico	OtherLA	Mideast/I	Japan	Asia/Other
Bergen, NJ	50.3	331.2	81.1	17.4	4.5	1043.9	63.5	53.8	301.4
Essex, NJ	170.6	1366.2	516.1	75.9	97.3	401.7	618	199	1030.3
Hudson, NJ	58	170	81	10.1	28.7	131	37.2	52	270.5
Hunterdon, NJ	0	1.8	0.2	0	0	0.6	0	0.5	1.6
Middlesex, NJ	17	278.4	41.8	7.5	24.1	386.3	38.9	27.5	133.3
Monmouth, NJ	1.7	20.3	8.2	3.6	0.5	6.2	148.1	2.9	28.9
Morris, NJ	5.6	259.5	14.2	2.6	1.6	241.2	7.4	12.4	102.7
Ocean, NJ	0	3	7.4	1.5	0.1	2.6	0.7	0.3	0.7
Passaic, NJ	1	142.7	23.3	5.2	0.8	11.9	14.5	15.6	57.3
Somerset, NJ	1	33.8	1.3	0.6	5.4	89.6	11.6	20.3	23.6
Sussex, NJ	0	29.4	1.4	0	1.9	18.1	0	0.3	0.5
Union, NJ	38.5	1255.7	18.4	25.4	14.4	2935.6	28.6	20	134.6
Warren, NJ	0.7	5.1	0.4	0	0.1	0.4	3.4	0.8	3.1
Richmond, NY	4.9	6.9	14.1	0.2	0.2	6.1	3.7	1.5	17.6
Queens, NY	95.1	217.7	146.5	11.6	16.6	100.7	59.4	81.2	391
Kings, NY	94.3	31.5	40.7	19	2.5	42.7	19.6	16	133.1
Bronx, NY	14.3	6.8	6.9	0.2	5.1	73.3	6	2.8	23.5
New York, NY	739.8	2783	678.5	322.2	615.3	3558.5	4002.3	852.2	1515.8
Rockland, NY	25.8	20	1.8	0.7	0.5	9.7	2.2	7.2	14.3
Westchester, NY	46	199.1	30.7	7.9	15.9	230.1	23.1	42.8	123.7
Nassau/Suffolk	143.8	305	136.6	31.1	6.3	139	552.6	81	158.5

Unit: Thousand of metric tons

NOTE: The data reflects only cargo movements which are traveling through New Jersey, despite the county of origin and/or destination

Source: NJDOT

Rail Mode By Partner

Mode: Rail
STCC: Total
Orig: All Orig
Data: Total

Dest	Canada	NEurope	SEurope	EEurope	Mexico	OtherLA	Mideast/I	Japan	Asia/Other
Bergen, NJ	3.3	89	6.6	1.5	1.3	48	10.3	5.5	96.1
Essex, NJ	45.9	452.3	650.1	30.1	13.7	114.1	429.2	52.1	1031.4
Hudson, NJ	4.3	13.4	6.4	0.5	5.2	8.8	4.4	9.7	76.5
Hunterdon, NJ	0	0.3	0	0	0	0.1	0	0.1	1.6
Middlesex, NJ	1.8	22.2	3.5	0.5	2.2	23.7	7.8	5.3	35.3
Monmouth, NJ	0.5	1.3	0.7	0.1	0.2	1	10.1	0.3	7.4
Morris, NJ	1.1	35.6	0.9	0.2	0.3	74.9	0.7	3.4	16
Ocean, NJ	0	0.4	0.2	0	0	0.1	0.1	0.1	0.1
Passaic, NJ	0.2	11.8	1.6	0.6	0.1	0.8	0.8	2.1	23.4
Somerset, NJ	0.2	2.5	0.1	0	2.2	19.2	6.8	2.9	5.3
Sussex, NJ	0	0.2	0	0	0.3	0.7	0	0	0.1
Union, NJ	3.3	14.7	2.1	1.3	2	116.1	2.5	1.5	31.1
Warren, NJ	0.1	0.5	0	0	0	0	0.1	0	0.3
Richmond, NY	0.7	0.5	0.8	0	0	0.5	0.2	0	0.4
Queens, NY	10.5	8.8	10.2	0.8	0	8.7	8.1	2.3	17.7
Kings, NY	2.8	2.8	3.3	0.8	0	3	2.4	0.7	4.6
Bronx, NY	0.5	0.6	0.3	0	0	30.9	0.3	0.1	0.4
New York, NY	72.3	250.2	74	102.8	83	608.2	431.1	43.9	57.4
Rockland, NY	6	0.9	0.1	0	0	0.6	0.2	0.6	1.6
Westchester, NY	5.4	10.6	1.5	0.4	6.4	10.6	2.2	2.9	9.6
Nassau/Suffolk	8.7	15.2	8.6	0.7	0.1	18	59.4	3	8.4

Unit: Thousand of metric tons

NOTE: The data reflects only cargo movements which are traveling through New Jersey, despite the county of origin and/or destination

Source: NJDOT

Water Other Mode By Partner

Mode: Water Other
STCC: Total
Orig: All Orig
Data: Total

Dest	Canada	NEurope	SEurope	EEurope	Mexico	OtherLA	Mideast/I	Japan	Asia/Other
Bergen, NJ	0.2	0	NA	NA	NA	651.9	NA	0	0.2
Essex, NJ	83.7	199	56.1	1.6	0.1	9.8	85.9	4.4	23.1
Hudson, NJ	0.1	0	NA	NA	NA	0.9	NA	0.1	0.1
Hunterdon, NJ	0	0	NA	NA	NA	0	NA	0	NA
Middlesex, NJ	0.1	134.2	NA	NA	NA	0.1	NA	0	0.3
Monmouth, NJ	0	0	NA	NA	NA	0	NA	0	0.1
Morris, NJ	0.1	191.4	NA	NA	NA	0	NA	0	0.1
Ocean, NJ	0	0	NA	NA	NA	0	NA	0	NA
Passaic, NJ	0	0	NA	NA	NA	0.1	NA	0	NA
Somerset, NJ	0	0	NA	NA	NA	0	NA	0.3	NA
Sussex, NJ	0	0	NA	NA	NA	0	NA	0	NA
Union, NJ	0.3	1157	10.9	NA	439.2	2457	1059.8	0	620.2
Warren, NJ	0	0	NA	NA	NA	0	NA	0	NA
Richmond, NY	0	0	NA	NA	NA	NA	NA	0	NA
Queens, NY	0	0	NA	NA	NA	0	NA	0.1	0
Kings, NY	0	NA	NA	NA	NA	NA	NA	0	0
Bronx, NY	NA	NA	NA	NA	NA	NA	NA	0	NA
New York, NY	2	285	156.7	0.1	40.9	614.7	695.8	7.4	2.1
Rockland, NY	NA	NA	NA	NA	NA	NA	NA	0	NA
Westchester, NY	0.7	13.1	NA	0	NA	43.7	0.4	0	0
Nassau/Suffolk	0	0	26.4	0	NA	0.8	NA	0	0

Unit: Thousand of metric tons

NOTE: The data reflects only cargo movements which are traveling through New Jersey, despite the county of origin and/or destination

Source: NJDOT

All Modes By Data

Part: Total
STCC: Total
Orig: All Orig
Mode: Total

Dest	Total	US/CA	ExpWater	ImpWater	ExpAir	ImpAir
Bergen, NJ	15036.2	12175	NA	2851.5	NA	9.8
Essex, NJ	18986.5	11224	7350.3	385.2	19.8	7.2
Hudson, NJ	11589.2	10620.1	NA	958.5	NA	10.5
Hunterdon, NJ	1606.6	1599.7	NA	6	NA	0.9
Middlesex, NJ	14528	13336.1	NA	1187	NA	4.9
Monmouth, NJ	5880.8	5638.6	NA	239.7	NA	2.4
Morris, NJ	7943.6	6971.9	NA	968.4	NA	3.4
Ocean, NJ	4224	4206.5	NA	16.8	NA	0.7
Passaic, NJ	6813.7	6499.7	NA	305.9	NA	8.1
Somerset, NJ	4150.4	3923.3	NA	225.3	NA	1.8
Sussex, NJ	1092.1	1039.3	NA	52.3	NA	0.5
Union, NJ	19399	9009.1	NA	10385.7	NA	4.3
Warren, NJ	1694.4	1679.3	NA	14.6	NA	0.5
Richmond, NY	3329.2	3270.9	NA	57.3	NA	1.1
Queens, NY	20005.6	18818.7	NA	984.8	211.3	10.8
Kings, NY	15976.5	15554.8	NA	402.7	NA	19
Bronx, NY	7571.2	7399.3	NA	169	NA	3
New York, NY	44927.9	26507.9	NA	18367.8	NA	52.2
Rockland, NY	4200.4	4106.1	NA	90.9	NA	1.3
Westchester, NY	13861.4	13033.7	NA	823.5	NA	4.2
Nassau/Suffolk	30681.1	28977.7	NA	1685.4	NA	18

Unit: Thousand of metric tons

NOTE: The data reflects only cargo movements which are traveling through New Jersey, despite the county of origin and/or destination

Source: NJDOT

NJ Goods Movement Data 2 Digit STCC Commodity Flows

Orig	All Orig
Part	Total
Dest	All Dest
Data	Total

STCC	Total	Truck	Rail	Air	Water	Other
Total	6905549.0	5307768.0	1316453.0		650.8	281328.5
01-Farm Products	296961.9	184715.2	112245.8	NA		0.9
08-Forest Products	5111.8	4565.1	546.6	NA		NA
09-Fresh Fish & Other Marine P	1754.8	1434.7	320.0	NA		0.0
10-Metallic Ores	127526.8	27039.0	86560.1	NA		13927.6
11-Coal	661116.3	247252.6	389774.0		0.1	24089.6
13-Crude Petroleum, Nat Gas	384604.9	130401.4	118743.8	NA		115459.7
14-Nonmetallic Minerals, Exc F	1890775.0	1771372.0	105627.0		0.0	13776.2
19-Ordnance and Accessories	5830.1	4668.5	1161.6		0.2	0.0
20-Food and Kindred Products	643753.8	555331.6	88386.5		3.8	35.7
21-Tobacco Products	850.0	656.3	193.7	NA		0.0
22-Textile Mill Products	17101.4	16775.9	324.3		2.6	1.3
23-Apparel	6666.1	6495.0	170.9		17.3	0.2
24-Lumber and Wood	506532.8	449033.2	56691.6		1.0	808.0
25-Furniture and Fixtures	12582.1	11607.3	972.6		3.8	2.1
26-Pulp and Paper	190450.6	141593.4	47632.6		2.0	1224.7
27-Printed Matter	28681.6	27589.1	1092.4		26.4	0.1
28-Chemicals	606839.0	491294.6	114546.2		11.6	998.2
29-Petroleum and Coal Product	278188.0	132333.0	37500.1		0.1	108354.9
30-Rubber	30200.2	27922.1	2276.7		6.8	1.3
31-Leather	1902.1	1507.8	394.2		1.4	0.1
32-Stone, Clay, Glass & Concr	708626.5	666382.1	40497.2		0.9	1747.2
33-Primary Metal Products	158933.8	116239.9	42203.5		2.1	490.4
34-Fabricated Metal Products	68517.3	67142.7	1373.0		6.2	1.6
35-Machinery, exc Electrical	37379.0	35771.8	1605.2		31.5	2.1
36-Electrical Machinery	25869.1	23322.2	2494.5		30.8	52.3
37-Transportation Equipment	74112.4	49867.6	24243.3		6.4	1.5
38-Instruments	4319.3	4026.4	292.8		30.8	0.1
39-Misc Manufacturing	8995.9	7355.1	1635.8		30.0	5.0
40-Waste and Scrap	71114.4	40778.0	29988.7	NA		347.7
41-Misc Freight	12387.7	9910.0	2477.6	NA		NA
42-Containers, rtd empty	13705.6	10964.2	2741.4	NA		NA
43-Mail, express, other contra	5168.5	4134.8	1033.7	NA		NA
*47-Small package shipments (L	5328.8	5328.8	NA		435.1	NA
48-Hazardous Waste	3525.8	2820.5	705.3	NA		NA

Unit: Thousand of metric tons

NOTE: The data reflects only cargo movements which are traveling through New Jersey, despite the county of origin and/or destination

Source: NJDOT

APPENDIX B

INTERMODAL FREIGHT INVENTORY QUESTIONNAIRE

AIRPORT GENERAL INFORMATION

NAME OF AIRPORT: _____

Operator/Owner: _____

Contact Person: _____

Telephone #: _____

Contact Address: _____

_____

I. PHYSICAL CHARACTERISTICS:

1. **Airport Size (Acres):**

   _____

2. **Address:**

   _____

   County: _____

3. **Type of Airport:**

   General Transport ____ **Basic Transport** ____
   General Utility ____ **Basic Utility** ____

4. **The nearest major highway/expressway (name):**

   _____

   Distance to the nearest major highway/express in miles:

   _____

5. **Primary access to airport (road name):**

_____

Secondary access to airport (road name):

_____

Other access (list):

_____

6. **List access deficiencies, e.g., congestion, insufficient road turning radius, others:**

_____

_____

7. **Terminal condition:**

Acceptable:	**Yes** ____	**No** ____
Needs improvement:	**Yes** ____	**No** ____

8. **Number of runways and length of runways:**

_____

_____

9. **Warehouse availability:** **Yes** ____ **No** ____
Refrigeration service availability: **Yes** ____ **No** ____
Other service(list): _____

10. **Special services availability:**

Animal handling service: **Yes** ____ **No** ____
Perishable material handling: **Yes** ____ **No** ____
Other: _____

11. **Parking facilities:**

Number of available spaces for passengers:

_____

Number of available spaces for cargo:_____
Comments: _____

_____

12. **Present cargo air carriers:**

_____

_____

13. **Present passenger air carriers:**

_____

_____

14. **Land use within 1 mile of your facility:**

Agricultural:	**Yes** ____	**No** ____
Residential:	**Yes** ____	**No** ____
Commercial:	**Yes** ____	**No** ____
Industrial:	**Yes** ____	**No** ____
Recreational:	**Yes** ____	**No** ____
Open space:	**Yes** ____	**No** ____

Comments: _____

_____

II. OPERATING CHARACTERISTICS:

1. **Number of airplanes (flights per year):** _____

2. **Types of aircraft handled:** _____

3. **Number of employees:** _____

4. **List commodities handled:** _____

_____

5. **Volume of commodities handled (tons per year):**

Domestic: _____

International: _____

6. **Average commodity transfer time from one mode to another:**

Commodity Type	Transfer Time (hours/unit)	Administrative Time Per Transfer

7. **Approximate delay time per transfer:**

Commodity Type	Hours of Delay

8. **List major reasons for delay:**

_____

_____

9. **List internal circulation deficiencies, e.g., congestion, insufficient road turning radius, etc.:**

_____

_____

_____

10. **List major barriers to improve freight movement:**

_____

_____

11. **List any advanced technology used in your facility, e.g., electronic, billing, tagging, wide area video detection system, etc.:**

_____

_____

12. **Future improvement projects of your facility:**

_____

_____

FOR PASSENGER SERVICE ONLY:

13. **Number of passengers per year:** _____

14. **List other modes of transportation within the airport:**

_____

_____

_____

Identify The Institutional and Systems Deficiencies:

What local, regional and federal policies operate as barriers/incentives to intermodal freight movement?

_____

What Metropolitan Planning Organization role does your organization see as appropriate?

_____

General Comments:

_____

_____

_____

INTERMODAL FREIGHT INVENTORY QUESTIONNAIRE

RAIL FACILITY/TERMINAL INFORMATION

NAME OF RAIL FACILITY FOR FREIGHT: _____

Operator/Owner: _____

Contact person: _____ **Telephone #:** _____

Contact address: _____

_____

I. PHYSICAL CHARACTERISTICS OF TERMINAL:

1. **Facility size (acres):**

   _____

2. **Address:**

   _____

   County:

   _____

3. **Type of facility:**

   Main Terminal _____ **Intermediate Terminal** _____
   Industry/Satellite _____ **Other** _____

4. **The nearest major highway/expressway (name):**

   _____

   Distance to the nearest major highway/expressway in miles:

   _____

5. **Primary access (road name):** _____
   Secondary access (road name): _____
   Other access (list): _____

6. List access deficiencies, e.g. congestion, insufficient road turning radius, grade crossing, excessive number of switches etc:

_____

7. List which bridge/tunnel that has substandard clearance or weight restrictions to accommodate double stack trains (within the corridor you use):

_____

_____

8. Terminal condition:

Acceptable: _____
Needs improvements: _____

9. Warehouse availability: Yes _____ No _____
Refrigerating service availability: Yes _____ No _____

10. Special services availability:

Animal handling service: Yes _____ No _____
Perishable freight handling service: Yes _____ No _____
Other: Yes _____ No _____

11. Number of available spaces:

Passenger Parking: _____ Freight Cars: _____
Storage: _____ Truck Parking: _____
Other: _____

II. OPERATING CHARACTERISTICS:

1. Number of train carloads handled per month: _____

2. Car types:

a. Boxcar _____
b. Double stack _____
c. Piggyback _____
d. RoadRailer _____
e. Carfloat _____
f. Other _____

3. Number of employees in the facility: _____

4. List commodities handled:

_____

_____

_____

5. Volume of commodity handled (tons per month):

a. domestic: _____
b. international: _____

6. Average commodity transfer time from one mode to another:

Commodity Type	Transfer Time (hours/unit)	Administrative Time Per Transfer

7. Approximate delay time per transfer:

Commodity Type	Hours of Delay

8. List major reason for delay:

_____

_____

9. List internal circulation deficiencies e.g. congestion, insufficient turning radius, grade crossing:

_____

10. List intermodal linkages most important to operation? (Rail/Truck, Rail/Barge, Rail/Ship, other):

_____

11. List major barriers to improve intermodal freight movement:

_____

_____

_____

12. List any advanced technology used in your facility, e.g. electronic billing, tagging, video camera system, security system:

_____

_____

12a. List equipment available in your facility:

_____

_____

13. Future improvement projects: _____

_____

_____

III. RAIL LINES (LEADING TO TERMINAL):

1. Railway characteristics

Track Class 1 (10 mph) _____ Track Class 2 (25 mph) _____
Track Class 3 (40 mph) _____ Track Class 4 (60 mph) _____
Track Class 5 (80 mph) _____ Track Class 6 (110 mph) _____
Track Class 7 (125 mph) _____

2. Type of block signals: Manual _____ Automatic _____

3. Grade crossing: Yes _____ No _____

If yes, number of grade crossings _____

4. Track condition:

Needs repair: Yes _____ No _____

5. Track congested: Yes _____ No _____

Reason (common use of passengers and freight track, etc):

_____

6. Railroad communications network condition:

Good _____
Needs Improvement _____

7. Level of utilization of tracks: _____

8. Time window of track availability for freight trains:

_____

9. Abandoned tracks (list location):

_____

_____

Identify the institutional and systems deficiencies:

What local, regional and federal policies operate as barriers/incentives to intermodal freight movement?

_____

_____

_____

What Metropolitan Planning Organization role does your organization see as appropriate?

_____

_____

_____

General Comments:

_____

_____

_____

_____

INTERMODAL FREIGHT INVENTORY QUESTIONNAIRE

MARINE FACILITY GENERAL INFORMATION

NAME OF MARINE FACILITY: _____

Operator/Owner: _____

Contact person: _____ **Telephone #:** _____

Contact address: _____

I. PHYSICAL CHARACTERISTICS:

1. **Facility size (acres):** _____

2. **Address:** _____

   County: _____

3. **Type of marine facility (check all that apply):**

   Container Port _____ **Bulk Cargo** _____
   Mixed Cargo _____ **Auto Marine Terminal** _____
   Other _____

4. **The nearest major highway/expressway (name):**

   _____

   Distance to the nearest major highway/expressway in miles:

   _____

5. **Primary access (street or road name):** _____

   Secondary access (street or road name): _____

   Other accesses (list): _____

   Access channel (berth's name, depth and width restriction):

   _____

6. List access deficiencies, e.g. congestion, insufficient turning radius for road and channel; insufficient channel depth, others:

_____

_____

7. Terminal condition:

Acceptable: _____ Needs improvements: _____

8. Berths:

Number	Length	Depth

9. Warehouse availability: Yes _____ No _____
Refrigeration service availability: Yes _____ No _____
Animal handling service: Yes _____ No _____
Perishable freight handling service: Yes _____ No _____
Other: Yes _____ No _____

10. Truck parking facilities - number of available spaces:

_____

11. Number and type of vessel docks within facility:

_____

_____

II. OPERATING CHARACTERISTICS:

1. Number of ships arrival/sailing per month: _____

2. Ship types: _____
Capacity in tons: _____

3. Number of employees: _____

4. List commodities handled: _____

_____

_____

_____

5. Volume of commodity handled (tons per month):

   a. Domestic: _____
   b. International: _____

6. Average commodity transfer time from one mode to another:

Commodity Type	Transfer Time (hours/unit)	Administrative Time Per Transfer

7. Approximate delay time per transfer:

Commodity Type	Hours of Delay

8. List major reason for delay: _____

9. List internal circulation deficiencies, e.g. congestion, insufficient turning road radius, off-dock rail terminal is too far from feeder terminal, others:

_____

_____

10. List intermodal linkages most important to operation? (Ship/Truck, Ship/Barge,Rail/Ship, others):

_____

_____

11. List major barriers to improve intermodal freight movement:

_____

12. List any advanced technology used in your facility, e.g. electronic billing, tagging, electronic data interchange, security system:

_____

13. Are there on-dock or off-dock rail terminals at your port?

Yes _____ No _____

If yes, how far are the off-dock terminals from feeder terminals?

_____

Are there any plans to construct on-dock or off-dock intermodal transfer facility? _____

14. Future improvement projects of your facility:

_____

_____

IDENTIFY THE INSTITUTIONAL AND SYSTEMS DEFICIENCIES:

What local, regional and federal policies operate as barriers/incentives to intermodal freight movement?

_____

_____

What Metropolitan Planing Organization role does your organization see as appropriate?

_____

_____

General Comments:

_____

_____

_____

INTERMODAL FREIGHT INVENTORY QUESTIONNAIRE

TRUCK FREIGHT FACILITY GENERAL INFORMATION

NAME OF TRUCK FACILITY: _____

Operator/Owner: _____

Contact Person: _____ **Telephone #:** _____

Contact Address: _____

_____

I. PHYSICAL CHARACTERISTICS OF TERMINAL:

1. **Truck terminal size (acres):** _____

2. **Address:** _____
   County: _____

3. **Type of terminal:**
   Class I -Annual revenue over $1M _____
   Class II-Annual revenue less than $1M _____

4. **Terminal condition:**

   Acceptable: **Yes** _____ **No** _____
   Needs improvement: **Yes** _____ **No** _____
   Explain: _____

5. **The nearest major highway/expressway (name):**
   _____

6. **Distance to the nearest highway/expressway in miles:**
   _____

7. **Primary access (road name):** _____
   Secondary access (road name): _____
   Other access (list): _____
   Access problems: _____

8. List terminal's deficiencies, e.g., congestion, insufficient road width, turning radius, insufficient lights, lack of security, etc.:

_____

9. List bridges and/or tunnels that have substandard clearance or weight restrictions to accommodate heavy trucks (within the corridor you use):

_____

10. Warehouse availability: Yes _____ No _____

11. Special services availability:

Animal handling services:	Yes _____	No _____
Perishable handling services:	Yes _____	No _____
Other:	Yes _____	No _____

12. Truck/trailer parking facilities:
Number of available spaces: _____

II. OPERATING CHARACTERISTICS:

1. Number of truck bays: _____

2. Number of trips per day generated from this terminal: _____

3. Truck categories operating within your facility:

a. Pickups/Vans _____
b. Trucks _____
c. Single trailer trucks _____
d. Multi-trailer trucks _____
e. Very large multi-trailer trucks _____
f. Other _____

4. Number of employees in the facility: _____

5. **Type of intermodal activity:**

Truck/rail	Yes _____	No _____
Truck/ship	Yes _____	No _____
Truck/barge	Yes _____	No _____
Truck/airplane	Yes _____	No _____

Other _____

6. **Average major commodity volume and transfer time from one mode to another:**

Commodity Type	Volume Tons Per Day	Transfer Time Hours/Units	Admin. Time per transfer	Origin/ Destination

7. **List major reason for delay (if delay occurred during the intermodal transfer, please specify):**

_____

_____

8. **List major barriers to improve intermodal freight movement:**

_____

_____

9. **List any advanced technology used in your facility, e.g., electronic billing, tagging, video camera system, other:**

_____

10. **Type of equipment available in your facility:**

_____

11. **Future project/plan to improve your facility:**

_____

_____

_____

Identify the institutional and systems deficiencies:

What local, regional and federal policies operate as barriers/incentives to intermodal freight movement?

_____

_____

What Metropolitan Planning Organization role does your organization see as appropriate?

_____

_____

General Comments: _____

_____

_____

APPENDIX C

U.S. Department of Transportation

Federal Highway Administration

Memorandum

Subject: **ACTION:** Guidelines for Identifying National Highway System Connections to Major Intermodal Terminals

Date APR 14 1995

Reply to Attn of HEP-12

From Associate Administrator for Program Development

To Regional Administrators

The purpose of this memorandum is to provide guidance for use by the States and Metropolitan Planning Organizations (MPO) in identifying National Highway System (NHS) connections to major intermodal terminals. Copies should be made available to the divisions, State transportation agencies, MPOs and any other organizations, agencies, groups, and operators of intermodal terminals with an interest in this process.

When the proposed NHS was submitted to Congress in December 1993, we acknowledged that more work was needed on the identification of connections to major intermodal terminals. The attached guidance is intended to complete this important aspect of the proposed system.

In developing the proposed system during 1992 and 1993, nearly total flexibility was provided in identifying connections to intermodal terminals. This approach produced inconsistent results and insufficient coverage of intermodal terminals. The guidance provided with this memorandum is designed to achieve greater consistency in identifying connections to major intermodal terminals.

Before developing the guidelines, we consulted with representatives from a number of organizations and agencies, including the American Trucking Associations, AASHTO, the American Association of Port Authorities, Greyhound Lines, Inc., Amtrak, the American Public Transit Association, and the Intermodal Association of North America, as well as with representatives from the other modal administrations, to obtain their views on possible criteria for use in this effort. Based on these meetings and working with information provided by the States in response to our November 8, 1994, memorandum, we concluded that a criteria-based approach, described fully in the

attached guidance, should be used for this effort. We believe this approach will produce consistency in results at the National level while providing sufficient flexibility to accommodate differing State characteristics, plans and investment strategies.

Consistent with the provisions of Section 1006 of the ISTEA, the identification of NHS connections to major intermodal terminals should be accomplished by the States in cooperation with the MPOs. While it is appropriate and indeed necessary for the States to take the lead in this effort, the work must be accomplished in cooperation with the MPOs and in consultation with other appropriate public and private sector organizations and agencies such as transit operators, intercity bus operators, terminal operators, and transportation carriers and shippers.

The Statewide Planning Division staff is available to conduct workshops in each region to explain the guidelines and to address any State-specific issues. Funds are included in your travel budgets under Washington Office directed travel for this purpose. More specifics on the workshops, including points of contact to schedule a workshop, are included in the guidelines.

Policy questions related to this memorandum and the attached guidelines should be directed to Mr. George Schoener, Chief, Statewide Planning Division on (202) 366-4067 or to Mr. Thomas Weeks on (202) 366-5002. Technical questions should be directed to Mr. Robert Gorman (202) 366-5001 or to Mr. Lee Chimini on (202) 366-4068, respectively.

Thomas J. Ptak

3 Attachments

GUIDELINES AND CRITERIA FOR IDENTIFYING NATIONAL HIGHWAY SYSTEM CONNECTIONS TO MAJOR INTERMODAL TERMINALS

Background

In developing the proposed NHS, the States were instructed to identify connections to major intermodal terminals; however, the FHWA instructions allowed the States to decide which intermodal terminals were considered major and how such terminals should be connected to the NHS. This effort was completed before most States and Metropolitan Planning Organizations (MPO) had developed their transportation plans and intermodal management systems. As a result, there was considerable variation in NHS connections to intermodal terminals among the States. When the proposed NHS was submitted to Congress, the FHWA acknowledged that further work was needed to refine the NHS connections to major intermodal terminals.

Before asking the States/MPOs to refine the connections, the FHWA decided that guidelines were needed to help determine which intermodal terminals warrant an NHS connection and how these facilities should be connected to the system.

To assist in the development of guidelines, the FHWA asked the States/MPOs to submit lists of intermodal terminals and the level of activity (volume of freight and passengers) generated by each. This information was used to gain some idea of how to classify or group the terminals. Suggestions were also solicited on what criteria should be considered for use in identifying major intermodal terminals.

The FHWA staff also met with representatives from the other modal administrations within the DOT (Federal Aviation Administration (FAA), Federal Transit Administration (FTA), Maritime Administration (MARAD), Federal Rail Administration (FRA), Research and Special Projects Administration (RSPA) and the OST Office of Intermodalism to solicit their ideas on criteria. In addition, a concerted effort was made to obtain the views of public and private sector organizations and associations representing various transportation agencies and intermodal facility owners, operators and users. These included: the American Association of State Highway and Transportation Officials (AASHTO), the American Trucking Associations (ATA), the American Association of Port Authorities (AAPA), Amtrak, Greyhound Lines, Inc., the American Public Transit Association (APTA), and the Intermodal Association of North America (IANA).

Using information obtained from the States and the input from the outreach described above, draft guidelines were developed and

provided to a small work group consisting of representatives from five State DOTs, an MPO and a transit operator. The work group met in Washington, D.C., on March 23, and provided comments and recommendations on the guidelines.

Scope of Guidelines and Criteria

The following guidelines are provided to assist the State transportation agencies and the MPOs in identifying NHS connections to major intermodal terminals. As used in these guidelines, Intermodal terminals are defined as facilities which provide for the transfer of freight or passengers from one mode to another. The identification of a facility as a major intermodal terminal for this purpose does not make that facility eligible for NHS funds. Only the designated NHS connection(s) to the facility will be eligible. The NHS connections to major intermodal terminals will be included on maps depicting the system. The resulting mileage will also be counted as a part of the NHS. NHS connections to major terminals must be public roads under the jurisdiction of and maintained by a public authority. NHS funds may not be used for improving privately owned roads.

The objective of this effort is to identify principal highway links between major intermodal terminals and other NHS routes. For example, a port or a rail head may function as a gateway for goods leaving and entering the country or a region. Where a large volume of goods will be transported by highway, it is critical to the efficient operation of the facility that it have adequate access to the NHS. In this case, the principal route(s) would be identified as the NHS connection to the major intermodal terminal.

Some roads serving intermodal terminals may perform collection and distribution functions. For example, commodities might be transported to/from the facility by truck on a number of collector routes, or passengers might arrive from several different directions. These collector/distributor routes should not be considered as connections to the NHS. If more than one route provides access to the terminal, then the route selected should be the one with the most traffic (providing the criteria contained in this guidance are met). Multiple routes should only be considered where each route meets the appropriate criteria.

Primary and secondary criteria are provided below for identifying NHS connections to major intermodal terminals. The primary criteria are based on annual passenger volumes or annual freight volumes or daily vehicular traffic on one or more principal routes that serve the facility. (If data are not available for applying these criteria, the FHWA recommends that special traffic counts be undertaken at those facilities which may meet the criteria to determine more precisely whether they warrant a direct NHS connection. The traffic data should represent an

average working day.) The secondary criteria include factors which underscore the importance of an intermodal facility within a specific State.

In arriving at the passenger volume criteria, the FHWA concluded that different passenger volumes should be applied to commercial aviation airports than for Amtrak stations and intercity bus terminals. The passenger volume criterion for airports has been established at 250,000 annual enplanements; the criterion for Amtrak stations and intercity bus terminals has been established at 100,000 annual boardings and deboardings. Even though the criterion is higher, commercial aviation airports with 250,000 annual enplanements handle nearly 96 percent of total enplanements at all commercial aviation airports. NHS connections to these major airports will serve a significant share of total passenger volumes. The FHWA intends, however, to apply the criterion for commercial aviation airports in a somewhat liberal sense, particularly in States which may not have any airports that meet the criterion and in States which may have only one airport that meets the criterion. States may identify connections to airports with 100,000 to 250,000 annual enplanements where the significance of these airports is reflected in State airport and aviation plans and increased service levels are anticipated.

Primary Criteria

The FHWA expects that NHS connections will be identified for all intermodal terminals that meet the primary criteria unless justification is provided for not identifying a connection.

Commercial aviation airports:

- Passengers - scheduled commercial service with more than 250,000 annual enplanements.
- Cargo - 100 trucks per day in each direction on the principal connecting route, or 100,000 tons per year arriving or departing by highway access mode.

Ports:

- Terminals that handle more than 50,000 TEUs per year, or whatever units measured that would convert to more than 100 trucks per day in each direction. (Trucks are defined as large single-unit trucks or combination vehicles handling freight).

  (Note: A TEU is a volumetric measure of containerized cargo. It stands for twenty-foot equivalent units).

- Bulk commodity terminals that handle more than 500,000 tons per year by highway or 100 trucks per day in each direction on the principal connecting route.

(If there is no individual terminal that handles this amount of freight, but a cluster of terminals in close proximity of each other does, then the cluster of terminals could be considered as meeting the criteria. In such cases, the connecting route might terminate at a point where the traffic begins to separate to each terminal).

- Passengers - terminals that handle more than 250,000 passengers per year or 1,000 passengers per day for at least 90 days during the year.

Truck/rail:

- 50,000 TEUs per year or 100 trucks per day in each direction on the principal connecting route, or whatever units measured that would convert to more than 100 trucks per day in each direction. (Trucks are defined as large single-unit trucks or combination vehicles carrying freight.)

Pipelines:

- 100 trucks per day in each direction on the principal connecting route.

Amtrak:

- 100,000 passengers per year. (entrainments & detrainments)

  (Joint Amtrak, intercity bus, and public transit terminals should be considered based on the combined passenger volumes. Likewise, two or more separate facilities in close proximity should be considered based on combined passenger volumes.)

Intercity bus:

- 100,000 passengers per year. (boarding & deboardings)

Public transit:

- Stations with park and ride lots with more than 500 spaces or 5,000 daily bus or rail passengers with significant highway access (i.e., a high percentage of the passengers arriving by cars and buses using a route that connects to another NHS route), or a major hub terminal that provides for the transfer of passengers among several bus routes (these hubs should have a significant number of buses using a principal route connecting with the NHS.)

Attachment 2

PRODUCT REQUIREMENTS

Listing of Terminals

A listing of NHS connections is requested. The listing should include the following information:

1. Name or description of the major intermodal terminal
2. Name, number, etc., of the connecting route
3. The termini of the connecting route
4. The mileage of the connecting route
5. The specific primary or secondary criteria which support the inclusion of the connecting route and the activity level associated with the terminal [e.g., airport - primary (375,000 enplanements); port - primary (2,750,000 tons of cargo by highway); Amtrak - secondary (86,000 boardings & deboardings which represent 26 percent of State total; etc.]

Map Requirements

The NHS connections to major terminals identified through the above process will be included on the official GIS based national, State and urbanized area maps. The Statewide Planning Division will use information provided by the State transportation agencies and the MPOs to identify the location of the intermodal facilities being served and the specific connection(s) to the facilities. Map requirements to support this effort are described below. Questions concerning these requirements should be directed to Aung Gye at (202) 366-2167 (Fax (202) 493-2198).

1. The location of each major intermodal facility as determined by these guidelines and the NHS connection(s) to the major terminal will be shown on a map or maps with a minimum locational accuracy of 1:100,000. These maps shall show 1) the specific location of each major intermodal facility, as defined by bounding streets or highways, and 2) the complete NHS connection to the major terminal. All bounding streets and connections shall be identified with route numbers and street names. In cases where intermodal facilities can not be located by a single point, appropriate text describing the nature and location of the intermodal facility shall be provided, with the listing of terminals. A map showing the boundaries of the facility or boundaries of the components of the facility should also be provided.

2. Larger scale maps shall be provided in all cases where the maps provided under item 1 are inadequate to illustrate the specific locations of the major intermodal facilities, including bounding roadways, and the geometry of the connections. These maps shall be of sufficient area to include the major intermodal terminal location, bounding roadways, and the complete NHS connection(s).

3. Identification of major intermodal terminals on maps: Please mark the type and location of each major intermodal terminal using the appropriate symbol from the listing below. The locations will be digitized by the FHWA for placement on the national, State and urbanized area NHS maps as appropriate.

Major Intermodal Facility	Symbol
Airports	A
Port Terminal	P
Truck/rail Facility	R
Amtrak Station	S
Intercity Bus Terminal	B
Public Transit Station	PT
Truck/pipeline terminal	L
Ferry	F

4. NHS Connection(s) to major intermodal terminals: Please show the NHS connections to major intermodal terminals in brown. If the connection is not already a part of the FHWA National Highway Planning Network, Version 2.0, it will be digitized from the most detailed map provided.

5. This effort may result in the deletion of NHS connections to intermodal terminals that were previously identified in developing the proposed NHS. In such cases, the routes proposed for deletion should be clearly described and marked for deletion with a red X.

EXPLANATION OF PASSENGER AND FREIGHT VOLUME CRITERIA AND DISCUSSION OF PUBLIC - PRIVATE TERMINALS

Rationale for Volume Criteria

Freight

Based on guidelines in the Intermodal Management System Course, a terminal with 50,000 TEUs annually might generate 182 truck trips per day or 52 one-way trips per peak hour per peak day once allowances are made for rail/highway mode split, conversion of TEUs to truck units, percent loaded, auxiliary truck trips, etc.

Ports handling 500,000 tons of cargo per year would handle 2,000 tons per day based on 250 working days, and this might equate to 100 trucks in each direction if the payload of each truck averaged 20 tons.

The threshold for airports was established at 100,000 tons per year because of high cargo value and because airports generate more truck trips per ton.

Passenger

Using data submitted by the States, such as listings of intermodal terminals ranked by the number of passengers handled, the FHWA developed criteria for classifying or categorizing groups of terminals for each mode. A threshold of 250,000 enplanements was selected for commercial aviation airports. Nationally, 36 percent of commercial aviation airports meet this threshold but these airports handle over 96 percent of total enplaned passengers. Moreover, airports with more than 250,000 enplanements handle the majority of each State's air passenger activity. All but four States have airports that qualify under this criterion.

A threshold of 100,000 passengers was selected for intercity bus and Amtrak because a very small number of terminals handle a major share of total passengers for those modes. This threshold also represented a logical point that separated one group of facilities from the next group and a point where identifying a principal access route may be warranted.

Public transit terminals were evaluated from a similar perspective. The thresholds that were established, i.e., terminals with parking facilities for more than 500 vehicles or terminals with a 5,000 bus or rail passengers arriving by bus or cars, also represent a point where identifying a principal access route may be warranted.

Ferries are divided into two categories: local and interstate/international. Local ferries are part of an area's

public transit system and should be treated in the same manner. Interstate/international passengers represent much longer trips that have some of the same characteristics as trips on the NHS.

Public versus Private Terminals

During the development of the guidelines, a great deal of consideration was given to whether NHS connections should be limited to public terminals. Terminals can generally be grouped into three broad categories: 1) public-use terminals that are open to all carriers, 2) private terminals that serve public passengers, and 3) strictly private terminals which are only served by carriers owned and operated by the companies that own the terminals. After careful deliberation, the FHWA has chosen not to limit NHS connections to public-use terminals; but urges the States and MPOs to carefully consider the possible implications of including connections to strictly private intermodal terminals.

Truck Terminals

Another question that emerged during the development of the guidelines was whether NHS connections should be identified for privately-owned truck terminals and warehouse distribution centers, or other significant truck traffic generators. After careful deliberation, a decision was reached to exclude these facilities because many are not intermodal (transfer between modes) and because the number of potential terminals in this category are virtually unlimited.

Ferries:

- Interstate/international - 1,000 passengers per day for at least 90 days during the year. (A ferry which connects two terminals within the same metropolitan area should be considered as local, not interstate.)

- Local - see public transit criteria.

Secondary Criteria

NHS connections proposed for intermodal terminals based on the secondary criteria must be justified in the State's submission. The justification should be based on the significance of the facility to the State and/or plans that a State or MPO has for improving the access and developing the facility.

- Intermodal terminals that handle more than 20 percent of passenger or freight volumes by mode within a State and which have significant highway interface, or

- Intermodal terminals identified by either the Intermodal Management System or the State/metropolitan transportation plans as a major facility and is targeted by the State/MPO for major investments to address an existing deficiency on a connecting route or an anticipated deficiency as a result of a significant expansion of traffic.

Proximate Connections

Intermodal terminals identified under the secondary criteria may not have sufficient traffic volume to justify a direct connection. States and MPOs should fully consider whether a direct connection should be identified for such terminals, or whether being in the proximity (2 to 3 miles) of a NHS route is sufficient.

Role of the States, MPOs and Others

Section 1006 of the ISTEA provides that "the States, in cooperation with local and regional officials, shall propose to the Secretary arterials and highways for designation to the National Highway System..." This section further states that "in urbanized areas, the local officials shall act through the metropolitan planning organizations designated for such areas under section 134..." Consistent with Section 1006, the States are expected to take the lead in identifying the NHS connections to major intermodal terminals in cooperation with the MPOs and other local officials as appropriate. The FHWA also expects the States and MPOs to consult with other organizations and agencies, such as transit operators, terminal operators, intercity bus operators, etc., as appropriate, in completing this activity.

Each State's submission to FHWA must include evidence of cooperation with the MPOs in identifying the NHS connections to major intermodal terminals.

Schedule

All maps and supporting information specified in these guidelines must be submitted to the appropriate FHWA division office not later than September 15, 1995. Earlier submissions are requested.

Workshops

Statewide Planning Division staff is available to conduct regional workshops on request. The purpose of the workshops is to explain the guidelines, answer questions related to their implementation, and to address any State-specific issues that may arise. The workshops are expected to last 4 to 8 hours. The target audience for the workshops are region and division staff, State representatives who will be responsible for completing the work in each State, and MPO representatives from the largest metropolitan areas (1 million population and greater). Attendance by representatives from all MPOs is not considered necessary. The FTA Regional offices should be notified by the appropriate FHWA field office if a workshop is scheduled and be given an opportunity to attend. Attendance by terminal operators is not considered necessary; however, the States and MPOs will be expected to involve appropriate operators in identifying NHS connections to the major terminals identified in each State. Workshops may be scheduled by contacting Mr. Robert Gorman at (202) 366-5001.

Future System Revisions

The FHWA anticipates that the NHS, including the connections to major intermodal terminals, will need further adjustments to accommodate economic growth and other changes. After the NHS is approved by Congress, the FHWA will establish policies and procedures, consistent with authorizing legislation, for administering future changes to the system.

5. Intercity Bus

Information on intercity bus passenger levels at a number of terminals statewide was provided earlier. If more information is needed, please call the Transit Division (Bob Serrillo, (518) 457-2100) in order to coordinate data requests statewide. As with the truck/rail data, this will eliminate multiple data requests from across the State to the bus operators.

6. Public Transit

Please keep in mind that public transit terminals must have a significant highway access volume to the NHS in order to be directly connected. Again, contact the Transit Division for any needed transit information.

7. Secondary Criteria

The purpose of the secondary criteria is to ensure intermodal terminals that account for a large share of activity in the State, but do not meet the national criteria, are included. However, data are still required to justify a direct connection. If these terminals are targeted for a major investment, please include any available information to document that plan. Do not include facilities where the proposed investment is more than five years in the future.

INTERMODAL CONNECTIONS TO THE NHS

1. AIRPORTS

Based on the FHWA criteria and the data on airport activity that they provided, it is clear that 9 airports qualify for direct connections to the NHS. These are:

John F. Kennedy International Airport
LaGuardia Airport
Greater Buffalo International Airport
Rochester-Monroe County Airport
Syracuse-Hancock International Airport
Albany County Airport
Long Island
White Plains
Stewart Airport

For the airports that already have direct connections, please review them to ensure they meet the volume criteria contained in the FHWA guidance. It may be necessary to drop those connections that do not have sufficient volumes. For those airports that do not have a direct connection, it will be necessary to select one. If passenger and freight access to the airport are significantly different, you may select separate connections if the volume criteria are met.

2.Ports

The FHWA guidelines allow individual terminals in a port to be combined when considering the activity level of the port. The direct connection to the NHS should only go to the front gate of the port itself, not to each individual terminal inside the port. If you need data on port activity, please contact the Commercial Transport Division (John Lemmerman, (518) 457-2330).

3. Truck/Rail

For any required data on terminal activity, please call the Commercial Transport Division (John Lemmerman). If they do not have the data, they will contact CONRAIL or other rail companies directly. This will eliminate multiple data requests to the same company from across the State.

4. AMTRAK

The data provided by FHWA makes the selection of the AMTRAK stations that warrant direct connections to the NHS very clear. However, FHWA also allows terminals that serve AMTRAK, intercity bus, and/or public transit to be combined for passenger activity levels. Please be sure to examine all of these possibilities when selecting terminals for direct connections to the NHS.

APPENDIX D

CHANNEL INVENTORY

The following tables summarize the characteristics of channels that connect ports in the metropolitan area.

Upper New York Bay

Channel Name	Depth (MLW) Max/Min (feet)	Width (feet)	Intermod. Facility Served	Issues	Type of Ship Operating	Main Commodities (LPMS * classification)	Volume (in thousand tons)
Bay Ridge Channel	40'	1750'	South Brooklyn Marine Terminal, 50th St. Float-bridge	Dredging completed in 1986, and in 1994 (Via Internat. Sept. 94)	all ships	21,22 to 26,31,32, 41 to 44, 46,47,49, 51 to 55, 61 to 68, 71 to 76, 79	3,540 - For Bay Ridge and Red Hook together
Red Hook Channel	40'	1200'	Red Hook Container Terminal	Dredging completed	all ships	As above	see above
Butter Milk Channel	40'- 45'	1000'	Red Hook Terminal, PANY&NJ Brooklyn Marine Terminal, Green St. Lumber Exchange	Dredging completed in 1962 & 1994	all ships	23,24,32, 41 to 44,46,47, 49,51 to 55,61 to 68,71 to 76,79,89	36,461
Gowanus Creek	30'to 18'	500' to 200'	varies terminals along Gowanus Expy	Planned dredging to 40'	barges	22,23,43, 52,68,89	2,419
East River	40'	1000'	Varies terminals along the river	Dredging completed 1970	all ships	21 to 23, 32,43,68, 79,89	36,595
Flushing Bay	15'	300'	LGA	Completed 1962	barges	22,23,43, 52,89	1,753
Hell Gate Channel	35'	1000'	Varies	N/A	barges	N/A	N/A
Harlem River Channel	15'	400'	Harlem River Yard, other terminals	Completed 1913	barges	N/A	N/A
Hudson River Channel	40' to 45'	2000'to 3600'	Varies	Completed 1937	all ships	22-26,31-32,41-49, 51-55,61 63-68,71-76,79	18,946

Note: Volume covers bulk only, not containers.
The tonnage figures represent short tons (2,000 pounds)

* LPMS commodity description: The first two digits of the Waterborne Commerce of the U.S. Support Center (WCSC) publication codes correspond with the Lock Performance Monitoring System (LPMS) commodity codes. Both LPMS and WCSC codes were standardized to reflect the hierarchical structure of the Standard Industrial trade Classification (SITC). (Ref: Waterborne Commerce of the U.S., Calendar Year 1993, Part 1, Waterways and Harbors, Atlantic Coast, Department of the Army, Corps of Engineers, Water Resources Support Center)

Lower New York Bay

Channel Name	Depth Max/Min	Width	Intermod.Facility Served	Issues	Type of Ship Operating	Main Commodities (*)	Other
Anchorage Channel	45'	2000'	varies	Project completed 1937	all ships	N/A	N/A
Ambrose Channel	45'	2000'	varies	Project completed 1982	all ships	N/A	N/A
Chapel Hill Channel	30'	1000'	varies	Project completed 1982	all ships	N/A	N/A
Jamaica Bay	18'-12'	200'-500'	JFK Airport	Completed 1950	barges	22,23,29, 32,43	1,138
Arthur Kill Channel	35'	500'-600'	Howland Hook	Dredging to 40'	all ships	N/A	N/A
Kill Van Kull Channel	45' and 30'	600'-1000'	varies Staten Island and SE New Jersey terminals	Project completed 1985	all ships	N/A	N/A
NY & NJ Channel	35'-37'	600'-1000'	varies	Project completed 1985	all types	All commodities	96,268
Great Kill Harbor	10'	150'	varies	Project completed 1938	all ships	N/A	N/A
Hackensack River	34'-32'	300'	varies	Condition as per 1986 data	barges	11,22-24 32,43,89	2,584
Passaic River	30'	300'	varies	Condition in 1986	barges	22-24,25 32,43,52, 54,66,68, 79,89	7,116
Newark Bay	37' - 35'	800'	Port Newark and Port Elizabeth terminals	Condition as per 1986 data, projected depth - 45'	all ships	All commodities	27,640

Commodity Type	LPMS (*) Commodity Classification
Vehicles	02
Crude Petroleum	21
Petroleum and Petro Products	22 to 29
Chemicals and Related Products	31 to 32
Crude Material (Lumber, Forest Products, Sand, Gravel etc.)	41 to 49
Primary Manufactured Goods (Paper Products, Iron/Steel Pipe, Cooper Alloy etc.)	51 to 55
Food and Farm Products (Fish, Grain, Vegetable, Meat, Fruits)	61 to 68
Manufactured Equipment, Machinery and Products	71 to 79
Waste and Scrap	89

Sources: "Atlantic Region Freight Traffic Tables, Part 1", 1993, U.S. Corps of Engineers; "Project Maps - Rivers and Harbors, U.S. Dept. of the Army, NY District Corps of Engineers, 1986; NYMTC Questionnaire"

GLOSSARY

ATA	-	American Trucking Association
CBD	-	Central Business District
COF	-	Container on Flatcar
Drayage	-	A motor carrier that operates locally, providing pickup and delivery service*
FAA	-	Federal Aviation Administration
FedEx	-	Federal Express
Floatbridge	-	A structure with tracks on an adjustable apron for transferring railroad cars to or from car floats at varying water level***
GIS	-	Geographic Information System
IMS	-	Intermodal Management System
ISTEA	-	Intermodal Surface Transportation Efficiency Act
ITS	-	Inteligent Transportation System
JFK	-	J.F. Kennedy International Airport
JIT	-	Just In Time delivery
LCL	-	Less than Containerload
LGA	-	LaGuardia Airport
Long Ton	-	2,240 lbs
LRP	-	Long Range Plan
LTL	-	Less than Truckload
MARAD	-	Maritime Administration
MTA-LIRR	-	Metropolitan Transit Authority - Long Island Rail Road

MLW	-	Mean Low Water
MPO	-	Metropolitan Planning Organization
NIA	-	Newark International Airport
NYCEDC	-	New York City Economic Development Corporation
NYCHRR	-	New York Cross Harbor Railroad
NYMTC	-	New York Metropolitan Transportation Council
NYSDOT	-	New York State Department of Transportation
PANY&NJ	-	Port Authority of New York & New Jersey
RHCT	-	Red Hook Container Terminal
RO/RO	-	Roll-on/Roll-off, the transfer between float to land by rubber tires**
SBMT	-	South Brooklyn Marine Terminal
Short Ton	-	2,000 lbs
TEU's	-	Twenty equivalent units, reference for a container due to their common 20 foot lengths
TIP	-	Transportation Improvement Program
TIRRA	-	Transportation Industry Regulatory Reform Act
TL	-	Truckload
TOFC	-	Trailer on flatcar
Toploader	-	A forklift-type vehicle that lifts and carries containers from one location to another**
Transtainer	-	A rubber tire gantry crane, stacks containers on/off chassis and railcars**
USDA	-	United States Department of Agriculture

UPS	-	United Parcel Service
USPS	-	United States Postal Service
UTRC	-	University Transportation Research Center

* "Intermodal Freight Transportation" by G. Muller
** "Gowanus Expressway Intermodal Goods Movement TSM Study"
*** Webster's Third New International Dictionary, 1972