NEIGHBORHOOD CHARACTER

PHYSICAL CHARACTERISTICS

This section documents the physical setting and existing conditions of the study area and analyzes in-depth the neighborhood character, historic and open space resources, institutional partners, land use and zoning issues, economic development, and transportation and infrastructure conditions. Technical analysis of economic, traffic, and engineering conditions are the topic of later sections.

The study area is a natural valley between 125th Street and 135th Street, Broadway and the Hudson River. The boundaries of the study area include approximately 125 acres of land, and were chosen because they delineate a remarkable neighborhood whose location in this valley, averaging approximately 75' below the surrounding hills, has led to the character of an "enclave," an area with heightened differences in land use, density and penetration by transportation infrastructure.

The most salient physical feature of the neighborhood is its Hudson River waterfront, a city-owned tract of land along the waterfront, approximately 1000' by 100', entirely paved, currently half empty and half used as a parking lot. Other remarkable features are the four successive North-South viaducts that span this valley: the Henry Hudson Parkway, the Amtrak Empire Corridor, the landmark Riverside Drive/12th Avenue viaduct, and the elevated span of the IRT subway.

The predominant current land use is auto-related or vacant. Several handsome, mid-rise buildings dot the site, interspersed with parking lots and partially empty industrial buildings. Residential high-rises mark the area's northern and southern edges, and an MTA bus facility, Con Ed transformer, and even a dormant waste-transfer site complete a picture of contrasting uses.

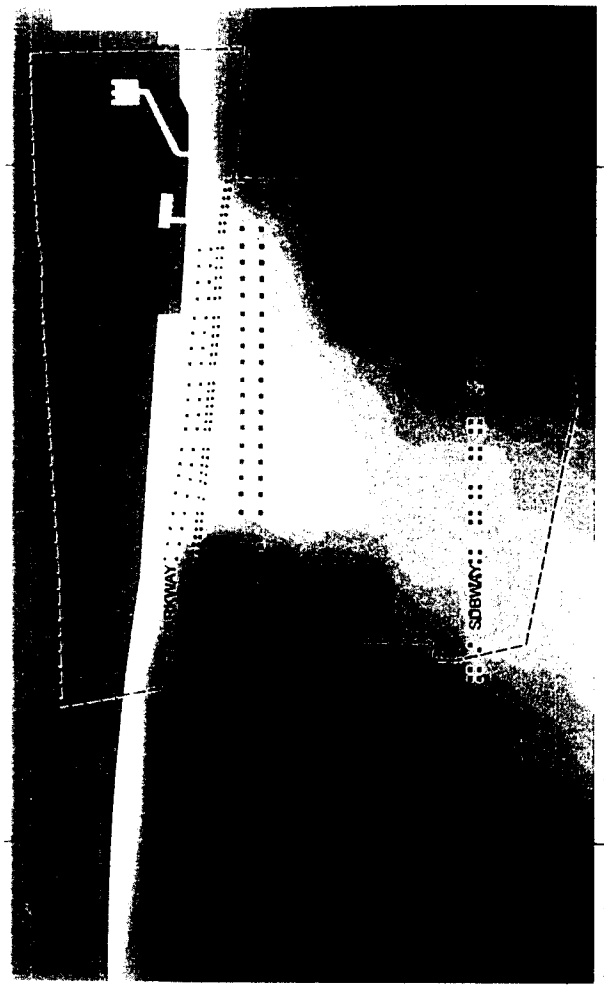
The study area is ringed by some of the world's most prestigious research and teaching institutions. Columbia University, the City College campus of the City University of New York, the Union Theological Seminary, the Jewish Theological Seminary, Columbia Presbyterian Hospital and others are either directly adjacent or merely blocks away.

Historically, the neighborhood was once denser, livelier and a waterside gateway for Manhattan. A renewed future seems possible, with Harlem's Main Street, 125th Street, running through the site with all the potential of reconnecting its waterfront to the resurgence of Central Harlem.

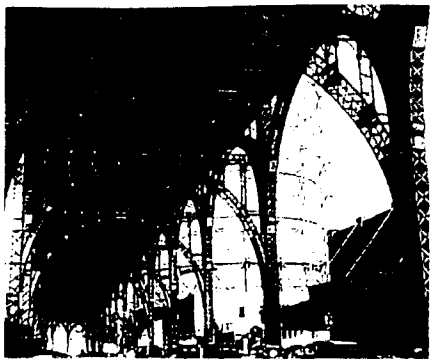
VIADUCTS

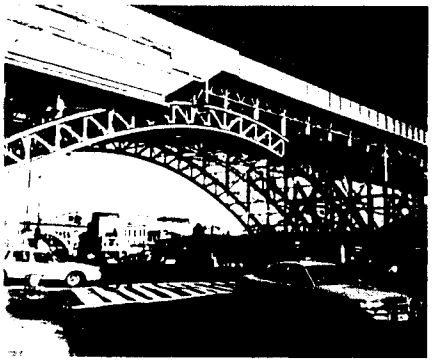
The natural valley forming the study area follows an ancient geological fault line now marked by 125th Street. The valley provides a feeling of remoteness and has lead to real separations from the surrounding land uses and transportation networks. The topography changes most abruptly in the north and south directions, with an average drop of 75'. To span this gap, a series of viaducts have been constructed for the Henry Hudson Parkway, the Amtrak Empire Corridor service, Riverside Drive and the Broadway IRT subway line.

These viaducts are landmarks for the area. The IRT line was one of the wonders of the New York Subway system when built, and passengers would often ride the line simply for the feeling of roaring over the gap. The 12th Avenue/Riverside Drive viaduct is similarly imposing, although here an aura of stateliness, almost cathedral-like, pervades. All the viaducts are visible from all east-west streets. The Twelfth Ave viaduct is visible over most of the adjacent lower buildings and from the Henry Hudson Parkway.



VIADUCT STRUCTURES & VALLEY TOPOGRAPHY





From below, the viaducts provide shelter and a feeling of enclosure, especially in the area beneath the beautiful and just restored 12th Avenue/Riverside Drive viaduct. It seems a contradiction that such area underneath a busy thoroughfare would be in any way pleasant, but the builders of these structures (F. Stewart Williamson, engineer) achieved in 1901 a combined feeling of solidity and openness that evokes the daring of Gothic builders. These covered streets are special places with potential for enhanced street life and activity.

While the areas under the Henry Hudson and the Amtrak Empire Corridor are prosaic, they are at least not unduly cramped, and Fairway Market has set up a thriving business in low buildings beneath, utilizing the upward sweep of the viaduct's west edge as a kind of awning shielding its shoppers from the rain. What is notable about the Henry Hudson and Amtrak lines are their linear qualities. They run together but with a gap, they rise and fall but at different rates. Most notably, the rapid traffic they support is met with a band of pulsating advertisement, the "billboard zone" which peeks up from gaps below the structure, rendering the area exciting in the twilight.

For sheer engineering accomplishment, none of the viaducts rivals the IRT Broadway Line. Designed and built in 1904 by William Barclay Parsons, its sweeping latticed arch is "worthy of Eiffel," according to the American Institute of Architects Guide. It is a work of unmistakable confidence and daring, a great piece of American engineering. It is only a shame that the station atop it is clad shut, concealing the moving lights of trains.

The arches of these viaducts announce the neighborhood unmistakably and forcefully. Just as we understand arrival in Greenwich Village when we see the Washington Square Arch, there is an even greater potential sense of arrival here at West Harlem Piers when we see, properly framed, the view of the arches of the Broadway IRT and 12th Avenue/Riverside Drive viaduct down 125th Street to the water. The majestic framing of the viaduct arches leading down 125th Street to the water's edge promises a glorious destination. But today that reality is flatly denied. Instead of delight and movement, the three acres of waterfront land to the west of Marginal Street are a sagging, blacktop trapezoid, half marked-off for Fairway Parking and half merely vacant. Chain link fences and highway barriers are all the street furniture available for those who might wish to enjoy the spectacular view at the river's edge.

THE WATERFRONT

Sweeping from the George Washington Bridge, past the Palisades across the Hudson to Riverside Park, the view is unparalleled, albeit muted by the indeterminate form of the North River Water Pollution Control Plant and the shed of the dormant waste-transfer station to the north of the site. To the south, the view is crowned by the steeple of Riverside Church. Cherry Walk and the new Hudson bike path stop abruptly at the site's edge, and for all its promise, there is currently no access to the waterfront.

Once the site of the Fort Lee Ferry, the waterfront was lined with piers from 125th Street north. Not only transportation and commercial piers but piers for amusement made the waterfront exceptionally lively at the turn of the previous century. A trolley bustled people back and forth to central Harlem on 125th Street.

STREETS AND BLOCKS

The main street of the study area is 125th Street, the main street of Harlem. Once known as Manhattan Street, the street bed is

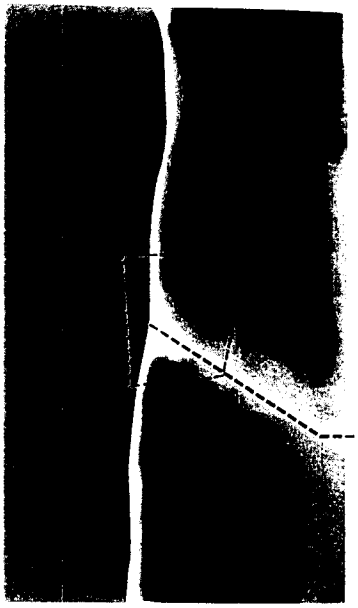
THIS PAGE LEFT:
VIADUCT STRUCTURE AND VALLEY TOPOGRAPHY MAP

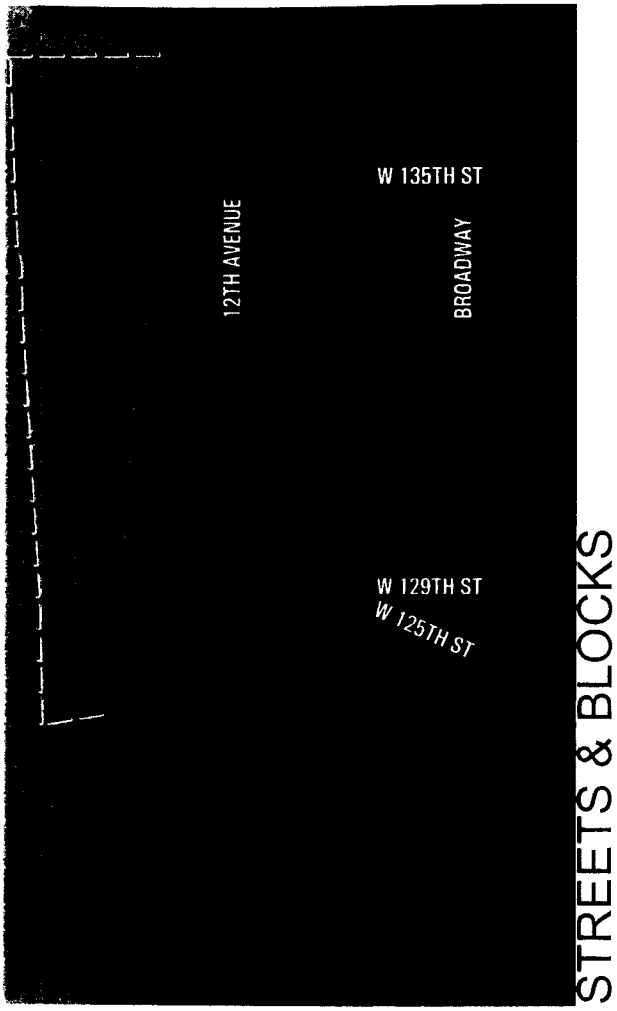
THIS PAGE UPPER RIGHT:
HISTORIC PHOTO OF 12TH AVENUE VIADUCT

THIS PAGE LOWER RIGHT:
IRT BROADWAY ARCH

NEXT PAGE LEFT:
125TH STREET VIADUCT STRUCTURE VALLEY TOPOGRAPHY MAP

NEXT PAGE RIGHT:
MAP SHOWING STREETS & BLOCKS





STUDY AREA BOUNDARY

CITY OWNED SITE

approximately 77 feet wide and slopes down through the arches of the Broadway IRT and Riverside Drive/12th Avenue viaducts to the water, passing underneath the Henry Hudson and Empire Corridor viaducts before reaching Marginal Street and the waterfront. In short, the waterfront is now the stump of its former self. All amenities have been removed, all variety of surface effaced. The valley focuses on the waterfront, 125th Street leads to the waterfront, and the ribboned viaducts reinforce a lost linearity originally met by great wharves and piers.

The street is diagonal to the Manhattan grid, following the line of a stream bed which followed the line of an inactive seismic fault at the base of the valley which forms the study area. Since the first development of the area, this broad and diagonal route has been the prime connection from the waterfront to central parts of Manhattan.

The rest of the street and block pattern developed with east west streets sloping down to the water underneath north-south viaducts above. Over time these streets have become discontinuous from their surroundings, and now create a local network. Some of the upland blocks are very long, over 600 feet, which inhibits pedestrian circulation due to the few occasions for north-south cross movement. The only at-grade north-south connections in the study area are streets that are either partially or entirely beneath the viaducts of the Henry Hudson Parkway, Riverside Drive/12th Avenue and Broadway. This is a remarkable condition and certainly contributes to the unique character of the neighborhood within the study area.

The shape of the blocks overall is varied. As mentioned, the blocks of the central study area are extremely long. However, at the southern edge of the study area, similar long blocks are divided by the angle of 125th Street, forming bow-tie blocks and triangular blocks around oblique intersections. Unlike the effect of Broadway on Herald Square, where Broadway cuts at a much more acute angle, the effect here is more Parisian or even like Washington, DC, where the resultant pieces of block are barely large enough for a single building, but nonetheless must somehow support and define the street-wall edge. A lack of planting and streetscape at present further erodes the linear quality of the street edge.

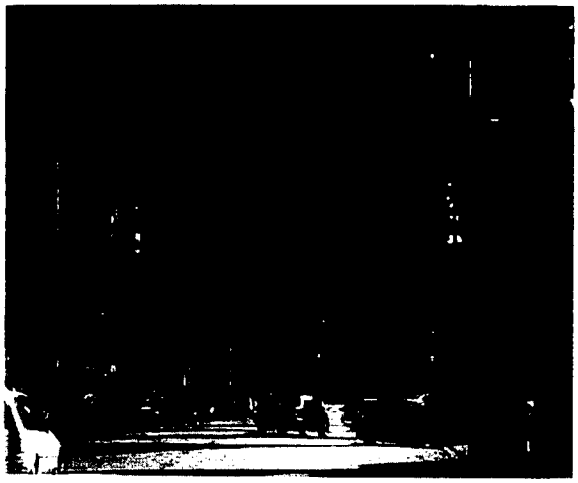
The blocks between Marginal Street and 12th Avenue are compact, although much of their surface area is underneath the viaducts. The northernmost block of the study area is a double block between 133rd Street and 135th Street, 12th Avenue and Broadway. This enormous block holds the towering half-octagon of the Riverside Park Apartments.

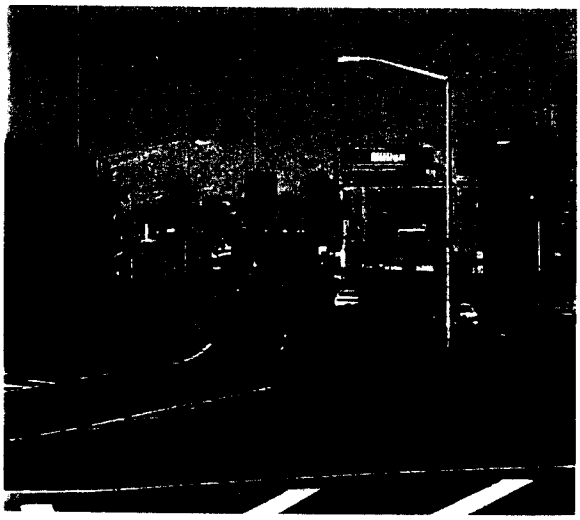
VIEW CORRIDORS

The primary view corridor of the neighborhood is down 125th Street to the water. However, the topography, street grid, building typology and overlay of several viaducts give the West Harlem Piers neighborhood perhaps the most diverse set of view corridors in any comparably sized area of New York. The diversity of view corridors leads to a hierarchy of spaces and movement in the neighborhood, which make it ideal as a lively area of pedestrian interest. The major view corridors of the neighborhood are:

125TH STREET

The classic "Only in New York" view of a waterfront down a substantial boulevard whose centerline is framed by the massive arches of the Broadway IRT and the Riverside Drive/12th Avenue Viaduct. These arches are so large that one still sees the water even though the lower





theatrical in their huge scale. Their arches comfortably contrast the substantial industrial buildings that still remain. Horizontally, the bold, broad line of 125th Street, pointing directly at the water and cutting through the valley serves as an anchor and baseline.

LAND USE AND ZONING

Zoning shapes the size and type of buildings; it also controls the use. The zoning in the study area, as is found in other waterfront areas of New York City, reflects an era when manufacturing and freight was often the predominant waterfront use. Today, while a few manufacturing uses remain in the study area, none of them are dependent on the waterfront for their existence. The Master Plan set out to analyze the ways in which the current zoning restricts development and ways in which rezoning might encourage better utilization of the study area.

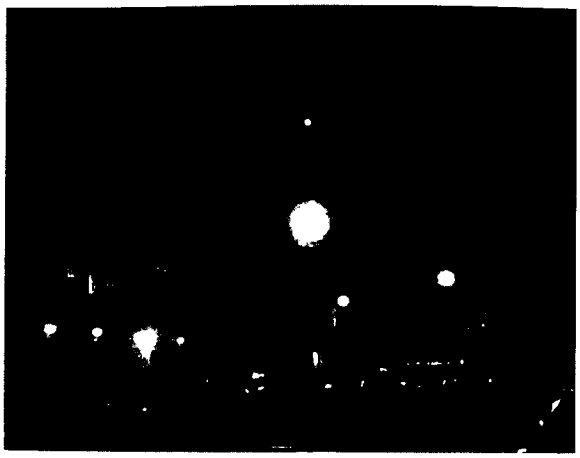
The land use in the study area is diverse. Land use is the functional category for which a parcel of land is developed, such as residences or factories. Zoning is the statutory framework which identifies allowable land uses for certain parcels and then further regulates the density and height to which the parcels may be built, along with other characteristics defined in the Building Code.

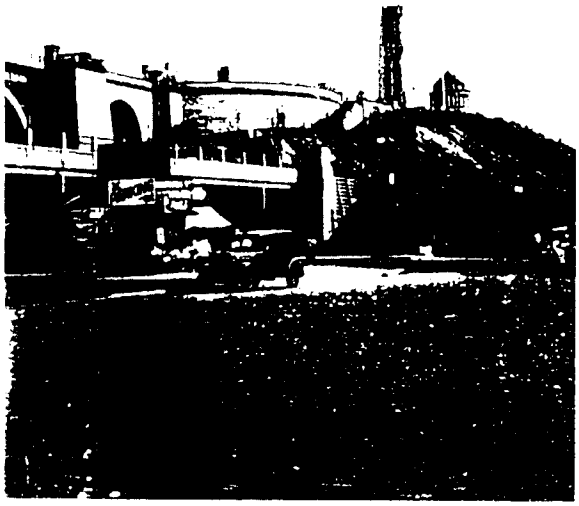
New York was the first city in America to institute a zoning ordinance. Established in 1916, zoning as a concept was challenged in the courts in 1925 and found to be constitutional. Since then, zoning has played a major role in government's attempt to guide the emerging shape, character and economic development of cities. A major update to the New York City Zoning Resolution was last enacted in 1961.

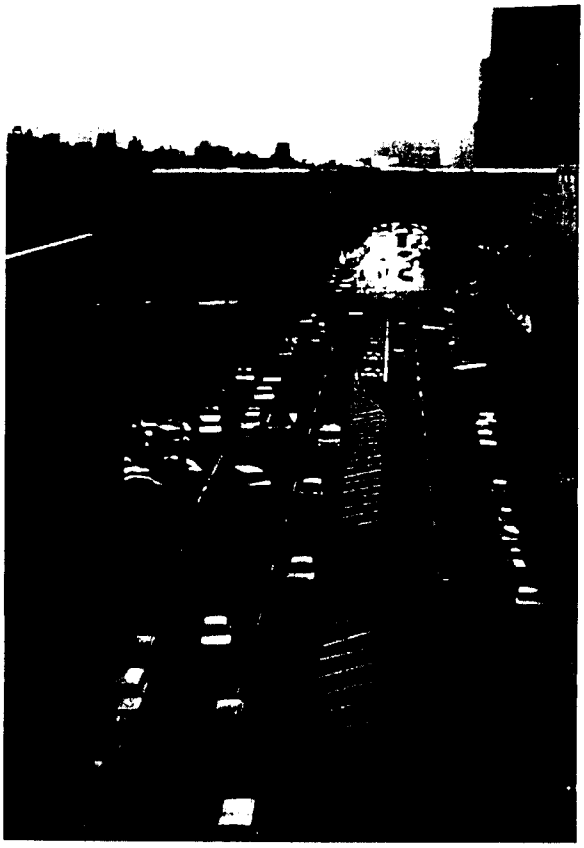
Of course, much of New York and much of the study area was built before 1916. Buildings and uses from that era are "grandfathered," meaning that they may remain as they were prior to passage or amendment of the zoning resolution, regardless of whether their built characteristics or use conforms to present standards. The study area was already prosperous and largely built-out as a manufacturing district prior to the zoning regulations of 1916 and 1961. This is why some of the buildings found in the study area, such as the 4-5 story loft

THIS PAGE:
NEIGHBORHOOD SCALE MAP

NEXT PAGE :
THE COTTON CLUB ON W. 12TH AVENUE (TOP). VIEW SHOWING 12TH AVENUE, LOOKING EAST (BOTTOM)







THIS PAGE UPPER LEFT:
NIGHT VIEW OF W 131ST STREET VIEW CORRIDOR.

THIS PAGE LOWER LEFT:
HISTORIC PHOTO LOOKING FROM MARGINAL STREET LOOKING SOUTH TOWARD RIVERSIDE PARK

THIS PAGE RIGHT:
VIEW FROM RIVERSIDE DRIVE DOWN ON TO 125TH STREET.

NEXT PAGE UPPER LEFT:
VIEW OF 12TH AVENUE LOOKING SOUTH.

NEXT PAGE LOWER LEFT
VIEW OF RIVERSIDE DRIVE LOOKING NORTH.

NEXT PAGE UPPER RIGHT:
VIEW OF BILLBOARD ZONE LOOKING FROM HENRY HUDSON PARKWAY.

NEXT PAGE LOWER RIGHT:
VIEW OF WATERFRONT FROM MARGINAL STREET LOOKING SOUTH.

structures of the Henry Hudson Parkway and Amtrak Empire Corridor cut across the view.

131ST STREET

Looking down 131st Street to the water is a view corridor with potential. At a smaller scale than 125th Street, this view corridor is framed on the sides by the mass of the street's mid-rise industrial buildings and at its end with three arches of the Riverside/12th Avenue viaduct. The vertical, European scale of the present elements offers the potential to define an architectural moment at the cross axis with another important view corridor: 12th Avenue.

12TH AVENUE

As the underside of the 12th Avenue/Riverside Drive viaduct, this Cathedral-like space of arches and transepts provides a unique view corridor, perhaps better termed a view-space. The area is an architecturally unified grand space. With the proper lighting, it will be an attraction in and of itself, capable of supporting diversity and activity around it.

RIVERSIDE DRIVE

The upper surface of the 12th Avenue/Riverside Drive viaduct terminates nicely to the south in Riverside Park, but it is strangely disconnected from the view-scape below. The architectural effect of solidity was so well achieved, that the view corridor seems to need some vertical elements to connect to the neighborhood below.

THE "BILLBOARD ZONE"

Another transverse, north-south view corridor is the "billboard zone," floating between the Henry Hudson Parkway and the 12th Avenue/Riverside Drive viaduct. It is a linear Times Square. Although the ads are for television and the flashing lights announce only specials at Fairway, there is an appealing zest to this line of lights and signs, blending with the tail-lights of passing cars.

WATERFRONT

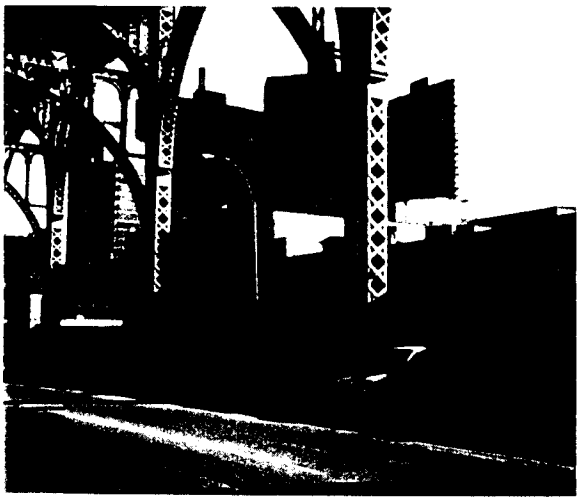
Although now it is nothing but asphalt, the waterfront should eventually become the most appealing view corridor in the neighborhood. Whether looking transversely back along a pier, or linearly along the water's edge to take in Riverside Church or the George Washington Bridge, the view corridors provided by the waterfront will be formidable.

NEIGHBORHOOD SCALE

The scale of the neighborhood is diverse. Its building scale ranges from a one-story bait shop on Marginal Street to a residential super-block high-rise on Broadway. Its topographical scale ranges from a waterfront bulkhead 7' above mean high tide to a rock escarpment approximately eighty feet in the air. Block size ranges from triangular blocks to superblocks. Street widths range from narrow to a six lane divided highway.

Yet somehow, this diversity feels unified. The key is in the topography, which forms a natural amphitheater. Low elements anchor the center, while as the land rises, so do the building heights. Therefore, the buildings work with the topography, reinforcing the sense of amphitheater and its focus on the water. Thus, the neighborhood can support numerous building types and still retain its character.

Two other elements unify the physical scale of the neighborhood by giving it a vertical and horizontal baseline. First, the arched viaducts of the Broadway IRT and 12th Avenue/Riverside Drive are almost



buildings, are larger than what is dictated by current zoning. These buildings would not be permitted to be constructed as-of-right today.

THE TOOLS OF ZONING

The zoning resolution is divided into two parts: map and text. The map specifies zoning districts for parcels of land. The text describes what is permitted in each zoning district. Zoning districts fall into three broad categories: Residential (R), Commercial (C), and Manufacturing (M). Residential and community facility uses are permitted in R Districts. Commercial, community facility and residential uses are generally permitted in C districts. Commercial and manufacturing uses only are permitted in M districts. C-overlays in R districts allow for commercial uses.

For each zoning district there are associated requirements of size (the bulk of the building in relation to the size of the lot), the maximum amount of building coverage allowed on the lot, the density of occupancy allowed on the lot, required set-backs, the amount of parking required, and various other requirements for each specific use group. The zoning map very precisely indicates which land use group within which zoning district is applicable to which building lot in the city.

Floor Area Ratio ("FAR") describes the maximum bulk that a building can have. FAR expresses the relationship between the amount of usable floor area permitted in a building and the area of the lot on which the building stands. A building can contain floor area equal to the lot area multiplied by the FAR. For example, a building that is on a lot of 10,000 square feet and has an FAR of 6.0 is allowed to have 60,000 square feet of floor area.

Finally, New York City zoning regulations contain special provisions for property on the waterfront. These regulations apply standards for waterfront design, providing view corridors, and creating public access to the waterfront. Any redevelopment of the EDC controlled waterfront will have to conform to waterfront zoning.

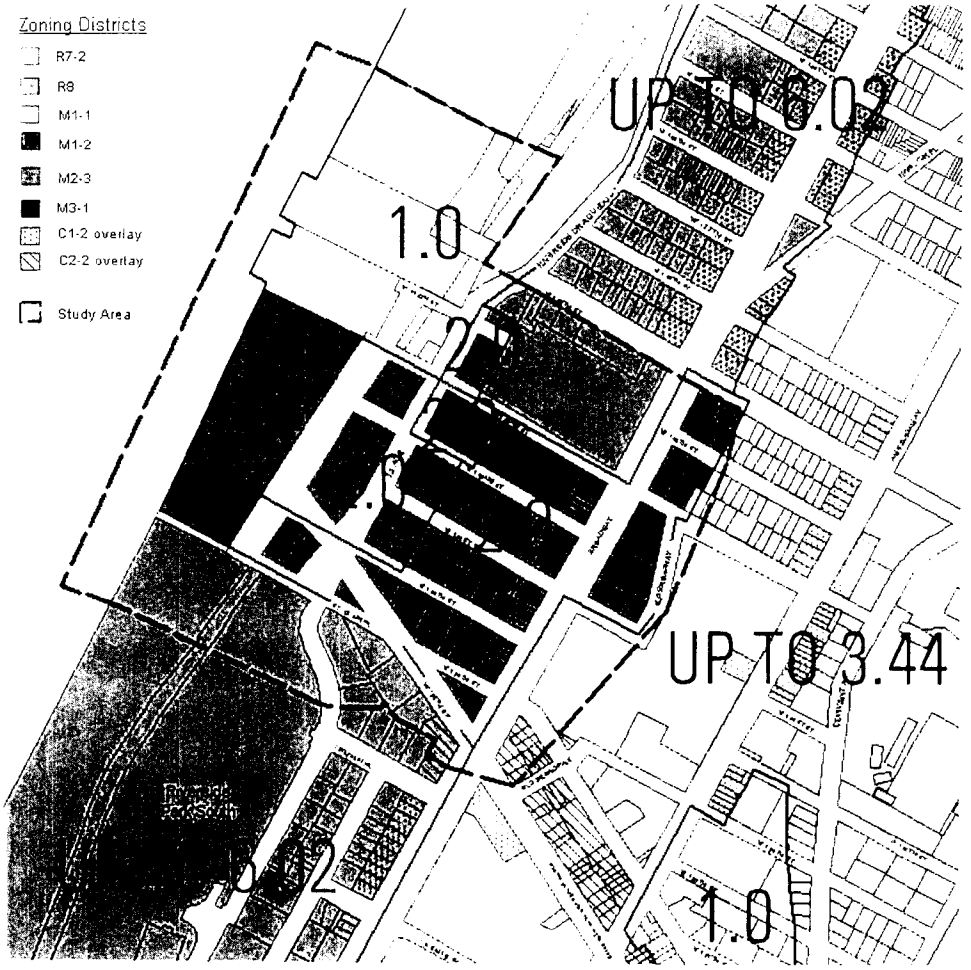
EXISTING ZONING

Existing zoning in the study area consists mainly of manufacturing zoning, with some residential zoning mapped on the outskirts of the study area. (See Zoning Map.)

The pattern of existing zoning exaggerates the topography of the study area. A lower density manufacturing district is concentrated on the water and the center of the study area's valley. A semi-circle of high density, tall residential buildings surrounds the manufacturing district. This pattern reflects the allowed FAR in those two districts.

Most of the study area is comprised of M1-2 and M2-3 zoning districts. An FAR of 2.0 is allowed in M1-2 and M2-3 zoning districts. An FAR of 1.0 is allowed in an M1-1 zoning district. An M3-1 zoning district allows an FAR of 2.0 and allows more noxious uses than the M1-1, M1-2, and M2-3 zoning districts. The low density FAR in the study area's manufacturing district - FAR of 1.0 and 2.0 - discourages redevelopment. Some of the most attractive buildings in the study area are the 4-5 story loft buildings. However, new buildings could not be built that match this density, because the FAR would exceed the permitted limits under current zoning.

The existing zoning in the study area does not reflect current patterns of growth or use. For instance, the waterfront is zoned largely for heavy manufacturing. 125th Street, Harlem's Main Street, is zoned for medium manufacturing at its most picturesque point between



The waterfront is zoned M1-2 between St. Clair Place and West 130th Street, M2-3 between West 130th Street and West 133rd Street, and M1-1 between West 133rd Street and the northern border of the study area. The core of the study area, mainly bounded by West 125th Street, West 133rd Street, Broadway, and 12th Avenue, is zoned M1-2 and some M2-3. The 12th Avenue corridor is primarily zoned M2-3. The Manhattanville Bus Depot on 12th Avenue between West 132nd and West 133rd Streets is zoned M3-1. R8 zoning is found on the southern portion of West 125th Street between St. Clair Place and Broadway, and the northern portion of West 133rd Street.

Broadway and the water. According to field surveys, there are no remaining traditional manufacturing uses along 125th Street in the study area.

Manufacturing zoning allows for uses that play an important role to New York City's economic vitality. In the study area, in recent years, uses have included food packaging and processing, meat-packing, contracting, film and theater set development, household construction uses, and electrical supplies. However, it should be noted that manufacturing zoning also allows for uses that are often considered unwanted uses and that generally are not permitted in residential districts, such as a bus depot, adult uses, automotive services, and other uses of this nature. Manufacturing zoning also restricts certain commercial development. For example, an M-1 district, certain commercial uses, such as supermarkets and department stores, are limited to 10,000 sq. ft. It also does not permit most community facility uses, such as museums, universities, libraries, churches, and community centers.

Zoning's current limitations on both the use and density preclude many of the uses that are envisioned as part of the Master Plan. Under current zoning, the development of the waterfront as a park would not be permitted. It is unlikely that West 125th Street would develop ground-floor retail uses because of zoning restrictions and current local development interest. The core of the study area as presently zoned is unlikely to attract new development because of its very limited FAR and limits on permitted uses.

LAND USE

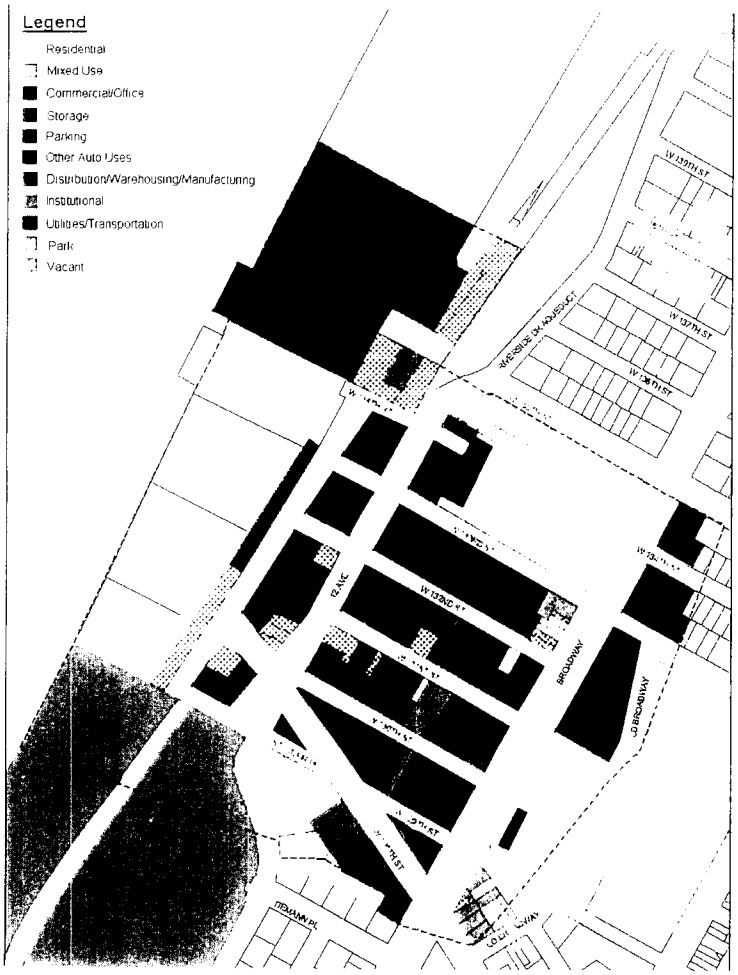
Because of the surface parking lots, large number of curb cuts, vacant lots, and the Bus Depot, the study area gives the impression of being

THIS PAGE:
ZONING MAP

NEXT PAGE LEFT:
ZONING/ CONTEXT MAP, LAND USE MAP

NEXT PAGE UPPER RIGHT:
F.A.R. / ZONING MAP

NEXT PAGE LOWER LEFT:
MODEL SHOWING THE STUDY AREA SURROUNDED BY TALL BUILDINGS



EXISTING LAND USE

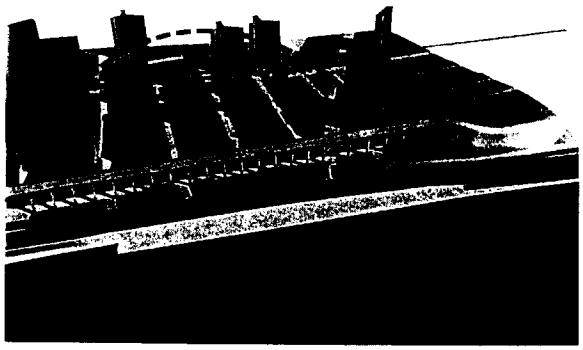
oriented towards vehicular land uses. The presence of car repair shops and gas stations is magnified, giving the impression of a gritty and nuisance-ridden place for pedestrians. The low level of service at certain intersections abets this impression.

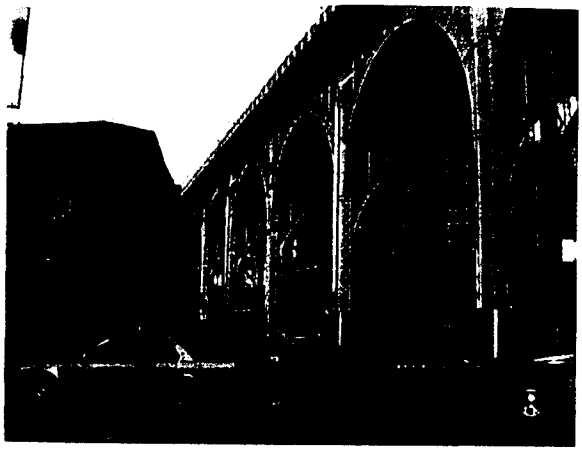
Uses friendlier to pedestrians are making a comeback, however. About half of Fairway market's customers arrive by car, half by walking from public transportation. The market is very successful; in fact, it is the study area's most visited land use.

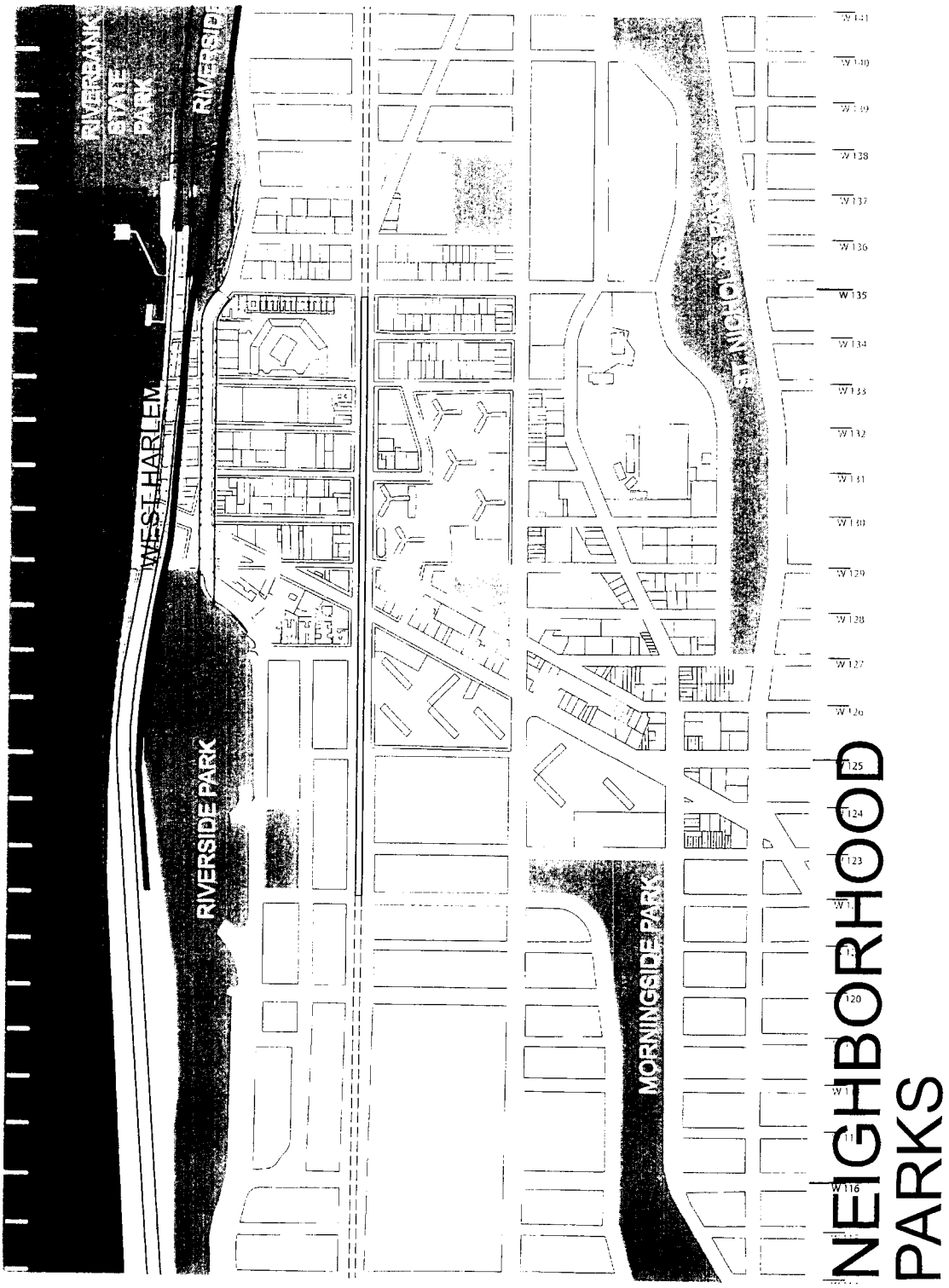
Several smaller commercial facilities operate in the study area as well, cutting stone, transporting meat, storing electrical supplies and even selling bait. A diner and several social clubs are in the study area, including the famous "Cotton Club" at 125th Street and St. Clair Place. (The original Cotton Club was located in mid-town.)

There is substantial residential use in the study area, primarily at the north end in the Riverside Park Apartments and the 300 apartments to the south at Columbia's 560 Riverside Drive. A limited amount of commercial loft space in the area has been converted to live/work space.

Institutional land use is also a major positive factor in the neighborhood. Columbia University, City College, and Columbia Presbyterian Medical Centers as well as several other institutions, are located around the study area. Columbia University owns Prentiss Hall, an 110,000 square-foot academic facility on 125th Street. Columbia University and the Museum of Natural History also occupy space in the Alexander Doll Factory.







NEIGHBORHOOD PARKS

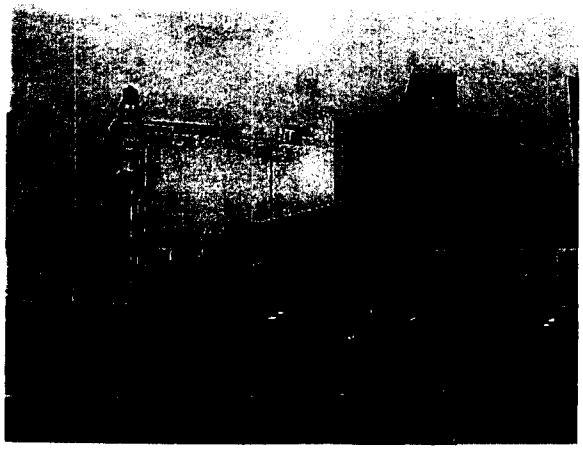
THIS PAGE TOP:
VIEWS OF W125TH STREET FACADE BETWEEN 12TH AVENUE AND BROADWAY LOOKING NORTH

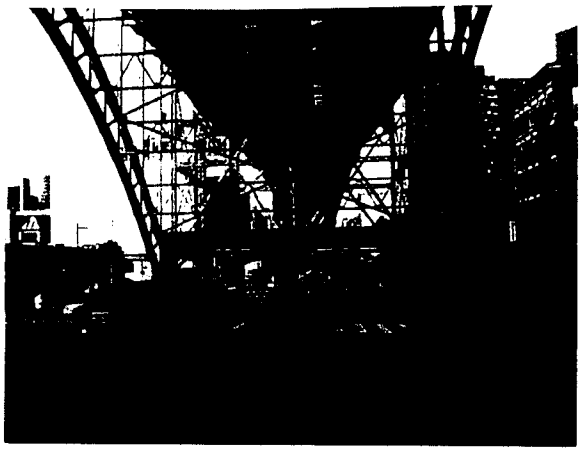
THIS PAGE BOTTOM:
MAP SHOWING THE AREA'S NEIGHBORHOODS PARKS

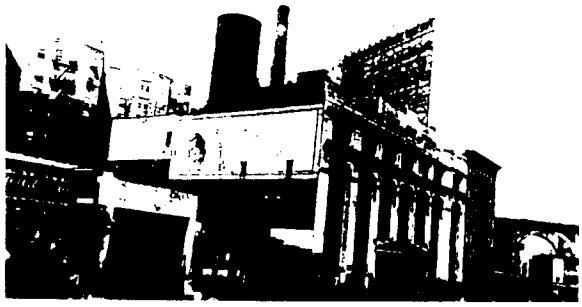
NEXT PAGE TOP:
VIEWS OF W125TH STREET FACADE BETWEEN 12TH AVENUE AND BROADWAY LOOKING NORTH

NEXT PAGE LOWER LEFT:
HISTORIC VIEW OF PRENTISS HALL, CURRENTLY OWNED BY COLUMBIA UNIVERSITY, WAS ONCE A DAIRY

NEXT PAGE LOWER RIGHT:
PHOTOGRAPH SHOWING THE STEPS OF RIVERSIDE PARK







OPEN SPACE, HISTORIC AND INSTITUTIONAL RESOURCES

The West Harlem waterfront has the potential to make the critical link between North and South, the Hudson River waterfront and Central Harlem to the East. Situated between two major parks at the waterfront landing of 125th Street, the study area is currently a paved void, only partially used as a parking lot.

PARKS

The waterfront's improvement is critical in order to link the parks and the waterfront together for the community and for the region. To the north of the site is Riverbank State Park, a 22-acre facility opened in 1991 atop the new North River Water Pollution Control Plant. This multi-tiered, 28-acre State Park, offers a wide range of recreational facilities, including a swimming pool complex with an outdoor 25-yard pool and wading pool open throughout the summer and an enclosed 50-meter Olympic-sized pool open year round. There are regulation size football and softball fields, both surfaced with artificial grass. A 400-meter track surrounds the football field. There are outdoor courts for basketball, handball/paddleball and tennis as well as an indoor multi-purpose athletic space for volleyball, gymnastics, and basketball plus game and activity rooms. The cultural center has an auditorium with a seating capacity of 834 and an expandable stage for theatrical, musical, dance performances and special events. The park has a rink for roller skating six months each year and ice-skating during the remaining months. There is a water level promenade and amphitheater. All of these features have made the park a popular neighborhood attraction. It connects via bridges to the north and to the south to Riverside Park.

Riverside Park is one of Manhattan's most beautiful parks, stretching from 72nd Street to 153rd Street between Riverside Drive and the Hudson River. Because Riverside Drive is on a viaduct in the study area, the park does not actually exist on the waterfront between 125th and 135th Streets. The connection from the study area to the south portion of the park is called Cherry Walk, a ribbon of bike-path and landscaping which terminates at the southern edge of the study area waterfront and runs south between the river's edge and the Henry Hudson Parkway.

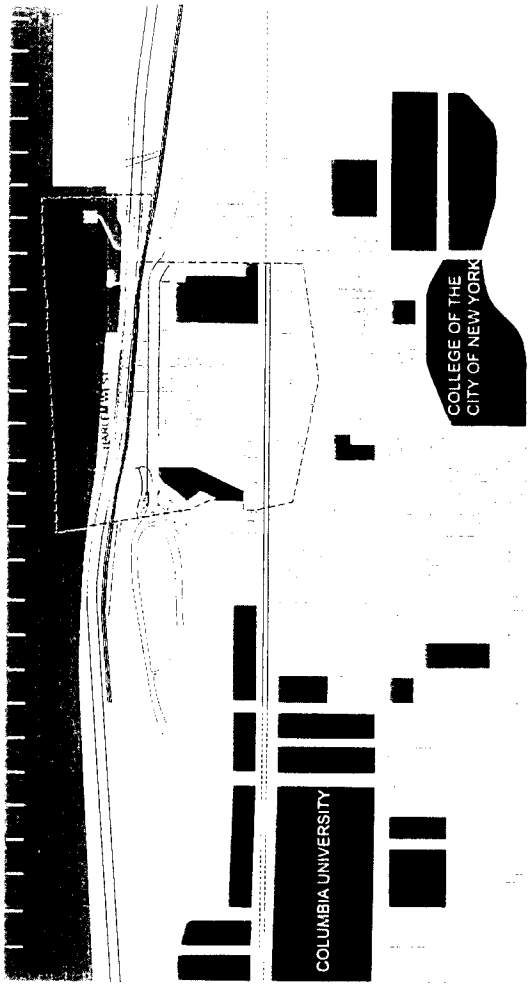
Other parks in the vicinity of the study area include St. Nicholas Park directly to the east. This picturesque Harlem park connects City College, "Sugar Hill", Hamilton Place and Convent Avenue.

Morningside Park to the southeast is a historic but newly renovated park on the hillside connecting Morningside Avenue and Morningside Drive. It is a steep, hillside park with mature trees planted at the turn of the century. In addition, it contains a softball field surrounded by a track, four playgrounds and a pond fed by a waterfall.

LINEAR CONNECTIONS

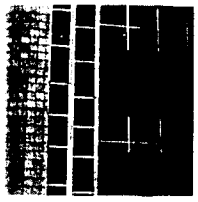
A major transportation and recreational goal of New York City has been to complete a bicycle path along the entire length of the Hudson River in Manhattan. Today, a major gap in the system is the study area's waterfront. The linear connection must tie Cherry Walk from the south back into Riverside Park where it comes to grade north of 135th Street. In addition, the linear connection at the study area must tie into a planned extension, to be carried out by the NYC Department of Parks and Recreation, which will continue to the north.

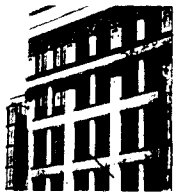
Other pedestrian connections include historic stairs in the Riverside Drive retaining walls that are slated for future renovation by the Parks Department.



MAJOR INSTITUTIONS

- CUNY
- COLUMBIA U
- SCHOOLS





HISTORICAL RESOURCES

The West Harlem study area is unusually rich in historic resources. A natural valley between Hamilton Heights on the north and Morningside Heights on the south, the site's natural advantages were first developed in the 19th Century when a village called Manhattanville grew at the intersection of the Hudson River and what was to become 125th Street. A natural gateway to Manhattan, the site developed into the major ferry landing leading to Fort Lee, New Jersey.

Physically separate for many years from the main centers of activity in New York, despite the mapping of the city's grid to include it, Manhattanville developed into a sort of mill town on the Hudson, reminiscent of many small towns in New England. It contained a pigment factory, a worsted mill, a brewery, churches and even a college - Manhattan College, founded at 131st Street and Broadway in 1853.

The hamlet's locational advantages soon outstripped its industrial heritage. Until the George Washington Bridge was built, the ferry landing at 125th Street was one of the chief gateways into Manhattan. With the extension of the IRT subway in 1905 and the building of Riverside Drive and Riverside Park, the site became singularly well placed to take advantage of the growth of Harlem and the tremendous development pressures that spilled north with new commuter transportation.

Turn-of-the-century photos show a dense and prosperous streetscape, and the piers themselves provided transportation and amusement for residents of the neighborhood and beyond. It was a true regional attraction with some of the best transportation connections in the City.

Many buildings and pieces of infrastructure remain from this era. Some are landmarked, many are worth preserving or integrating into any future development. Some of the notable historic structures and spaces include:

Riverside Drive/12th Avenue Viaduct
IRT Broadway Viaduct
Prentiss Hall
Alexander Doll Factory
Riverside Drive Retaining Walls and Viewing Platforms
Riverside Park

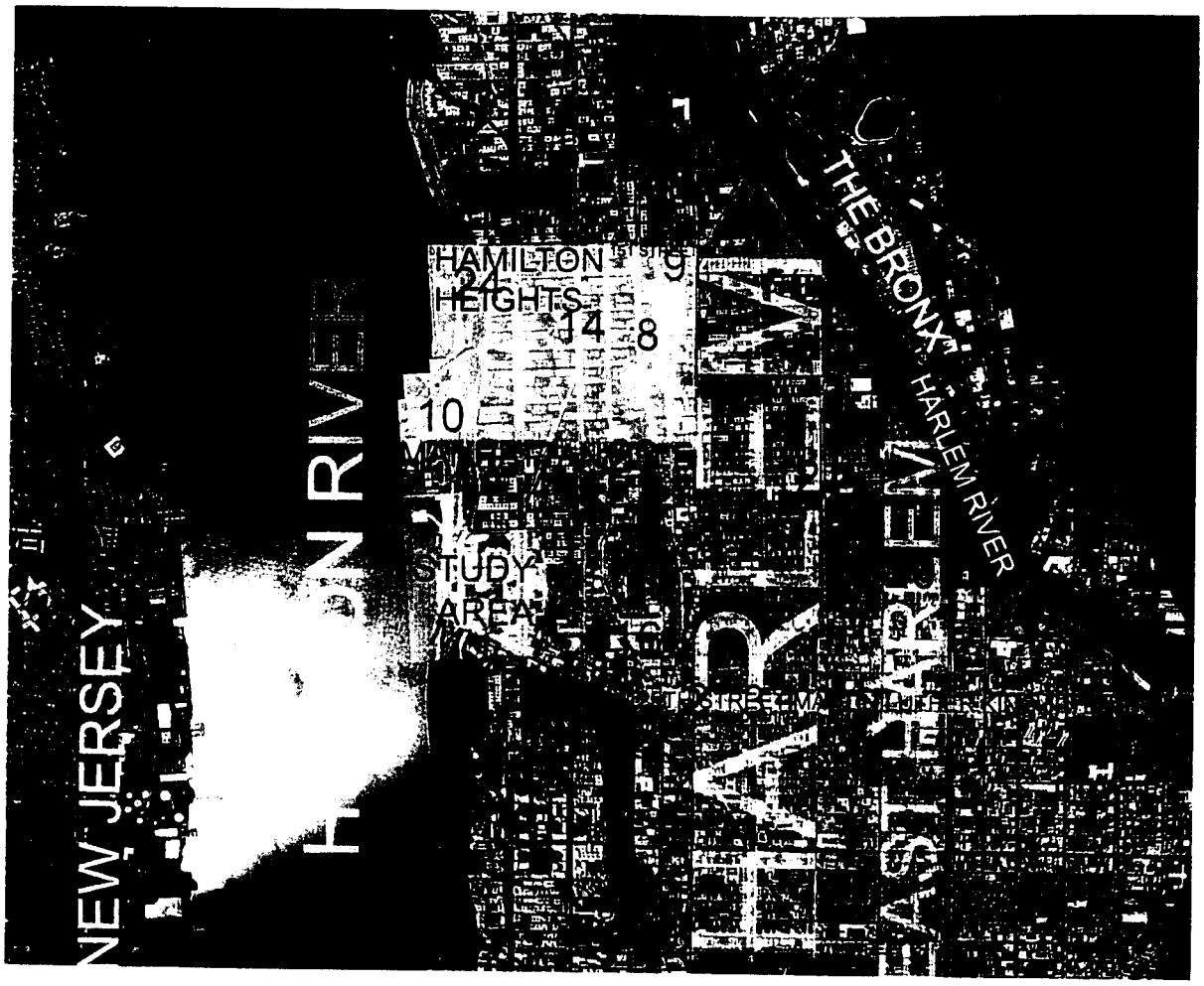
INSTITUTIONAL RESOURCES

The overall study area is ringed with major institutions, and the greater Harlem area includes numerous other world renowned cultural, religious and educational institutions. The eventual success of the economic development of West Harlem will require, to a large extent, taking advantage of these resources, ranging from Columbia University in the study area to the Apollo Theater up 125th Street. Many of these institutions can become partners. There are too many - both large and small - to list them all here, but the extraordinary institutions include the following (locations shown on the map):

THIS PAGE LEFT:
MAP SHOWING MAJOR INSTITUTIONS

THIS PAGE RIGHT:
PHOTOS OF THE FOLLOWING (TOP TO BOTTOM):
CITY COLLEGE,
APOLLO THEATER,
NATIONAL BLACK THEATER,
STUDIO MUSEUM.

NEXT PAGE:
MAP SHOWING HARLEM HIGHLIGHTS



1 DUKE ELLINGTON MONUMENT
2 MAGIC JOHNSON THEATER
3 BLACK FASHION MUSEUM
4 STUDIO MUSEUM IN HARLEM
5 APOLLO THEATER
6 SCHOMBURG CENTER FOR RESEARCH IN BLACK CULTURE
7 MUSEUM OF AFRICAN AMERICAN HISTORY & ARTS
8 HARLEM SCHOOL OF THE ARTS
9 JACKIE ROBINSON PARK
10 RIVERBANK STATE PARK
11 NATIONAL BLACK THEATER
12 ABYSSINIAN BAPTIST CHURCH
13 BORICUA COLLEGE
14 CITY COLLEGE OF THE CITY UNIVERSITY OF NEW YORK
15 COLUMBIA UNIVERSITY
16 DANCE THEATER OF HARLEM
17 FREDERICK DOUGLAS ACADEMY
18 JEWISH THEOLOGICAL SEMINARY
19 LA ROCQUE BEY SCHOOL OF DANCE
20 MOTHER A.M.E. ZION CHURCH
21 RIVERSIDE CHURCH
22 THE CATHEDRAL OF SAINT JOHN THE DIVINE
23 THE CHILDRENS ART CARNIVAL
24 THE MODERN SCHOOL
25 UNION THEOLOGICAL SEMINARY

WEST HARLEM

New York City
Economic Development
Corporation

ECONOMIC MARKETS

ECONOMIC DEVELOPMENT

ECONOMIC ANALYSIS INTRODUCTION

The Real Estate Advisory Services Practice ("REAS") of Ernst & Young LLP ("E&Y") prepared an economic development analysis for the study area, including a review of uses complementary to existing uses and community visions. The data are presented in a Site Area Assessment and an Economic and Demographic Analysis with the critical elements summarized here.

ECONOMIC ANALYSIS SUMMARY

As documented by the following economic development analysis, the majority of West Harlem residents are working and spending outside the neighborhood. The analysis, however, has looked at the underlying economic trends of the neighborhoods and has determined that there is latent retail demand in the neighborhood. There is the opportunity to expand on the neighborhood's growing retail success to develop a trade district and waterfront attraction of regional importance. The analysis has also determined that there is significant job creation potential from the institutions that ring the area, if space can be developed for jobs within the neighborhood.

ECONOMIC DEVELOPMENT DEMAND

The development of the West Harlem neighborhood as a destination offers a strong economic development opportunity for the development of retail and work environments with a strong local and regional draw.

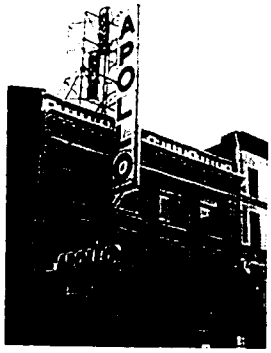
Market assessments indicate that the area is experiencing positive income growth (14%), positive retail spending trends ($10,000 per household annually), and significant public and private sector investment (over $100 million) in the area. There is latent potential for retail development in the area. Buying power per square mile is $116 million for support and service retail - that is over 2 times as much as the buying power per square mile for Manhattan ($53 million). Yet most of this spending is done outside of the community. Median household income in the area is 62% of Manhattan median income, but spending on retail and entertainment is 90% of the Manhattan average. Again, most retail and entertainment spending is done outside the community.

Potential opportunities within the community include eating and drinking facilities (at all price points) and retail development. In addition, there is a market for the service sector, including specialty, ethnic, tourist, home goods and other services. There is also potential residential demand including live/work residences for artists and multifamily housing.

JOB CREATION POTENTIAL

The community includes a substantial workforce, which currently commutes outside the community for jobs. Establishment of adult education and vocational training facilities and incubators is underway (such as HIWay 125 incubator and City College accelerator) to reinforce job creation and serve the entrepreneurial needs of the community. These opportunities will promote revitalization and diversification of the area, and will promote community involvement, job opportunities and local entrepreneurship.

Supporting factors for these opportunities include increased public sector investment in the area (including UMEZ incentives and initiatives such as HIWay 125, BRISC and the restaurant initiative) and incentives for the development of industrial clusters (Garment and Food Manufacturing) through the New York Industrial Retention Network. Additionally, there is increased private sector investment in Harlem including significant investment by Chase, Fleet and Citibank for acquisition, pre-development, construction and permanent financing of a variety of projects.



Improving economic and demographic factors in the area, such as increases in income, home ownership, and spending potential, supports the basis for increased job creation. Development trends such as Fairway's site purchases, proposed N Store development and the Midway Electric Building sale show a reviving private sector interest. In addition, there is increased local and international tourism in Harlem.

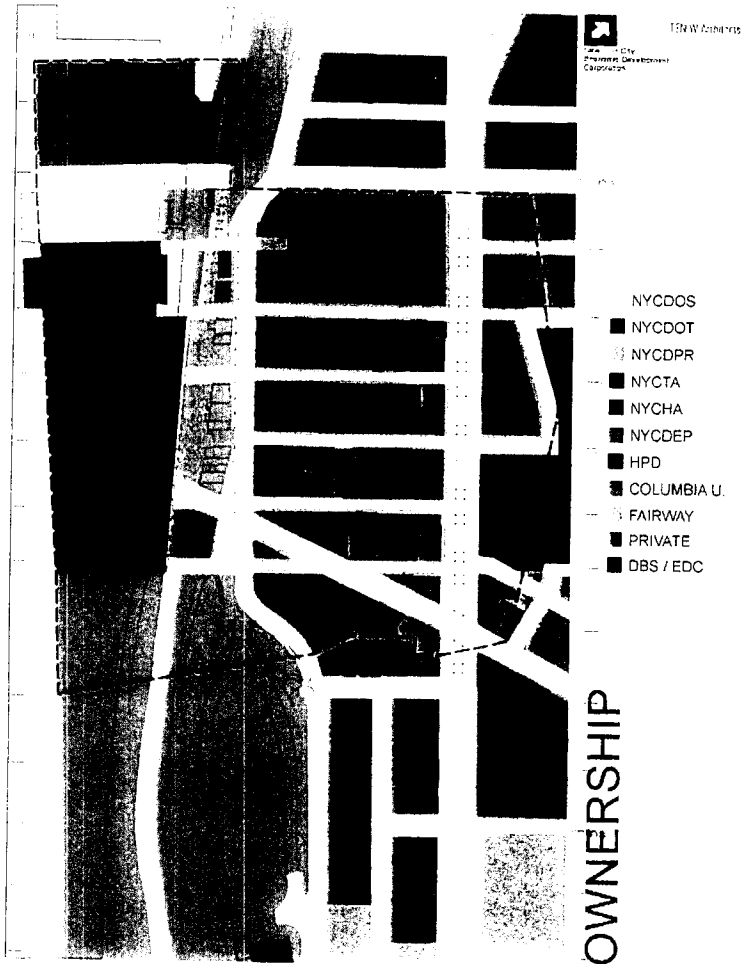
Harlem is increasingly becoming a destination not only for tourists but also for residents. Revitalization and development of cultural facilities, educational institutions and retail anchors in the area is increasing, both in Harlem and in West Harlem. These include: Columbia University, Fairway, the City College of New York, the Cotton Club, the Apollo Theater, Harlem USA, Aaron Davis Hall, and the Studio Museum of Harlem. The Business Improvement District (BID) is also considering expansion.

The unique physical and economic characteristics of the West Harlem area contribute to the development of the area as a destination as well. Businesses in the area are stable, and almost all existing buildings are occupied. Existing and potential business owners have significant interest in the neighborhood, many are long-standing business owners, and there is increasingly specific involvement by the local community.

NOTE: The data for the economic development report presented here was gathered prior to the tragic events of 9/11. It should be noted that the site continues to have the following major development advantages:

i. An attractive waterfront location with some casual recreational uses in place.
ii. A location immediately between two existing waterfront parks that are well used by the community and New York City residents.
iii. High visibility
iv. In-place good vehicular access to major highways and commercial corridors.
v. Proximity to major educational institutions.
vi. An in-place regionally recognized retail anchor store.
vii. Location in an area eligible for public sector investment, e.g., the Upper Manhattan Empowerment Zone (UMEZ).

NEXT PAGE:
OWNERSHIP MAP



OWNERSHIP

SITE AREA ASSESSMENT

While the waterfront study area is City owned , the majority of sites in the study area are not City owned or managed.

Included in the study area, and located in the close vicinity of the waterfront study area are:

- Retail and entertainment destinations such as Fairway and the Cotton Club.
- Educational institutions including the Columbia University Arts Department and Faculty Housing, and PS School 195 for the Arts.
- Medium to high density residential developments including the Manhattanville Housing District and the Riverside Community Housing Developments.
- The 125th Street Subway Station (1,9)
- The MTA Bus Depot
- Four (4) Gas Stations and Numerous Auto Supply and Auto Repair Stores.
- Four (4) Meat Processing and Packaging Facilities
- Five (5) Short and Long Term Storage Facilities
- Ten (10) Short and Long Term Parking Lots and Low Rise Parking Garages.

As evidenced by the list of uses mentioned above, existing uses within the study area are primarily automotive, storage and food manufacturing related. Additionally, both the study area and waterfront study areas are in the immediate vicinity of:

- Other well-developed low and medium density middle income residential districts along Riverside Drive between 130th Street and 140th Street to the North and East of the site including Hamilton Heights, Stanley Court and Cromwell Apartments.
- The Manhattanville Housing District and the Residential and Commercial Districts to the East of Broadway toward Central Harlem.
- Two (2) parks including Riverbank State Park to the North and Riverside Park to the South, linked by Cherry Walk.
- Educational Institutions including the City College of New York, as well as PS 43 and Manhattanville Junior High, and PS 192.
- The 137th Street Subway Stop (1,9)

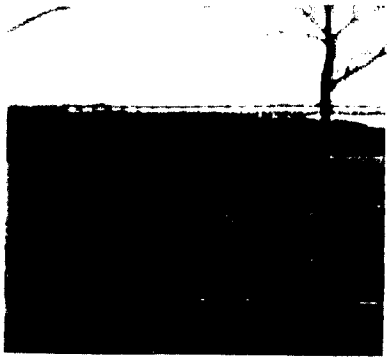
PRIME MARKET AREA ("PMA")

The Prime Market Area ("PMA") for this assessment was considered to be Community Boards 9 and 10, which includes the waterfront study area and the study area. The boundaries of the area are 155th Street to the North; Fifth Avenue to the East; Cathedral Avenue and Central Park North to the South; and the Hudson River to the West.

The Prime Market Area was established based on the site's locational attributes, analysis of geographical boundaries, neighboring communities, population trends, proximity to major employment centers, mass transit and general development patterns.

SITE ATTRIBUTES AND MITIGATING FACTORS

The study area is well located with respect to public transit and highway access and has demonstrated through the success of Fairway that its location is equally accessible and attractive to the local PMA market (including Columbia University and the local community), as well as the regional area including the Upper West Side Manhattan market to the south and the



Bronx and southern Westchester to the north.

Key site and area attributes positively impacting potential development opportunities in the study area include:

- Fairway and the Cotton Club, established local and regional retail and cultural destinations are located on the Site.
- Strong waterfront access and views
- Strong potential linkages with waterfront parks along the Hudson River.
- Strong visual recognition, (the viaduct is a district landmark).
- The study area is accessible by road, bus and sub way:
- By road, via the Henry Hudson Parkway, Broadway and 125th Street.
- By bus, via the M4 and M104 (along Broadway), M5 (along Riverside Drive); and from crosstown and the Bronx via Bronx 15 (along 125th Street).
- By subway via the 1,9 train; the study area is 20 to 25 minutes by subway from Midtown Manhattan.

The site can be easily accessed from the Bronx by road, train and bus; and is easily accessed from Southern Westchester and Northern New Jersey by road and bus.

The closest transit nodes are:

- The 125th Street Subway Station (1,9), located at the intersection of 125th Street and Broadway.
- The 137th Street Subway Station (1,9), located at the intersection of 137th Street and Broadway.
- The MTA bus stop at 125th and Broadway.

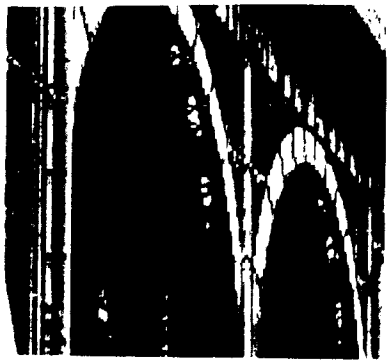
Major population centers are within a 20 to 30 minute (car, subway or bus) commute from the study area. Among these are all of Upper Manhattan (which includes all of Harlem), the Bronx, the Upper West Side and Midtown Manhattan in New York; and Bergen County in New Jersey.

The study area is within 15 to 20 minutes walking, and approximately 5 to 7 minutes by road from major cultural and retail destinations in Harlem including Aaron Davis Hall, the Apollo Theater, Harlem USA and the Studio Museum of Harlem.

The study area is directly accessible from the major North-South Throughway, the Henry Hudson Parkway. For South bound traffic it is the last exit to Harlem and the first leading to the Upper West Side. The next exit to the Upper West Side is the 72nd Street exit.

Conditions that control the type of development in the study area include:

- The study area does not offer walkable access to the Riverbank State Park, a popular recreational destination point.
- Is not within easy walking distance (5 to 10 minutes) of the Apollo Theater and Harlem USA , located in the central portion of West 125th Street.
- Not traditionally known as an office, commercial or tourist district



- Not accessible by an express subway line.
- Steep gradients limit accessibility and walkability.
- Overhead rail line and public housing create visual and physical barriers.
- Existing uses, such as the MTA Bus Depot, promote vacant streetscapes.

Although Harlem is experiencing significant revitalization at this time, the study area has not yet experienced the direct effects of the revitalization. This is primarily because the most significant revitalization efforts are along the central portion of 125th Street and along Frederick Douglass, Adam Clayton Powell and Malcolm X Boulevards. The study area and Harlem still suffer from negative image and perception in terms of safety and security.

ECONOMIC AND DEMOGRAPHIC ANALYSIS

Using data provided by CACI Marketing Systems, a national market research firm, the key economic and demographic characteristics of the PMA were assessed. Significant PMA resident and Upper Manhattan tourism trends were identified to demonstrate that the commercial and retail needs of the PMA are currently underserved. Additionally, significant trends positively impacting the development potential of the study area were assessed. Significant trends include:

- The Overall Strength of the Local and Regional Economy
- Significant Private Sector Investment & Public Funding
- Establishment of Industrial Clusters
- Revitalization in Harlem
- Waterfront and Open Space Redevelopment in New York City
- Economic and Demographic Characteristics

According to CACI Marketing Systems, economic and demographic indicators show improving trends for the PMA over the next five years.

Between 2000 and 2005, significant trends in the PMA include:

OVERALL INCREASE IN HOUSEHOLDS
In the PMA, households are projected to increase by 3 percent (2,607 households) from 85,490 to 88,097 households. Annually, this translates to 0.6 percent or 521 households.

INCREASE IN HOUSEHOLDS WITH INCOME LEVELS OVER $25,000
Households with income levels above $25,000 are projected to increase by 14 percent (6,091 households) from 43,702 to 49,793. Annually, this translates to 2.8 percent or 1,218 households.

Table 1 below summarizes the Annual Household Retail Spending of PMA households as compared to Upper Manhattan (considered to be North of 96th Street on the East Side and North of 110th Street on the West Side), Manhattan and New York City households.

Table 1: Summary of Annual Household Retail Spending (2000)

Category	PMA	Upper Manhattan	Manhattan	New York City
GAFO	3,914	3,982	4,456	4,280
Entertainment	1,205	1,409	1,615	1,474
Eating and Drinking	1,240	1,379	1,542	1,445
Grocery	3,222	3,331	3,428	3,379
Alcoholic Beverages	537	565	597	571
Retail Spending	$10,118	$10,666	$11,637	$11,149

Additionally, during this period, households with income levels below $25,000 are projected to decrease by 3,484 households (697 households annually) from 41,788 to 38,304. This accounts for an 8 percent decrease (or 1.6 percent annually). This indicates that households in the PMA are becoming wealthier.

OVERALL INCREASE IN MEDIAN HOUSEHOLD INCOMES

Overall median household incomes are projected to increase by 13.6 percent ($3,596) from $26,538 to $30,134. Annually, this translates to 2.7 percent or $719. Although this is significant, the PMA median household income ($26,538) levels are still below the New York City ($37,442) and national ($39,918) levels.

However, median household income levels for the 35 to 44 and 45 to 54 age cohorts are higher. The median household income levels for these age cohorts are experiencing significant increases, and are approaching New York City and national levels:

35 to 44 Age Cohort - The median household income level is $32,476 and is projected to increase by 13.3 percent ($4,326) to $36,802.

45 to 54 Age Cohort - The median household income level is $34,766 and is projected to increase by 11.2 percent ($3,890) to $38,656.

AVERAGE HOUSEHOLD SIZE

The average household size in the PMA is 2.35, smaller than the national average household size of 2.6.

AGE AND ETHNICITY

Consistent with trends throughout the nation, the overall average age of the population is 34.5. The average age is expected to increase from 34.5 to 35.4 between the years 2000 and 2005.

The ethnicity of the population in the PMA is more diverse than the nation. In 2000, for example non-whites comprise 85 percent of the population in the PMA. The majority of non-whites in the PMA are African American (146,547) and Hispanic (57,928).

ANNUAL HOUSEHOLD RETAIL SPENDING

Total annual household retail expenditures in 2000 were analyzed for the following categories: General Apparel Furnishing and Other Retail ("GAFO"), Entertainment, Eating and Drinking, Grocery and Alcoholic Beverages.

Annual retail expenditures were $10,118 per PMA household. Of this, $3,914 was spent on General Apparel Furnishing and Other Retail ("GAFO"), $1,205 on Entertainment, $1,240 on Eating and Drinking, $3,222 on Grocery and $537 on Alcoholic Beverages.

The table above summarizes annual household retail spending in the PMA, Upper Manhattan, Manhattan and New York City households. Annual spending in these households is higher than spending in the same categories in households nationwide - both on a total per dollar basis and as a percentage of median household income. This is a reflection of the higher levels of spending in the New York City area due to higher costs of goods and services and the strong tendency to entertain, meet people and eat away from home.

BUSINESS AND EMPLOYMENT

There are approximately 3,031 business establishments in the PMA. Approximately 41 percent of the business establishments in Upper Manhattan are located in the PMA. Business establishments in Upper Manhattan translate to less than 8 percent of the total number of businesses in Manhattan (97,458) and less than 3 percent the total num-

ber of businesses in New York City (214,713).

Approximately 45 to 50 percent of businesses in the PMA (and Upper Manhattan) are small businesses with 1 to 4 employees, and 22 to 25 percent are small businesses with up to 50 employees.

The primary industries in Upper Manhattan (which includes the PMA) are retail trade and services industries. Retail trade includes food stores (513), eating and drinking places (698) and other retail (605); and services includes automotive, motion pictures, amusements and educational institutions.

Upper Manhattan (and the PMA) have low business to residential ratios of 0.15 to 0.20. These numbers are 4 to 5 times lower than the business to residential ratio in Manhattan of 1.02.

Compared to the PMA, the study area has a relatively small employment and business base. The total business base is estimated to be 96 employers and the total employee base is estimated to be under 2,000 employees. Major employers in and around the study area include Columbia University and City College of New York. Columbia University is one of the top ten employers in New York City. Major private businesses include Fairway, Skyline Windows, Smitty's Meat Products and the Alexander Doll Factory. Public transportation and utilities include the MTA Bus Depot. Major industries include auto supply and auto repair, storage, some retail and eating and drinking and meat processing and packing.

PMA RESIDENT TRENDS

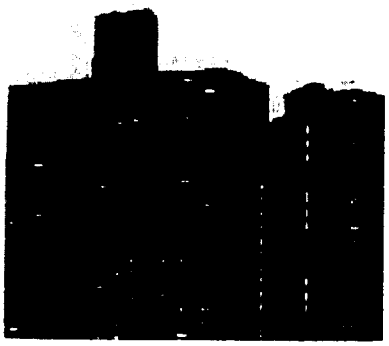
Consistent with trends in New York City, overall economic and demographic trends in the PMA are positive. Significant PMA resident trends between 2000 and 2005 include:

- 14 percent (6,091 households) increase in PMA house holds with median income levels above $25,000 from 43,702 to 49,793.
- A corresponding 8 percent (3,484 households) decrease in PMA households with median income levels below $25,000 from 41,788 to 38,304.
- Average household size of 2.35, 7 to 11 percent smaller than the average household size of 2.52 in New York City and 2.59 in the nation.
- 13.6 percent ($3,596) increase in PMA median house hold income from $26,538 to $30,134.
- High level of diversity within the community.
- Non-white ethnic groups comprise approximately 85 per cent of PMA households (85,490 households). Of this, approximately 70 percent are African American house holds and 27 percent are Hispanic households.

Smaller households tend to be non-traditional households with double incomes and no children. These households have more disposable income than traditional households with children.

The PMA has low current levels of home ownership and education attainment:

- Home Ownership - The owner renter ratio in the PMA is 7 to 93.
- Education Attainment - 58 percent of the population has at least a high school education. Of these, 20 percent have a college degree.



PMA residents have a high level of dependency on public transportation and long commute times. 70 percent of the population uses public transportation to journey to work and approximately 15 percent drive. This indicates that prime locations on the site are within easy walking distance of the subway station, for example 125th Street and lower Broadway. The average commute time is 35 minutes which indicates that most of the population does not work in the PMA.

The PMA has high retail spending potential for General Apparel Furnishing and Other (GAFO) retail services, Entertainment, Grocery and Eating and Drinking categories.

Annual retail expenditures in the PMA were $10,118 per household, approximately 38 percent of the PMA's median household income of $26,538. This is compared to a retail spending potential in New York City of $11,149 per household, approximately 30 percent of New York City's median household income of $37,442.

Although median household incomes in the PMA are 29 percent lower than median household incomes in New York City, annual retail expenditures per household in the PMA are only 10 percent lower than annual retail expenditures in New York City.

Despite the PMA's positive economic and demographic growth trends the commercial and retail needs of the PMA are currently underserved.

The existing supply of support and service retail and eating and drinking facilities in the PMA is limited. Additionally, quality retail and national and regional retailers and eating and drinking facilities are located at transit nodes on or near the revitalized corridor of 125th Street located between Harlem USA, the Apollo Theater and the Studio Museum of Harlem.

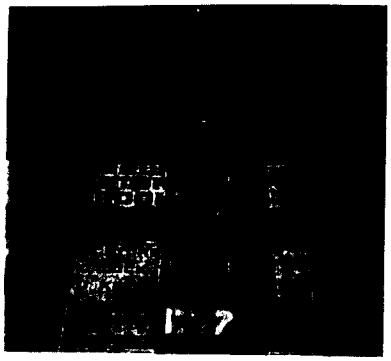
The study area has no national support or service retail and eating and drinking facilities are limited to facilities in the below $10 per person category including McDonald's, Taco Bell, Kentucky Fried Chicken, Chinese take out and Floridita.

According to the Initiative for a Competitive Inner City ("ICIC"):

> PMA households have high disposable incomes due to low levels of home ownership (the PMA has an owner renter ratio of 8:92). PMA households have up to six times as much buying power per square mile as surrounding areas. PMA demand for support and service retail such as groceries and apparel is an esti-mated $116 million per square mile as compared to $53 million per square mile for all retail categories in the New York metro politan area.
>
> Retailers who have opened in the PMA and comparable areas have achieved average store sales and sales per square foot in these stores that are 40 to 45 percent higher than regional averages for these indicators. Old Navy, the New York Sports Club and Duane Reade franchises in Harlem are among the fastest growing and the highest sales generators in the chains.

UPPER MANHATTAN TOURIST TRENDS

Before the tragic events of September 11, New York City overall had been experiencing steady and strong increases in the number of visitors and visitor spending. In 2000, New York City was rated the most popular vacation destination in the United States for overseas visitors



and the second most popular vacation destination for domestic travelers. Visitation to Upper Manhattan represents about 2 percent of the visitors to New York City. According to the New York City Convention and Visitors Bureau, visitors to New York City in 2000:

- Totaled 36.7 million (30.1 million domestic, 6.6 million international) or an increase of 11 percent over the prior year.
- Tourism in New York City in 2001 was anticipated to increase by approximately 5 percent (1.7 million) from 36.7 million to 38.4 million.
- The increase in domestic travel in recent years was mainly attributable to the strength of the U.S. economy.
- The largest percentage of international tourists are from Europe, following in descending order by Canada, Asia and South America.

After dining the second most popular activity of domestic leisure visitors in New York City is attending museums, concerts, and plays. According to the NYCVB, tourism spending was expected to outpace the increase in visitor volume for several two primary reasons:

(1) growth in international travelers, who consistently spend more, due to favorable exchange rates.
(2) growth in overnight domestic travelers, who will spend more as a result of a longer stay.

On average, international visitors spend $115 per person daily while traveling in the U.S. Domestic visitors spend on average $148 per person daily; and domestic visitors spend more than international visitors in the entertainment and eating/drinking categories.

In 2000, according to the New York City Convention and Visitors Bureau and Audience and Research Analysis December 2000 Study for UMEZ, visitors to Upper Manhattan account for approximately 2 percent of all visitors to New York City, or 817,000 visitors annually. Of these, 533,000 travel to cultural attractions in Harlem and 284,000 are on restricted bus tours.

Recent research and audience surveys found that the Apollo Theater is the most widely recognized and visited attraction in Upper Manhattan. Of the surveyed visitors to cultural attractions, one out of five traveled to New York City to visit Upper Manhattan; and approximately six percent would extend their stay to visit Upper Manhattan.

Upper Manhattan is an area strongly associated with jazz and other related activities. Among those visiting Upper Manhattan, 48 percent identify the area as being influential to jazz music. Other memorable attractions include ethnic food and gospel music at church.

Most of the Upper Manhattan visitors tour the area as part of a travel package. This trend is seen most apparently in international travelers. One out of three international travelers visit Harlem in guided tours using hop on-hop off bus services. Tour buses to Harlem include Harlem Spirituals, Harlem Your Way and Gray Lines. Typical tours include Gospel tours, soul food and jazz tours and tours to the Apollo Theater.

Upper Manhattan is a destination for family and group travel. Approximately 40 percent of all Upper Manhattan visitors bring their families. Among them, one out of six families are traveling with

children under 18 years of age. The Studio Museum in Harlem, The Apollo Theater, and The Cloisters prove to be popular attractions for families traveling with children.

Manhattan residents and International travelers account for the largest volume of visitors to cultural attractions in Upper Manhattan. Each group accounts for approximately 25 percent of the total visitors.

In addition, one-third of the total Upper Manhattan visitors are from outside the United States, with French, German and Italian visitors accounting for the largest volume of visitors.

Upper Manhattan attracts ethnically diverse groups. White tourists comprise the largest percentage of tourists visiting Upper Manhattan, followed by African American tourists who make up 37 percent. In addition, 14 percent of all visitors are of Hispanic origin.

It is observed that most of the visitors are young and are above average income earners. The median age for all tourists visiting Upper Manhattan's cultural attractions is 39-years old. However, is estimated that over 49 percent of all Harlem tourists are below 35 years of age.

Average household income for all visitors is $67,700, with over 50 percent earning at least $50,000 annually.

Average daily visitor spending for visitors to Upper Manhattan is approximately $48. Of this, approximately 46 percent ($23) is spent on eating and drinking.

Positive PMA economic and demographic trends and increases in tourism coupled with the lack of supply of retail and eating and drinking facilities has further increased the strong latent demand for development. This has promoted the influx of capital and increase in the levels of development in the PMA in the past 7 years.

Public and private sector investments in the PMA include: (1) Federal, State and City investments through the Upper Manhattan Empowerment Zone ("UMEZ") and related industry and small business specific initiatives such as the Business Resource and Investment Center ("BRISC") and HIWay 125; and (2) Private sector investments through commercial banks including Chase, Fleet and Citigroup.

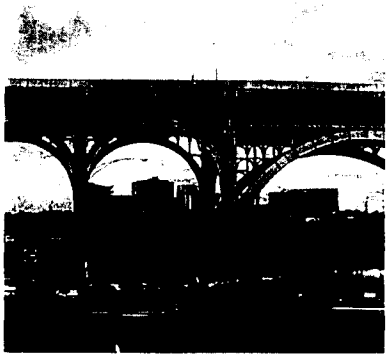
85 to 90 percent of private sector investments are targeted primarily toward commercial and retail development while 10 to 15 percent is lending for residential development. Fleet is increasing its investment in residential development.

As the PMA economic and demographic trends improve and the PMA stabilizes, home ownership initiatives and affordable housing developments are underway. Significant initiatives include Abyssinian Development Corporation's Homeworks program and Housing Preservation and Development Corporation's ("HPD") initiatives for development of affordable housing through public private partnerships.

TRENDS IMPACTING DEVELOPMENT POTENTIAL

As defined earlier, the overall strength of the local and regional economy positively impact the development potential of the study area. Specific trends include:

- As of the fourth quarter of 2000, the New York metropolitan region has been experiencing consistent



economic growth for the eighth year in a row. The area has experienced significant private sector job growth and strong leasing and sales activity. Currently this growth is slowing, but is still positive.

- According to the ULI Market Profiles 2000, the New York metropolitan region has a low average unemployment rate of approximately 4.58 percent, the lowest in ten years.
- The region is at full employment with labor shortages affecting the region.
- In 2001, job growth in the region started to slow down, but in both 1999 and 2000, approximately 205,000 pri vate sector jobs were created in the New York metropolitan region each year.
- Of these, approximately 77,000 were created in New York City. Over 60 percent of these jobs were in the services sector (including legal services, computer programming, data processing, health care services, engineering and management) and 13 percent were created in FIRE (Finance, Insurance and Real Estate). These jobs tend to be higher income jobs, averaging approximately $50,000 annually. The creation of these higher income jobs is raising median household incomes in the New York City region.
- Significant Private Sector Investment and Public Funding
- There is significant private sector investment and public funding for development and revitalization projects in Upper Manhattan, specifically in Harlem. Harlem is viewed as New York City's next economic development frontier.
- Since the mid-1990s after the development of the Upper Manhattan Empowerment Zone ("UMEZ"), private developers have been actively seeking opportunities in Harlem to take advantage of the public funding opportunities offered by the city and the state.

Public Sector Funding Opportunities include funding from The Upper Manhattan Empowerment Zone Development Corporation ("UMEZ") - a non-profit organization created in 1994 to promote revitalization of distressed communities by developing integrated investment strategies using public funds and tax incentives as catalysts for private investment. UMEZ was initially designated for ten years (till 2004) and has recently been awarded a five year extension. UMEZ is accompanied by a federal grant of $100 million, which was matched by the city and state, creating a total public investment pool of $300 million.

Other public sector agencies with initiatives and funding opportunities for redevelopment and economic development include the New York City Economic Development Corporation ("NYC EDC"), the Empire State Development Corporation ("ESDC") and the Harlem Community Development Corporation ("HCDC").

Accompanying the state and city backed incentive programs, private sector commercial banks are investing in Harlem. Commercial bank financing includes acquisition, pre-development, construction and permanent financing. Major private sector commercial banks in the area are Chase, Fleet and Citigroup.

ESTABLISHMENT OF INDUSTRIAL CLUSTERS

UMEZ currently funds diverse economic initiatives for small and large businesses and for not-for-profit organizations in order to create new

New York City
Economic Development
Corporation

THIS PAGE:
MAP SHOWING EMPOWERMENT ZONE

jobs and increase entrepreneurship in Upper Manhattan. Potential candidates could include organizations that are currently supporting economic sectoral initiatives and pursuing the establishment of industrial clusters throughout New York City. These include but are not limited to:

New York Industrial Retention Network ("NYIRN")- a not-for-profit that was established to strengthen New York's manufacturing jobs. According to NYIRN, 51% of food manufacturing companies surveyed are looking to relocate their businesses in the next three years, and 38% are considering leaving New York City to find affordable and appropriate space. These at risk companies provide a total of 1,374 jobs.

Garment Industry Development Corporation ("GIDC")- a not-for-profit organization founded through a collaborative effort involving industry, labor and government officials for the purpose of strengthening the garment industry in New York City, which had been steadily losing jobs, yet remained the largest source of manufacturing jobs and an important employer of low-income residents with limited language skills. According to GIDC, the apparel industry has traditionally provided an opportunity for immigrant workers to not only work but to establish their own businesses as apparel production contractors. Start-up costs are minimal (approximately $30,000), with possible equipment rental and little required inventory.

The creation of the Harlem Internet Way 125 (HIWay 125) Technology District (the "District"), designated to UMEZ by the NYC EDC, is another example of an economic initiative that was established to add to the economic revitalization of Upper Manhattan. The initiative's main objective is to attract high technology companies to Upper Manhattan to obtain job growth and stimulate overall economic development. The District spans the 125th street corridor, from 2nd to 12th Avenues.

There is also an increasing interest in locating high-tech, bio-tech, and nano-tech industries in the area which are compatible with existing and future manufacturing uses.

REVITALIZATION IN HARLEM

According to UMEZ, development and revitalization initiatives in Harlem are focused on:

- Economic and business development
- Development and/or restoration of residential and neigh borhood retail.
- Development of destination and specialty retail and enter tainment nodes and districts.

Major investments and support by the private and public sector in Harlem further demonstrate the confidence in the area's long-term revitalization. One indicator of private sector confidence is the growing presence of national retailers in the neighborhood. New public initiatives and incentive programs, such as through UMEZ, also are implementing new financial and public policy efforts focusing on revitalization of the business community and on the creation of new jobs.

The various streetscape and transit initiatives undertaken by the Harlem Community Development Corp. and the Metropolitan Transit Authority provide major enhancements to road access and the public transportation network in the area. These projects are committed to improving access to Harlem for city residents in other boroughs and for all tourists who visit Harlem for its cultural and artistic heritage.

New York City
Economic Development
Corporation

OVERALL DEVELOPMENT TRENDS

At this time, Harlem, particularly the vibrant West 125th Street commercial corridor and the surrounding area, are undergoing a "Second Renaissance". The area is experiencing economic growth and an increase in tourism and entertainment spending promoting the revitalization of its retail, residential and cultural districts.

COMMERCIAL

In the waterfront study area, numerous recent and proposed economic and business development initiatives within and adjacent to the study area include:

- Fairway's recent purchase of the site south of Fairway to eventually move their parking off of EDC's waterfront site.
- Long term lease for 2500 SF upscale restaurant and retail facility along 12th Avenue
- Proposal for 8300 SF HIWay 125 technology incubator facility at 3280 Broadway
- Proposal over the next 3 to 5 years by Columbia University's School of the Arts proposal to redevelop the School of the Arts to include a Visual Arts Department, with studios, various media facilities, technology center, support retail and eating and drinking facilities and screening rooms, art galleries and theaters.
- City College of New York has an "accelerator" (similar to a technology incubator) moving to the campus. Additionally, City College has adult education programs promoting entrepreneurship and business ownership within the community.

Other developments and notable features in Harlem include:

- Redevelopment of brownstones and medium rise housing through public private partnerships throughout Harlem under the Housing Preservation and Development ("HPD") program.
- Dwyer Warehouse: Planned mixed-use residential and commercial development at St. Nicholas Avenue and 123rd Street.

RETAIL DEVELOPMENT ALONG 125TH STREET

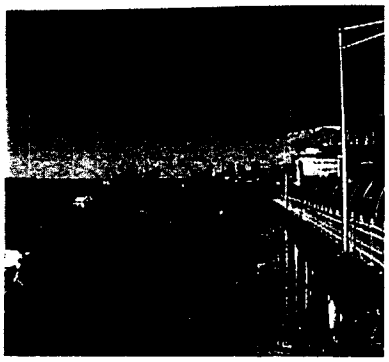
Harlem USA: The $66 million and 285,000 square-foot shopping plaza on 125th Street opened for operations late 1999. The complex houses a Magic Johnson nine-screen multiplex, a Disney Store, an Old Navy, HMV Records, Modell's Sporting Goods, a branch of the New York Sports Club, and Chase Manhattan Bank.

Harlem Center Mall: The development of a 545,000 square foot mixed-use complex on 125th Street between Malcolm X Boulevard and State Office Building was announced. The design development for this $50 million project is in progress.

Pathmark: A $15 million, 50,000 square foot store at 125th Street and Lexington Avenue opened in April 1999. This is the fist major chain supermarket in Harlem for more than three decades.

Starbucks: In May 1999 at 125th Street and Lenox Avenue, the chain's newly opened store brewed its first cup of coffee.

Wilsons Leather: In late 2000, Wilsons Leather opened up a retail outlet on 125th Street opposite the Apollo Theater.



CULTURAL DEVELOPMENTS

The Studio Museum of Harlem: Financed and under construction for expansion and renovation of the sculpture garden, auditorium, and facade. The museum houses African, African-American, and Caribbean art and is located on West 125th Street.

Julia de Burgos Latino Cultural Center: Development of operational plan for cultural center located on E. 106th Street and Lexington Avenue.

Lenox Lounge: Restoration of the jazz club reopened in January, 2000.

Dance Theatre of Harlem: Proposed facility improvements for the school building located on West 152nd Street. The theater hosts a variety of dance performances regularly.

El Museo del Barrio: The museum may relocate to the building that is currently occupied (but to be vacated) by the Museum of the City of New York. This proposal is currently under discussion.

The Upper Manhattan Visitors & Information Center: Proposed development of a visitor's center in the historic Corn Exchange Building located at 125th Street and Park Avenue. The Center will be the "welcoming center" for all tourists visiting Upper Manhattan and will provide check-in services, referral services to tourists and residents on the historic attractions and cultural events, and promotional services for the Upper Manhattan area.

RESIDENTIAL ANCHOR

Partnership Plazas: The city's Department of Housing Preservation and Development is administering the program in cooperation with the NYC Housing Partnership which intends to encourage retail development in areas where the city has invested heavily in housing. Four mixed-used cooperative and retail developments are present in Harlem:

- Renaissance Plaza - 240 cooperative apartments and 60,000 square foot of ground-level commercial/retail space located at the corner of Malcolm X Boulevard and West 116th Street. Current anchor retail tenants include Rite-Aid, Petland Discounts, Ashley Stewart, and Met Food Supermarket.
- Millennium on Fifth - residential condominium with 129 owner-occupied units and 25,000 square feet of retail space. The building is located at the corner of Fifth Avenue and West 116th Street in Upper Manhattan.
- The Strivers - A fourteen-story residential building with 169 owner-occupied condominium units and 32,000 square feet of commercial/retail space with frontage along both Frederick Douglas Boulevard and West 135th Street.
- Harlem Plaza West - Development of two buildings comprised of approximately 11,000 square feet of ground floor leaseable retail space and 60 condominium units. The site is located on Malcolm X Boulevard and West 117th Street.
- Mount Morris Park West Homeownership Project: The 1-9 Mount Morris Park West, once known as "The Ruins", is about to be redeveloped into a market rate 36-unit homeownership project. The design scheme offers brownstone-like layouts in simplex and duplex units, each with a park view.
- Homeworks: Renovation and sale of city-owned vacant

properties as 1-4 family homes to eligible buyers. There are 20 brownstone buildings located from West 120th to 123rd Streets between Frederick Douglass and Adam Clayton Powell Jr. Boulevards that are currently under construction.

CRITICAL ISSUES AND POTENTIAL DEVELOPMENT OPPORTUNITIES

Market based development in the study area is limited due to:

- the distance of the study area from Harlem tourist and resident destinations such as Harlem USA and the Apollo
- Limited Floor Area Ratio ("FAR") zoning
- Limited residential population in the immediate waterfront study area

Yet, study area development is promoted by the:

Presence of strong stakeholders, including Fairway and Columbia University, with positive plans for development of the study area.

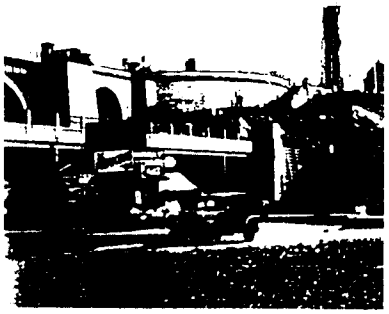
Discussions with business and site owners indicate that:

- There is significant business interest in the area and there are numerous, long-standing business owners.
- The business and site owners view the study area as having potential for development into a mixed-use area with retail and other uses.
- The development of a mixed-use area would promote economic development, viability of the area and also increase the number of visitors to the area.
- Existing issues to be addressed include hectic traffic pat terns and parking in the area.
- Numerous prime locations along 12th Avenue and Broadway Numerous have short term leases.
- Numerous recent and proposed economic and busi ness development initiatives within and adjacent to the study area indicate that market based develop ment is poised to occur.

SITE TOPOGRAPHY

As a result of the topography and the barriers to the east, the study area can be developed as an destination enclave with a distinct character. If developed as a distinct destination, the study area has the potential to become a third node or attraction on 125th Street. The development potential as a destination is supported by the following factors:

- The development of clusters of complementary uses to attract the critical mass of development and patronage necessary to support and promote devel opment of the study area.
- The presence of a strong visual landmark, the viaduct.
- Strong economic development opportunity for the development of retail and work environments with a strong local and regional draw if these services are distinctive services not available in the broader com munity.
- Potential opportunities for development and adaptive reuse of the industrial buildings to suit a combination of flex office, light industrial and retail uses.



TRADE DISTRICTS

The study area has a manufacturing and trade image that is appealing. Trade districts could be developed that include:

- Home goods and services
- Antiques and architectural hardware
- Printing
- Woodworking

The community, UMEZ, HCDC, and the 125th Street BID are looking to develop local entrepreneurship as opposed to just creating new jobs. The developments of a "trade district" will strengthen the existing business base, making the potential for local entrepreneurship more viable. Additionally:

- This concept would be further strengthened by using zoning overlays to promote strengthening and stabilizing of the market.
- There are tax incentives available from UMEZ, the State and the City that target specific industries. These incentives can be used to attract the desired mix of industries to the trade district.

ADDITIONAL ANALYSIS

The Real Estate Advisory Services Practice ("REAS") of Ernst & Young LLP ("E&Y") was also engaged to determine the development potential of several types of uses including: 1) revenue generating uses on the waterfront ; 2) ferry uses and; 3) commercial uses in the study area.

Ernst and Young analyzed the following uses complementary to existing uses and community visions:

- Physical and visual linkages for the Hudson River park system, specifically between Cherry Walk, adjacent to the South of the study area, and Riverbank State Park, to the North of the study area
- Uses that promote economic development along the proposed Harlem Piers and the surrounding area
- Revenue generating uses that cover waterfront open-space maintenance and operating costs and other costs related to redevelopment.
- Economic Assessment of the Vision Plan
- Uses suggested in the Vision Plan
- Potential revenue generating uses that would contribute to the maintenance and operations of the proposed piers
- A ferry market assessment

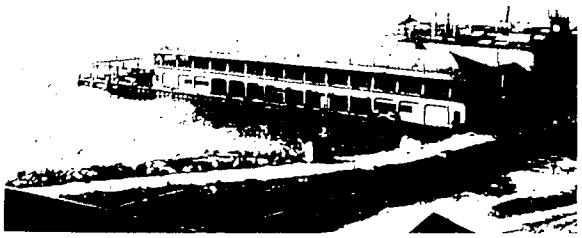
Based on E&Y's understanding and discussions with NYC EDC, this revitalization includes the development of:

VISION PLAN USES

There is local community support for each of the uses suggested in the Vision Plan, ie. aquatic learning center, small boat dock, fishing and other recreational-type, water-borne activities.

Yet, it is critical to note that as none of these uses is revenue generating. Instead the Vision Plan uses are more focused on the potential to draw visitors, enhance the waterfront and complement the broader area and the potential to promote active and large-scale use of the waterfront.

E&Y's assessment indicates that of these non-revenue generating



uses, fishing and other recreational water-borne activities had the strongest potential to draw visitors from the study area and the broader area. Fishing is already a popular activity on Harlem Piers and with better facilities there it is believed that the interest in fishing will grow.

Recreational water borne activities are increasingly attractive to New York City residents. In the past 5 to 10 years with the revitalization of New York City's waterfront, the waterfront is becoming increasingly attractive and accessible to broader segments of the population.

FERRY MARKET ASSESSMENT - HURDLES TO CLEAR

Our market assessment indicates that although there is considerable community support for a full-service commuter ferry facility on Harlem Piers, there is insufficient demand both from potential users and operators of the ferry service given the current conditions as a sole origin/destination landing. These conditions could change with the increased economic activity and investment the community and this Master Plan envisions.

From Table 6, the existing and potential demand for ferry uses is assumed to come from two (2) primary demand segments: (1) Primary Market Area (PMA) residents; and (2) Non-Resident Tourists to Upper Manhattan.

Demand from PMA Residents:

The potential aggregate weekday demand for the ferry terminal from the two potential demand sources is 66 transit trips per weekday or 330 per working week. NY Waterways, the main commuter ferry operator in New York City, requires a weekly ridership of 25,000 people at $5.00 per ride in order to consider operating a commuter ferry service.

According to ferry operator demand interviews, the site's potential for a recreational-type ferry service in the short term is also very minimal. Ferry operator comments included that the site lacks sufficient demand to warrant support for a recreational-type ferry service. Additionally, current combination tours (gospel and excursion boat ride) are capturing most of the market from tourist demand in and around the site's PMA. The site is not located proximate to numerous tourist and retail venues and does not have high visibility and pedestrian traffic levels, therefore not making it a suitable location for a recreational-type ferry service terminal.

A potential site would not be considered exclusively for a recreational-type ferry service. NY Waterways, for example, has a multi-dimensional infrastructure built at a potential site to accommodate both a commuter and recreational-type ferry service. This economies-of-scale approach limits the risk borne by the operator should there be a shortfall in demand for the recreational-type ferry service. According to NY Waterways business trend information, the demand for the recreational-type ferry service is susceptible to fluctuations in the economy, as a downturn in the economy negatively affects the demand for recreational-type ferry services.

Typically, a ferry operator's return on investment ("ROI") is 20%. According to NY Waterways, the cost to operate a recreational-type ferry service is $600 per hour. Assuming a 10-hour day, 250 recreational ferry riders at $24 per tour are needed in order for NY Waterways to break even. 300 riders are needed for a 20% ROI.

The site currently lacks destination appeal due to its lack of:

- Parking facilities

THIS PAGE:
HISTORIC VIEW OF FERRY STATION AT THE END OF W125 STREET.

NEXT PAGE TOP:
TABLE OF AVERAGE PMA RESIDENT WEEKDAY DEMAND FOR FERRY SERVICE

NEXT PAGE MIDDLE:
TABLE OF POTENTIAL ESTIMATED OPEN SPACE ANNUAL MAINTENANCE COSTS

NEXT PAGE BOTTOM:
TABLE OF TOTAL POTENTIAL GROSS REVENUE

AVERAGE PMA RESIDENT WEEKDAY DEMAND FOR FERRY SERVICE

Households	Trips Using Transit (3.2%)	Trips Using Ferry (2.0%)
PMA 88,097	2,828	57

Source: E&Y assembled data

AVERAGE PMA NON-RESIDENT WEEKDAY DEMAND FOR FERRY SERVICE

Upper Manhattan Non-Resident Tourists	Non-Resident Tourists Trips Using Transit (30.0%)	Trips Using Ferry (2.0%)
1,460	438	9

Source: E&Y assembled data

POTENTIAL ESTIMATED OPEN SPACE
ANNUAL MAINTENANCE COSTS

Total Development Program (SF)	Cost (PSF) Total	Potential
Estimated Costs		
72,000	$2.50	$180,000

That is, for the open space to be self-sustaining, the waterfront area needs to generate at least $180,000

TOTAL POTENTIAL GROSS REVENUE

Restaurant	$150,000
Retail	$50,000
Fees and Permits	$3,750
Total Potential	$203,750

- Leisure activity (i.e., eating and drinking, retail)
- Curb appeal (i.e., streetscape)

Although full ferry service may not currently be supportable, changing economic factors and policy perspectives, and future development make it a strong potential use in the near future. In addition, much as is planned along the East River, ferry service with origins and destinations along the Hudson River could accommodate 125th Street as a "local" stop along the route. Ferry ridership in the New York, New Jersey area has dramatically increased since September 11th. Existing ferry service is discussed in greater detail in the Traffic Section of this report.

WATERFRONT AREA - OPEN SPACE MAINTENANCE COSTS

To provide a high standard of maintenance, the City needs a source of funds. Given the City's current options, generating revenue on site is one of the only ways to assure excellent park maintenance; however, EDC will continue to consider ideas for viable alternatives.

WATERFRONT AREA - POTENTIAL REVENUE GENERATING USES

Assessment indicates that revenue-generating uses that serve local area residents and visitors to the waterfront include:

- a concession stand
- a more formal restaurant
- a catering/private party area - with both outdoor and indoor components
- Retail - A small store with goods and services promoting active recreation on the waterfront, such as purchase and rental of sports equipment

It is proposed that development on the waterfront for the accommodation of revenue generating uses be limited to approximately 8,000 SF [Restaurant - 6,000 SF (including party room); Retail - 2,000 SF]. Development will be located to the North of the site so that it will not block the view or divide the waterfront area expanse.

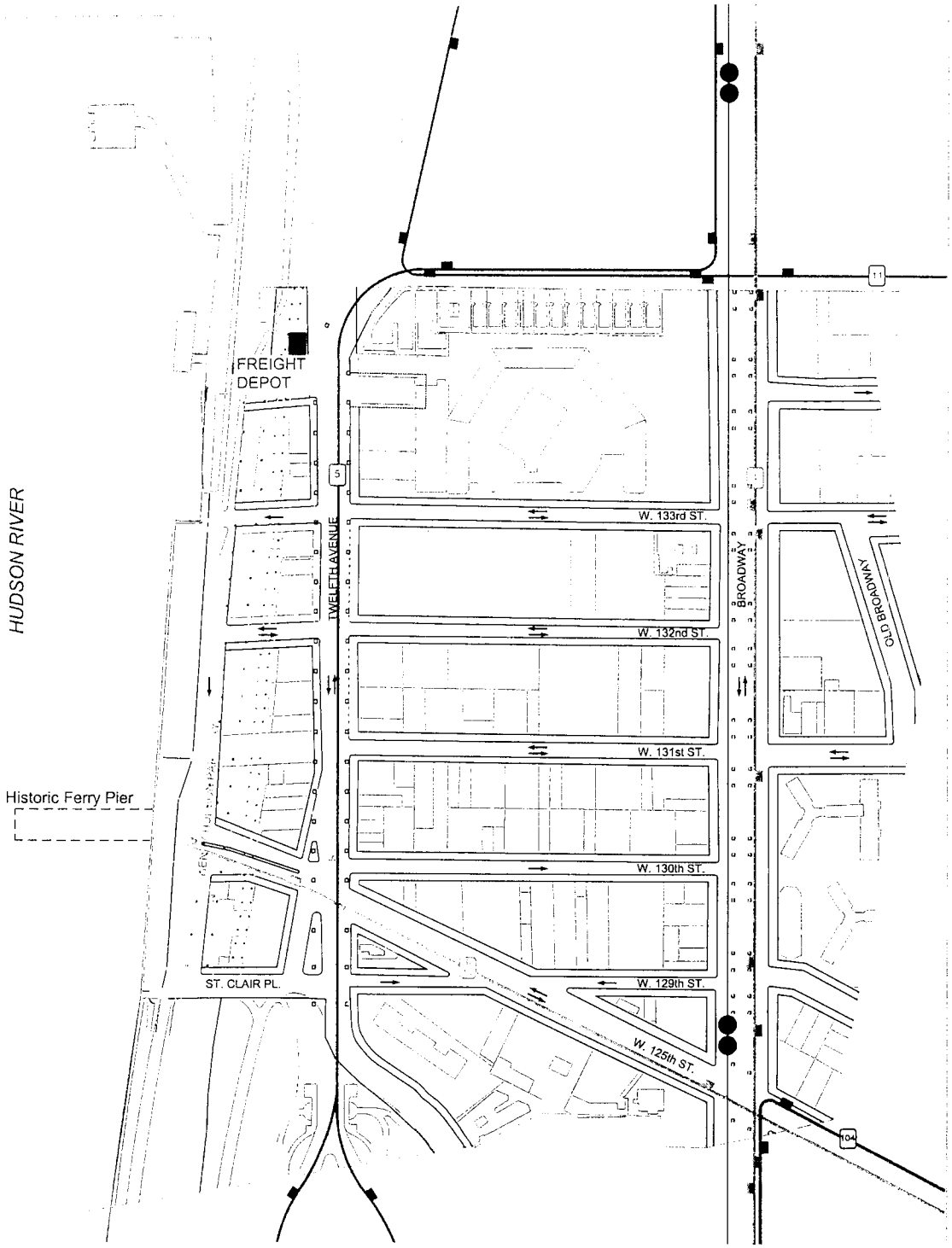
Estimated annual revenues from restaurant and retail development on the waterfront are over $200,000, sufficient to defray the annual open space maintenance costs and promote the development of a self-sustaining open space.

Depending on the operating structure adopted, fundraising through private donations and public funding may be an additional source of funds.

WATERFRONT AREA - POTENTIAL DEVELOPMENT/OPERATING Structure for waterfront area

There are several potential options for the development and operation of the waterfront including:

- Option 1- EDC acts as owner, developer, operator and master lessor
- Option 2- EDC owns and develops the land but sets up a partnership with a local development corporation ("LDC") or community-based organization to act as operator of the open space and lessor of the developed space
- Option 3 - EDC owns the land but leases the land to a developer who will develop and operate the open space and the building, and will act as lessor for the building. This option will generate less revenue since some revenue will have to repay development costs.



Within the Study Area ● ●

Two Blocks East of the Study Area ● ● ● ●

Bus Lines

Within the Study Area 5 11 104

Two Blocks East of the Study Area 3 60 100

● BX15 is the only bus that runs west of Broadway, close to the waterfront.

THIS PAGE:
TRANSPORTATION MAP
SHOWING SUBWAYS AND
BUSES IN AND AROUND
THE STUDY AREA

TRAFFIC AND PARKING

TRAFFIC OVERVIEW

As part of the New York City Economic Development Corporation's team led by W-Architecture, the Sam Schwartz Company (SSC) analyzed public transportation, traffic, and parking conditions along the waterfront area of West Harlem.

The traffic and transportation survey of the study area provides recommendations to improve traffic flow and maximize open space along the waterfront. To address the likely increase in the number of visitors and users of the future waterfront area, recommendations include: improving pedestrian access and safety; mitigating demands of local traffic with through traffic (i.e., Henry Hudson Parkway users); improving public transportation; and increasing local on- and off-street parking availability. Traffic calming measures such as neckdowns, crosswalk and increased sidewalk widths are suggested as part of an overall streetscape plan for the study area.

A short- and long-term plan was developed. As detailed in the recommendations section of this report, the short-term plan provides recommendations that can be implemented within 1-3 years (Figure 2). These recommendations will set the stage for the long-term plan, which would require major capital improvements and a minimum of ten years to implement (Figure 3).

EXISTING CONDITIONS

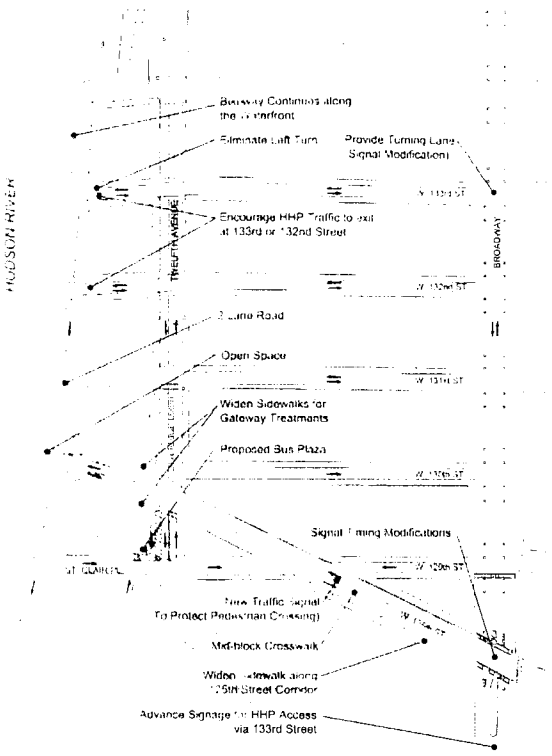
The West Harlem Master Plan study area is located in a primarily manufacturing district in West Harlem/Manhattanville. It is bounded by 135th Street to the north, 125th Street to the south, Broadway/Old Broadway to the east, and the Hudson River to the west. From the east, the land slopes gradually down to the Hudson River, where the street grid extends to the edge of the Hudson River.

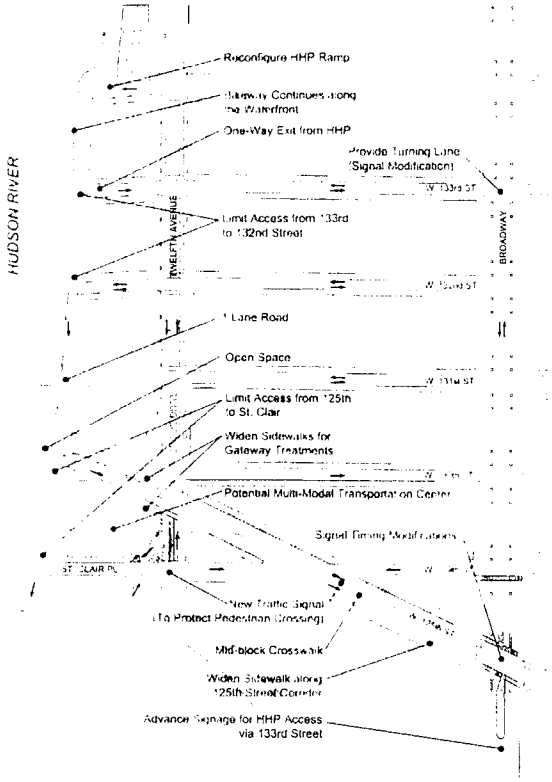
Four elevated structures run parallel to the Hudson River in the study area: Riverside Drive Viaduct, Amtrak's Empire Corridor rail line; the Henry Hudson Parkway; and the Subway which runs above 125th Street. Riverside Drive runs above 12th Avenue between 125th and 135th Street. Amtrak's Empire Corridor, which provides rail passenger service between New York City and Albany, passes through the study area on a two-track viaduct approximately 20 to 25 feet above grade. Immediately to the west of this structure, the six lane Henry Hudson Parkway spans the area on a separate viaduct located approximately 25 to 30 feet above grade. The 1 and 9 trains travel along an elevated portion of the subway in the study area.

Broadway and 125th Street are the primary roadways serving the study area. Broadway is the major north-south corridor. 125th Street serves as the primary east-west route to the waterfront. Twelfth Avenue also runs north and south in the study area, parallel to Marginal Way. Both streets are heavily used by vehicles accessing or exiting the Henry Hudson Parkway ramps. (The Henry Hudson Parkway on and off ramps are located at the southern and northern ends of the study area.)

Local traffic is minimal, but through traffic bound for the Henry Hudson Parkway is high. The study area is predominately characterized by auto related services, warehouses, meat markets, and other manufacturing-based uses (Figure 1). A number of institutional uses, often located in a manufacturing zone, like the North River Sewage Treatment Plant, the Manhattanville Bus Depot, and the Department of Sanitation's Marine Transfer Station are all sited in this area.

The Manhattanville Bus Depot, located between West 132nd and West 133rd Streets on Twelfth Avenue, is scheduled to be converted to clean air technology within the next few years. The existing





Amsterdam Avenue Depot (at 129th Street) is scheduled to remain open for approximately ten years as a building to provide relief capacity as other Manhattan depots are modernized.

Most of the nearly 200 buses leave the 134th Street Manhattanville depot between 5:00 am and 8:00 am daily. The highest number of buses (92 buses) leave the depot between 6:00-7:00 am. Most buses return to the depot as early as 6:00 pm and as late as 2:00 am. The peak number of buses returning (33 buses) occurs between 7:00 and 8:00 pm. Bus traffic is minimal throughout the remainder of the day, particularly from late morning to early evening.

The NYC DOS Marine Transfer Station (MTS) serviced three Manhattan Collection Districts until it discontinued operations in 1996. According to the NYC Solid Waste Management Plan, the MTS will likely resume operations in approximately four years. When reopened, garbage trucks would transfer garbage onto New Jersey-bound barges at the waterfront facility. Approximately 80 trucks would deliver garbage to the MTS. Most deliveries would be made between 10 am and 1 pm; there would be a maximum of 30 deliveries in one hour.

The area's existing businesses, including the meat markets, the Alexander Doll Factory, auto-service garages and gas stations, rely heavily on auto and truck traffic. Fairway Supermarket attracts a significant number of suburban motorists who use the Henry Hudson Parkway to access the store. Although local shoppers also frequent the store, Fairway also attracts upscale customers with its large selection of gourmet and specialty foods. Fairway recently purchased the lots immediately south of the store, and intend to relocate customer parking from the existing waterfront lot to the newly purchased property.

EXISTING ROADWAY NETWORK

A total of 11 signalized intersections and 8 un-signalized intersections are located in the study area (Figure 4). These 19 intersections were identified for analysis. SSC met with the New York City Department of Transportation (NYC DOT) prior to commencing analysis; NYC DOT confirmed the appropriateness of the approach for data collection.

There is a fairly large number of unsignalized intersections in the study area, uncommon in an area of this size in Manhattan. This provides an opportunity to improve the network by adding signals and modifying signal timing.

Unsignalized Intersections:

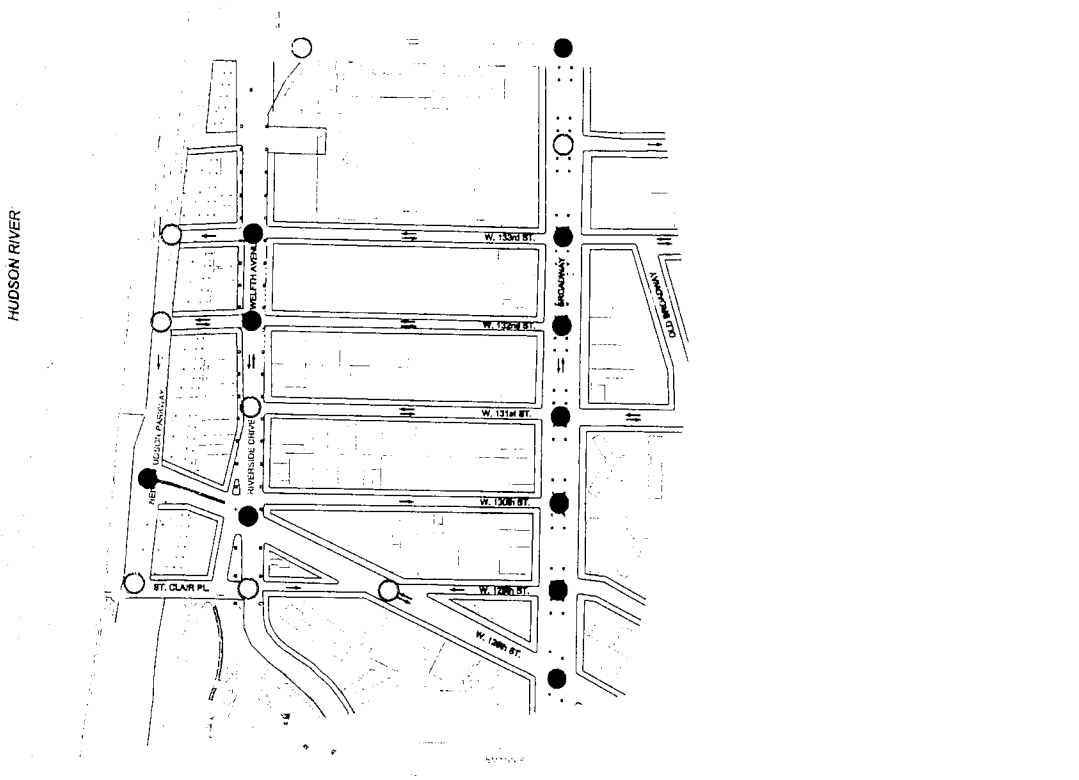
- 131st Street at 12th Avenue
- 125th Street at 129th Street-St. Clair Place.
- 12th Avenue at St. Clair Place.
- 132nd Street at Marginal Way
- 133rd Street at Marginal Way
- 134th Street at Broadway
- 135th Street at 12th Avenue
- St. Clair at Marginal Way

Signalized Intersections:

- 125th Street at Broadway
- 129th -126th Street at Broadway
- 130th Street at Broadway
- 131st Street at Broadway
- 132nd Street at Broadway
- 133rd Street at Broadway
- 135th Street at Broadway
- 125th Street at 12th Avenue

THIS PAGE LEFT:
FIGURE 2 - SHORT TERM PLAN FOR TRAFFIC IN WEST HARLEM
THIS PAGE RIGHT:
FIGURE 3 - LONG TERM PLAN FOR TRAFFIC IN WEST HARLEM

NEXT PAGE:
FIGURE 4 - DIAGRAM SHOWING SIGNALIZED AND UN-SIGNALIZED INTERSECTIONS



132nd Street at 12th Avenue
133rd Street at 12th Avenue
125th Street at Marginal Street

ROADWAYS

The major roadways serving the area are as follows:

Broadway, the major north/south corridor in the study area. A busy four lane roadway, Broadway's northbound and southbound lanes are divided by elevated subway tracks in the study area which surface at 122nd Street and dip back underground at 135th Street. The 1/9 subway station, a landmarked elevated structure, is located at the intersection of W. 125th Street and Broadway. Parking is allowed in the median under the elevated structure, adjacent to a problem intersection (125th Street and Broadway). (See Accident Analysis.)

West 125th Street provides the major east/west connection to the study area, connecting the East River to the Hudson River, and extends to the edge of the Hudson River. The roadway is approximately 70 feet wide within the project site. The majority of vehicles using 125th Street between Broadway and Marginal Way are coming to or from the Henry Hudson Parkway ramps. Two-way volumes on 125th Street are highest in the weekday pm peak period, with 1,636 vehicles per hour traveling the roadway in both directions. Compared to typical Manhattan streets, these volumes are not high.

Marginal Way is a one-way, unmapped City street that runs southbound along the Hudson River waterfront and parallels Twelfth Avenue from W. 133rd Street/Henry Hudson Exit Ramp to St. Clair Place. The street is bordered to the east by the elevated Henry Hudson Parkway and to the west by the Hudson River. Located west along the northern half of the street, a portion of the paved blacktop is currently utilized as a parking lot for Fairway shoppers. This parking lot accommodates approximately 110 vehicles, with an entrance at W. 132nd Street and an exit at W. 131st Street.

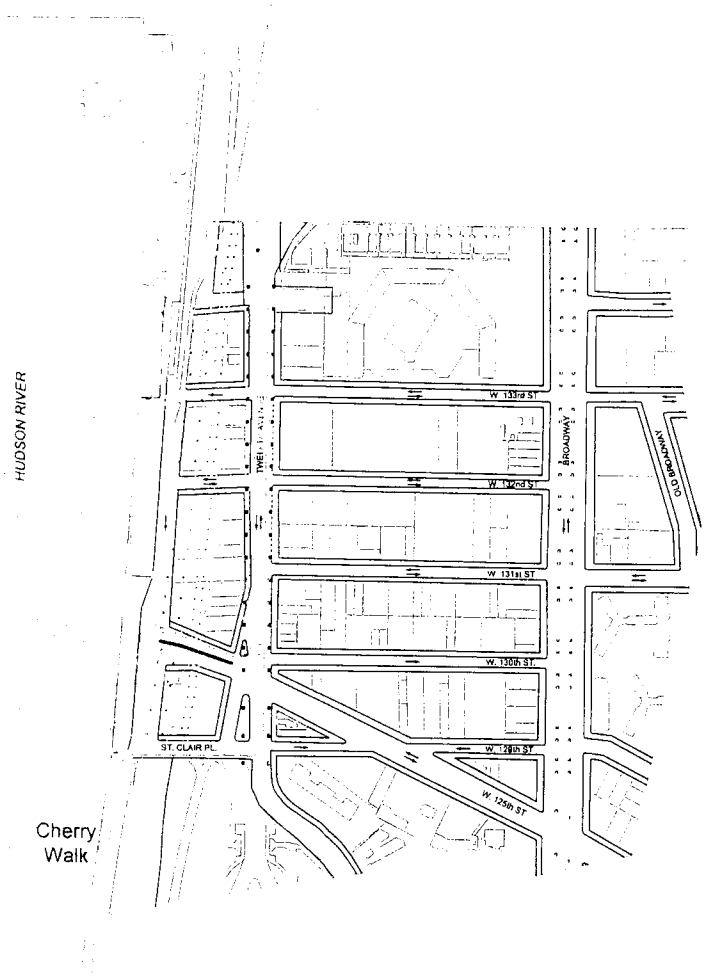
Marginal Way provides direct egress from the southbound exit ramp of the Henry Hudson Parkway. Southbound traffic volumes on Marginal Way exceed 600 vehicles per hour during the weekday evening peak. Within the limits of the project area, the width of Marginal Way varies between 32 and 54 feet with 3 effective travel lanes.

Twelfth Avenue runs north and south. Within the study area, 12th Avenue is a two-way, 60-foot wide roadway with two lanes in each direction. Parking is permitted on both sides of the Avenue along most of its length. The 80-foot wide Riverside Drive Viaduct traverses Twelfth Avenue from St. Clair Place to 135th Street. At 135th Street, it turns inland.

Twelfth Avenue volumes are predominantly higher in the northbound direction, since vehicles making a right turn from 125th Street use this Avenue to enter the northbound Henry Hudson Parkway on-ramp located at 133rd Street. Traffic volumes on Twelfth Avenue northbound are highest (but comparatively low to typical Manhattan streets) during the weekday evening peak period with 870 vehicles per hour. Volumes are well below capacity in the southbound direction with less then 100 vehicles per hour during peak periods.

BIKEWAYS

Cherry Walk provides bike access from Riverside Park to the waterfront site, but does not provide an at-grade connection to Riverside Park North. Recently, the New York City Department of Parks and



Recreation (DPR) has implemented a temporary, on-street bicycle route to connect Riverside Park North and South (Figure 5). Bicyclists leaving Cherry Walk are temporarily re-routed along Twelfth Avenue, traveling north until West 135th Street, where they connect to the bike path on Riverside Park North.

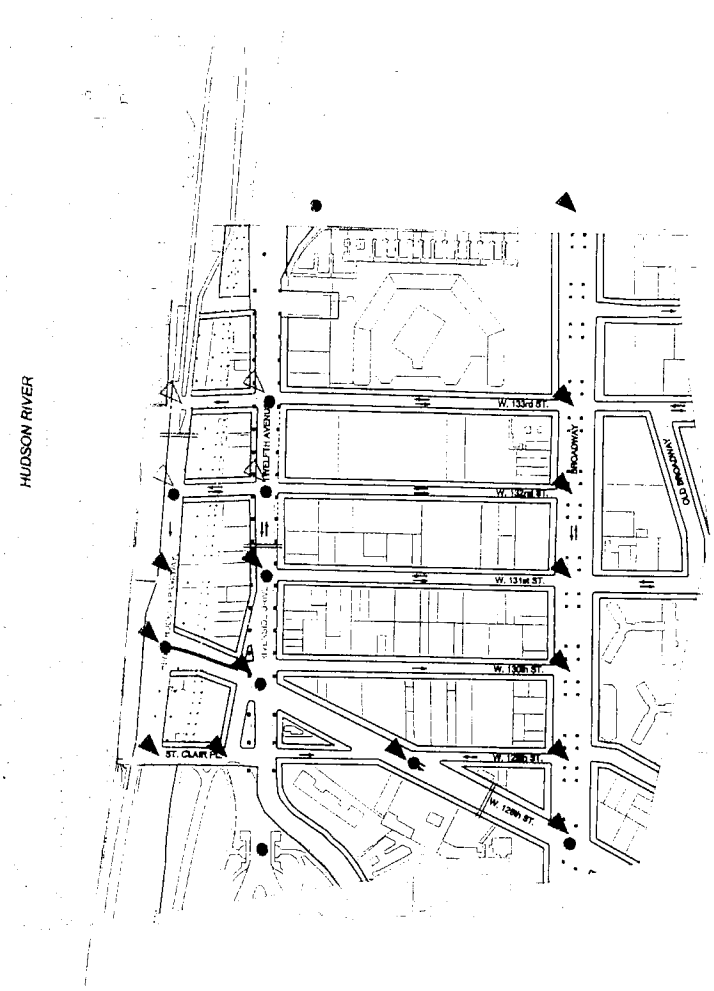
DPR's permanent planned bicycle path will cantilever over the existing rip-rap along the Hudson River from 133rd Street to 135th Street. At 135th Street the path will turn inland and continue along the west side of the elevated Henry Hudson Parkway. DPR plans to maintain the open space between Riverbank State Park and the Henry Hudson (roughly parallel to 135 through 137 Streets) as well as the bike path itself.

As part of the Hudson River Walk project, DPR will construct a continuous four mile bike and pedestrian path along the Hudson River from 72nd Street to 158th Street. This project is part of a longer term goal to provide a continuous waterfront pedestrian and bicycle path around Manhattan. Hudson River Walk is a priority route of the Citywide Bicycle Network and Greenway Plan for the New York City. It will become part of the Hudson River Valley Greenway System that will provide a 350-mile continuous path from Battery Park City to Troy, New York. The portions of the path between 83rd Street and 91st Street as well as 133rd Street to 151st Street are currently in the design phase.

DPR has also received funding to reconstruct the stairs connecting Riverside Drive with Twelfth Avenue at 136th Street. In addition to rebuilding the stairs, DPR will also repave walkways and provide new fencing and lighting along Riverside Drive from 135th to 138th Street.

THIS PAGE:
FIGURE 5 - BIKEWAYS MAP (BIKE PATH INDICATED BY SOLID GREEN LINE NORTH AND SOUTH OF THE STUDY AREA, AND DASHED LINE CROSSING STUDY AREA)

NEXT PAGE:
FIGURE 6 - DATA COLLECTION POINTS



TRAFFIC DATA COLLECTION

Traffic counts were conducted at each of the study area intersections on May 2, 2001 for weekday AM and PM peak periods and on April 28, 2001 for weekend periods (Figure 6). Both intersection vehicle and turning movement counts were recorded. Automatic Traffic Recorders (ATRs) were installed for three days at the following locations:

- Broadway between 132nd and 133rd Streets
- 12th Avenue between 131st and 132nd Streets
- 125th Street between Broadway and 129th Street
- Marginal Street between 132nd and 133rd Streets

SSC also incorporated data from past studies, including volumes published in the Fairway Accessory Parking Lot EAS (Feb. 1998) and existing NYC DOT volume counts (Spring/Summer 1996).

A review of the manual count and ATR data indicated that the weekday am peak occurred between 8:00 am and 9:00 am, the weekday evening peak between 5:00 pm and 6:00 pm and Saturdays midday peak between 1:00 pm and 2:00 pm.

Traffic volumes in the study area are relatively low or moderate compared to typical Manhattan streets. (See Volume Comparisons.) However, the highest traffic volumes in the study area were observed at the following intersections:

Marginal Street and 133rd Street: During the evening peak hour, 886 vehicles made a right turn from 133rd Street at Marginal Street to enter the northbound Henry Hudson Parkway. 703 vehicles exited the southbound Henry Hudson Parkway using Marginal Street at 133rd Street to head south.

Broadway and 125th Street: During the evening peak hour, vehicular volumes on Broadway were 934 and 536 vehicles northbound and southbound, respectively. On 125th Street, volumes were 576 and 565 vehicles eastbound and westbound, respectively.

Broadway and 135th Street: During the evening peak hour, vehicular volumes on Broadway were 874 and 604 vehicles northbound and southbound, respectively. On 135th Street, volumes were 177 and 346 vehicles eastbound and westbound, respectively.

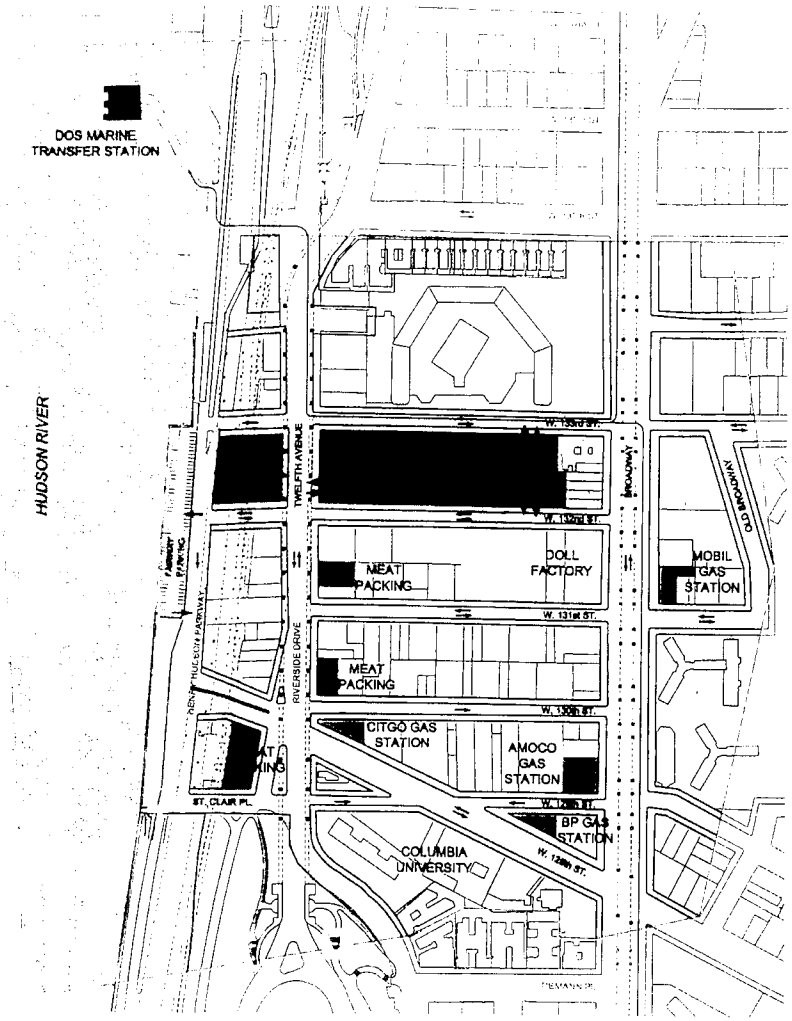
LEVEL OF SERVICE ANALYSIS

Each intersection in the study area was analyzed in terms of its capacity to accommodate existing traffic volumes and the resulting Level of Service (LOS). All LOS and capacity analysis were performed with HCS Version 2.4g. This software is based on the 1994 Highway Capacity Manual (HCM) from the Transportation Research Board (TRB). For signalized intersections, LOS is defined in terms of average vehicle delay, detailed below (as described in the HCM):

LOS A describes operations with very low control delay, up to 5 seconds per vehicle. This LOS occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.

LOS B describes operations with control delay greater than 5 and up to 15 seconds per vehicle. This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of average delay.

LOS C describes operations with control delay greater than 15 seconds



and up to 25 seconds per vehicle. These higher delays may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.

LOS D describes operations with control delay greater than 25 and up to 40 seconds per vehicle. At level D, the influence of congestion becomes more noticeable. Longer delays result from some combination of unfavorable progression, long cycle lengths, or high volume to capacity (v/c) ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.

LOS E describes operations with delay greater that 40 and up to 60 seconds per vehicle. This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent occurrences.

LOS F describes operations with control delay in excess of 60 seconds per vehicle. This level, considered to be unacceptable to most drivers, often occurs with over-saturation, that is, when arrival flow rates exceed the capacity of the intersection. It may also occur at high v/c ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing factors to such delay levels.

THIS PAGE:
FIGURE 1 - SIGNIFICANT LAND USES AS RELATED TO TRAFFIC

NEXT PAGE:
FIGURE 7 - MAP SHOWING EGRESS

The criteria for signalized intersections is summarized below:

Level of Service	Progression Delay Range (sec)
A Extremely Favorable	less than 5.0
B Good	5.1 to 15.0
C Fair	15.1 to 25.0
D Unfavorable	25.1 to 40.0
E Poor	40.1 to 60.0
F Unacceptable	greater than 60.0

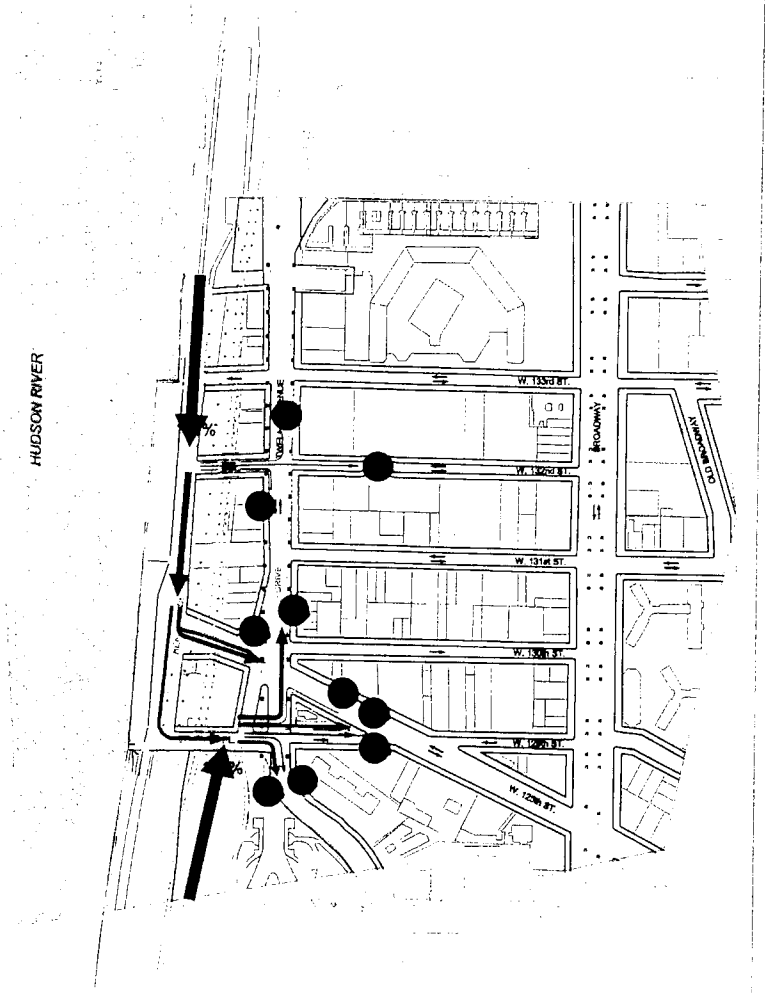
The study area's overall LOS is generally good, with most intersections operating at overall LOS B during peak periods. Given the moderate volumes in the area, there is an opportunity to increase volume while maintaining acceptable LOS.
Key findings discussed in the next section.

SIGNALIZED INTERSECTIONS

During the weekday morning peak, all but one study area intersection operates at overall LOS B, with some specific movements operating at LOS C. However, the permitted westbound left turn onto 125th Street from Broadway fails due to the conflict with the protected and relatively heavy eastbound through movement.

During the weekday evening peak, the majority of intersections in the study area operate at an overall LOS B except the intersections of 125th Street and Broadway and West 135th Street and Broadway, which operate at an overall LOS C. The permitted eastbound and westbound left turns at these intersections operate at LOS D because of heavy and protected east/west through movements.

During the Saturday peak hour, most intersections operate at an



overall LOS B with the exception of 125th Street and Broadway, which operates at LOS C.

UN-SIGNALIZED INTERSECTIONS

With the exception of two intersections along Marginal Way, all un-signalized intersections in the study area operate at LOS C or better during peak hours. However, the intersections of Marginal Way at 132nd Street and at 133rd Street fail during the evening and Saturday midday peak for the following reasons:

Marginal Way at 133rd Street - The heavy southbound traffic volume coming off the Henry Hudson Parkway ramp on Marginal Way conflicts with the westbound left turn movement from 133rd Street.

Marginal Way at 132nd Street - Again, the heavy southbound ramp volume on Marginal Way conflicts with the westbound through movement (heading to the Fairway Parking lot) and the left turn movement from 132nd Street. The southbound through movement also conflicts with the eastbound left turn as vehicles exit the Fairway Parking lot.

PEDESTRIAN VOLUMES

Field observations indicate that pedestrian volumes are generally modest in the study area. However, higher pedestrian volumes were recorded on the sidewalk, crosswalks, and corner reservoirs at the following intersections:

Broadway and West 125th Street - during Saturday midday (1:00 pm - 2:00 pm) peak hour, pedestrian activity at this location was recorded to be at peak in the entire study area. More than 1,100 pedestrians were recorded during the peak hour.

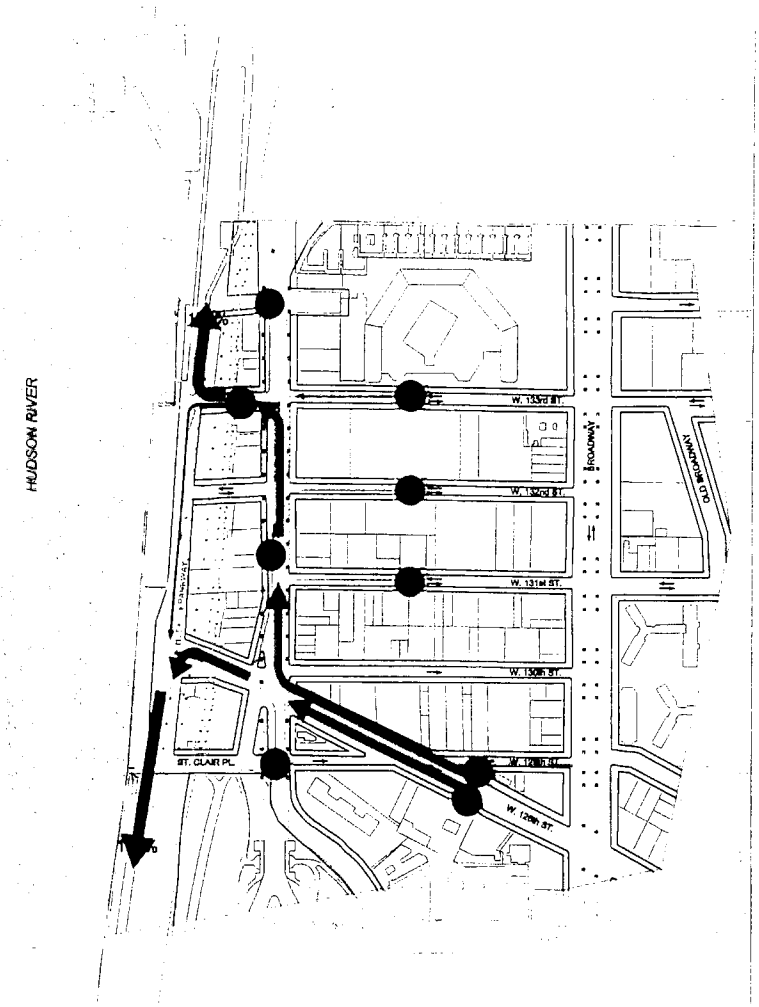
Entrance / Exit to Fairway at West Marginal Street - is also a moderately heavy pedestrian activity location in the study area. Approximately 1,000 pedestrians were recorded during the Saturday midday peak hour.

The criteria for pedestrian sidewalk level of service is as follows:

Level of Service		Pedestrian flow rate per Foot of width per Minute (PFM)
A	Unrestricted flow	2 or less PFM
B	Slightly restricted	3-7 PFM
C	Restricted, but fluid	8-10 PFM
D	Restricted, necessary to continuously alter walking stride and direction	11-15 PFM
E	Severely restricted	16-25 PFM
F	Forward movement on by shuffling; no reverse movement possible	More than 25 PFM

The higher volume intersections still operate at LOS A, which indicates unrestricted pedestrian movement, or 2 or less pedestrians per foot of width per minute. (Level of service is based on normal conditions. When there is an irregular rush, the level of service changes for a short period of time from A to B and then returns to normal conditions.)

At LOS A, pedestrian conflicts in the study area are not a result of heavy pedestrian volumes. Instead, pedestrian conflicts are due to intersection design and signal timing issues. Intersections and roadways adjacent to the waterfront are often ill-suited for pedestrians and



cyclists. Crossings at intersections such as West 125th Street and Broadway, where awkward geometries, inadequate cross times, and limited sight distances, create confusing and dangerous traffic conditions for vehicles and pedestrians. Other intersections close to the waterfront such as Twelfth Avenue and West 125th Street lack painted pedestrian crosswalks and sidewalks. Along Marginal Street, Fairway shoppers are forced to dodge Henry Hudson Parkway off-ramp traffic as they cross Marginal Street to access the supermarket from the existing waterfront parking lot.

VOLUME COMPARISONS

Vehicular volumes in the study area are low compared to streets and avenues in midtown Manhattan. The average one-way midtown cross street averages between 500 to 700 vehicles per hour(vph) during peak periods. In contrast, cross streets in the study area average considerably lower vehicle volumes. For example, 133rd Street, a two-way street, averages only 193 vph during the pm peak hour between 12th Avenue and Broadway.

On the other hand, ramp volumes on the Henry Hudson Parkway are generally higher at the 125th Street exit/entrance than on ramps south of the study area. For example, the northbound Henry Hudson Parkway 125th Street entrance during the evening peak hour has a higher volume (886 vph) than 72nd Street, 79th Street or 96th Street northbound Henry Hudson Parkway ramps during the same period. Similarly, the southbound Henry Hudson Parkway 125th Street entrance has higher volumes (433 vph) during the pm peak hour than 72nd Street, 79th Street or 96th Street southbound Henry Hudson Parkway ramps during the same period.

Despite the relatively low volumes on study area avenues and streets, the high volumes on the 125th Street access ramps creates congestion at critical intersections, particularly during peak periods.

HENRY HUDSON PARKWAY EXIT

Analyzing traffic volumes and field observations, it was possible to determine typical routes motorists took to leave the study area after exiting the Henry Hudson Parkway. Figure 7 shows the percentage distribution of vehicular volumes along local roadways after motorists exit the Parkway. By adding the percentage of vehicles utilizing 125th Street and 129th Street east of 12th Avenue, it is determined that nearly half, or 47% of all vehicles exiting the Parkway in the study area utilize these two streets as their primary eastbound access routes.

HENRY HUDSON PARKWAY ENTRANCE

Figure 8 shows the percentage distribution of vehicular volumes along local roadways that motorists utilize to enter the Henry Hudson Parkway. As indicated in the figure below, nearly 75% of all motorists use 125th Street to access the Henry Hudson Parkway northbound and southbound on-ramps.

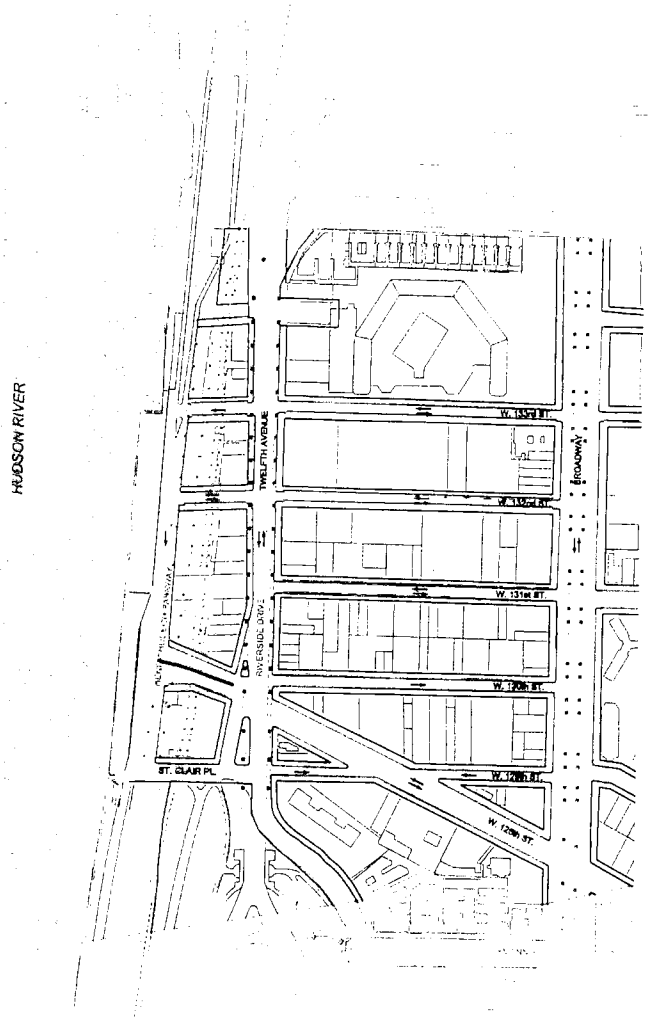
TRUCKS

Local truck routes along Broadway, 125th Street and 133rd Street serve truck-dependent businesses in the study area and the surrounding neighborhood (Figure 9). Businesses in the study area include meat markets along 12th Avenue and the Alexander Doll Factory on West 132nd Street. Truck dependent businesses in the adjacent neighborhood include local retail stores, restaurants, and light manufacturing establishments.

Truck volumes peak on weekday mornings, between 8:00-9:00 am. The bulk of truck traffic occurs along Broadway and 125th Street. For example, along 125th Street, east of Broadway, trucks comprise 5%

THIS PAGE:
FIGURE 8: MAP SHOWING ENTRANCES

NEXT PAGE:
FIGURE 9 - ON-STREET PARKING



of all westbound traffic, or 72 trucks per hour. Similarly, along Broadway, trucks comprise 4% of all traffic traveling south bound, or 70 trucks per hour. Truck volumes along 125th Street west of Broadway are lower. On 125th Street westbound between Broadway and 12th Avenue, trucks comprise 1% of all traffic, or 10 trucks. Although numerous businesses in the waterfront area rely on trucks, trucks do not use 125th Street (west of Broadway) or 12th Avenue as access routes to the Henry Hudson Parkway as the Parkway prohibits commercial vehicles.

ACCIDENT DATA

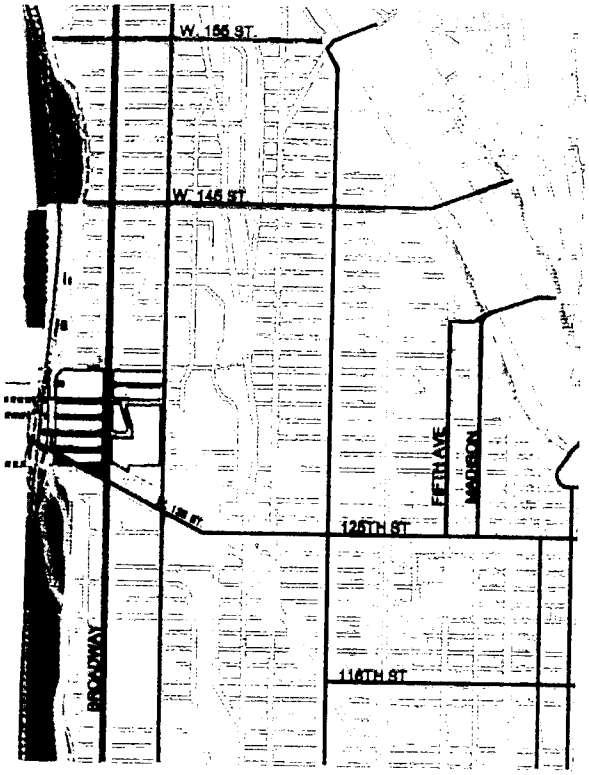
SSC obtained accident data from the New York State Department of Transportation (NYSDOT) for the three year period between September 1996 to September 1999. (The data did not include accident information along Marginal Street and 135th Street.)

Most accidents occurred at intersections rather than on road segments between intersections (See Table 3 and Figure 10).

During this three year period, the majority of accidents occurred along Broadway. According to NYS DOT accident data and conversations with the local police precinct, the intersection of 125th Street and Broadway is considered an accident prone location. This intersection is prone to accidents due to awkward geometry and limited sight distances.

Broadway at West 125th Street has angles less than 90 degrees (measured counter-clockwise) at the northwest and southeast corners. This geometry is further complicated by the metal arch members supporting the subway tracks running directly above Broadway. The lateral clearance for both northbound and southbound approaches is restricted. The sight distance for north-south traffic is limited due to the pillars, inhibiting them from seeing those that are turning from the east-west approach. Further limitations in sight are caused by the angle of the intersection, which prevents an adequate view of conflicting traffic approaches. Parking on the median on both northbound approaches further creates limitations to available sight distances.

Proposed safety improvements are outlined in the Recommendations section of the Traffic Report.



Typical Saturday		Typical Weekly	
Maximum Capacity = 528		Maximum Capacity = 440	
Hour	Parking Occupancy (Vehicle-Hour)	Hour	Parking Occupancy (Vehicles-Hour)
8:00 am - 9:00 am	301	**8:00 am - 9:00 am**	**362**
9:00 am - 10:00 am	290	9:00 am - 10:00 am	358
10:00 am - 11:00 am	301	10:00 am - 11:00 am	368
11:00 am - 12:00	307	11:00 am - 12:00	376
12:00 - 1:00 pm	309	12:00 - 1:00 pm	360
1:00 pm - 2:00 pm	**321**	1:00 pm - 2:00 pm	368
2:00 pm - 3:00 pm	304	2:00 pm - 3:00 pm	386
3:00 pm - 4:00 pm	325	3:00 pm - 4:00 pm	379
4:00 pm - 5:00 pm	299	4:00 pm - 5:00 pm	372
5:00 pm - 6:00 pm	289	**5:00 pm - 6:00 pm**	**361**

Public Parking Garages and Lots

Name	Location	Capacity	AM	MD	PM
Y&H	134th off Broadway	175	full	full	full
MTP	134th off Broadway	200	full	-	-
WTP	129th St.	200	full	full	full
NOHA	129th St.	86	full	full	full
GMC	129th St.	134	full	80%	full
Andrea's	Marginal Street Between 125th and St. Clair	35	60%	60%	70%
Edison	134th Street at Riverside Drive	360	80%	80%	80%

ON-STREET AND OFF-STREET PARKING

Parking surveys were conducted in April and May 2001 to evaluate existing parking conditions in the study area. Data was collected on parking regulations, on- and off-street parking demand, as well as information on garages and lots in the study area.

ON- STREET PARKING

Table 1 shows that the 'no parking/standing anytime' restriction is effective at the following main locations:

- 132nd Street (both north and south curbside) between 12th Ave and Broadway.
- W. 133rd Street (south curbside only) between 12th Ave. and Broadway.
- Marginal Way (both east and west curbside) between W. 125th and W. 133rd Street.
- On W. 131st Street, parking is permitted only during nights and weekends.

In order to evaluate on-street parking usage in the study area, surveys were conducted on May 12 and May 15, 2001 from 8 am to 6 pm along study area streets to analyze typical Saturday and weekday conditions. The survey results indicate that on-street parking utilization in the study area is high for a typical weekday. Of the approximately 440 parking spaces available during weekdays, 362 and 361 spaces were occupied (approximately 82% utilization) during am and pm peak hours, respectively. The highest utilization rate of 88% was observed from 2 pm to 3 pm during a weekday. The field observations also show that approximately 15% of all parked cars in the study area were illegally parked. Illegal parking typically occurred in areas adjacent to auto-service businesses who use underutilized sidewalk and roadway space as makeshift parking lots.

During the Saturday peak hour, however, the utilization rate was approximately 61% (321 parking spaces occupied out of approximately 528 spaces available). The increased availability of parking spaces (88 extra spaces) during Saturdays results from less parking restrictions.

Table 1 provides an hourly summary of parking utilization for a typical Saturday and Weekday. Although peak volume periods are highlighted, on-street parking utilization does not necessarily coincide with peak traffic hours. On a typical Saturday, the highest parking occupancy occurs between 3:00 and 4:00 pm and between 2:00 and 3:00 pm on a weekday.

OFF-STREET PARKING

The survey inventory of existing public off-street parking garages and lots within the study area shows a total capacity of approximately 1,150 off-street parking spaces. The parking occupancy survey was conducted during weekday morning, midday, and evening peak hours. Field observations and conversations with garage managers indicate that off-street parking garages and lots are generally occupied to capacity. Table 2 shows the detailed findings of the off-street parking survey.

Fairway Supermarket leases waterfront property, located along Marginal Way from 131st to 133rd Streets, from the City to accommodate its 110-vehicle capacity parking lot. Reserved for employees and customers of Fairway, the lot is heavily utilized, particularly during peak shopping periods. On Saturday midday, typically the peak shopping period, some vehicles are diverted to on-street or nearby off-street parking areas. Fairway plans to relocate its existing parking facility to two recently acquired lots immediately south of the store, located

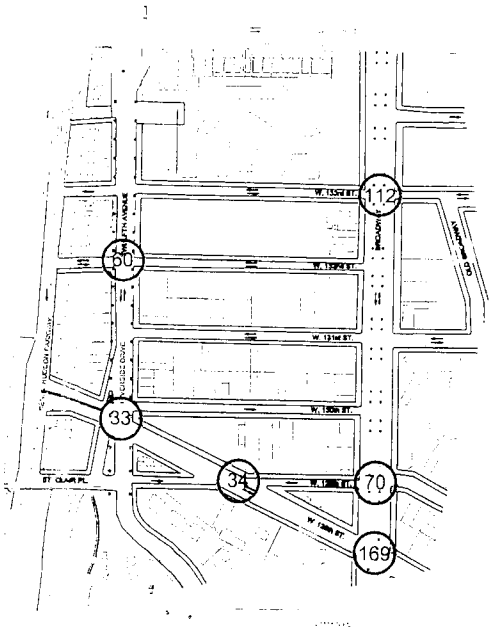
THIS PAGE:
FIGURE 9 - MAJOR TRUCK ROUTES

TABLE 1 - PARKING REGULATIONS

TABLE 2 - PUBLIC PARKING GARAGES AND LOTS

NEXT PAGE:
FIGURE 10/ TABLE 3 - HIGHEST ACCIDENT LOCATIONS

	Total Accidents	Injuries	Ped/Bike Accidents	Truck Accidents
Broadway & 125th Street	169	35	6	8
Broadway & W 133rd Street	112	58	10	10
Broadway & W 129th Street	70	31	7	3
12th Avenue & W 132nd Street	60	19	2	1
W 125th Street & St. Clair Place	34	8	0	0
12th Avenue & West 125th Street	33	9	0	1



between 132nd and 130th streets. It can be estimated that due to the increased size of the new property, Fairway's new parking facility will be able to accommodate more vehicles than on its existing lot.

The MTA Bus Depot also provides approximately 500 parking spaces for its employees on the roof of its facility. At this time, the MTA does not intend to allow any public parking on its parking lot.

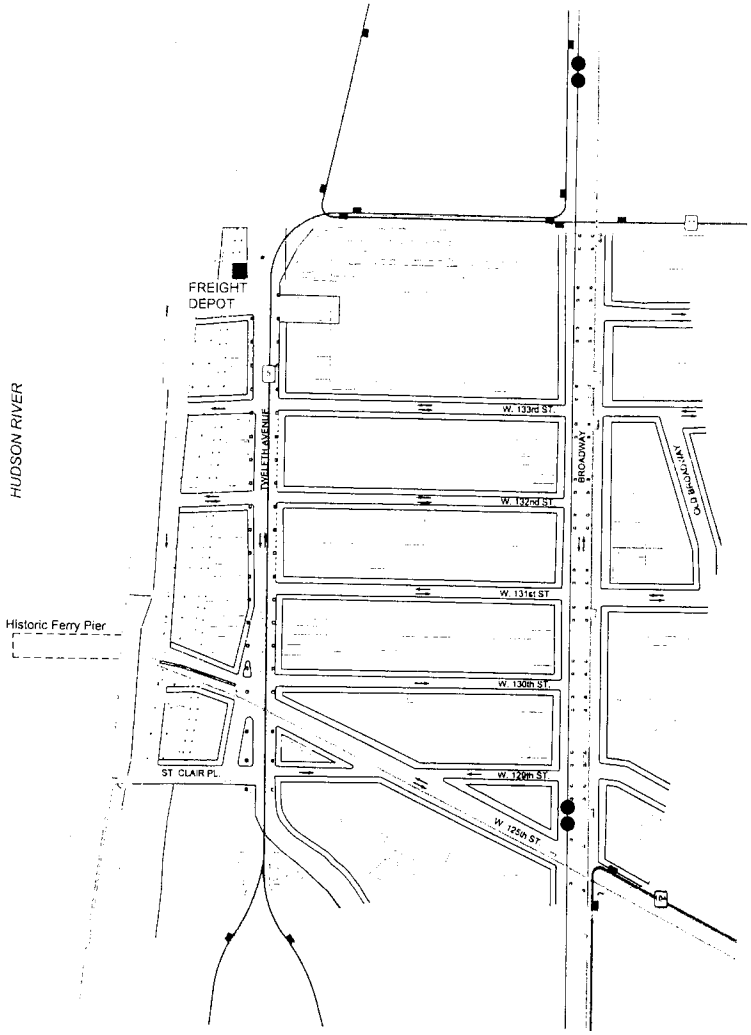
PUBLIC TRANSPORTATION

SUBWAY SERVICE

The IRT subway has an above-ground station at 125th Street and Broadway, approximately 1/4 mile east of the waterfront. The IRT makes local stops from South Ferry Terminal, along the west side of Manhattan, to Van Cortlandt Park in the Bronx. The IRT also has near-by stops at 116th Street and 137th Street. The A/C, B and D trains stop at 125th Street and St. Nicholas Avenue, approximately 1/2 mile east of the study area (Figure 11).

BUSES

- The M4, M11, M5, M104 and BX15 operate within the vicinity of the study area.
- The M4 travels north and south along Broadway, from Penn Station to Ft. Tryon Park in Upper Manhattan.
- The M11 connects the West Village in downtown Manhattan to Riverbank State Park. In the study area, the M11 travels along West 135th Street, turning north on Riverside Drive.
- The M104 starts at the bus depot on Amsterdam and West 129th Street, ending at the United Nations. In the study area, the M104 travels up 125th Street, turning south on Broadway.
- The M5 travels north and south along Riverside Drive in the study area, connecting Greenwich Village to the George Washington Bridge Bus Terminal.
- The BX15 is the only bus that travels west beyond Broadway along125th Street. It begins service in the Fordham area of the Bronx, and travels along East 125th Street and First Avenue in Manhattan, until it ends at its unofficial lay over area along the western edge of Marginal Street.



Mode	Riverbank Park
Walk/Jog	50%
Bicycle	4%
Skate	1%
Bus	11%
Subway	8%
Car	24%
Taxi	2%
Ferry	0%
Total	100%

AMTRAK/METRO NORTH SERVICE

The New York Central Railroad's historic freight facility was once located in the vicinity of West 135th Street and 12th Avenue to service the rail line running between Albany and New York City. The historic building that served freight trains is now privately owned. There is currently no station stop in the study area for Amtrak or MetroNorth trains.

The Metropolitan Transportation Authority (MTA) Metro North is currently conducting the Penn Station Access Major Investment Study/Draft Environmental Impact Statement (MIS/DEIS) to study alternatives for improving access between the Metro North service area, Penn Station and points along the west side of Manhattan using what is now Amtrak's right-of-way. Although the MTA is studying West 125th Street as a potential station stop, there is no commitment to building a station at this time. Both the potential 125th Street and 59th Street stops have been forwarded for further analysis. The public hearing for the MIS/DEIS is scheduled for completion in late 2002.

POTENTIAL BUS AND SUBWAY SERVICE DEMAND

Survey data published in Travel Characteristics of Users at Riverbank State Park and Nelson Rockefeller (North) Park (October 28, 1994), provided baseline modal splits (see table below) to project public transportation demand for the proposed waterfront development. Data from Riverbank State Park was used due to the Park's proximity to the study area and the similar socioeconomic characteristics of its users. Riverbank is also two blocks away from the 1/9 subway train station at 135th Street and Broadway.

The 1994 report also derived trip generation rates from surveys conducted at Riverside Park and at Riverbank State Park. Trip generation rates at Riverside Park were viewed as being more comparable to West Harlem waterfront as nearly all of Riverbank State Park's space is used for active recreation. The total acreage of the Harlem piers and open space is 3 acres, and is projected to generate approximately 150 trips per hour.

Based on the assumptions described above, modal splits were based on the Riverbank State Park survey data while trip generation rates were based on Riverside Park information. Although expected to draw significant proportion of users from the adjacent community, Harlem West would also attract motorists. For example, nearly 50% of all of Fairway customers come from greater Manhattan and the surrounding region. Most customers, even local customers, come by car and shop in bulk. It can be assumed that some of these customers would also visit West Harlem before or after shopping. Both West Harlem and Fairway also share the same peak period during the weekend midday.

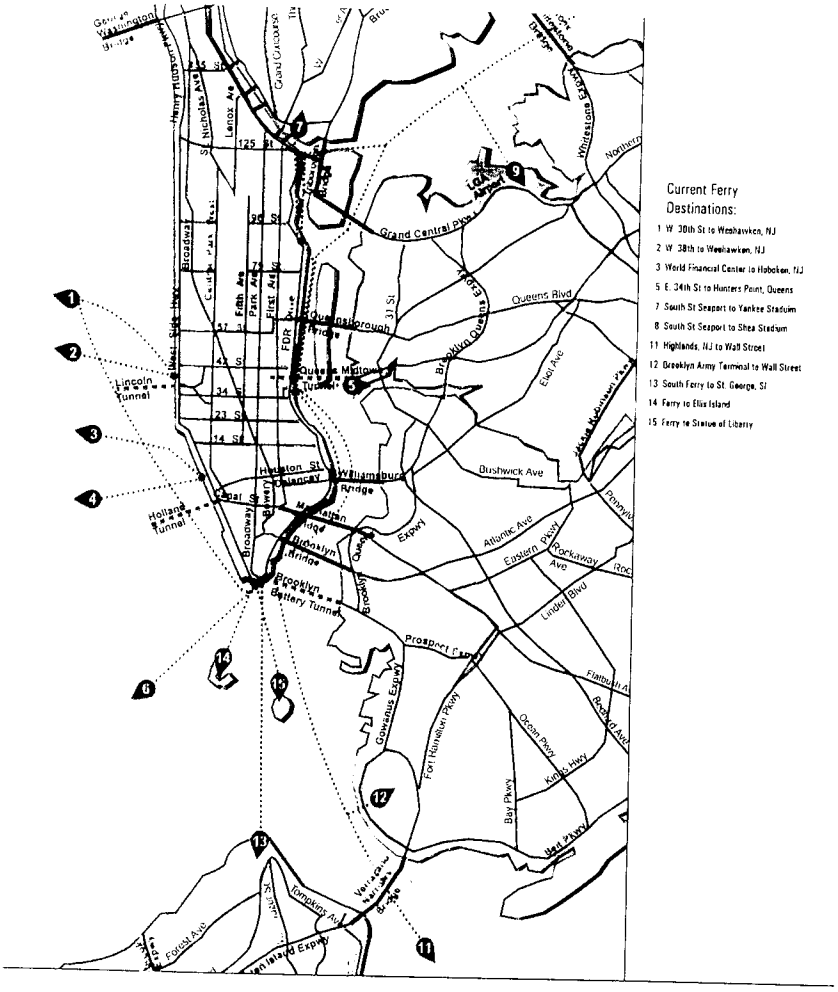
Nearly half, or 75 trips would be made on foot. Approximately 17 trips would be made by bus and 12 trips would be made by subway during the peak hour. It can also be projected that bicycle trips would increase as Cherry Walk is extended through the Harlem West site. Furthermore, as the pier and open space would not generate much use during the winter and weekday, bus service should operate seasonally, with more service provided during weekends and warmer months.

The community facility, retail store and restaurant would generate approximately 70 trips per hour during the weekday evening peak. These uses do not share the same peak period with the pier/open space facility. Approximately 7 trips would be made by bus and 5 trips would be made by subway during the weekday evening peak hour.

THIS PAGE:
FIGURE 11 - TRANSPORTATION MAP SHOWING SUBWAYS AND BUSES IN AND AROUND THE STUDY AREA

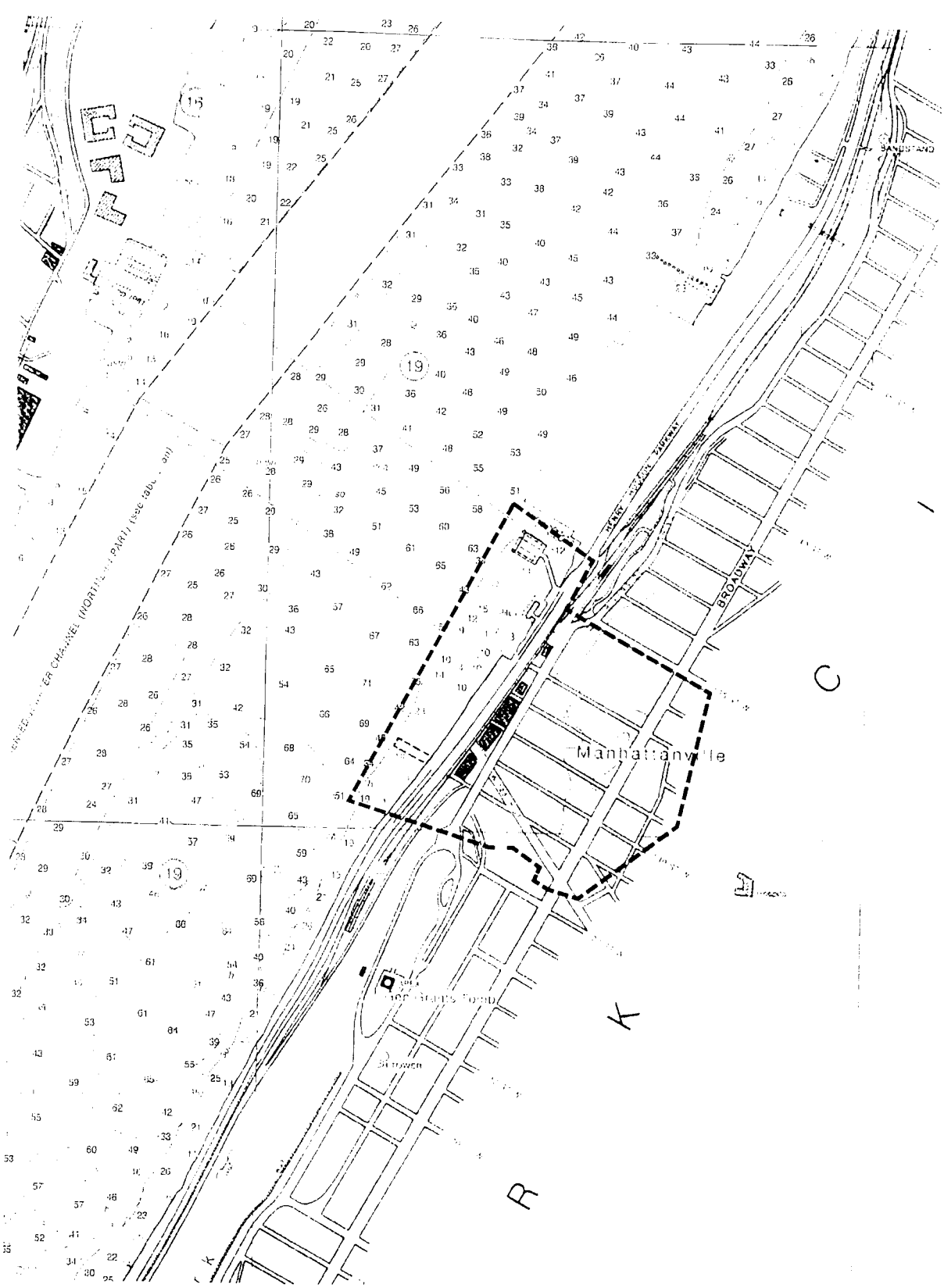
TABLE 4: MODAL SPLITS, RIVERBANK STATE PARK

NEXT PAGE:
NEW YORK CITY FERRY MAP



FERRY SERVICE

A ferry service to Fort Lee, New Jersey operated from a pier at the westerly end of 125th Street from 1888-1950. Although there is no longer ferry service at West 125th Street, ferry operations connecting downtown and midtown New York to New Jersey via the Hudson River have experienced significant growth. At present, the northernmost ferry pier in Manhattan's west side is the West 38th Street Pier which connects to the northernmost ferry pier in New Jersey, Weehawken. As part of the Port Authority's Regional Ferry Program, however, the Port Authority is looking to establish new ferry service to Rockland County and is considering several stops along Upper Manhattan, including West 125th Street.



THIS PAGE
FIGURE 1 - GENERAL PLAN
FROM 2000 NOAA CHART
12341

ENGINEERING

INTRODUCTION

The Master Plan engineering analysis of existing conditions contains four main physical analysis written by DMJM + Harris: hydrographic report, bulkhead report, pier reconstruction analysis and subsurface investigation. These reports are aimed at providing an understanding of the current conditions which prevail at the site and provide information essential to the development of the design. A topographic report that presents site survey information for the waterfront study area is being prepared by Angle of Attack and is available under separate cover.

HYDROGRAPHIC REPORT

This report analyzes characteristics of the water and wave action that influence the design and use of piers.

BULKHEAD REPORT

This report assesses the general condition of the bulkhead and the previous repairs. Recommendations are included developing criteria for future structures/buildings to be located behind the seawall and for the future protection of the seawall.

PIER RECONSTRUCTION ANALYSIS

This analysis investigates the possibilities and engineering requirements for a variety of new piers.

SUBSURFACE INVESTIGATION

This report looks at the soil conditions beneath both the water and upland waterfront area.

HYDROGRAPHIC REPORT

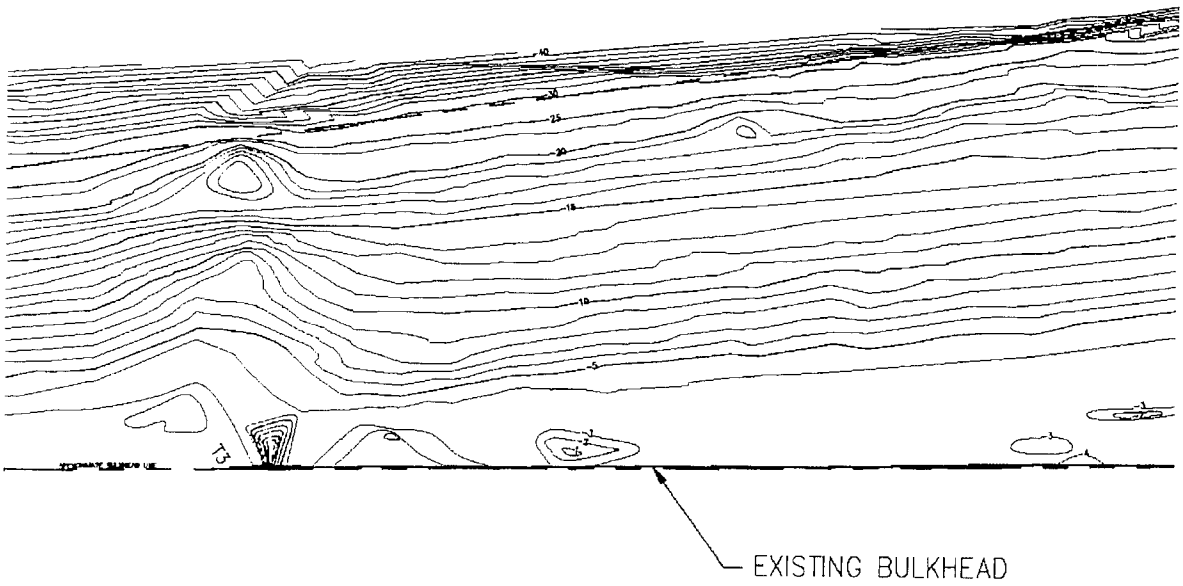
A General Plan of the Harlem Piers Waterfront area is shown in Figure 12 taken from 2000 NOAA Chart 12341. A comparison with the 1978 edition of the same chart indicates that the vicinity is unchanged except for the Riverbank State Park landfill that was under construction in 1978. The waterfront bulkhead has essentially been located near its present position since the early 1920's. Figure 13 illustrate the shoreline circa 1920's before the original piers were removed.

BATHYMETRY

Aqua Survey Inc. obtained water depths on March 28, 2001 under subcontract to Harris. Harris senior staff supervised this survey. Limits of the survey were from the inshore bulkhead to approximately the Pierhead line and from the Sanitation Pier to the extension of St. Claire's Place. Soundings were obtained in 25' lanes using an electronic depth sounder (survey Fathometer) with location logged using GPS-D. Alongside the bulkhead the data was supplemented with water depths obtained using a lead line sinker during the bulkhead inspection. All soundings were converted to Mean Low Water (MLW) datum. Relationship between various datum planes is shown in table 5.

The water depths between the bulkhead and pierhead lines were originally deeper than presently exist as inferred from depths shown in Figure 14. This change is most significant along the face of the seawall currently ranging from 0' to 3' below MLW. Inshore depths from the pierhead line range around 40 feet. The river bottom slopes gradually from the bulkhead to the pierhead line.

The bottom consists of a silty, muddy layer, which is relatively firm to probing with penetration of only several inches. At the southern end the mudline is firmer. It is scoured at the sewer outfall at the southern end of the bulkhead between station 0+24 to 0+45.



The mudline within the footprint of the former piers is clear of debris and timber pile stubs with the exception of several stubs found at the southern end of the site. Approximately 17 pile stubs, protruding 6" to 2' above mudline were observed at the southern end of the bulkhead between stations 0+00 and 0+35 at 0' to 80' out from the bulkhead. Timbers, concrete debris, bricks, crushed stone and tires were also found in this area. 37 Timber fender piles, 3' to 8' above mudline, were observed along the face of concrete bulkhead from station 0+50 to 10+07.

WAVE CLIMATOLOGY

Waves at the site are primarily from west. Significant wave height is 4' (crest to trough - vessel wake or storm). Storm generated waves can be higher, of 6' from the southeast. Wave amplitude will be approximately doubles just at the bulkhead due to reflection. Therefore, an east west pier orientation would be desirable to minimize roll of berthed vessels when waves strike vessels. Since most waves will be generated by passing vessels, wave disturbances will be minimal on most non-windy days.

TIDAL CURRENTS

Current at the site is north-south due to tidal action. Maximum currents will approach 2.5 knots. Therefore considering currents, a north-south pier orientation is preferred to preclude vessels from being pushed hard into or away from piers during approach. Also should end load ferries be anticipated, they hold themselves against pier and in event of engine failure would be quickly twisted away from pier if they are oriented east-west.

THIS PAGE:
FIGURE 15 - BATHYMETRIC PLAN

ICE FLOES/DRIFT

A north-south pier orientation with its southern end skewed to west is preferred to minimize broadside impacts against pier and to direct ice build-ups away from piers.

SEDIMENTATION

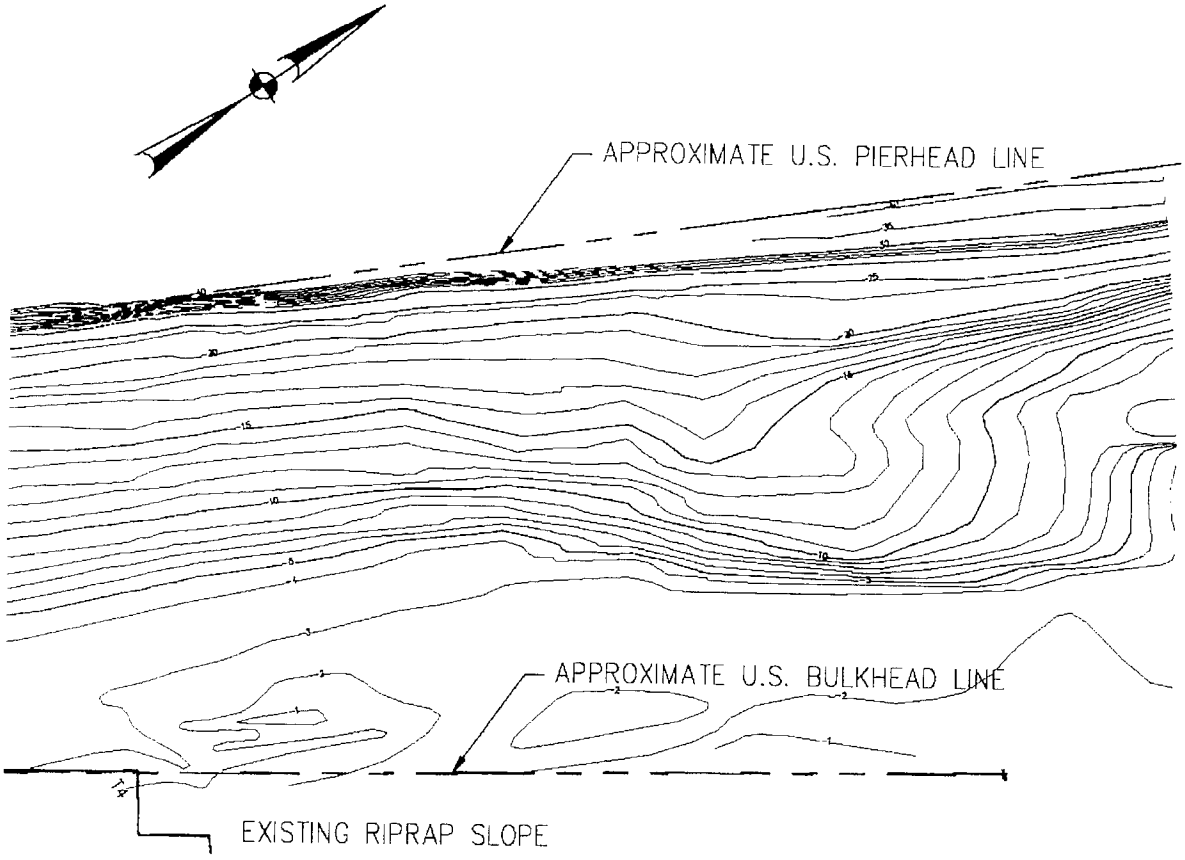
East-west pier orientation will slow currents more than a north-south direction, resulting in "mud mound" eventually forming under pier further slowing current. Such a mound would further slow current resulting in further silting in of the area. The north end of the site is more susceptible to siltation due to Riverbank State Park Landfill projecting into the River.

TIDES

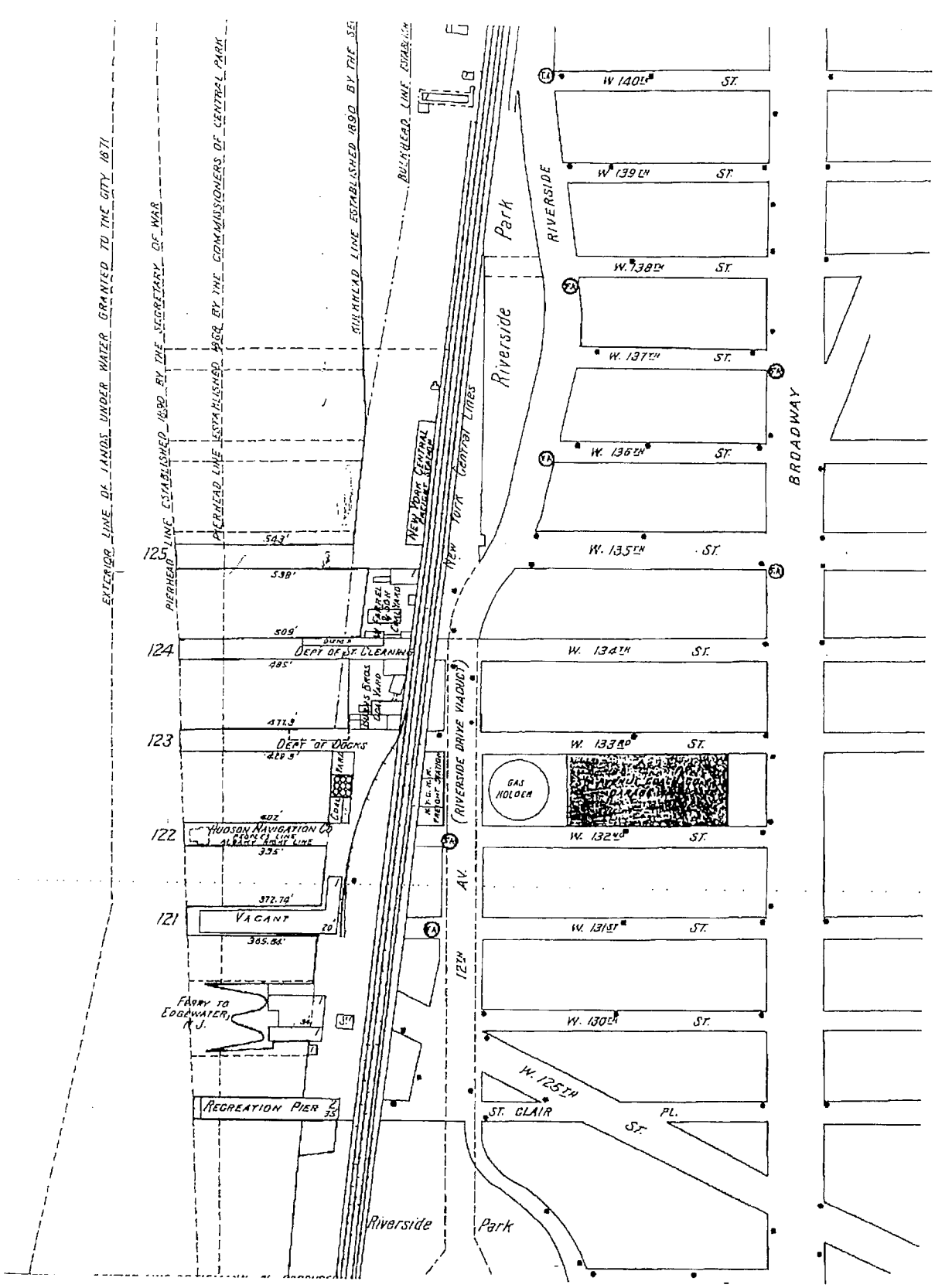
Tidal ranges at the site are 4.5' mean, 5.5' spring range, and 14' extreme observed (excluding wave effects). The upland promenade/esplanade will be inundated during extreme storm events (e.g. nor'easters, hurricanes).

FLOATING PIERS

A north-south pier orientation would allow installation of wave "fence" under outermost pier, stilling incoming waves. This is desirable should floating piers be used for canoes/kayaks. Piers would otherwise be quite bouncy and make entering small craft more difficult when vessels pass (possibly falling overboard if novice users). If floating piers are unprotected the recommended location would be at far north end adjacent to rip-rap slope to minimize wave reflection effects. Consideration of winter removal (requiring upland storage space) may be required due to ice. An alternate to a floating pier fixed ramp/pier to water or mechanically operated ramp and platform which could be raised and lowered with tide.



COMBINED SEWER OUTFALL (AT SOUTH END)
Due to this sewer outfall it will be preferable to keep piers away from this area both considering odors (after storms should sanitary overflow, this outfall will spew wastewater) and should future maintenance of the sewer be required.



THIS PAGE:
FIGURE 13 - VICINITY MAP
FROM 1928 SANBORN MAP
COMPANY

NEXT PAGE:
TABLE 5 - TIDAL LEVELS

Tidal Levels based on Various Datum Planes

	Mean Low Water	Manhattan Borough Datum	National Geodetic Vertical Datum	Remarks
100 year FEMA flood Plain Elevation	10.92	6.85	9.60	Based on FEMA, May 2001 Flood Ins. Study @ GWB
Record High	10.01	5.94	8.69	assumed, based on the Battery (Hurricane Donna 1960)
Mean Higher High Water (MHHW)	4.41	0.34	3.09	Interpolated between the Battery and Spuyten Dyvil
Mean High Water (MHW)	4.10	0.03	2.78	"
Manhattan Borough Datum	4.07	0.00	2.75	"
National Geodetic Vertical Datum (NGVD)	1.32	-2.75	0	"
Mean Low Water (MLW)	0	-4.07	-1.32	"
Mean Lower Low Water (MLLW)	-0.20	-4.27	-1.52	"
Record Low	-3.87	-7.94	-5.19	assumed, based on the Battery (2/2/76)

BULKHEAD REPORT

The purpose of this report was to assess the general condition of the bulkhead and the condition of repairs made within the last three years. Further, recommendations are included developing criteria for future structures/buildings to be located behind the seawall and for the future protection of the concrete seawall bulkhead referred to as 125th Street Esplanade located between the Hudson River and the West Side Highway.

A concrete seawall approximately 8' high and 1200 ft long (Station 0+00 to 11+91) forms the western edge of the project site (Photos 1 and 2). The seawall is supported by two timber piles spaced at five to six foot centers. Water is relatively shallow at the face, ranging from 0 to 3 feet below MLW. Piers outboard of the bulkhead were removed years ago and the wall serves to retain the upland presently used as a parking lot and promenade (Photo 3).

The outside face of the concrete seawall has been deteriorating due to sulfate attack, freeze-thaw and wave and current erosion, principally in the lower tidal zone. Repairs, performed within the last 2 years, provided a sheet pile wall just outboard of the original face and a concrete infill to repair the deepest spalled face, seal undermined areas of the wall and replaced a collapsed section of the wall about a year ago. The repaired areas are on the southern half of the bulkhead and northernmost return wall. Some of the sheets are steel while other areas used vinyl sheet piling. Plastic wales were used to retain the tops of the sheets.

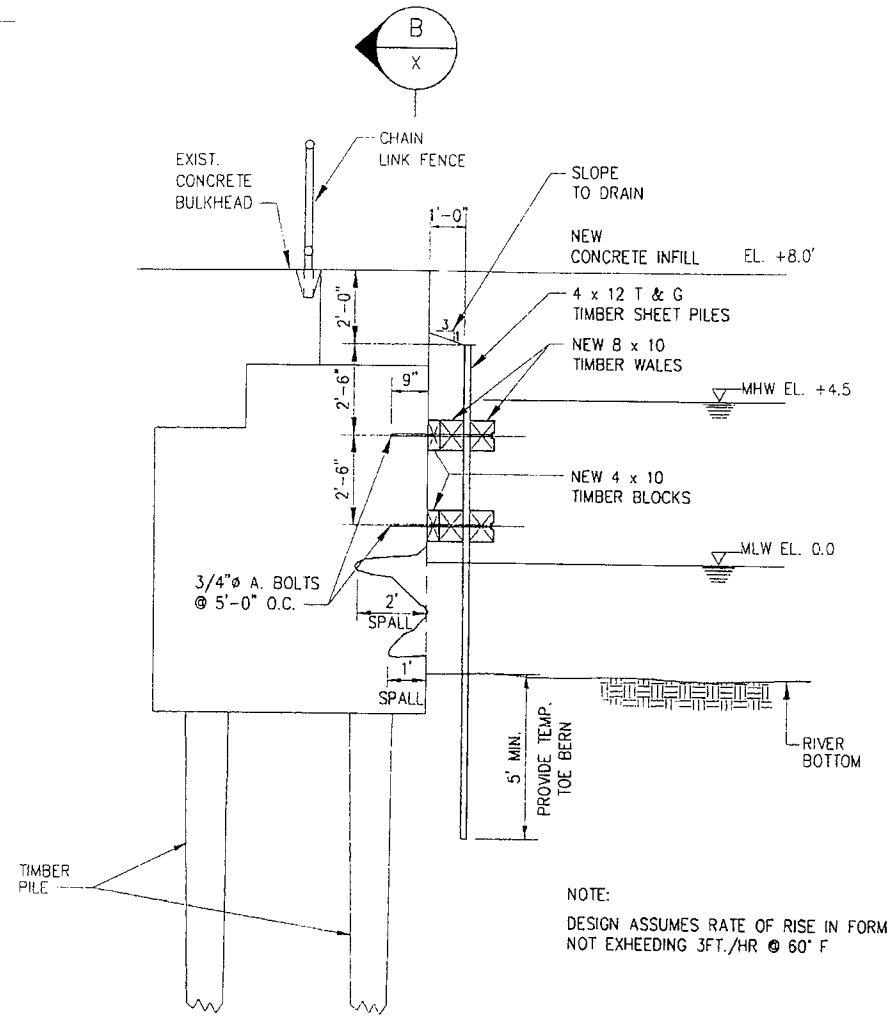
INSPECTION FINDINGS

A previous inspection by Hudson Engineers in December 1997 led to the above noted repairs. The current inspection found no significant changes from those areas that were not repaired. The concrete repairs to the seawall were found in relatively good condition. The plastic sheeting at the mudline is somewhat misaligned with areas of bulging - evidence of difficult driving or obstructions encountered during installation. The sheeting has pulled away from the new concrete approximately 1" at the top in some areas (Photo 4), but for the most part, the concrete repairs are serving their intended purpose. The top wale and hardware are intact but show that some difficulty was encountered during installation, however the tie rods were not trimmed back beyond the nuts(Photo 5). No material was noted to be shifting through or under the bulkhead.

Most of the spalling occurs in the tidal zone and just above the mudline at the northern section of the concrete bulkhead and at the sewer outfall at the southern end. Spalls and eroded areas of the face vary from 3" to 6" deep or 1' to 2' deep (Photo 6). No undermining of the bulkhead was observed. The upland was repaved and previous sinkholes reported by Hudson Engineers were filled. No new sinkholes were observed. Most of the outfall openings have been plugged, a few remain as drains. Table 6 contains a summary of the condition findings at the face of the wall.

RECOMMENDED REPAIRS

The existing repairs to the seawall appear sound and no further measures are warranted except the projecting tie-rods should be trimmed. The unrepaired northern section of the concrete seawall will continue to deteriorate due to wave erosion in the tidal zone and eventually result in its toppling as previously occurred. A timber/concrete facing anchored with wales to the top of the bulkhead is proposed for the repair and future protection of the seawall. Typical repair section is shown in Figure 14. The proposed repair is estimated to cost $933,600 for the 700 linear feet of wall not previously repaired.



The timber facing, which provides an added layer of protection against future erosion of the face could be eliminated if desired, using standard forming techniques for the concrete.

ADEQUACY FOR FUTURE LOADS

The bulkhead once repaired will be structurally adequate for loads imposed of a similar nature as currently exists (e.g. promenade, bikeway, parking). It is assumed that no dredging will be preformed since dredging would undermine the wall, which extends only slightly below the mudline. Should dredging be anticipated the wall will have to be replaced with a bulkhead or seawall. Due to underlying organics and silts as found in the geotechnical investigations, it is assumed that future buildings, if constructed, would be pile supported and hence would not impose any additional loads on the wall.

PERMITTING

The Bulkhead repairs and all new structures and pavements within 30 feet inshore of the bulkhead and 150 feet inshore of the high tide line at the rip-rap slopes will require permits from the following agencies:

- New York State Department of Environmental Conservation (NYSDEC)
- New York State Department of State (NYSDOS)
- United States Army Corp of Engineers (USACOE)
- New York City Department of City Planning, Waterfront and Open Space Planning
- New York City Economic Development Corporation (NYCEDC)
- New York City Department of Business Services, "Waterfront Permit Unit" (DBS)

For the repairs, an USACOE Nationwide Permit will be sought if no new piers are proposed. If no new buildings are proposed and should the work include only repair to the seawall, the work could be performed under the EDC's General Permit with the NYSDEC. Authorization for repairs only can be obtained within about 6 to 8 weeks. If piers and/or buildings are proposed, permit applications should include them and would take considerably longer (see Pier Reconstruction Analysis). Generally, the permits would take approximately 3 to 6 months to obtain. However objections, either directly from these agencies, or from Public Notice could lengthen the process considerably or require changes in the proposal. The above assumes no dredging is proposed.

THIS PAGE:
FIGURE 14 - PROPOSED BULKHEAD REPAIRS

NEXT PAGE:
PHOTO 1,2 - PHOTOGRAPHS OF HARBOR BULKHEAD

PIER RECONSTRUCTION ANALYSIS

PIER DESIGN ALTERNATIVES:
Typical cross sections of alternative constructions are presented in Figures 1 and 2 and are as described below.

1. Timber Pier (see Figure 16): Construction is all Greenhart except for the deck planking which is Pau Lope™ (Tabebuia spp., commonly known as Ipe, Bethabara, Lapacho). This lumber is chosen due to its strength (approximately 3 times that of Douglas Fir or Southern Yellow Pine), it's natural resistance to borer organism attack as well as it's fire resistance. It will however require a 6 to 12-month lead-time since this lumber is harvested to order. This option is estimated to cost approximately $115 per square foot. The above costs exclude fendering, railings and other architectural amenities.

2. Concrete Pier (see Figure 17). This alternate consists of concrete filled steel pipe piles or precast prestressed concrete piles , precast concrete pile caps, and a precast concrete plank deck with a cast-in-place topping. A timber decking is proffered as an option. This option is estimated to cost approximately $ 95 per square foot. Without the timber deck this alternate is reduced to approximately $ 82 per square foot. The above costs exclude fendering, railings and other architectural amenities.

OTHER ALTERNATIVES:
Floating Pier: This was considered but rejected for several reasons including:

- Existing water depths are insufficient near the bulkhead. This would necessitate dredging around the existing piles and then cutting off piles at the new dredge depth.
- Total costs would likely exceed the costs for a fixed pier considering costs for acquiring a barge, mooring spuds and dredging.

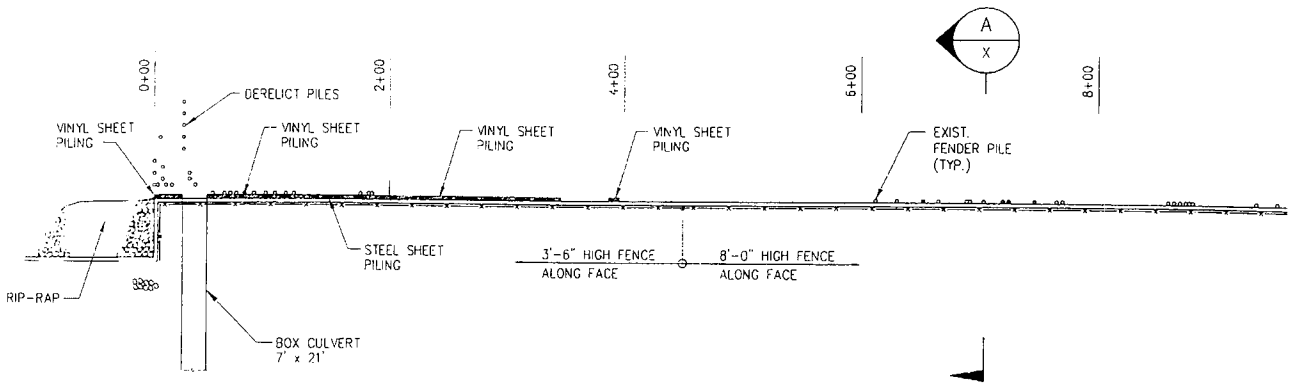
PIER FENDERING ALTERNATES
Hard Fender System: Alternate 1 provides for Greenhart fender piles at 10' o.c. with pile clusters at both corners of the outshore pier only. It does not provide any significant energy absorption capability but is in common use and provides the least costly system if only occasional berthing is expected. As an option, fiberglass reinforced plastic piles could be substituted. Plastic piles can be supplied to "look like" timber in color. The additional cost to furnish these is significant, however replacement frequency will be significantly reduced, possibly outlasting the life of the pier.

Flexible Fender System: Alternate 2 provides a flexible system by adding additional walers and inserting a cylindrical rubber bumper between the wales and the pier. This alternate provides a softer face for berthing, lessening the possibility of damage to the vessel or the pier, however maintenance may increase.

Floating Cushioned Fender System: Alternate 3 provides a floating foam filled system. It provides the softest system and will hold vessels out from the face of the pier.

UTILITIES:
Depending on selection of final usage the following utilities should be considered.

- Potable Water: Min- 1 1/2" heat traced and insulated
- Sewer (plus portable pumpout): Min-. 4" heat traced



and insulated force main plus a portable sewage pump
- Electric
- Telephone

Minimum sizes of all piping are preliminary only, actual sizes will be based on final design requirements. Where berths are designated, consideration of ship's stations should be provided in the form of power posts with electricity, hose bibs for water and sewage. Proposed portable pumpout must be wheeled between vessels for use.

Electrical equipment, backflow preventer, portable pumpout, etc. will require a small shed for housing.

PERMITTING:

The pier reconstruction will require permits from the following agencies:

- New York State Department of State (NYSDOS)
- New York State Department of State (NYSDOS)
- United States Army Corp of Engineers (USACOE)
- New York City Department of City Planning, Waterfront and Open Space Planning
- New York City Economic Development Corporation (NYCEDC)
- New York City Department of Business Services, "Waterfront Permit Unit" (DBS)

Generally, the permits would take approximately 3 to 6 months to obtain and would be combined with permit for bulkhead repairs (see Bulkhead Report). However objections, either directly from these agencies, or from Public Notice could lengthen the process considerably or require changes in the proposal. The above assumes no dredging is proposed.

SUMMARY OF UPLAND INVESTIGATIONS

Subsurface Investigation Program

The subsurface investigation program was conducted from July 11 to July 22, 2001 by CMI Subsurface Investigations Inc. under the supervision of a DMJM+HARRIS Engineer, present on-site for the entire duration of the exploration. The program consisted of the execution of six (6) soil borings (2 land and 4 water borings) and three (3) pavement cores at the project site. The boring location plan is presented as Figure 18.

All borings were drilled using four inch diameter casing installed as needed to maintain an open hole and supplemented with drilling mud in some boreholes. Disturbed sampling was performed at approximately five-foot intervals in accordance with ASTM procedure D-1586. Undisturbed samples were obtained in cohesive deposits using the Shelby Tube Sampler in accordance with ASTM procedure D-1587. Upon encountering bedrock, five feet of rock coring was performed at five of the boring locations, in accordance with ASTM D-2113; using an NX core barrel.

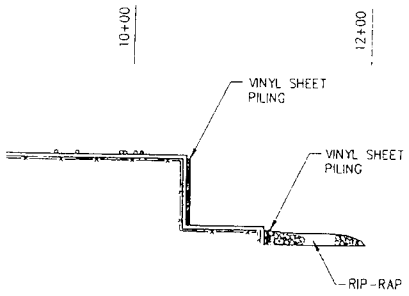
SUBSURFACE CONDITIONS

2.1. - Land Borings

In General five different soil strata were encountered on the land borings: Fill Material, Black-Gray Clayey SILT, Brown SAND, SAND and GRAVEL, and the Bedrock. The soil strata are describes below in greater detail.

THIS PAGE:
FIGURE 15 - EXISTING BULKHEAD

NEXT PAGE:
TABLE 6 - INSPECTION TABLE



tation	Description
+00 to 0+24	Vinyl sheet pile facing of concrete repaired wall.
+24 to 0+45	Double Barrel Outfall Culvert with 12"x12" timber wale above.
+45 to 1+12	Vinyl sheet pile facing of concrete repaired wall.
+12 to 1+88	Steel sheet pile facing of concrete repaired wall.
+88 to 3+46	Vinyl sheet pile facing of concrete repaired wall.
+45 to 3+80	Scaling/spalling with 3" deep exposed aggregate.
+87 to 3+96	Vinyl sheet pile facing of concrete repaired wall.
+25 to 4+50	2' deep and 2' high void in tidal zone.
+55	2'x2' outfall 8' deep.
+55 to 4+65	1" deep scaling in tidal zone.
+95	6" deep 2'x7' spall in tidal zone.
+95 to 5+15	6" wide and 6" deep spalling along horizontal cold joint in tidal zone.
+15 to 5+26	1' high and 2' deep spall above mudline.
+96	Spalled vertical joint 1' deep.
+99	18" diameter pipe in square typical outfall.
+05 to 6+10	3" deep spall 1' high in tidal zone.
+10 to 6+20	1' high and 1' deep spall in tidal zone.
+30	2' deep and 3' high spalling in tidal zone.
+30 to 6+40	1' high and 1' deep spall in tidal zone.
+45	1' deep 2' long spall 1' above MLW.
+65	2' wide 2' high spall. 2'x2'x10' deep outfall plugged with timber.
+70	2' deep 1' high spall.

2.1.1. - Miscellaneous Fill
This layer is mainly composed of Brown, Black or Gray coarse to fine SAND, trace to some coarse to fine Gravel, with rock fragments, mainly Manhattan Mica Schist and Pegmatite, and Ashes. This layer has a thickness of about 41 feet, with an N value ranging from 6 to 35 with and average of 15. Some obstructions were encountered in this layer, namely boulders at a depth of 25 feet at L-2. It is also important to mention that at L-1, the presence of old timber piles forced the relocation of the boring twice within 2 feet of the original location.

2.1.2. - Black-Gray Clayey SILT
This layer is mainly composed of Black to Dark Gray Organic Clayey SILT with little to trace coarse to fine Gravel, little to trace Shells. This layer has a thickness that varies from 20 feet at L-1 and 8 feet at L-2. At L-1, the N value of this layer is 0 (Weight Of Rod) whereas at L-2 it has an average of 6. The difference in N value may be due to the fact that L-2 is located in a commercial parking area whereas L-1 is in an area which sustains only pedestrian activities (fishing). Therefore the SILT would be classified as Very Soft for L-1 and Medium for L-2

2.1.3. - Brown SAND
This layer is mainly composed of Brown coarse to fine SAND; little to trace, coarse to fine Gravel, with a higher density of Gravel in the last 3 to 7 feet overlying the Bedrock. The thickness of this layer is about 31 feet with an average N value of 58. Boulders were encountered at a depth of 95 feet at L-2

2.1.4. - Sand and Gravel
Encountered only at L-2, this layer composed mainly of Black, Brown and Gray coarse to fine SAND, and to some coarse to fine Gravel. It is located between the SAND and SILT layers and has thickness of 25 feet with an average N value of 28 ranging from 21 to 40.

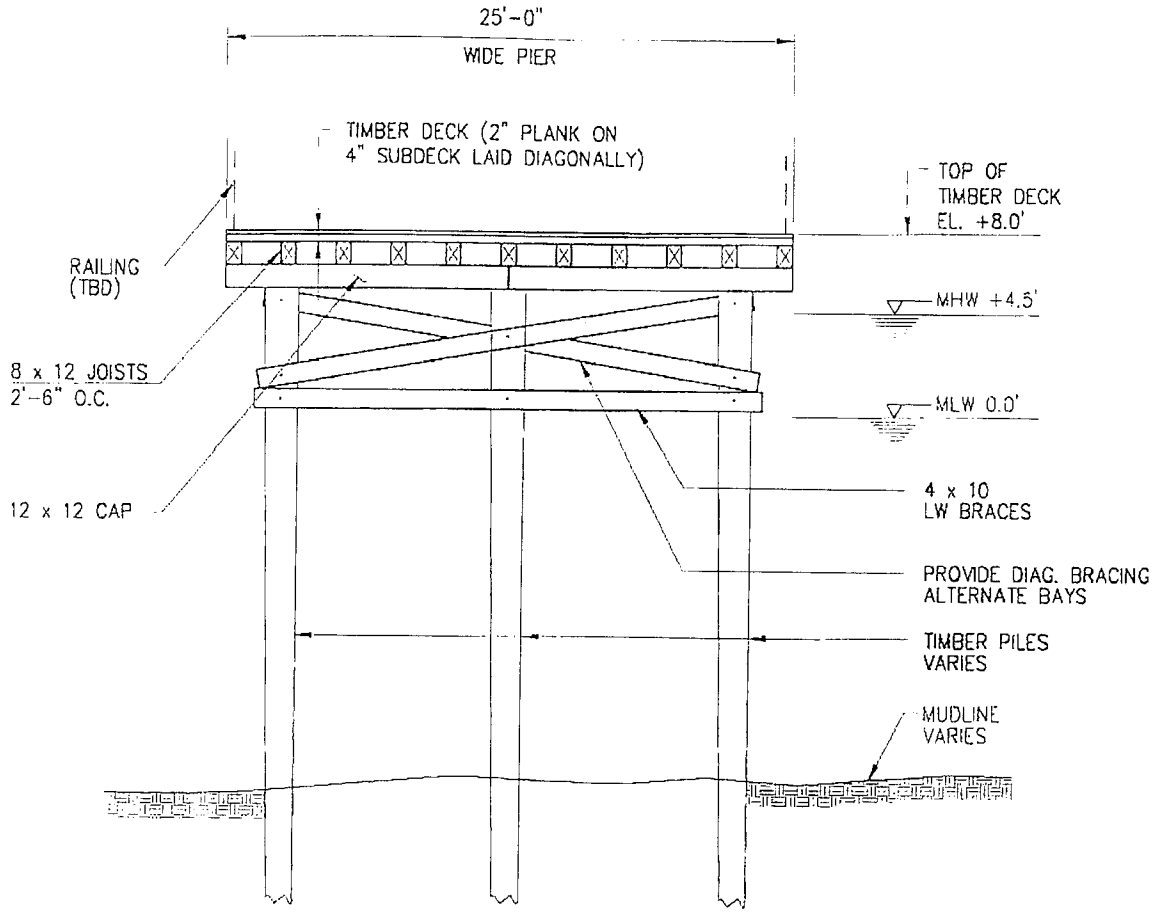
2.1.5. - Bedrock
The Bedrock is a Black, Sound, Medium-Hard Manhattan Mica Schist which presents no signs of weathering and has a perfect Recovery rate (100% in average) and has a RQD value (98.5% in average). Based on the RQD value, the Rock can be said to have an Excellent Rock Mass Rating. The Elevation of the bedrock varies between -91.02 feet and -112.62 feet from the Borough of Manhattan Geodesic Datum.

2.1.6. - Observation Wells
Two observation wells were installed during the course of this investigation program, one at each land boring, to monitor fluctuation in ground water level. Table 8 summarizes the findings of the well observations.

2.2. - Water Borings
Three main strata of soil were encountered during the water borings, Black-Gray Clayey SILT, Brown SAND and the Bedrock. The soil strata are describes below in greater detail.

2.2.1. - Black-Gray Clayey SILT
This stratum is mainly composed of Black to Gray Clayey SILT; little to trace fine Sand; little to trace, coarse to fine Gravel; some to trace Shells. This layer is 63 feet is average in the south side of the project area (location of projected piers: W-1, W-2, W-3) and is as thick as 115 feet in the north side (W-4). This layer has an N value of 0 (Weight of Rod), which qualifies it as being Very Soft.

Some obstructions were encountered while drilling in this layer. More specifically, at W-1 it is interrupted by a 12-foot layer (31' to 43') of



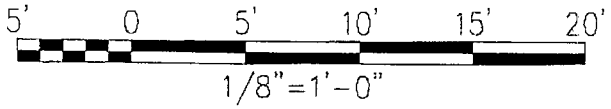
TYPICAL TIMBER PIER

SCALE" 1/8"=1'-0"

(BENTS 15' O.C.)

NOTES

1. PILES AND TIMBER (EXCEPT DECKING): GREENHART.
2. DECKING: (BY ARCHITECT) SUCH AS PAU LOPE, EPE, BETHABERA.
3. ALL TROPICAL HARDWOODS FROM MANAGED FORESTS.
4. PILE CAPS CONNECTED TO PILES WITH 1" DRIFT PINS AND 3/8" x 3" HURRICANE STRAPS - H.D. GALVANIZED.
5. ALTERNATE JOISTS BOLTED TO PILE CAPS, DECK SCREWED.
6. ALL BOLTS 1"ø H.D. GALVANIZED.
7. PILES MAY BE LAGGED – PENDING BORING RESULTS.



THIS PAGE:
FIGURE 16 - TYPICAL TIMBER PIER

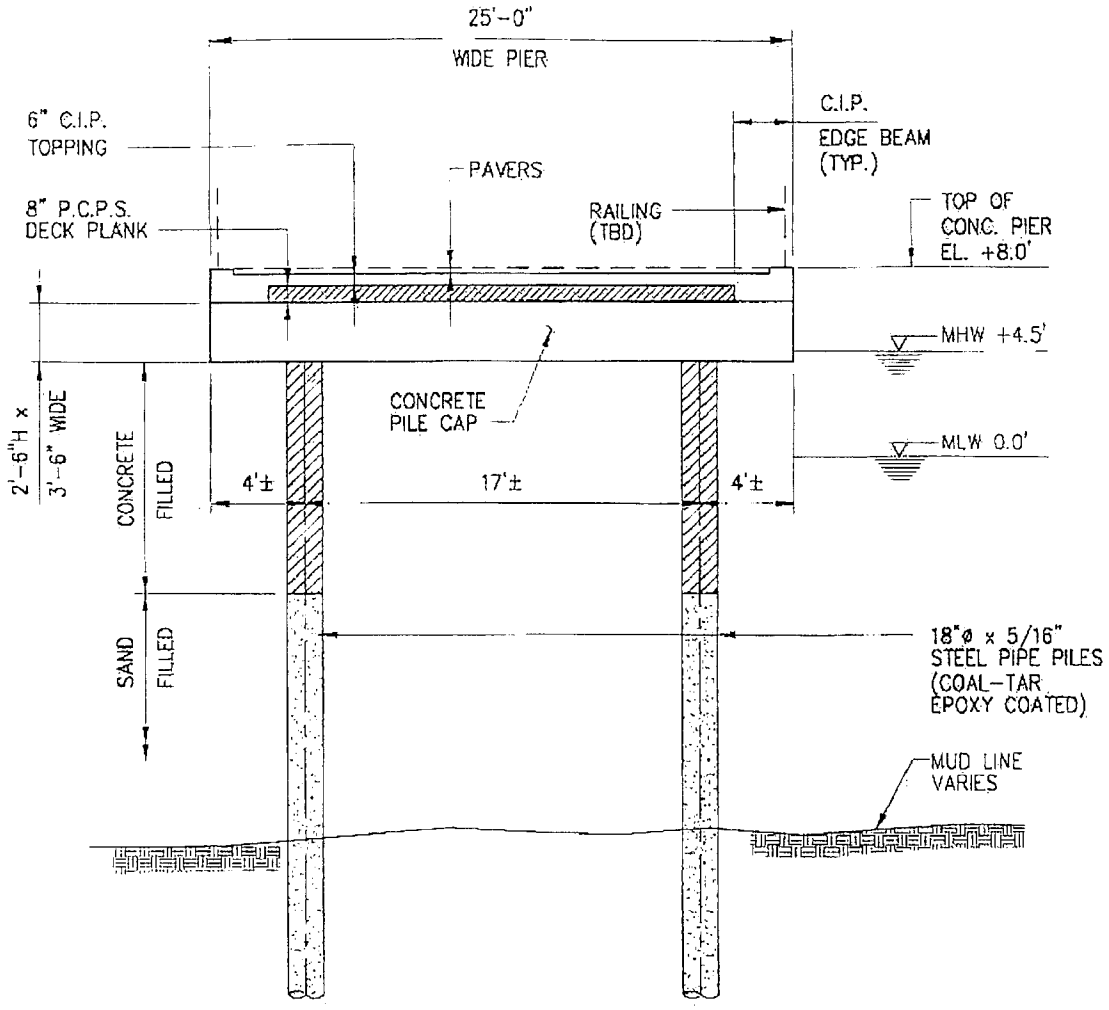
NEXT PAGE:
PHOTO 3,4 - PHOTOGRAPHS OF EXISTING BUILKHEAD

Gravel and decomposed Wood; and at W-3 by a 9-foot layer (30' to 39') of boulders.

At W-2, the first 14 feet of this stratum was mixed with debris from the sewer, namely glass, sand and gravel, wood and porcelain, with a petroleum odor.

2.2.2. - Brown SAND and GRAVEL
This layer was encountered at all water borings except at W-1. It's mainly composed of Brown coarse to fine SAND, little to some coarse to fine Gravel, trace Silt. Its average thickness is 24 feet in the south side of the project area and extends over 50 feet in the north side. The average N value in the south is 29 blows per foot whereas it averages 70 on the north side.
At W-4 a 7-foot boulder was encountered within this layer.

2.2.3. - Bedrock
The water borings were terminated into bedrock except at W-4. The bedrock was identified as being a Sound Black Manhattan Mica Schist with pegmatite inclusions and presenting no signs of weathering. As of the land borings the rock presented very high Recovery rate (98.5 % in average) and RQD value (97% in average). Based on the RQD value, the bedrock can be said to have an Excellent Rock Mass Rating. The profile of the bedrock is relatively flat on the south side of the project area, with an elevation varying between -92.1 and -96.5 feet from the Borough of Manhattan Geodesic Datum. However the bedrock profile slopes northward and was deeper than elevation -186.13 feet at W-4.



TYPICAL CONCRETE PIER

SCALE" 1/8"=1'-0"

ON STEEL PIPE PILES

(BENTS 30' O.C.)

Ground Water Readings (07/21/01)

	L-1		L-2	
Time	Depth	Elevation	Depth	Elevation
7:00 AM	6.75'	- 2.77'	7.33'	-2.95'
3:00 PM	8.00'	- 4.02'	8.33'	- 3.95'

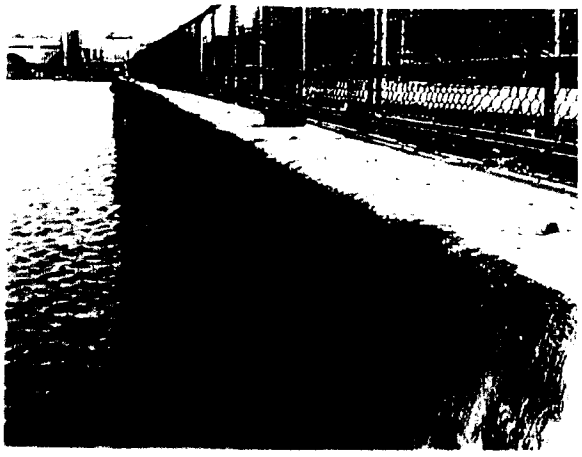
THIS PAGE:
FIGURE 17 - TYPICAL CONCRETE PIER

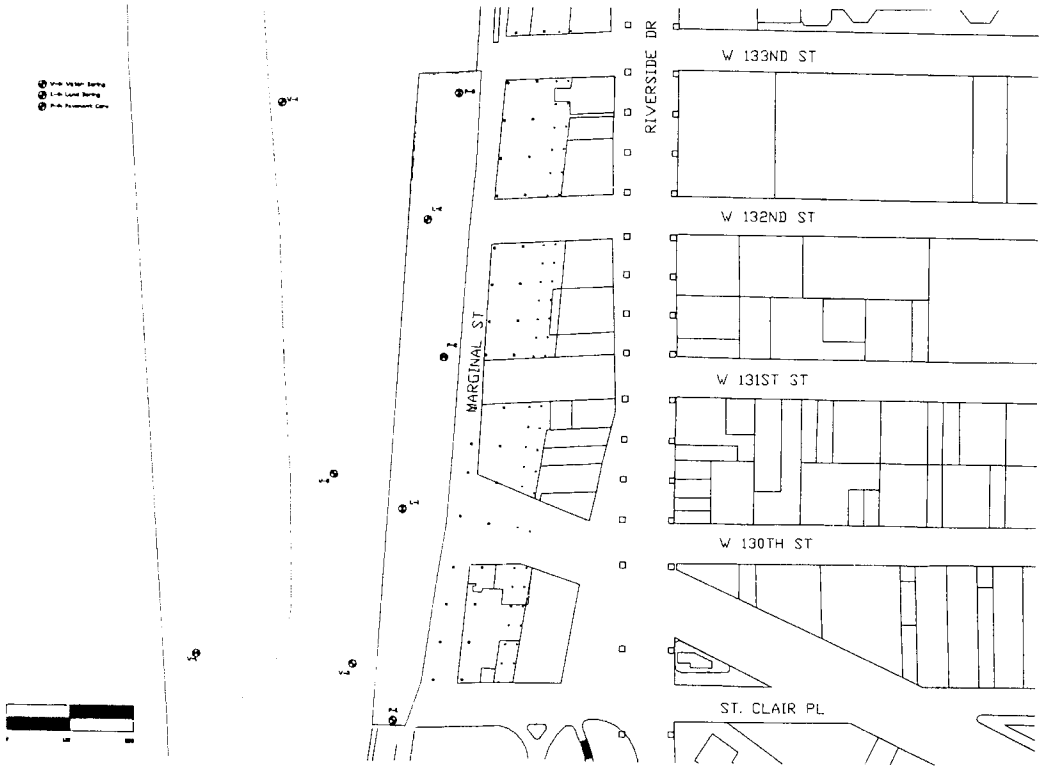
THIS PAGE BOTTOM:
TABLE8 GROUND WATER READINGS

NEXT PAGE TOP:
PHOTO 5,6 - PHOTOGRAPHS OF EXISTING BUILKHEAD

NEXT PAGE MIDDLE:
FIGURE 18 - BORING LOCATION PLAN

NEXT PAGE BOTTOM:
TABLE 7 - BORING SUMMARY





Summary of Pavement Coring

	Description of Pavement	Underlying material
P-1:	➢ 3 1/4 inches Asphalt ➢ 5 1/2 inches Concrete ➢ 2 inches medium to coarse Gravel (base material)	Reddish-Brown, course SAND; little to some, n coarse Quartz Gravel
P-2:	➢ 4 1/2 inches. Asphalt ➢ 5 1/2 inches Cobble (Belgian Block) ➢ 10 1/2 inches Concrete	Brown to Black, c medium GRAVEL and to fine Sand, Trace Silt
P-3:	➢ 4 inches Asphalt ➢ 1 1/2 inches Concrete ➢ 7 1/2 inches Miscellaneous debris: Cobbles and Wood	Brown, Black, Gray coa SAND, little Fine Grave Silt. First 5 in are Oil sc

THIS PAGE:
AERIAL VIEW OF
STREETSCAPE ZONES
(WATERFRONT & W125TH
STREET)

NEXT PAGE ABOVE:
W125TH STREET VIEW

NEXT PAGE BELOW:
WATERFRONT AREA VIEW