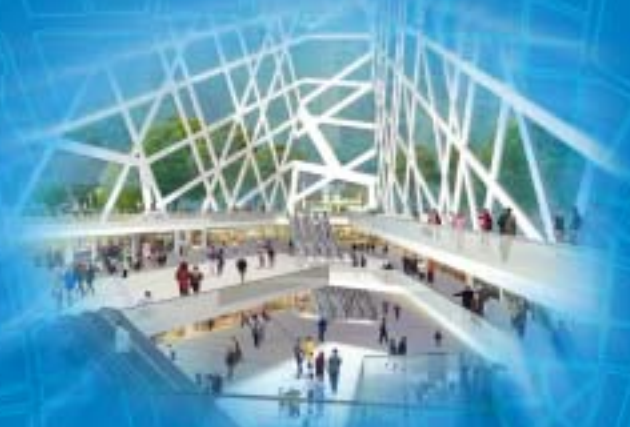
Chapter 1: Restoring and Renewing Lower Manhattan's Transportation Infrastructure



The September 11th attacks destroyed critical portions of the Lower Manhattan transportation system, compounding existing deficiencies and jeopardizing the area's sustainability as a central business district. By rebuilding the transportation network — restoring service, eliminating deficiencies, and anticipating future needs — Lower Manhattan can lay the foundation for its revitalization.

Investments in Lower Manhattan's transportation infrastructure should be aimed at accommodating the rapid pace of 21st Century commerce and ensuring that our downtown remains well positioned among its international rivals. In addition to being the financial capital of the world, Lower Manhattan is home to the fastest growing residential area in New York City, with thousands of new housing units constructed in the last decade. Downtown is the center of New York City's government, the location of several educational institutions, and the site of many new and established cultural institutions. Lower Manhattan's prominence in a number of contexts draws a variety of people from a variety of places, making transportation central to its growth and vitality.

Although Lower Manhattan contains many significant transportation assets, most date back to the pre-World War I era. The events of September 11th struck a devastating blow to this already outmoded system. Going forward, millions of visitors are expected to visit the World Trade Center memorial that is currently in development — straining the capacity of the system still further. It is time to restore downtown's aging and damaged transit infrastructure, and, in the process, assist Lower Manhattan in achieving advanced technological standards. Clean and efficient rail stations, real-time passenger information systems, modern bus facilities, improved vehicular circulation, and enhanced above- and below-ground pedestrian connections are vital to the accomplishment of this objective.

Rail Station and Service Improvements

Subway

Lower Manhattan boasts the densest concentration of subway service in America, with 18 lines and 19 stations[1] serving an approximate area of 1.25 square miles below Canal Street.[2] These lines are heavily used. In fact, Lower Manhattan has by far the highest percentage of transit ridership in the nation. For the almost 220,000 Lower Manhattan workers who live in the city, the subway is the overwhelmingly preferred transit option, with 57% of workers from Manhattan, 77% from Brooklyn, 70% from Queens, and 70% from the Bronx relying on the subway for their commute. With such extensive subway usage, improvements to Lower Manhattan's rail facilities and service should be a high priority.

Nearly all of Lower Manhattan's transportation infrastructure was built in the early part of the 20th century. The last of the major subway projects in Lower Manhattan was the completion of the IND subway tunnels in the early 1930's. The manner in which the transit network developed — over the course of a century and as a set of competing private systems — has resulted in a number of deficiencies:

An illustrative example of the confusing passageways at the Fulton Street – Broadway Nassau Subway Station.

- **Poor Transit Connections:** Transferring between subway lines is awkward and disorienting. The connections between subways and other modes, including the PATH train, ferries and buses, are inefficient.
- **Inadequate Station Conditions:** Many of Lower Manhattan's subway stations have short and narrow platforms, crowded pinch-points that constrict passenger movement, and inadequate stairwells for distributing passengers along the length of platforms.

Many of these problems are manifested at the Fulton Street-Broadway Nassau station, which serves nine subway lines and 62,000 riders during weekday peak periods. Connections between the lines are confusing and circuitous, while the station's pedestrian passages are narrow and crowded and its entries are inadequate. An August 2001 study conducted by the Straphangers Campaign of over 4,200 riders at 15 different stations found that riders were especially dissatisfied with conditions at the Fulton Street station. Seventy-one percent of riders reported dissatisfaction at the crowding in the station — one of the worst ratings of the fifteen stations polled. Riders also complained that the Fulton complex was one of the worst in terms of station information and station security. Overall, passengers gave the station worse ratings than two-thirds of the other stations polled.[3]

Another station that suffers from an antiquated design is the single-track South Ferry station, constructed in 1918. Serving the 1/9 lines the station connects with the Staten Island Ferry Terminal and serves more than 15,000 riders per day. The inefficient operation at South Ferry restricts the number of riders who can board the trains, slows down the loading and unloading process, and limits the capacity of the entire 1/9 line.

World Trade Center PATH Service

The destruction of the World Trade Center PATH terminal on September 11th has put Lower Manhattan at a great disadvantage. The PATH terminal and tracks that lay below the World Trade Center were completely destroyed and the tunnels under the Hudson River connecting the PATH system in New Jersey to the World Trade Center site were flooded, damaging the tracks, signals, and other components. Accommodating PATH service, as well as three NYCT subway lines, and local and commuter buses along perimeter streets, more than 100,000 PATH and subway riders traveled through the World Trade Center concourse each morning — part of an estimated 150,000 total daily users entering the complex. Despite its ability to handle large crowds, its layout was inefficient, circuitous, and made direct connections confusing for workers and visitors alike.

Restoring and enhancing PATH service is crucial. PATH provides the primary transit link to Lower Manhattan from New Jersey, serving local markets in Hudson and Essex counties and providing a key linkage for New Jersey Transit rail commuters on routes that terminate at its major hubs at Newark Penn Station and Hoboken Terminal. In recent years, Jersey City and

The PATH train at the World Trade Center site prior to September 11th.

Hoboken waterfront areas have experienced growth in both residential and office development. Much of that development is within walking distance of PATH stations and has therefore increased the numbers of commuters traveling to and from Lower Manhattan, adding bi-directional ridership pressure to the PATH lines serving Lower Manhattan. PATH's Newark-WTC service was operating near capacity in the AM peak before September 11th. More than 67,000 passengers used PATH's WTC Terminal for travel to and from Lower Manhattan each weekday. The Port Authority introduced ferry service between Hoboken Terminal and the World Financial Center in 1989 to ease rush-hour pressure on the Hoboken-WTC PATH service.

Construction of a temporary WTC PATH station, rehabilitation of the trans-Hudson tunnels, and incorporating terminal station capability, and ten-car platform lengths at the Exchange Place Station are projects which are under way and on schedule for completion by the end of 2003. The temporary WTC PATH facility will be a stand-alone open-air station providing an entrance/exit on Church Street for up to 50,000 daily PATH riders.

The Port Authority is creating new crossover tracks at Exchange Place in Jersey City to enable PATH service restoration at that station by June 2003.

The Lower Manhattan Transit Complex consists of two components: (1) the World Trade Center PATH Terminal and (2) the Fulton Street Transit Center, located at Fulton Street and Broadway. They will be connected by an east-west concourse, extending under Church Street and Broadway.

A GRAND POINT OF ARRIVAL FOR LOWER MANHATTAN

Conceptual image of the PATH Terminal's interior.

Providing efficient and reliable PATH and subway service will be a key driver in the continuing development of Lower Manhattan. Located in proximity to each other, the Fulton Transit Center and the World Trade Center PATH Terminal will be striking physical manifestations of Lower Manhattan's position as a global destination. Whether arriving from London, Long Island or New Jersey, a train traveler's first impression of Lower Manhattan will be the hub located at the World Trade Center site and at Fulton Street. The structure will be a significant architectural icon for Lower Manhattan and serve as a civic space for exhibitions, performances, and important events. The presence of a world-class transportation center will affirm Lower Manhattan's prominence as a global leader in business and define its role as a top Class A office market.

World Trade Center PATH Terminal

A new WTC PATH Terminal is required to fully restore and enhance PATH services that existed prior to September 11th, and to support the economic redevelopment of Lower Manhattan. It is projected that, upon full buildout, over 150,000 people will use the terminal on a daily basis — including PATH and subway riders, and other visitors. The Port Authority of New York and New Jersey is designing the new PATH Terminal to act as a gateway to Lower Manhattan — providing access north to the City Hall area and Tribeca, south to the Financial District, east to the Fulton St. Transit Center, and west to Battery Park City and the World Financial Center.

PATH will continue to be a vital and growing link between Lower Manhattan and New Jersey, as well as New York's Rockland and Orange counties. The region's west-of-Hudson counties are the largest source of Lower Manhattan workers apart from the five boroughs, and are forecast to grow in population more rapidly overall than the boroughs. PATH facilities will be expanded in the new terminal, including lengthening platforms (from 8-cars to 10-cars) and adding a platform, to enhance efficiency and passenger experience, and to accommodate future growth. The new terminal will provide a larger mezzanine level and feature a new regional fare collection system that will incorporate "SmartCard" technology to facilitate travel between transit systems.

Besides improved transit service, the new terminal will also provide more options for connecting with various transit modes, surrounding streets, the memorial, and nearby buildings. Below-grade circulation elements can extend in both north-south and east-west directions, featuring wide corridors and moving walkways to ease pedestrian travel across the roughly 1,000-foot wide WTC site (e.g., between Church Street and West Street or between Liberty Street and Vesey Street). Above-ground circulation will be greatly enhanced as well, with clearly configured pedestrian routes, more lively street-level retail, and shaded parks and open space. Information and wayfinding systems will assist travelers in reaching their destinations.

Studio Daniel Libeskind's Memory Foundations design for the World Trade Center site further fleshes out this transportation infrastructure. The Libeskind design locates the WTC PATH Terminal building between Fulton and Dey streets. The terminal opens onto the Wedge of Light, a large piazza onto which multiple important structures will front, including St. Paul's Chapel, the Millennium Hotel, a new Hotel and Conference Center, and a major new commercial office building. The Wedge of Light piazza is bisected by Fulton Street, a major east-west artery, and connects the new terminal building to both Church and Greenwich Streets. The PATH Terminal becomes a major presence within the new World Trade Center site and arises as a magnificent new structure for downtown.

Given its positioning, the Terminal has the potential for major street entrances along Church Street, Liberty Street, Vesey Street, and possibly others, as well as connections to the Fulton Transit Center (to the east) and the World Financial Center (to the west). The western connection underneath West Street will also provide access to the expanded WFC ferry terminal.

The project will incorporate appropriate security infrastructure and systems, as well as sustainable design components such as building management systems to provide for energy conservation. The WTC PATH terminal design also will allow for the future growth and integration of potential Lower Manhattan transportation enhancements such as airport rail access or commuter rail extensions.

Fulton Street Transit Center

The Fulton Street station complex will be completely rebuilt, reorganizing the existing maze of ramps, stairs and platforms into a more rational configuration in which transfers among the 2, 3, 4, 5, A, C, J, M, and Z subway lines will be simple and easy. It will also create a new, highly visible entry pavilion at the corner of Broadway and Fulton Street, made possible by the acquisition of properties along the Broadway frontage. Rebuilding this corner will make it possible to untangle the corridors, add new and larger station entrances, and create new above- and below-ground links to the 1/9, N/R, and E subway platforms, as well as a new PATH terminal.

The new design will help remedy the station's currently labyrinthian condition, as explained in the previous section, and reduce the time it currently takes passengers to navigate the station. Untangling the corridors and adding new station entrances will provide improved connections among the different lines and facilitate easier passenger movement. Elements such as waiting areas that are clean, bright and safe; clear signage; convenient retail that relates to the surrounding street life; and wide circulation areas will ensure that the Fulton Street Transit Center is a vast improvement over existing facilities. Concerns that passengers currently have expressed around the congestion and lack of information in the station will be addressed through these improvements.

An example of what the MTA's Fulton Street Transit Center's wayfinding information display might look like.

The Fulton Street Transit Center will be a major presence on the revitalized Fulton Street. The LMDC, in conjunction with the Department of City Planning, recently hired two consulting teams – Robert A.M. Stern Architects and Gensler Architecture, Planning, and Design – which are exploring new retailing and design ideas for the Fulton Corridor. The goal of the study is for Fulton Street to become the major east-west artery of Lower Manhattan by transforming the street's character into a unique retail, arts, culture, and entertainment destination. As advocated in Mayor Bloomberg's *Vision for Lower Manhattan*, the transformation of the Fulton Street-Broadway Nassau station into an attractive and efficient transit hub, will significantly aid in spurring the revitalization of the Fulton Corridor — and the surrounding areas — into a lively, mixed-use neighborhood that links the Hudson and East Rivers.

This conceptual rendering by the MTA illustrates how the new Fulton Street Transit Center will be a vast improvement over current crowded conditions.

Lower Manhattan Transit Complex

PROJECT DESCRIPTION:

The Lower Manhattan Transit complex will consist of a new PATH Terminal on the WTC site, a new Fulton Street Transit Center, and pedestrian connections linking these facilities with each other and the World Financial Center and WFC ferry terminal.

The new PATH terminal will provide expanded and modernized facilities including additional and lengthened platforms, "SmartCard" fare collection equipment, and appropriate security. The terminal will also facilitate pedestrian circulation (e.g., to Church Street, and across West Street, Vesey Street, and Liberty Street; as well as on the WTC site itself) to interconnect the various mass transit lines, streets, and future memorial and commercial development.

Agencies:

The Port Authority of New York and New Jersey

Metropolitan Transportation Authority

MTA rendering of the Fulton Street Transit Center concept.

Current Conditions:

The PATH Terminal at the World Trade Center was destroyed in the September 11th attacks. The permanent terminal will replace the temporary WTC PATH Terminal that is currently under construction and scheduled to be in operation by late 2003.

Estimated Schedule and Cost:

WTC PATH Terminal	**Fulton Street Transit Center**
Phased completion over 3 to 6 years	3 to 4 years
$1.7 to 2.0 billion (See note below.)	$750 million

Studio Daniel Libeskind's rendering of the WTC PATH Terminal interior.

Note: The Port Authority is requesting $1.4 to $1.7 billion in funding from FEMA/FTA — an amount that reflects an allocation of potential Port Authority insurance recoveries.

Issues and Impacts:

- Value to Lower Manhattan:
  - The new WTC PATH Terminal will re-establish and enhance the level of service for Lower Manhattan PATH customers, while serving as a major point of arrival for commuters and visitors to Lower Manhattan.
  - The re-configured Fulton Street Transit Center will improve access to and between, the subway lines that it serves and provide a direct link to the PATH, World Trade Center and World Financial Center.

WTC PATH Terminal

- Lengthened 10-car platforms to maximize capacity.
- Additional platform for more efficient loading and unloading.
- New direct-fixation tracks to improve ride quality.
- Direct connections provided to NYCT subways, including 1/9, N/R, and A, C, E lines, as well as the 4, 5, J, M, and Z lines at the Fulton Street complex.
- Direct connection to the World Financial Center.
- Major street presence as a large civic building on the Libeskind Wedge of Light, a piazza that will serve as an important new public space.
- Multiple street-level access points and a main terminal entry building.
- Numerous vertical circulation elements and moving walkways to ease pedestrian circulation.
- Climate-controlled terminal with restroom facilities.
- Sustainable design components for energy conservation.
- Appropriate systems for security and communications systems, and provisions for ADA accessibility.

Fulton Street Transit Center

- Creates attractive and efficient connections between subway, PATH, World Trade Center and World Financial Center.
- Creates an efficient transportation center east of Broadway, where the majority of downtown employees work.
- Improves access between the WTC area and locations east of Church Street including the subway stations.
- Improves orientation and clarity for the customer.

Current Status:

Currently in planning stage. Environmental review underway. Design work to begin in mid-2003.

South Ferry Station

The South Ferry terminal subway station on the 1/9 subway line will be completely redesigned to accommodate the full length of a typical 10-car subway train, rather than the 5-car platform that exists today. As one of the oldest stations in the system, its platforms are so short that only five of the ten cars on the subway can be used for passenger loading and unloading. Consequently, riders unfamiliar with the station may find themselves walking through five cars of the subway just to exit the train.

These changes will speed the movement of trains in and out of the station and reduce travel times between Penn Station and South Ferry. Currently, all trains on the 1/9 line make an extended stop at the Rector Street station to allow South Ferry-bound passengers to move to the first five cars where they need to be to unload. Furthermore, the extremely tight radius of the station requires retractable platforms and limits the speed with which trains can pass through the station.

New connections to the Staten Island Ferry and the N/R station at Whitehall Street will also be made possible. Overall, the upgraded facility will ease the commute of Staten Island residents headed for Wall Street, the World Financial Center, the new World Trade Center, and other destinations in Manhattan.

One important consideration in the renovation of the South Ferry Station is the impact of locating the project within Historic Battery Park. The MTA is developing an alternative design that will accomplish the goals of the project while positioning the new terminal completely outside of the park. Under this configuration, the station will still be in proximity to both the Staten Island ferry and the Whitehall Street N/R station.

The curved, outmoded South Ferry Platform.

PROJECT DESCRIPTION:

Upgrading the existing 5-car loop station on the 1/9 line to 21st-century standards, with a full length (10-car), two-track, island platform for 1/9 trains. The improvements will provide a pedestrian connection to the Whitehall Street N/R station and the Staten Island Ferry.

Agency:

Metropolitan Transportation Authority

Current Conditions:

The current station is configured as a loop, and the platform only accommodates 5 of the 10-car subway trains. As a result, the passengers in the rear five cars must walk to the first five cars in order to exit the train. The loop configuration also hinders efficiency throughout the entire 1/9 line. Currently, there is a connection to the Staten Island ferry, but no direct passenger connections to other subway lines.

Estimated Schedule and Cost

3 to 4 years
$400 million

Issues and Impact:

- Value to Lower Manhattan:
  - The service improvement will increase capacity throughout all of the 1/9 line, reducing travel time for commuters traveling to Lower Manhattan from Penn Station.
- Overall Impact:
  - Accommodates loading of full-length 10-car trains.
  - Additional entrance created.
  - Improves reliability, on-time performance, and travel time for Manhattan's West Side subway service.
  - Provides a new free connection between the 1/9 line at South Ferry and the N/R line at Whitehall St.
  - Given that Staten Island is the fastest growing of the five boroughs -- and that its population growth rate will be among the top half of counties in the region over the next 25 years -- improvements to South Ferry station will help to accommodate increased Staten Island ferry ridership.
  - Provides ADA (American Disabilities Act) accessibility

Current Status:

Currently in planning stage