

Chinatown Access and Circulation Study

Final Report



Prepared by
Parsons Brinckerhoff Quade & Douglas, Inc.

In association with
Chan Krieger & Associates
SIMCO Engineering, P.C.

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1 INTRODUCTION & SUMMARY OF BASELINE ANALYSIS

BACKGROUND

Manhattan's Chinatown owes its dynamic character to its unique mix of physical and cultural characteristics and the myriad activities that take place on the area's principal public places – its streets and sidewalks.

Foremost among these activities are the assembly and movement of people, goods and vehicles on the area's public rights-of-way – including parking, bus staging, freight deliveries, waste pickups, and the many other activities and services that are essential for the area's daily life.

These activities in Chinatown are familiar and readily apparent, and contribute greatly to the area's essential character and cultural significance. They are particularly intense in the oldest and most traditional areas of the community where the public rights-of-way are the most heavily utilized and congestion is the greatest. They have also increased and become more varied over the years as Chinatown has grown and expanded and its economic base has diversified.

While this growth has benefited many in the community and the city as a whole, local and area-wide transportation problems have become increasingly acute, and the need for their resolution more compelling.

The events of 9/11 greatly compounded transportation and access issues in Chinatown.

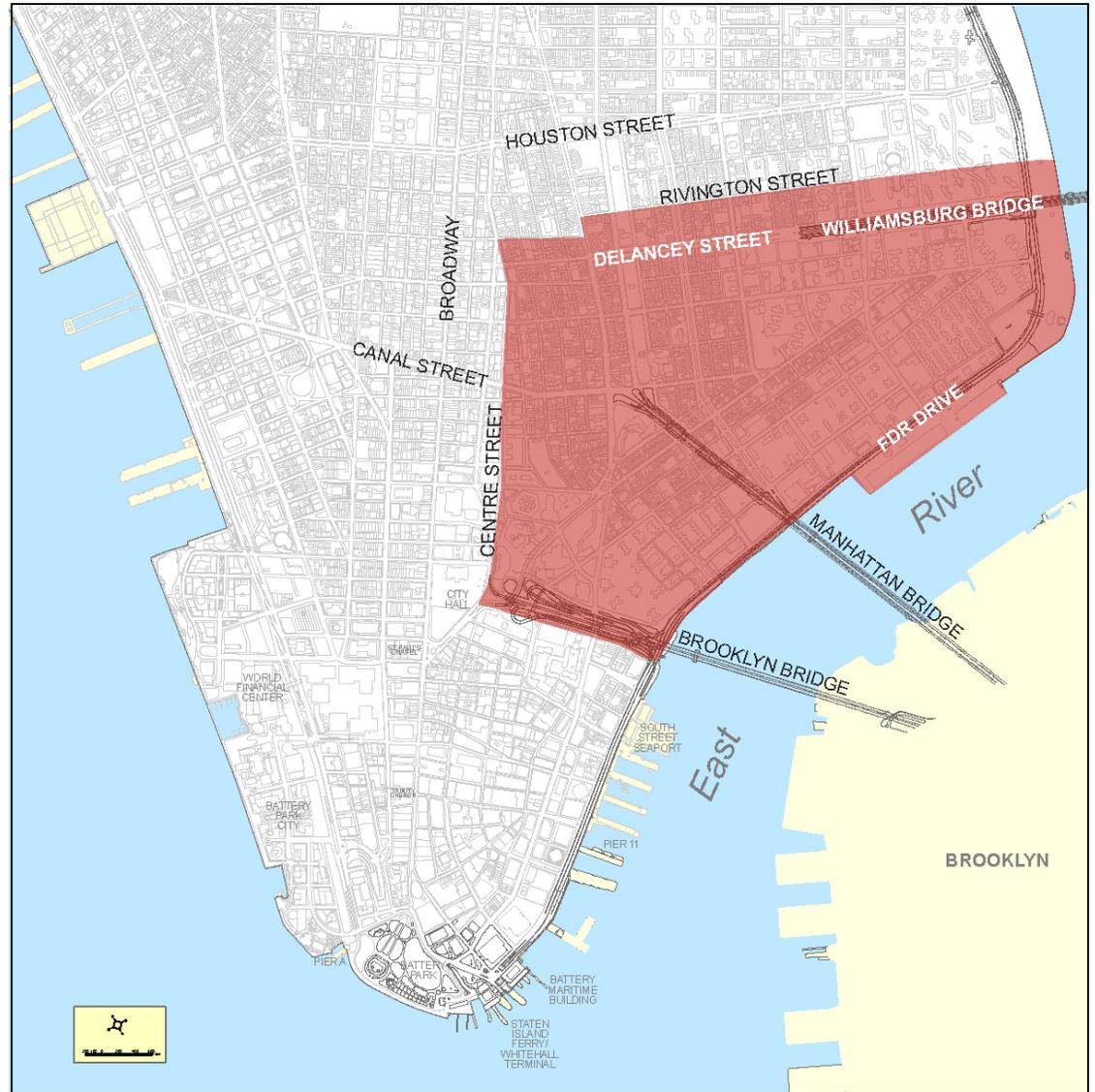


Figure 1-1: Study Area for the Chinatown Access and Circulation Study

Essential linkages to other parts of Lower Manhattan were (and still are, three years later) cut

off, and long-standing crowding and congestion problems became exacerbated. New physical



Figure 1-2: Aerial Photo of the Study Area

constraints burdened the community on many levels. Among the most significant are the disruptions to the street access between Chinatown and the rest of Lower Manhattan.

This report presents recommendations to help resolve access and circulation issues within the Chinatown community of Lower Manhattan.

“Access” is defined as the ability to enter the Chinatown community area or to pass through it while traveling to or from other parts of the city. “Circulation” refers to the ability to move within or throughout the area by any means of transportation, including walking.

The report is the culmination of a nearly 15-month effort initiated in July 2003 by the Lower

Manhattan Development Corporation (LMDC), in cooperation with the New York City Department of Transportation (NYCDOT), to address the issue of the street closures in the civic center area after September 11, 2001, and to identify possible solutions for other transportation problems in this vital area of the city, most of which were significantly exacerbated in the aftermath of 9/11.

SCOPE OF THE STUDY

The “Chinatown community,” the context for these recommendations, includes the Chinatown “core,” which is the traditional, historic center of the New York Chinese community centered on Mott Street and its current center of community life and tourism, and the areas surrounding this 12-block core into which Chinatown has physically expanded or otherwise has an influence on development and community life.

The study area for the Chinatown Access and Circulation Study is bounded by Rivington Street on the north, the Brooklyn Bridge on the south, Centre Street on the west, and the East River on the east (see Figures 1-1 and 1-2). This diverse area encompasses a large portion of the east side of Lower Manhattan south of Houston Street. It includes portions of the civic and governmental area in the southwest of the study area, Little Italy to the northwest, and the Lower East Side to the east. It is the location of three of the five major river crossings into Lower Manhattan and has a number of arterials that are important for access through and circulation within this section of the borough. This entire area is referred to as the “Chinatown community” in this report.

This report is organized as follows. First is an overview of existing study area conditions, with an emphasis on the current status of the community's transportation facilities and services, and a summary of the access and circulation issues and problems confronting the community. Next, the proposed transportation improvement recommendations of the Chinatown Access and Circulation Study are provided, followed by an explanation of the planning process and how the recommendations evolved over the course of the study. Finally, the report concludes with suggestions for implementing the recommended transportation improvements.

SUMMARY OF BASELINE ANALYSIS: ACCESS AND CIRCULATION PROBLEMS

Introduction

A major focus of the baseline analysis was to identify the specific transportation problems that exist within the study area. Other problems that exist in this area were not addressed in the study, except where they directly affect and are related to circulation and access conditions.

The following problems were defined in the initial scope of the study and are described in this section:

- Impacts of the post-9/11 street closings on circulation to and within Chinatown,
- Pedestrian circulation and sidewalk activities including storefront operations,
- Deliveries, freight vehicles, and garbage disposal,
- Tour buses, in relation to tour bus operations elsewhere in Lower Manhattan, and
- NYCT bus services.

The following problems are also briefly addressed in this section, but were examined (or are to be examined) in other current and proposed studies associated with the transportation issues in Chinatown, and therefore were dealt with more generally in this study:

- Chinatown tour buses and commuter van services,
- On- and off-street parking in the area, and
- Subway services.

Impacts of the Post-9/11 Street Closings

Description of the Problem

Subsequent to 9/11, Park Row and other streets in the area of this major arterial route were closed to traffic between Chatham Square and Frankfort Street south of the Brooklyn Bridge to provide security for the NYPD Headquarters building and the U.S. Court House building located nearby. The other streets closed in the area include: Pearl Street between Centre Street and St. James Place, Avenue of the Finest between Park Row and St. James Place, Madison Street between St. James Place, and the Brooklyn Bridge, a small segment of Rose Street near the bridge, and the northbound exit ramp from the Brooklyn Bridge to Park Row.

Prior to its closing, this section of Park Row was the primary vehicular connection between Chinatown and the Bowery and the central area of Lower Manhattan. The intersection at Chatham Square had been reconstructed by the City to emphasize and enhance the traffic connection between the Bowery and Park Row over the connection between the Bowery and St. James Place. The latter connection provides an alternate

route to and from the rest of Lower Manhattan via Pearl and Water Streets.

The closure of Park Row both eliminates an effective vehicular route for the Chinatown community, and has caused increased traffic on other streets in the area.

Prior to 9/11, seven bus routes used Park Row in one or both directions, including the M1 (northbound), M9 (both directions), M15 to City Hall (both directions), M103 (both directions), X25 and X90 (southbound), and the B51 (northbound).

For most of these bus routes, Park Row provided the most direct route and the fastest travel times to destinations south of the Brooklyn Bridge. Rerouting of most of these buses increased the travel distances and travel times for the buses and their passengers, and added additional large (bus) vehicles to the new alternate routes. These alternate routes are more congested and narrower, and require more turns for the buses than the Park Row route.

Locations Where This Problem Occurs

In addition to eliminating a convenient route between Chinatown and the rest of Lower Manhattan, the closing of Park Row also caused the diversion of other vehicular traffic to alternate streets already burdened with other traffic flows. This is particularly the case on sections of Worth Street, Centre Street, St. James Place, and Frankfort Street, but this problem also affects other streets farther away from Park Row.

The closing of Park Row also created access and service disruptions for the Chatham Towers and Chatham Green residential buildings, and exacerbated the traffic flow and pedestrian

shortcomings at Chatham Square. The current configuration of this complex intersection does not adequately serve the links between the arterial streets of the Bowery, East Broadway, St. James Place, and Worth Street.

Significance of the Problem

While the closure of Park Row does not appear to be having a significant impact on the overall number of visitors to Chinatown or on the overall level of business activity in the area, it poses a major inconvenience for those who would use this route were it open to traffic. Its closure affects passenger cars, taxis, trucks, and buses and bus passengers, particularly for the residential buildings near Chatham Square. Its closure also adds significantly to the traffic volumes on the alternate bypass routes, inconveniencing other users of those routes as well as residents, businesses, and pedestrians in areas adjacent to these routes.

As redevelopment continues in Lower Manhattan and the area regains the levels of employment and economic activity lost after 9/11, traffic into and out of the area (including the demand for bus services) will correspondingly grow. With that growth, the effects of the loss of this key connection between Chinatown and Lower Manhattan will become more pronounced.

Pedestrian Circulation and Sidewalk Activities

Description of the Problem

A major part of the life of Chinatown occurs on its sidewalks. The area's sidewalks are the primary means of mobility within the community, and they carry far more people than its streets each day. Moreover, the area's sidewalks serve as key market

areas for shopping (both for shoppers and for many of the vendors and their goods), and are used for a variety of support activities ranging from the loading and unloading of goods, to the storage and collection of garbage and other wastes.

The results, in many locations, are sidewalks that are overburdened with pedestrians, facilities, objects, and activities. They are unable to provide adequate space for pedestrians to walk or circulate comfortably and to pass other pedestrians when necessary. While the experience of walking or shopping on such streets can be stimulating, people who are shopping are also inconvenienced if there is inadequate space to stand out of the way of fixed obstacles or other pedestrians.

The width of a sidewalk and the physical obstructions on it (both permanent and temporary) are key factors in the sidewalk's capacity to handle the multiple demands placed upon it, but a number of distinct factors contribute to sidewalk congestion. Pedestrian volumes are the most important. Larger volumes of pedestrians require a greater width of available sidewalk space to move comfortably and efficiently, and the larger volumes of pedestrians need more space at street corners to cross movement paths and queue for signals and traffic.

Many retail stores on shopping streets in the Chinatown area sell directly from the sidewalks, and in many cases from displays on counters placed on the sidewalks. In addition to the sidewalk space occupied by the displays, shoppers and vendors stand in front of the displays, taking up additional sidewalk space. Sidewalk vendors have comparable operations that cause similar problems, except these

problems typically occur on the curb side of the sidewalks.

The extensive loading and unloading of goods associated with the stores also infringes upon and across many of the sidewalks in Chinatown, taking up space on the sidewalks. This typically occurs whether or not stores have displays extending onto the sidewalks. When loading operations move quickly across a sidewalk between a vehicle and a store, the impact on pedestrian circulation is minimal. However, when items being loaded or unloaded are placed and stored on the sidewalk for a period of time, that sidewalk space is usurped and unavailable for pedestrians. The practice of stacking goods on a sidewalk is more prevalent where the stores themselves have displays on the sidewalk or are selling from sidewalk space, exacerbating the problem at those locations.

The storage of garbage and other refuse on sidewalks until it is collected is not only unsightly and at times unsanitary, but also occupies sidewalk space needed for pedestrians, especially when the waste items are left on the sidewalks during the daytime and early evening hours when pedestrian volumes are highest.

Locations Where This Problem Occurs

The most congested sidewalks in the area were observed on Canal Street, Mott Street, and East Broadway, although some other streets and blocks in the area experience significant congestion due either to excessive sidewalk activities, or to narrow sidewalk widths (or a combination of the two). Other streets where these problems occur include Mulberry Street, Bayard Street, and Grand Street. Still other streets, especially those west of Allen

Street, have more localized problems with respect to sidewalk congestion or pedestrian obstructions.

Significance of the Problem

While Chinatown's sidewalks are the source of a unique vitality for this dense urban area, the levels of congestion on some of the sidewalks pose a significant inconvenience for pedestrians passing through and for shoppers. In a few instances, pedestrians were observed walking in streets to avoid the sidewalk congestion, despite the presence of traffic, resulting in inconveniences and posing safety hazards, as well as interfering with vehicular movements on those streets.

Even sidewalks with only local obstructions or congestion detract from the overall comfort and convenience of pedestrians in the area.

Deliveries, Freight, and Waste Disposal

Description of the Problem

As noted above, freight deliveries and waste disposal contribute to pedestrian congestion when sidewalk space is used for loading and unloading or the temporary storage of items. These activities also occupy critical curb space.

Some delivery practices, while efficient for merchants, do not use the limited curb space available in the area efficiently. If a vehicle occupies a curb space for a long period of time, that space is not available for other vehicles needing to deliver or load goods. The result can either be double-parking or standing by a second truck or vehicle also trying to load or unload freight, or excessive searching for spaces by delivery drivers. Examples of the inefficient use of curb space in the area include:

- Trucks or other vehicles that park along a curb in front of a store and act as mobile storage rooms. Instead of promptly off-loading the goods from the truck and moving the vehicle, the truck may park for a substantial period of time (or even all day), and goods are removed as needed by adjacent merchants.
- Sidewalk vendors may park a vehicle next to the place they intend to occupy and leave the vehicle parked for a substantial period of time, either moving goods out of the vehicle as needed, or simply keeping the vehicle parked nearby.
- Wholesale produce operations in the area use fork lifts on sidewalks and create excessive nighttime noise.
- Waste materials and recyclables are stored on curbsides in the way of traffic and pedestrian flows.

Locations Where These Problems Occur

Problems with deliveries and waste disposal are found throughout the area; however, they are most intense and problematic in the commercial zones along Canal Street, East Broadway, the narrow streets of the old Chinatown area and Little Italy, and particular locations on Grand Street, the Bowery, Allen Street, and Essex Street.

Significance of the Problem

Deliveries, freight movements, and waste disposal (both garbage and recycled materials) affect both sidewalk pedestrian circulation and the utilization of limited curbside space in the area. This problem becomes especially significant where the double standing of vehicles occurs because insufficient curb space is available.

Tour Bus Operations

Description of the Problem

There are two basic types of tours that affect street conditions and mobility in the Chinatown community:

- Regionally-based tours that bring people to Chinatown from outside of New York City
- Locally-based tour bus operations, for which Chinatown is a routine stop

Both tour types have their own unique issues with respect to pedestrian and vehicular traffic flows and parking. The regional tours are not regulated by the City. Therefore, no designated drop-off points and no specific layover locations are provided. These regionally-based tours typically drop off a bus load of tourists, relocate to a site that is on the fringes of the community where the bus lays over for a period of time, and then the tour bus returns to a designated pick-up location to continue the tour.

Regional Tours: Since there are specific drop-off and pick-up areas for these tours, they create a concentrated crowd of people unfamiliar with the neighborhood that disembarks the buses and later reassembles. This process can cause vehicular congestion when the buses are idling to drop their tours, especially if the locations are on a particularly congested street such as Canal Street. For pedestrians, depending on the drop-off point, which may not be specifically designated location, the issue of assembling a sizeable tour crowd on a city sidewalk in the area is problematic for other local pedestrian movements.

Local Tours: Local tours run a prescribed route with designated stop locations. A stop is provided on the southbound portion of the tour loop on

Broadway a few blocks west of Chinatown, and a stop on the northbound side of the loop at Allen and Grand Streets is even farther away from the tourist cores of Chinatown and Little Italy.

Locations Where This Problem Occurs

Regional Tours: Since this type of service is not regulated and is highly transitory, it is difficult to ascertain the specific travel patterns of the bus tours that come into the city, especially as they relate to pick-up and drop-off patterns. However, the regional tour buses tend to congregate in single locations along South Street and Pike Street under and near the Manhattan Bridge during layover periods.

Local Tours: The primary local tour operator in the city (Gray Lines) runs bus tours on a twenty minute headway south down Broadway, with a stop just south of Canal Street, and north back through Chinatown along Allen Street, making a stop at the intersection of Allen and Grand Streets.

Significance of the Problem

Regional Tours: The bus layover locations that have evolved over time along South and Pike Streets, while not congested central spots that particularly affect traffic or pedestrian movements, have their own set of problems. For example, the specific location on South Street, usually along the western side of the street between Rutgers Street and Allen Street, tends to form a wall of buses along this edge of the study area, blocking both visual and physical access to the waterfront, and creating noise and air pollution. A significant investment has been made in recent years to develop the pedestrian esplanade and bikeway along the East River, and the stacking of layover and idling buses has a deleterious impact on the quality

of the esplanade experience. The same problems hold true to an even greater extent for the housing that fronts along South Street north of Pike Street.

Local Tours: While the primary advertised Chinatown stop is on Broadway, two blocks west of the study area, the stop advertised as the “Lower East Side” stop is located in the middle of the study area. The key issue is the economic impact of not having a stop located closer to the focus of tourist activity in Chinatown and Little Italy, particularly on the northbound part of the tour loop.

NYCT Bus Services

Description of the Problem

The overall coverage and frequency of the NYCT bus services were found to be relatively good in the study area. However, three major shortcomings that affect mobility for residents and visitors were identified.

First, there is no crosstown bus service in the area between Chambers Street and Houston Street. The fact that there is no crosstown service on (or near) Canal Street or Grand Street is a particularly significant local issue. In addition to serving short east-west trips, a crosstown route in this area would provide transfer opportunities for the many north-south subway lines traversing the length of Manhattan. It is understood that both Canal Street and Grand Street are exceedingly congested, making bus operations challenging.

Second, prior to 9/11, six bus routes used Park Row in one or both directions, including the M9 (both directions), M15 to City Hall (both directions), M103 (both directions), X25 (southbound), X90 (southbound), and the B51 (eastbound). In addition, the M22 traveled

westbound on Pearl Street, as did the M1 and M15. Based on current bus schedules, a total of 648 buses have been affected by the closure each weekday, resulting in increased travel distances and times, and more congested alternative streets.

Third, while the general levels of service on the existing bus routes were observed to be adequate, with frequent service and seats available on most of the buses passing through the area, problems with schedule adherence and bus spacing were evident on most of the routes. This issue relates in large part to localized traffic conditions and unforeseen incidents that occur far beyond the Chinatown study area. Addressing obstructions to bus movements, such as double-parking and loading, stop line restrictions, and other regulations, would improve schedule reliability on these routes.

Locations Where This Problem Occurs

There is a lack of crosstown bus service between Chambers Street and Houston Street, and in particular on Canal and Grand Streets, the east-west arterials running through the study area where such service could be a significant benefit to mobility.

The rerouting of the Park Row buses subsequent to 9/11 directly impacts the surrounding streets on which the buses are rerouted. Moreover, due to the resulting increased travel time to reach destinations in Lower Manhattan, passengers traveling to points in the downtown area from points all along these routes are adversely affected.

The problem of schedule adherence is largely influenced by factors occurring well beyond the Chinatown area. However, traffic problems and obstructions anywhere along each bus route play a role. The detour around Park Row, which entails

added traffic, the use of some narrower streets, and more turns, also contributes to this issue.

Significance of the Problem

The absence of a crosstown bus route forces some people to travel farther than desired and increases pedestrian volumes in the area.

The rerouting of buses from Park Row both increases travel times for bus passengers and contributes to traffic congestion on the streets containing the alternate routes.

Unreliability in bus arrivals or schedules results in overcrowding on the delayed buses and detracts from the customers' satisfaction with the bus services.

Commuter Van Services

Description of the Problem

Problems associated with the commuter van services in Chinatown fall into two categories: operational issues that relate to the operation of vehicular traffic and pedestrian circulation, and regulatory issues that relate to transportation rules, regulations, and standards.

Operational Problems

- *Disruptions to traffic flows* – On typical weekdays, disruptions to traffic flows by the commuter van services are minimal during the peak service periods, and even appear to be less than that caused by taxis. This is because the majority of the boarding operations (particularly at those sites in front of fire hydrants) occur in curbside lanes out of the moving traffic lanes. In addition, during peak periods, passengers are usually waiting in lines for the vehicles, so it takes very little time to

complete the boarding process before the vehicles depart. Nonetheless, there are many instances where brief disruption occurs due to double-parking/double-standing vehicles, but this is not a regular or predictable problem.

The situation is quite different on weekends when Chinatown generates much higher volumes of both vehicular and pedestrian traffic. Throughout the day, the demand for commuter van services is relatively steady in both directions, but the afternoon demand is usually higher than that in the mornings or evenings. Because the peak van service periods also coincide with the peak traffic peak periods of Chinatown, many curbside spaces, including those in front of the fire hydrants, will be occupied by vehicles other than the commuter vans. In such situations, double-parking/standing for pick-up and drop-off operations are common. Overall, the levels of traffic disruption vary by location and time of day, but these disruptions are generally very short in duration.

- *Occupancy of sidewalk space* – The sidewalk space occupied by passengers waiting for vehicles is affected both by the number of passengers boarding and the average waiting time. However, the pedestrian level of service in the vicinity of commuter van loading sites also depends on the volume of pedestrian flows and the widths of the sidewalk. The formation of queues is a function of the courtesy of the passengers waiting and the constraints that surround each loading site. For example, at sites with high pedestrian flow volumes, such as Bowery and Canal Street, the waiting passengers typically form a single line along the curbsides parallel to the street, minimizing the

potential conflicts with other pedestrian traffic. Conversely, at the Market Street sites, where pedestrian traffic is lighter and there are parking meters along the curbside, the waiting passengers often stand across the sidewalk to ensure orderly boarding.

The waiting crowds do not impose serious capacity or safety problems to pedestrian traffic during the weekdays, with the exception of the Canal Street site where pedestrian flows are usually very high during the afternoon peak hours. On weekends, however, most of the commuter van sites experience a higher level of congestion on the sidewalks because the pedestrian flows are much greater than on weekdays.

- *Traffic violations (illegal parking and standing)* – In order to carry out their business, most of the commuter van services regularly violate the City's parking regulations. While strengthening enforcement might substantially affect the commuter van operations, enforcement alone is unlikely to solve these problems. As long as there is a substantial demand for such services, the operators will continue to find ways to conduct their business. Therefore, it may be necessary to review both the purpose of the affected parking regulations and the operational needs of the commuter van services to strike a balance between these two objectives.

Regulatory Problems

In addition to affecting the operations of the commuter vans and their impact on other street activities, regulations also affect the safety and quality of life for Chinatown residents. Regulatory

issues related to the commuter vans include inadequacies in the following areas:

- Operator licensing
- Vehicle maintenance and safety
- Passenger safety
- Liability and insurance protection

Locations Where This Problem Occurs

There are nine major locations in the Chinatown area where commuter vans regularly load and unload passengers. While the operational problems vary somewhat at each location, all experience each problem to some extent.

The locations where commuter vans operate and where the problems are the most prevalent include:

- Bowery, northbound at Confucius Plaza
- Bowery, southbound between Pell and Doyers Streets
- Market Street, westbound approaching the intersection of East Broadway
- Market Street, westbound approaching the intersection of Division Street
- East Broadway, southbound between Forsyth and Market Streets
- Forsyth Street, westbound between East Broadway and Division Street
- Canal Street, eastbound between Mulberry and Mott Streets
- Hester Street, westbound between the Bowery and Elizabeth Streets
- Elizabeth Street, northbound between Hester and Grand Streets.

Significance of the Problem

While not a particular problem in the morning peak period, commuter vans sometimes contribute to vehicular traffic congestion during the midday and evening peak hours due to double-parking when curb spaces are not available. Where loading occurs on sidewalks that are too narrow and congested with other activities, passengers queuing for vans contribute to localized pedestrian congestion, especially during the evening peak period. While these impacts tend to be short lived, they occur on a regular basis and repeatedly affect the same locations.

Table 2-16 summarizes the problems at each of the locations where the commuter vans operate. Violations of traffic regulations, such as double parking and illegal parking, occur at all of these locations on a regular basis, while the impacts on pedestrians and traffic vary by location.

On- and Off-Street Parking

Description of the Problem

Both on- and off-street parking is in high demand throughout the study area, especially in the commercial areas located west of Allen Street, and in the southwest (Civic Center) portion of the study area since 9/11. The lack of adequate off-street parking places a burden on local streets where parking is allowed.

Additional problems concern the extensive use of street space for placard parking in the vicinity of the criminal courts, and the increase in police and security-related parking in the areas around One Police Plaza.

**TABLE 2-16
PROBLEMS AT COMMUTER VAN LOADING SITES**

| | Location | Disruption of Traffic | Pedestrian Conflicts |
|---|--|-----------------------|----------------------|
| 1 | Bowery, northbound at Confucius Plaza | ◐ | ○ |
| 2 | Bowery, southbound between Pell and Doyers Streets | ◐ | ◐ |
| 3 | Market Street, westbound approaching the intersection of East Broadway | ◐ | ● |
| 4 | Market Street, westbound approaching the intersection of Division Street | ○ | ● |
| 5 | East Broadway, southbound between Forsyth and Market Streets | ● | ● |
| 6 | Forsyth Street, westbound between East Broadway and Division Street | ◐ | ◐ |
| 7 | Canal Street, eastbound between Mulberry and Mott Streets | ◐ | ● |
| 8 | Hester Street, westbound between the Bowery and Elizabeth Streets | ◐ | ● |
| 9 | Elizabeth Street, northbound between Hester and Grand Streets | ◐ | ● |

○ = seldom, ◐ = occasionally, ● = regularly

Source: PB field observations.

Locations Where This Problem Occurs

Parking problems are most severe west of Allen Street, especially in the old Chinatown core and Little Italy areas where the streets are narrow and most tourist and visitor attractions are located. This is particularly the case for the many people who drive into the area on weekends to shop, visit relatives, use local services, or dine. Other problems related to placard parking occur along Baxter Street and on the intersecting streets near the Lower Manhattan Detention Facility.

Significance of the Problem

The shortage of parking, especially off-street options, results in excessive driving around to find available parking spaces. While the opportunities for double-parking are limited in the area because

of the many narrow streets, double-standing for pick-ups or drop-offs is common and significantly interferes with traffic flows. The increased usurpation of on- and off-street parking spaces in the Civic Center, Courts, and Detention Facility areas, especially subsequent to 9/11, has also compounded the parking space shortage.

Subway Service

Description of the Problem

At the initiation of the study, subway service on the two lines that cross the Manhattan Bridge was disrupted due to rehabilitation work on the bridge over the past decade. The travel patterns for the subway routes were initiated in Summer 2001 (shortly before 9/11) when the tracks on the north side of the bridge were taken out of service, and the Q and W services were rerouted to the tracks on the south side of the bridge. As a result, the Grand Street station was no longer on a through-train route, so a shuttle train connected Grand Street to the Broadway-Lafayette and West 4th Street stations, where passengers transferred to other subway lines. Service on the B and D trains, which normally continued across the north side of the bridge into Brooklyn, was cut back to 34th Street, where passengers to and from Brooklyn transferred to the N, R, Q, and W trains.

In February 2004, however, full operations using all four tracks on both sides of the Manhattan Bridge were reestablished for the first time in many years, and services were restored. As a result, the long-standing issue of this subway service curtailment in the Chinatown community area no longer exists.

Summary of the Access and Circulation Problems

The locations of the key access and circulation problems identified in the sections above, and to some extent their prevalence in the study area, are illustrated in Figure 1-3.

While all parts of the study area experience some access and circulation problems, the older sections, mainly located west of Allen Street, tend to have a

higher concentration of these transportation issues because they are more crowded due to the concentration of attractions and services in these areas, and their popularity as tourist and visitor destinations. This finding, while not unexpected, dramatically highlights the interrelatedness, but also locally variable (virtually block by block) nature, of these issues, and influenced the approach to their resolution.

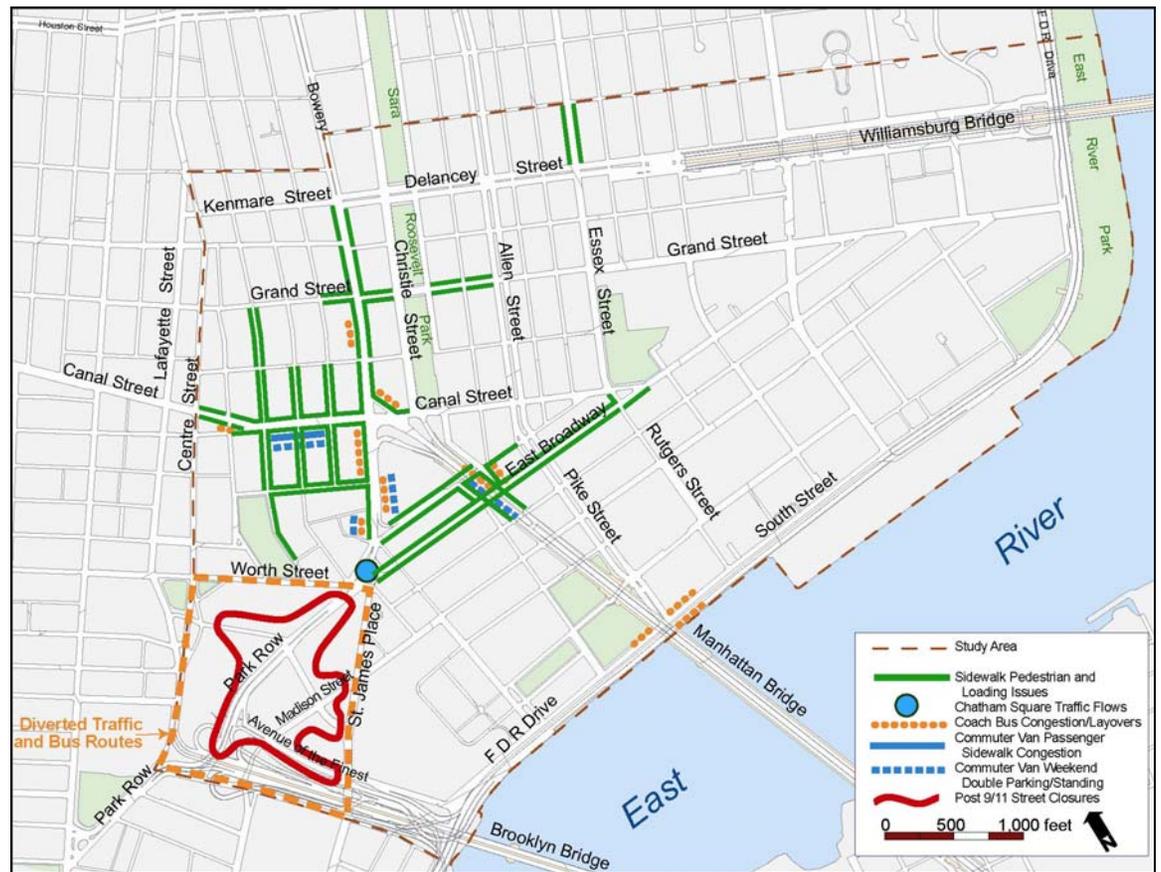


Figure 1-3: Summary of the Area’s Access and Circulation Problems

2 CHINATOWN ACCESS AND CIRCULATION RECOMMENDATIONS

The broad range of investigations carried out in the study ultimately produced seven major transportation improvement recommendations for further consideration by local community, agency and political decision-makers. The recommendations include both discreet actions that address specific transportation problems in the area, and combinations of initiatives that address issues with a broader geographic scope.

The seven transportation improvement recommendations resulting from the Chinatown Access and Circulation Study, are:

- 1) Park Row Improvements
- 2) Chatham Square Reconfiguration
- 3) Forsyth Street Bus Plaza
- 4) Consolidated Commuter Van Stops
- 5) Crosstown Bus Route
- 6) Streetscape Enhancements
- 7) Parking Improvements

The accompanying figure shows the general locations of these recommendations within the study area.



Figure 2-1: Chinatown Access and Circulation Recommendations

1) PARK ROW IMPROVEMENTS

The most important recommendation of the study is to address the closure of Park Row by making it more pedestrian-friendly and efficient between Chatham Square and the areas south of the Brooklyn Bridge, while ensuring it can accommodate vehicular traffic in the future.

The current four-lane configuration of Park Row has excess capacity, and did so even when it was fully open to vehicular traffic. Thus, two lanes could easily be transformed into a tree-lined pedestrian walkway and community amenity without precluding the option of reopening Park Row to partial or full traffic volumes.

A range of potential future scenarios for Park Row were considered in the study, including a full reopening of the street, a limited or partial reopening, reopening of the street in one direction only, and the continuation of its current restricted access. The recommended two-lane concept combines the best aspects of balancing the possibility for vehicular access with an improved pedestrian environment, while continuing to meet the area’s immediate security needs.

The future of Park Row is also integral to plans for the surrounding streets and open spaces in the area, particularly St. James Place and Worth Street. The recommended widening of one block of St. James Place between Chatham Square and Madison Street, and the reconfiguration of Chatham Square, are intended to relieve any remaining congestion caused by the future restrictions on Park Row’s usage.

The concept for a two-lane vehicular route and pedestrian esplanade is being further developed in

LMDC’s Brooklyn Bridge Anchorage Study. That study’s recommendations are considered (with respect to this and the other recommendations in the Civic Center area) as complementary to the recommendations of the Chinatown Access and Circulation Study.

Specific Actions



Concept for Park Row Pedestrian Esplanade

- Reduce most of Park Row’s right-of-way to two lanes, one in each direction, with the possibility for one lane of curb-side parking between Chatham Square and Pearl Street.
- Realign the northern end of Park Row to conform to the recommended Chatham Square reconfiguration.
- Provide more aesthetic security measures for the Police Headquarters building and the Federal Courthouse Annex such as bollards, setbacks, walls, berms, or other similar measures.
- Eliminate the vehicular access and service barriers to the Chatham Towers and Chatham Green residential buildings.



Upgrading of Security Features is Recommended

- Install a landscaped esplanade along Park Row, including attractive paving, trees, shrubs, planters, etc.
- Install improved street fixtures, including benches, lighting, and barriers. Attractive trash receptacles may be placed at appropriate locations away from security sensitive areas.
- Improve pedestrian wayfinding signage along Park Row and other routes through the area.

Actions Related to the Park Row Improvement

The Park Row improvements should be closely coordinated with the proposed reconfiguration of Chatham Square (see Recommendation 2), and other related recommendations. These complementary initiatives would either further enhance Chinatown's transportation linkages to Lower Manhattan, or provide local improvements and enhancements in the vicinity of Park Row and the Civic Center:

- Relocate the security barricade at the north end of Park Row approximately 75 feet to the south, to facilitate entry into the Chatham Green Parking lot and direct access to Chatham Towers.
- Provide perimeter security features around the Chatham Green parking lot, and reconfigure the parking lot as required to provide adequate separation from One Police Plaza.
- Restore and improve James Madison Park as a public green space.

Benefits

The benefits of the Park Row Improvements include the following:

- Improved pedestrian circulation and connections between Chinatown and Lower Manhattan south of the Brooklyn Bridge.
- Potential for partial or total restoration of an important vehicular route for the Chinatown community.
- Improved intersection of Park Row with Chatham Square.
- Aesthetic improvements to the area.

Implementation

The New York City Department of Transportation would have the primary responsibility for implementing this recommendation. Coordination with the NYPD and the U.S. Marshals Service regarding security measures for the Police Headquarters building and the federal court buildings would be required.

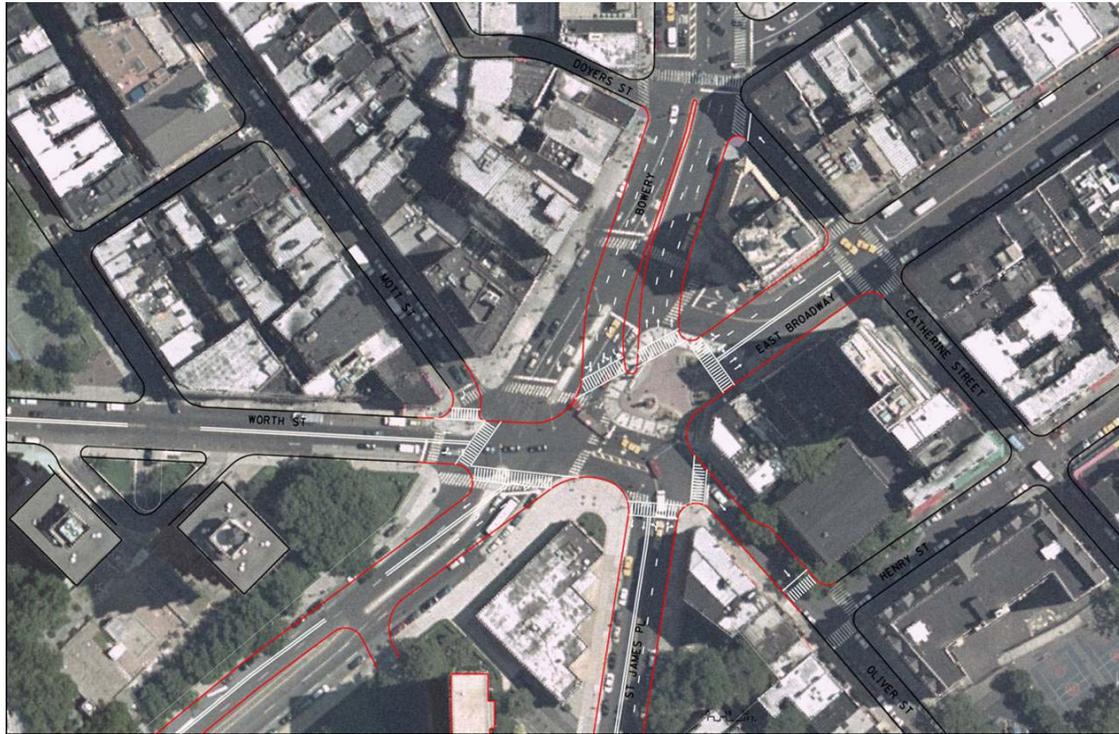


Figure 2-2: Proposed Layout for Chatham Square Reconfiguration

2) CHATHAM SQUARE RECONFIGURATION

Development of a recommended plan for Chatham Square’s reconfiguration began with an investigation of the existing traffic and pedestrian mobility functions of the square, including the drastically changed traffic patterns that resulted from the closure of Park Row after 9/11. Traffic counts were taken on the multiple legs of the Chatham Square intersection, and pedestrian movements were observed and counted.

Various conceptual layouts for reconfiguring the roadways, pedestrian spaces, and crosswalks were considered in the study. These took into account alternative options for Park Row and St. James Place. Alternative arrangements for Oliver and Catherine Streets, which affect the design of the intersection, traffic flows, and signal requirements, were also considered. Further design development requires coordination with plans for Second Avenue subway.

The reconfiguration of Chatham Square emerged as a top transportation priority for the Chinatown community.

Specific Actions

- Reconfigure the Chatham Square intersection (streets, curb lines, and pedestrian spaces) as shown in Figures 2-2 and 2-3.
- Align the Bowery with St. James Place, eliminating the awkward double turn presently required for this north-south connection.
- Align East Broadway with Worth Street.
- Replace the Kimlau Square plaza on the southeast side of the intersection with two enlarged public spaces on the northwest and northeast sides of the Square.
- Incorporate the existing Lt. B.R. Kimlau Chinese-American Veterans’ Memorial and Commissioner Lin statue – along with enhanced paving, benches, lighting, trash receptacles, trees, landscaping, and other features - into the reconfigured public spaces.
- Control the movement of buses and authorized vehicles between Park Row and East Broadway, and between Park Row and the Bowery, with new traffic signals.
- Install improved signage for pedestrian wayfinding in and around Chatham Square.

Actions Related to Chatham Square’s Reconfiguration

The related actions necessary to fully realize Chatham Square’s performance and community design objectives are as follows:

- Widen St. James Place to four lanes between Chatham Square and Madison Street, with on-street parking removed on both sides of the street in this block, to ease traffic congestion on this street, and facilitate right turns through Chatham Square to East Broadway.

- Reverse Oliver Street’s traffic direction to run southbound only between Chatham Square and Henry Street.
- Reverse Catherine Street’s traffic direction to run northbound only between East Broadway and the Bowery. This will allow vehicles to access the Bowery from East Broadway without entering the Chatham Square intersection.
- Allow only right (westbound) turns from Mott Street onto Worth Street.
- Incorporate a bus stop for loading on-off tour buses on East Broadway, just northeast of the intersection.
- Relocate the Chinese Veterans Monument to the west side of the square.
- Relocate the Commissioner Lin statue to the northeast side of the square, facing East Broadway.
- Locate Second Avenue subway entrances so they are consistent with the revised configuration of the Square’s public spaces.

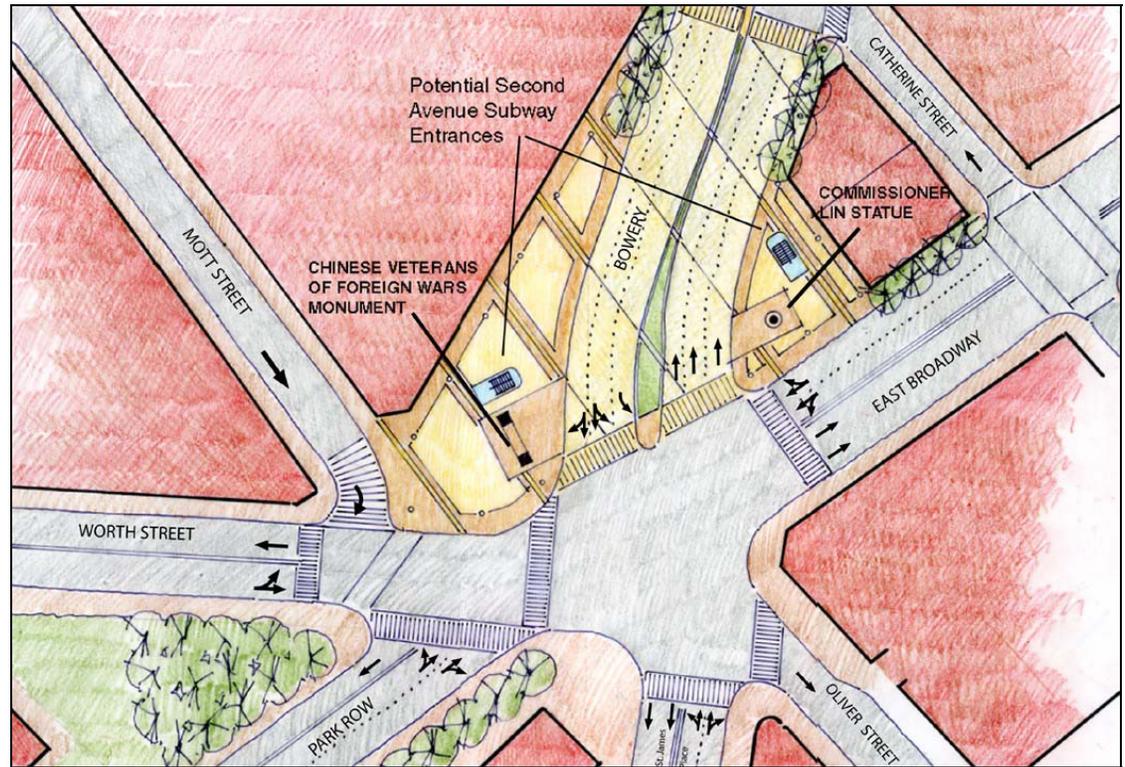


Figure 2-3: Chatham Square Reconfiguration Concept Plan

Benefits

- Improvement of key traffic connections, particularly between the Bowery and St. James Place, between East Broadway and Worth Street, and between St. James Place and East Broadway.
- Improved vehicular circulation in the intersection and improved pedestrian safety at the corners of the intersection due to the recommended changes to Mott Street, Oliver Street, and Catherine Street.
- Improved pedestrian safety due to decreased crossing distances.

- Greatly expanded and improved public spaces along the sides of the intersection rather than in the middle of it, reconnecting the enlarged pedestrian sidewalks and plazas to adjacent buildings and side streets.
- Maintenance of a visual corridor toward the Civic Center and Municipal Building down Park Row.
- Facilitated routing of on-off tour buses through the area, improving tourist access to the core of Chinatown.

Implementation

The reconfiguration of Chatham Square would be carried out by the New York City Department of Transportation and/or through the New York City Department of Design and Construction.

The Lt. B.R. Kimlau Chinese-American Veterans’ Memorial Post of the American Legion would be consulted on the final placement and site design of the Chinese Veterans Monument.

The Lin Ze Xu Foundation of U.S.A. would be consulted on the final placement and site design of the Commissioner Lin statue.



**Figure 2-4: Chatham Square Reconfiguration Concept
(looking northeast from St. James Place)**

3) FORSYTH STREET BUS PLAZA

The presence of coach buses, whether loading or unloading or laying over between trips, has become an important contributor to street and sidewalk congestion in the community. Dealing with the issue of coach buses for intercity travel therefore became a major focus of the study.



Forsyth Street Today Looking North from Division Street



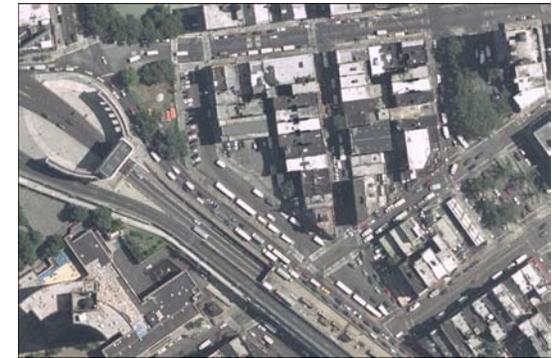
Recommended Forsyth Street Bus Plaza Concept

This recommendation suggests consolidating most of the intercity coach bus operations in one centralized location. The objective is to provide a bus facility, but not to create a formal terminal, or necessarily to promote further growth of these intercity services or competition with other established intercity bus terminals and services.

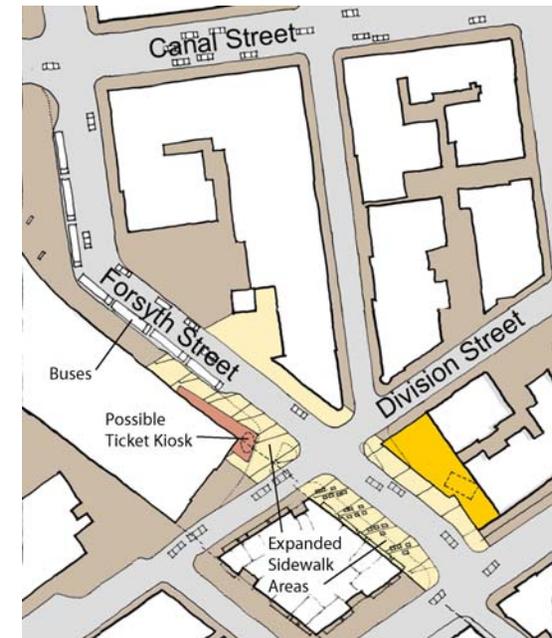
Forsyth Street is a busy coach bus stopping area today, but with better organization, it could accommodate additional capacity and consolidate more services in a single “bus plaza” location.

Specific Actions

- Develop an outdoor bus plaza for coaches serving other cities and possibly for those traveling to casinos. The plaza would incorporate expanded and improved pedestrian spaces and designated zones for bus loading and brief layovers.
- Delineate pavement zones for bus loading and unloading areas.
- Provide a combined ticket and information kiosk on the northwest corner of Forsyth Street at Division Street.
- Improve paving of sidewalks and roadways, visibility of crosswalk markings, signage, and enhanced lighting on the street.



Existing Forsyth Street Layout



Recommended Forsyth Street Bus Plaza Concept

Actions Related to the Forsyth Street Bus Plaza

Full implementation of this recommended transportation improvement requires the following actions to ensure its success:

- Enforcement of bus loading and layover rules and regulations elsewhere in the community.
- Linkage to the commuter van loading site at East Broadway and Market Street, just west of Forsyth Street, one of the three recommended consolidated van loading sites, to allow convenient transfers between the intercity coaches and intra-city commuter vans.

Benefits

- Consolidation of Chinatown's intercity coach services at one location in the community.
- Improved organization of the bus loading area to facilitate improved coach bus operations and passenger access to the coaches, and reduced sidewalk congestion elsewhere in the community.
- Centralized control of ticketing and customer waiting, and information source for passengers.

Implementation

Implementation of the Forsyth Street coach bus facility (the street reconstruction elements) would be primarily by the New York City Department of Transportation. Operations of the bus plaza could be undertaken by the NYC Economic Development Corporation or a Local Development Corporation or similar private local community-based entity. Coordination with the coach operators and enforcement would be required,

particularly to consolidate the operations of coaches that are operating elsewhere in Chinatown.

4) CONSOLIDATED COMMUTER VAN STOPS

The study demonstrated a significant need to better organize and enforce regulations for the commuter van operations in the Chinatown area. The most important step for resolving this traffic and sidewalk congestion and safety issue would be to designate and provide specific locations for these essential services, without promoting their growth or expansion to other locations within the community.

Numerous issues including safety, street and sidewalk congestion, and rivalry over stop locations and routes have characterized many of the commuter van operations in Chinatown. As a result, the NYPD, who is responsible for traffic and safety enforcement, identified three locations, with input from the van operators, to consolidate existing van operations in the area.

These consolidated commuter van stops were analyzed and endorsed by the study.

Specific Actions

- Designate consolidated zones for commuter van stops at the recommended locations (as shown in Figure 2-5):
 - The Bowery at Pell Street
 - The Bowery at the Confucius Statue
 - Market Street between East Broadway and Division Street
- Designate sidewalk and street pavement zones for van pick-up and drop-off operations at these locations.

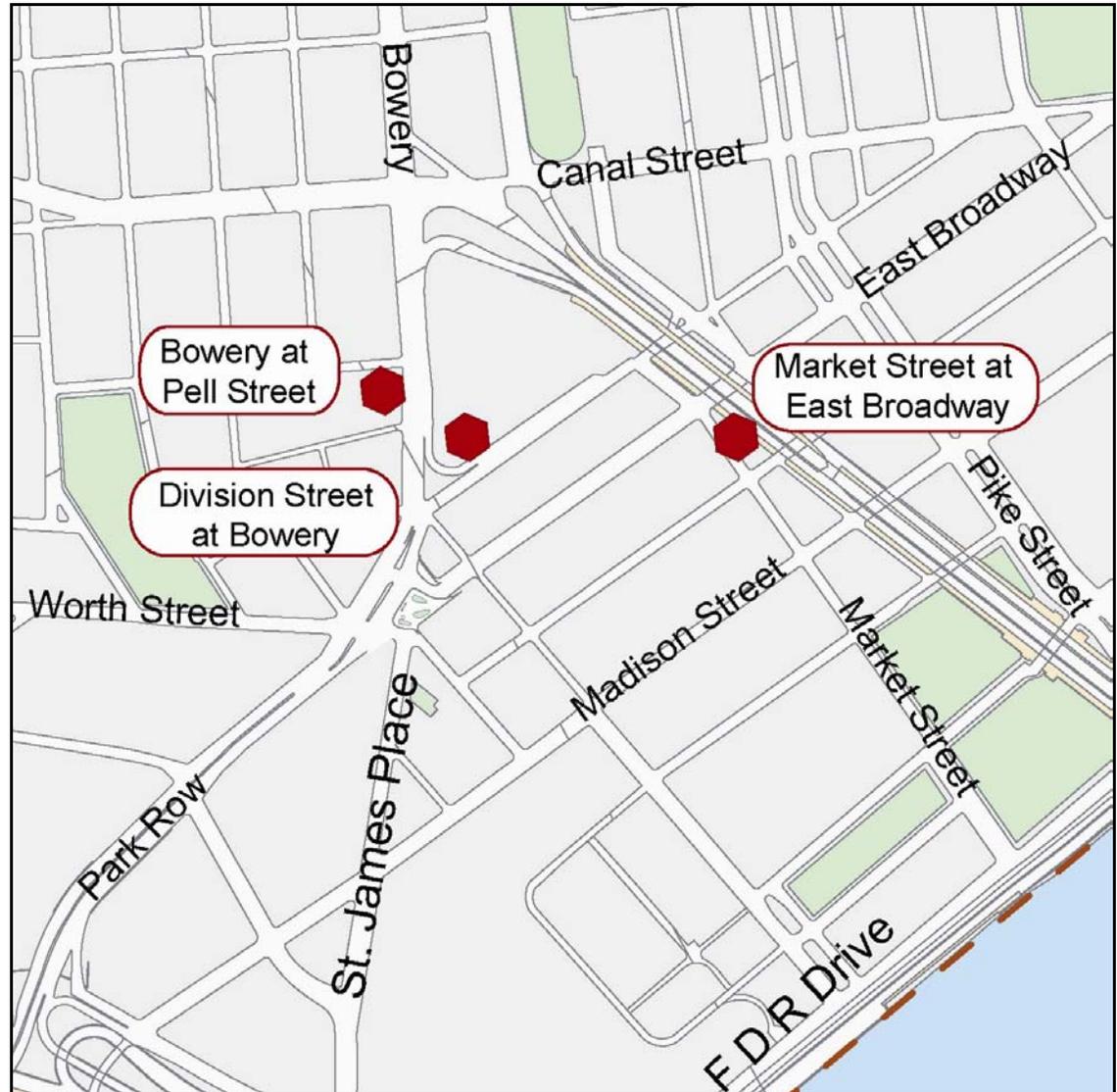


Figure 2-5: Recommended Locations for Consolidating Commuter Van Stops

- Install bilingual signs and lighting on sidewalks at the commuter van loading areas for passengers and pedestrians.
- Monitor and enforce usage of the designated commuter van loading areas.

Actions Related to the Commuter Van Stop Consolidation

- Enforcement of all regulations restricting commuter van operations (legal or illegal) at other locations in Chinatown.

Benefits

- Reduction of the negative traffic impacts of the current ad-hoc van operations in the area.
- Coordinated and monitored van loading to improve safety and security for the passengers and drivers.
- More easily controlled and resolved approaches to issues related to competition over routes and stop locations.

Implementation

The NYPD has stated its intention to implement this loading area policy for commuter vans in the area, and will continue to have primary responsibility for enforcing use of the commuter van loading and unloading areas.

The New York City Department of Transportation would either undertake or facilitate the placement of appropriate pavement markings, signage, and lighting.

Cooperation of the commuter van operators is required to ensure effective and safe operation of the van loading zones, and of van operations in the community in general.

5) CROSTOWN BUS ROUTE

The desire and potential need for a crosstown bus route in the study area were demonstrated by comments received during the study's community outreach efforts, and through a general review of the potential ridership demand associated with such a route. The two most likely locations for a route are Grand/Broome Streets, and Canal Street, as shown on Figure 2-6.

A brief analysis of the year 2000 U.S. Census journey-to-work data for likely ridership catchment areas within and west of the study area indicated that sufficient demand may exist to justify a new crosstown bus route in the area. Although such a route is recommended based on a preliminary analysis, more detailed study will be required to fully establish its feasibility and demand.

Specific Actions

The specific actions recommended for this improvement are as follows:

- Conduct a detailed study of the two potential routes for a crosstown NYCT bus route, to be located on either:
 - Canal Street, or
 - Grand and Broome Streets.

Benefits

- Improved crosstown access for residents of Chinatown and of Tribeca, west of the study area.
- Connections between a crosstown route and key subway stations on Canal and Grand Streets.

Implementation

Studies for a new route and implementation of the route would be conducted by the NYSDOT / NYMTC Canal Street Area Transportation Study and are subject to budget considerations by MTA.

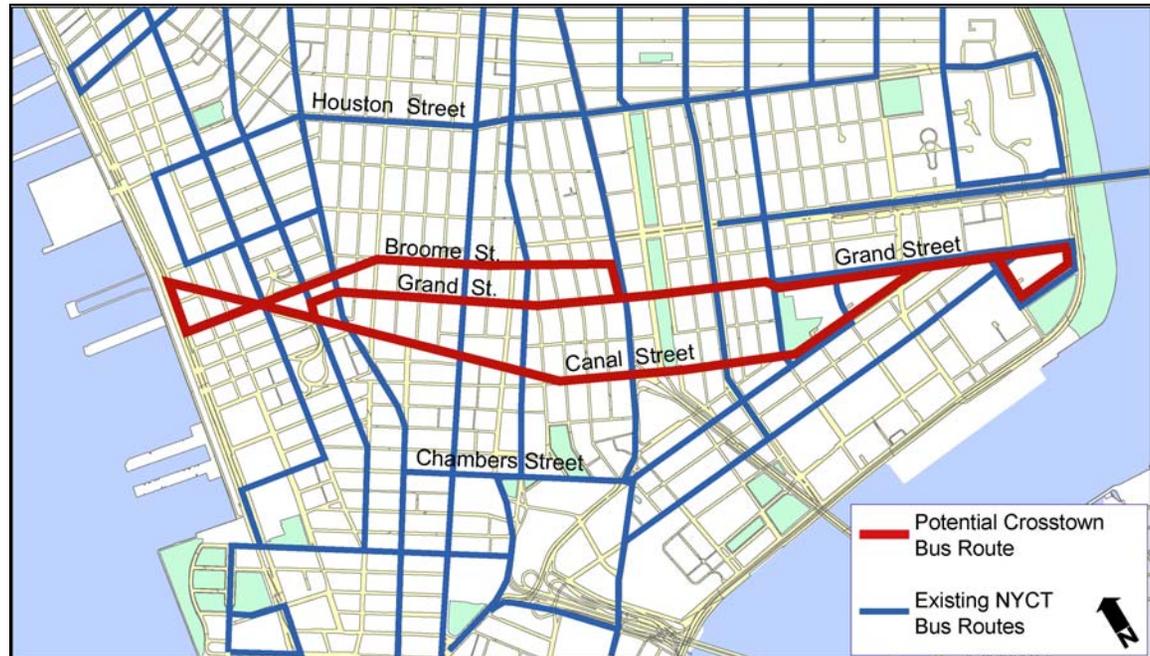


Figure 2-6: Potential Alternative Crosstown Bus Route Locations

6) STREETScape ENHANCEMENTS

The study determined that enhancements to the streets in the area could improve pedestrian and vehicular mobility by clearly delineating major street activities, better integrating multiple street uses, and increasing the likelihood of better enforcement of street activities that involve retail sales activities and other commercial uses. The overall objective of these enhancements would be to reduce traffic and pedestrian conflicts at congested locations.

A broad variety of potential improvements and actions were identified for possible selective application, as well as improvements at five specific locations, one of which would be a streetscape enhancement case study.

Specific Actions

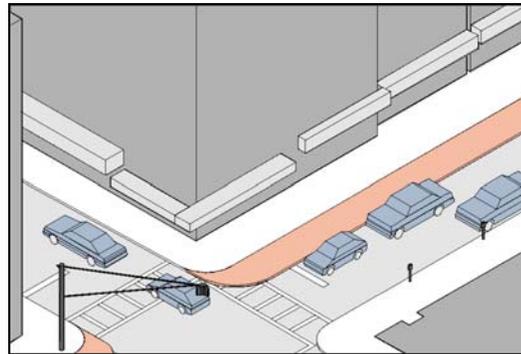
The specific recommended streetscape improvements include the following:

1. A new midblock crosswalk on East Broadway between Catherine and Market Streets, requiring a new midblock traffic signal.

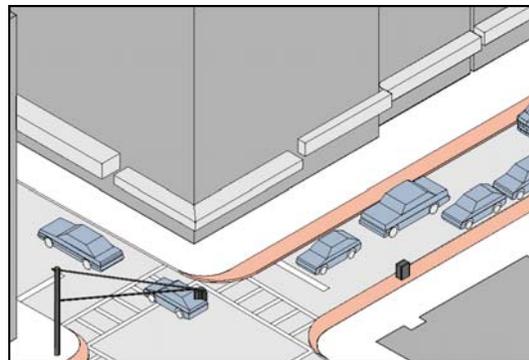


Midblock Crosswalk, Sidewalk Widening, and sidewalk Bulb-outs on East Broadway

2. Widened sidewalks and new sidewalk “bulb-outs” on East Broadway between Chatham Square and Forsyth Street, on one (the east side) or both sides of the street.
3. New crosswalks on Worth Street at Baxter Street, requiring the installation of traffic and pedestrian signals at this intersection.
4. Widening of one or both sidewalks and maintenance of one through lane and one parking lane on Mott Street between Canal Street and Chatham Square.

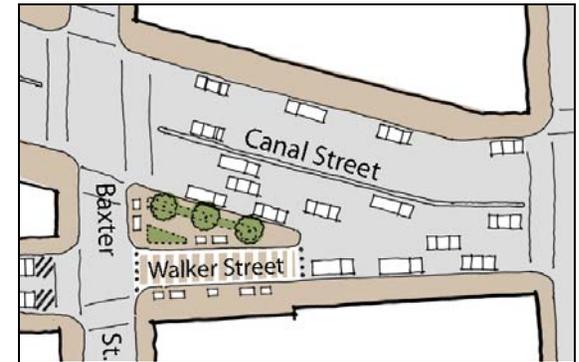


Potential Sidewalk Widening: Option A



Potential Sidewalk Widening: Option B

5. Implementation of a streetscape enhancement case study at the Baxter/Walker Triangle, initially involving a time-of-day closure on Walker Street and pedestrian-oriented improvements to the traffic island.



Baxter/Walker Triangle Time-of-Day Street Closure Case Study

6. Sidewalk bulbouts at selected bus stop locations to facilitate bus operations and provide additional space for waiting bus passengers.

Actions Related to Streetscape Enhancements

Streetscape improvements may also be implemented at other locations throughout the community, based on further studies and consultations among local community residents, businesses, and organizations.

Potential streetscape improvements, which could be applied on a selective basis throughout the study area, may include the following:

- Delineated sidewalk zones for retail and vending, pedestrian movement, and curbside loading, using distinctive paving materials or colors for different allowable uses.



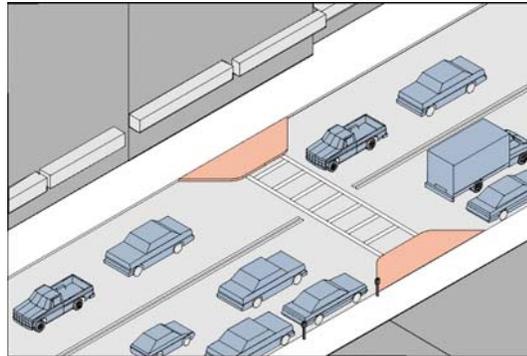
Congested Narrow Sidewalk on Mott Street



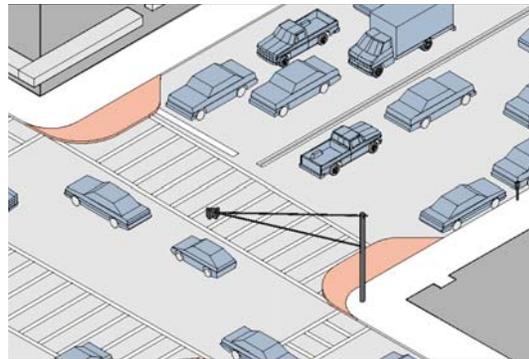
- Delineated parking or loading zones through the use of distinctive pavements on the streets.
- Widened sidewalks at selected locations. (Sidewalk widenings of 2 to 4 feet may be beneficial and feasible on some streets in the area without reducing the number of vehicular traffic lanes.)
- In areas where security barriers are needed, provision of attractive bollards, benches, or

other measures that are more visually appealing than Jersey barriers and other current fixtures.

- Installation of pedestrian wayfinding signs.
- Installation of high visibility crosswalks at selected locations.
- Implementation of sidewalk bulb-outs at



Midblock Sidewalk Bulb-out and Crosswalk



suitable street corners and midblock locations. (Street pavement widths should not be reduced to less than 20 feet at any location, however.)

- Implementation of mid-block crosswalks on selected longer blocks where significant cross-street pedestrian activity occurs, and where a

new traffic signal is warranted as determined through further study.

- Implementation of time-of-day closures on selected blocks to facilitate pedestrian circulation, shopping, and walking. Time-of-day closures may be applied only on Saturdays or Sundays, or on a daily basis.
- Application of appropriate controls for store or vendor encroachment on sidewalks, while remaining sensitive to the need to maintain Chinatown’s unique street vitality.

Benefits

- Improved pedestrian circulation and comfort on busy sidewalks.
- Reduced congestion on streets.
- Improved streetscape aesthetics.
- Better sense of organization and safety on the area’s streets.
- Improved conditions for waste removal and street and sidewalk sanitation.
- Improved bus operations and waiting areas for bus passengers.

Implementation

Streetscape improvements could be implemented by the NYCDOT, or by a Local Development Corporation in cooperation with the NYCDOT.

7) PARKING IMPROVEMENTS

The issue of parking in Chinatown is to be further explored in a forthcoming study, but various options and requirements, mainly focusing on off-street parking, were preliminarily considered in the Access and Circulation Study. The most significant and potentially feasible recommended action that emerged is a possible new parking garage, covered by a public park, on a site just west of the study area. Additional studies are required to determine its potential capacity and feasibility.

Specific Actions

The specific actions associated with the recommended parking improvements are as follows:

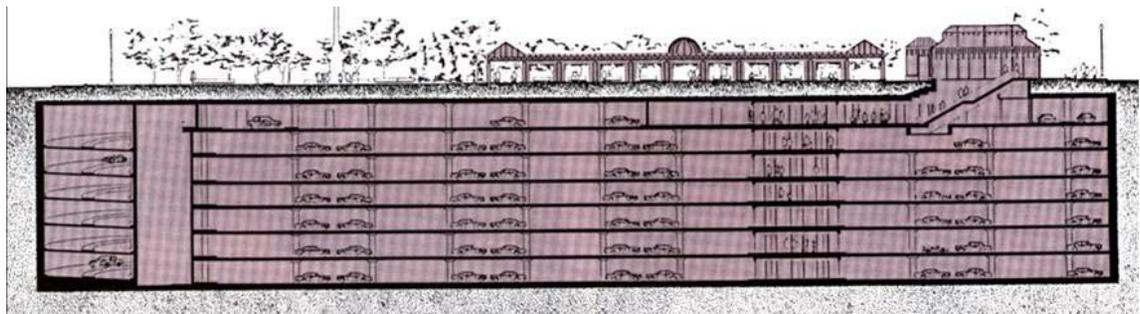
- Further study the feasibility and construction of a new underground parking garage at “Collect Pond,” the existing parking lot and park on and north of Leonard Street between Lafayette and Centre Streets.
- If implemented, expand or improve the park on top of the parking garage and provide suitable surface drop-off and short-term parking facilities.
- Consolidate all NYPD on-street parking outside of the security zone surrounding One Police Plaza in the restored municipal parking garage at One Police Plaza.
- Consolidate the current on-street parking in Chinatown by court and detention facility officers into the new parking garage at Collect Pond.



Existing Parking Lot and Park at Collect Pond



Underground Garage and Park (Post Office Square, Boston)



Example of Underground Garage and Park Concept (Post Office Square, Boston)

- Install MuniMeters where appropriate on currently metered streets throughout the area.



MuniMeter and Sign

eliminate parking of officials' vehicles on sidewalks.

Implementation

A new parking garage on the City property at Collect Pond (and at Chatham Green, if residents so desire) could be constructed and operated by a private company. Other recommended parking improvements would be undertaken by agencies of the City.

- Complete a detailed study of on- and off-street parking in the Chinatown community area to develop more definitive recommendations.

Actions Potentially Facilitated by Parking Recommendations

- Residents of Chatham Green may wish to further explore the potential for a privately-developed underground parking garage at the site of their existing surface parking lot.

Benefits

- A new parking garage at Collect Pond would serve both employees and visitors to the Municipal Courts during weekdays, and visitors to the Chinatown area during weekday evenings and on weekends.
- Consolidation of the police and court officers' parking in garages, to free street parking spaces for residents and visitors to Chinatown and

3 DEVELOPMENT OF THE RECOMMENDATIONS

INTRODUCTION

The seven Chinatown Access and Circulation Study recommendations were developed following an analysis of the initially-collected baseline data, the development of initial responses to the identified issues and problems, and refinement of these potential solutions through stakeholder meetings and extensive community outreach. Their final formulation followed completion of a public workshop in the Chinatown community.

The process also involved close coordination with the other studies being conducted for the Chinatown area.

Prior to initiation of the Access and Circulation Study, the following transportation issues and problems were identified by LMDC as issues of primary concern within the Chinatown community, and were used to focus the study's initial data collection and analyses:

- The impacts of the 9/11 street closings on access to and within the community
- Pedestrian circulation in relation to storefront operations
- Delivery/freight vehicles and waste disposal
- Tour bus operations
- New York City Transit bus services in the area.

The following issues were also identified, but were to be addressed to a lesser degree, as they were also

being addressed in the other studies being conducted for the area:

- Tour buses and commuter van services
- On- and off-street parking
- Subway service to the area.

Many agencies in addition to LMDC and NYCDOT provided input on these issues, including the Empire State Development Corporation (ESDC), the New York City Department of City Planning (DCP), the New York City Department of Parks and Recreation (DPR), the New York City Economic Development Corporation (EDC), the New York State Department of Transportation (NYSDOT), the New York City Department of Sanitation (DOS), the New York City Police Department (NYPD), the Metropolitan Transportation Authority (MTA), and the Office of the Deputy Mayor for Rebuilding and Economic Development.

OTHER CONCURRENT AND PLANNED STUDIES

Other studies underway (or planned) for Chinatown have area boundaries that overlap with the Access and Circulation Study and address related topics. A Chinatown Study Coordination Committee made up of representatives from all these studies, LMDC, NYCDOT, and the Consultant for the Chinatown Access and Circulation Study was therefore convened and met periodically to share their data and findings, and to coordinate recommendations. Information from these studies influenced the findings of the Access and Circulation Study. The extent to which the areas addressed by these studies overlap with the Access and Circulation Study is shown in Figure 3-1.

The other studies are:

- **Canal Area Transportation Study (CATS)** – An ongoing study by the New York Metropolitan Transportation Council (NYMTC), with a study area that covers considerably more than the entire study area of the Access and Circulation Study. Track 1 of this study, which culminated in a series of recommendations for Canal Street vehicular and pedestrian circulation issues, has been completed, and NYMTC is currently in the process of initiating Track 2, which will investigate and recommend longer-term transportation solutions, with a continued focus on Canal Street issues.
- **Rebuild Chinatown Initiative (RCI)** – A comprehensive and outreach-oriented initiative, sponsored by Asian Americans for Equality (AAFE), that included a broad examination of and recommendations for economic and development issues within the Chinatown community, including transportation concerns. A final report and presentation were issued in April 2004.
- **Delancey Street Transportation Study** – A traffic study conducted by the New York City Department of City Planning, Manhattan Office and Transportation Division, to assess current conditions and the impacts of further local development on traffic and pedestrian volumes and circulation in the Delancey Street area, and to recommend mitigating transportation improvements for that corridor.
- **NYCDOT Truck Route Management and Community Impact Reduction Study** – An ongoing study of the city's truck route

network, including truck routes that pass through Chinatown.

- **Chinatown Parking/Access Study** – A prospective study funded through Congresswoman Nadia Velasquez’ office and the New York State and City DOTs, with a focus on parking issues in Chinatown.

INITIAL RESPONSES TO THE ISSUES

The first major milestone in the study was completion of the baseline analysis and delineation of the Chinatown area’s transportation problems, which are summarized in the Appendix. The interim findings from that analysis were used to develop a range of general concepts that represented potential “responses” to the problems, and were discussed, modified, and refined in working sessions among LMDC, the NYCDOT, and the study’s Consultants.

Early on, the team decided to create an easily-understood visual presentation of the most significant opportunities for resolving the access and circulation issues, which could be presented to groups that had the strongest interest in the issues and recommendations of the study. The following initial “focus areas” were identified to organize the responses in the presentations:

- Civic Center/Chatham Square/Park Row
- Coach Buses (Forsyth Street)
- Baxter/Walker Triangle
- Parking
- Other Bus and Van Services
- Streetscape Improvements

For the first focus area, various options for reconnecting Park Row to Chatham Square were explored (Park Row access restored to the Bowery,

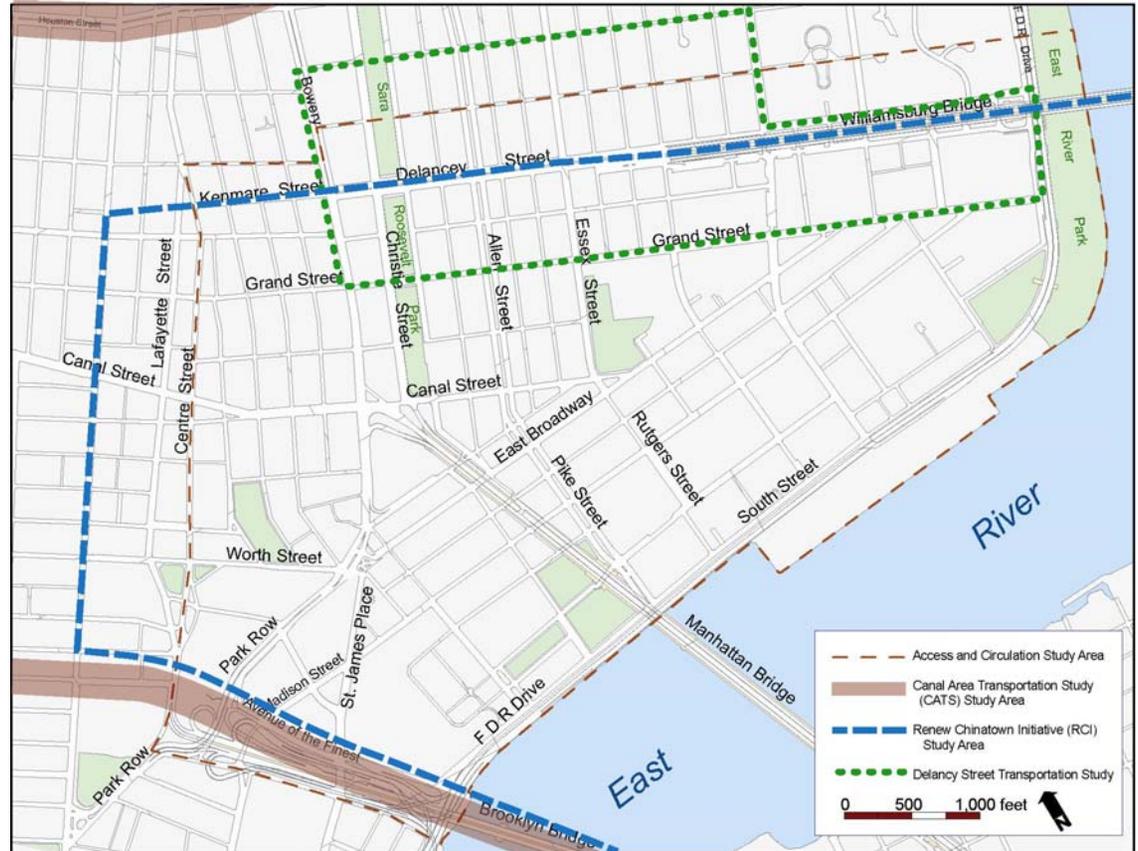


Figure 3-1: Study Area Boundaries of Other Studies in the Area

Park Row access to Worth Street, Park Row Access to St. James Place, and Park Row access limited to service vehicles and parking), as were potential streetscape treatments for Park Row, Chatham Green parking access options, and improvement options for James Madison Park. An analysis of the intercity coach bus issues led to the concept of a potential bus plaza on Forsyth Street. For parking, multiple locations for a new parking garage were explored. For the other bus and van services,

consolidated stop locations, potential cross-town bus routes, and operational and enforcement measures were proposed. For the last focus area, Streetscape Improvements, a “toolkit” of potential improvements was compiled, and examples were illustrated.

REFINEMENT OF THE PROPOSALS

Once the major problems and initial responses were identified, the following presentations were made to obtain specific interest group and general community feedback:

- March 2, 2004 – Civic Center Residents' Coalition
- March 3, 2004 - Chinatown Working Group (an advisory committee convened by LMDC for issues related to Chinatown)
- March 15, 2004 – Community Boards 2 and 3 Transportation Committees
- March 16, 2004 – Combined Co-op Boards of Chatham Green and Chatham Towers

A separate presentation on the Park Row/Civic Center issues was made to a representative of the New York City Police Department during April 2004 to determine the viability of the responses with respect to security concerns surrounding One Police Plaza.

These community outreach sessions brought to light a number of concerns and comments about the preliminary proposals. The concepts were edited and refined accordingly, and the options were narrowed down. The initial presentation was revised, and a second round of meetings was held as follows:

- May 4, 2004 – Chatham Green Co-op Board
- May 11, 2004 – Community Board 3 Transportation Committee
- May 27, 2004 – Chatham Green Co-op Residents

COMMUNITY WORKSHOP AND FINAL RECOMMENDATIONS

The above sessions with different constituencies of the Chinatown community, as well as close coordination with the other Chinatown area study teams (in particular the RCI study), resulted in comments and additional information that greatly informed the final refinement of this study's recommendations, both with respect to shaping their overall characteristics and to determining which options would be most acceptable and viable.

What emerged from this process was a short list of initiatives that was subjected to a final review before the technical work of the study could be completed. This review took place in a public meeting/community workshop that was held in Chinatown on the evening of June 24, 2004. Community leaders, business representatives, and residents were invited to attend. In total, there were 95 participants.

The purpose of the meeting was to ask the public to assess whether the potential initiatives developed in the study would be effective in improving Chinatown's access and circulation problems, and to prioritize those that are the most important to the Chinatown community. A total of 12 potential initiatives, derived from earlier feedback on the issues, were presented:

1. Park Row Improvements
2. Chatham Square reconfiguration
3. James Madison Park Redesign
4. Coach Bus Plaza
5. Tour Bus Stop at Chatham Square
6. Consolidated Commuter Van Stops
7. Cross-town City Bus Route

8. Parking Garage
9. Pavement Zones
10. Street Furniture Improvements
11. East Broadway Mid-block Crossing
12. Baxter/Walker Triangle Time-of-Day Closure

A combination of presentations, written questionnaires, and open forums was employed during this meeting to document the participants' evaluations of the initiatives, and to provide an opportunity for reactions to the initiatives and the expression of views on the transportation issues in Chinatown. Most of the meeting attendees enthusiastically participated. At the conclusion of the meeting, the results of the participants' ratings and rankings were tabulated and presented to the participants. The results of the evening's exercises (which are fully documented in the report "Summary of the Final Public Meeting," ACP Visioning & Planning, August 13, 2004, available on the LMDC website at www.renewnyc.com) may be summarized as follows:



Participants at the final public workshop for the Chinatown Access and Circulation Study on June 24, 2004.

- All 12 of the initiatives were viewed as having some positive effect on access and circulation (“To what extent would this initiative improve access and circulation for Chinatown?”). The same conclusion applies to the participants’ perception of community impact (“To what extent would this initiative improve quality of life for the Chinatown community?”). In this assessment, the Park Row Improvements, the Coach Bus Plaza, and the East Broadway Mid-block Crossing received the highest rankings.
- Those initiatives perceived to have the lowest impact on access and circulation were the James Madison Park Redesign, the Tour Bus Stop at Chatham Square, the Baxter/Walker Triangle Time-of-Day Closure, and the Street Furniture Improvements.
- The initiatives felt to be the most important overall to the Chinatown community (combination of the initiatives’ ratings and rankings) were the proposed Chatham Square Reconfiguration, a Parking Garage, Park Row Improvements, provision of a Coach Bus Plaza, a Cross-Town Bus Route, and Pavement Zones.

From this final input, an analysis of how best to “package” the initiatives into reasonable recommendations from which projects could be developed was done, along with further visual documentation, and the recommendations in this report were developed from there.

4 IMPLEMENTING THE RECOMMENDATIONS

Implementing the recommended initiatives of the study will require an orchestrated effort on the part of State and City agencies and various community-based organizations. The responsibilities will encompass establishing final project and funding priorities, overseeing capital improvement and other funding programs, conducting further studies and technical analyses where necessary, and coordinating the subsequent implementation activities. An important challenge will be to confirm the priorities of the various recommendations, and to implement responses that balance the needs of the diverse community interests in the study area.

A preliminary implementation scheme for the recommended projects and policies is provided in Table 4-1. This is intended to serve as a point of departure for further consideration by the stakeholders involved.

PROJECT PLANNING AND PRIORITIES

The Chinatown Access and Circulation Study had a mandate to address the major transportation problems confronting the Chinatown community, including long-standing issues of congestion and access, as well as problems that were created or exacerbated in the aftermath of 9/11. The purpose of the recommendations is not only to ameliorate the consequences of 9/11, but also to improve access and circulation generally in the Chinatown area over the longer term, while maintaining the area’s unique character and vitality.

TABLE 4-1 IMPLEMENTATION APPROACH FOR THE RECOMMENDATIONS

| Recommendation | | Actions Required | Responsibility | Priority |
|----------------|---|---|---|--|
| 1 | Park Row Improvements | <ul style="list-style-type: none"> • Urban design study • Design and Engineering • Construction | <ul style="list-style-type: none"> • LMDC • NYC • NYC | <ul style="list-style-type: none"> • Underway • Immediate • Near term |
| 2 | Chatham Square Recofiguration | <ul style="list-style-type: none"> • Design and Engineering • Construction | <ul style="list-style-type: none"> • NYC • NYC | <ul style="list-style-type: none"> • Immediate • Near term |
| 3 | Forsyth Street Bus Plaza | <ul style="list-style-type: none"> • Operating Arrangements • Design and engineering • Construction • Enforcement | <ul style="list-style-type: none"> • Community LDC • NYC • NYC | <ul style="list-style-type: none"> • Near term • Near term • Intermediate • Ongoing |
| 4 | Commuter Van Stop Consolidation | <ul style="list-style-type: none"> • NYPD enforcement • Enhancements at stops | <ul style="list-style-type: none"> • NYPD, NYCDOT • NYC / LDC | <ul style="list-style-type: none"> • Underway • Near term |
| 5 | Crosstown Bus Route | <ul style="list-style-type: none"> • Feasibility study • Implementation | <ul style="list-style-type: none"> • NSDOT/NYMTc (CATS) • NYC Transit | <ul style="list-style-type: none"> • Intermediate • Longer term |
| 6 | Streetscape Enhancements <ul style="list-style-type: none"> • East Broadway Midblock Crossing • Baxter-Walker Triangle Case Study • Other improvements | <ul style="list-style-type: none"> • Design and engineering • CATS II Study • Case study actions | <ul style="list-style-type: none"> • NYCDOT / LDC • NYMTc / NYCDOT • NYCDOT / LDC | <ul style="list-style-type: none"> • Near term • Ongoing • Longer term |
| 7 | Parking Improvements | <ul style="list-style-type: none"> • Feasibility & needs study • Design and engineering • Construction • MuniMeters | <ul style="list-style-type: none"> • NYC / NYSDOT • NYC or private sector • NYC or private • NYCDOT | <ul style="list-style-type: none"> • Near term • Longer term • Longer term • Near term |

To lay the groundwork for achieving this goal and ensure that the most immediate needs are met, certain immediate actions are essential. After that, a follow-through strategy is required to maintain the momentum until all of the recommendations are fully explored and either implemented or abandoned upon further analysis.

NEXT STEPS

In general, the next steps to be taken fall into three mutually-supportive areas: organizational activities, further detailed studies, and public intervention and investment.

Overall, public-private partnerships will be necessary to stimulate action on the recommendations. Organizational activities will include solicitation of political support for specific projects, establishment of development standards, and identification of points in the process for public and private intervention.

Further studies are also needed to determine the feasibility of those recommendations where performance or cost considerations are important, such as the Chatham Square Reconfiguration or the Parking Improvements (new parking garage) recommendations. The products of these studies would include more refined physical concepts or

preliminary designs, and much more accurate implementation costs.

Finally, public intervention and investment are critical, as the role of the public sector in all the recommendations is significant. Major needs will include project sponsors to act as catalysts for the projects; to assist in streamlining the approval processes; to assist in tapping available funding programs and providing technical assistance; to undertake both short-term (smaller) improvements and longer-term (larger) capital investments; and to undertake and monitor pilot programs or case studies.

IMPLEMENTATION APPROACH

Table 4-1 outlines a set of implementation strategies for the study's recommendations. Included for each recommendation or project are the major actions required, the agency or entity most likely to be primarily responsible for the actions, and the priority status for each action.

Two follow-up studies are already underway—an urban design concept for Park Row in LMDC's Brooklyn Bridge Anchorage Study, and NYMTC's CATS Track 2 for consideration of the Baxter/Walker Triangle case study—and other top priorities are designated either "immediate" or "near term" in Table 4-1. The recommendations that require extensive study or major funding for which sources are not yet identified are referred to as "longer term" projects.

It should be noted that implementation of some of the recommendations may require the sponsorship of a Local Development Corporation (LDC) or a community Business Improvement District (BID); entities that do not yet exist in the areas affected by

the recommendations, but are being considered by the community and several government agencies.

CONCLUSION

As a result of the study, LMDC and NYCDOT are exploring which priorities they may pursue, as well as identifying other public, private, and non-profit entities that may take on the other recommendations.

APPENDIX: BASELINE ANALYSIS -- EXISTING CONDITIONS

The first major task in the Chinatown Access and Circulation Study was completion of a baseline analysis of existing conditions in the Chinatown area. The baseline analysis provides information on existing transportation conditions, drawing on various sources including the other Chinatown studies being conducted; general research involving interviews, reviews of prior reports, and on-site observations; and a selective data collection program involving traffic flow, bus occupancy, pedestrian movement, and parking counts.

STUDY AREA FOR THE BASELINE ANALYSIS

Figure A-1 highlights the major arterial streets that run through the study area and its major access points.

This 142-block area encompasses a broad variety of communities, neighborhoods, and uses, ranging from the relatively fine-grained, older blocks of the core of Chinatown centered on Mulberry and Mott Streets, to the newer section of Chinatown east of East Broadway, to portions of the traditional Little Italy and the Lower East Side communities, the municipal and court building complexes at the foot of the Brooklyn Bridge, and the large scale cooperative and public housing developments along the East River.



Figure A-1: Study Area Street Network

STREET NETWORK

Overview

The study area’s network of streets is as varied as the area’s communities and neighborhoods. It includes the narrow, circuitous streets in the oldest parts of the study area, the typical north-south and east-west Manhattan grid north of Canal and Grand Streets, the superblocks of the large housing

developments along the FDR Drive and the East River, and the local street configurations near the anchorages of the East River bridges. As in other New York communities, this network not only provides general access and circulation, but also fulfills distinct local functions within each residential and commercial neighborhood.

The major routes that provide access to and through the area are:

- The three East River bridges and the streets that extend from these bridges,
- The primary north-south and east-west arterials, and
- FDR Drive.

Many arterial streets, such as East Broadway, also function as local circulation routes between the neighborhoods of the study area, while the local streets connecting to and between these arterials provide local access and circulation for traffic and pedestrians.

East River Bridges

The northernmost bridge crossing between Manhattan and Brooklyn is the **Williamsburg Bridge**, which becomes **Delancey Street**, and extends westward to an intersection with the **Bowery** and **Kenmare Street**, both of which are major routes for the bridge's traffic. Kenmare Street funnels traffic westbound to Lafayette and Broome Streets and to points further west, including the Holland Tunnel.

The busiest East River bridge crossing is the **Manhattan Bridge** which touches down near the center of the study area and becomes **Canal Street**, the busiest and most important arterial street crossing Manhattan south of Midtown. The Manhattan Bridge also funnels Manhattan-bound traffic into the northbound **Chrystie Street** and east on Canal Street. Canal Street west of the Manhattan Bridge is a primary east-west artery that links the bridge with the Holland Tunnel and Route 9A on the west side of Manhattan and provides regional connections to the area. It is also an important truck route and major arterial for local crosstown traffic, as well as a regional shopping destination.

The **Brooklyn Bridge** forms the southern boundary of the study area and links into **Centre Street**, **Chambers Street**, and **Park Row** south of the Brooklyn Bridge. The bridge also provides direct access to and from the **FDR Drive** and Pearl Street, which pass under the Manhattan end of the bridge.

North-South Arterials

The **Bowery** is the major north-south thoroughfare running through the study area, providing direct access to and from the Williamsburg and Manhattan Bridges. It extends north to Third Avenue, and at its southern end at **Chatham Square**, links to **St. James Place**, which in turn becomes **Pearl Street** just north of the Brooklyn Bridge. Pearl Street becomes Water Street south of the bridge and is the primary street on the east side of Lower Manhattan. The Bowery also functions as a major regional shopping street, particularly for lighting fixtures, restaurant equipment, and jewelry.

Other north-south arterial streets are **Centre Street**, **Chrystie Street**, **Allen Street/Pike Street**, and **Essex Street**. Northbound Centre Street is an important distribution route for traffic from the Brooklyn Bridge. Chrystie Street performs a similar function for Manhattan Bridge traffic as far north as Houston Street, where it transitions into Second Avenue. Allen Street, a wide center boulevard street with significant capacity, is a secondary route for north-south traffic, but it extends northward to First Avenue and south into Pike Street, and is the only north-south thoroughfare other than the Bowery and St. James Place running north and south through the entire study area. Essex Street is the easternmost north-south arterial street with direct access to the Williamsburg Bridge.

East-West Arterials

In addition to Canal Street, the major east-west streets include **Delancey Street** (which becomes **Kenmare Street**), **Grand Street**, **Worth Street**, **East Broadway**, and **South Street**. Delancey and Kenmare, as described above, are major traffic routes associated with the Williamsburg Bridge, but Delancey also functions as an important shopping street. Grand Street, two blocks south of Delancey and extending east and west between Centre Street and South Streets, provides access through the area, and is another busy shopping street between Centre and Essex Streets. Worth Street is a secondary arterial route that provides an important connection between the southern part of Chinatown and Lower Manhattan to the west. East Broadway, an arterial route between Chatham Square and Grand Street, functions as a major commercial and shopping street in Chinatown. South Street, which skirts the eastern boundary of the study area, provides access into the area at Pike Street and the



Canal Street Looking East from Baxter Street

Brooklyn Bridge, and is also a through-route for traffic entering and exiting the FDR Drive.

FDR Drive

The FDR Drive is a limited-access, north-south highway with three lanes in each direction. The highway is at grade in the northern part of the study area and elevated over South Street in the remainder of the area from a point north of the Manhattan Bridge. Southbound traffic can exit the FDR Drive at Grand Street and **Jackson Street**, and northbound traffic can access the Drive in the vicinity of **Montgomery Street**.

Major Access Points

The major access routes into the study area include the following streets:

- From the north: the Bowery, Allen Street, Essex Street, and South Street
- From the east: Delancey, Canal/Chrystie, and Centre Streets where the three East River bridges touch down, and Grand and Pike Streets
- From the south: Park Row (to Centre and Frankfort Streets or the Brooklyn Bridge for vehicular traffic), Pearl Street/St. James Place, and South Street
- From the west: Grand, Canal, and Worth Streets

These access points define the major points of entry and egress for traffic into, out of, and through the study area. Although some (such as the East River bridges) are well defined points of entry and egress, none constitute a “gateway” in the classic sense, as the study area is really integrated into the fabric of the entire Lower Manhattan district.

Streets Closed Subsequent to 9/11

One of the major transportation impacts of 9/11 was the closure, for security reasons, of streets in the vicinity of One Police Plaza and the court and criminal justice buildings in the southwestern part of the study area. These closures, and the need to assess their impact on Chinatown and identify mitigating transportation actions, were a major impetus for the Chinatown Access and Circulation Study. The closed streets also have become a significant defining feature of how the area’s street network functions.



Park Row South of Chatham Square After 9/11

The study area street network map locates the streets that have been closed:

- Park Row, between the Brooklyn Bridge and Chatham Square
- Madison Street, between Avenue of the Finest and St. James Place
- Rose Street, between the Brooklyn Bridge and Avenue of the Finest
- Avenue of the Finest, between Park Row and St. James Place
- The Brooklyn Bridge exit ramp northbound into Park Row

In addition to these vehicle closures, restrictions on pedestrian movement are in place on many of these same streets.

STUDY AREA CHARACTERISTICS

Community Districts

Portions of three Manhattan Community Board Districts - CB1, CB2, and CB3 - are within the study area’s boundaries (see Figure A-2). They include a major portion of one of the five neighborhoods of CB1, the Civic Center area, whose boundary extends across the southwest portion of the study area and incorporates the Municipal Building, the NYPD Headquarters, and the Federal, State and City Courts and detention facility complexes. Although this area contains only a very small portion of the study area’s street network, it is the area where most of the streets have been closed since 9/11.

The portion of CB2 included in the study area is the Little Italy neighborhood north of Canal Street and west of the Bowery. This area, in addition to the core area of the Chinatown community immediately to the south, is one of the most popular commercial and tourist attractions in New York City, with heavy nighttime and weekend usage of its streets and sidewalks, and all the attendant problems related to access and circulation.

The part of the area within CB3 encompasses a broad and diverse range of communities and roadway network infrastructure and makes up the bulk of the study area. Crowding on the streets and sidewalks (particularly in the core of Chinatown), sanitation problems, the distance of many residents from subway stops, a lack of public bus service in some areas, and parking shortages are some of the

important transportation-related issues in this district.

Lower East Side Business Improvement District

The southern portion of this Business Improvement District (BID), between Rivington and Canal Streets and Forsyth and Clinton Streets, is within the study area. The BID, centered on the Orchard Street shopping district, was established in 1992 to help revitalize the area and preserve its unique historic character. In addition to promoting local businesses, the BID undertakes street clean-up and community beautification efforts.

Existing Land Uses

The distribution of the study area’s land uses provides insight into patterns of transportation demand and trips. The area’s development characteristics also provide a geographical focus for the transportation analysis and recommendations. For example, the predominantly residential areas are most closely associated with higher levels of work trip origins during weekday AM peak travel periods (and work trip destinations during the PM peak periods), while the major commercial concentrations typically exhibit an inverse pattern of weekday trip-making and are major trip attractions on weekends.

Land uses in the area are shown in Figure A-3. The major land use districts are as follows:

- The Chinatown core (triangular area extending south from Canal Street to Worth and Madison Streets) – This area is predominantly residential with ground floor retail uses and is relatively uniform in scale except for the high-rise Confucius Plaza development in its center.

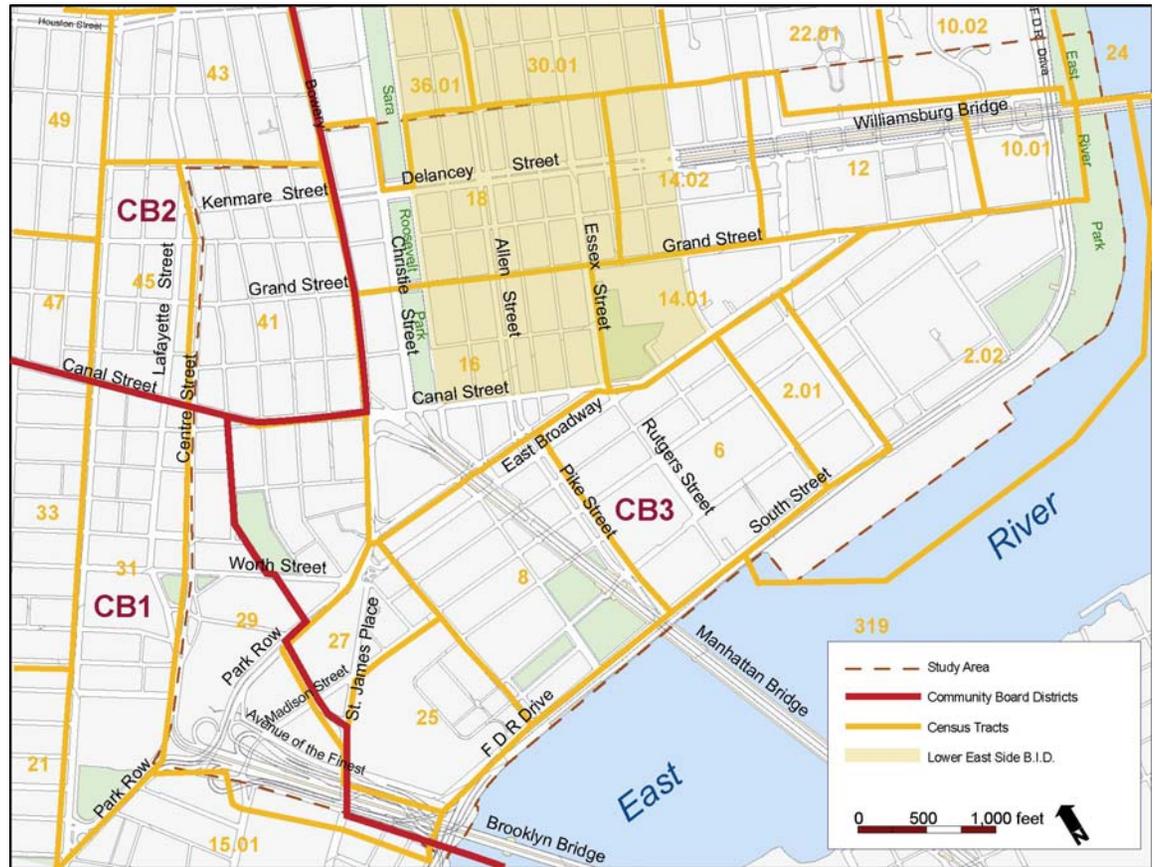


Figure A-2: Subareas within the Study Area

- Large-scale residential districts (extending along the East River waterfront between Madison Street and South Street/FDR Drive, adjacent to the Williamsburg Bridge, and south of Grand Street and east of Essex Street) – These districts are typified by high-rise apartment buildings in landscaped “super-blocks.”
- Little Italy (north of Canal Street between Centre and Chrystie Streets) – This

neighborhood is similar in scale to the Chinatown core with a predominance of residential uses over ground floor retail and smaller commercial buildings.

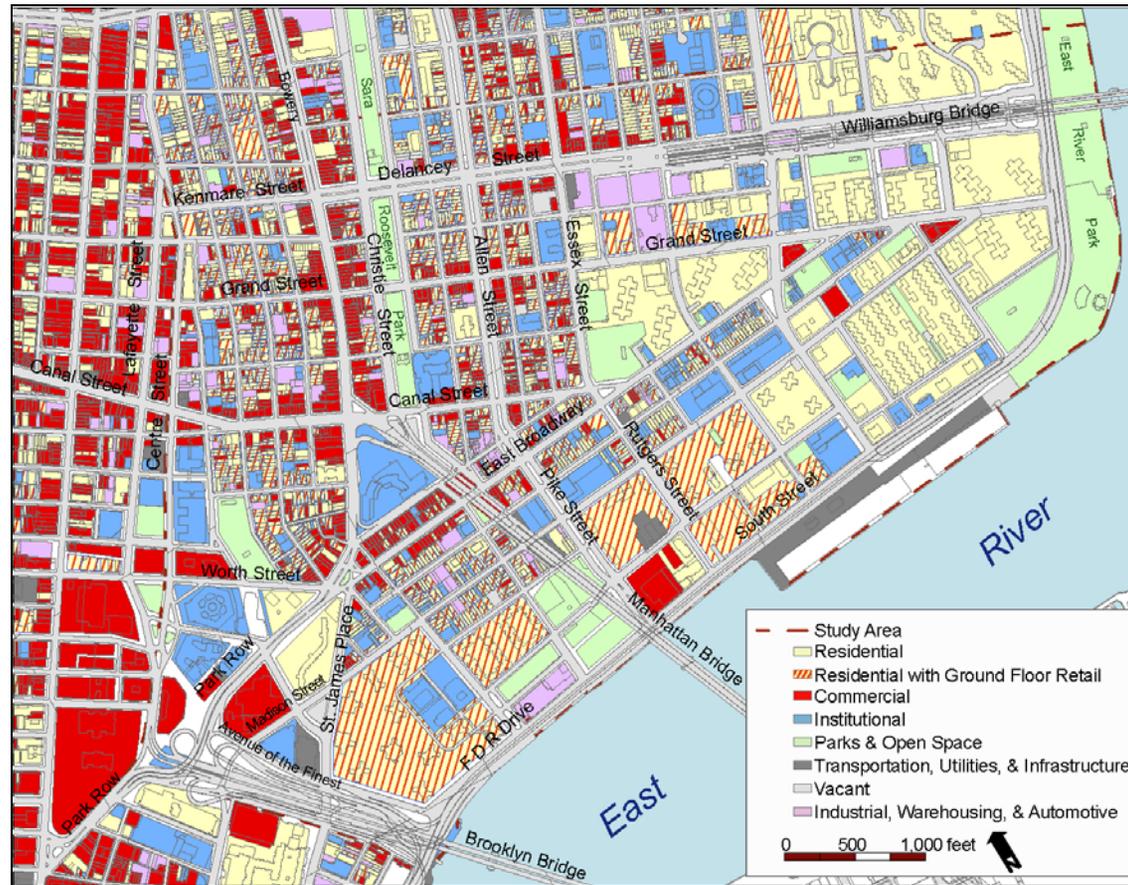


Figure A-3: Existing Land Uses

- Lower East Side (north of Canal Street between Forsyth and Essex Streets and along the north side of Delancey Street to the Williamsburg Bridge) – Another lower scale area, this neighborhood has a mix of uses similar to those in the Chinatown core and Little Italy.
- Transitional area (between Delancey and Grand Streets, and Essex and Pitt Streets) –

This small district is transitional because of the presence of surface parking lots suitable for new development, although the area already contains some mid-sized apartment buildings.

- Civic center area (between Center Street and Baxter Street and the lower portions of Pearl Street and St. James Place) – This area is dominated by large civic and institutional buildings with landscaped plazas.

Demographic Characteristics

Population

In the year 2000, the total aggregate population of the 142-block Chinatown study area was 87,027 with 44,192 households. This reflected an overall increase of 1.4% in the area’s population since 1990, and a population increase of 7.2% since 1980. The areas with the highest population growth in the community were the East Broadway to South Street area south of the Manhattan Bridge, attributed to new apartment building construction along South Street, and the areas adjacent to Allen Street between Delancey and Canal Streets. A number of the tracts had small population losses between 1990 and 2000.

TABLE A-1 POPULATION

| Tract | Population (2000) | % of Total Study Area | % Change Over 1990 | Population (1990) | Population (1980) |
|--------------|-------------------|-----------------------|--------------------|-------------------|-------------------|
| 2.01 | 3,329 | 3.8 | -1.7 | 3,387 | 3,355 |
| 2.02 | 6,837 | 7.9 | -13.6 | 7,915 | 8,019 |
| 6 | 12,276 | 14.1 | 2.3 | 11,996 | 10,638 |
| 8 | 10,917 | 12.5 | 9.7 | 9,952 | 9,260 |
| 10.01 | 1,361 | 1.6 | -29.8 | 1,940 | 1,799 |
| 12 | 3,466 | 4.0 | -1.3 | 3,511 | 3,499 |
| 14.01 | 2,962 | 3.4 | -5.4 | 3,130 | 3,434 |
| 14.02 | 3,019 | 3.5 | 2.0 | 2,959 | 3,661 |
| 16 | 9,598 | 11.0 | 10.2 | 8,709 | 8,085 |
| 18 | 10,157 | 11.7 | 9.8 | 9,247 | 6,961 |
| 25 | 5,209 | 6.0 | -14.2 | 6,070 | 6,388 |
| 27 | 1,517 | 1.7 | -12.9 | 1,344 | 1,366 |
| 29 | 7,422 | 8.5 | 5.2 | 7,058 | 6,016 |
| 41 | 8,957 | 10.3 | 3.7 | 8,641 | 8,669 |
| Total | 87,027 | | 1.4 | 85,859 | 81,150 |

Race

The population of the area reflects decades of immigration. Sixty percent of the population in 2000 was of Asian ethnicity, while the second largest population was of Hispanic ethnicity (20%). Nearly 56% of the population was foreign born, in comparison with 36% in New York City as a whole.

Not surprisingly, most of the foreign born population is Chinese, but while Asians constitute a large proportion of the residents, there was only a five percent increase (from 55% to 60%) in the area’s Asian population between 1990 and 2000.

TABLE A-2 ETHNICITY (ASIAN ONLY)

| Tract | Asians (1980) | Asians (1990) | % Change (1980 - 90) | Asians (2000) | % Change (1990 - 2000) |
|--------------|---------------|---------------|----------------------|---------------|------------------------|
| 2.01 | 697 | 1,253 | 80% | 1,444 | 15% |
| 2.02 | 693 | 1,112 | 60% | 1,215 | 9% |
| 6 | 5,178 | 7,082 | 37% | 7,840 | 11% |
| 8 | 6,361 | 7,930 | 25% | 9,424 | 19% |
| 10.01 | 19 | 34 | 79% | 41 | 21% |
| 12 | 187 | 258 | 38% | 358 | 39% |
| 14.01 | 34 | 59 | 74% | 112 | 90% |
| 14.02 | 369 | 882 | 139% | 1,009 | 14% |
| 16 | 6,761 | 7,669 | 13% | 8,610 | 12% |
| 18 | 3,273 | 6,479 | 98% | 7,403 | 14% |
| 25 | 1,648 | 2,151 | 30% | 2,073 | -4% |
| 27 | 784 | 745 | -5% | 1,136 | 52% |
| 29 | 4,966 | 5,180 | 4% | 5,297 | 2% |
| 41 | 5,541 | 6,561 | 18% | 6,745 | 3% |
| Total | 36,511 | 47,395 | 30% | 52,707 | 11% |

Income and Poverty

Like many immigrant communities, Chinatown is a community with relatively low income levels and high poverty rates. The median household income ranged from \$13,611 to \$41,932 for census tracts in the area. In comparison, the median household income of Manhattan was over \$47,030 in 2000. Thirty percent of the population was reported living below the poverty level, and the poverty rate among Asians has increased by seven percent over the past two full decades.

Transportation

The census data indicate that, like the rest of Manhattan, a large proportion of Chinatown residents take public transportation (bus, streetcar, trolley, subway, railroad, ferryboat, or taxi) to work. Nearly 50% of the working population commutes by publicly-provided transportation, of which 35%

travel by subway, in comparison with 60% and 43%, respectively, in all of Manhattan. A relatively large proportion of the Chinatown working population (37%) walks to work. Twenty-five percent of the population drives, by themselves or in carpools and vanpools, to work, but car ownership rates are minimal; nearly 83% of the area’s households do not own a car.

TABLE A-3 MODE OF TRANSPORT TO WORK, 2000

| Tract | Population (over 16) | Car, Truck, Van | Public Transportation | Bike | Walk | Work at Home |
|--------------|----------------------|-----------------|-----------------------|------------|---------------|--------------|
| 2.01 | 1,195 | 438 | 643 | 19 | 298 | 7 |
| 2.02 | 2,166 | 962 | 1,138 | 32 | 454 | 61 |
| 6 | 4,353 | 1,154 | 2,342 | 58 | 1,350 | 21 |
| 8 | 4,633 | 1,064 | 1,876 | 19 | 2,093 | 103 |
| 10.01 | 567 | 296 | 308 | 22 | 51 | 29 |
| 12 | 1,218 | 624 | 564 | 19 | 240 | 64 |
| 14.01 | 1,331 | 358 | 804 | 6 | 278 | 64 |
| 14.02 | 1,318 | 140 | 719 | 11 | 453 | 59 |
| 16 | 4,302 | 1,122 | 1,875 | 83 | 1,697 | 68 |
| 18 | 4,531 | 964 | 1,920 | 60 | 1,892 | 110 |
| 25 | 1,319 | 242 | 598 | - | 523 | 64 |
| 27 | 573 | 54 | 295 | 12 | 231 | 8 |
| 29 | 2,219 | 458 | 678 | - | 1,265 | 39 |
| 41 | 3,722 | 688 | 1,622 | 40 | 1,565 | 120 |
| Total | 33,447 | 8,564 | 15,382 | 381 | 12,390 | 817 |

ANALYSIS SUBDISTRICTS

Considering the study area’s broad range of physical characteristics - as reflected in its street network, the distribution of land uses, major infrastructure features, and the fact that the study area encompasses an extensive and demographically diverse portion of Lower Manhattan - the area was divided into subdistricts to facilitate the transportation analysis and documentation in the study.

The seven analysis subdistricts, shown in Figure A-4, include:

- **Historic Chinatown Core** – The traditional center of the Chinatown community between Baxter Street and East Broadway south of Canal Street and the Manhattan Bridge
- **Little Italy and Bowery Area** – The area located between Kenmare and Canal Streets, and Centre and Chrystie Streets
- **Allen Street Area** – The area centered around Allen Street between Rivington and Canal Streets and Chrystie and Essex Streets
- **Williamsburg Bridge Area** – The area flanking the Williamsburg Bridge east of Essex Street and north of East Broadway and Grand Street
- **Rutgers, LaGuardia and Vladeck Houses Area** – The area between Grand Street and the Manhattan Bridge, and between Madison Street and the easternmost block of East Broadway and South Street
- **Between the Brooklyn and Manhattan Bridges** – The residential areas between East Broadway and South Street
- **Civic Center** – The public institutional complexes west of Baxter and Pearl Streets and St. James Place

Delineation of these subdistricts was based on the characteristics of their physical development, real or perceived community/neighborhood boundaries, key vehicular and pedestrian travel corridors, and the statistical and study boundaries. The primary purpose for identifying them was to locate areas with relatively uniform development patterns and street and sidewalk characteristics. Thus, although some transportation issues span more than one subdistrict, each subdistrict tends to have common issues.



Figure A-4: Analysis Subdistricts

STREETS AND VEHICULAR TRAFFIC

General Street Characteristics

The streets of the Chinatown study area form a network that has its own unique characteristics, many of which are important determinants of access and circulation problems, and suggest opportunities (and constraints) for solutions within the area. As described earlier, the streets form

basically a north-south and east-west grid pattern in the top half of the study area (north-south defined as the alignment of Manhattan’s avenues), north of East Broadway and Division Street, and a similar grid pattern, canted at an angle that lines up with true north and south, between East Broadway and South Street. Some irregular street patterns exist in the Civic Center area and at the Manhattan and Brooklyn Bridges.

With the exception of the FDR Drive, the area contains two basic types of streets – arterial streets and local streets. The identified arterial streets function as major through-travel streets and carry the bulk of the area’s traffic. Canal Street, Delancey Street, and the Bowery are the most important traffic arteries and also function as major commercial and shopping streets. The major arterials, with a combined length of about nine miles, comprise 44% of the approximately 21-mile street network in the area.



The Bowery – A Major North-South Arterial Street

All of the study area’s streets, except for the FDR Drive south of the Manhattan Bridge, the Williamsburg, Manhattan and Brooklyn Bridge approaches and ramps, and a small section of Park Row, are situated at grade. Street widths vary but are similar to the other streets north of Chambers Street in Lower Manhattan. Generally, the widest arterials (Canal Street, the Bowery, Delancey Street and Allen Street) have rights-of-way ranging between 100 and 150 feet with Allen and Delancey Streets being the widest; the other arterial streets are approximately 70 to 80 feet wide, and the local streets have typical rights-of-way of 50 to 60 feet.



Allen Street has a Wide Median

In keeping with the general Manhattan pattern, most of the streets except the major arterials (which have wider pavement widths) are designated as one-way streets. The one-way streets typically have one effective traffic moving lane with parking on one or both sides of the street. This presents a problem for traffic flows in the older sections of the area where the streets are narrower, obstacles such as double parking and loading/unloading have a bigger effect, and traffic enforcement is less stringent. The bulk of the intersections have traffic signals, and those that don't typically have stop signs.



Mott Street – A Typical Narrow Local Street in the Historic Chinatown Core

Study Area Traffic Volumes and Traffic Flows

The major flows of traffic through the study area are shaped—not surprisingly—by the area’s arterial street system. At the broadest level, the area functions as a major Lower Manhattan east-west traffic corridor, with automobiles and trucks crossing the district in a steady stream most of the day to and from the Williamsburg Bridge (Delancey Street), Manhattan Bridge (Canal Street and the Bowery), and Brooklyn Bridge (Chambers and

Centre Streets). The most significant of these flows occurs on the Manhattan Bridge and Canal Street, which has historically been a major traffic corridor in its own right. Within that general pattern, the area’s other arterials function more as local collector and distributor streets, although most also channel traffic into and out of (or through) the study area. Traffic flow directions and signalized intersections are shown in Figure A-5.

To help establish the study’s analytical baseline, traffic counts were conducted at selected locations.



Figure A-5: Traffic Flow Directions and Locations of Traffic Signals

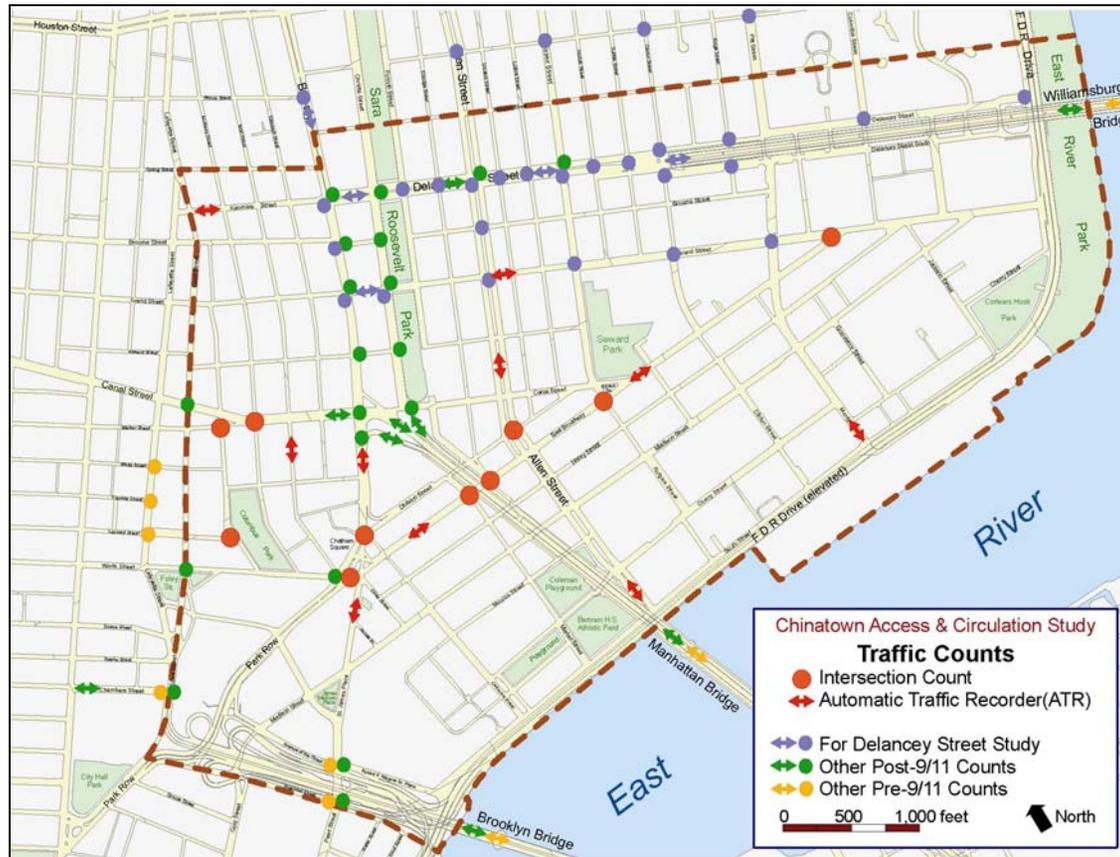


Figure A-6: Traffic Count Locations

Not only did they determine the parameters of the overall traffic flows, but also provided sufficient data to determine the overall performance of the study area’s street network and establish a basis for the study’s recommendations. Another purpose was to obtain data that could be compared with available pre-9/11 traffic data at the very limited number of locations where such earlier data is available. Two types of counts were made: turning movement counts at intersections, and automatic

traffic recorder (ATR) counts at midblock locations.

The counts were conducted to supplement data available from other earlier traffic counts and a counting program that was conducted during November 2003 by the Delancey Street Transportation Study. The locations where intersection turning movement and midblock ATR counts were made are shown in Figure A-6, along

with the locations where other past and present studies have obtained counts.

Traffic volume, turning, and classification counts were conducted at ten intersections during three weekday time periods during the third week of October 2003. These counts were conducted from 7:00 AM to 9:00 AM, 12:00 to 2:00 PM, and 4:00 to 6:00 PM on one weekday (Tuesday, Wednesday, or Thursday) at each location. Counts were also conducted at three locations, indicated below, from 1:00 to 3:00 PM on a Saturday and on a Sunday. Locations for the intersection counts are as follows:

1. Bowery at Division Street (Chatham Square North) (+weekend)
2. E. Broadway at St. James Place & Worth Street (Chatham Square South)
3. E. Broadway at Market Street (under Manhattan Bridge) (+weekend)
4. E. Broadway at Forsyth Street (under Manhattan Bridge)
5. E. Broadway at Rutgers Street
6. E. Broadway at Grand Street
7. Division Street at Allen Street
8. Canal Street at Mulberry Street (+weekend)
9. Baxter Street at Walker Street
10. Baxter Street at Leonard Street (west side of Columbus Park)

Automatic traffic recorder (ATR) counts were conducted at ten midblock locations over a one week period during the same week as the intersection counts. Two ATR machines were used to provide bi-directional data on two-way streets. Locations for the ATRs are as follows:

1. St. James Place between Pearl and Madison Streets
2. Bowery between Bayard and Canal Streets

3. E. Broadway between Catherine and Market Streets
4. E. Broadway between Jefferson and Clinton Streets
5. Grand Street between Allen and Orchard Streets
6. Allen Street between Canal and Hester Streets
7. South Street (under FDR Drive) between Rutgers and Clinton Streets
8. Montgomery Street between FDR Drive and Water Street
9. Kenmare Street between Lafayette and Mulberry Streets
10. Mott Street between Bayard and Canal Streets

The traffic data indicate that, despite the fact that Chinatown is one of the major attractions in Lower Manhattan, it is not a major traffic generator, especially during weekdays. The street network that surrounds the core area is very much influenced by the regional traffic that passes through Chinatown to and from other parts of the city—particularly traffic associated with the Holland Tunnel and the three bridges crossing the East River.

The following briefly describes the major traffic flows in the study area during the two peak hours of the day. Figures A-7 and A-8 illustrate the major traffic flow corridors for these two peak hours.

AM Peak Hour: The major flows of traffic are the Manhattan-bound traffic from the Manhattan Bridge and the Williamsburg Bridge (see Figure A-7). The following describes the general characteristics of the most heavily used traffic routes during the typical weekday AM peak hours:

- Manhattan Bridge (Westbound) to the Canal Street and Bowery Street Corridors –

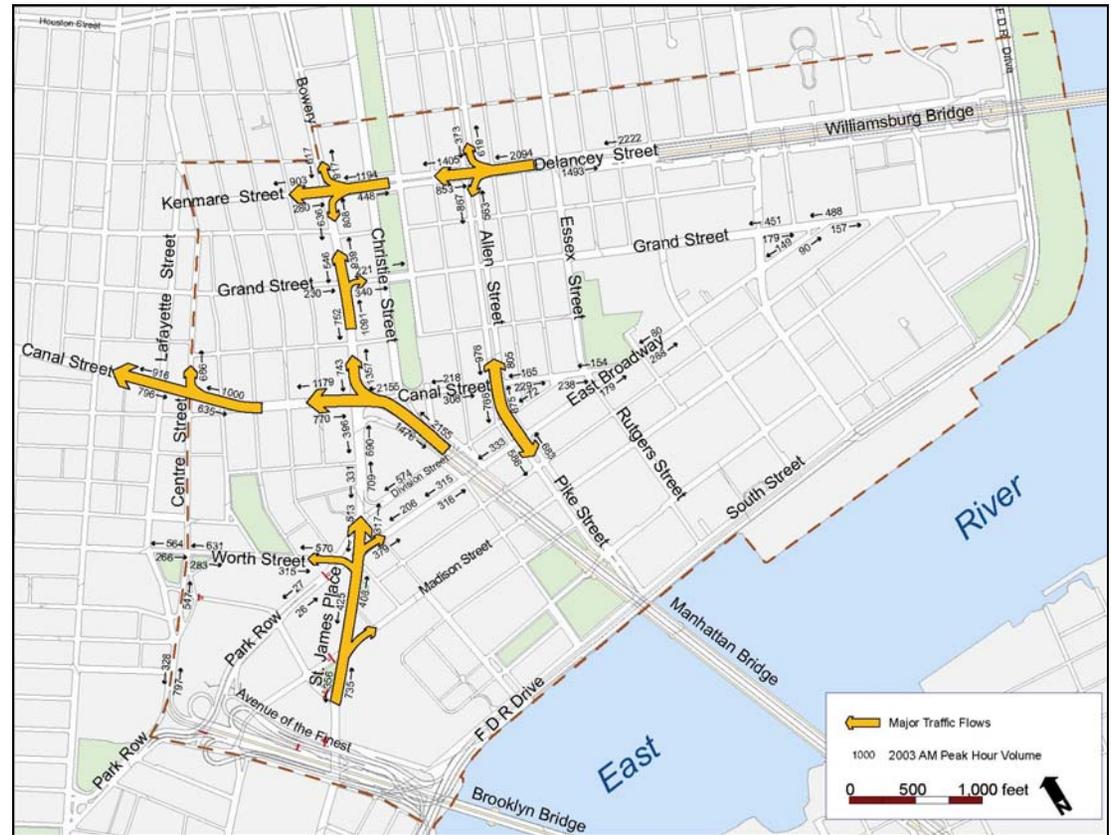


Figure A-7: Major Traffic Flows: 2003 AM Peak Hour

Approximately 2,200 vehicles enter Manhattan from Brooklyn in the morning peak hour, of which 50% heads north via the Bowery or Chrystie Street. Some of the vehicles turn right onto eastbound Grand Street, but the majority stays on the Bowery and continues northward. Most of the remaining 50% continues westward on Canal Street to other parts of Manhattan or the Holland Tunnel, though some of the traffic heads north via Centre Street or other local streets.

- Williamsburg Bridge (Westbound) to the Delancey Street Corridor – This bridge also carries about 2,200 vehicles from Brooklyn into Manhattan. Many of these vehicles either head south (500 to 600 vehicles) or north (200 to 300 vehicles) at the Allen Street intersection, while the remainder gradually merges into the local street network via Chrystie Street, the Bowery, and other local streets.

- Pearl Street Corridor (Northbound) – Approximately 700 to 800 vehicles head northbound from Pearl Street just north of the Brooklyn Bridge. About 300 vehicles turn onto Madison Street, and the rest travel toward Chatham Square via St. James Place. At the Chatham Square intersection, 50 to 55% of the traffic turns onto westbound Worth Street, while 45 to 50% continues northbound via the Bowery or East Broadway.
- Allen Street Corridor – Allen Street north of Canal Street carries close to 1,800 vehicles in both directions (about 1,000 vehicles southbound and 800 vehicles northbound). The volumes decrease slightly south of Division Street, with approximately 600 vehicles southbound and 700 vehicles northbound. Some of these vehicles merge into the local street network, but the majority travel in the direction of South Street and the FDR Drive.

PM Peak Hour: The major traffic flows during the afternoon peak hours are similar to those of the morning peaks, except that heavy traffic is experienced in both directions – a common condition for an urban arterial (see Figure A-8). The following summarizes the PM peak traffic characteristics of these corridors:

- Manhattan Bridge (Eastbound) from the Canal Street and Bowery Street Corridors – Approximately 1,850 vehicles leave Manhattan for Brooklyn, of which 38% (700 vehicles) originate from the Bowery northbound, 28% (500 vehicles) come from eastbound Canal Street, and 34% (650 vehicles) come from the Bowery southbound. These percentages indicate that the eastbound bridge traffic is

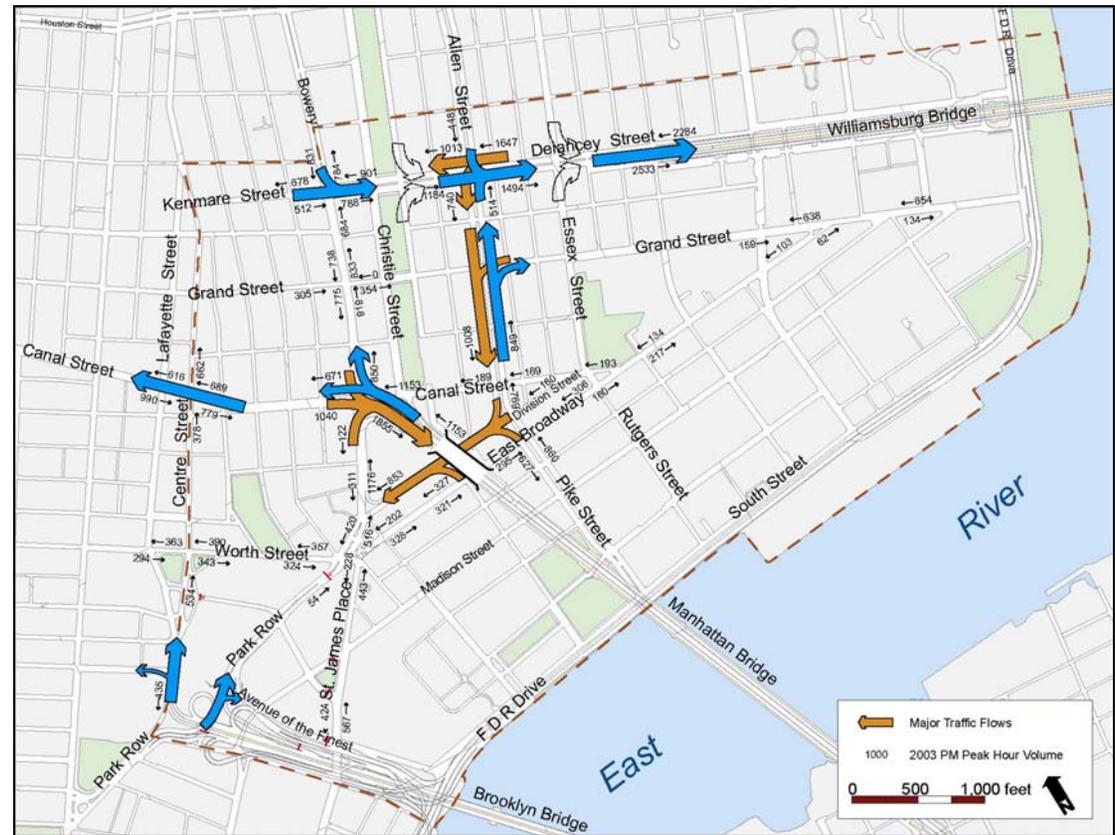


Figure A-8: Major Traffic Flows: 2003 PM Peak Hour

- drawn nearly evenly from all three approaches to the Manhattan Bridge.
- Manhattan Bridge (Westbound) to the Canal Street and the Bowery Corridors – Approximately 1,100-1,200 vehicles enter Manhattan in the afternoon peak hour, and similar to the morning peak hour pattern, 50% heads north on the Bowery or Chrystie Street, and 50% heads west on Canal Street. The majority of the Canal Street traffic heads to the Holland Tunnel or the west side of Manhattan.
- Williamsburg Bridge (Eastbound) from the Delancey Street Corridor – The PM peak flow is eastbound with approximately 2,600 vehicles. Many of these vehicles come from the western portion of Delancey Street (500 vehicles), southbound on the Bowery (300 vehicles), southbound on Chrystie Street (500 vehicles), southbound on Allen Street

(200 vehicles), northbound on Allen Street (200 vehicles), southbound on Essex Street (200 vehicles), and northbound on Essex Street (200 vehicles); the rest of the traffic comes from other local streets. The data further indicate that the Bowery, Chrystie Street, and Allen Street are the major feeder routes serving the Williamsburg Bridge.

- Williamsburg Bridge (Westbound) to the Delancey Street Corridor – The westbound direction carries about 2,300 vehicles, which is slightly lower than the eastbound peak direction. It also displays traffic patterns similar to the morning peak hour, when 500 vehicles turn southbound and 300 vehicles turn northbound on Allen Street; 200 vehicles turn southbound and 300 vehicles turn northbound on the Bowery; and the rest of the traffic is gradually distributed onto local streets.
- Allen Street Corridor – This corridor experiences slightly heavier traffic in the afternoon peak hour than in the morning peak hour, partly due to the commercial activities located along Division Street and East Broadway. The section north of Canal Street carries about 1,900 vehicles in both directions (1,000 southbound and 900 vehicles northbound). The section south of Division Street carries about 1,500 vehicles in both directions (600 southbound and 900 northbound). Similar to the morning peak hour, this street also provides a direct link to South Street and the FDR Drive to the east.
- Division Street Corridor (Southbound Only) – This street operates one-way southbound. The level of traffic increases as commercial activities increase toward Chatham Square.

Division Street carries only 150 vehicles on the section just east of Allen Street; it picks up an additional 300 vehicles from both directions of Allen Street and adds another 300 vehicles from Market Street, before ending with an approach volume of about 900 vehicles at Chatham Square.

- Pearl Street Corridor (Northbound) – This street carries slightly less traffic in the afternoon peak hour than in the morning peak hour, with about 600 vehicles just north of the Brooklyn Bridge. About 100-200 vehicles turn onto Madison Street with the remainder continuing to Chatham Square. At Chatham Square, 65% of the vehicles travel north via the Bowery and East Broadway, while 35% travel westbound on Worth Street.
- Centre Street Corridor (Northbound Only) – Centre Street operates one-way northbound starting at the T-intersection with Chambers Street. The off-ramp from the Brooklyn Bridge forms the northbound approach to the Chambers Street intersection. Approximately 1,000 vehicles travel northbound from the Brooklyn Bridge on the approach to Centre Street in the afternoon peak hour, of which more than 50% (500 vehicles) turn left onto Chambers Street and the remainder continue northward on Centre Street. This street eventually picks up additional traffic from Canal Street (100-200 vehicles) as it travels northward.

Study Area Traffic Profile

Analysis of the Traffic Counts: The traffic data collection program for the baseline analysis was based on the availability of existing traffic data, and the location of critical gaps in the data for the study area street network. The intersection and ATR counts were conducted to provide reasonably comprehensive coverage of the study area for the purpose of establishing a traffic profile. The focus of this profile was the major travel corridors within the study area. These travel corridors capture the majority of the vehicular movements that either directly serve the study area’s neighborhoods or pass through these community areas. Five major travel corridors and their key intersections were identified through this analysis:

- Canal Street Corridor – Intersections with Centre Street, Baxter Street, Mulberry Street, the Bowery, Chrystie Street, and Allen Street
- Delancey Street Corridor – Intersections with the Bowery, Chrystie Street, Allen Street, and Essex Street
- The Bowery Corridor – Intersections with Broome Street, Grand Street, Hester Street, and Division Street/Doyers Street
- East Broadway Corridor – Intersections with Worth Street/Chatham Square, Market Street, Forsyth Street, Rutgers Street, and Grand Street
- Chrystie Street Corridor – Intersections with Broome Street, Grand Street, and Hester Street

Also identified were other key intersections where traffic count data was collected. These intersections included:

- Centre Street / Chambers Street

- Centre Street / Worth Street
- Pearl Street / Frankfort Street / Dover Street
- Pearl Street / Robert Wagner, Sr. Place/ Brooklyn Bridge ramp
- Allen Street / Division Street
- Baxter Street / Walker Street
- Baxter Street / Leonard Street

The main objective in establishing a traffic profile was to define the critical traffic flows, their peaking characteristics, and in the case of the Chinatown core, variations in the traffic flows between weekdays and weekends. For a street network that includes both urban arterial and local streets such as this area, analysis of intersections’ total approach volumes is appropriate, since the total volumes represent the travel demand that occurs at each specific location.

Table A-4 provides a summary of the peak hour street utilization (in terms of total approach volumes) for the above intersections, by peak hour. The table also highlights the intersections that had the highest traffic volumes among those surveyed and shows where the respective weekend peak hours are greater than at least one of the weekday peak hours.

**TABLE A-4
SUMMARY OF TOTAL APPROACH VOLUMES AT TRAFFIC SURVEY LOCATIONS**

| Peak Hour Traffic Volumes Location | Weekday | | Weekend | |
|---------------------------------------|---------|-------|---------|-------|
| | AM | PM | Sat. | Sun. |
| Canal Street / Centre St. | 2,240 | 2,060 | 2,150 | na |
| Canal Street / Baxter St. | 2,040 | 1,980 | na | na |
| Canal Street / Mulberry St. | 2,250 | 2,490 | 1,800 | 2,020 |
| Canal Street / Bowery | 4,560 | 4,050 | 3,070 | na |
| Canal Street / Chrystie St. | 100 | 310 | na | na |
| Canal Street / Allen St. | 2,200 | 2,220 | 1,800 | na |
| Delancey Street / Bowery | 2,900 | 2,930 | 3,320 | na |
| Delancey St. / Chrystie St. | 2,880 | 3,260 | 2,550 | na |
| Delancey Street / Allen St. | 3,880 | 3,820 | 3,990 | na |
| Delancey Street / Essex St. | 4,060 | 5,160 | 4,200 | na |
| Bowery / Broome Street | 1,910 | 1,750 | na | na |
| Bowery / Grand Street | 1,870 | 1,960 | na | na |
| Bowery / Hester Street | 1,470 | 1,690 | na | na |
| Bowery / Division Street | 1,230 | 1,690 | 1,250 | 1,470 |
| E. Broadway / Chatham Sq. | 1,670 | 1,290 | na | na |
| East Broadway / Market St. | 880 | 990 | 780 | 880 |
| East Broadway / Forsyth St. | 1,130 | 850 | na | na |
| East Broadway / Rutgers St. | 640 | 720 | na | na |
| East Broadway / Grand St. | 760 | 870 | na | na |
| Chrystie Street / Broome St. | 520 | 520 | na | na |
| Chrystie Street / Grand St. | 930 | 930 | na | na |
| Chrystie Street / Hester St. | 400 | 460 | na | na |
| Centre Street / Chambers St. | 2,020 | 1,880 | 2,140 | na |
| Centre Street / Worth St. | 1,440 | 1,220 | 1,320 | na |
| Pearl Street / Frankfort St. | 2,340 | 2,060 | na | na |
| Pearl St. / R. Wagner Sr. Pl. | 2,100 | 1,990 | na | na |
| Allen Street / Division St. | 1,520 | 1,820 | na | na |
| Baxter Street / Walker St. | 610 | 450 | na | na |
| Baxter Street / Leonard St. | 90 | 120 | na | na |

Light red shading indicates ten busiest locations. Dark blue shading indicates weekend peak hour busier than weekday peak hour.

Another unique traffic characteristic of the Chinatown area is that many of its streets carry more traffic on weekends than during weekdays, and in many instances, traffic volumes during the weekend peak hours are also higher than the peak hour volumes of a typical weekday. This situation is mainly due to the large number of commercial establishments in portions of the area that generate a large volume of activity on the weekends. Table A-5 summarizes the traffic profiles of the study area locations with these unique travel patterns.

TABLE A-5 SUMMARY OF TOTAL APPROACH VOLUMES AT TRAFFIC SURVEY LOCATIONS

| Location | Direction | Daily Volumes | | | Peak Hourly Volumes* | | |
|---|------------|---------------|----------|--------|----------------------|----------|--------|
| | | Weekday | Saturday | Sunday | Weekday | Saturday | Sunday |
| Bowery Street between Bayard St. and Canal St. | Northbound | 16,488 | 16,001 | 16,296 | 1,237 | 1,001 | 1,103 |
| Bowery Street between Bayard St. and Canal St. | Southbound | 6,297 | 5,589 | 5,018 | 388 | 423 | 452 |
| East Broadway between Catherine St. and Market St. | Eastbound | 6,086 | 6,247 | 5,343 | 411 | 437 | 329 |
| Mott Street between Bayard St. and Canal St. | Southbound | 11,534 | 14,711 | 14,335 | 721 | 1,118 | 934 |
| Grand Street between Allen St. and Orchard St. | Eastbound | 7,618 | 8,341 | 8,527 | 491 | 545 | 674 |
| Grand Street between Allen St. and Orchard St. | Westbound | 4,066 | 4,503 | 3,810 | 296 | 307 | 326 |
| Allen Street between Canal St. and Hester St. | Southbound | 15,558 | 17,022 | 16,242 | 980 | 1,090 | 1,348 |
| Kenmare Street between Lafayette St. and Mulberry St. | Eastbound | 7,419 | 7,385 | 6,201 | 437 | 576 | 468 |
| Kenmare Street between Lafayette St. and Mulberry St. | Westbound | 13,286 | 14,856 | 12,995 | 821 | 802 | 712 |

*Shading indicates day of peak volumes. * Peak hour occurs at different times at different locations and on different days.*

As the data indicate, these unique locations include Mott Street, where the daily traffic volumes on the weekends are 24% to 28% higher than during the average weekday, and the peak hour volumes are 30% to 55% higher on the weekends than during the average weekday. A similar situation applies to Grand Street and to Allen Street, where both the daily volumes and peak hour volumes on the weekends are higher than they are during the average weekday. The volumes of daily traffic are consistent throughout the week on the Bowery and East Broadway, two of the major north-south arterials in Chinatown, and their peak hour volumes during the weekends are close to or higher than the volumes during the weekdays. These streets are either associated with major commercial areas (such as Grand Street, Allen Street, and Kenmare Street) or have land uses that include many shops, markets, and/or restaurants (Mott Street, the Bowery, and East Broadway).

Due to the commercial nature of this part of Chinatown, truck and bus traffic plays an important

role within the local communities. To gain some insight on the truck and bus traffic in Chinatown, vehicle classification counts were conducted at the following locations:

- Canal Street at the intersection with Mulberry Street
- The Bowery at the intersection with Division Street
- Allen Street at the intersection with Division Street
- Division Street at the intersection with the Bowery
- East Broadway at the intersection with Forsyth Street

Table A-6 provides a summary of the peak hour truck percentages on these selected major travel corridors. The table also differentiates the truck percentages by time of day (morning, midday and afternoon peak periods), and by Saturday and Sunday at two locations.

TABLE A-6 TRUCKS AS A PERCENTAGE OF TOTAL TRAFFIC

| Location | AM | Weekday | | Weekend | |
|---------------------------------|--------|---------|-------|---------|------|
| | | Midday | PM | Sat. | Sun. |
| Canal Street at Mulberry Street | 16-19% | 15-22% | 6-10% | 5-7% | 1-2% |
| Bowery at Division Street | 15-16% | 6-12% | 5-6% | 2-8% | 1-2% |
| Allen Street at Division Street | 14-15% | 9-10% | 3-4% | n.a. | n.a. |
| Division Street at the Bowery | 8-10% | 7-14% | 3-4% | 11-12% | 1-2% |
| East Broadway at Forsyth Street | 17-19% | 9-10% | 5-6% | 5-6% | 1-2% |

Most trucking activities occur in the morning peak hour, and this finding is consistent with the types of commercial land uses in the area, where most of the businesses expect deliveries of merchandise during the morning hours. Not surprisingly, Canal Street, with its regional functionality, carries considerable volumes of trucks throughout most hours of the day, with 16% to 19% trucks in the morning peak, 15% to 22% trucks in the midday peak, and 6% to 10% trucks in the afternoon peak. These percentages decline significantly on weekends, especially on Sunday. Other corridors with heavy truck traffic volumes during the morning peak hour include the Bowery (15% to 16% of the total traffic), East Broadway (17% to 19% of the traffic), Allen Street (14% to 15% of the traffic), and Division Street which carried 8% to 10% trucks. These facilities also experienced a range of 6% to 14% trucks during their midday peak hours. In the afternoon peak hour, however, much lower truck traffic (in the range of 3% to 6%) can be expected on these streets.

Table A-7 summarizes the bus percentages on the key bus routes in the study area. The table also provides the number of buses recorded at each location in both directions. The data indicate that the Bowery and Allen Street corridors had the

highest bus volumes during all peak hours. The Bowery recorded 70 buses (4% to 6% of the total traffic) in the morning peak hour and 62 buses (4% to 7% of the traffic) in the afternoon peak hour. Allen Street recorded 52 buses (3% to 6% of the traffic) at the midday peak hour and as high as 74 buses (4% to 5% of the traffic) during the afternoon peak hour. East Broadway also recorded bus percentages ranging from 4% to 9% of the traffic, which translates into 44 buses, 34 buses, and 46 buses for the morning, midday and afternoon peak hours, respectively.

**TABLE A-7
BUSES AS A PERCENTAGE OF TOTAL TRAFFIC**

| Location | Weekday | | | Weekend | |
|---------------------------------|-----------|-----------|-----------|-----------|-----------|
| | AM | Midday | PM | Sat. | Sun. |
| Canal Street at Mulberry Street | 2% (44) | 1-2% (21) | 1-3% (29) | 1-2% (31) | 1-2% (18) |
| Bowery at Division Street | 4-6% (70) | 2-5% (43) | 4-7% (62) | 3-5% (32) | 1-2% (28) |
| Allen Street at Division Street | 4-5% (43) | 3-6% (52) | 4-5% (74) | n.a. | n.a. |
| Division Street at the Bowery | 3-7% (19) | 2-3% (15) | 1-2% (16) | 2-3% (16) | 1-2% (13) |
| East Broadway at Forsyth Street | 4-9% (44) | 4-6% (34) | 6-7% (46) | 2-3% (14) | 2-3% (20) |

(##) = number of buses (both directions)

On the other hand, despite its status as a regional traffic facility, Canal Street recorded fewer buses, ranging from a low of 21 buses during the midday peak hour to a high of 44 buses during the morning peak hour. Also, while route B51 operates westbound on Canal Street between the Bowery and Lafayette Street, there is no NYCT bus route operating the length of Canal Street. Bus traffic dropped considerably during the weekends on most of these streets, with the exception of Division Street, a popular boarding location for casino and tour buses, which recorded a constant volume of buses throughout the week.

Summary of the Traffic Analysis Findings: Several key findings can be drawn from the above traffic analysis, other available data for the area, field observations, and a general knowledge of local conditions. They include:

- On a system-wide average basis, the morning peak hour typically occurs between 7:45 AM and 9:15 AM, and the afternoon peak hour occurs between 4:30 PM and 6:00 PM.
- The peak hour patterns for the weekends vary greatly from location to location as well as between Saturdays and Sundays. On average, the weekend peak hour is likely to occur during the midday period, and is usually spread over several consecutive hours of heavy travel. Despite the fact that the weekend peaking characteristics are difficult to predict, they are closely related to the land uses and commercial activities served by the major travel corridors.
- For commercial-based corridors and streets such as Grand Street, Allen Street, the Bowery, East Broadway, Mott Street, Centre Street, Canal Street, and Delancey Street, travel demand on the weekends is likely higher than on the average weekday. Therefore, traffic management strategies for these corridors must be sensitive to and flexible for the needs of the commercial uses located along these streets in order to be effective. These strategies should consider and include parking needs and regulations, traffic controls and enforcement, as well as zoning and development requirements and rules.
- The Canal Street corridor and the Delancey Street corridor are the two most heavily traveled corridors in the study area. The majority of the intersections located along

these corridors were among the 10 most heavily utilized locations surveyed. These two corridors not only serve regional traffic flows as they connect directly to the East River crossings, but also provide direct access to Chinatown and commercial establishments on both sides of Canal and Delancey Streets.

- The majority of the truck activities occur in the morning and gradually decrease throughout the day. Canal Street, as a regional facility, carries the most truck traffic through the area, but other major routes such as the Bowery, Allen Street and East Broadway play an important role in serving truck traffic. Goods movements are important to the Chinatown community, as most of the businesses depend heavily on the daily delivery of merchandise.
- The Bowery and Allen Street have the highest total bus volumes, ranging from 43 to 74 buses during the morning, midday and afternoon peak hours. East Broadway and Division Street, however, are the two most popular bus boarding and drop-off locations, showing a constant volume of bus traffic for each of the three peak hours. Division Street recorded between 15 to 19 buses during each of the peak hours, while East Broadway recorded a range of 34 to 46 buses.

Impact of Post-9/11 Street Closures

A set of traffic data that adequately reflects both “before” and “after” conditions is required to fully and quantitatively address traffic impacts resulting from the closure of Park Row. This data should not only address the streets that are affected by this action, but also provide travel information (in terms of origins and destinations) for pre-9/11 Park Row traffic.



*Park Row Security Barrier Looking Toward
Chatham Square*

A review of the available traffic data for pre- and post-9/11 conditions in the area concluded that the existing available data are not sufficient for a quantitative analysis of these conditions. Two important factors contribute to this situation:

- There is no pre-9/11 data available for the critical intersection of Chatham Square (Park Row/Worth Street/the Bowery/St. James Place/East Broadway).
- A comparison of the available 2001 and 2003 traffic data for the area indicates that travel demand and traffic volumes decreased on the majority of the streets in Lower Manhattan's financial district, including on the streets in the vicinity of Park Row and City Hall. It is believed the main reason for this reduction in travel demand is the employment losses in the area subsequent to 9/11. This decline in volumes makes the analysis of traffic impacts difficult; for example, while it is logical to expect a substantial portion of the Park Row traffic to be diverted to Pearl Street near the Brooklyn Bridge, the 2003 data show a

reduction in traffic volumes for the majority of the movements for all peak hours on this street.

Despite this lack of data, a qualitative assessment based on traffic variations at other key locations suggests the following traffic impacts have occurred due to the closure of Park Row:

- Morning Peak Hour – An estimated 200 to 250 southbound vehicles on Park Row were affected, of which most were diverted to Broadway from the north. In the northbound direction, it was estimated that at least 450 to 500 vehicles were affected, and most of these vehicles were buses from Lower Manhattan and vehicles from the northbound off-ramp of the Brooklyn Bridge. While impacts from the diversion of these vehicles cannot be assessed due to the lack of data, it is estimated that the Park Row traffic from the Brooklyn Bridge now uses the Pearl Street exit as a potential alternate, and Frankfort Street serves as a route for the northbound buses via Pearl Street and St. James Place. At Chatham Square, the total of 37 buses that were recorded at the northbound approach of St. James Place supports this assumption.
- Midday Peak Hour – An estimated 150-200 vehicles in the southbound direction on Park Row were affected. It is assumed that about 100 of these vehicles were diverted to Broadway, and the remainder are assumed to be diverted to other north-south streets. An estimated 200 vehicles were affected in the northbound direction, but their diversion routes cannot be determined due to the lack of data. It is assumed that Pearl Street is the most logical diversion route, as during the morning

peak hour (22 buses were recorded northbound on the St. James Place approach to Chatham Square).

- Afternoon Peak Hour – An estimate of approximately 350-400 vehicles were affected; the data and observation suggest that about 50% of these vehicles were diverted to southbound Broadway, and the remainder to other north-south streets. About 550 to 600 vehicles in the northbound direction are estimated to be affected. The available data also suggest that about 100 vehicles from the Brooklyn Bridge may be diverted to the Pearl Street exit, but the incompleteness of the data prohibits the determination of other possible diversion routes.



Pearl Street Security Barrier at Pearl Street

It is important to recognize that impacts from the closure of Park Row (and the closure of other streets in the area) cannot be fully assessed solely on the basis of traffic volumes, vehicle diversions, and the capacity of other nearby streets. It is also important to consider additional travel times and excessive delays that directly or indirectly affect the driving population. Obviously, longer travel times

(delays) are expected for those affected vehicles that are diverted to other routes. By the same token, vehicles on those diversion routes will also experience additional delays due to the increases in traffic volumes as the result of the street closures. As this delay is directly related to time-of-day and other traffic conditions, it is difficult to quantify the exact amounts of delay without an in-depth analysis involving transportation modeling and traffic simulation.

Based on professional judgment and knowledge of the study area, however, up to five minutes of added travel time for each diverted trip might occur during the more congested time periods. Nonetheless, the delays due to the street closures should be expressed in terms of person-hours of time when summing up the total delays experienced by all affected individuals, and not only those associated with the diverted vehicles from Park Row. Also to be considered are how the traffic delays affect the operations and response times of emergency vehicles such as fire trucks and ambulances in the area.

COMMERCIAL PICK-UPS AND DELIVERIES

As indicated earlier, a significant component of the traffic activity in the study area is commercial truck traffic, comprising trucks passing through the area without stopping for pick-ups or deliveries, and trucks that serve local businesses. The bulk of the local truck traffic provides commercial pick-ups and deliveries of various types, and contributes in varying degrees to the levels of street activity in the area.



Trucks Unload Wherever Space is Available

Truck Routes

There are a number of New York City Department of Transportation (NYCDOT)-designated truck routes in the study area, including the following:

Designated Through Truck Routes:

- Manhattan Bridge and Canal Street extending westward from the bridge
- Walker Street west of its intersection with Canal Street near Baxter Street
- Williamsburg Bridge, Delancey Street extending west of the bridge, and Kenmare Street
- Allen and Chrystie Streets north of Delancey Street

Designated Local Truck Routes:

- St. James Place and the Bowery
- Chrystie Street between Canal and Delancey Streets
- Pike Street and Allen Street south of Delancey Street
- Grand Street west of Allen Street

- Worth Street
- South Street between the Manhattan and Brooklyn Bridges

Although data on truck vehicle numbers and types are not available, these routes, and particularly the through truck routes, are believed to be responsible for the bulk of the truck traffic on the streets in the study area. The levels of truck traffic on Canal Street are particularly high. This is attributed to the corridor's major arterial status, the commercial importance of the street, and the toll structure on the New York Harbor and Hudson River crossings, although post-9/11 regulations regarding truck use of the Holland Tunnel tended to lower these volumes at the time of the traffic survey. The through truck volumes are reflected in the traffic counts for the streets designated as truck routes and, as such, their operations affect local street conditions only to the extent that they contribute to overall levels of traffic and street congestion.

The NYCDOT recently conducted a study of the entire truck route network of New York City with the goal of updating the network to better reflect development changes that have taken place since the original routes were designated. A local outcome is expected to be better enforcement and management of the truck route network in the study area.

Local Freight Pick-ups and Deliveries

The most extensive and visible commercial vehicle operations – those most relevant to this study - are local freight pick-ups and deliveries, which predominate on the streets containing retail, restaurant, and manufacturing land uses in the study area. (Waste and recyclables pick-ups are discussed separately below.) Because of the large number of small retail stores and eating establishments on the area’s commercial streets, freight deliveries are the major activity. The major types of commercial freight trucking activities occurring in these areas are as follows:

- Deliveries to non-food retail stores
- Deliveries to supermarkets and food markets
- Deliveries to eating establishments
- Pick-ups and deliveries for garment and other manufacturing businesses
- General commercial pick-ups and deliveries (e.g., those associated with offices, commercial services such as Federal Express, and the U.S. Postal Service).

In general, the above trucking activities are not much different than similar activities in other neighborhood commercial areas of the city, except the proportion of food-related deliveries (produce, meat, and fish) tends to be much higher because of the relatively high concentration of fresh food markets and restaurants in Chinatown, Little Italy, and other commercial districts. Also, because of the concentration of these uses on certain streets and the relatively small physical size of the businesses involved, the food deliveries tend to be frequent and occur throughout the day, with the heaviest concentration of deliveries occurring in the morning hours. Smaller, two-axle trucks and vans

are the predominant vehicle type. Other activities that cater to the need for smaller and fresher food inventories are all-day vending from curbside trucks and wholesale food distribution from centralized locations in the area.



Deliveries are Made Directly to Sidewalk Vendors on East Broadway



Division Street is Typically Very Busy with Freight Deliveries



Hand Trucks on Sidewalks are Often Used for Local Store Deliveries

The following summarizes the predominant local freight trucking operations in the study area:

- *Produce, fish and meat deliveries*, which typically occur from the early morning hours to midday, Monday through Saturday, with trucks originating from Upstate New York, New Jersey, and the Hunts Point Market in the Bronx. The bigger retail operations have their own trucks and delivery vans, and on some streets (East Broadway is a prime example), park trucks/vans along the curb opposite the retail markets for extended periods of time, delivering produce to the markets as it is sold and often selling directly from the trucks or the curbside, which contributes significantly to local sidewalk congestion. Trucks are also often parked overnight on these streets.
- *Deliveries to retail fish markets and restaurants*, which are similar to the deliveries to non-food stores in the area. These trucks make curbside deliveries by demand, mostly during the morning hours, from markets outside the area, and depart after the deliveries are made. A significant food delivery operation occurs

along the east side of Division Street south of Market Street, one of the wider streets in the area, and also serves the very active afternoon produce market on the west side of the street adjacent to Confucius Plaza.

- *Deliveries and pick-ups for the local garment factories.* These typically occur two times a day, six days a week, and are by independent trucking companies. Typically, in the morning (7:00 to 9:00 AM), cut goods are delivered and sewed goods are picked up, and in mid-afternoon (3:00 to 4:00 PM), new cut goods are delivered.
- *Deliveries to retail stores and vendors.* Deliveries of general merchandise occur throughout the day and are typically completed by late afternoon. Trucks are unloaded onto sidewalks or at street corners as close to the retail outlets as possible and carried by hand trucks to the stores or sidewalk vending locations. This activity tends to be transient in nature.

The wholesale produce operations are a relatively recent addition to the study area's freight activities. These establishments operate as mini-terminal markets, generating both large scale deliveries via over-the-road trucks from the tri-state region and elsewhere on the Eastern Seaboard, and local pick-ups for markets and restaurants in the study area. A major part of this wholesale unloading and loading activity occurs early in the day, beginning at about 5:00 AM, and results in traffic congestion, noise, sanitation problems, extensive use of the sidewalks for freight transfers and fork lift movements, and other quality of life problems on the local streets involved. Locations of these activities include Mulberry and Broome Streets, Kenmare between Elizabeth and Mulberry Streets,

and in the marketplace under the Manhattan Bridge between East Broadway and Henry Street.

Refuse Removal

Refuse removal is not a significant generator of traffic or contributor to traffic congestion or vehicular circulation problems in the study area. Because of generally limited storage space for refuse, however, it contributes to sidewalk congestion throughout the area. Regular refuse removal services are provided by the New York City Department of Sanitation (DOS) for private residences and not-for-profit and government institutions, including the New York City Housing Authority developments, and by private carting companies for commercial establishments.



Daily Refuse is Typically Neatly Stored on Sidewalks



Garbage in Some Areas Requires Major Sidewalk Space

City Services: The City DOS regularly collects refuse and recycled materials as it does in all other areas of the city. Refuse pick-ups typically occur three days a week, and recycled materials are picked up one day every other week. Typically, a residential building accumulates bagged refuse at a designated on-site location near the street, or places it on a curb side during the night or early morning before a pick-up. The DOS also collects refuse from the street corner waste receptacles that are maintained by the City. After completing the collections, the DOS trucks transport the waste via pre-established street routes through the Holland Tunnel to waste management facilities in New Jersey.

Manhattan is divided into Sanitation Districts (SD) whose boundaries are coterminous with the borough's community districts. The Chinatown study area is served by the three SDs corresponding with the boundaries of CB 1, CB 2, and CB 3. Each Sanitation District also has a garage that is used to house its trucks and provides a base for personnel and shift changes. The only post-collection routes within the study area are for trucks from SD 3, which are routed via Allen Street to Delancey Street, west on Delancey Street and Kenmare Street, and then south on Lafayette Street to Canal Street and west on Canal Street to the Tunnel.

SD 3 trucks represent the bulk of the DOS refuse operations in the study area. The DOS garage for SD3 is located on Pier 36 east of South Street between Montgomery and Jefferson Streets. Trucks originating at the garage are routed to their individual collection routes via South Street to Pike Street, north on Pike to Allen Street and Delancey Street, and west on Delancey to Kenmare,

Lafayette, and Canal Streets. This garage location is also a storage facility for street cleaning equipment and functions as a repair facility for the District's trucks and other equipment.

The volumes of DOS truck traffic are relatively low and not a significant contributor to local traffic congestion - the number of trucks on the post collection routes is rarely greater than 10 per hour during peak periods. The busiest hours are between 8:00 AM and 12:00 noon on weekdays, with 9:00 AM to 10:00 AM typically having the most activity. The peak activity day is usually Thursday. Refuse collections on the narrower streets sometimes result in temporary traffic back-ups, particularly where the volume of refuse is substantial, but this situation is both periodic and predictable at any given location, and the resulting traffic delays are inconsequential.

Private Services: All commercial establishments in the area (as throughout the city) use private carting companies for both refuse and recycling pick-ups. These typically occur between 12:00 midnight and 6:00 AM Monday through Saturday, depending upon individual contracting arrangements. Larger generators of commercial refuse typically use receptacles that are stored off the street in building vestibules or holding areas, but the bulk of the commercial refuse and recycled materials (mainly broken-down and bundled cardboard boxes) are placed on curb sides the evening or night before the pick-ups early the following day. Minimal truck volumes are involved and, other than early morning noise, the traffic from the trucks is not a problem.

There are problems, however, with the temporary storage of commercial refuse and recycling

materials on sidewalks in some areas. This occurs where commercial establishments place refuse on the sidewalks in the late afternoon or early evening (peak sidewalk use periods for pedestrians), and it is not picked up until early the following morning, and at locations where the sidewalks are particularly narrow or there are other obstructions such as stoops or signs.

Generally, the problem is the greatest on the narrower sidewalks in the older parts of the study area (the Chinatown core, Little Italy, and north of Delancey Street), and where there is extensive street market activity such as along the south side of East Broadway, the north side of Division Street west of Market Street, and in the commercial sections of Grand Street. A related quality of life problem in these locations is the prevalence of food waste, lack of timely pick-ups of the waste, private carters leaving some waste behind, inadequate bagging or containerization of the waste, and insufficient enforcement of the City's sanitation regulations.

Street and Sidewalk Cleaning

The City DOS regularly cleans the streets with mechanical sweepers in conjunction with the alternate side of the street parking regulations, although this is hindered by problems in some areas with illegally parked or standing vehicles. In addition, there are significant private sidewalk and street clean-up and beautification efforts to encourage shopping and tourism, particularly in the old Chinatown core and Lower East Side BID districts. One clean-up project is sponsored by the Council for a Cleaner Chinatown, which employs people to bag garbage in street corner receptacles and has also sponsored large-scale and highly organized voluntary community clean-up efforts with assistance from the New York City Fire

Department for the use of fire hydrant water. A major need for these efforts is greater access to the hydrants.

Another sidewalk and street cleaning initiative promoted by Asian Americans for Equality (AAFE) is called "Shining Chinatown." This program consists of voluntary clean-up efforts based on a publicity and education campaign, in conjunction with storefront and other streetscape beautification efforts.

A major challenge of street and sidewalk sanitation is the variable levels of commitment by business owners, who do not necessarily own the properties they occupy, to maintaining the appropriate storage and containment of waste and recyclables, and to keeping the streets and sidewalks in front of their establishments clean.

PARKING

Parking in the area, including opportunities for new off-street parking, is expected to be examined in detail in an upcoming study, funded through the New York State and New York City Departments of Transportation. The following presents a preliminary overview of the existing parking conditions in the area.

Parking in the area includes both on-street curbside parking and off-street parking in open parking lots and parking garages. Overall parking conditions vary considerably within the study area's neighborhoods and sometimes from street to street, especially where storefront commercial activities compete for curbside space. Older buildings, which dominate the western portion of the study area, were built without any on-site parking. Many newer buildings, especially in the eastern portion of

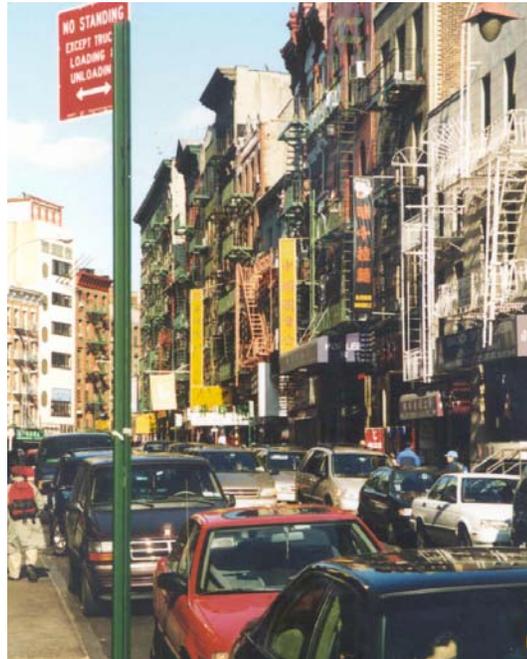
the study area, have some parking either in surface lots or underground garages, but even these buildings have less parking than is typically required for the residents of these buildings.

On-Street Parking

On-street parking is a function of both the regulations that affect use of curbside lanes and of the overlapping demands for this space for parking, standing, and loading. The demands for parking and curbside activity differ significantly among land uses: residences produce demand for longer term parking during the day and especially overnight, while commercial storefronts produce demands for both short-term parking by shoppers and the curbside unloading of goods and removal of garbage.

Curbside regulations vary greatly, and most blockfronts have more than one regulation in effect. Most of the regulations change at different times of the day and night and are different on weekdays and weekends. However, despite the intricacy of the regulations, broad patterns can be discerned in different portions of the study area:

- Streets in the Civic Center portion of the study area, where access is presently limited to authorized police vehicles, are now used for parking of both police vehicles and police officers' personal cars.
- The regulations in the historic Chinatown core and Little Italy tend to be highly restrictive. During the daytime, many areas are limited to standing only by trucks loading and unloading. Narrow streets often have no standing anytime on one side, and busy streets often restrict any standing during peak traffic periods. Where parking is allowed, it is generally metered and



Competition for Curb-Side Parking in the Older Portions of Chinatown is Especially Intense on Weekends



Police, Court and Detention Facility Officers' Parking Competes for Street and Sidewalk Space Near these Municipal Facilities

limited to one or two hours. Some blocks in the vicinity of the criminal courts limit parking to authorized police or court officer vehicles only.

- Areas in the center of the study area, from Chrystie Street to Essex Street, have a mix of loading zones and metered parking with one or two hour limits, but also have more free daytime parking, especially on minor streets.
- East of Essex and Rutgers Streets, the area is predominantly residential, and the regulations allow more free daytime parking. Loading zones and metered parking are more limited to areas in front of stores and community facilities.

Just as parking regulations vary throughout the study area, the activities that compete for parking space and cause parking and loading conflicts vary within the study area:

- In the historic Chinatown core and Little Italy, residential parking competes with parking by shoppers and diners, freight unloading at stores, and vendors' vehicles parked on various streets. Due to the intensity of visitors driving to this area, this portion of the study area has the most intense parking demand, and is also busy on evenings and weekends.
- The area just east of the municipal courts has the same demands as elsewhere in the old Chinatown core, with the added demand for parking by police and court officers, who have special parking privileges.
- The Civic Center area, now restricted to authorized police vehicles, incorporates the parking lot for Chatham Green. The reconstruction of the 400-space municipal

parking garage next to the police headquarters for official use only, has resulted in the displacement of parking spaces previously available to the public. Also, the Police Department temporarily used James Madison Park between St. James, Madison, and Pearl Streets for police parking, an activity that ceased under a court order as of April 15, 2004.

- The area along the Bowery and Chrystie Street has less visitor-related parking demand than the Chinatown core but has extensive commercial activity, with parking demand from both shoppers and for commercial deliveries and pick-ups.
- East Broadway, from Chatham Square to Essex and Rutgers Streets, has intense commercial activity, including grocery shopping, especially between Catherine and Market Streets. Therefore, that street has intensive demand for loading and unloading, along with parking by vendors and some demand from apartments along the street.
- Parking demand in the eastern end of the study area and south of Madison Street is primarily residential in character, with longer-term daytime and nighttime parking being the main demand.

A curb parking occupancy survey was conducted along 10 blockfronts on a weekday, a Saturday, and a Sunday in October 2003. Actual curb parking activity was observed and recorded periodically throughout each day. Findings of the on-street parking survey are summarized as follows:

- Passenger cars occupied most of the legal parking spaces throughout the day.

- Passenger cars standing with their drivers were frequently observed at those locations with the most severe parking shortfalls throughout the day.
- Some of the busiest curb parking demand locations, such as the west side of St. James Place between East Broadway and Madison Street, were continuously filled to capacity for the entire day.
- As expected, most illegal double-parking by freight vans and light trucks occurred during loading/unloading operations.
- The illegal parking by passenger cars generally involved fire hydrant spaces and parking in truck loading zones.
- Some legal parking spaces were occupied by garbage dumpsters, fork lift machines, DOT vans, and police vehicles.
- All legal curb parking spaces were fully occupied during the midday (12:00 – 2:00 PM) period, whereas some surplus parking spaces were available during the morning and afternoon peak periods.

Off-Street Parking

Off-street parking is available at 39 open parking lots or parking garages within the study area. These facilities, identified in Table A-8 and indicated on Figure A-9, have a combined capacity for about 4,100 cars.



Typical Small Off-Street Parking Lot in the Study Area

TABLE A-8 OFF-STREET PARKING FACILITIES

| | Location | Capacity |
|----|---|----------|
| 1 | 88 Madison St. | 50 |
| 2 | 38 Henry St. | 150 |
| 3 | 227 Cherry St. | 100 |
| 4 | 220 South St. | 63 |
| 5 | 61-63 Chrystie St. | 20 |
| 6 | Essex St between Broome St & Delancey St | 63 |
| 7 | Broome St between Norfolk St & Suffolk St | 140 |
| 8 | 24-26 Columbia St. | 457 |
| 9 | Rivington St between Essex St & Norfolk St | 356 |
| 10 | 14 Kenmare St. | +/- 90 |
| 11 | Lafayette St. & Kenmare St. | +/- 62 |
| 12 | 142-146 Lafayette St. | 95 |
| 13 | 395 Broome St. | 85 |
| 14 | Baxter St between Hester St & Canal St | 125 |
| 15 | 138 Bowery | 140 |
| 16 | Forsyth St between E. Broadway & Division St. | 9 |
| 17 | 268 Division St. | 300 |
| 18 | 62-64 Mulberry St. | 191 |
| 19 | 95-97 Baxter St. | 28 |
| 20 | 174 Centre St. | 93 |
| 21 | Suffolk St between Broome St & Grand St. | 90 |
| 22 | Broome St between Clinton St & Ridge St. | 48 |
| 23 | 59-63 Allen St. | 48 |
| 24 | Delancey St between Forsyth St & Eldridge St | 90 |
| 25 | 196-204 Mulberry St. | 175 |
| 26 | 102-112 Mott St. | 113 |
| 27 | Mulberry St between Canal St & Hester St. | 45 |
| 28 | 224-228 Mulberry St. | 150 |
| 29 | 44 Elizabeth St. | 150 |
| 30 | 58 Walker St. | 35-40 |
| 31 | 84-86 White St. | 72 |
| 32 | 4850 Franklin St. | 40 |
| 33 | Lafayette St. between White & Leonard Sts. * | *? |
| 34 | 49-59 Henry St. | 114 |
| 35 | 31 Munroe St. | 110 |
| 36 | 71Munroe St. | 66 |
| 37 | 26 Forsyth St. | +/- 60 |
| 38 | Chrystie St. Between Grand & Hester Sts. | 116 |
| 39 | 235 Bowery | 38 |

* Parking only for DOT on weekdays, open to public on weekends.

The largest off-street parking garage in the area, the municipal garage at One Police Plaza, was closed on June 29, 2001 (prior to 9/11) to facilitate construction of a new emergency services center. Subsequent to 9/11, plans for completing the center at that location were changed, but the parking garage remained closed, pending its reconstruction for permanent police use. While it will only be available for the police, reopening of the garage should ameliorate the demand for parking both within the restricted area of the Civic Center and on surrounding streets.



A New Off-Street Parking Garage on Mulberry Street

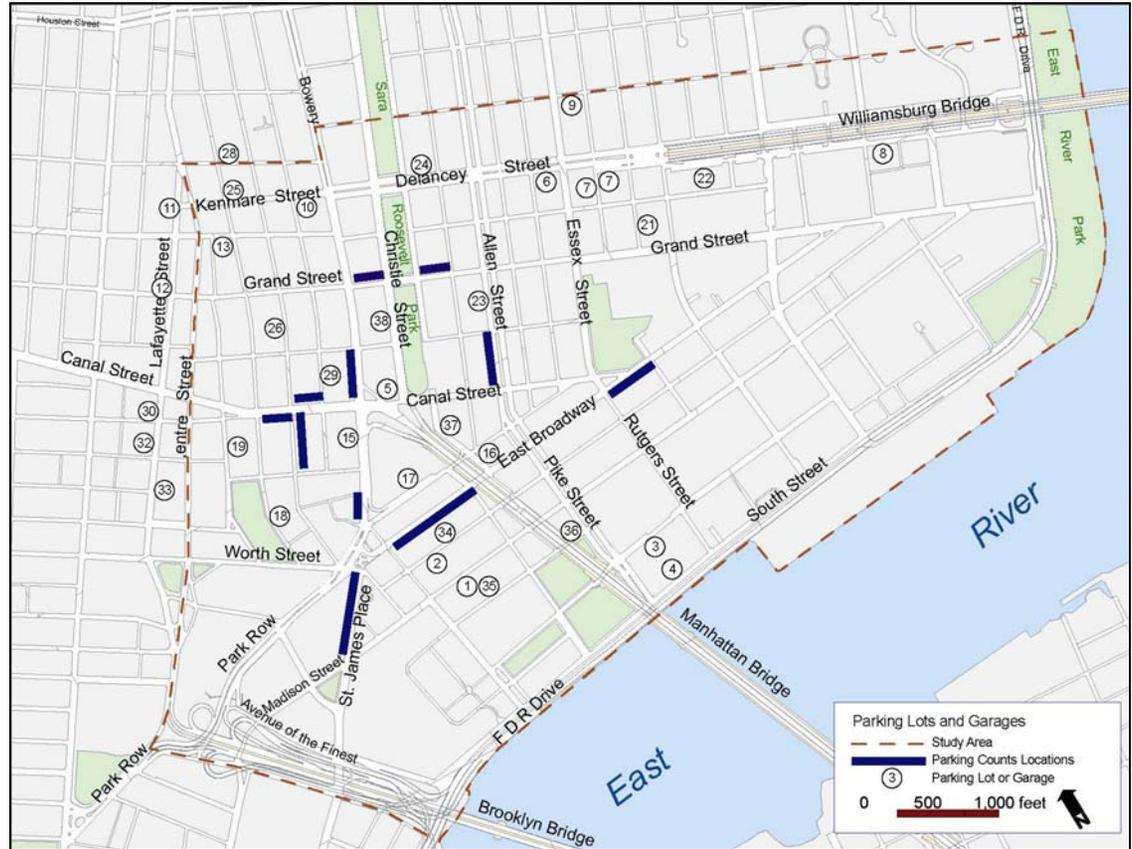


Figure A-9: Off-Street Parking Facilities in the Area

BUS SERVICES

MTA New York City Transit

Eleven MTA New York City Transit (NYCT) bus routes provide service to and through the Chinatown study area (see Figure A-10). (Some of these bus routes have common trunk routes and the same number designations but different termini.) Table A-9 summarizes the routes, the type of service provided (regular, part-time, limited stop, or express), and the key streets served within the study area.

The 11 bus routes provide good coverage; few places in the area are more than two blocks from a bus route, and most places are within a few blocks of multiple routes serving different areas of Manhattan. The buses typically operate on headways of between two and eight minutes during the weekday peak periods.

However, the area is served primarily in the uptown-downtown direction; the M22 is the only crosstown NYCT bus route serving the study area. For example, no bus provides continuous service across or near Canal or Grand Streets. In addition to serving short east-west trips, crosstown routes in these areas would provide transfer opportunities for the many north-south subway lines traversing this area.

To assess the adequacy of the services on existing routes, passenger counts and observations were made during typical weekday morning and evening peak periods on the M9, M15, and M22 routes in both directions at a central point in the study area. During the periods surveyed, the buses were found to be operating with surplus capacity throughout both peak periods in the study area. While the



Figure A-10: NYCT Bus Routes

southbound buses were more crowded in the morning and the northbound buses were more crowded in the evening, most buses passing Canal Street or Rutgers Street in either direction had seats available for additional passengers.

A general conclusion from this limited survey is that the existing NYCT bus services appear to be adequate in terms of overall passenger demand and frequency of service on the existing bus routes.

Prior to 9/11, six bus routes used Park Row in one or both directions, including the M9 (both directions), M15 to City Hall (both directions), M103 (both directions), X25 (southbound), X90 (southbound), and the B51 (eastbound). In addition, the M22 traveled westbound on Pearl Street, as did the M1 and M15. Based on current bus schedules, a total of 648 buses have been affected by the closure each weekday.

For most of these, Park Row provided both the most direct routing and the fastest travel route to destinations. Rerouting of these buses has increased travel distances and travel times for passengers and has added additional large vehicles to the detours used for the buses. These streets are narrower and more congested, and more turns are required for the buses than on the Park Row route.

**TABLE A-9
NYCT BUS ROUTES IN THE STUDY AREA**

| Route | Service Type | Sts. Served in Study Area |
|--|---------------------|--|
| M1 – Fifth and Madison Aves. | Part-Time | Centre and Lafayette Sts. |
| M9 – Ave. B and East Broadway | Regular | East Broadway, Pearl, Clinton, and Essex Sts. |
| M14A – 14 th St. Crosstown and Ave. A | Regular | Essex, Grand and Cherry Sts. |
| M14D – 14 th St. Crosstown and Ave. D | Regular | Columbia and Delancey Sts. |
| M15 – First and Second Aves. to City Hall | Regular and Limited | Allen St., East Broadway, and Park Row |
| M15 – First and Second Aves. to South Ferry | Regular and Limited | Allen, Madison, and Pearl Sts. |
| M22 – Madison and Chambers Sts. | Regular | Madison St., East Broadway, Park Row, Frankfort, Madison and Cherry Sts. |
| M103 – Third and Lexington Aves. | Regular | Park Row and Bowery |
| B39 – Delancey St. and Williamsburg Bridge to Brooklyn | Regular | Delancey St. |
| B51 – Manhattan Bridge to Brooklyn | Regular | Canal and Lafayette Sts.; Park Row |
| X25 – Grand Central Terminal - Wall St. Express | Express | Three stops in area at Pearl/Frankfort, Wagner/St. James and Centre/Worth Sts. |

Commuter Vans and Jitneys

There are a number of Chinese communities in the five boroughs of New York City, of which the most populated and commercially concentrated are the

Chinatowns in Lower Manhattan, Flushing in Queens, and Eighth Avenue in Brooklyn. There is significant demand for trip-making between these three areas.

Manhattan’s Chinatown, the largest and oldest of the communities, is the most significant generator of this travel, as it offers substantial opportunities for shopping, dining, employment, professional services, and social functions. It also generates a large number of trips for family events on weekends, mainly due to the large number of elderly residents that reside in the area. As such, commuter jitney and van services have become a very popular form of transport for many travelers to and from Lower Manhattan’s Chinatown.

Commuter van services are popular because they offer fairly inexpensive and convenient transportation. The following lists some of the advantages these services provide:

- More direct connections and a shorter journey time for the same cost as other forms of public transportation.
- Convenient pick-up and drop-off locations, resulting in shorter walking distances, especially for travelers carrying groceries and other purchases.
- Pick-up areas close to the main grocery markets and shopping areas of Chinatown.
- Passenger drop-offs along service corridors at destinations. This is particularly attractive to Queens- or Brooklyn-bound passengers whose final destinations are some distance away from subway stations or bus stops. For example,

Flushing bound vans often drop off passengers along Main Street after they take the Main Street exit to downtown Flushing from the Long Island Expressway.

- A sense of security for travelers in groups of 8-10 people, as opposed to single travelers using public transportation.
- A high frequency of service compared to buses and subways, especially on weekends.

There are many providers of van services, including illegal operators that use popular pick-up points in various parts of Chinatown. The licensed operators typically use designated pick-up and drop-off locations, while the illegal operators shift among various locations. In general, however, each location tends to be used by a specific operator or service company.

Providers tailor their operations and pick-up locations based on the level of enforcement that occurs by the NYC Taxi and Limousine Commission. A high level of flexibility is maintained, and patrons are typically informed of service changes by van drivers en route.

Based on field observations, the Chinatown commuter van business is operated on a “one origin-many destinations” principle. This type of operation gives patrons quicker mobility and better accessibility. It also fills service voids in the available public transportation modes. This type of service operation is common in Hong Kong where many of Chinatown’s immigrants come from, and these residents are therefore comfortable with the system and know how it works.

The demand for the commuter van services was found to be significantly lower in the morning than in the afternoon, which suggests that most of the patrons use other forms of public transportation in the morning. This may be explained by spread-out morning work schedules and the fact that potential patrons are typically not carrying purchases (such as groceries) in the morning.

The primary demand for commuter van services is in the afternoon, for passengers who shop at local grocery markets after work. Field observations indicated that the majority of afternoon passengers carried grocery bags when boarding the vans. The afternoon peak period for pick-ups occurs between 5:30 PM and 7:30 PM, depending on location. During the peak hour between 6:00 and 7:00 PM, lines of passengers waiting for the next van often form on adjacent sidewalks.

Field observations also indicated that the commuter van services do not adversely affect traffic conditions during the morning hours. During the afternoon and evening, traffic problems are more likely at the different pick-up sites, but the overall impact on traffic appears minor. While momentary disruptions of traffic were found from time to time during the peak periods, these did not occur on a regular or extended basis.

The most popular pick-up locations in Chinatown are described below and shown in Figure A-11, along with the stops for other private bus services in the study area.

- The Bowery, northbound in front of Confucius Plaza - This is the main pick-up area for van services to Flushing, Queens. The services are provided by two operators, each occupying a separate waiting area along the

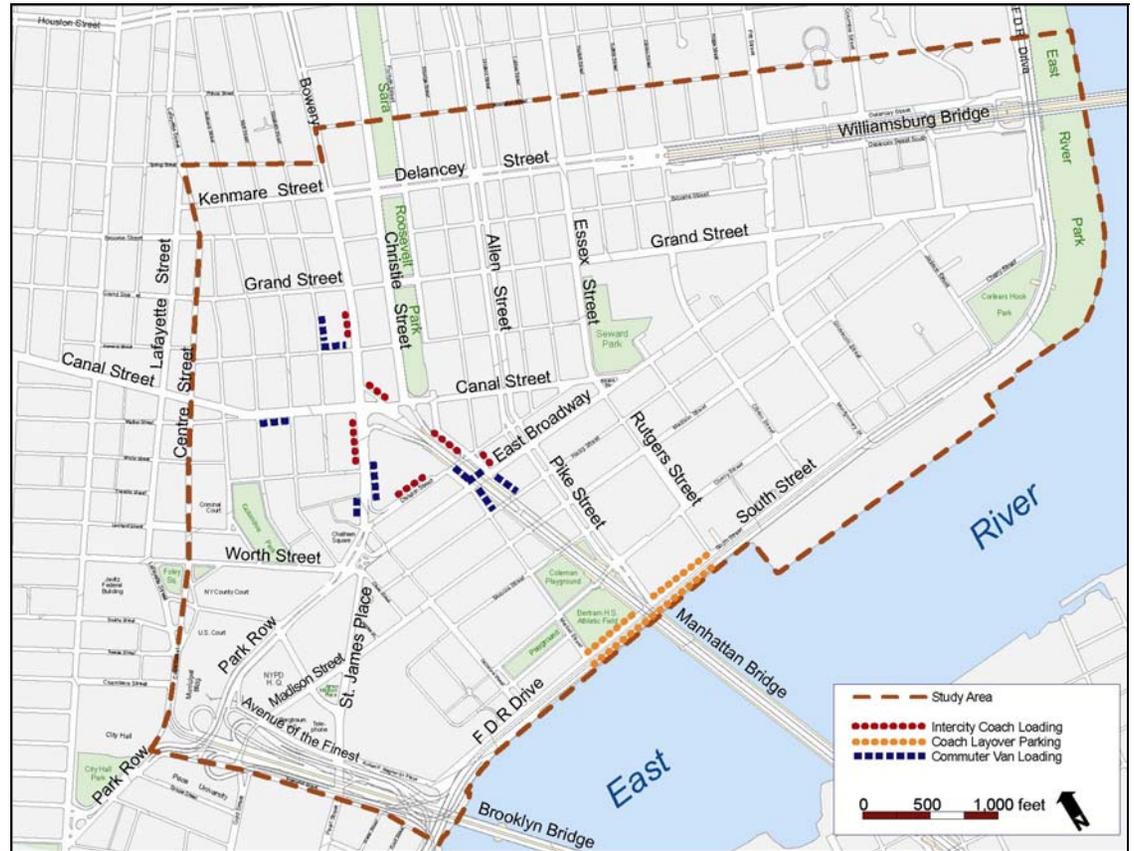


Figure A-11: Commuter Van and Intercity Coach Loading Areas

plaza. The southern waiting area (in front of a fire hydrant) is used by an operator equipped with 20-passenger mini buses. Waiting passengers observed at this location often numbered 20 to 30 persons around 6:00 PM. However, the lines quickly shortened when a mini-bus arrived. The northern waiting area (in front of a fire hydrant and parking meters) provides services to Flushing with 8-passenger vans. Its waiting lines were very short, usually

around 10 persons at the peak, and this operator runs at a higher frequency than the mini-bus operator to the south. It was typical that several vans were double-parked at the northern site when the metered parking spots were occupied at the beginning of the service peak periods (5:45 - 6:00 PM). Because the northbound side of the Bowery is very wide at this location, the operations did not seriously affect traffic flows during this peak hour.

- The Bowery, southbound next to a fire hydrant between Pell and Doyers Streets - This is an



Northbound Commuter Vans Loading on The Bowery

area where illegal van operators often stop or double-park to pick up Brooklyn-bound passengers. No waiting line was observed at this location, so the 8-passenger vans usually idled for a short period of time waiting for customers. Because the southbound side of the Bowery is not as wide as the northbound side, some friction was created by the doubled-parked vans, and traffic flows were disrupted.

- Market Street, westbound approaching the intersection of East Broadway in front of a fire hydrant outside the Oriental Plaza shopping center. This is perhaps the most popular location for Brooklyn-bound passengers. The operator is equipped with 8-passenger vans. Passengers often start waiting around 6:00 PM (about 15 persons were observed), and even with the services of one or two empty vans, the waiting crowd reached 20 to 30 persons around 6:15 PM. The demand drops off slightly around 7:00 PM but still maintains a service rate of about eight persons per van every five minutes. Market Street is a one-way

street with parking on both sides, and despite the fact that the boarding site is located along a small no parking zone on the right side of the street, the operations did occasionally interrupt traffic flows. This effect was not too noticeable, however, when the traffic light turned red on the Market Street approach and stopped the traffic flow. A dispatcher is also stationed at this location because there is not enough street width for double-parked vehicles. When there are sufficient passengers waiting in line, the dispatcher will call vans from their waiting locations, which are usually around the corner on Henry Street under the Manhattan Bridge.

- Market Street, westbound approaching the intersection of Division Street – This location



A Popular Area for Finding Commuter Vans is on Market Street between East Broadway and Division Street

is in the vicinity of a no-standing sign located on the side of Market Street outside the East

Broadway Mall. It is used by different van operators serving different destinations in Flushing and Brooklyn. The observed demand here was lower than the other Market Street location, with an average of 10 persons waiting in line around 6:00 PM. Since this one-way segment of Market Street is quite wide and parking is not allowed between 4:00 and 7:00 PM for the meters located along the left side of the street, the van operations did not create major problems for traffic at this location.

- East Broadway, southbound between Forsyth and Market Streets - This location is in the vicinity of a no-standing sign and parking meters outside the main entrance of the East Broadway Mall. The 8-passenger vans here often park at a meter or double-park waiting for passengers. The demand here is not as high as the other sites, and no passenger waiting was observed. It is assumed that these vans serve areas outside the Eighth Avenue corridor in Brooklyn with a lower concentration of Chinese. However, because East Broadway in the vicinity of this location is a busy arterial, the double-parked vehicles seriously disrupt traffic flows.
- Forsyth Street, westbound approach between East Broadway and Division Street – This is a site often used by small or illegal operators traveling to Brooklyn. The service frequency (10 to 15 minutes) and the demand were not very high here, with an average about 5 to 6 persons waiting for pick-ups between 6:00 and 6:30 PM. This short segment of Forsyth Street is a wide two-way street, but because the parking meters along the curb are often occupied, traffic flows are disrupted when a

commuter van is double-parked waiting for passengers.

- Canal Street, eastbound between Mulberry and Mott Streets – Vans stop either in front of a fire hydrant outside a major Chinese supermarket or next to the phone booths just west of the corner of Mott Street. The vans pull into these curb-side spaces to pick-up and drop-off Brooklyn-bound passengers. Because this site is located in front of a market, it is very common, especially on weekends, to find standing or idling vehicles waiting for passengers. When the spaces are occupied and unavailable for commuter vans, the vans will double-park along the side of the parked vehicles while waiting, boarding, or discharging passengers. The demand at this location during the weekdays or weekends is usually



Canal Street Commuter Vans Lining Up for Afternoon Pick-ups

quite high due to its convenience; therefore, waiting passengers often occupy the limited sidewalk space available to serve the high volumes of pedestrian traffic on this block. On weekdays, no standing or parking is permitted in this section of Canal Street between 4:00 PM. and 7:00 PM. Therefore, during these daily peak periods, the commuter vans are likely to stop illegally to pick up and drop off passengers and frequently disrupt the high volumes of eastbound traffic on Canal Street.

- Hester Street, westbound between the Bowery and Elizabeth Street – This site is located midblock on a one-way street, and commuter vans pull into the curb space in front of a fire hydrant to pick up and drop off passengers. The demand is high at this location and consistent throughout the peak hours because it is close to a supermarket at the northeastern corner of the intersection. An average of 6 to 16 waiting passengers were observed between 6:00 and 7:00 PM, with service approximately every 10 to 15 minutes. Hester Street is narrow with parking on both sides; therefore, other traffic has to stop when the commuter vans pick up or drop off passengers, though occasionally the signal at the intersection creates traffic gaps for the commuter vans.
- Elizabeth Street, northbound between Hester and Grand Streets – This location occupies the space in front of a fire hydrant east of Hester Street and is outside the supermarket on the northeast corner of the intersection. About 15

to 20 waiting passengers were observed between 6:00 and 7:00 PM, with a van service frequency of approximately 10 to 15 minutes. Similar to Hester Street, Elizabeth Street is a one-way street with parking on both sides, so commuter vans often interrupt the flow of traffic.

- Additional Sites – Additional sites are also used for commuter van services around Chinatown on an irregular basis, such as Grand Street near Elizabeth Street. These sites are typically near popular grocery stores and utilize available space at fire hydrants or parking meters and no-standing or parking zones. The operations usually do not result in serious traffic problems when the spaces are available. However, if curbside spaces are not available, double-parking seriously – if temporarily – affects the level of service on the local streets involved.

Interstate Coaches and Vans

Interstate coaches and vans provide service both to other cities in the Northeast and to casinos in Atlantic City and the Foxwoods casino in Connecticut. These routes serve the residents of Chinatown and other parts of the city. Interstate coach services operating from Chinatown, along with their ticket office locations, are identified in Table A-10, and buses to casinos are identified in Table A-11. The coach buses normally load in front of or near ticket office locations. Five loading areas were identified in Chinatown, as illustrated earlier.



Interstate Coach Buses on Forsyth Street

Buses used in these services tend to lay over at their pick-up and drop-off points. Many of these buses, especially those servicing Boston and Washington, tend to have short layover times. When longer layovers are required and sufficient curb space is not available, some of these vehicles will lay over elsewhere, such as along South Street and Allen Street.



Casino Buses on Division Street

**TABLE A-10
INTERSTATE COACHES SERVING CHINATOWN**

| Bus Line | Service to | Trips each way per day | Departure/Arrival Location |
|--------------------------------|------------------|------------------------|--|
| Boston Deluxe | Boston | 2 | 88 East Broadway |
| | Hartford | 2 | 88 East Broadway |
| Eastern Travel | Washington D.C. | 4 | 88 East Broadway |
| Fung Wah Transport Vans | Boston | 18 | 139 Canal Street (at Manhattan Bridge) |
| | Providence | 2 | 139 Canal Street (at Manhattan Bridge) |
| Lucky Star Bus | Boston | 15 | 78 Chrystie Street at Hester Street |
| Sunshine Travel | Boston | 15 | 139 Canal Street and 89 Bowery |
| | NYC Tour | | (unknown / various) |
| Today Travel (formerly Dragon) | Atlanta | 1 | 88 East Broadway |
| | Philadelphia | 9 | 88 East Broadway |
| | Washington D.C. | 6 | 2 Mott Street |
| | Richmond, VA | 1 | 88 East Broadway |
| | Woodbury, NY | 2 | 88 East Broadway |
| | Albany, NY | 4 | 88 East Broadway |
| Travel Pack | Boston | 2 | 88 East Broadway |
| | Hartford | 2 | 88 East Broadway |
| Ivy Media | Canada | | 89 Bowery |
| | Acadia Natl Park | | 89 Bowery |
| | Tennessee | | 89 Bowery |
| | Niagara Falls | | 89 Bowery |

Source: Parsons Brinckerhoff. Today Travel has formerly operated as Dragon Expressway, Dragon Coach, and Dragon USA.

**TABLE A-11
CASINO BUSES SERVING CHINATOWN**

| Destination | Time | Carrier | Boarding at: |
|-----------------|-----------|-----------------|------------------|
| Atlantic City | 9:15 AM | Lee Da Co | Division Street |
| Atlantic City | 9:30 AM | Hilton Casino | Division Street |
| Atlantic City | 9:30 AM | Taj Mahal | 2 Bowery |
| Atlantic City | 10:15 AM | Lee Da Co | Division Street |
| Atlantic City | 10:30 AM | Hilton Casino | Division Street |
| Atlantic City | 11:00 AM | Taj Mahal | 2 Bowery |
| Atlantic City | 11:15 AM | Lee Da Co | Division Street |
| Atlantic City | 11:30 AM | Hilton Casino | Division Street |
| Atlantic City | 12:30 PM | Hilton Casino | Division Street |
| Atlantic City | 12:30 PM | Lee Da Co | Division Street |
| Atlantic City | 3:00 PM | Hilton Casino | Division Street |
| Atlantic City | 3:00 PM | Lee Da Co | Division Street |
| Atlantic City | 6:15 PM | Hilton Casino | Division Street |
| Atlantic City | 6:15 PM | Lee Da Co | Division Street |
| Atlantic City | 8:30 PM | Hilton Casino | Division Street |
| Atlantic City | 8:30 PM | Taj Mahal | 2 Bowery |
| Atlantic City | 8:30 PM | Lee Da Co | Division Street |
| Atlantic City | 11:15 PM | Lee Da Co | Division Street |
| Atlantic City | 1:00 AM | Lee Da Co | Division Street |
| Foxwoods Casino | 9:15 AM | Sun Lee Travel | 46 Bowery |
| Foxwoods Casino | 9:30 AM | Lucky Travel | Chrystie & Grand |
| Foxwoods Casino | 10:15 AM | Sun Lee Travel | 46 Bowery |
| Foxwoods Casino | 12 Noon | Sun Lee Travel | 46 Bowery |
| Foxwoods Casino | 8:30 PM | Lucky Travel | Bowery & Grand |
| Foxwoods Casino | 9:00 PM | Sun Lee Travel | 46 Bowery |
| Mohegan Sun | 8:45 AM | Golden Globe | 2 Bowery |
| Mohegan Sun | 9:30 AM | Golden Globe | 2 Bowery |
| Mohegan Sun | 10:30 AM | Golden Globe | 2 Bowery |
| Mohegan Sun | 12:15 AM | Golden Globe | 2 Bowery |
| Mohegan Sun | 2:00 PM | Golden Globe | 2 Bowery |
| Mohegan Sun | 8:45 PM | Golden Globe | 2 Bowery |
| Mohegan Sun | 11:15PM | Golden Globe | 2 Bowery |
| Mohegan Sun | 8:55 AM | Golden Globe | Forsyth & Grand |
| Mohegan Sun | 9:40 AM | Golden Globe | Forsyth & Grand |
| Mohegan Sun | 10:40 AM | Golden Globe | Forsyth & Grand |
| Mohegan Sun | 12:25 PM | Golden Globe | Forsyth & Grand |
| Mohegan Sun | 2:10 PM | Golden Globe | Forsyth & Grand |
| Mohegan Sun | 3 per day | Sunshine Travel | 89 Bowery |

Tourist Buses

There are two basic types of bus tours that deliver visitors to Chinatown:

- Regionally-based tours that bring people into Chinatown from outside of New York City, and
- Locally-based tour bus operations for which Chinatown is a routine stop.

A third type of tour operation that picks up passengers in Chinatown and takes them to other cities, was discussed above under intercity coaches.

The primary tour operator in Manhattan is New York Sightseeing, a unit of Grey Line Tours. New



Sightseeing Transit Bus on Allen Street

York Sightseeing operates red double-decker buses on three loops around Manhattan and downtown Brooklyn during the daytime and one loop in the evening. The daytime loops operate on a hop-on/hop-off basis with multiple stops and one or more buses passing every 20 minutes throughout the day. A nighttime loop is operated once each evening without provision to hop-on/hop-off. One of the daytime loops serves Midtown and Lower Manhattan, with stops in and near the study area. The designated stop for Chinatown and Little

Italy is located on Broadway between Walker and Lispenard Streets, one block south of Canal Street. Another stop, designated “Lower East Side,” is located on Allen Street at Grand Street. Buses serve the “Chinatown-Little Italy” stop only on the southbound portion of the one-way loop and stop at the “Lower East Side” stop only on the northbound portion of the loop. In both directions, the buses do not pass within sight of the key tourist attractions centered on Mott and Mulberry Streets.

The impact of having the only stop close to the heart of Chinatown and Little Italy on the southbound portion of the loop is unclear. At a minimum, it reduces the opportunity and attraction for passengers to get off in Chinatown. Since most people begin the tours in Midtown, some passengers who might be interested in stopping in the area may be compelled to remain on the buses to reach the key tourist destinations in Lower Manhattan, including Ground Zero, the Statue of Liberty/Ellis Island, and South Street Seaport.

Some tour buses from other cities visit Chinatown as one of a number of stops in Manhattan. These tend to be guided tours and may or may not originate in other cities’ Chinese communities. Other tour buses bring tour groups exclusively to Chinatown and serve an exclusively Chinese clientele. These operations are distinct from the interstate coach operations discussed elsewhere because the passengers primarily travel as a group and depart on the same bus that brings them into the city. As a result, these buses lay over in the area to pick up their passengers later in the day. Since these buses are not based in Chinatown, their drop-off and pick-up times and locations are on a relatively ad-hoc basis.

Many of these buses, mini-buses, and vans lay over along South Street and Pike Street. While these areas have limited competing demands for other parking, facilitating the layovers, the presence of the buses form a visual barrier between nearby neighborhoods and the East River waterfront, and result in noise and air quality issues.



Tourist Buses from All Over Lower Manhattan Lay over on South Street

SUBWAY SERVICE

The Chinatown study area is served by five subway routes carrying 11 subway lines, including the 4, 5, 6, F, J, M, Z, N, Q, R, and W lines. Seven subway stations are located within the study area. Some of these serve only one subway line, while others provide access to multiple lines. The Canal Street station, with four distinct sections, is located on the border of the study area but includes platforms that are one or two blocks west of the study area. In particular, platforms for the N, R, Q, and W lines are outside the study area but provide key access for people going to and from Chinatown. Subway

stations serving the study area are identified in Table A-12 and on Figure A-12.

**TABLE A-12
SUBWAY STATIONS SERVING THE STUDY AREA**

| Station | Subway Lines Served | Location |
|--|---|---|
| Spring Street | 6 – Lexington Avenue Local | Spring and Lafayette Streets |
| Bowery | J, M – Nassau Street Exp/Local | Bowery and Delancey Streets |
| Grand Street | S – Grand Street Shuttle | Grand and Chrstie Streets |
| East Broadway | F – 6 th Avenue Local | East Broadway and Rutgers Street |
| Chambers Street & Brooklyn Bridge- City Hall | 4, 5, 6 – Lexington Avenue Exp. & Local J, M, Z - Nassau Street Express & Local | Chambers Street and the Brooklyn Bridge |
| Canal Street | 6 – Lexington Ave Local J, M, Z - Nassau Street Local & Express N, Q, R, W – Broadway Local & Express | Broadway, Lafayette, Centre and Canal Streets |
| Delancey Street/ Essex Street | F – 6 th Avenue Local, J, M, Z - Nassau Street Local & Express | Delancey and Essex Streets |

Due to rehabilitation work on the Manhattan Bridge in recent years, subway service on the two lines that cross the bridge was in transition during the baseline analysis. In September 2001 (shortly after 9/11), the tracks on the north side of the bridge were taken out of service, and Q and W service was routed across the tracks on the south side of the bridge. As a result, the Grand Street station was no longer on a through train route, so a shuttle connecting Grand Street to the Broadway-Lafayette and West 4th Street stations was implemented. Service on the B and D trains, which normally would have continued across the north side of the bridge to Brooklyn, was cut back to 34th Street, where passengers to and from Brooklyn can transfer to the N, R, Q, and W trains. Full operation using all four tracks on both sides of the bridge was restored, and the normal pattern of



Figure A-12: Subway Lines and Stations

subway services over the bridge resumed, for the first time in many years on February 22, 2004.

The subway lines passing through the study area provide direct service to Lower Manhattan, the east side of Manhattan, many areas in the Bronx and Brooklyn, and central Queens. Transfers to other lines provide ample connections to the west side of Manhattan and other areas of the city.

Most of the neighborhoods identified in the study area include at least one subway station, and most areas are within reasonable walking distance of one or two stations. However, most of the stations are located in the western or central portions of the study area, so that residents in the more easterly part of the study area closer to the East River must walk further or take a bus. Distances from these areas to the nearest station are as high as 3,000 feet—a 12 minute walk.

As shown in Table A-13, overall utilization of stations in the Chinatown area in March/April 2003 equaled usage in March/April 2001. While subway ridership declined significantly after 9/11, this indicates that ridership in Chinatown had returned to its pre-9/11 levels. The changes in service on the Manhattan Bridge at the time of this analysis caused a decline of 79 percent at the Grand Street station and increases of 80 percent and 49 percent at the Bowery and Canal Street stations, respectively.

**TABLE A-13
AVERAGE WEEKDAY STATION ENTRIES MARCH-APRIL 2001 AND 2003**

| Station | March-April 2001 | | | March-April 2003 | | | Change 2001 to 2003 | |
|---|------------------|---------------|----------------|------------------|---------------|----------------|---------------------|----------------|
| | 6-9am | 4-7pm | Daily | 6-9am | 4-7pm | Daily | Daily | % Change |
| Bowery (J,M) | 96 | 332 | 918 | 176 | 661 | 1,653 | 735 | 80% |
| Canal St. (6,J,M,N,Q,R,W,Z) | 1,326 | 11,437 | 32,386 | 2,762 | 16,869 | 48,307 | 15,921 | 49% |
| Chambers St./ Brooklyn Bridge (4,5,6,J,M,Z) | 2,077 | 13,753 | 36,616 | 2,114 | 13,888 | 37,446 | 830 | 2% |
| Delancey St./ Essex St. (F,J,M,Z) | 3,411 | 3,172 | 13,928 | 3,646 | 3,721 | 15,561 | 1,633 | 12% |
| East Broadway (F) | 3,019 | 3,023 | 12,415 | 3,482 | 3,618 | 14,478 | 2,064 | 17% |
| Grand St. (S) | 2,943 | 8,337 | 27,453 | 924 | 1,628 | 5,706 | -21,748 | -79% |
| Spring St. (6) | 986 | 3,032 | 9,323 | 1,097 | 2,842 | 9,076 | -247 | -3% |
| Total | 13,858 | 43,086 | 133,039 | 14,201 | 43,227 | 132,227 | -812 | -0.006% |

Source: NYCT turnstile registration data.

Station entry data indicate that residents of the Chinatown community predominantly use the Canal Street, Chambers Street, Delancey Street, and East Broadway Stations (four highest AM turnstile registrations), while workers and visitors to the area primarily use the Canal Street and Chambers Street stations (two highest PM turnstile registrations).

PEDESTRIANS

Walking is the primary means of getting around in Chinatown and is an important component of almost all trips into or out of the area, including those by subway and bus. Even trips by car or taxi often include a walking component to reach parking or a pick-up or drop-off point. Several factors contribute to the prevalence of walking in Chinatown: the high density of development and

activity; the compact size, especially of the Chinatown core, which limits distances; and limited area parking.

All residents and workers in Chinatown engage in trips on foot, and most visitors to the area walk not only to reach a destination, but for the pleasure of walking itself. For any measure of mobility in Chinatown, walking is a critical component and pedestrian mobility is the most basic unit of travel

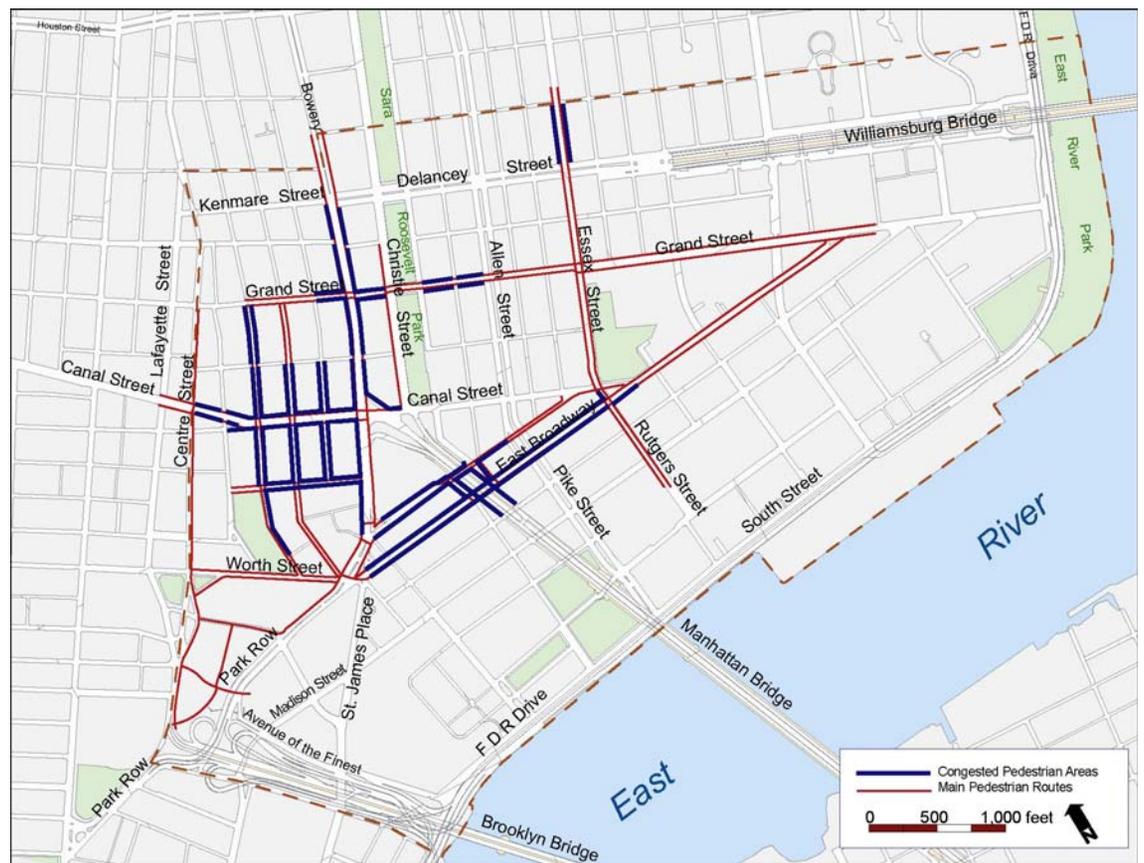


Figure A-13: Key Pedestrian Routes

for circulation planning.

While most sidewalks in the study area are well used, and each is critical to those who live, work or shop on them, some sidewalks carry far greater volumes of pedestrians than others, and some provide important connections between areas or to subway stations. The key pedestrian routes in the study area tend to be concentrated in the older sections (see Figure A-13). The busiest pedestrian route by far is Canal Street west of the Bowery. Mott Street, Mulberry Street, Grand Street, and East Broadway are other important pedestrian routes.



Typical Sidewalk Activity in Chinatown

While certain aspects of pedestrian flow are relatively universal, pedestrian circulation patterns and space needs are affected by the purposes of the pedestrian trips. Pedestrians may be categorized as:

- Residents
- Workers
- Shoppers, diners, and people obtaining services
- Tourists (including residents of the metropolitan area and other cities)

Residents of Chinatown may also work in the area, in which case their journey to and from work is likely to be on foot, or they may work elsewhere, in

which case work commute is likely to involve the subway, taxis, or other means—in addition to walking. The local residents also make trips for shopping, eating, recreation, and other purposes.

In addition to the key streets for shopping and dining, residential-oriented pedestrian trips are prevalent on routes to and from housing throughout the area, especially on sidewalks approaching subway stations and bus stops in the area. In particular, East Broadway, Allen Street, Rutgers Street, and Essex Street are key routes for residential areas in the eastern part of the study area.

Key pedestrian routes for workers in Chinatown are the streets where much of the area’s employment is concentrated, including streets throughout the old core of Chinatown around Mott Street, the Little Italy area around Mulberry Street, and along Canal Street, the Bowery, and East Broadway. Many of the workers in Chinatown also live in the area, facilitating walking to work, but a large number of the area’s workers come from outside so that routes between subway stations and employment areas are important, especially Canal Street and the Bowery.

The numerous shoppers and diners in Chinatown are particularly concentrated on the major shopping and dining streets, especially Canal Street, Mott Street, and Mulberry Street. East Broadway and Grand Street are also busy areas for local residents.

Visitors from other parts of the metropolitan area (as distinct from tourists) also come to Chinatown for specialized services, such as Chinese-speaking lawyers, accountants, doctors, and dentists, and frequent these same areas.

Tourists arrive in Chinatown by subway, on charter buses from outside the city, on tour buses operating within Manhattan, or by taxi. Once in the area, tourists almost always get around on foot, either alone or in groups. Tourists tend to concentrate around Mott Street, Canal Street, and Mulberry Street. The Chinatown/Little Italy stop on the Grey Line New York Loop Tour is one block west of the study area on Broadway between Walker and Lispenard Streets. Another stop is located within the study area on Allen Street at Grand Street.

Peak Pedestrian Periods

As shown on Table A-14, the heaviest periods for pedestrian circulation in Chinatown are the weekday morning, midday, and evening peak periods; and on Saturday and Sunday afternoons and early evenings. The critical time periods for congestion differ from location to location depending on predominant activities at each location. For example, in the immediate vicinity of transit facilities, the critical periods are the weekday morning and evening peak periods. Commuting tends to be more concentrated in the morning peak period than in the evening, making that period the more intense of the two for commuters, but commuters mix with shoppers and tourists during the PM peak period.

**TABLE A-14
PEAK PEDESTRIAN ACTIVITY PERIODS**

| Main Activity | Weekday AM | Weekday Midday | Weekday PM | Weekend Afternoon |
|------------------|------------|----------------|------------|-------------------|
| Commuter | peak | | | |
| Eating, Shopping | | | | |
| Tourism | | | | peak |

Pedestrian Volumes

Pedestrian counts were made at ten locations in the study area on one weekday and one weekend day— five on a Saturday and five on a Sunday, during the third week of October 2003. The locations of these counts are shown in Figure A-14, and the peak-hour pedestrian volumes are presented in Table A-15 for the weekday AM, midday, and PM peak periods and for a weekend afternoon. Overall, pedestrian activity in the study area, like subway ridership, appeared to have returned to its pre-9/11 levels.

The busiest sidewalks in the area, by far, are those along Canal Street west of the Bowery, with volumes of 3,000 to 4,000 pedestrians per hour. Sections of Mott Street, East Broadway, and Grand Street are also very busy with volumes of over 1,500 people per hour. At almost every location weekend peak hour volumes exceed the weekday volumes. Pedestrian volumes on Park Row are the lowest of the locations surveyed and are lower on both weekend days, as this corridor is more dependent on work-related trips than the other locations.

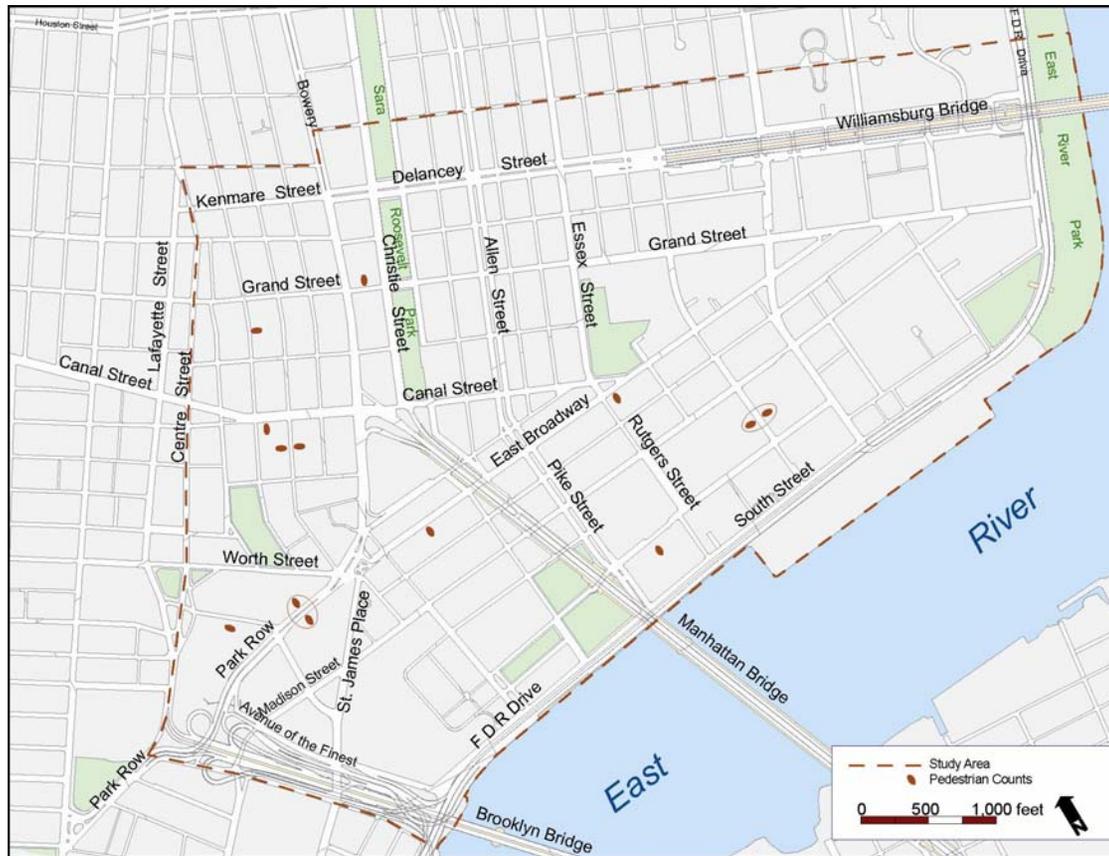


Figure A-14: Pedestrian Count Locations

**TABLE A-15
PEAK HOUR PEDESTRIAN VOLUMES AT
LOCATIONS SURVEYED**

| Location | Side | AM | Midday | PM | Weekend |
|--|---------------|------------|----------------|----------------|------------------------|
| Canal Street between Mulberry and Mott Streets | South | 1,057 | 3,360 | 2,647 | 3,956 sat |
| Mott Street between Canal and Bayard Streets | East West | 506 518 | 1,552 1,602 | 1,240 1,614 | 2,921 sun 2,512 sat |
| Mulberry Street between Hester and Grand Streets | East | 282 | 559 | 574 | 1,241 sun |
| East Broadway between Catherine and Market Streets | South | 514 | 1,931 | 1,574 | 2,266 sat |
| East Broadway between Rutgers and Jefferson Streets | South | 439 | 421 | 514 | 509 sat |
| Grand Street between Bowery and Chrystie Streets | North | 1,163 | 1,732 | 1,691 | 1,767 sun |
| Clinton Street between Madison and Cherry Streets | East West | 185 169 | 104 121 | 144 151 | 108 sun 133 sun |
| Cardinal Hays Place between St. Andrews Plaza and Pearl Street | Entire Street | 313 | 571 | 406 | |
| Park Row between Pearl Street and Chatham Square | Both Sides | 265 | 342 | 228 | 283 sat 224 sun |

Source: October 2003 counts by Parsons Brinckerhoff

Post-9/11 Pedestrian Facilities

Although Park Row is closed to vehicular traffic between Chatham Square and the Brooklyn Bridge, pedestrians are still allowed to use the sidewalks, especially between Chatham Square and Pearl Street. From there, pedestrians can continue west on Pearl Street to Foley Square or turn south on Cardinal Hays Place to St. Andrews Plaza behind the Municipal Building and further to the City Hall subway station or points farther south in downtown.

Pedestrian Conditions

The pedestrian capacity of a walkway is a function of the width of the walkway, while the capacity of a circulation space is a function of its area. *Width* is the controlling factor on a sidewalk, passageway, ramp, or stair, where pedestrians largely move in a linear fashion. *Area* is the controlling factor for street corners, plazas, and other locations where multiple pedestrian paths may converge or cross, and where both walking and standing or queuing occur. In assessing available capacity, an *effective* width or area is used, which excludes space not available to pedestrians due to obstructions from fixtures like light poles, trash cans, or mailboxes; space taken by other activities such as street vendors; or buffer zones next to walls and obstructions where pedestrians normally do not walk.

Pedestrian congestion, which is a function of pedestrian volumes and the physical capacity of walkways and spaces, is rated as a “pedestrian level of service” (LOS) on a scale from LOS A to LOS F. LOS A represents a condition with no congestion where pedestrians are widely spaced, while LOS F represents extreme congestion where movements are limited to shuffling and frequent contact occurs among people. General public spaces, including surface street sidewalks and indoor concourses, may be designed to operate at sidewalk LOS C during the peak periods (at least 24 square feet per person or up to 10 pedestrians per foot per minute). Pedestrian facilities that are heavily used by commuters, including subway, commuter rail, and major bus stations, typically are designed to achieve Transit LOS C at the height of the weekday peak periods (at least 15 square feet

per person or up to 15 pedestrians per foot per minute).



Sidewalk Congestion on East Broadway

Sidewalk widths vary greatly in Chinatown. In general, the broader streets have broader sidewalks, such as the Bowery, St. James Place, Essex Street, and Delancey Street. The narrowest sidewalks are found on the smaller streets, especially those in the old center of Chinatown and Little Italy. In a few cases, sidewalks are so narrow that it is difficult for people to pass. In most cases, sidewalk width only becomes a critical factor when pedestrian volumes are high, or other obstructions and activities constrict the space available for movement.

More broadly, conditions on a sidewalk depend not only on the volume of pedestrians and the width of the sidewalk, but also sidewalk characteristics that make the sidewalk attractive or unattractive for pedestrians and the presence of obstructions or other activities occurring on the sidewalk. Thus, a relatively narrow sidewalk may provide a comfortable and efficient movement for a small number of pedestrians, while a broader sidewalk may not be able to effectively carry a higher volume if other activities occupy too much sidewalk space.



Sidewalk Sales on East Broadway Crowd Out Pedestrian Space

This is a significant issue for Chinatown, where extensive activities on sidewalks make for a vibrant street life, but in some places squeeze pedestrian circulation to the point of discomfort and inefficiency. A variety of sidewalk activities contributes to congestion on Chinatown sidewalks, including:

- Store displays that extend onto sidewalks
- Vendors selling on sidewalks
- Various building features, such as stoops and railings, that extend onto sidewalks
- Loading onto and across sidewalks, especially when items are left piled on the sidewalk
- Garbage bags and other refuse, such as empty crates and boxes or food byproducts
- Subway stairs on sidewalks (rather than recessed into a building)
- Sign poles, parking meters, and light poles
- Queues of passengers waiting for buses or commuter vans
- Cars, fork lifts, and dollies parked on or across sidewalks (occasionally)

In Chinatown, the sidewalks with the most pedestrian activity are often the sidewalks most obstructed by these other activities, since commerce attracts pedestrians and vice versa. This is particularly the case on Canal Street, Mott Street, and East Broadway, though more localized problems occur on many streets.

Of the above activities, an important and persistent problem is the proliferation of sidewalk vendors on many of the busiest streets in the area, and the obstructions and related problems they pose to pedestrians using the sidewalks. While this problem is widespread throughout the city near transportation terminals and in tourist districts, the vendor activities in Chinatown tend to occur where the sidewalks are the most crowded, further reducing the pedestrian levels of service, adding debris and in some cases noise and light pollution, and at times compromising pedestrian safety. The primary locations for the vendors are on the south side of Canal Street between Mulberry and Elizabeth Streets, the Bowery, Grand Street, Howard Street (known as the “thieves’ market”), and Division Street at Confucius Plaza.

The major reasons for this problem are the expiration of the City’s vendor law in 2003, and a lack of enforcement of sidewalk crowding/blocking regulations. Another cause is the illegal rental of sidewalk space to vendors by adjacent shop owners. Track 1 of the CATS Study has addressed one of the major problem locations, the south side of Canal Street, with recommendations for a consolidated vendor location with a time-of-day street closing at the Walker and Baxter Streets triangle. The selective widening of sidewalks, the removal of illegal vendors, strict enforcement of space and quality of life regulations, and a total ban

on vending in some areas has been suggested by others.

BICYCLE FACILITIES AND CYCLING

The study area is served by four off-road bikeways.



Canal Street Sidewalk Congestion Spilling Over into the Street

The East River Greenway, a 3.5-mile riverfront bicycle path and pedestrian promenade, extends along the East River between Old Slip near Wall Street and East 14th Street. This path is to be extended north to East 23rd Street in the near future, and eventually farther north along the East River. Shared bicycle and pedestrian paths are also located on the Williamsburg and Brooklyn Bridges, which connect the study area and other points in Manhattan to Brooklyn. In 2003, over 3,000 bicyclists used these bridges each day, the highest number since NYSDOT began monitoring bicycle usage in 1980. A new exclusive bikeway recently opened on the north side of the Manhattan Bridge, and pedestrians will have exclusive use of the walkway on the south side of the bridge.

The only on-street bike lanes in the study area are found along Center Street from the foot of the

Brooklyn Bridge north to Worth Street at Foley Square. However, the NYC Cycling Map identifies a number of recommended on-street bicycle routes within the study area, including portions of Delancey Street, Grand Street, Madison Street, Court Street, Bowery, Allen Street, Pike Street, Pitt Street, and Montgomery Street.

Bicycle travel comprises a very small portion of total travel within or through the study area. Those cyclists who cross the bridges disperse quickly on multiple roadways in Manhattan.