

## **A. INTRODUCTION**

The basic project alternatives for the East Side Access Project were identified as part of the Major Investment Study (MIS) in a comprehensive planning process, with public involvement, that developed alternatives and evaluated them against project goals and objectives and a number of other criteria to focus in and ultimately determine a Preferred Alternative. Three alternatives were carried forward in the Environmental Impact Statement (EIS): the No Action, Transportation Systems Management (TSM), and Preferred Alternative.

In the MIS phase, 23 alternatives were screened and evaluated, as summarized in the appendix entitled “Alternatives Screening and Evaluation.” From this long list of alternatives, three alternatives were carried forward in the EIS. As described below, these are the No Action, TSM, and Preferred Alternatives.

Since completion of the MIS in April 1998, these alternatives have evolved and consequently, are not identical to the No Action, TSM, or Preferred Alternative described in the MIS. The No Action and TSM alternatives have been revised to reflect current baseline conditions (for example, some of the improvements cited in the 1998 MIS have already been completed). Most important, since the MIS was published, conceptual engineering work for the Preferred Alternative has begun. This provided more specific detail about all aspects of the alternative than was available for the MIS.

The three EIS alternatives are described below, followed by a section on “Background to Project Planning,” summarizing the MIS alternatives evaluation procedure, and the evaluation of Long Island yard sites.

## **B. NO ACTION ALTERNATIVE**

The No Action Alternative includes improvements that will be implemented by 2010 (the year the project could be completed) and 2020 (the forecast year for the project) by LIRR, regardless of whether the TSM Alternative or the Preferred Alternative goes forward. The No Action Alternative includes projects that have been approved and will be implemented by 2010 and 2020—as identified in the Metropolitan Transportation Authority (MTA) 2000-2004 Capital Program, LIRR’s future plans, and other projects likely to be built by the analysis year. This includes completion of LIRR initiatives to bring the system into a state of good repair (such as the purchase of new rail cars, rehabilitation of certain stations, track improvements, etc.), along with major capital improvements to the LIRR system that will result in increased levels and quality of service. The No Action Alternative also includes changes to the railroad’s operations plan that will be in place by 2010 and 2020.

Under the No Action Alternative, capacity will be added on the LIRR system to accommodate projected ridership demand to the maximum extent possible without increasing track capacity to Manhattan. Service will be added and investments targeted to those branches that already

experience overcrowded conditions and where growth is expected to continue. Ridership growth and the capital projects developed to provide for future demand in the No Action Alternative are described in Chapter 1, "Project Purpose and Need." The effect of these MTA initiatives on service levels and operating patterns throughout the LIRR system is described below.

### **INCREASING SERVICE DURING THE PEAK PERIOD**

#### *PEAK DIRECTION SERVICE ADDITIONS*

Services changes under the No Action Alternative include increasing service to Penn Station from 37 trains to 42 trains during the AM peak hour. Additional service will be provided on the shoulders of the peak hour within the AM peak period and throughout the PM peak period. Service will increase on the following branches:

- Port Jefferson (dual-mode service)
- Oyster Bay (dual-mode service)
- Montauk (dual-mode service)
- Main Line/Ronkonkoma
- Huntington
- Port Washington

#### *REVERSE PEAK SERVICE ADDITIONS*

The Main Line Third Track Project will construct an additional track between Bellerose and Hicksville, providing capacity for increased reverse commute service and greater operating reliability on the Main Line. Currently, the ability to expand the amount of service provided to reverse commuters on the Main Line is limited by the two-track segment between Bellerose and Hicksville that operates in the peak direction of travel during peak hours. Consequently, only hourly reverse peak service is offered on the Main Line. The Main Line Third Track Project will double the amount of reverse commute service to Mineola, Hicksville, Huntington, and other Long Island centers of employment—from one train to two trains during the peak hour to and from Penn Station.

The Main Line Double Track Project will construct an additional track between Farmingdale and Ronkonkoma stations. The single-track system on the Ronkonkoma Branch currently limits reverse peak service to one train per hour. Currently, only hourly reverse peak service is provided. Double tracking to Ronkonkoma will allow additional peak direction service planned between Penn Station and Ronkonkoma.

#### *DUAL-MODE SERVICE AND BI-LEVEL FLEET*

New dual-mode service will provide a one-seat ride to Manhattan from diesel territory. Currently there are four dual-mode trains operating on LIRR. Nine dual-mode trains are expected to be operating *once the full service plan is put into effect*. The entire diesel-hauled fleet has been replaced by a new fleet of bi-level coaches, slightly increasing line capacity. The new coaches are hauled by the new dual-mode and diesel locomotives. The new coaches will include cab control cars, allowing push-pull train operation and eliminating the need for locomotives at both ends of the train.

The dual-mode service and the new bi-level car fleet will shift riders from the Ronkonkoma and Babylon Branches back to the Port Jefferson and Montauk Branches east of Babylon. The

operation of dual-mode trains into Penn Station will provide the railroad the ability to reallocate equipment to reduce standees throughout the system. It is LIRR policy to provide a seat for every passenger east of Jamaica and to provide formal connections for trains at Jamaica Station. Consequently, customers from the diesel territory are provided with a seat to their transfer station and a seat on the connecting train that brings them to Jamaica. Thus, two seats are currently maintained for these customers. Passengers who currently transfer from a diesel train to an electric train at Huntington, Babylon, or Jamaica will not require redundant seating once the dual-mode service begins. With dual-mode service, electric trains from branches such as Hempstead and Far Rockaway will no longer have to provide seats for diesel passengers boarding at Jamaica and could be reduced in size.

#### **MAINTENANCE AND STORAGE**

LIRR currently stores its electric fleet at eight facilities on the east end of the LIRR system and at western locations such as Jamaica, Hillside, West Side Yard, and C Yard in Penn Station. Diesel storage is currently accommodated by five eastern yard locations. No net increase in the dual-mode or diesel fleet will occur under the No Action Alternative. Hence, no expansion of diesel yard facilities will be required.

The LIRR's current capital program and long-term capital plan anticipate the purchase of 670 normal electric fleet (M-7) replacement cars over the next 20 years. *In addition to those normal replacement cars, the electric fleet will also be expanded by some 180 additional cars to accommodate ridership growth, to increase the number of spare cars to 15 percent (the industry standard), and to add cars to make up for lost seats in the newer cars to satisfy the requirements of the Americans with Disabilities Act (ADA).*

LIRR's existing electric yards cannot fully and efficiently accommodate the planned increase in fleet within existing boundaries. While there is ample storage for the electric fleet at the western locations, capacity constraints on the Main Line and a need to reduce non-revenue train miles generates demand on the electric fleet storage facilities farther east on Long Island.

*Consequently, the LIRR has identified a need to construct additional rail storage yard capacity in Nassau and Suffolk Counties for its current and future electric fleet. New yard capacity will be planned to improve LIRR's cost effectiveness and service throughout the LIRR rail network. A proposal to move forward with a search for potentially appropriate sites, analysis and selection of those sites, and, ultimately, the construction of such facilities is part of the LIRR's current capital program and long-term plan. As part of its long-term strategic planning process, the LIRR will seek new storage space on a branch-by-branch basis throughout its system.*

*Current plans to accommodate the projected fleet size and improve operating efficiency and service include expansions within the existing yards at Babylon, Port Washington, Ronkonkoma, and Long Beach and building a new eight-track storage yard on the Port Jefferson Branch. In the Draft Environmental Impact Statement (DEIS) for the East Side Access Project, the Hazeltine and Cerro Wire sites were identified as potential sites for yard development for the Port Jefferson Branch under the No Action Alternative. That discussion was based on sites identified through a preliminary screening process conducted by the LIRR (see page 2-34 of the DEIS). That discussion is no longer applicable. Based on community input, the LIRR has determined that it will initiate a new site selection process for any new yards to be developed. This is discussed in more detail*

later in this chapter, in the description of "Maintenance and Storage" in section D, "Preferred Alternative" (see page 2-26). As also discussed in that section, the Hazeltine site, in the Town of Huntington, was described in the DEIS but is not included in the FEIS. This site has been eliminated because the DEIS identified significant adverse impacts associated with the site's proximity to residential neighborhoods and because of community input received during the public comment period for the East Side Access Project's DEIS. The Cerro Wire site is retained in this FEIS to illustrate the types of impacts that could occur from development of a new yard on the Port Jefferson Branch.

Yard expansions within the LIRR right-of-way to accommodate lengthened trains, provide additional tracks for increased service, or minimize non-revenue operating miles, will include the following:

- Expanding the existing Babylon Yard within the LIRR right-of-way to accommodate seven lengthened tracks for 12-car trains;
- Lengthening two tracks to accommodate 12-car trains in Port Washington Yard;
- Adding two tracks in the LIRR right-of-way at Ronkonkoma Yard; and
- Adding two tracks in Long Beach Yard.

Maintenance of the diesel and electric fleet will continue to be performed in the existing facilities located throughout New York City and Long Island.

#### *OTHER CAPITAL IMPROVEMENTS*

Other projects included in the No Action Alternative will improve the quality of service and system safety for LIRR customers. These projects include:

- Substantial improvements at LIRR stations are planned over the next 20 years. Foremost among these are the plans for regional intermodal transportation hubs at Atlantic Terminal and Jamaica Station. The LIRR portion of Atlantic Terminal at Flatbush Avenue in Brooklyn will be completely rebuilt by 2010, in coordination with improvements to the nearby subway hub and development of a retail complex above the terminal. The new station will include an enlarged concourse, an air-conditioned passenger waiting room, widened passenger transfer corridors, and a new LIRR entranceway at street level.
- At Jamaica Station, substantial improvements will also be undertaken, including replacement of platforms and canopies. At the same time, the station will be integrated with the new terminus for a light rail system to John F. Kennedy International (JFK) Airport. A new overpass will be created to connect the light rail system terminus to the LIRR portion of the station. In addition, a new Central Control building will be constructed at Jamaica Station, to allow the railroad to consolidate its operating and administrative departments at one site. This center, together with proposed signal changes, will eventually allow LIRR to centrally control the activities of 12 interlocking control towers and 25 remote interlockings.
- To meet the continuing demand for additional parking at LIRR stations, the railroad will improve and expand parking lots at many stations throughout the system. This parking program will consist of reconfiguration, resurfacing, striping, capacity increases (through reconfiguration or by expansion into available fringe areas), improvements in Americans with Disabilities Act (ADA) access, improvements to curbs, sidewalks, fencing, lighting, drainage, signage and landscaping, and provisions to encourage bicycle use.

- The East River tunnels are being rehabilitated in coordination with Amtrak. This involves improvements both to the tunnels themselves and to their emergency ventilation systems.
- Communications, traction power, and signaling systems will be improved systemwide. This will include gradual improvements to the signals and communications system, enabling more operational flexibility, increased speeds, and reverse commutation, and facilitating the eventual implementation of new signal technology.
- In conjunction with the Main Line Third Track Project, an ongoing program to eliminate eight at-grade crossings, to improve safety on the Main Line.
- Over the next 20 years, LIRR will gradually replace its wood ties with new concrete ties, which last significantly longer and reduce maintenance requirements. This construction work will be performed in phases, and synchronized with signal improvement work and other improvements to minimize disruptions to service.

### **C. TRANSPORTATION SYSTEMS MANAGEMENT (TSM) ALTERNATIVE**

The TSM Alternative is designed to maximize the use of the existing transportation system without major capital expenditures. It thus serves as a comparison for evaluating the added costs and benefits of the more costly Preferred Alternative. The TSM differs from the No Action Alternative in that it includes components that, despite their low cost, are not currently planned for construction or operation by LIRR. Some components of the MIS's version of the TSM Alternative have already been constructed and are therefore not included as part of the EIS's TSM Alternative.

The TSM Alternative was developed by considering and combining elements of several other alternatives that did not, by themselves, sufficiently satisfy project goals and objectives to warrant further consideration. The TSM Alternative contains three major transportation elements, described below: increasing the number of rail cars on LIRR trains, increasing LIRR service to the Hunterspoint Avenue and Long Island City stations, and extending the existing westbound morning contra-flow lane on the Long Island Expressway.

#### **INCREASING LIRR TRAIN LENGTH**

The TSM Alternative would create additional capacity for selected trains on the LIRR system by increasing the number of rail cars on certain peak LIRR trains to and from Penn Station. Train lengths would be increased by 2 to 4 cars, up to the limit of 12 rail cars, which is the maximum LIRR platform length. This initiative would require lengthening of selected station platforms to accommodate the longer trains; affected stations would include Port Washington, Plandome, Manhasset, Great Neck, Little Neck, Douglaston, Bayside, Broadway, and Flushing/Main Street. It would also require reconfiguring various east end terminal yard tracks (including those at Babylon, Long Beach, and Port Washington stations) to allow the longer trains to be stored. This component would also require the purchase of additional rolling stock to create a sufficient number of 12-car electric trainsets. It would also require the devotion of additional west-end yard space at Penn Station to store the longer trainsets. Together, these changes would result in the following increases in passenger capacity:

- 2,400 additional seats per hour on the Babylon Branch;
- 1,680 additional seats per hour on the Port Washington Branch;

- 960 additional seats per hour on the Long Beach Branch; and
- 720 additional seats per hour on the Far Rockaway Branch.

#### **INCREASING SERVICE AT HUNTERSPPOINT AVENUE AND LONG ISLAND CITY**

To better serve passengers traveling to destinations in East Midtown, the number of LIRR trains serving the LIRR Hunterspoint Avenue and Long Island City stations would be increased, so that more LIRR passengers could use this service and then transfer to connecting subway or ferry services to complete their trip to Manhattan's East Side. The increases to train service would be as follows:

- One additional peak hour train from Port Jefferson to Hunterspoint Avenue.
- One additional peak hour train from Yaphank to Hunterspoint Avenue.
- One additional peak hour train from Oyster Bay to Hunterspoint Avenue.
- One additional peak hour train from Patchogue to Hunterspoint Avenue.
- One additional peak hour train from Port Jefferson to Hunterspoint Avenue and then continuing to Long Island City.
- One additional peak hour train from Speonk to Long Island City.

Along with this new service, improvements would be made at the Long Island City and Hunterspoint Avenue stations to allow better transfers between LIRR and the nearby subways and ferries, as follows (see Figure 2-1).

#### ***IMPROVEMENTS AT THE LIRR HUNTERSPPOINT AVENUE STATION***

Tracks and platforms would be reconfigured at Hunterspoint Avenue station to accommodate the increased service. Hunterspoint Avenue station currently has two tracks on either side of a single island platform, but additional capacity would be required to accommodate trains running in the reverse peak direction or reversing direction at the station. The existing high-level wood platform would be replaced with a high-level precast concrete platform.

In addition, to facilitate transfers between LIRR and the subway at Hunters Point Avenue, new stairway/escalator connections and a new ADA-compliant passageway would be created. Both the LIRR station and the subway station at Hunters Point are below the grade of the street, which is on a viaduct above the LIRR tracks. Currently, passengers transferring between the stations must take stairs up to the Hunters Point Avenue bridge, traverse the sidewalk, and then take stairs back down to the subway. The new passageway would provide a dedicated pedestrian bridge between the LIRR station and the subway, and would lead to a new fare control area to enter directly into the mezzanine of the subway station. Consequently, passengers would take an escalator, elevator, or stairs up to the new passageway, travel along a walkway parallel to the Hunters Point Avenue bridge, and then enter the subway station.

#### ***IMPROVEMENTS AT THE LIRR LONG ISLAND CITY STATION***

To accommodate increased train service, the tracks and platforms at the Long Island City station would also be reconfigured, and yard tracks would be changed. The Long Island City station currently has two low-level station platforms and an adjacent yard that provides midday train storage on 13 tracks. To allow several trains to load and unload simultaneously and to reduce conflicting yard movements, the existing yard tracks would be realigned to provide four

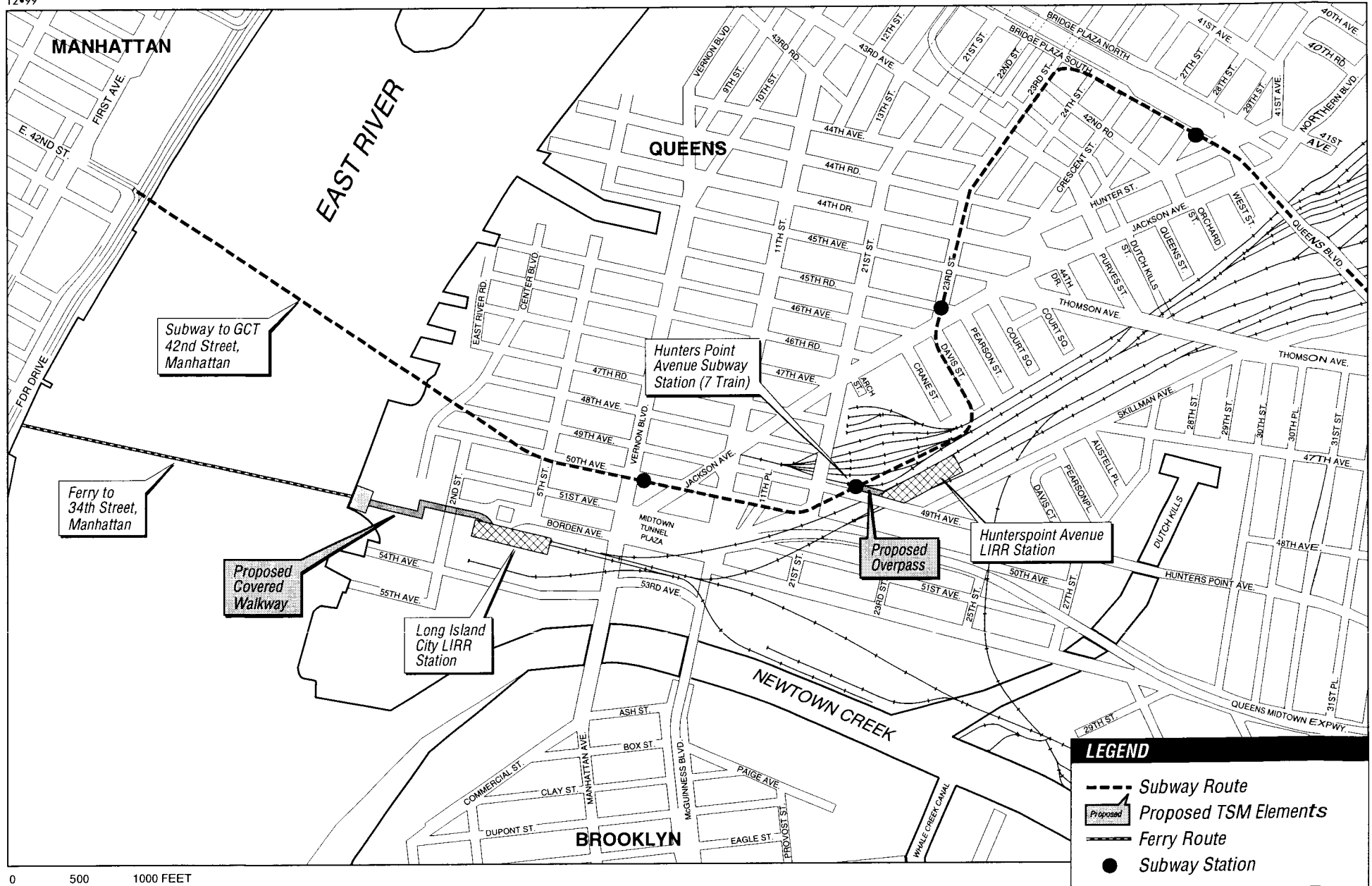


Figure 2-1

## TSM Alternative: Long Island City Elements

850-foot-long high-level, precast concrete platforms serving eight tracks. High-level platforms are required because the new bi-level cars are only accessible via high-level platforms.

Also at the Long Island City station, a new 500-foot-long covered pedestrian walkway would be created between the station and the East River ferry terminal. This walkway would follow the existing public right-of-way along Borden Avenue, through the New York Waterway parking lot to the ferry slip. Privately operated ferry service between the Long Island City ferry terminal and East 34th Street in Manhattan would be coordinated with new LIRR service to Long Island City. Based on ridership forecasts for the TSM Alternative, the existing ferries and ferry slips in both Queens and Manhattan would be able to handle the additional passengers transferring from the railroad. If demand requires, the current 64-person ferries could be replaced with 250-person ferries during peak periods, or an additional slip could be added in Queens.

In Manhattan, timed connecting buses would distribute ferry riders to Midtown Manhattan destinations along 34th, 42nd, and 49th/50th Streets. New York Waterway's existing bus service would be retained and supplemented to provide this service.

### **LIRR STORAGE AND MAINTENANCE REQUIREMENTS**

The storage and maintenance requirements for the electric fleet under the TSM Alternative would be similar to those for the No Action Alternative, *and includes the need for a new electric railcar storage yard on the Port Jefferson Branch*. The additional service operating in diesel territory would utilize available capacity in existing Long Island yards, such as Oyster Bay, Port Jefferson, Speonk, and Montauk.

### **CONTRAFLOW BUS/TAXI LANE**

This initiative would extend the existing inbound (westbound) contra-flow bus lane that currently operates in the morning peak period on the Long Island Expressway (LIE) between the Queens-Midtown Tunnel toll plaza and Greenpoint Avenue in Queens. The AM-only westbound contra-flow lane would be extended 3.6 miles to the east, to 102nd Street in Corona, Queens near the Grand Central Parkway interchange. This would improve morning peak hour travel time for Queens express bus service to Manhattan by using one lane on the eastbound side of the LIE for westbound bus and taxi service.

This improvement is based on the New York State Department of Transportation's (NYSDOT) Contra-flow Advance Alternative II as analyzed in their May 1994 *NYSDOT HOV Feasibility Study* and refined in their *Assessment of Extended Preferential MOV Lane in Western Queens* study published in May 1997.\* These studies, which were conducted for the section of the LIE from the Queens-Midtown Tunnel to Grand Central Parkway, identified new or expanded low-cost High Occupancy Vehicle (HOV) or Multiple Occupancy Vehicle (MOV) options for westbound morning traffic using contra-flow lanes and moveable barriers.

Currently, two sections of the LIE operate with HOV lanes and one additional section is currently under construction. The first segment, implemented in 1971, is a single contra-flow lane

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\* Due to monetary constraints, NYSDOT's 1997 study recommended a bus-taxi lane shorter in length than the bus-taxi lane component recommended in their 1994 study. However, the additional travel time savings to be gained by the longer bus-taxi lane led to the decision to retain the 1994 study's recommended configuration for inclusion as a component of the EIS's TSM Alternative.



from the Queens-Midtown Tunnel to Greenpoint Avenue, about 2 miles. This lane is open to buses, occupied taxis, and permit vehicles during the westbound (inbound) weekday morning peak period (7 AM to 10 AM). During this period, the contra-flow lane uses one lane on the south, or eastbound, side of the LIE for westbound traffic. The second HOV segment on the LIE, begun in 1994, provides one HOV lane in each direction between Exit 40 (Jericho) and Exit 64 (Medford) in Suffolk County. These lanes are not contra-flow lanes, but rather concurrent-flow HOV lanes, carrying buses, carpools, and vanpools traveling in the same direction as other traffic on that side of the highway. In addition, concurrent-flow HOV lanes are currently under construction from Exit 32 (Little Neck) to Exit 40. When this work is complete, there will be a continuous HOV lane on the LIE from approximately the Nassau-Queens border to Medford, in Suffolk County.

The TSM Alternative's bus and taxi lane would extend the existing lane from its current terminus at Greenpoint Avenue east to 102nd Street (see Figure 2-2). Vehicles could enter the new lane in two places: near 102nd Street or via a new on-ramp and flyover just east of 74th Street. Near 102nd Street, buses and taxis would enter the contra-flow lane via a gap in the median that normally separates the westbound and eastbound sides of the highway. Just east of 74th Street, the flyover would carry entering vehicles from Queens and Woodhaven Boulevards over the three westbound lanes of the LIE and across the highway median to a new contra-flow lane on the otherwise-eastbound side of the road. The flyover ramp would speed access to the LIE contra-flow lane for the multitude of express buses entering from Queens and Woodhaven Boulevards, significantly cutting travel times into Manhattan.

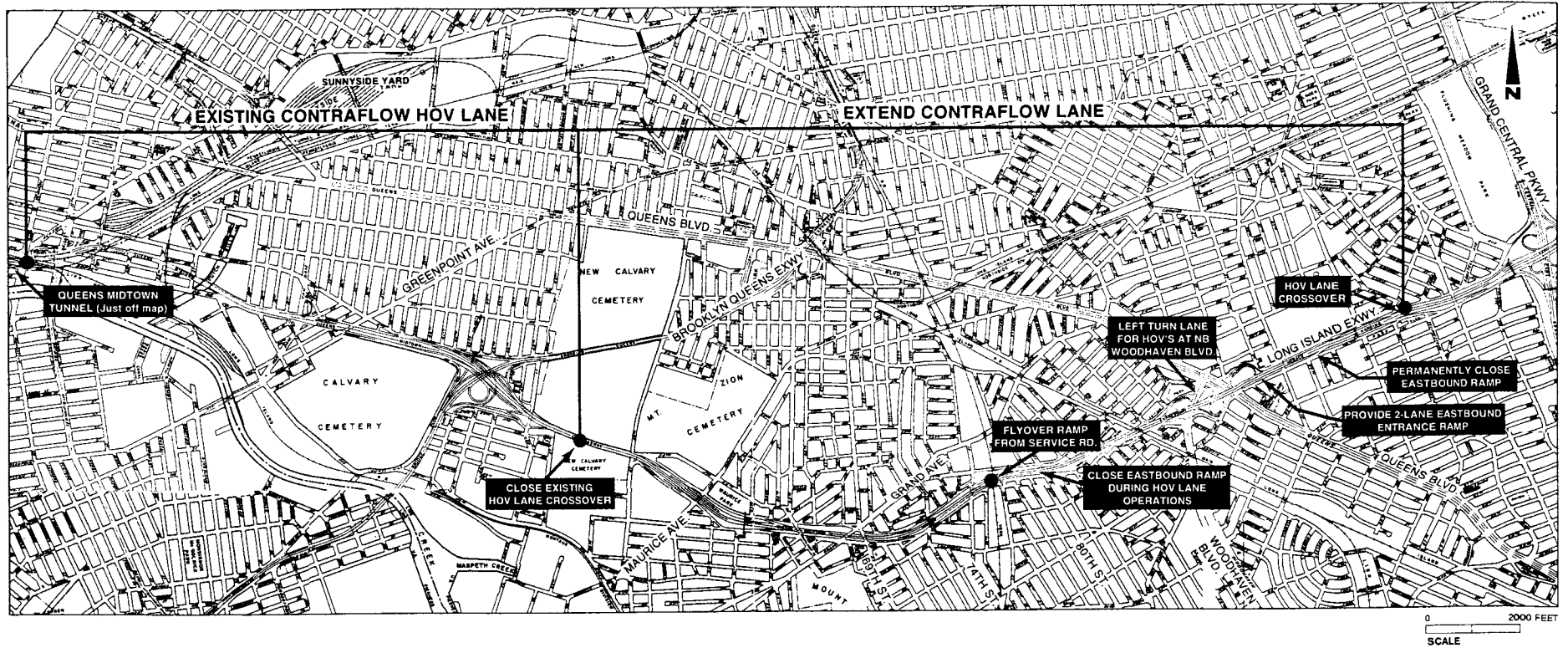
Along its entire length, the westbound contra-flow lane would be segregated from opposing eastbound traffic by plastic tubular stanchions and by signage and signals that indicate that the contra-flow lane is in operation.

The bus/taxi lane would operate only in the westbound AM peak direction, from 6:30 AM to 10 AM. During the evening peak, reverse (inbound, or westbound) traffic volumes are too heavy to allow use of one of the westbound lanes for eastbound traffic.

Construction of the flyover and ramp between 74th and 80th Streets would necessitate reconstruction of all the westbound traffic lanes and the service ramps and lanes in this area. In addition, where the LIE passes beneath LIRR at 86th Street, the eastbound LIE would have to be reduced from three to two lanes so that the contra-flow lane (which would occupy one—typically the eastbound—lane) could fit beneath the overpass as well. However, according to the 1994 NYSDOT study, the eastbound traffic volumes at that location require three lanes. A potential solution would be to close the on-ramp from the eastbound service road, which would reduce volumes on the primary LIE eastbound lanes enough that two lanes would be sufficient. Eastbound traffic that normally would enter the LIE here would instead enter by continuing along the service road and using a new, two-lane on-ramp east of Queens Boulevard. According to NYSDOT's study, the eastbound service road has enough capacity to handle this rerouted traffic during the morning peak period. Constructing the contra-flow lane would require a reconstruction of the LIRR bridge at 86th Street. For this reason, among several, NYSDOT does not wish to pursue construction of the contra-flow bus lane.

## **COSTS**

Capital costs take into account only the costs associated with the system improvements required for the TSM Alternative. Funding required for initiatives included in the MTA Capital Program



are not included in this summary of estimated capital costs. Capital costs for the TSM Alternative are estimated at \$655.6 million (in dollars escalated to the midpoint year of construction), as outlined in Table 2-1.

**Table 2-1**  
**Capital Cost Estimates: TSM Alternative**

<b>Component</b>	<b>Cost (in millions)*</b>
Increased Ferry Service	\$24.1
Increased Number of Rail Cars on Peak Trains	214.1
Extension of LIE Bus/HOV Lane	75.7
Increased Service to Long Island City and Hunterspoint Avenue LIRR Stations (and related improvements)	341.7
<b>Total Capital Costs</b>	<b>\$655.6</b>
<b>Note:</b> *All costs escalated to the midpoint year of construction.	

## **D. PREFERRED ALTERNATIVE**

### **OVERVIEW**

The Preferred Alternative would establish a direct link from the LIRR Main Line and Port Washington Branch to Grand Central Terminal (GCT). As shown in Figure 2-3, the new service would branch away from existing LIRR tracks at Sunnyside Yard in Queens and travel in tunnels beneath Sunnyside Yard and LIRR's Yard A at Sunnyside. It would continue in the currently unused lower level of the existing 63rd Street Tunnel beneath the East River. In Manhattan, the service would continue west from the tunnel's terminus at Second Avenue and 63rd Street. Service would head west toward Park Avenue and then south, beneath the existing MNR tracks under Park Avenue, into GCT. At GCT, LIRR would have new tracks, platforms, waiting areas, ticket windows, and other services.

The Preferred Alternative would require construction of new tunnel connections beneath Sunnyside Yard and approximately 3 miles of new tunnel in Manhattan. Altogether, the project's multiple tunnels would total approximately 9.5 miles of new tunnels, with approximately 13 miles of tracks. The project would also involve construction of numerous new structures, including new tracks, platforms, and below-grade ventilation and substation facilities in GCT; a new ventilation structure on East 44th Street between Vanderbilt and Madison Avenues; five new off-street entrances to GCT between 44th and 49th Streets; new below-grade substations and ventilation facilities along the project alignment; a new LIRR passenger station in Sunnyside, Queens; new LIRR storage and maintenance facilities at Yard A and the adjacent Arch Street Yard in Sunnyside; new facilities in Queens at Blissville or Maspeth and Fresh Pond, for use by New York & Atlantic Railway (NYAR), to replace those displaced by the project from Yard A; and new facilities at Highbridge Yard in the Bronx for use by MNR to replace those displaced by the project from GCT.

The following sections describe each component of the Preferred Alternative, beginning with elements in GCT and following the route out toward Long Island. The general location of each element is shown in Figures 2-3 and 2-4.

## GRAND CENTRAL TERMINAL

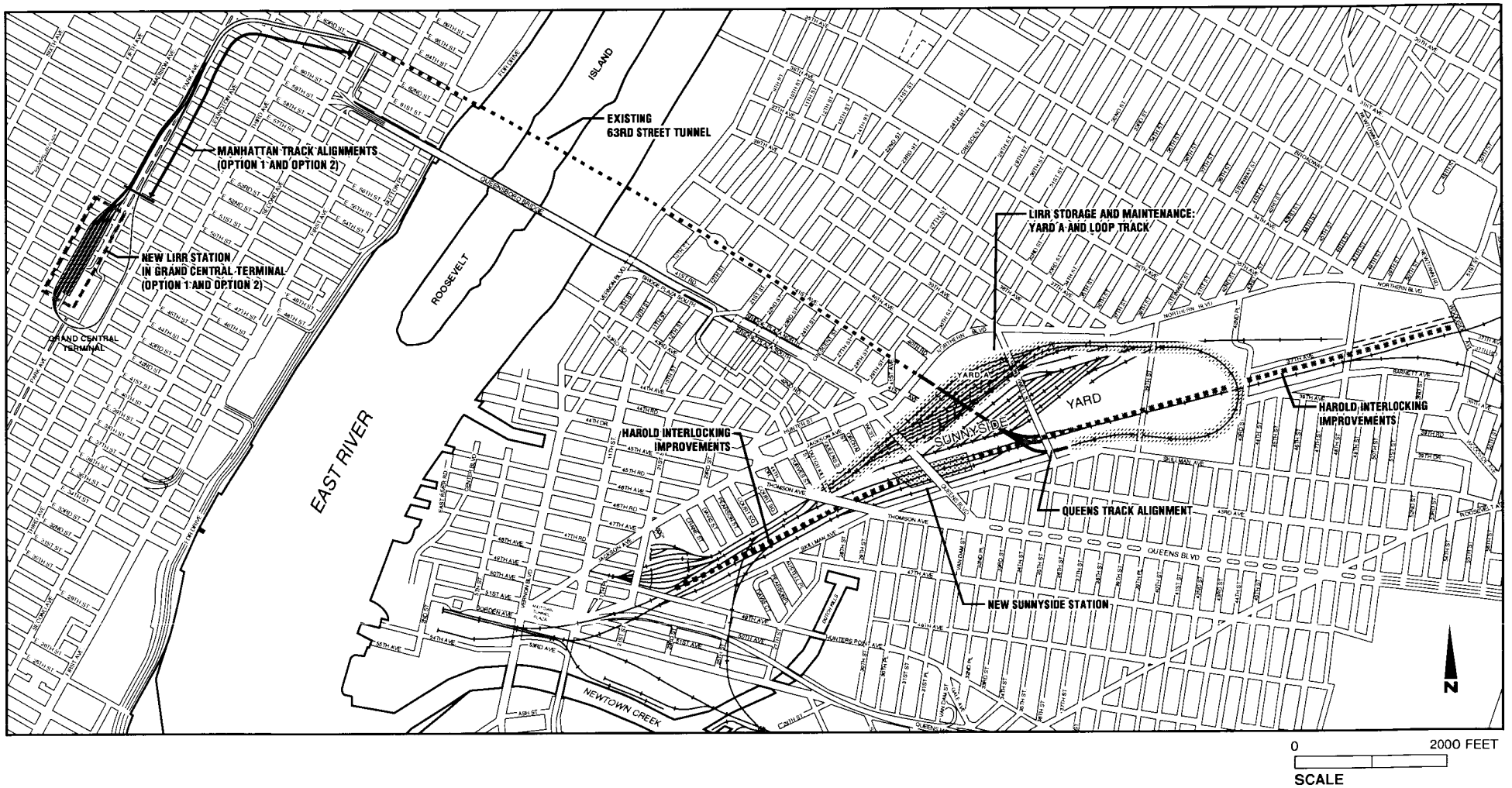
The Preferred Alternative would bring LIRR passengers to a new LIRR terminal at GCT, one of New York City's most prominent historic structures and a major transportation hub. The following sections provide a brief discussion of GCT as it currently exists and also describe what would be constructed in GCT under each option of the Preferred Alternative.

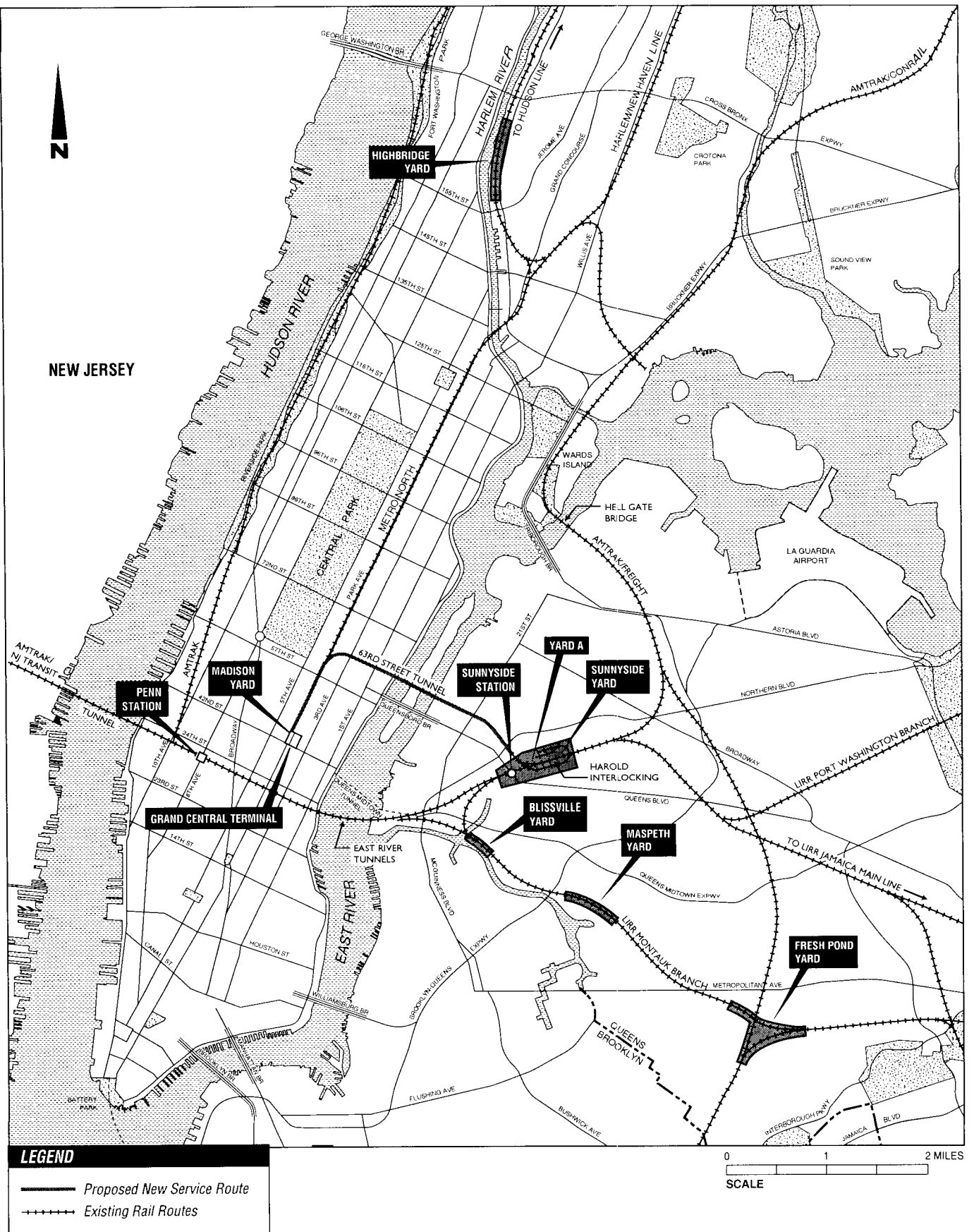
### *GRAND CENTRAL TERMINAL TODAY*

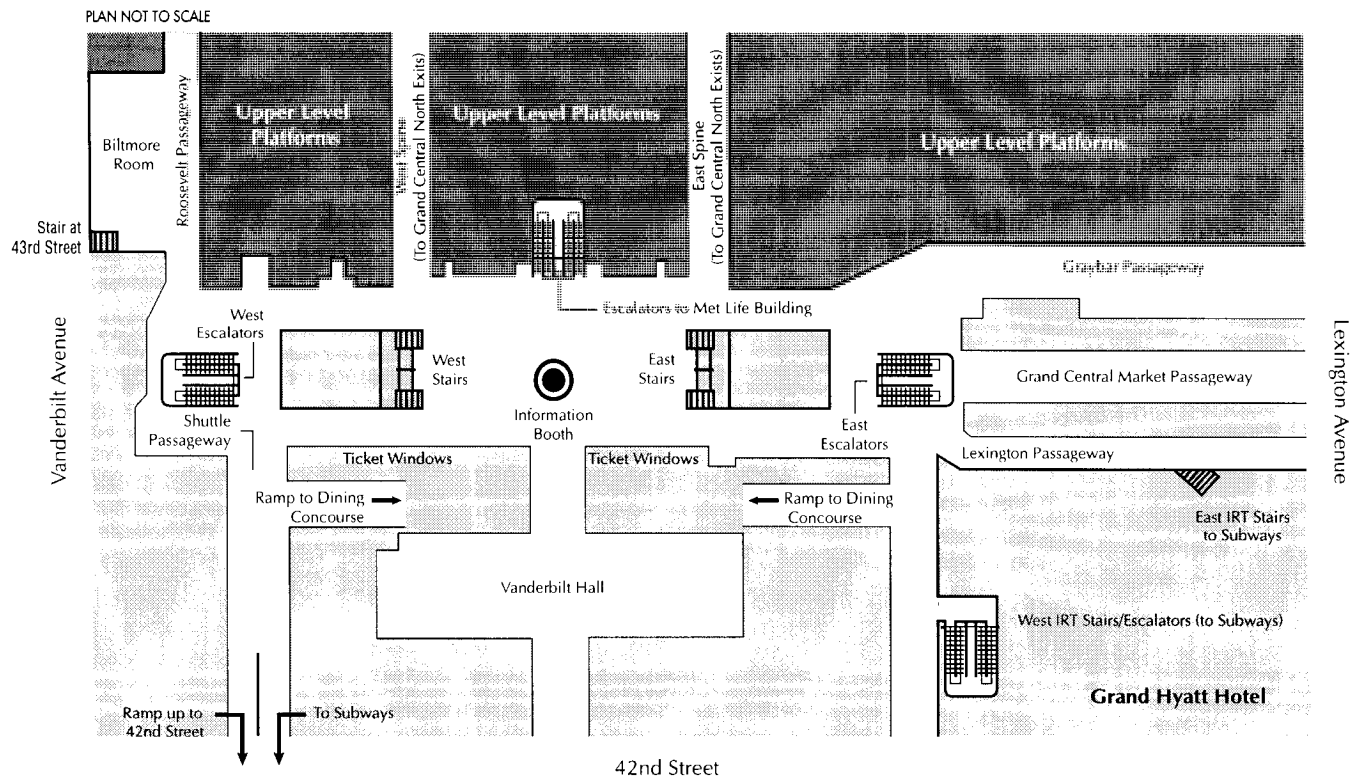
While the monumental terminal building stands on a site between East 42nd and East 44th Streets, from Vanderbilt to Lexington Avenues, the terminal itself actually occupies a much larger area, with tracks extending beneath buildings and streets from midblock between Vanderbilt and Madison to Lexington Avenues as far north as 50th Street. Including its concourses, passages, and underground platform and yard areas, GCT occupies some 48 acres of Midtown Manhattan. The terminal has recently undergone a major restoration project, in which surfaces—including the Main Concourse's famous zodiac ceiling—were cleaned and restored; a new grand staircase was created on the east end of the Main Concourse to match the one on the west; a new MNR arrival and departure board was installed; and new escalators, a lower level Dining Concourse, and numerous new retail stores were created. GCT is currently the main terminus for commuter rail service provided by MNR and an important hub for NYCT subway service (the Lexington Avenue Nos. 4, 5, and 6 lines, the No. 7 Flushing line, and the Shuttle between GCT and Times Square). It once served long-distance travelers as well, but Amtrak service to GCT ceased in the early 1990's, when it was shifted to Penn Station.

The public spaces at GCT are on two levels: the Main Concourse, or upper level; and the Dining Concourse, or lower level (see Figure 2-5). Those two concourses provide access to two levels of tracks and platforms. The westernmost tracks on both levels are lower than the eastern tracks, to allow for one of the terminal complex's most significant engineering features: an upper- and lower-level loop track that circles beneath the main terminal building. The two-level loop track allows trains on the westernmost tracks on either the upper or lower level to exit the station by continuing forward, circling under the station and reconnecting to the easternmost tracks. The other tracks at GCT are stub-ended—i.e., they terminate at GCT—so that trains must reverse directions to exit.

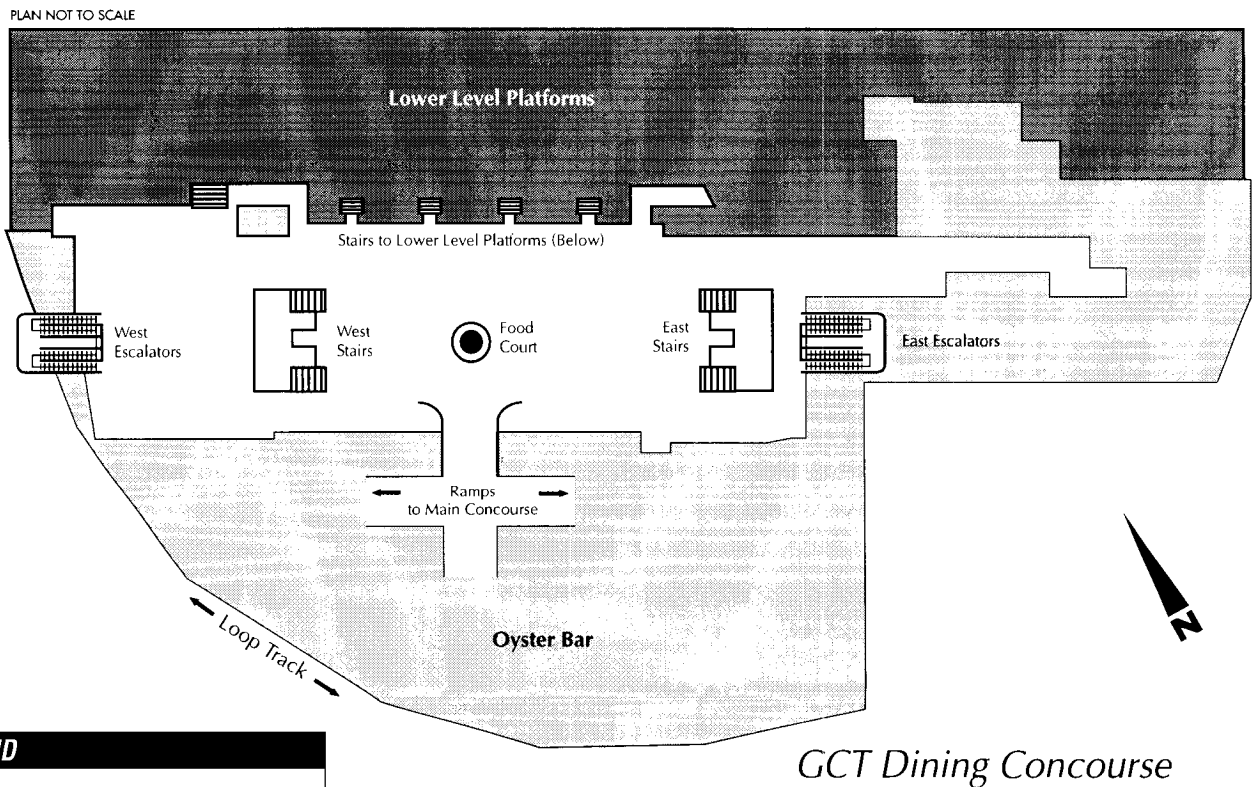
The Main Concourse is the primary public space at GCT, and its high, vaulted ceilings make it one of the signature spaces in New York City. The Main Concourse (upper-level concourse) is entered from street level on 42nd Street via a hallway that passes through Vanderbilt Hall, and also from the Met Life building to the north via staircases or escalators. Two main stairways ascend from the Main Concourse up to Vanderbilt Avenue on the west and to retail space on the east, while a number of passageways connect the Main Concourse to 42nd Street, Lexington Avenue, and the Shuttle and Lexington Avenue subways. To the west of the primary entrance hall leading from 42nd Street, the southern wall of the Main Concourse houses the ticket windows and the large Harlem-Hudson departure boards for MNR. A similar bank of ticket windows is east of the entrance hall, with the New Haven Line departure boards above, but those windows are not in regular use. Just west of the Main Concourse is the Biltmore Room, an open room currently occupied by a large newsstand. On the north, the Main Concourse leads to the upper-level tracks, tracks 11-42 (some of these tracks are accessed from hallways to the east and west of the Main Concourse). As mentioned earlier, the westernmost of the upper-level tracks (tracks 38-42) are connected to a loop track.









GCT Main Concourse



GCT Dining Concourse

**LEGEND**

-  Track and Platform Areas
-  Retail and Other Areas

The Dining Concourse, or lower level, lies just below the Main Concourse. The Dining Concourse is connected to the Main Concourse via a number of stairways, ramps, and escalators. As part of the restoration of GCT, the Dining Concourse has been converted into a dining area, with restaurants and public seating areas. Like the Main Concourse and its upper-level tracks, the Dining Concourse is connected on the north to lower-level tracks 101-117, which lie below the upper-level tracks.

The westernmost tracks on the lower level (west of lower-level track 117) are inaccessible to the public. These tracks comprise Madison Yard, an area where MNR currently stores trains during the midday and performs light maintenance work. One of the westernmost Madison Yard tracks is connected to the lower-level loop track.

As mentioned above, the GCT complex occupies a large area beneath the streets and buildings between Madison and Lexington Avenues. The passageways and public spaces in the terminal are located beneath buildings between East 42nd and roughly East 45th Streets; numerous exits from the upper level of the terminal are through office buildings surrounding the main terminal building. The platform area of the terminal extends north as far as 48th Street, from near Vanderbilt Avenue to close to Lexington Avenue. To allow pedestrians to take advantage of this layout, MTA has recently opened four new entrances to and exits from GCT from the north. These are at the East and West Walks in the Helmsley Building (between East 45th and East 46th Streets), on East 47th Street close to Madison Avenue, and on East 48th Street just east of Park Avenue. The new entrances connect to all the MNR platforms via several “cross passages” —east-west passageways that link each of the platforms with two north-south corridors and GCT, via stairs, escalators, and elevators. Between East 50th and East 57th Streets, the two levels of MNR tracks merge into one level of four tracks that continue north under Park Avenue to East 96th Street, then on a viaduct above Park Avenue, to the MNR 125th Street station and onto the Harlem River Lift Bridge.

#### *EAST SIDE ACCESS AT GRAND CENTRAL TERMINAL*

The Preferred Alternative would bring new LIRR service under Park Avenue beneath the MNR tracks to GCT. Two engineering options were considered *in the DEIS* for the Manhattan alignment, *with different terminals at GCT*. Option 1, which reflects the refinement of the project alignment in the MIS, would bring trains to the west side of the existing lower level of the terminal. Option 2 would bring trains to a new level beneath the existing lower level at GCT, and would create a new passenger concourse on the west side of the existing lower level of GCT. The two engineering options for the Manhattan alignment were developed to reduce the construction-related impacts on nearby tunnel structures and buildings along Park Avenue that are associated with the design presented in the MIS. Option 1 is most similar to the MIS design but it would be constructed at a deeper elevation underneath the NYCT tunnel structures before rising up to meet the depth of the lower level of GCT. Option 2 stays deep and further reduces construction risk, avoiding the need to underpin Metro-North’s tunnel structure and Park Avenue buildings that would be required under Option 1.

Option 2 has been identified as the preferred engineering option for East Side Access because it has substantial advantages in terms of cost, constructability, and operations, and significantly fewer impacts on MNR and risks during construction. Specifically, Option 2 is preferable to Option 1 for the following reasons, among others (also see Table 2-2):



**Table 2-2**  
**Comparative Features of Manhattan Alignment Options**

Component	Option 1	Option 2
Customer Operations: Waiting and Services	<ul style="list-style-type: none"> <li>• Uses Biltmore Room and new space created adjacent to Dining Concourse</li> <li>• Escalators and elevators to Biltmore Room</li> <li>• May replace retail space at Shuttle Passageway for ticketing and waiting</li> <li>• Platforms 17 feet to 22 feet wide</li> </ul>	<ul style="list-style-type: none"> <li>• Madison Yard area as concourse provides for large waiting areas, passenger services</li> <li>• Possible elevators and escalators to Biltmore Room</li> <li>• Possible use of retail space at Shuttle Passageway for ticketing</li> <li>• Platforms 28 feet wide</li> </ul>
Customer Operations: Vertical Circulation	<ul style="list-style-type: none"> <li>• One rise from platform to cross passage, then to street</li> <li>• Platforms 65 feet below street</li> </ul>	<ul style="list-style-type: none"> <li>• Three rises from platform to street level; long rise from cross passage to <i>concourse</i></li> <li>• Platforms 140-160 feet below street</li> </ul>
Customer Operations: Horizontal Circulation	<ul style="list-style-type: none"> <li>• Restricted to three cross passages</li> </ul>	<ul style="list-style-type: none"> <li>• Madison Yard mezzanine provides for direct exits to street, improved passenger circulation</li> </ul>
Train Operations	<ul style="list-style-type: none"> <li>• Loop track for return moves</li> <li>• Existing structure constrains throughput in "throat" at GCT</li> <li>• Maximum grade 3.25 percent</li> </ul>	<ul style="list-style-type: none"> <li>• Stub end terminal</li> <li>• Throat area designed to suit throughput needs</li> <li>• Maximum grade 3.0 percent</li> </ul>
Construction Cost	<ul style="list-style-type: none"> <li>• Up to \$400 million higher than Option 2</li> </ul>	<ul style="list-style-type: none"> <li>• Up to \$400 million lower than Option 1</li> </ul>
Operating Costs	<ul style="list-style-type: none"> <li>• Comparable</li> </ul>	<ul style="list-style-type: none"> <li>• Comparable</li> </ul>
Construction	<ul style="list-style-type: none"> <li>• Requires underpinning of four buildings along Park Avenue</li> <li>• Requires underpinning of train shed in GCT</li> <li>• Minimal rock cover over tunnels, mixed face tunneling</li> </ul>	<ul style="list-style-type: none"> <li>• Entire alignment in deep rock</li> <li>• No underpinning required</li> </ul>
Impact on MNR	<ul style="list-style-type: none"> <li>• Uses Madison Yard for platforms/tracks</li> <li>• Requires underpinning of MNR Park Avenue tunnel</li> <li>• Requires significant track outages during construction for up to 4 years</li> <li>• Under delay conditions, creates overcrowding in the 47th Street cross passageway</li> </ul>	<ul style="list-style-type: none"> <li>• Uses Madison Yard for passenger concourse</li> <li>• No underpinning required, minimal track outages during construction</li> <li>• Performs better than Option 1 under delay conditions; provides additional waiting area for MNR customers</li> </ul>
Construction Issues	<ul style="list-style-type: none"> <li>• Impact to private buildings to be underpinned and related sidewalk and lane closings for 2 years on 52nd Street</li> <li>• Sidewalk and lane closings for 4 years on 53rd Street for reconstruction of NYCT vent plant</li> <li>• Sidewalk and lane closings for 3 years on 54th Street for construction of vent plants</li> <li>• Construction work for 2 years for 44th Street vent facility</li> <li>• Minor disturbances for entrances and vents at other locations</li> <li>• Use of shaft site in Queens for 10 years</li> </ul>	<ul style="list-style-type: none"> <li>• No need for underpinning; minimal impact to 52nd Street for access to vent plant and construction of gratings</li> <li>• No need to rebuild NYCT 53rd Street vent plant</li> <li>• No impact to 54th Street</li> <li>• Sidewalk and lane closings for 2½ years on 55th Street for construction of vent plant</li> <li>• Construction work for 2 years for 44th Street vent facility</li> <li>• Minor disturbances for entrances and vents at other locations</li> <li>• Use of shaft site in Queens for 10 years</li> </ul>

- Option 2 would cost less to construct than Option 1.
- Option 2 would perform better under “perturbed” or emergency conditions, because it would provide a large public concourse level that could serve as a new waiting area for passengers delayed by service outages at GCT.
- *Option 2 would not require lengthy track outages for MNR during construction, and therefore would not result in significant impacts to MNR, as would Option 1.*
- *Option 2 would not require underpinning of buildings along Park Avenue or MNR tunnels and, overall, would have significantly less construction risk than Option 1. As detailed in Chapter 17, “Construction and Construction Impacts,” Option 2 would allow the use of different tunneling techniques and would isolate the construction work from existing railroad and subway tunnels and building foundations.*

*Furthermore, public and agency comments received prior to and during the public comment period were overwhelmingly supportive of the project with Option 2 for its Manhattan alignment (see Chapter 23, “Process and Public Participation”). In addition, Metro-North and NYCT have expressed a strong preference for Option 2.*

*Option 1 is retained in this FEIS for comparison purposes. Both options are described in more detail below.*

#### *Option 1: Station in Existing Lower Level of GCT*

In Option 1, LIRR’s new track and platform area would occupy the westernmost track area of GCT’s lower level, including Madison Yard. That area is currently occupied by 4 tracks used for MNR service (tracks 114-117) and MNR’s Madison Yard. The new LIRR tracks would be designated, from east to west, tracks 201-210. Tracks 201 to 205 would be stub-ended, while tracks 206 to 210 would be connected to the existing lower-level loop track (see Figure 2-6).

The new platforms would be designated, from east to west, 1, 2, 3, 4, and 5. The new track area for Tracks 205-210 would be lower than the existing MNR tracks to the east. The new LIRR platforms would connect to two new passenger spaces: a passenger waiting/access area below the Dining Concourse level at the LIRR platform level, and a similar, but larger space adjacent to the existing Dining Concourse. All platforms would connect to the new platform-level room, either directly (from Platforms 1, 2, and 3) or via an underpass (from Platforms 4 and 5, beneath the loop tracks at the end of those platforms). The new platform-level passenger area would have escalators connecting to the new Passenger Concourse above; from there, another escalator would connect to a passenger space in the Biltmore Room on the Main Concourse level. Platforms 4 and 5 would also have a direct connection, via escalators and elevators, to the Biltmore Room on the Main Concourse level. The passenger concourse would house most LIRR passenger facilities, including waiting rooms, ticketing areas, and information. The new escalators to the Biltmore Room would be at the northern end of the room, near the existing doorways leading to MNR’s tracks 39 through 42. (*Design and construction of new escalators to the Biltmore Room is subject to review and approval by the New York State Historic Preservation Office at the New York State Office of Parks, Recreation and Historic Preservation.*)

In addition to the entrances from GCT described above, passengers would also access the new LIRR platforms from various points north of the terminal; three of the access points constructed as part of the Grand Central North project and in use by MNR customers would be shared with LIRR customers:

- At the northeast corner of East 48th Street and Park Avenue (outside the Westvaco Building);
- On the north side of East 47th Street between Madison and Park Avenues (outside the Chase building); and
- On the south side of East 47th Street between Madison and Park Avenues (this entrance is currently under construction as part of the new building at 383 Madison Avenue).

In addition, the East Side Access Project would create five additional entrances similar to the recently opened Grand Central North entrances (see Figure 2-7). All of the new LIRR platforms would be connected to new east-west passageways leading to these entrances/exits. The platforms would also be connected to the recently opened 47th Street east-west passage created for MNR, and would provide access to those entrances/exits as well. Hence, a total of eight access points north of GCT would lead to the new LIRR platforms (see Figure 2-7).

The new entrance locations were chosen from an initial list of 27 sites, based on a set of objective siting criteria. While a review of structural and architectural drawings for affected buildings was part of the screening process, for some buildings these drawings were not up-to-date or even available. As information becomes available through structural and architectural surveys performed during preliminary engineering, the locations chosen will continue to be reviewed and assessed against the siting criteria. Any change in the location of an entrance to GCT is likely to be a minor one, with potential shifts within the same building or block, or to a nearby street, which would not significantly affect the environmental analyses presented in this document.

The six new locations identified in the current plans for the Preferred Alternative are:

- Within 347 Madison Avenue (at East 45th Street);
- At the southeast corner of Vanderbilt Avenue and East 45th Street (outside the Met Life Building);
- On the south side of East 47th Street between Park and Lexington Avenues (outside of the American Brands Building at 245 Park Avenue), to serve both LIRR and MNR passengers;
- On the southwest corner of East 48th Street and Park Avenue (outside of the Chase building at 270 Park Avenue); and
- Within or adjacent to the Bankers Trust building at 280 Park Avenue, on the north side of East 48th Street or the south side of East 49th Street between Madison and Park Avenues.
- Within the new building being constructed at 383 Madison Avenue, on the south side of East 47th Street between Park and Madison Avenues. (This entrance is currently being constructed by a private developer in support of the Preferred Alternative.)

At street level, the access points would likely be similar in design to those recently opened for MNR passengers. Some of the new entrances would be within existing buildings, where they would either occupy a storefront or create a new entrance into the building. Others would be covered entrances from the sidewalk.

### *Option 2: New Deeper Station in GCT*

*For Option 2, the DEIS analyzed a new terminal beneath GCT's lower level with 10 tracks and five platforms. Since publication of the DEIS, the design for Option 2 has been advanced. Currently, two design concepts are being considered for the Option 2 terminal,*

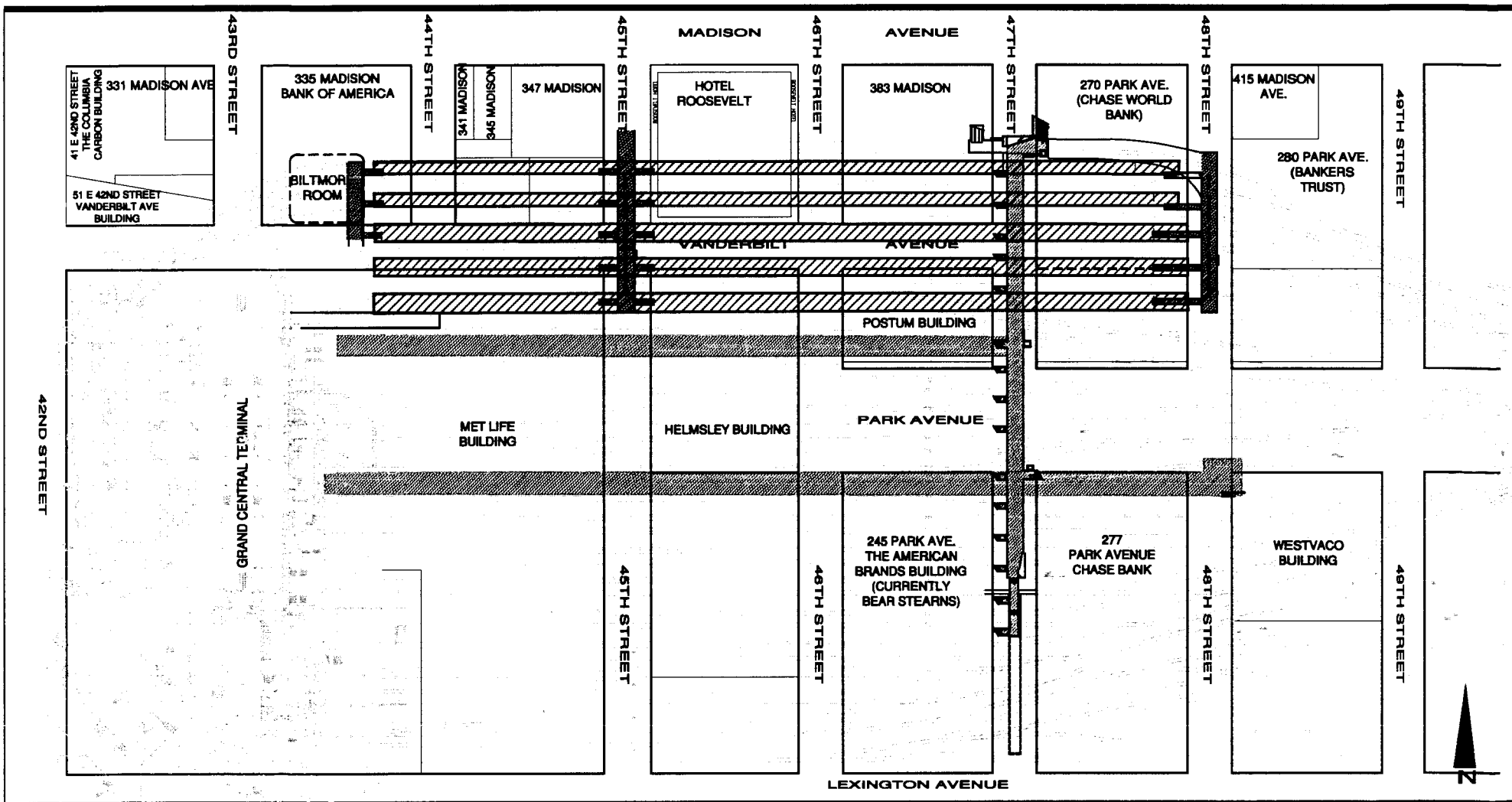


Figure 2-6  
**GCT Lower Level Platform and Cross-Passageway Layout - Option 1**

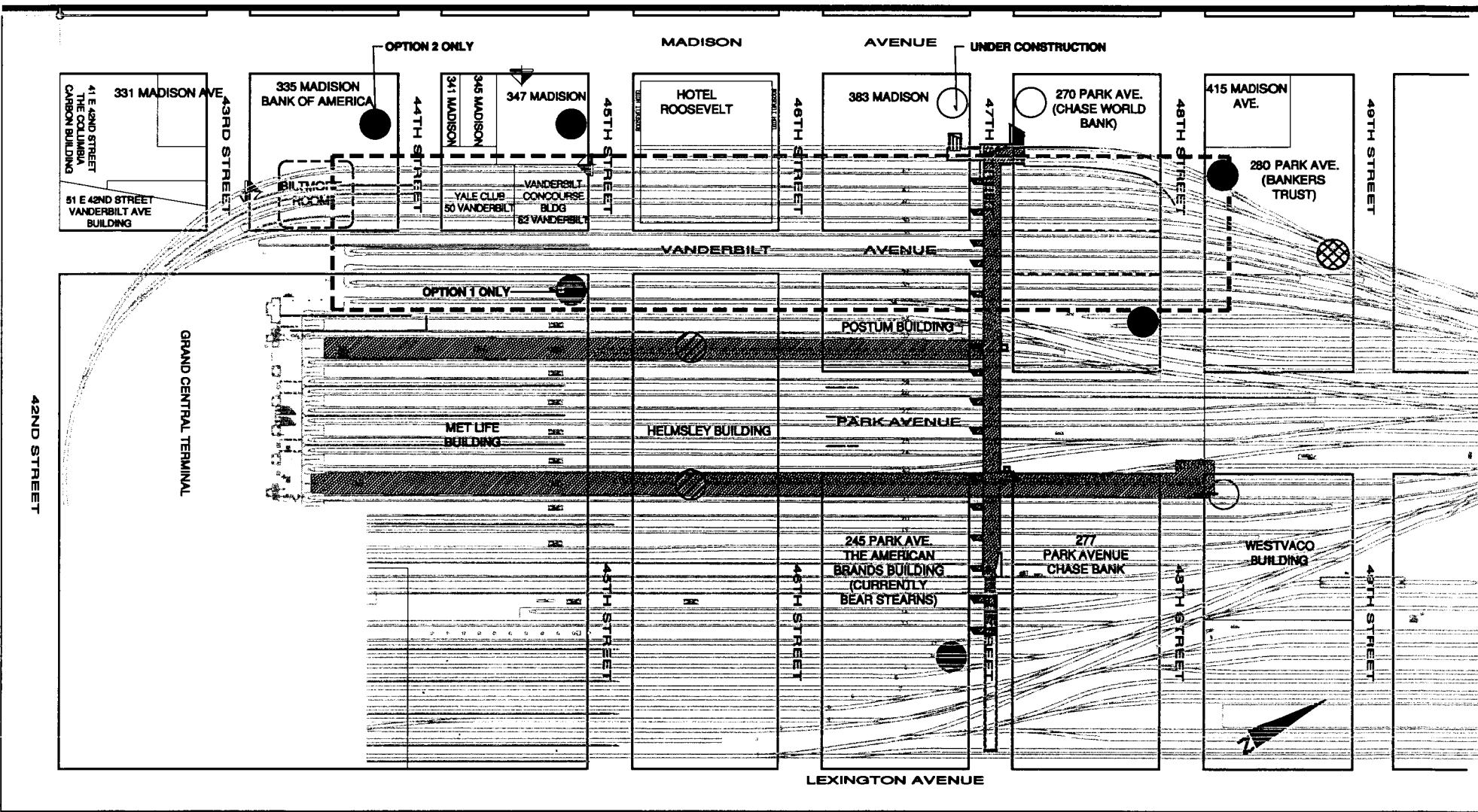


Figure 2-7  
**Proposed Street Entrances: Options 1 and 2**

*both of which would require fewer tracks and one less platform than presented in the DEIS. To ensure that the terminal station and approach tunnels optimize constructability and operational performance, the design will continue to be refined throughout preliminary engineering.*

*Under Option 2, a new passenger concourse would occupy the westernmost track area of GCT's lower level—the area that would be used for LIRR's new tracks and platforms under Option 1. As described above, that area is currently occupied by four tracks used for MNR service (tracks 114-117) and the tracks of MNR's Madison Yard. The new finished concourse space would be separated from MNR's track area to the east, and would be well lit and climate-controlled. It would include passenger amenities, such as ticketing booths, information booths, waiting room seating, retail elements (newsstands, etc.), and required LIRR administrative and operational support spaces (see Figure 2-8).*

*New LIRR tracks and platforms would be located beneath the concourse area. The two design concepts being considered vary in the layout of the tracks and platforms under Option 2: one concept would have eight tracks served by four platforms on one new lower level, approximately 90 feet below the new concourse and existing lower level at GCT, while the other concept would have eight tracks served by four platforms on two new levels, approximately 90 feet and 110 feet below the concourse level. Figure 2-9 shows a section of the single-level concept and Figures 2-10 through 2-12 show sections of the bi-level concept.*

*To access the new concourse from the platforms, LIRR customers would use one of several escalator banks. The main bank would have five escalators, four of which would operate in the peak direction of travel. Most other banks would have two escalators and a staircase. Elevators from the platform level would also be provided. Escalator connections to the Biltmore Room are also being considered for Option 2 under both design concepts. The design and construction of escalators to the Biltmore Room is subject to review and approval by the New York State Historic Preservation Office at the New York State Office of Parks, Recreation and Historic Preservation (this is discussed in more detail in Chapter 7).*

*For either design concept of Option 2, the practicality of using the same five locations for new off-street entrances as in Option 1 was explored. Some basic differences in the design schemes for each option warranted a closer look at certain off-street entrance locations. For example, the elimination of cross passageways at 45th and 48th Streets as a means of egress to the street in Option 2 changed the vertical circulation requirements to satisfy emergency egress codes. The study determined that four of the five new off-street entrances proposed for Option 1 meet the siting criteria and are recommended under Option 2. These sites are:*

- *Within 347 Madison Avenue (at East 45th Street);*
- *On the south side of East 47th Street between Park and Lexington Avenues (outside of the American Brands Building at 245 Park Avenue);*
- *On the southwest corner of East 48th Street and Park Avenue (outside of the Chase building at 270 Park Avenue); and*

- Within Bankers Trust at 280 Park Avenue, on the north side of East 48th Street between Madison and Park Avenues or on the south side of 49th Street between Madison and Park Avenues.

The off-street entrance outside the Met Life Building proposed under Option 1 is not recommended for inclusion under Option 2. This entrance was required under Option 1 to eliminate a dead end condition at the west end of the 45th Street cross passageway. Since this condition is not present under Option 2, an alternate location was evaluated that ranked higher under the planning criteria. The proposed fifth off-street entrance is on the southeast corner of 44th Street at 335 Madison Avenue (Bank of America). In addition, like Option 1, Option 2 would also use three of the access points constructed as part of the Grand Central North Project.

These sites and other feasible alternatives, if identified, will continue to be evaluated during preliminary engineering as building surveys are completed and plans are developed to more detailed levels.

## **MANHATTAN TRACK ALIGNMENT**

### *PROJECT ROUTE TODAY*

As mentioned earlier, MNR travels from GCT under Park Avenue. Tracks and platforms occupy a wide area of the terminal, extending beneath buildings from Lexington to Madison Avenue. Between roughly East 49th and East 52nd Streets, the track area narrows, and north of 55th Street, the railroad travels only beneath Park Avenue. At the same time, the lower level tracks rise to meet the upper level tracks, and north of 57th Street, four MNR tracks run under Park Avenue on one level.

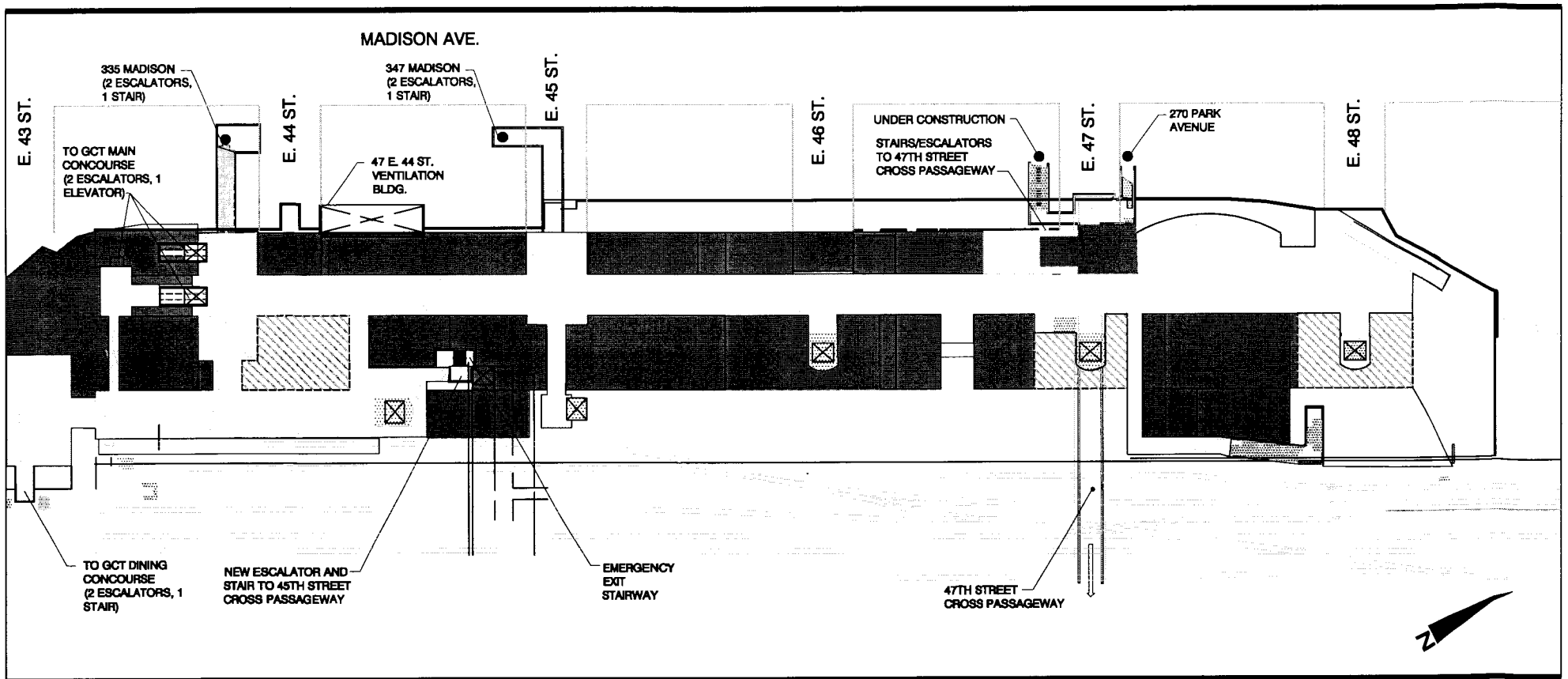
In addition to the MNR tracks, several subway tracks are located along or near the project route. At East 53rd Street, the E and F line tunnels cross beneath Park Avenue and the MNR tunnel, on their route between the Lexington Avenue and Fifth Avenue stations. Also running east-west, the N and R line crosses the East Side of Manhattan at 60th Street (lower than the MNR tracks). Finally, the Lexington Avenue subway runs north-south directly below Lexington Avenue on two levels: the local No. 6 train is directly beneath the street, and the express Nos. 4 and 5 lines are beneath the local (see Figures 2-13, 2-14, and 2-15).

### *EAST SIDE ACCESS ROUTE*

The new LIRR service in East Side Access's Preferred Alternative would travel north from GCT beneath the MNR tracks. The configuration of this route would be different under the two options under consideration.

#### *Option 1: Station in Existing Lower Level of GCT*

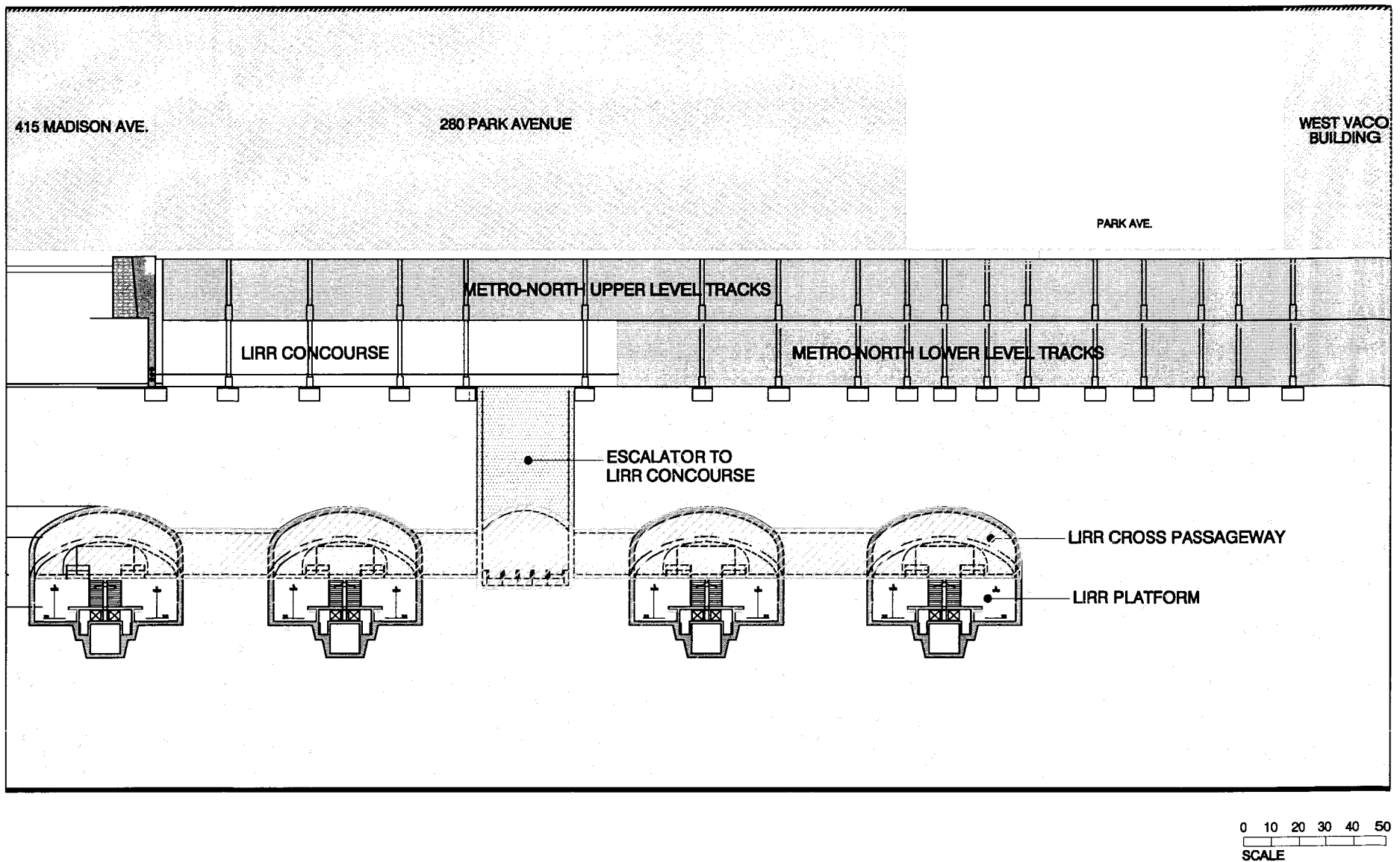
With a new station in the lower level of GCT, LIRR's tracks would be west of MNR, beneath existing buildings. This would enlarge the track area that lies beneath existing buildings on the west side of Park Avenue slightly: while today tracks are located beneath existing buildings as far north as 52nd Street, with East Side Access, they would be located beneath existing buildings as far north as 55th Street. Chapter 17, "Construction and Construction Impacts," discusses the complex construction that would be required to build these tunnels (including the underpinning of a number of Park Avenue buildings).

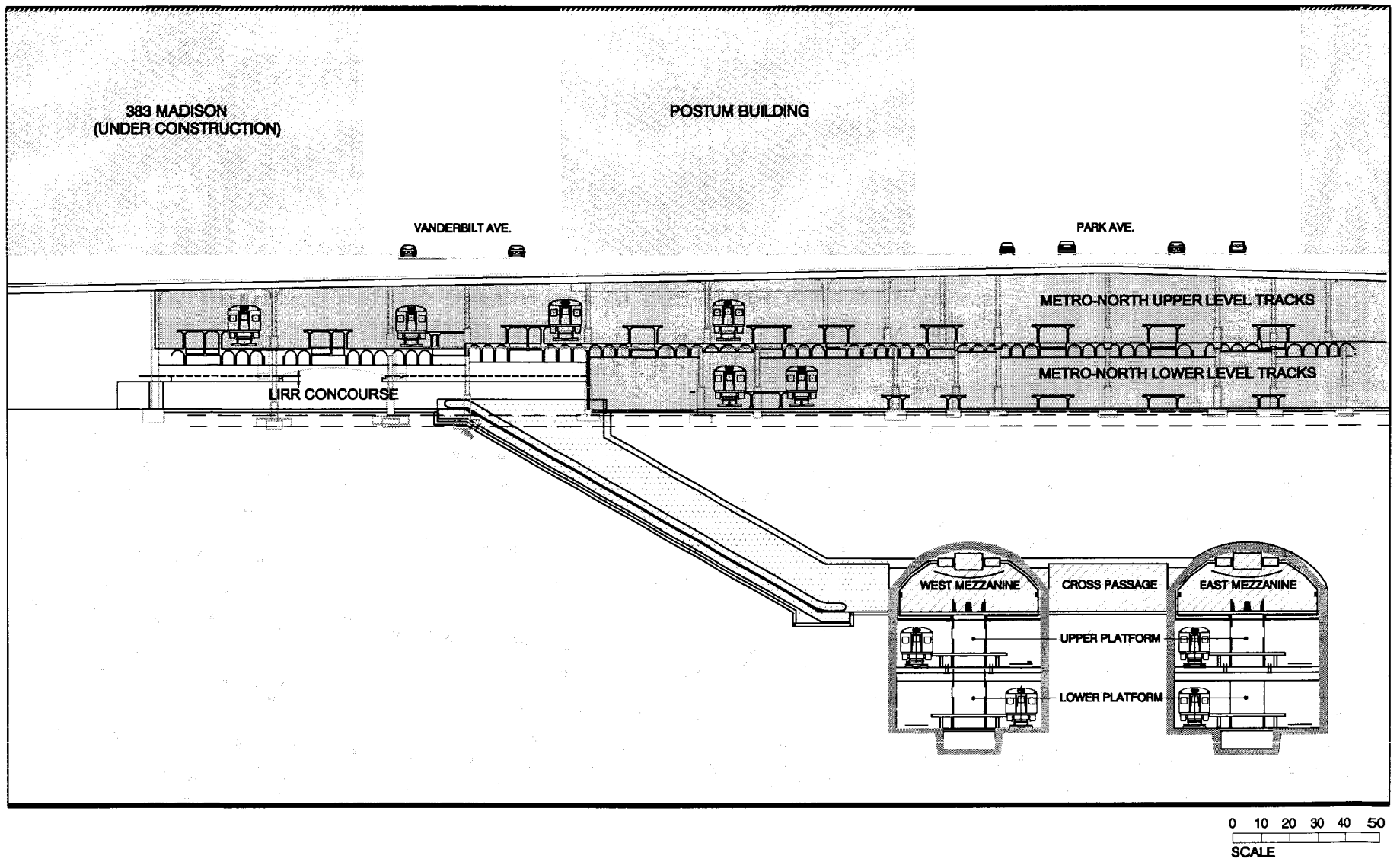


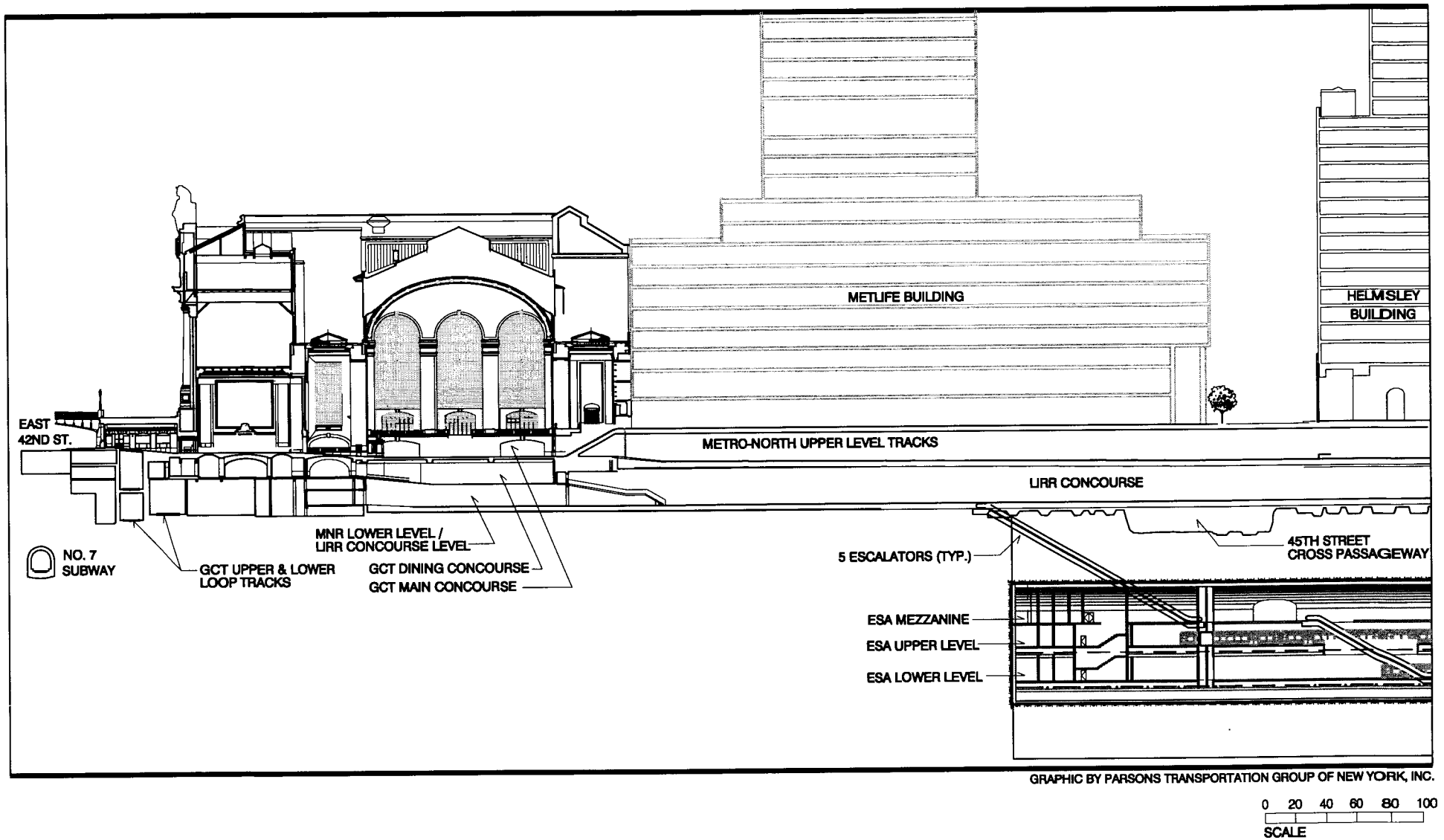
# **LEGEND**

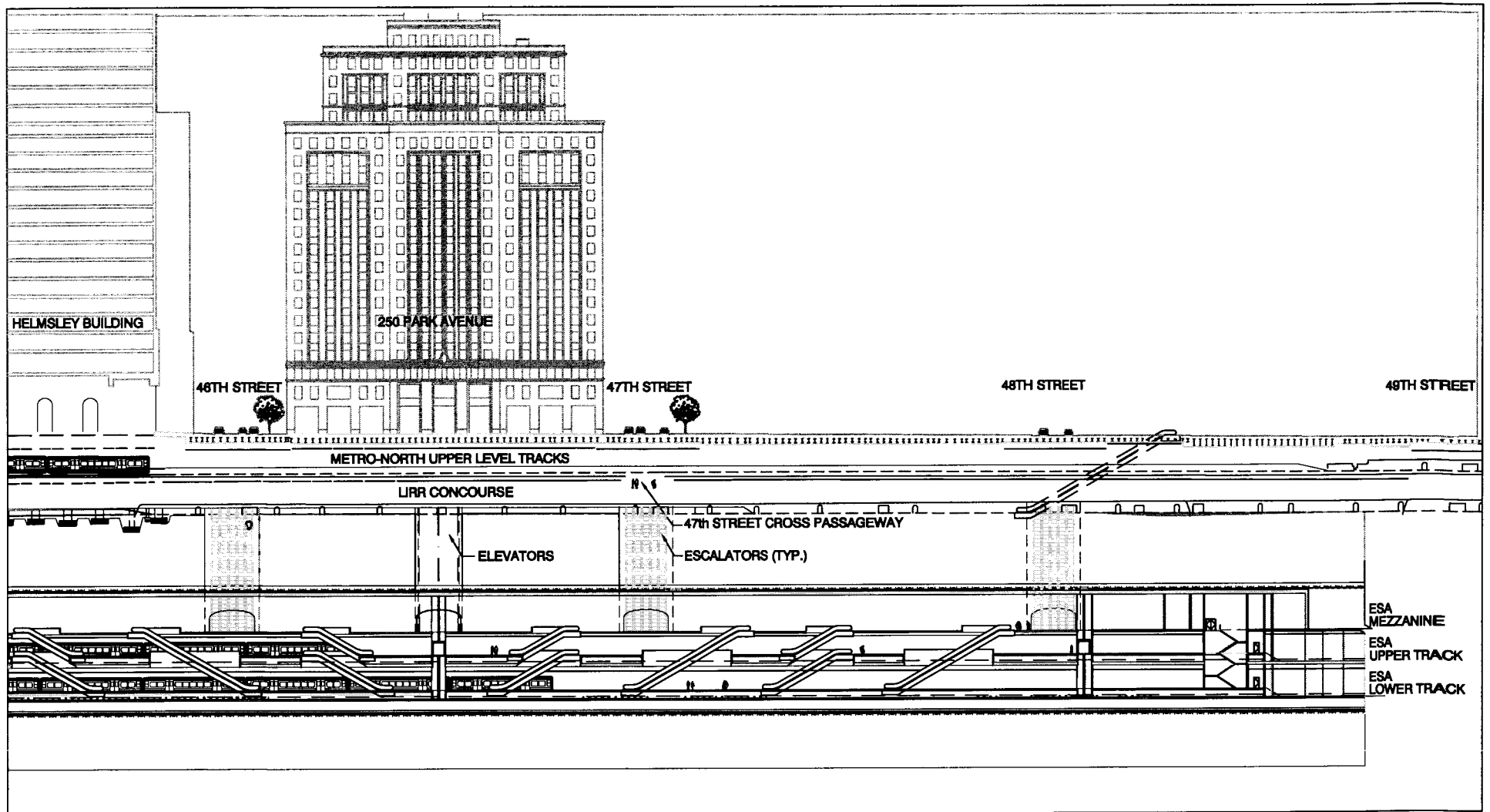
- Proposed Vertical Circulation to Street
- Proposed Vertical Circulation from Platforms
- Proposed Retail / Amenities / Other LIRR space
- Proposed Waiting Area
- Exits to Street





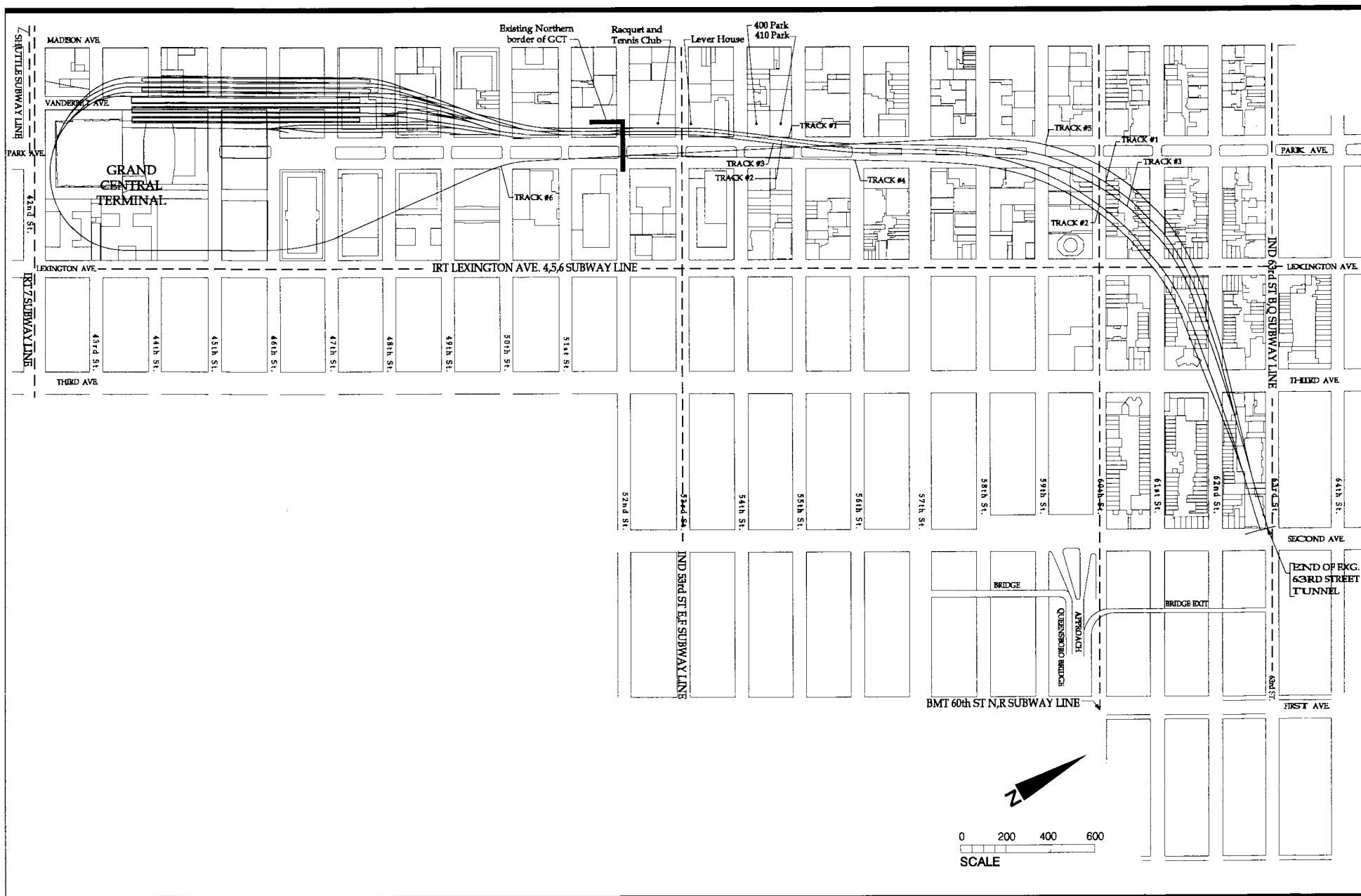


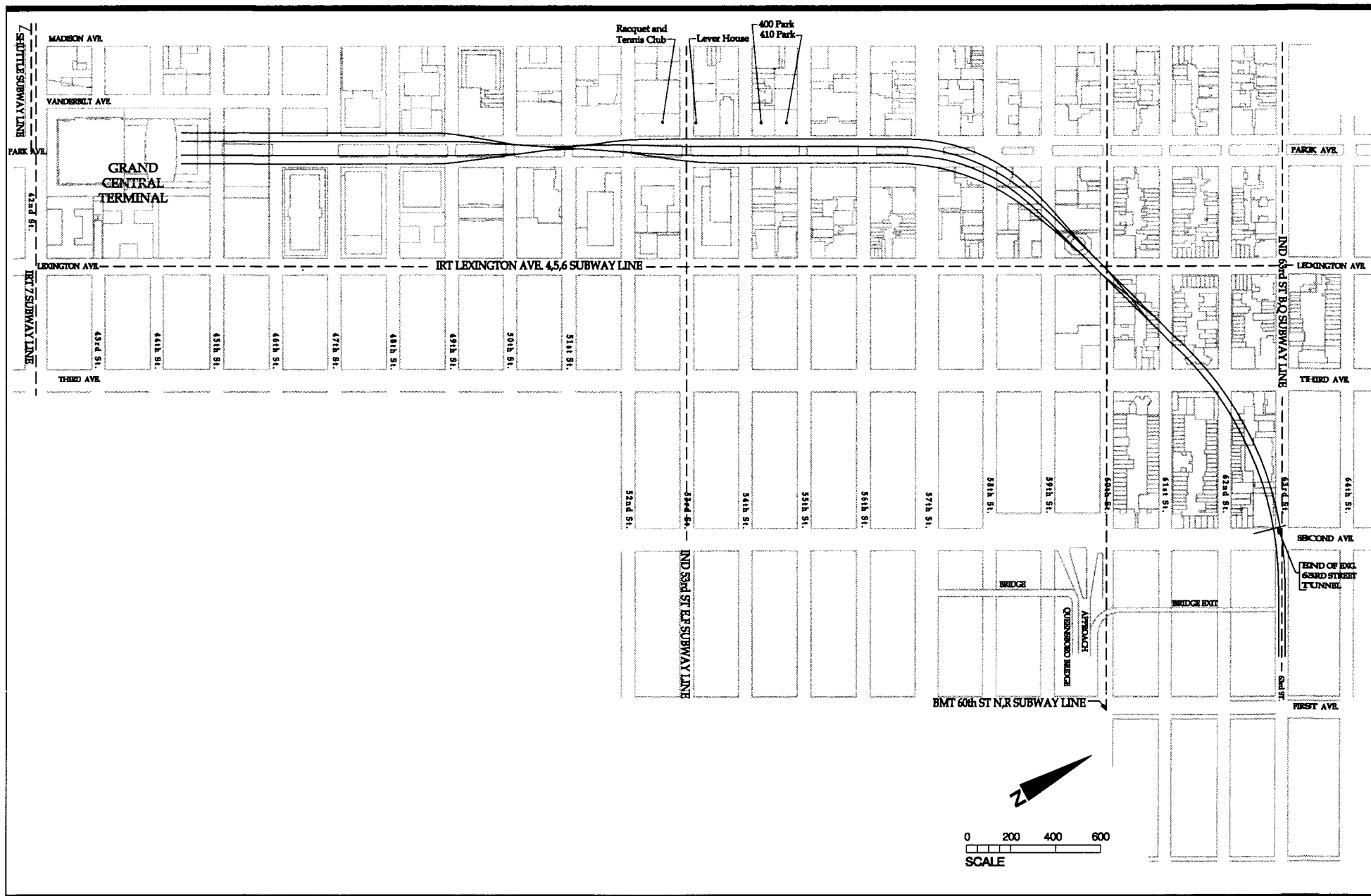


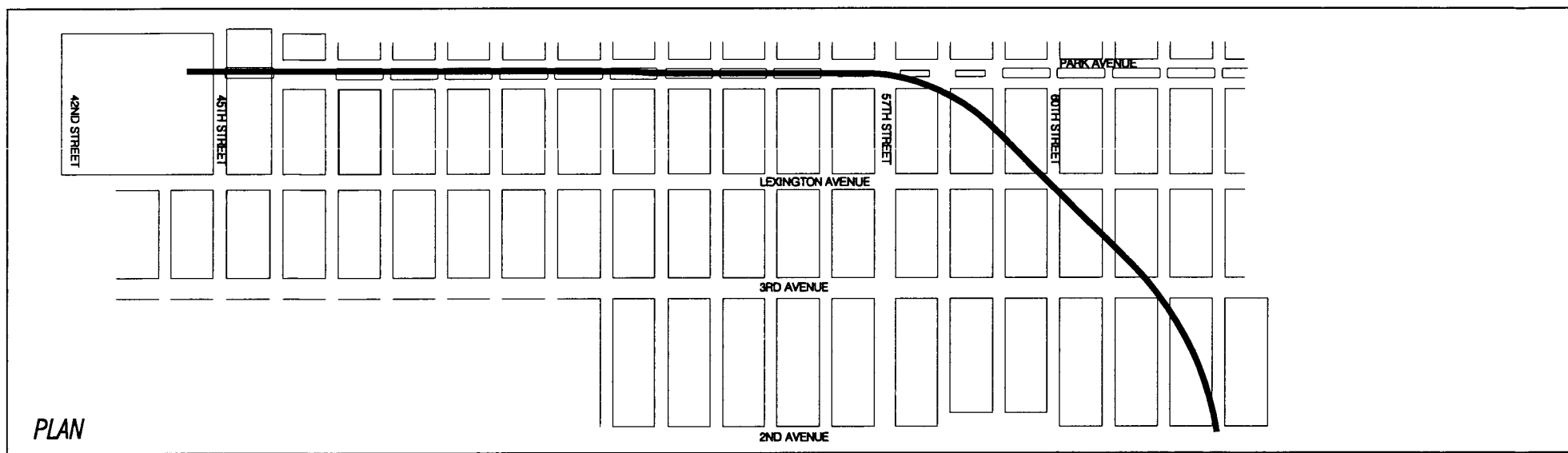
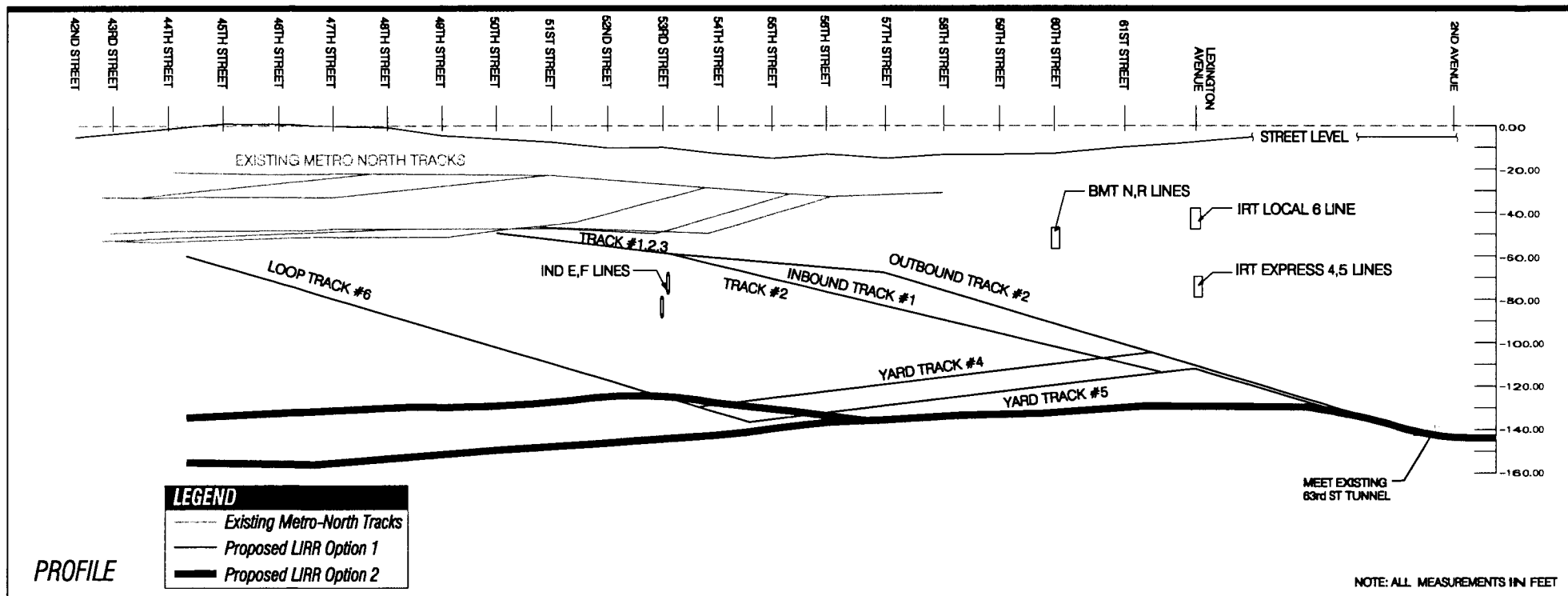


GRAPHIC BY PARSONS TRANSPORTATION GROUP OF NEW YORK, INC.

0 20 40 60 80 100  
SCALE







The 10 LIRR tracks would combine together to three tracks by 51st Street (see Figure 2-13). At the same time, they would gradually descend to new tunnels beneath MNR's tracks under Park Avenue. Trains on the eastern five LIRR tracks would reverse directions to leave GCT, traveling out of the station on the same tracks they arrived on. Trains on LIRR's western five tracks would do the same, or they would use the lower-level loop track, continuing forward on the loop track under GCT, and following the curving track around beneath the east side of Park Avenue, eventually rejoining the other LIRR tunnels east of Park Avenue. (After discharging their passengers, some of the morning peak period trains would exit, without passengers, via the loop track to travel to LIRR's Yard A in Sunnyside, Queens for midday storage, while other morning trains would travel to Yard A by reversing direction. Still other trains would carry passengers out to Long Island by reversing direction. Train storage and maintenance at Yard A is discussed later in this chapter in the description of the Preferred Alternative in Queens.)

At 53rd Street, the three main LIRR tracks would pass above the E and F subway lines, while the two loop tracks on the east side of Park Avenue would pass below them (see Figure 2-15). From 55th Street northward, the new LIRR service would travel in five tunnels beneath Park Avenue and beneath MNR's tracks. Beginning at about 58th Street the tunnels would gradually curve eastward and slope downward on their way to the 63rd Street Tunnel. All five tunnels would pass beneath the N and R subway lines at 60th Street and the No. 4, 5, and 6 subway lines at Lexington Avenue (between East 61st and East 62nd Streets). Between Third and Second Avenues, the five tunnels would merge into two tunnels and join the existing 63rd Street Tunnel just west of Second Avenue, approximately 140 feet below the street.

#### *Option 2: New Deeper Station in GCT*

As described earlier, *the tracks at GCT in Option 2 would be located approximately 7 stories below MNR's lower-level tracks.* These would all be stub-ended tracks, so that trains would enter and exit on the same tracks. This deeper station would not need to use the loop track for departing trains because it would employ a wider "throat track" area than Option 1. The deeper station's throat track, where the 8 tracks combine, would not be constrained by the structure of GCT as would the throat track area in Option 1. This means the throat can be longer and trains can enter and exit the terminal faster, supporting peak hour train operations without needing a loop track. After discharging and/or picking up passengers, all trains would reverse direction and depart the terminal to the north.

Between 52nd and 59th Streets, the tracks would join together and continue north in *four* tunnels approximately 120 feet deep below Park Avenue (see Figures 2-14 and 2-15). At 53rd Street, all the tracks would pass well below the E and F subway tunnels. At approximately 58th Street, the tunnels would gradually curve eastward, passing beneath the N and R and Nos. 4, 5, and 6 subway lines, *combining into two tunnels at 61st Street and Lexington Avenue*, and joining the existing 63rd Street Tunnel at Second Avenue.

### **63RD STREET TUNNEL**

The 63rd Street Tunnel under the East River was constructed in the 1970's under the authority of the Metropolitan Transportation Authority. The tunnel was built with two levels, containing two tracks on the upper level for subway service between Manhattan and Queens and two tracks on a lower level for new LIRR service between East Midtown and Long Island. Subway service through the upper level of the completed 63rd Street Tunnel began in October 1989, when service on the B and Q lines was extended to 63rd Street and Lexington Avenue, Roosevelt Island,



and 21st Street/Queensbridge. NYCT is currently extending this line approximately 1,500 feet farther to connect to the Queens Boulevard E, F, G, and R lines at Northern Boulevard (for more information, see the discussion of current planning context in Chapter 1, “Project Purpose and Need”).

The lower level of the 63rd Street Tunnel remains unused. It extends in an easterly direction approximately 1.6 miles from a bulkhead at 63rd Street and Second Avenue in Manhattan, under the East River and Roosevelt Island, and into Queens, where it continues under 41st Avenue to a point west of Northern Boulevard. Just west of Northern Boulevard, the upper level of the tunnel (NYCT) branches away toward Northern Boulevard, but the lower level terminates there. East Side Access would run its new LIRR service through the currently unused lower level of the 63rd Street Tunnel.

## **QUEENS TRACK ALIGNMENT**

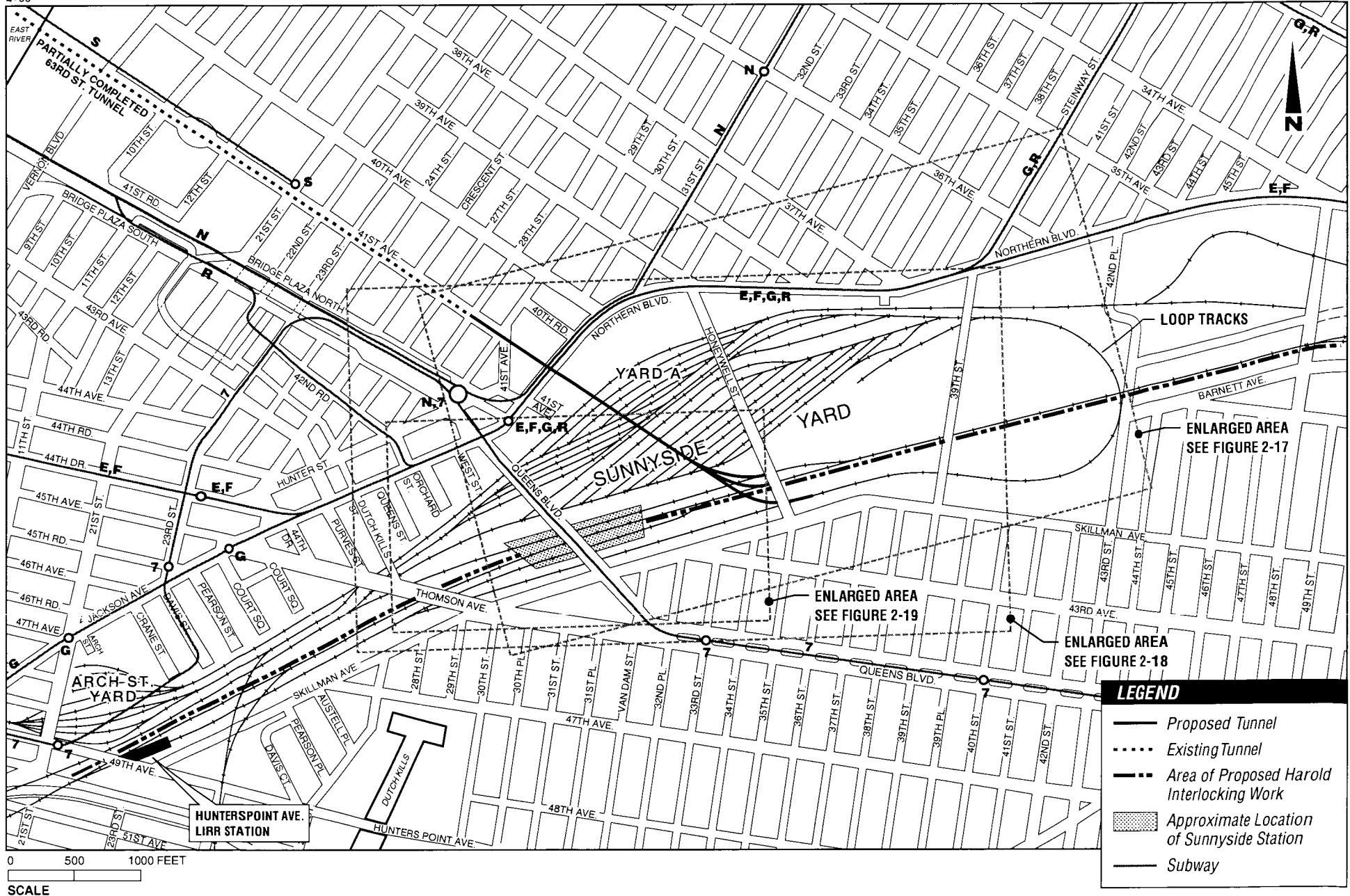
### *EXISTING SUNNYSIDE TRAIN FACILITIES*

As shown in Figure 2-16, the Sunnyside area of Queens is occupied by a vast railroad complex generally extending from close to Hunters Point Avenue on the west to 43rd Street on the east, between Northern Boulevard and Skillman Avenue. The railroad uses in Sunnyside are dominated by Sunnyside Yard, which is used by Amtrak and New Jersey Transit (NJ Transit) for storage and maintenance of trains. Sunnyside Yard includes extensive trackage for train storage with associated overhead electric wire (catenaries) and numerous buildings and parking areas for railroad employees. Amtrak stores trains throughout the day at Sunnyside Yard, while NJ Transit uses the yard for midday storage of trains that have run inbound during the morning peak period and will run outbound during the evening.

Trains traveling east from Manhattan’s Penn Station—including LIRR trains headed out to the Main Line and Port Washington, and Amtrak Northeast Corridor trains headed north to Boston—emerge from the East River tunnels along tracks adjacent to the southern boundary of Sunnyside Yard, just north of Skillman Avenue. These tracks also carry Amtrak and NJ Transit trains headed for Sunnyside Yard. Trains can enter Sunnyside Yard from the west end or via the eastern loop tracks, which are close to 43rd Street.

The 1.5-mile stretch of track—and the associated switches and crossovers—shared by LIRR and Amtrak and providing access to and from the East River tunnels, Sunnyside Yard, LIRR’s Main Line and Port Washington Branch tracks, and Amtrak’s route to and from New England over the Hell Gate Bridge—is known as Harold Interlocking.

Adjacent to Sunnyside Yard on the north is a separate, smaller train yard owned by LIRR. This yard, known as Yard A, has numerous storage tracks that can be used by diesel-powered trains (the tracks are not electrified) and a 6,000-square-foot maintenance shop building with a paved parking area. Yard A is currently used by New York & Atlantic Railway (NYAR). NYAR runs freight operations on selected LIRR branches under a franchise agreement, and uses Yard A for storage and maintenance of freight cars. NYAR moves freight trains to and from Yard A over LIRR’s Montauk Branch, which connects to the western end of Yard A. The western end of Yard A also connects to Arch Street Yard. NYAR uses the northern half of Arch Street Yard as a shared loading and unloading facility used by several of NYAR’s freight customers, including Ringling Brothers and Barnum & Bailey circus, which uses the yard to store circus trains when it comes to New York. NYAR has a freight office, warehouse, and two active tracks in the yard. The southern half of the yard is vacant.



Six bridges cross Sunnyside Yard, connecting the neighborhood on the north to that on the south: Hunters Point Avenue/49th Avenue, Thomson Avenue, Queens Boulevard, Honeywell Street, and 39th Street. The Queens Boulevard bridge carries vehicular traffic to and from Queens Plaza and the entrance to the Queensboro Bridge. It also carries the elevated No. 7 subway line across the yard between its stop at 33rd Street and Queens Boulevard and the Queensboro Plaza stop. Other subways nearby include the E, F, G, and R trains, which run beneath Northern Boulevard and stop at Queens Plaza. As described earlier, NYCT is currently extending the upper level of the 63rd Street Tunnel to the Queens Boulevard (E, F, G, and R) line, so that B and Q service can connect to Queens Boulevard, and E and F trains can be routed in the tunnel.

#### *EAST SIDE ACCESS ROUTE IN QUEENS*

Regardless of which Manhattan alignment option is chosen, East Side Access's Preferred Alternative would continue eastward from the lower level of the 63rd Street Tunnel to meet LIRR's Main Line and Port Washington tracks in Harold Interlocking, just south and east of Sunnyside Yard. Two tracks would continue from the existing tunnel, run under Northern Boulevard (and beneath the E, F, G, and R subway lines that run under Northern Boulevard as well as the N train, which is elevated above), and then fan out under Yard A and Sunnyside Yard into five separate tunnels. After crossing beneath the railroad yards, the tracks would ascend, emerging from the five tunnels to join both the tracks at Harold Interlocking and the loop track (see Figure 2-17). Three of the five tracks would be for trains connecting to the Main Line and Port Washington Branch tracks, while the other two would provide access to and from LIRR's Yard A (discussed below).

Construction activities associated with the Preferred Alternative would be closely coordinated with Amtrak operations to meet their requirements for access to and within Sunnyside Yard (see Chapter 17, "Construction and Construction Impacts").

#### *MIDDAY TRAIN STORAGE FACILITIES AT YARD A*

With the new service provided by East Side Access, LIRR would need a yard for midday storage of the electric trains that serve GCT. Yard A at Sunnyside would be used for this midday storage, and for cleaning and light maintenance (see Figure 2-18). Trains would travel to Yard A from the 63rd Street Tunnel via one of the Sunnyside Yard loop tracks, which would be realigned to connect to Yard A. A fourth loop track would be added to the three existing tracks to accommodate LIRR trains. Most of the trains that bring passengers to GCT during the AM peak period on weekdays would be stored at Yard A during the day, waiting to return to GCT to pick up passengers departing during the evening peak period. A total of 24 trainsets would be stored in Yard A during the midday period. NYAR freight operations at Yard A would be relocated to other yards, as discussed below under "Replacement Maintenance and Storage Facilities."

During the midday, trains at the yard would be cleaned, serviced, and inspected. In addition to storage tracks, Yard A and the southern half of Arch Street Yard would have a Service and Inspection shop, a car wash facility, an extraordinary interior cleaning facility,\* and various storage buildings. A new LIRR building adjacent to the yard at 2950-2970 Northern Boulevard (at

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\* Nightly cleaning includes sweeping and removal of debris; extraordinary cleaning includes hot-water mopping, and polishing and cleaning seat fabrics.

approximately 41st Avenue) would house yard offices and crew quarters. This new building would be directly above the new tunnel.

### **NEW SUNNYSIDE STATION**

In addition to the new service to GCT, East Side Access would also create a new station in Sunnyside, Queens. Selected LIRR trains bound to and from Penn Station would stop at this new station located below the Queens Boulevard bridge, which crosses over the LIRR Main Line tracks and Sunnyside Yard lead tracks. In the future, this station could also be used for Amtrak and/or NJ Transit service.

*Due to capacity constraints to train service in the area of Harold Interlocking (in the Sunnyside Yard vicinity), a new Sunnyside station would not be operationally feasible without the improvements proposed as part of East Side Access. To add Sunnyside station as a stop for LIRR trains en route to Penn Station, some trains moving through Harold Interlocking would have to be rerouted to new, GCT-bound tracks planned under the East Side Access Project. Without East Side Access, stopping trains at Sunnyside station would create an unacceptable logjam of trains at Harold Interlocking.*

The new Sunnyside station would have one center-island and two side platforms that would be long enough for 12-car trains (see Figures 2-19 and 2-20). These three platforms would serve four tracks (two at the center platform and one each at the side platforms). The center platform would have two enclosed sheltered waiting areas.

The station's main entrance would be at street level on the west side of the Queens Boulevard bridge near its Skillman Avenue end, directly above the center platform. The station building would open onto the west sidewalk of the Queens Boulevard bridge, and would house the LIRR ticket office, ticket vending machines, waiting room, and passenger information center, and potentially public restrooms and some retail space. Passengers would access the station platforms from this station building. The center platform would be accessible via stairs and an elevator, and the two side platforms would be accessed by pedestrian bridges over the tracks and enclosed stairways and elevator down to the platforms. The pedestrian bridge to the southern platform would also continue to a designated drop-off and pick-up area on the north side of Skillman Avenue, approximately 150 feet west of Queens Boulevard. The drop-off and pick-up area would be located on Skillman Avenue to avoid traffic congestion along the busy Queens Boulevard viaduct.

*MTA has allocated \$2 million in its 2000-2004 Capital Program to study improving pedestrian connections between the proposed East Side Access Sunnyside station and transit stations at Queens Plaza and Queensboro Plaza. This study will be conducted by MTA, outside the scope of the East Side Access Project.*

### **EXTENSION OF NYCT LINES FROM EXISTING BELLMOUTH**

In addition to extending the existing lower level of the 63rd Street Tunnel for LIRR use, two NYCT tracks from the upper level of the 63rd Street Tunnel would also be extended. The extension of these tracks, called T1A and T2A, would provide for a logical future connection to the planned NYCT storage yard in the vicinity of Sunnyside Yard. The tracks would be extended to a point to minimize future impact on LIRR operations, not precluding future expansion by NYCT.

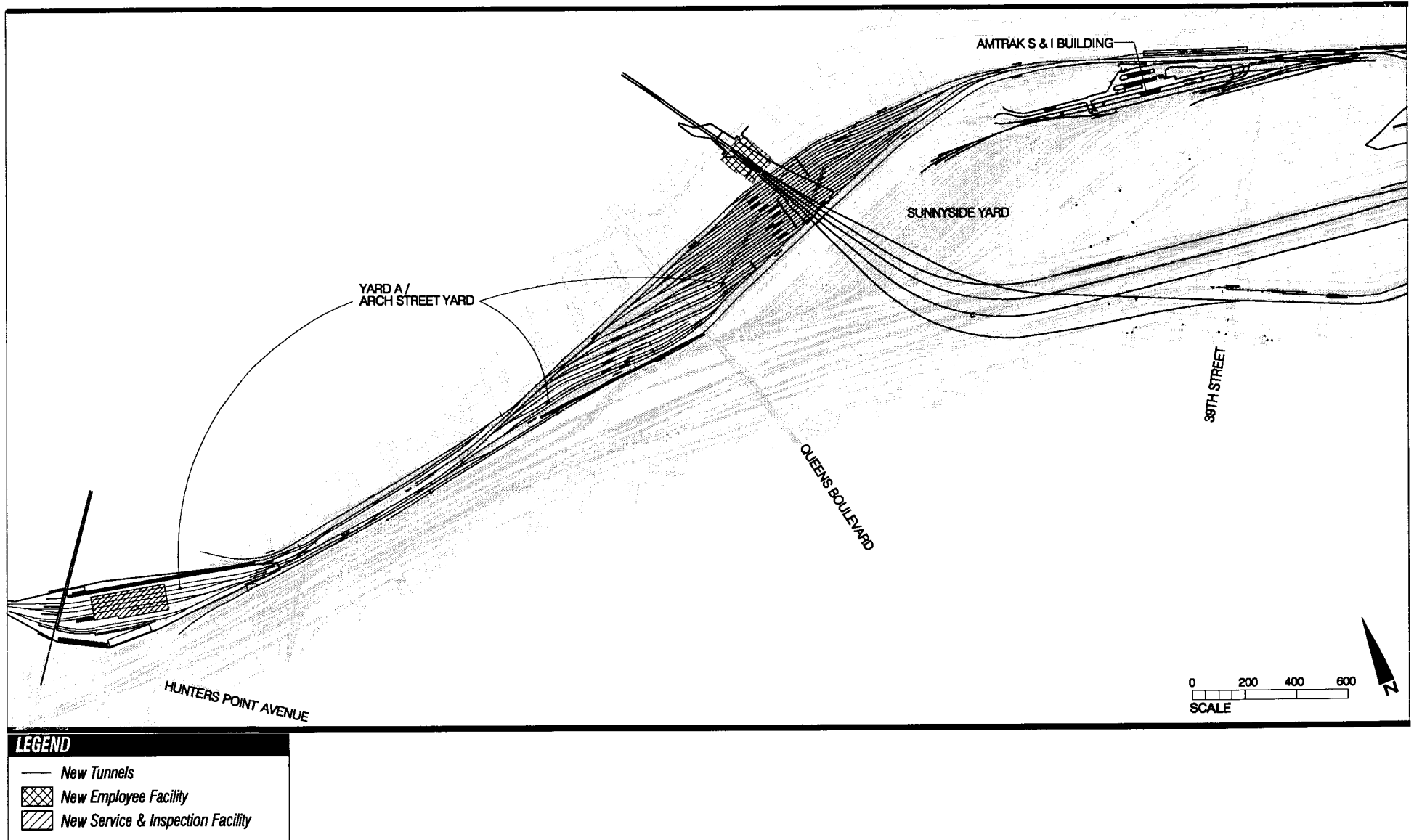


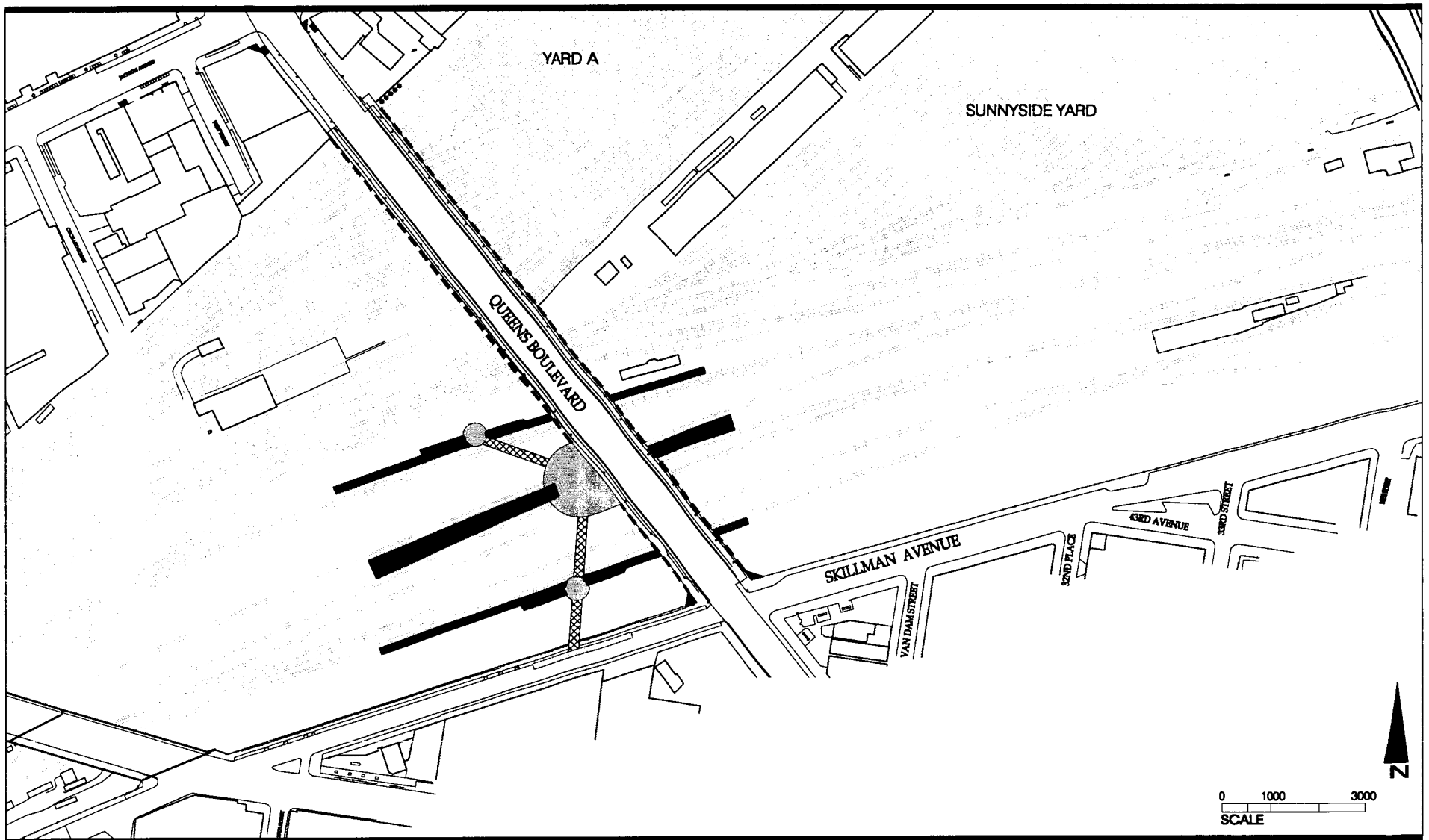
**LEGEND**

- TBM Tunnels
- Cut and Cover Tunnels
- Open Approach Structures (Retaining Walls)

Figure 2-17  
**Queens Tunnels - Overall Plan**







GRAPHIC BY PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC./STV INCORPORATED

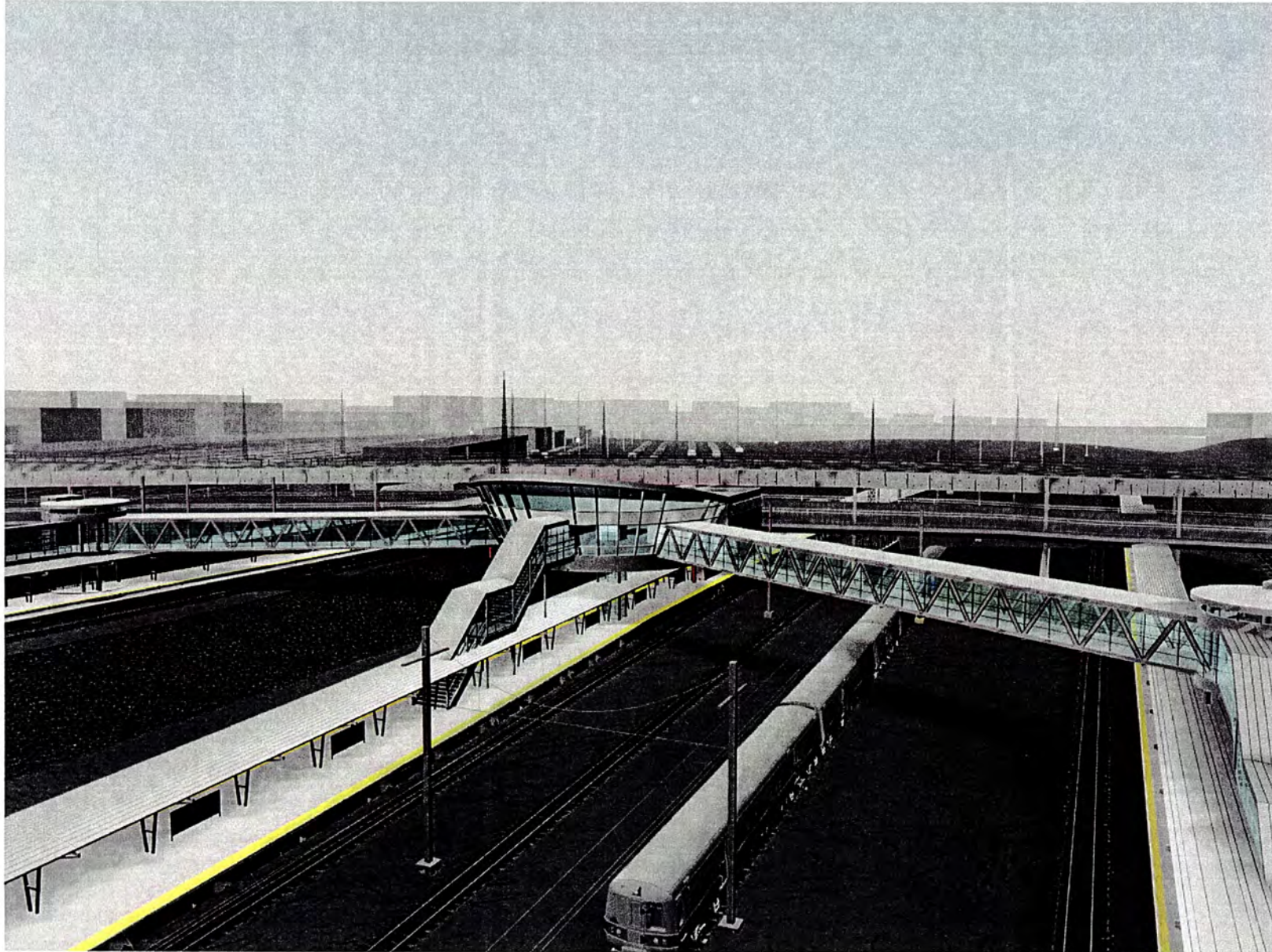
#### LEGEND

- Station
- New Fence
- Drop-off Area
- LIRR Yard A Employee Access
- Connector
- Platforms

**MTA / LIRR**  
**East Side Access**

Figure 2-19

**Sunnyside Station Site Plan**



**MTA / LIRR**  
East Side Access

*Figure 2-20*  
**Sunnyside Station Conceptual View**



## **HAROLD INTERLOCKING IMPROVEMENTS**

Adjacent to Sunnyside Yard, LIRR trains and Amtrak's Northeast Corridor trains traveling to and from Penn Station share the Harold Interlocking, an approximately 1.5-mile-long portion of track leading to the East River tunnels. The Harold Interlocking allows connection among tunnel tracks, LIRR's Main Line tracks, Amtrak's Northeast Corridor tracks through Queens and over the Hell Gate Bridge, and loop tracks leading into and out of the yard. Amtrak also uses Sunnyside Yard for train maintenance and storage, and NJ Transit stores trains there during the mid-day as well. Amtrak and NJ Transit can access storage and maintenance facilities via the loop tracks, without using Harold Interlocking.

The number and frequency of trains running through Harold Interlocking make it a congested area, especially during peak periods. Amtrak and LIRR movements leaving and entering the East River tunnels and Sunnyside Yard create conflicts that must be managed closely to avoid train delays. Further, the large number of track crossings at Harold Interlocking presents numerous opportunities for conflicts. To avoid exacerbating this situation with additional LIRR service, East Side Access would make modifications to Harold Interlocking. These modifications would reduce track crossings and create the added capacity and flexibility required for construction and operation of the new LIRR service. As a consequence of these required improvements, it would also reduce existing operational conflicts.

The proposed work at Harold Interlocking would essentially separate the tracks used by Amtrak and LIRR. When completed, Amtrak would travel on tracks separated from the LIRR Main Line, passing some sections of LIRR track in cuts and tunnels, and passing other sections on new track. New crossovers and switches would provide much greater operating flexibility for LIRR trains entering and leaving the East River tunnels. East of 43rd Street and just outside Sunnyside Yard, some new LIRR tracks would travel on a new viaduct structure beside the existing raised tracks until approximately 48th Street.

## **SUBSTATIONS**

Six electric substations, connected to local utilities, would supply electric power to LIRR trains serving GCT. Each substation would be located in an existing structure and/or underground, at the following locations:

- In existing GCT space between East 51st and 52nd Streets just west of Park Avenue in Manhattan;
- Beneath 54th Street (Option 1) or 55th Street (Option 2) west of Park Avenue in Manhattan;
- In the existing 63rd Street Tunnel ventilation shaft at 63rd Street and Second Avenue in Manhattan;
- In the existing 63rd Street Tunnel ventilation shaft and an adjacent new underground structure, between the seawall along Roosevelt Island's western East River shore and the roadway;
- In the existing 63rd Street Tunnel ventilation shaft in Queensbridge Park in Queens; and
- At approximately 41st Avenue and Northern Boulevard in Queens.

## VENTILATION FACILITIES

Ventilation plants would provide fresh air to East Side Access's tunnels and underground spaces, including passenger areas. The ventilation plants would also remove smoke in the event of a fire. During normal train operations, a continuous air path would be open from street level down to the tunnel. During a fire emergency or periods when trains had to stop in the tunnel, fans would be turned on to move air into and out of the tunnel. Since Option 1 and Option 2 would have different station layouts in GCT and different track alignments approaching GCT, these two options have different ventilation plans in Manhattan.

### *MANHATTAN VENTILATION PLANTS*

#### *Option 1*

Option 1, the station in the existing lower level at GCT, would create four ventilation plants in Manhattan, to ventilate the new LIRR trainshed in GCT, the tunnels under the west side of Park Avenue, the loop track under the east side of Park Avenue, and the approach to the 63rd Street Tunnel:

- At 47 East 44th Street, replacing an existing 5-story building. This ventilation facility would serve the LIRR portion of the GCT trainshed;
- Under East 54th Street between Park and Madison Avenues;
- Under East 54th Street between Park and Lexington Avenues; and
- At Second Ave and East 63rd Street, within the existing 63rd Street Tunnel ventilation plant.

The below-grade ventilation facilities would be under the street, and would place gratings and street-level maintenance/exit hatches in the sidewalk. In addition, Option 1 would involve reconstruction work at the existing NYCT ventilation facility beneath 53rd Street between Park and Madison Avenues.

#### *Option 2*

Option 2, the deeper station at GCT, would also have four ventilation plants to ventilate the Manhattan tunnels, but two of them would be in different locations than in Option 1. (No ventilation would be required for loop track tunnels on the east side of Park Avenue, since this option would not use a loop track.) Option 2 would construct ventilation plants in the following locations:

- At 47 East 44th Street (similar to Option 1). Under Option 2, this plant would also include the mechanical equipment required to provide climate control for this option's new lower-level mezzanine and half of the new platform and track area;
- Within the lower level of GCT from 48th to 49th Street;
- Under 55th Street between Park and Madison Avenues; and
- At Second Avenue and 63rd Street (same as Option 1).

In addition to the four Manhattan tunnels ventilation plants, Option 2 would require a number of additional air supply shafts to ventilate the new LIRR cross passageways and mezzanine. Each cross passageway and each section of the mezzanine would require a minimum of one

intake shaft and one exhaust shaft. The size of the shafts depends on the final configurations of the spaces and the total number of shafts to be employed. There are four possible types of ventilation shafts that may be employed, depending on the availability of suitable above-ground space:

- Gratings in the street or sidewalk;
- Vents on the roofs of existing buildings above the trainshed;
- Grills or louvers on the facades of existing buildings above the trainshed. These new grills would be at least 6 feet above the sidewalk level; or
- Kiosk-type pylons installed in an open plaza or sidewalk, which would have either a hooded opening or a louvered opening.

While specific sites have not yet been determined, these ventilation shafts would be sited as close as possible to directly above the area being ventilated. The intake and exhaust shafts for the cross passages and the mezzanine would be located in the vicinity of Park and Madison Avenues between 43rd and 49th Streets.

#### *ROOSEVELT ISLAND AND QUEENS VENT PLANTS*

On Roosevelt Island, an existing facility would be used to ventilate the lower level of the 63rd Street Tunnel. In Queens, one new ventilation facility would augment four existing 63rd Street Tunnel ventilation facilities (at 41st Avenue and Vernon Boulevard, 12th Street, 23rd Street, and 29th Street). The new East Side Access facility would be created beneath LIRR's Yard A, on top of the new tunnel structure. The facility would extend from beneath the new LIRR Yard A building on Northern Boulevard across the width of Yard A.

#### **REPLACEMENT MAINTENANCE AND STORAGE FACILITIES**

As described in the discussion of the Preferred Alternative above, East Side Access would displace existing rail activities from Madison Yard at GCT and from Yard A at Sunnyside. New replacement rail yards would be provided for both MNR and NYAR. In addition to the relocation of MNR from Madison Yard to Highbridge Yard, described below, the Preferred Alternative would reconstruct a former train storage yard in the eastern portion of GCT's lower level for MNR use.

#### *RELOCATION OF METRO-NORTH TO HIGHBRIDGE YARD*

The new East Side Access facilities at GCT would occupy Madison Yard, an area currently used by MNR for midday storage, light maintenance, and cleaning. Both options under consideration would displace Madison Yard: Option 1 would use the space for its platforms and tracks, while Option 2 would use this area for LIRR's mezzanine.

To replace Madison Yard, East Side Access would create new midday storage tracks and maintenance facilities for MNR trains at Highbridge Yard, in the Bronx. Highbridge Yard had been previously selected by MNR as a preferred location for future midday storage of trains. The new facilities, on land currently owned by Metro-North, would be sufficient to meet MNR's projected needs through 2020.

Currently, Highbridge Yard is a partially used rail yard located on the eastern shore of the Harlem River north of Macombs Dam Bridge and south of High Bridge. Specifically, the yard

Street) on the north. The yard has limited tracks, located between the Harlem River and MNR's Hudson Line tracks. The Oak Point Link freight line runs through the yard as well. MNR currently uses the approximately 20-acre yard for storage and construction staging.

A number of improvements to Highbridge Yard would be made to replicate operations currently conducted at Madison Yard. The new Highbridge Yard complex would include the following:

- A storage yard for storage and servicing of electric trainsets. This yard would have six tracks, with the capacity to store up to 11 electric trainsets during the midday. In total, the new Highbridge Yard facility would have the capacity to store approximately 90 train cars, sufficient to handle MNR's projected need;
- Two runaround tracks (east and west) and new lead tracks at the north ends of the yard to allow connections from both directions;
- A Car Appearance Facility, consisting of a 900-foot-long building covering two tracks. This facility would be used for periodic cleaning and repair of the interiors of MNR trains;
- Two employee station platforms with an enclosed overpass;
- Employee automobile parking;
- A materials storage area; and
- New fencing and pole-mounted lighting.

In a separate endeavor, the Oak Point Link freight line would be relocated to the west side of the yard along the edge of the Harlem River prior to the reconstruction of Highbridge Yard.

The overall plan for Highbridge Yard also includes additional elements *to be constructed by Metro-North* that would not be constructed as part of the *East Side Access Project*, such as an enclosed train washer facility and various tracks and servicing facilities for *dual mode (diesel and electric)* trains. Because these facilities are not part of the existing Madison Yard, they are not included as components of the new Highbridge Yard replacement facilities of the Preferred Alternative. *However, the effects of the additional train activity associated with these facilities are analyzed in this EIS.*

#### *RELOCATION OF NEW YORK & ATLANTIC RAILWAY*

The new East Side Access service would also displace NYAR's operations from Yard A in Sunnyside. As described earlier, NYAR currently uses Yard A as a rail car storage and maintenance facility. With new service to GCT, LIRR would use all of Yard A for midday storage and maintenance of LIRR trains that serve GCT. The Preferred Alternative calls for the relocation of NYAR operations from Yard A to two of three replacement rail yards, all located in Queens adjacent to the LIRR Montauk Branch tracks. *As part of the East Side Access Project*, NYAR would *create* replacement railcar storage tracks for 61 cars (or 3,500 feet of storage track), *most likely* at Blissville Yard, and a replacement railcar maintenance shop, *most likely* at Fresh Pond Yard. *The Maspeth Yard site is no longer under consideration, but remains in this document for comparison purposes.* NYAR has been involved with East Side Access planning decisions and supports the project plans for new storage tracks in Blissville Yard and a maintenance shop in Fresh Pond Yard.

### *Blissville Yard*

Blissville Yard is located in Blissville, Queens, less than a mile from Yard A. It is just north of Newtown Creek and east of Dutch Kills (see Figure 2-21). Currently unused, Blissville Yard is being considered as a possible location for replacement rail car storage. Four to six unelectrified storage tracks would have to be constructed, each approximately 1,400 feet in length (to provide a minimum of 3,485 feet of storage track), to store 80 to 90 freight cars. In addition, two hand thrown switches, one each at the east and west ends of the yard, would be installed connecting the yard to the Montauk Branch, along with security fencing and pole-mounted lighting.

### *Maspeth Yard*

Maspeth Yard is located in Maspeth, Queens, approximately 1½ miles east of Blissville Yard adjacent to the Montauk Branch LIRR tracks. The yard runs along Rust Street near the intersection with Maspeth Avenue. Maspeth Yard is an active rail yard, currently used by NYAR as a storage facility and staging area for freight cars hauling debris removed from the Third Water Tunnel construction project. The four storage tracks at the yard connect to the Montauk Branch mainline tracks at the east end of the yard. A former connection at the west end of the yard was removed several years ago.

Maspeth Yard was considered as a possible *alternative to Blissville Yard* for replacement rail car storage. Four additional storage tracks would have to be constructed, each approximately 1,400 feet long, between the existing northerly yard track and the Montauk Branch tracks (see Figure 2-22). In addition, a hand-thrown crossover connecting the west end of the yard to the Montauk Branch would also be installed. *However, as noted above, NYAR supports development of the rail car storage space at Blissville rather than Maspeth Yard.*

### *Fresh Pond Yard*

Fresh Pond Yard and Junction are located in Glendale, Queens, at the intersection of LIRR's Montauk Branch and the Conrail freight tracks, approximately three miles east of Maspeth Yard. Fresh Pond Yard consists of a west yard and an east yard, divided by the Conrail bridge. Fresh Pond Yard is the major freight facility on the NYAR/LIRR system; the location where NYAR receives cars from Conrail's Oak Point Yard in the Bronx, which receives freight from the entire country. NYAR marshals the freight cars at Fresh Pond, and uses the yard for storage as well. NYAR's headquarter offices are also located in a trailer in Fresh Pond Yard.

The yard is being considered as a location for the replacement maintenance shop, which would be sited at the current location of NYAR's headquarters in the center of the east yard (see Figure 2-23). The new maintenance shop would include the following components:

- Approximately 6,000 square feet of area with two side-by-side service bays;
- Tracks connecting to the LIRR Montauk Branch; and
- Administrative offices for NYAR employees.

## **OPERATIONAL ASPECTS**

The Preferred Alternative would increase peak hour service to Manhattan by approximately 45 percent over No Action conditions. Service would be added throughout the LIRR system as access to Manhattan's East and West Sides is provided. Over the next 20 years, LIRR would experience a 40 percent increase in its electric fleet. This increase is a result of a number of factors in addition to the planned service to GCT, including: ridership growth, modifications to the

interior configurations of cars to meet ADA requirements (resulting in fewer seats in new cars), an increase in the number of spare vehicles, and a need to reduce non-revenue (deadhead) car miles. A description of the additional service is provided below. Infrastructure for the overnight storage of trains required to support the new growth is described in the next section.

#### *INCREASING PEAK DIRECTION SERVICE*

The Preferred Alternative would create new LIRR service to GCT at all hours of the day. During the AM peak hour, it would operate 24 electric trains to GCT and maintain the current service level of 37 trains to Penn Station. No significant changes in the dual mode or diesel territory service would occur under the Preferred Alternative.

During the AM peak hour, the following service to GCT would be added:

- Three to six trains each on the electric portions of the Babylon Branch, Port Washington Branch, and Ronkonkoma Branch;
- Two trains each on the Hempstead Branch, Long Beach Branch, and Far Rockaway Branch.

#### *INCREASING REVERSE COMMUTE SERVICE*

Reverse commute service on most branches throughout the LIRR system would more than double as compared to the No Action Alternative. To accommodate GCT service, the Preferred Alternative would increase peak hour reverse commute service from 11 trains under the No Action Alternative to 24 trains; with 12 trains operating from Penn Station and 12 trains operating from GCT. Service to Main Line destinations, Ronkonkoma, and Huntington stations, would be provided at 20-minute intervals from Manhattan during peak periods (currently, reverse peak trains run approximately hourly).

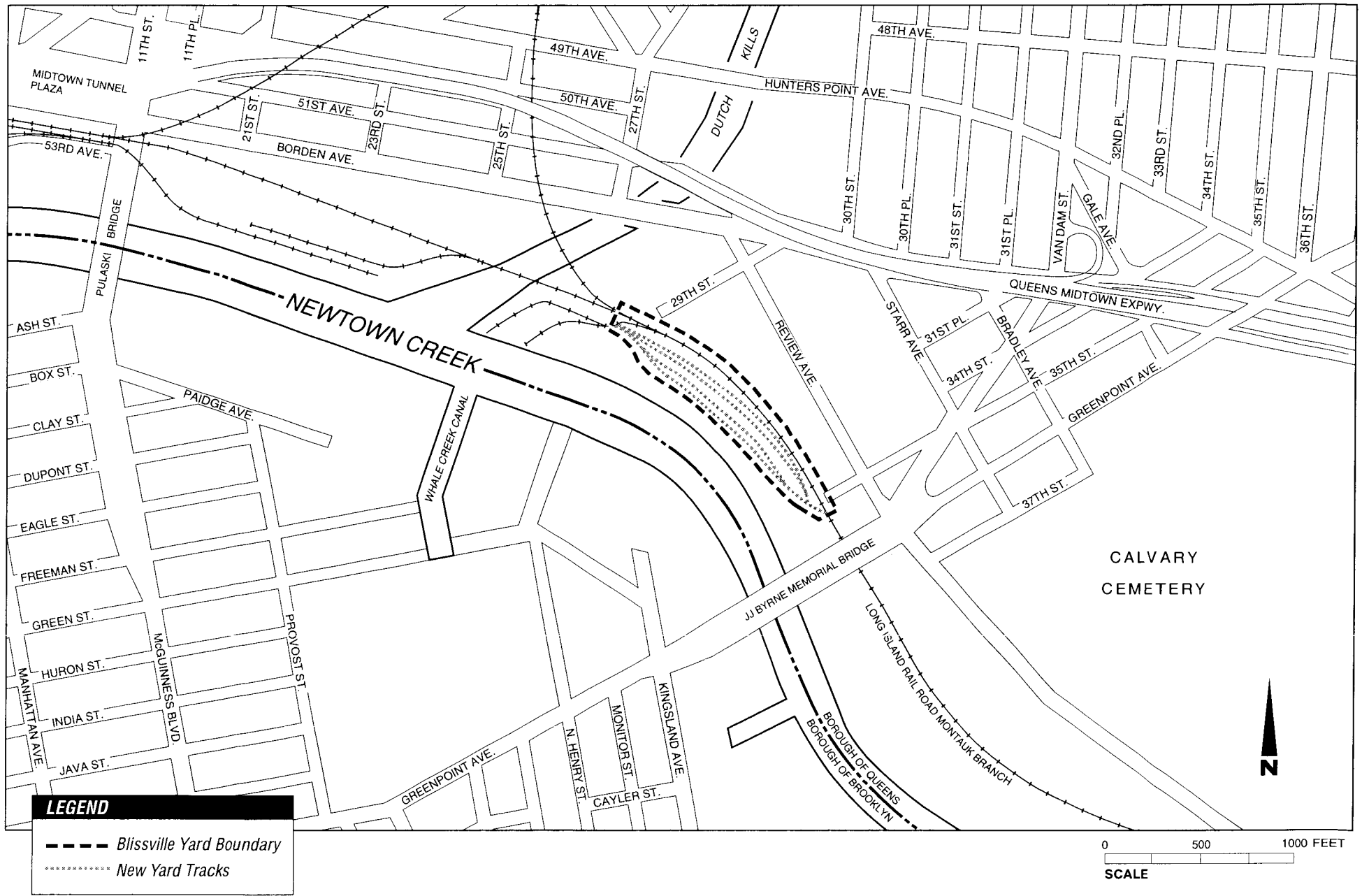
#### **ROLLING STOCK**

*The Preferred Alternative would require an estimated total of 220 additional electric cars over No Action conditions to operate the new service to GCT. The cost of this new rolling stock is included as part of the East Side Access Project.*

#### **MAINTENANCE AND STORAGE**

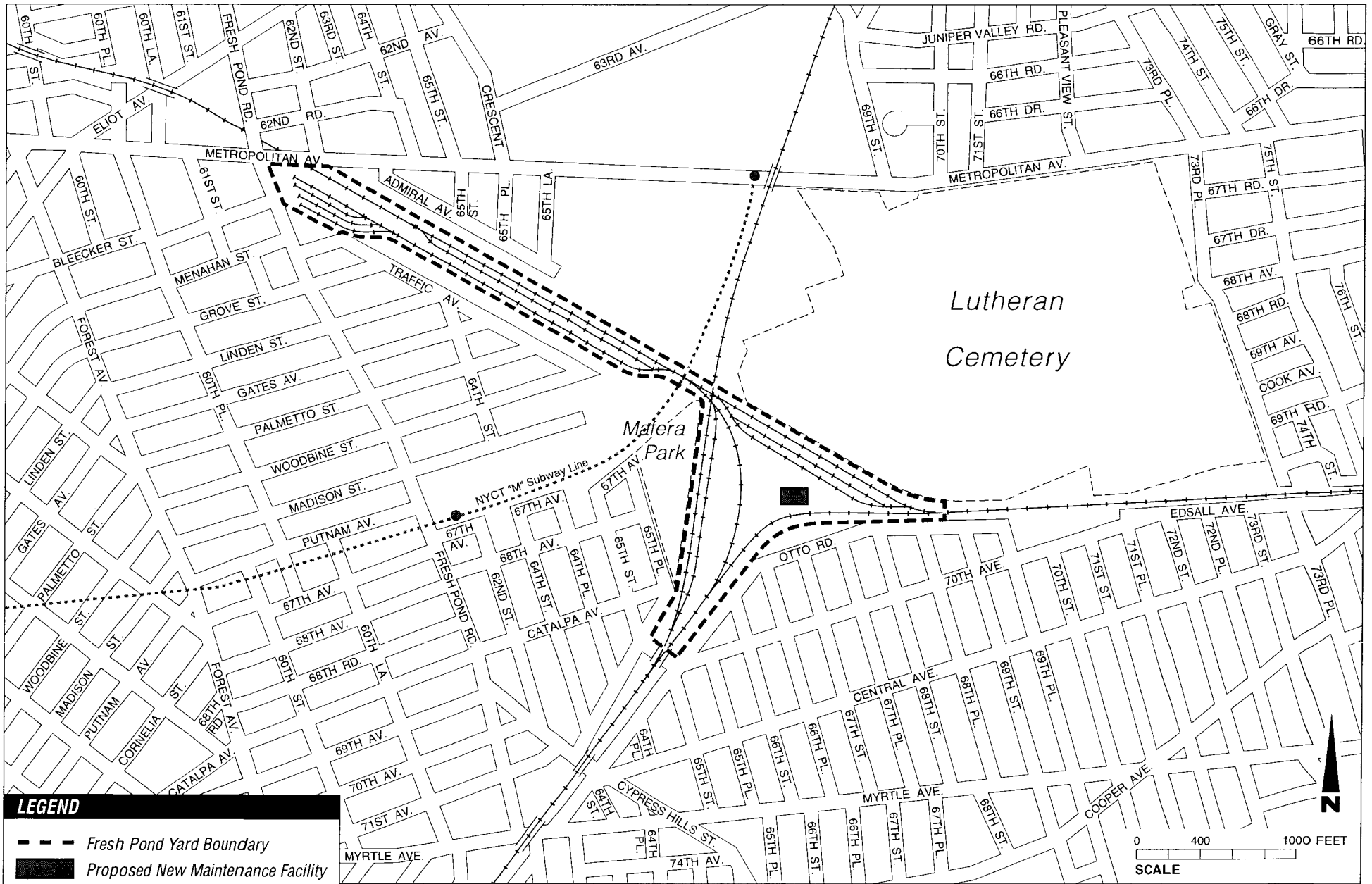
*With the East Side Access Project, maintenance of the electric fleet would continue to be performed at the 20 existing facilities and the new facility that the Preferred Alternative would construct in Yard A, where trains would be serviced during a midday layover.*

*As discussed in the description of the No Action Alternative (see page 2-3), LIRR will pursue a future long-term plan for new rail storage yards. By adding some 220 new electric vehicles to the LIRR's fleet, the East Side Access Project would increase the total number of electric trains in operation in the LIRR system. It would therefore cause an incremental expansion of the amount of additional storage space required to meet LIRR's future needs. In particular, without the East Side Access Project, the LIRR projects a need to expand within the existing LIRR storage yard facilities at Port Washington, Babylon, Ronkonkoma, and Long Beach and to construct a new yard on the Port Jefferson Branch. With the East Side Access Project, there would be a need for additional electric rail storage space for the 220 new vehicles for nighttime storage and related servicing activities—overnight cleaning, ordinary servicing (toilets, etc.), and visual inspection.*









*As part of the LIRR's long-term capital planning process, LIRR will identify potential sites for new rail storage yards for its future electric fleet on a branch-by-branch basis. In so doing, the railroad will seek to maximize operational efficiency wherever possible. This can be done by siting yards in the eastern portion of the branch, thereby reducing the number of miles trains have to travel without passengers and increasing the amount of time available for servicing and cleaning trains. To allow an efficient operating plan for the LIRR overall and to enhance the operations of the new East Side Access service, it is anticipated that two new yards would be developed to meet the need for six tracks on the Babylon/Central Branch and five tracks on the Main Line/Ronkonkoma Branch and that the projected new Port Jefferson Branch yard would be twice as large as in the No Action scenario (16 tracks rather than 8 tracks).*

*The process of identifying potentially appropriate sites for the new yards and selecting preferred alternatives for those sites will be conducted by the LIRR. Planning for the storage yards is currently at a very early stage. At present, no site on any LIRR branch has the status of a preferred yard location. The discussion of potential storage yards that was provided in the DEIS is no longer applicable. That discussion was based on eight potential yard sites identified by the LIRR through preliminary screening analyses. Since that time, however, the LIRR has continued to explore the possible alternatives for developing new yard space and has determined that it will initiate a new site selection process for any new yards to be developed. (As a result, the discussion of the screening process for the Long Island storage yards that was included in section E in Chapter 2 of the DEIS is no longer applicable and is not included in this FEIS.)*

*The decision whether to go forward with one or more additional storage yards, where the yard or yards should be located, and the details concerning expansion of the existing yards will be the subject of a tiered environmental review. Under a tiered NEPA EIS approach, the lead agency focuses on the issues that are ripe for decision in the first-tier document and prepares further environmental analyses as elements of the subsequent actions become adequately defined.*

*The steps that will be followed in the storage yard development process, to be conducted through a comprehensive public outreach process, are as follows:*

- 1. Develop site selection evaluation criteria*
- 2. Identify a list of potential sites*
- 3. Perform screening analyses*
- 4. Identify potential environmental impacts*
- 5. Develop mitigation measures.*

*As the new storage yards would not be developed for a number of years, the public outreach and environmental review process for these yards has not yet begun. Therefore, at this time, it is not possible to identify the specific locations of new yards to be developed to meet the LIRR's future needs.*

*Because the increased need for storage yards is one of the foreseeable environmental impacts of the East Side Access Project, this FEIS includes an analysis of that impact. The FEIS identifies seven sites in Nassau and Suffolk Counties to illustrate the types of impacts that could occur with development of new yard facilities on Long Island. As noted above, this is a change from the DEIS, which described those sites as part of the site selection*

process for new LIRR storage yards. It should also be noted that an eighth site, at Hazeltine in the Town of Huntington, Suffolk County, was also described in the DEIS but is not included in this FEIS. This site has been eliminated because the DEIS identified significant adverse impacts associated with the site's proximity to residential neighborhoods and because of community input received during the public comment period for the East Side Access Project's DEIS. (Chapter 28, "Comments and Responses on the Draft Environmental Impact Statement," provides details on the comments received.)

The seven illustrative yard sites are described below and shown in Figure 2-24. The analyses of these sites presented in later chapters in no way preclude or replace the full site selection or environmental review process that will be conducted in the future by the LIRR for the new storage yards.

The seven illustrative sites are as follows:

- Cerro Wire (Port Jefferson Branch). The Cerro Wire site is located between the Hicksville and Syosset stations (see Figure 2-25). This site is located just north of Exit 43A of the Long Island Expressway, east of Robbins Lane, in the village of Syosset, within the larger Town of Oyster Bay, Nassau County. The analysis in the FEIS assumed development of 16 electrified, stub-ended tracks adjacent to the LIRR right-of-way. In addition to the tracks, 80 employee parking spaces would also be constructed. This yard would be twice the size of the yard that would be required on the Port Jefferson Branch under the No Action Alternative (which would be 8 tracks; see pages 2-1 through 2-4 of this chapter for a discussion of the No Action Alternative). A yard at Cerro Wire could be configured to diverge south of the LIRR right-of-way and occupy just the Cerro Wire property. In this case, the group of tracks would extend approximately 800 feet south of the right-of-way, with each track approximately 1,050 feet long. Alternatively, a yard at Cerro Wire could instead run parallel to the LIRR right-of-way to encompass land on both the Cerro Wire property and the former Syosset Landfill just to its east. However, construction under the layout involving the landfill would entail some special construction techniques to protect the landfill cap. (In addition, it should be noted that the Cerro Wire property is currently being considered for development of a regional shopping mall, the Mall at Oyster Bay. On June 13, 2000, the Town Board of the Town of Oyster Bay passed a resolution accepting as complete the FEIS for the Mall at Oyster Bay, dated May 2000, which was prepared pursuant to SEQRA.)
- Babylon (Babylon/Central Branch). This site on the Babylon Branch is located in West Islip, in the Town of Islip, Suffolk County. It is east of the Babylon LIRR station and south of the existing Babylon Yard between NYS Route 231 on the west, Higbie Street on the east, the LIRR right-of-way on the north, and Union Boulevard on the south (see Figure 2-26). The analysis in the FEIS assumed development of a six-track yard at this site with approximately 15 parking spaces for employees. As in the No Action Alternative, Tracks 11 through 17 of the existing yard would also be lengthened to accommodate 12-car trains within the railroad's property. In addition, to avoid potential adverse effects, it was assumed that a visual barrier would run along the southern boundary of the yard.
- Yaphank East (Main Line/Ronkonkoma Branch). This site on the Main Line/Ronkonkoma Branch is east of Yaphank station to the north of the LIRR right-of-way (see

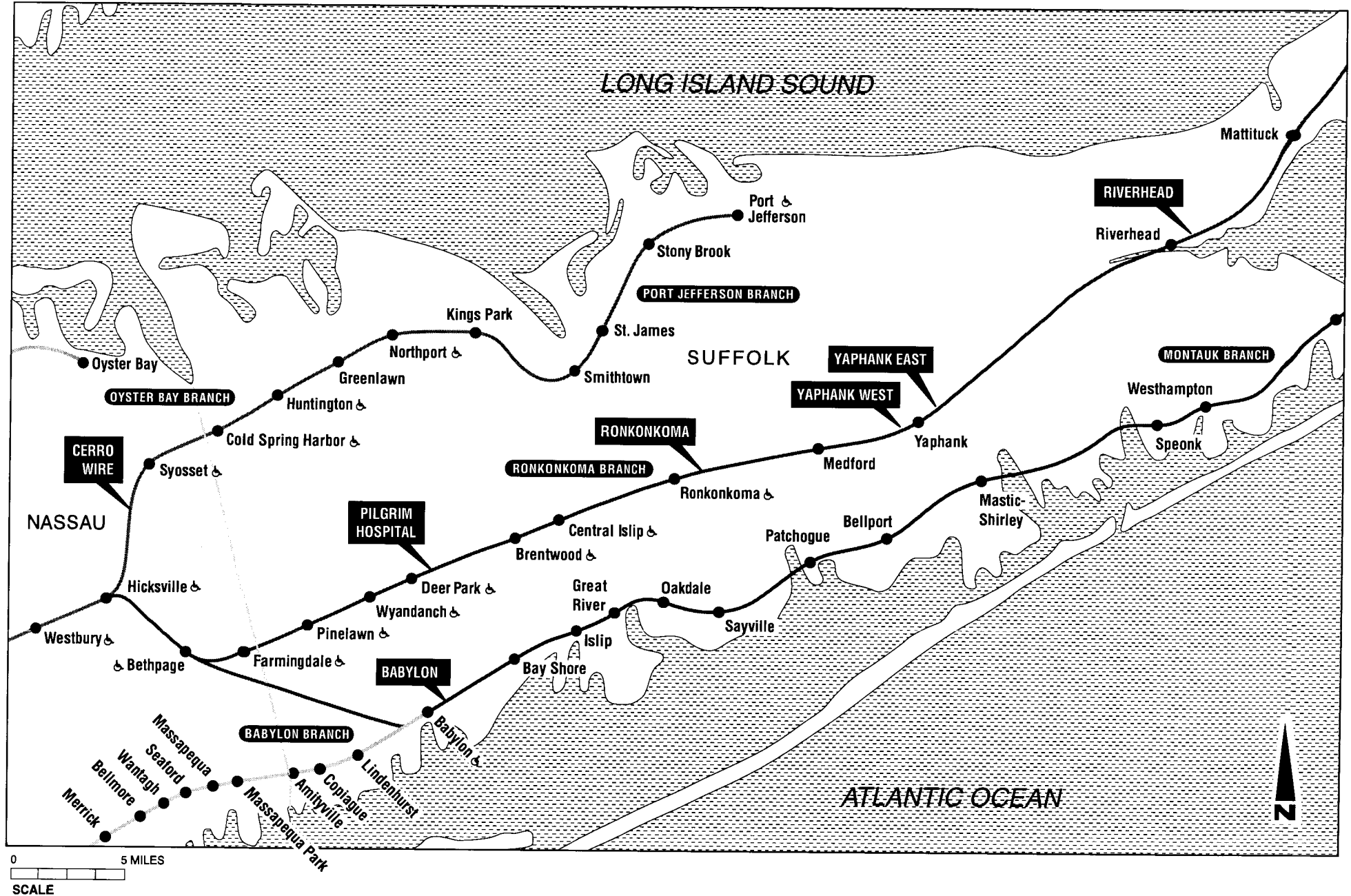
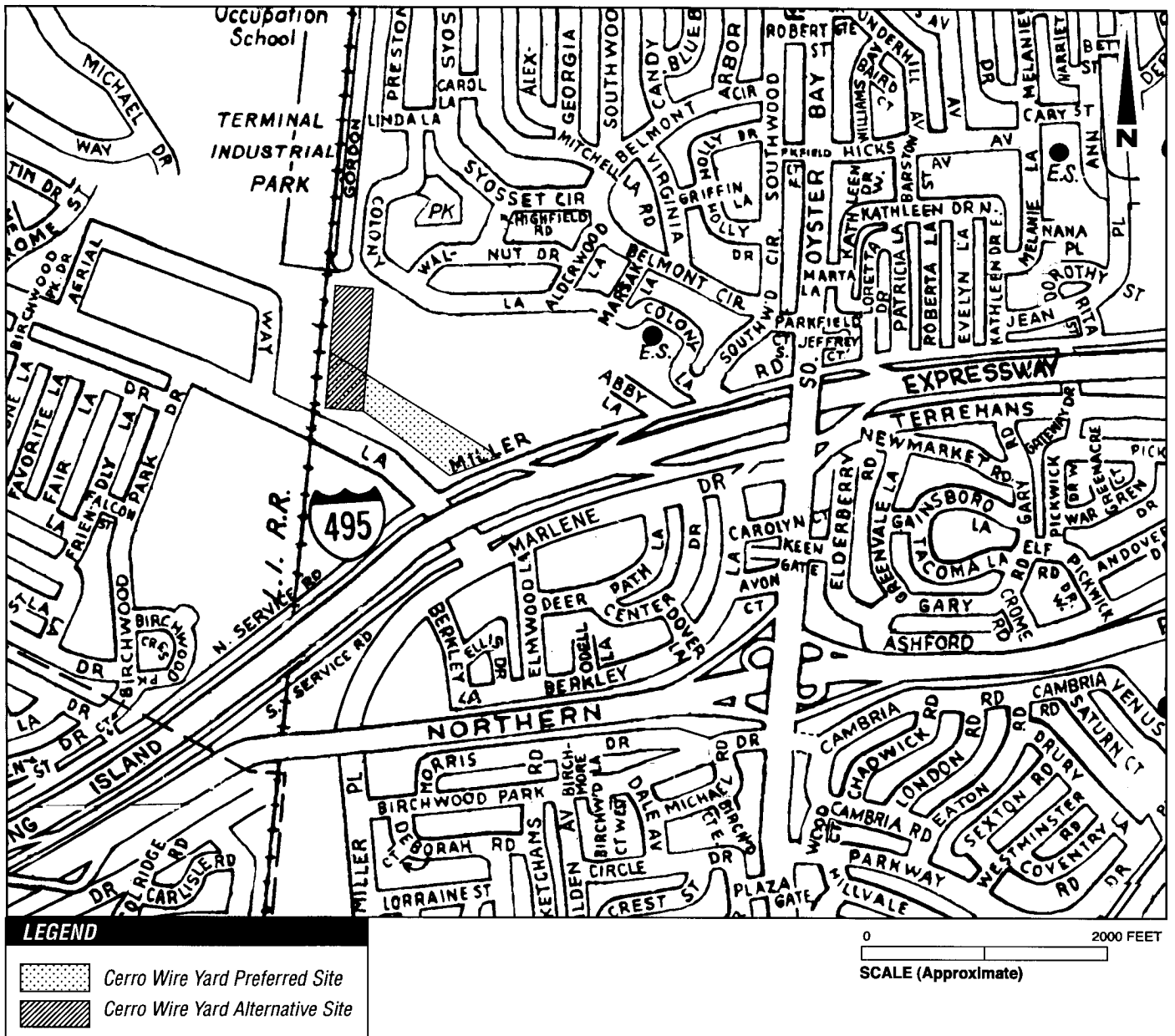
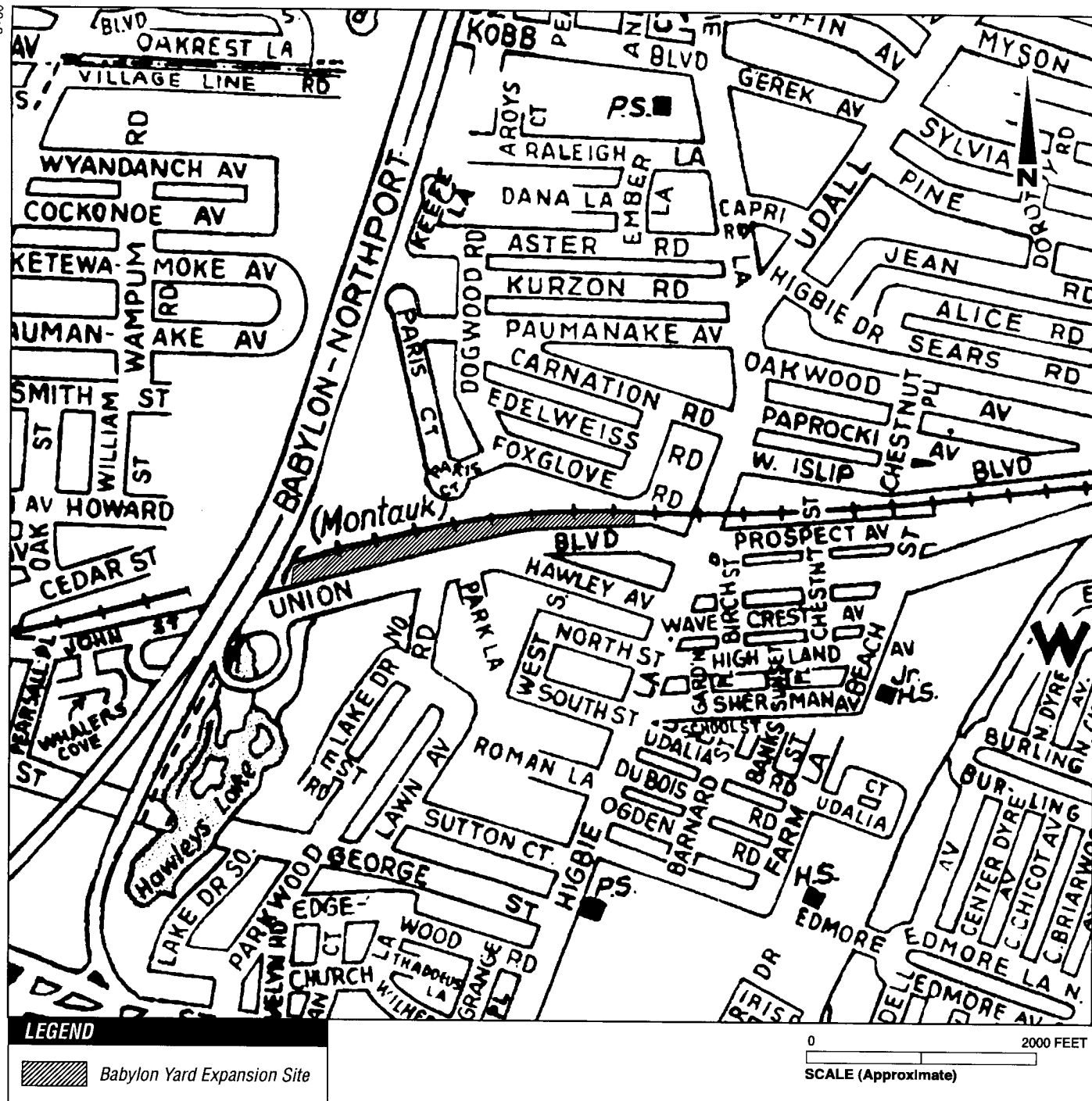
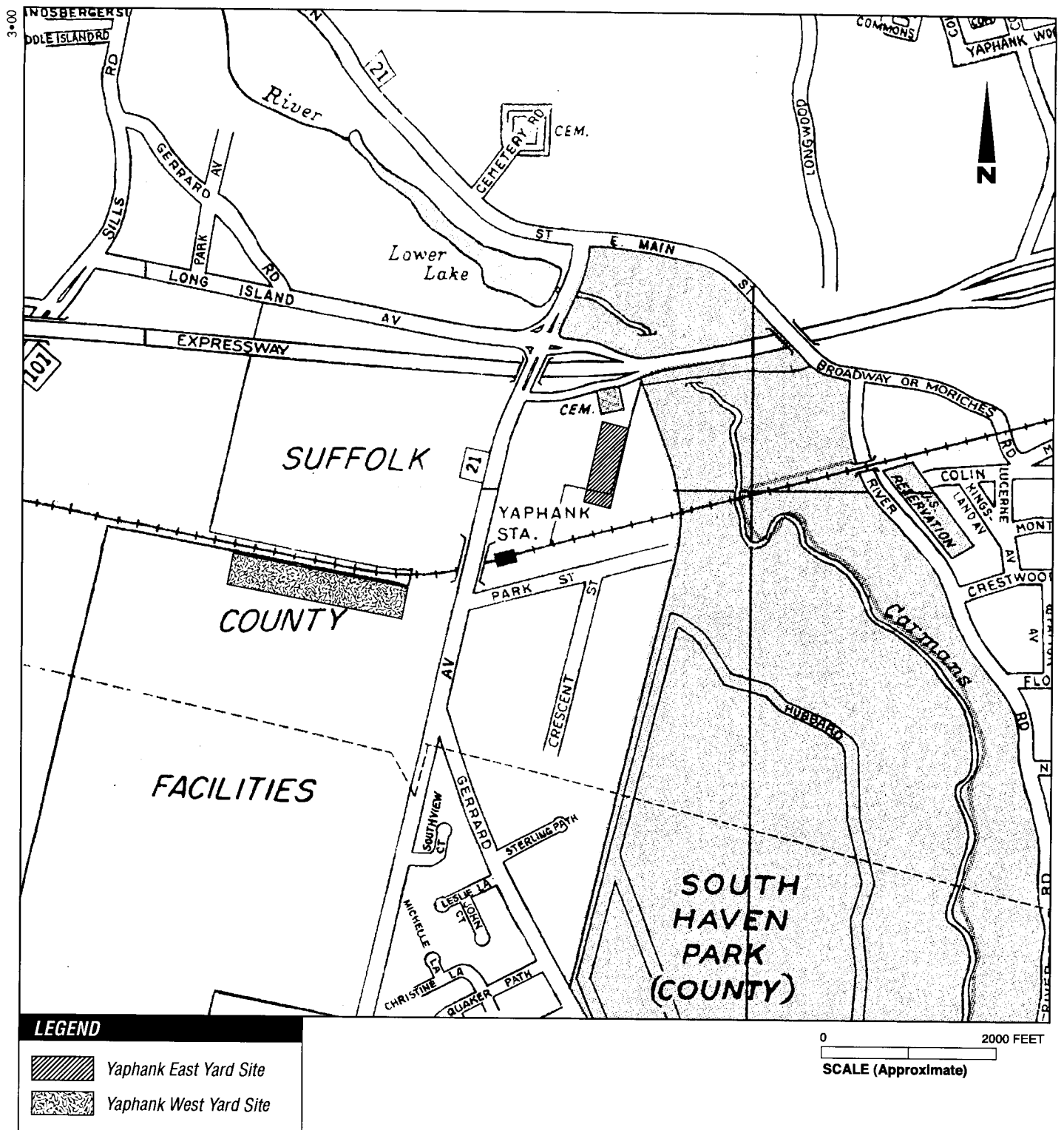


Figure 2-24

### Long Island Storage Yards Sites Analyzed







occupies an eastern portion of the Suffolk County Department of Public Works facility and part of a privately owned tree farm. The analysis assumed that up to five stub-ended tracks and approximately 15 employee parking spaces would be provided.

- *Yaphank West (Main Line/Ronkonkoma Branch)*. This site, also on the Main Line/Ronkonkoma Branch in Yaphank, is undeveloped land to the west of the existing Yaphank station (see Figure 2-27). The analysis in the FEIS assumed that development of this site would include a double-ended yard with up to five tracks and employee parking.
- *Ronkonkoma (Main Line/Ronkonkoma Branch)*. This site is located just south of the existing LIRR yard at Ronkonkoma, in the Town of Islip, Suffolk County. The analysis assumed that, in addition to the two new tracks that would be constructed within railroad property for the No Action Alternative at the existing Ronkonkoma Yard, three electrified stub-ended tracks, a yard lead, and approximately 15 employee parking spaces would be constructed to the south of the yard on a largely vacant parcel of land (see Figure 2-28).
- *Pilgrim Hospital (Main Line/Ronkonkoma Branch)*. The Pilgrim Hospital site is located approximately 1 mile north of the LIRR right-of-way, about ½ mile east of the Deer Park LIRR station, in the Town of Brentwood, Suffolk County, on the Main Line/Ronkonkoma Branch (see Figure 2-29). The analysis in the FEIS assumed that three electrified stub-ended storage tracks would be constructed on the site, perpendicular to the LIRR right-of-way. An existing, approximately mile-long, un used track that leads from the LIRR right-of-way to the location of the proposed yard would be replaced and restored for use as a lead track. The group of tracks would extend from just north of Mercedes Way (approximately 4,600 feet north of the LIRR right-of-way) to just south of Community College Road (approximately 7,100 feet north of the right-of-way). At their widest point, the tracks would extend 100 feet from west to east. The yard would also include parking spaces for 15 employees.
- *Riverhead (Main Line/Ronkonkoma Branch)*. This site on the Main Line/Ronkonkoma Branch is approximately 1.6 miles east of the Riverhead LIRR station, between Sawmill Creek and Indian Island County Park, just west of Route 105/Cross-River Drive (see Figure 2-30). The site is located in the Town of Riverhead, Suffolk County. The analysis in the FEIS assumed that three double-ended, non-electrified tracks would be constructed on the site, adjacent to the LIRR right-of-way. These tracks would serve dual-mode locomotive trainsets formerly stored at other yards (especially Ronkonkoma Yard) on the Ronkonkoma Branch, freeing up storage space at those yards for electric trains. The analysis did not assume that tracks between Riverhead and Ronkonkoma would be electrified, because of the prohibitive cost of electrifying the nearly 25 miles of track from Ronkonkoma. The group of tracks would extend approximately 100 feet south of the right-of-way, with each track approximately 1,050 feet long. In addition to the tracks, 15 employee parking spaces would be constructed. The analysis also assumed that, to mitigate visual and noise effects, walls would be constructed around the yard and on the north side of the LIRR right-of-way.

A number of branches would have sufficient capacity to store East Side Access trains without expanding beyond what is planned in the No Action Alternative. These branches include: Oyster Bay, Hempstead, West Hempstead, Far Rockaway, and Long Beach. On the Port Washington Branch, to accommodate additional peak hour service to and from Great Neck the Great Neck “pocket” track—a single storage track currently being constructed just east of the Great Neck



station—would have to be doubled in length. This lengthened siding would be used to store additional Great Neck-to-Penn Station trains. The new portion of the pocket track would be 1,050 feet long and would be constructed almost entirely within the LIRR right-of-way.

## COSTS

Capital costs take into account only the costs associated with the system improvements required for each option of the Preferred Alternative. As outlined in Table 2-3, capital costs for the Preferred Alternative are estimated at \$4.7 billion for Option 1 and \$4.3 billion for Option 2. Total capital costs include costs of construction, costs for engineering and management, costs to purchase additional rolling stock (220 new M-7 rail cars), and costs for property acquisitions and easements required for the project.

**Table 2-3**  
**Capital Cost Estimates: Preferred Alternative Option 1  
and Option 2**

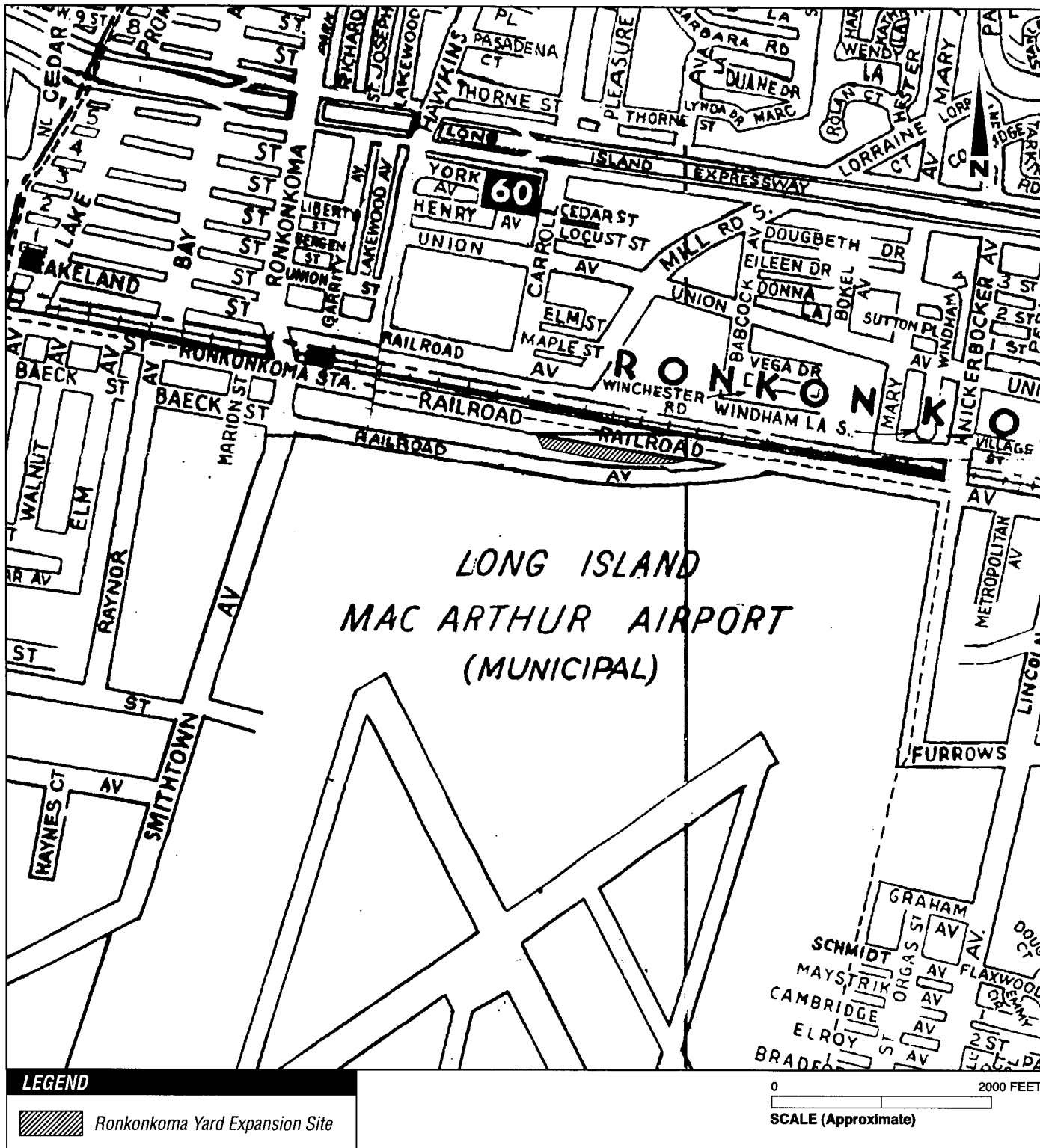
Component	Option 1 Cost (in millions)	Option 2 Cost (in millions)
Construction, Engineering, and Management	\$3,521.4	\$3,288.6
Right-of-way	400.0	265.0
Rolling Stock	790.5	790.5
<b>Total ESA Capital Costs</b>	<b>\$4,711.9</b>	<b>\$4,344.1</b>
<b>Notes:</b> The above table reflects the costs of the Preferred Alternative. Other improvements that benefit operations for LIRR or other transit operators and also benefit East Side Access could also be built while the Preferred Alternative is under construction. Funding for those items, which include extensions of MTA NYCT tunnel structures and storage yards on Long Island for nighttime storage of LIRR trains, would be funded by the agencies that most directly benefit from the improvements and not as part of the total ESA capital costs. Costs are escalated to midpoint of construction.		

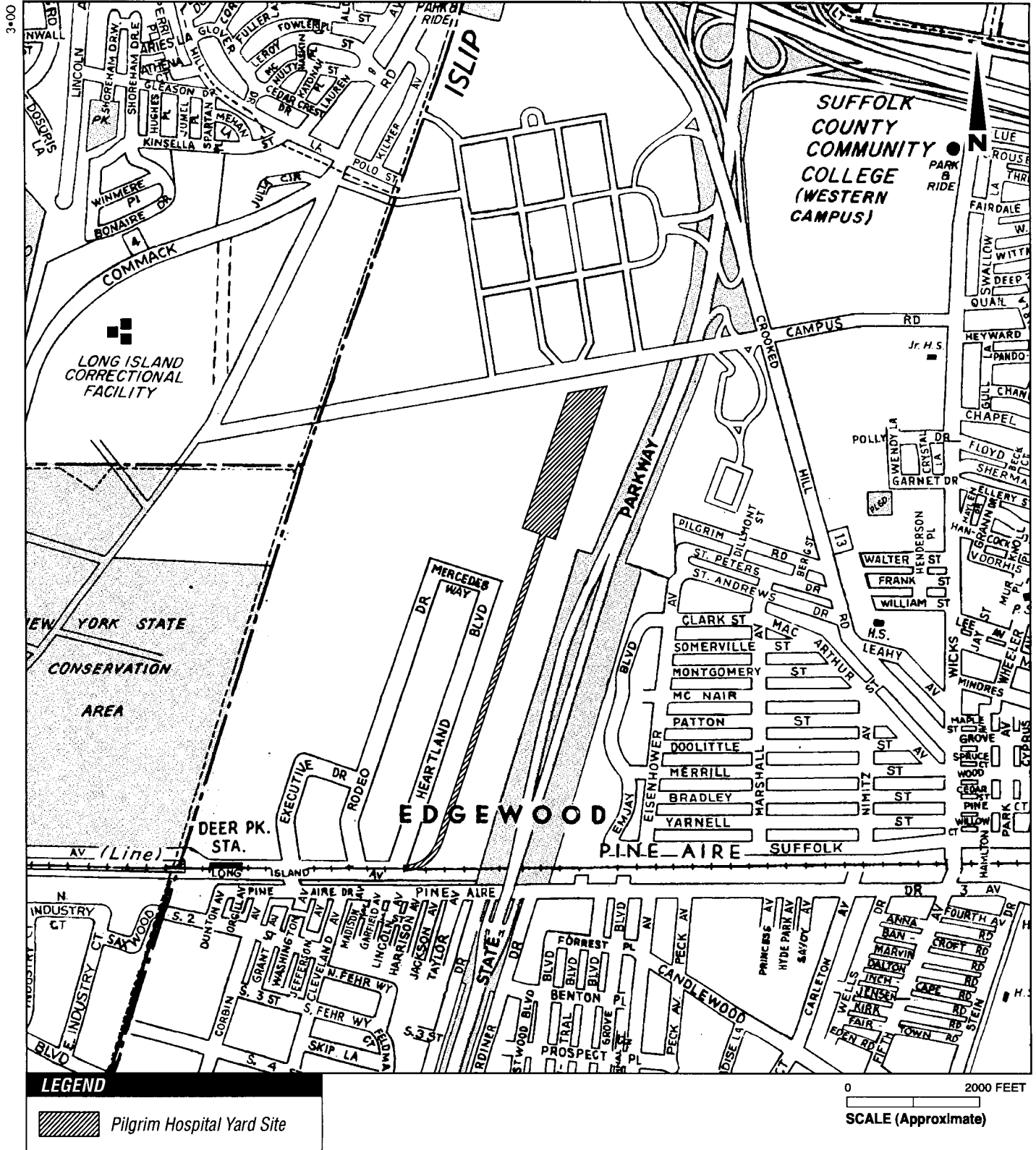
## E. BACKGROUND TO PROJECT PLANNING

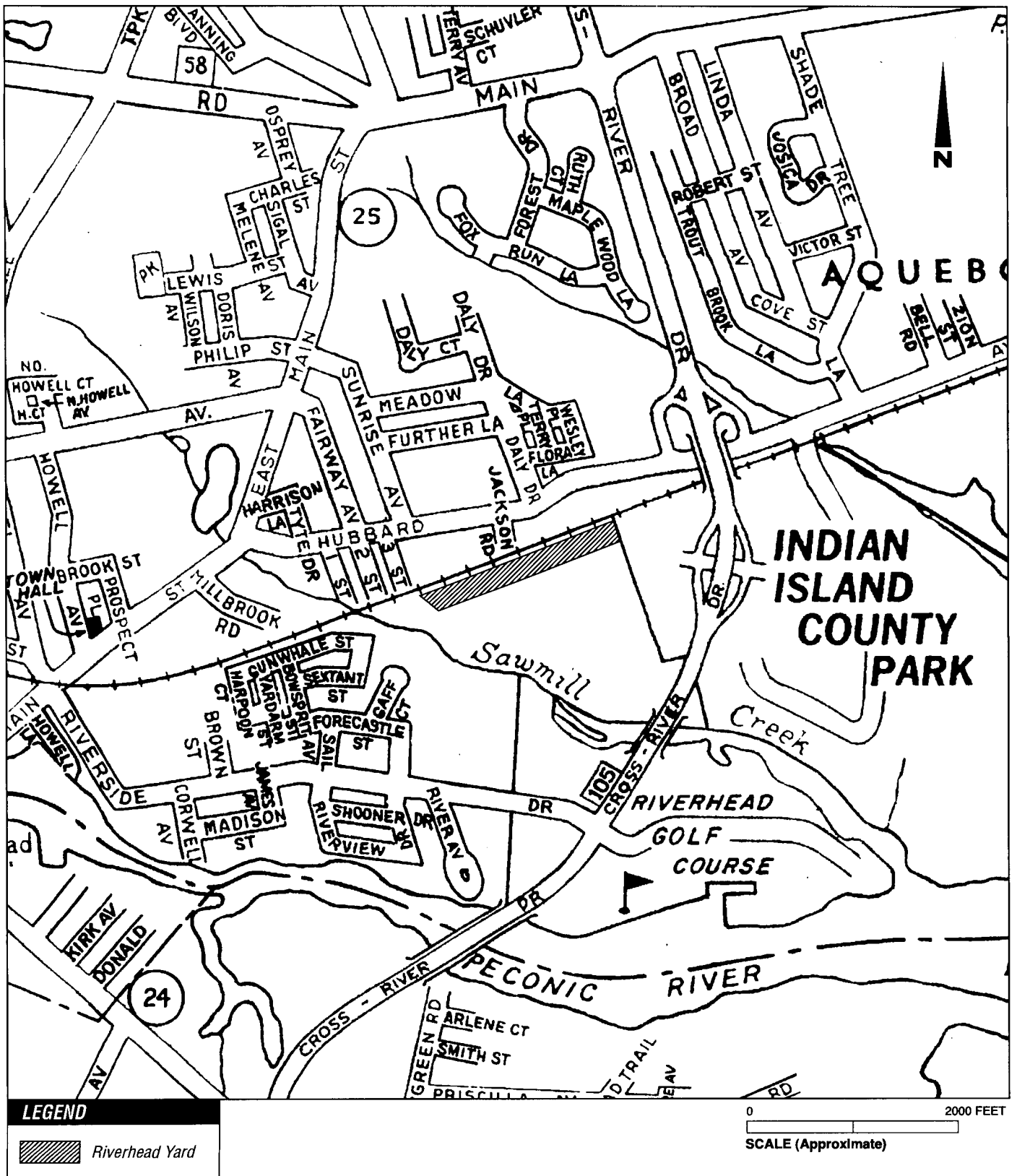
As discussed in the introduction to this chapter, the alternatives in this EIS were identified mostly during the MIS phase of project planning through a comprehensive evaluation process. In addition, more recent planning identified the need for storage yards on Long Island, which led to an evaluation of alternative sites for these facilities. This section summarizes the two evaluation processes. For greater detail, refer to the appendices.

### PROJECT ALTERNATIVES SCREENING AND EVALUATION

The identification of alternatives that could meet the project goals began in January 1995. The process involved several years of discussions, outreach, scoping meetings, and research geared toward developing scenarios that would improve transit access to East Midtown Manhattan and increase the capacity of LIRR. A Technical Advisory Committee aided in the review of technical data, and a Citizens Advisory Committee provided a formal mechanism for obtaining a broad base of community input relating to project goals.







To bring focus to the evaluation, it was performed in two stages. Once all options were identified, these “long list” alternatives were screened for their performance in meeting project goals and their potential for technical and operational feasibility. The remaining “refined list” alternatives that did not fail the screen were subject to a more detailed evaluation, so that project alternatives for further review in the EIS could be identified.

### *IDENTIFYING ALTERNATIVES*

The extensive public planning efforts elicited a wide variety of ideas for improving access to the east side of Manhattan—from building a new rail terminal in East Midtown, to running LIRR trains on Manhattan subway lines, to expanding subway service beyond New York City limits. With all of these accumulated ideas and thoughts in mind, the project team compiled a preliminary list of alternatives designed to capture the universe of ideas about how to improve access to East Midtown Manhattan. This was the “long list” of project alternatives, shown in Table 2-4, consisting of 21 separate “Build” alternatives and two alternatives required for consideration under environmental and transportation regulations: the No Action Alternative, which includes improvements to the transportation system that will be implemented regardless of the construction of East Side Access; and the Transportation Systems Management (TSM) Alternative, which consists of transportation improvements that could be implemented without intensive capital expenditures. Regulations require that any selected alternative be evaluated in comparison with both the No Action and TSM Alternatives. As such, these two alternatives were not subject to the MIS screening of “long list” alternatives, but carried through to the next level.

### *SCREENING OF THE LONG LIST BUILD ALTERNATIVES*

The first screening of “long list” alternatives eliminated any alternative that either did not meet the project’s two critical study goals—to reduce travel time to East Midtown Manhattan and to relieve train traffic congestion at Penn Station—or was deemed either technically or operationally infeasible. In order to conduct the initial screening, information was gathered and organized in the following categories: right-of-way requirements, track work, utilities, structures/tunnels, traction power, signals and communications, stations, parking, maintenance facilities/depots, vehicles, operating plans, impact on other operators, environmental issues, and community issues/concerns, among others. The names of each alternative are adaptations of names used in the MIS, while the numbers for each alternative have been retained from the MIS.

Many of the alternatives did not meet the basic project goals in that they could not provide the required service to East Midtown Manhattan (several brought passengers to 59th or 63rd Street on the East Side before continuing south on the West Side, others did not go to the East Side at all, still others could not offer a one-seat ride to the East Side, etc.) or relieve train traffic congestion at Penn Station (some actually would have increased congestion, others did not divert enough passengers away from Penn Station to make a difference). The results of the long list screening was a “refined list” of alternatives for further evaluation (see Table 2-5):

- Bus/HOV Lane Alternative (Alternative 3);
- All East Side Terminal Alternatives (Alternatives 4A-4D);
- East Side Rail Station with New East River Tunnel Alternative (Alternative 6); and
- Long Island City Intermodal Transfer Station Alternative (Alternative 7D).

Table 2-4  
Screening of Long List Alternatives

Alternatives	Meets Study Goals	Technically Feasible	Operational Issues		Further Evaluation?
			Sufficient Capacity	Institutionally and Operationally Feasible	
<b>1. No Action</b>					Yes
<b>2. TSM</b>					Yes
<b>3. Express Bus/HOV Lane*</b>	No	Yes	No	Yes	Yes
<b>4. LIRR East Side Terminal</b>					
A. GCT via the Main Line	Yes	Yes	Yes	Yes	Yes
B. GCT via the Montauk Branch	Yes	Yes	Yes	Yes	Yes
C. Third Avenue via the Main Line	Yes	Yes	Yes	Yes	Yes
D. Third Avenue via the Montauk Branch	Yes	Yes	Yes	Yes	Yes
<b>5. East Side Rail Station</b>	No	Yes	No	No	No
<b>6. East Side Rail Station with New East River Tunnel*</b>	Yes	Yes	No	No	Yes
<b>7. Sunnyside Transfer Station</b>					
A. Queens Plaza**	Yes	Yes	Yes	Yes	No
B. Harold Interlocking	No	No	No	No	No
C. 42nd LRT to Sunnyside	Yes	Yes	No	No	No
D. Long Island City Intermodal	Yes	Yes	Yes	Yes	Yes
<b>8. Subway Operation Over LIRR Tracks</b>					
A. Port Washington Branch	No	Yes	Yes	No	No
B. Inner Port Washington and Rockaway Beach Branches	No	Yes	Yes	No	No
C. Atlantic Branch	No	Yes	Yes	No	No
D. Atlantic Branch Shuttle	No	Yes	Yes	No	No
<b>9. LIRR Operation Over NYCT Tracks</b>					
A. Port Washington Branch/BMT	No	Yes	Yes	No	No
B. Port Washington Branch/IND	No	Yes	No	No	No
C. Atlantic Branch to IND	No	Yes	No	No	No
D. Atlantic Branch—Clockwise	No	Yes	No	No	No
E. Atlantic Branch—Counter-Clockwise	No	Yes	No	No	No
F. Atlantic Branch to Fulton Street Line	No	Yes	No	No	No
<b>Notes:</b>					
* These alternatives passed to more detailed evaluation by exception. See text discussion.					
** Similar to Long Island City Intermodal Alternative, but not as beneficial. See text discussion.					

Table 2-5  
Refined Long List Alternatives Evaluation Summary

Alternative	Impact on O&M Costs	Capital Cost Range (billions of 1997 dollars)	2020 Average Weekday LIRR Linked Trips (vs. No Action)	2020 Average Weekday Incremental Riders Using New Facility (vs. No Action)	Impact on Travel Time	Travel Time Savings (Person-Hours/Day vs. No Action)	Comfort and Convenience	Revenue Impacts	Community Impacts	Economic Impacts	Environmental Impacts	Automobile Vehicle Miles Traveled (Average Daily Reduction vs. No Action)	Impacts on Social Equity
1. No Action	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2. Transportation System Management	■	0.30	3,680	8,554	+	2,646	+	+	0	+	+	88,333	0
3. Bus/HOV Lane	■	0.3	8,456	11,800	■	4,712	■	■	■	+	■	22,584	0
4. LIRR East Side Terminal:													
A. GCT via Main Line	■	2.8-3.0	23,909	179,257	++	10,801	+++	+	■	++	+	293,473	++
B. GCT via Montauk Branch	■	3.7-4.4	20,434	167,895	+	5,960	+	+	■	++	■	254,875	++
C. Third Avenue Terminal via Main Line	■	3.3-3.9	16,893	137,933	++	6,498	++	+	■	++	■	209,813	+
D. Third Avenue Terminal via Montauk Branch	■	4.2-5.0	13,905	131,352	+	2,410	+	+	■	++	■	179,475	++
6. New East River Tunnel and East Side Rail Station	■	2.8-3.0	15,364	174,759	++	12,612	++	+	■	++	■	232,524	+
7D. Long Island City Intermodal Transfer Station	■	0.4	2,008	16,662	+	3,914	+	++	+	++	0	33,455	++

**Notes:**

\* Costs are presented in 1997 dollars; NA = not applicable in this analysis. +++ = Substantial benefit. ++ = Moderate benefit. + = Slight benefit. 0 = No change, little impact. ■ = Moderate adverse impact potential. ■ = High to very high adverse impact potential.

*EVALUATING THE REFINED LIST OF ALTERNATIVES*

The refined list of alternatives was subjected to more detailed evaluation aimed at identifying the most appropriate alternative(s) for consideration in the EIS based on a set of quantitative and qualitative criteria that included issues of performance, cost, community effects, social equity, and environmental impact. The TSM Alternative was included in the evaluation for comparison purposes, and the No Action Alternative served as the baseline against which effects of candidate alternatives were measured.

Information was developed for the following criteria: order-of-magnitude capital cost range; operating and maintenance costs; revenues, ridership, quality of service, economic impacts, community impacts, environmental impacts, and social equity impacts. Some of the criteria were assessed quantitatively using capital cost estimates. Quantitative assessments also used preliminary ridership forecasts for the year 2020; this gave information for each alternative on the trips it would generate, riders who would use new facilities, travel time savings, and reduction in vehicle miles traveled (VMT). In other categories, where quantification was not available or inapplicable, alternatives were rated according to impacts (from +++ for the greatest positive impacts, to --- for the greatest negative impacts).

The evaluation of the refined list of alternatives (see Table 2-5) resulted in the selection of GCT via the Main Line Alternative 4A as the Preferred Alternative. Each of the other alternatives was judged to be inferior to GCT via the Main Line for the following reasons, as detailed in the appendix:

- The primary reason for eliminating the Express Bus/HOV Alternative (3) was that it would not have drawn enough riders to alleviate congestion at Penn Station. Secondly, it would have adverse impacts on local communities, the environment, and social equity.
- The three other East Side Terminal Alternatives (4B, 4C, and 4D) would all have cost considerably more than GCT via the Main Line, while drawing significantly fewer riders. Accordingly, 4B, 4C, and 4D would reduce automobile VMT by less than GCT via the Main Line and would be less beneficial to the environment.

The East River Tunnel with East Side Train Station Alternative (6) was fatally flawed in that it would not have relieved train traffic at Penn Station. Further analysis showed that it actually would have negative effects on train traffic at Penn Station and would have disrupted the community significantly during construction.

- Similar to the Express Bus/HOV alternative, the Intermodal Transfer Station Alternative (8D) would not draw enough riders to warrant its selection. Furthermore, it would not improve quality of service or reduce travel times significantly.

On June 25, 1998, a NYMTC resolution affirmed that the Long Island Transportation Corridor MIS study was complete and the GCT via the Main Line Alternative was the Locally Preferred Alternative. The GCT via the Main Line Alternative was named the Preferred Alternative, and together with the No Action and TSM Alternatives, it is evaluated further in this EIS. ❖