

Surface Transportation Improvements

Lower Manhattan is the historic core of New York City, characterized by narrow, winding lanes laid down by Dutch settlers in the seventeenth century. Today those lanes are lined by buildings of every era and style, forming canyons amidst towering skyscrapers. The network of streets in Lower Manhattan results in significant congestion, compromises in safety, and inefficient surface transportation.

Although Lower Manhattan enjoys many distinctive features, including historic monuments, great architecture, water on three sides, and a strong commercial and residential base, it lacks several critical elements that could transform it into a cohesive downtown. With narrow and crowded streets, limited open space, and old transportation stations, Lower Manhattan's public realm is in need of improvement. LMDC is focusing on significant public realm changes that can be made throughout Lower Manhattan that will make this historic part of New York a more attractive place to live, work, and visit. Whether the problem is the narrow streets of Chinatown or the width of West Street, planning for Lower Manhattan needs to address problems related to surface transportation.



An example of how high bus volumes create both circulation and parking problems.

The Department of City Planning's 1993 *Plan for Lower Manhattan* noted that "overcrowding, traffic jams, and a jostling for space," end up "pitting pedestrians against vehicles, and trucks and buses against taxis and private cars."⁴ These problems are endemic to the Financial District and the Civic Center, as well as to Chinatown. As early as 1975, the City Planning Commission noted that "a rational and convenient pedestrian circulation network... as well as improvements in the street network...and [West Street]" were necessary upgrades.⁵ Street closings since September 11th, such as those of Park Row and Broad Street, have exacerbated the challenges of street management.

Lower Manhattan is one of the only central business districts nationally that does not contain a bus facility. Bus congestion was identified as a problem as early as the 1966 *Plan for Lower Manhattan*, which considered the lack of a bus facility a major disadvantage relative to Midtown. The creation of the World Trade Center site memorial and the development of the rest of the site will likely increase the number of buses visiting the Lower Manhattan district. This volume increase will pose a growing problem both in terms of circulation and parking.

West Street, also known as Route 9A, is a multi-lane, 260-foot wide highway serving both regional and local traffic in Lower Manhattan. Its traffic conditions and width — more than twice as wide as a typical Manhattan avenue — make it a barrier for pedestrians by cutting off Battery Park City, the World Financial Center, and the Hudson River waterfront from the rest of Lower Manhattan. Significantly, West Street acts as a divide between the World Trade Center site, the emerging residential community south of Liberty Street, and the existing Battery Park City community. Residents complain about the safety hazards of crossing West Street, and retailers in the World Financial Center suffer from their lack of accessibility.



Current West Street conditions.

Since September 11th, there has been extensive discussion of the best ways in which to accommodate the large traffic volumes that flow along West Street, while also improving the pedestrian experience and making the areas adjacent to West Street more amenable to residential and commercial development. The portion that runs along the length of the World Trade Center site is of special concern since it must provide an appropriately dignified and aesthetically graceful setting for the future World Trade Center memorial. Numerous design concepts have been considered that attempt to address the dual goals of meeting the needs of the Memorial Garden within the bathtub of the World Trade Center site — an integral component of Studio Daniel Libeskind's site design — and eliminating West Street as a barrier between Lower Manhattan neighborhoods.

Improving the Pedestrian Experience: The Promenade

The New York State Department of Transportation, working with the LMDC and the Port Authority, has developed a design for West Street that consists of a tree-lined pedestrian promenade from the World Trade Center site to Historic Battery Park. This design will accomplish the goals of creating better east-west pedestrian connections, improving the pedestrian environment, easing surface congestion, and accommodating the need to create a quiet, respectful site for the memorial. This plan will transform a congested highway into a grand landscaped boulevard — one that will rival such exemplary urban spaces as Barcelona's Passeig de Gracia, Berlin's Unter den Linden, or Paris's Champs Elysees.



The new West Street Promenade looking south.

Rebuilding West Street as a tree-lined promenade will allow it to link the World Trade Center site physically and visually to the southern tip of Manhattan, Ellis Island, and the Statue of Liberty. The promenade will incorporate elements such as:

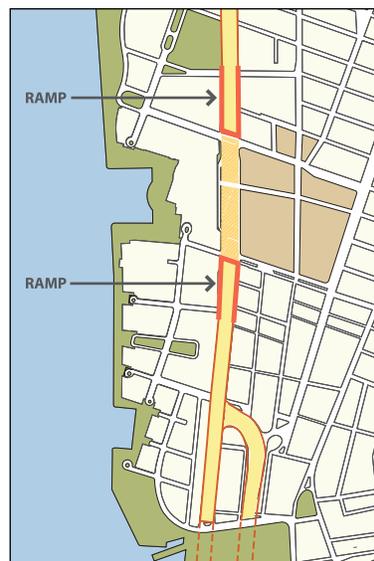
- a wider sidewalk along the east edge of the highway, which will improve pedestrian circulation, provide a buffer from traffic, and provide a more attractive edge to the neighborhood east of the highway and south of Liberty Street,
- realignment of portions of the roadway to allow for the creation of new public open space and green spaces,
- increased landscaping of the open space that will preserve or incorporate the community gardens and green spaces that already exist within the right-of-way,
- decorative pavements, plantings, lighting, street furniture and other streetscape enhancements and pedestrian amenities,
- crosswalks modified to improve pedestrian connectivity and safety, both across and along the highway,
- the introduction of pedestrian bridges, and
- the final link of the Hudson River bikeway, which will run continuously all the way from 59th Street to Battery Park.

Reducing Traffic Congestion

There are several options for reconfiguring West Street into the type of promenade envisioned. The construction of a simple at-grade promenade is one option. Under this option, the length of West Street (from the Battery to the World Trade Center site) would be landscaped. The design and construction of this option would take three years and cost approximately \$400 million.

However, the most effective way* to reduce surface traffic substantially at the WTC site is to build a short bypass tunnel that will create a depressed and covered roadway between Liberty and Vesey Streets -- the length of the four city blocks that are adjacent to the site. This approach creates two levels: the lower level bypass will contain two express lanes in each direction, while a road with two lanes in each direction plus turning lanes will be created at the surface to accommodate local vehicular traffic. The State Department of Transportation estimates that approximately 75% of the traffic along West Street will utilize the tunnel portion and 25% will utilize the surface road. This scenario will result in a much less congested roadway at the WTC site where pedestrians will be crossing, creating a more pleasant environment for residents and workers. In addition, the short tunnel approach will provide opportunities for enhanced landscaping adjacent to the memorial due to the decrease in the number of surface lanes between Liberty and Vesey Street. It also has the advantage of reducing noise from traffic along the length of the World Trade Center site.

Further analysis of the two options is required; however, there is a strong preference for the short bypass, given its advantages. It is estimated that the design and construction of the tree-lined promenade and the short bypass would cost \$900 million. Portions of the promenade would be created within two years, and the entire project would be completed within five years.



Schematic diagram of the West Street short bypass tunnel option.

*Note: Completely tunneling West Street from the World Trade Center site to Battery Park would not sufficiently reduce congestion. It is estimated that 65% of vehicles, most bound for local destinations, would be required to remain above ground.

Short-term Improvement

To ease the passage across West Street and improve access to the World Financial Center and Battery Park City in the immediate term, State DOT, the Port Authority, and LMDC will work with the City and other partners to improve existing West Street pedestrian bridges and construct an additional overpass (e.g. at Vesey Street).



West Street Promenade looking north.

Managing Buses on the Streets of Lower Manhattan

A comprehensive strategy must be developed in order to serve tourists, commuters, and other visitors who increasingly use bus transit to access Lower Manhattan. Buses play an important role in carrying commuters and visitors to Lower Manhattan. Commuter bus volumes are expected to continue to grow in the coming years. Furthermore, even with concerted efforts to promote alternatives, planning estimates show that up to 25 percent of visitors to the World Trade Center memorial will arrive by bus — adding to the existing bus crowding in the area.

Recognizing the conflicting role that commuter and tour buses play in Lower Manhattan by enabling access to the area on the one hand and creating unnecessary street and sidewalk congestion on the other, the Port Authority and LMDC planning teams reached out to partner transportation agencies to conduct a bus study that assessed the future bus demand in Lower Manhattan. These teams developed strategies with the potential to improve service while reducing buses' adverse impact on local traffic and neighborhoods. The effort was aimed at reaching an interagency consensus on the main elements of a commuter- and tour-bus management plan that would coordinate with ongoing Lower Manhattan planning.

Chinatown is another popular destination for both tour and commuter buses but its narrow streets are ill-suited for such uses. LMDC's recently commissioned Chinatown Traffic Study will yield strategies for better managing charter and tour-bus operations serving attractions in that area, and their relationship to routing and operational recommendations for the rest of Lower Manhattan will be considered as that study nears completion.

Tour and Charter Buses

In the summer months, hundreds of tour buses carry visitors to Lower Manhattan's existing attractions each day. The largest tour bus destination is Battery Park, where ferries depart for the Statue of Liberty. Many of these buses utilize the northern curb of the park for staging and storage while passengers visit the historic Statue. The grouping of buses in this specific location is highly disruptive for traffic going to Battery Park City and entering the Brooklyn-Battery Tunnel. Buses also park under the elevated FDR Drive, which poses an impediment to pedestrians wishing to access the East River waterfront and generally detracts from the area around the South Street Seaport. In addition, sightseeing tour buses that can run continuous

tours as frequently as every fifteen minutes during the peak season add another significant layer of congestion.

In addition to gathering data on existing tour and charter bus activity in Lower Manhattan, the bus study examined projections prepared for the Port Authority of potential volumes of visitors to the WTC memorial, as well as estimates of the share likely to use tour or charter buses. Even with excellent subway and PATH service directly at the site, it is forecasted that 15 to 25 percent of all visitors to the memorial will arrive by charter and tour buses. This quantity of buses is so significant that, were the buses to drop off their passengers around the periphery of the World Trade Center site and park on the adjacent surface streets while waiting to pick them up at the end of their visit, the memorial and the site might be ringed by buses at times of peak demand. Since such a situation would seriously detract from the dignity and character of the memorial and would hinder pedestrian and vehicular access to and from the remainder of the site, the Port Authority has identified the need for a secure facility (location to be determined) for the storage of tour and charter buses. This facility would be expected to accommodate between 75 and 150 buses. A bus management plan will be required to ensure the smooth operation of the facility.

Commuter Buses

Commuter buses each day bring over 31,000 passengers to Lower Manhattan. During morning rush hour, over 450 buses travel through the streets of Lower Manhattan. Buses from Staten Island account for 43% of the volume, followed by Brooklyn buses which account for 25%. Eight percent arrive from Ocean, Monmouth, and Middlesex counties in New Jersey. The PA and LMDC bus study concluded that gradual growth in commuter bus volumes is likely. The buses utilize Broadway for southbound travel and Church and West Streets for northbound travel. Bus staging is haphazard, random and disruptive to general traffic flow and pedestrian safety. Certain express buses park on the street all day between the morning and evening commutes. With narrow streets, limited loading zones, no terminal and minimal space for storage or queuing, Lower Manhattan's streets and pedestrian zones are easily congested by these services. Indeed, 52% of residents of Lower Manhattan's Community Board 1 cite traffic congestion and pollution as a high priority problem.

The interagency bus study specifically examined two concepts for improved commuter-bus management. The first was an enhanced on-street operations scenario. This approach would involve further development of priority-lane and curbside treatments, especially on Church Street, including sheltered waiting areas for passengers, information kiosks, and other amenities. This concept preserves the local drop-off and pick-up service that makes commuter buses attractive,

but requires allocating more of Lower Manhattan's limited street and curbside capacity to buses during peak commuting hours, thus potentially impacting other vehicular operations.

A number of strategies are being considered to address the concerns regarding buses making stops through Lower Manhattan. MTA New York City Transit is evaluating options for developing an Advanced Traveler Information System (ATIS), which would allow information on the status of bus service, including bus arrival times, to be provided at each bus stop. Extensively used on European bus systems, ATIS is now being implemented in the United States, including the "Metro Rapid" bus system in Los Angeles, and a demonstration project on the 22-Fillmore bus line in San Francisco.



Queuing passengers crowding Lower Manhattan sidewalks as they wait at their bus stop.

Opportunities may also exist to enhance the "street furniture" and aesthetic appeal at bus stops. In the same way that MTA's Fulton Street Transit Center will provide a gateway to subway service for the Lower Manhattan area, newly designed bus stops and waiting areas could potentially provide a gateway for surface transit services. Portland's Tri-Met bus system for example, which has outfitted downtown bus stops with distinctive bus stop pavilions providing sheltered waiting areas and comprehensive route information, suggests an approach which could benefit Lower Manhattan.

A second concept examined in the bus study focused on development of off-street, full service commuter bus terminal operations in Lower Manhattan, a perennial proposal that attracted renewed attention after the September 11th attacks. The consultant team determined that two facilities would be needed — one to intercept Brooklyn and Staten Island buses using the Brooklyn Battery Tunnel, and another for Holland tunnel buses. These facilities would include berths for loading/unloading, ticketing and waiting areas for passengers, as well as bus storage. Passengers would exit and board buses at the terminals in lieu of on-street service for most routes. This approach would take buses off much of the local street network, but require most passengers to walk further (unless the terminal concept incorporated shuttle bus services).

Though the consultant team concluded both options were viable, the interagency group agreed that the enhanced on-street operations concept offered a better level of service to passengers and supported more efficient bus operations, especially if buses were to be given priority treatment

such as dedicated bus lanes. The group targeted several aspects of the concept for further development, including adequacy of curbside frontage on key routes, potential two-way operation on lower Church Street, and details of enhanced curbside treatment and intermodal transfers at Battery Place and on Church Street and Route 9A where these roadways cross the east-west concourses of the proposed Lower Manhattan Transit Complex.

One problem the group identified for further attention is the deficit in available storage capacity even for existing levels of bus activity. Most commuter and tour buses serving Lower Manhattan are stored outside the area at present. Some park on the periphery of Lower Manhattan in locations likely to be unavailable as redevelopment plans proceed. Operational inefficiencies and site availability complicate efforts to identify additional bus storage sites north of Lower Manhattan or in Brooklyn or Hudson County.



Commuter buses, sightseeing buses and delivery vehicles contributing to congestion on State Street near Historic Battery Park.

World Trade Center Site Stabilization, Reinforcement and Restoration

Ensuring Structural Stability

The damage resulting from the destruction of the World Trade Center site requires significant stabilization to ensure the continued structural integrity of the foundation. In addition, restoration of key below-grade infrastructure – both for transportation and other purposes – is required to prepare the site for future development. Site preparation work includes permanent reinforcement of the slurry wall that surrounds the World Trade Center site, demolition of remaining damaged structures and required excavation.

Creation of New Transportation Infrastructure for Vehicular Access

Reconfiguration of the roadways and ramps that were available at the former WTC complex is necessary to support efficient traffic flow and to meet new security and site-access requirements, including below-grade access for deliveries. Additional underpinning of the 1/9 subway lines is required to allow connections between the east and west sides of the site for construction of the PATH terminal.

Site Preparation for the Memorial and Future Development

The construction of the World Trade Center memorial is a priority consideration in how infrastructure work will proceed. Construction of the infrastructure improvements will be performed in conjunction with implementation of the memorial and with Studio Daniel Libeskind's overall plan for WTC redevelopment.

Restoring Fulton and Greenwich at the WTC site is a crucial component of Studio Daniel Libeskind's site plan. (The configuration of streets at the new World Trade Center is discussed later in this chapter.) Restoration of surface streets on the site, which will require the rebuilding of underlying structural support elements, are important steps that will improve pedestrian and vehicular circulation, and reduce traffic congestion at the site and its environs.

The Port Authority, in conjunction with LMDC, is performing planning studies on the various WTC site infrastructure components described and expects to advance into preliminary engineering in mid-2003.