Chapter 2: Project Alternatives

A. INTRODUCTION

The East Side Access Project is proposing a new facility on 50th Street between Park and Madison Avenues that would extend through the block to 49th Street. This 50th Street facility would provide ventilation for the East Side Access Project’s new terminal at Grand Central and for a portion of its new tunnels, and would provide a loading dock for deliveries and waste removal from the terminal. In addition to the ventilation and loading dock functions, other program elements required for the East Side Access Project that have been planned for the site include a cooling tower, emergency generators and fuel tank, and electrical substations to support operations at Grand Central Terminal. In addition, the 50th Street facility is proposed for use as a construction access point to facilitate delivery of workers and materials for the construction of the East Side Access Project’s new passenger terminal.

This chapter describes the range of alternatives that have been considered for the 50th Street facility and related ancillary functions throughout the course of design development for the East Side Access Project. It describes the design analyzed in the East Side Access Project’s FEIS (Alternative A, the no action alternative) and the three build alternatives for the 50th Street facility (Alternative B, C, and Preferred Alternative D). The chapter also describes other alternatives that were considered but found to be impracticable during development of designs for the three build alternatives.

B. DESIGN HISTORY

Since the Final Environmental Impact Statement (FEIS) was published and the Record of Decision (ROD) was issued in 2001, the design of the East Side Access Project has progressed. In the course of design development, the need for modifications to the project’s ventilation facility near 50th Street was identified. An above-ground structure for the East Side Access Project was not analyzed in the FEIS; a ventilation facility was included below ground in the vicinity of 50th Street. In addition, at the time of the FEIS, it was assumed that the new terminal would be supported by an existing loading dock at Depew Place. However, this loading dock is currently operating near capacity and it was determined that it would not support the needs of increased activity resulting from the LIRR service. As a result, a site for an above-ground structure to house the necessary ventilation functions and a new loading dock was identified.

A new design was developed in 2002 for an above-ground 50th Street facility that incorporated ventilation functions and a loading dock for East Side Access. To maximize the property’s use and provide other support functions for the East Side Access Project, the new design included additional elements. The 2002 design was presented and evaluated in a 2002 Technical Memorandum. Following that 2002 design, additional design modifications have since been made and were presented and evaluated in the January 2005 EA. Both those supplemental NEPA documents evaluated a 50th Street facility in light of the analysis presented in the FEIS to determine if any additional significant adverse impacts not disclosed in the FEIS would result.
from the 50th Street facility design revision. The supplemental documents prepared for the 50th Street facility and related public meetings held to discuss the facility were as follows:

- **February 2002**: Technical memorandum analyzing a 50th Street facility that incorporated ventilation shafts and a loading dock, in addition to other program elements (referred to in this document as the “2002 interim design”).

  In the 2002 interim design, the 50th Street facility was proposed to include elevated ventilation intakes and exhausts on the facility’s front and rear façades and associated shafts inside to serve the ventilation intakes and exhausts; a loading dock with two bays for 40-foot trucks, a bay for vans or small trucks, a bay for a dumpster/compactor, and a freight elevator to move goods between the East Side Access concourse and the loading dock; a rooftop cooling tower and associated chiller equipment within the facility; and emergency generators.

  In this 2002 design modification to the ventilation system, the design for the East Side Access Project’s tunnel ventilation fans was also modified from the FEIS design. The tunnel ventilation fans were moved from the project’s concourse area at Grand Central Terminal to a new location in a large cavern area to be excavated beneath approximately 51st Street. The cavern area was to be excavated to create room for the interlocking where tracks would split to access the upper and lower level platforms in the new East Side Access Terminal.

- **February 2004**: Public meeting to review proposed design for 50th Street facility that incorporated ventilation shafts and tunnel ventilation fans, loading dock, and the other ancillary project elements (Alternative B). Public comments were accepted through March 9, 2004.

- **January 2005**: Environmental Assessment (EA) that analyzed two build alternatives (Alternatives B and C) for a new 50th Street facility that incorporated ventilation shafts and tunnel ventilation fans, loading dock, and the other ancillary project elements. The second alternative (Alternative C) incorporated a through drive loading dock in response to public comments received during the 2004 comment period.

  The January 2005 EA presented several design modifications for the proposed 50th Street facility from the 2002 design. In the first set of design modifications, the facility was modified, in response to comments raised by neighboring building owners, to remove the air exhausts from the rear of the facility. In addition, the 50th Street facility was modified to incorporate the tunnel ventilation fans, to eliminate the need for excavation of the large cavern proposed in the interim design beneath approximately 51st Street. Instead, the design for that portion of the tunnels (referred to as the interlocking) was modified to eliminate the need for such extensive rock excavation, reducing risk and meeting schedule requirements. Consequently, the first set of design modifications for the 50th Street facility incorporated the tunnel ventilation fans. This revised 50th Street facility is analyzed throughout this revised supplemental EA as Alternative B.

  A second alternative was developed for the 50th Street facility, in response to concerns raised by neighboring building owners in the 2004 public meeting. This alternative incorporates drive-through access to the building’s loading dock. The entrance drive for this building would be on 49th Street, and the exit would be on 50th Street. Trucks would no longer need to back in to the loading dock, and all trucking activities could be fully contained within the 50th Street facility. Other than the loading dock operations, this alternative incorporates the same basic functions as the 50th Street facility without drive-
through access. Because of the need to accommodate the entrance drive in the ground-floor loading dock area, however, some of these functions were shifted to different locations within the facility and the chiller equipment located in the first alternative without a through drive was removed from the alternative. This alternative was analyzed in the January 2005 EA as the preferred alternative for a 50th Street facility; it is analyzed throughout this revised supplemental EA as Alternative C.

- **February 2005**: Public meeting to review January 2005 EA and design for 50th Street facility. Public comments were accepted through March 8, 2005.

- **Spring 2006**: This revised supplemental EA, which analyzes three build alternatives for a new 50th Street facility—the two alternatives included in the January 2005 EA and a new Preferred Alternative D developed in response to public comments—incorporating ventilation shafts, a loading dock, and public open space, while relocating the cooling tower, fuel tank and substations to other locations not at the 50th Street site.

In response to public comments made during the February 2005 public meeting, a new design for the 50th Street facility has been developed that substantially modifies the preferred alternative identified in the January 2005 EA. The design relocates a number of functions either below grade, to the concourse, or to an adjacent building. The above-ground size of the new 50th Street facility would be substantially smaller than the facility evaluated in the 2005 EA under either alternative—about half the width and less than half the height—and would include a landscaped public open space on the remainder of the site. This modified alternative is the new Preferred Alternative D for the 50th Street facility analyzed throughout this revised supplemental EA.

A timeline of events related to the development of the 50th Street facility is shown on Figure 2-1. Table 2-1 provides a comparison of Alternative A (the design analyzed in the FEIS), Alternative B, Alternative C, and Preferred Alternative D.
### Table 2-1
*50th Street Facility Program Elements: Comparison of Alternatives*

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Exhaust shafts (one for tunnel and one for station)</td>
<td>Sidewalk grate on 50th Street between Park and Madison Aves.</td>
<td>Station and tunnel exhaust shafts at 50th Street site, with elevated exhaust louvers facing the street</td>
<td>Station and tunnel exhaust shafts at 50th Street site, with elevated exhaust louvers facing the street; station exhaust on west façade at northwest comer of building; tunnel exhaust on front façade</td>
<td>Station and tunnel exhaust shafts at 50th Street site, with elevated exhaust louvers; station exhaust at front of building facing street; tunnel exhaust on east façade of building</td>
</tr>
<tr>
<td>Fresh air intake</td>
<td>Sidewalk grate on 49th Street between Park and Madison Aves.</td>
<td>Station and tunnel fresh air intake at elevated locations at 50th Street site</td>
<td>Station and tunnel fresh air intake at elevated locations at 50th Street site</td>
<td>Station and tunnel intake fresh air at elevated locations at 50th Street site</td>
</tr>
<tr>
<td>Tunnel ventilation fans</td>
<td>Underground in a cavern excavated from rock in the vicinity of 48th/49th Street</td>
<td>Above grade in 50th Street facility</td>
<td>Above grade in 50th Street facility</td>
<td>Partially below-grade at the 50th Street facility</td>
</tr>
<tr>
<td>Loading dock</td>
<td>Existing Grand Central Terminal loading dock at Depew Place</td>
<td>Ground floor of 50th Street building with access to and from the dock via two doors on 50th Street</td>
<td>Ground floor of 50th Street facility; access to the dock from 49th Street using a through drive; exit from the dock via one door on 50th Street</td>
<td>Ground floor of 50th Street facility; access to the dock from 49th Street using a through drive; exit from the dock via one door on 50th Street</td>
</tr>
<tr>
<td>Cooling tower</td>
<td>Rooftop of Grand Central Terminal</td>
<td>Rooftop of 50th Street facility</td>
<td>Rooftop of 50th Street facility</td>
<td>Rooftop of adjacent Colgate-Palmolive Building at 300 Park Avenue</td>
</tr>
<tr>
<td>Emergency generator</td>
<td>No specific location identified</td>
<td>Upper floor of 50th Street facility</td>
<td>Upper floor of 50th Street facility</td>
<td>Basement/concourse level beneath 50th Street facility</td>
</tr>
<tr>
<td>Fuel oil storage tanks for generator</td>
<td>No specific location identified</td>
<td>Basement level of 50th Street facility</td>
<td>Basement level of 50th Street facility</td>
<td>ESA concourse; not at 50th Street facility</td>
</tr>
<tr>
<td>Emergency generator exhaust</td>
<td>No specific location identified</td>
<td>Elevated louvers on north façade of 50th Street facility facing street</td>
<td>Elevated louvers on north façade of 50th Street facility facing street</td>
<td>Exhaust from rooftop of adjacent Colgate-Palmolive Building at 300 Park Avenue</td>
</tr>
<tr>
<td>Public open space</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>New public open space, approximately 40 by 60 feet</td>
</tr>
<tr>
<td>Substations</td>
<td>No specific location identified</td>
<td>Two substations for building functions and signal room in 50th Street facility</td>
<td>Two substations for building functions and signal room in 50th Street facility</td>
<td>Two substations for building functions and signal room in concourse, not at 50th Street facility</td>
</tr>
<tr>
<td>Overall Building Size</td>
<td>None</td>
<td>80 feet along 50th Street, 153 feet tall</td>
<td>80 feet along 50th Street, 20 feet along 49th Street, 153 feet tall</td>
<td>40 feet along 50th Street, 20 feet along 49th Street, 62 feet tall</td>
</tr>
</tbody>
</table>
Ventilation Concept at 50th Street: Sidewalk grates on 49th and 50th Streets between Park and Madison Avenues (tunnel fans underground)

Technical Memorandum Assessing Potential Design Changes in Interim Design
50th Street Facility: Four-story facility for ventilation and loading dock (tunnel fans in concourse)

Public Meeting to Discuss Scope for Environmental Assessment
50th Street Facility: 153-foot-tall facility for ventilation and loading dock (tunnel fans in building)

Supplemental Environmental Assessment
50th Street Facility: 153-foot-tall facility for ventilation and loading dock with and without a through drive (tunnel fans in building)

Public Comment Period
Revised Supplemental Environmental Assessment
50th Street Facility: 60-foot-tall facility for ventilation and loading dock with public open space (tunnel fans relocated below grade)

Figure 2-1
50th Street Facility Timeline
C. ALTERNATIVE A (NO ACTION ALTERNATIVE)

DESCRIPTION OF DESIGN

The design for the East Side Access Project that was analyzed in the FEIS for East Side Access, published in March 2001, had different plans for a ventilation facility, goods delivery and trash removal, and placement of the cooling tower and other ancillary functions now proposed for the 50th Street facility. The design analyzed in the FEIS represents the baseline condition, or the no action alternative, for the environmental analyses in this revised supplemental EA.

The design analyzed in the FEIS included a ventilation facility at the northern end of the new East Side Access concourse in Grand Central Terminal, to provide ventilation to the northern portion of the concourse and the southern section of the train tunnels approaching Grand Central Terminal (see FEIS, pages 2-22 and 2-23). The ventilation facility was proposed to be located underground, with grates in the sidewalks along 49th Streets and 50th Streets between Park and Madison Avenues for intake and exhaust of air (see FEIS, pages 2-23 and 17-10). Fresh air intakes were proposed to be located in sidewalk grates along 49th Street and exhaust grates were proposed in the sidewalk along 50th Street.

The same ventilation shafts and grates were proposed to be used for both concourse and tunnel ventilation: under normal conditions, the grates would be used to provide ventilation to the concourse and caverns, but in emergency conditions, they would be used for tunnel ventilation instead. In addition, the FEIS noted that intake and exhaust shafts could be constructed at other locations, using gratings in the street or sidewalk, vents on the roofs of existing buildings, grills or louvers on the facades of existing buildings, or kiosk-type pylons installed in open plazas or sidewalks (see FEIS, page 2-23). The tunnel and station ventilation fans were proposed for a location within the lower level of Grand Central Terminal near 48th/49th Streets.

When the FEIS was prepared, the East Side Access Project’s design envisioned placing the cooling tower for the East Side Access Project’s heating, ventilation, and air conditioning (HVAC) system serving the concourse and platform area on the roof of the North Court of Grand Central Terminal. The existing Grand Central Terminal truck dock on Depew Place was proposed to be used for all new deliveries and trash removal generated by the East Side Access Project.

When the FEIS was prepared, the design of the East Side Access Project had not advanced sufficiently to include details on the placement of emergency generators or electrical substations, other than the substations providing traction power for trains.

DISADVANTAGES OF ALTERNATIVE A DESIGN

NORMAL AND EMERGENCY VENTILATION OF CONCOURSE AND TUNNELS

As described in Chapter 1, “Project Purpose and Need,” the FEIS design for the underground ventilation facility within the lower level of Grand Central Terminal at 48th/49th Streets would lead to compromised performance of station ventilation when both tunnel ventilation and station ventilation operate simultaneously.

In addition, placing ventilation intakes and exhausts in sidewalk grates would require extensive cut-and-cover street excavation and a costly relocation of Consolidated Edison underground
vaults and other utilities, including three water lines, six gas lines, two fire hydrants, three streetlights, two catch basins, and an electrical manhole.

Most important, placement of the air intakes at street level to ventilate the public spaces of the new East Side Access terminal would not be as reliable a source of clean, fresh air as elevated intakes. A reliable source of fresh air is of utmost importance since air will be circulated in the terminal through an “active” (or forced) ventilation system. Moreover, elevated air intakes located within a building owned and operated by the MTA would increase protection against the possible introduction of harmful substances into the air supply of the new East Side Access terminal.

GOODS MOVEMENT AND WASTE REMOVAL

The movement of trash, equipment, deliveries, and supplies between the loading dock and concourse in the FEIS design are compromised because (1) the existing truck dock on Depew Place is presently operating near capacity and cannot accommodate the additional demand associated with the East Side Access Project; and (2) the northern portion of the East Side Access passenger terminal would be located approximately ¼ mile from the Depew Place dock. Trucks making deliveries would therefore need to occupy the loading dock for long periods while materials are delivered into the terminal complex, which would further strain the capacity of the dock. In addition, given the long distances between the drop-off point and the destination of those materials, some drivers would likely avoid using the truck dock, and use handcarts to ferry goods from informal drop-off points at other entry points to the Grand Central Terminal complex. This would compound an existing problem: many deliveries being made to Grand Central Terminal by handcart using street-level passenger entrances instead of the Depew Place loading dock. Such deliveries create conflicts and safety hazards with passengers using the same entrances.

COOLING OF TERMINAL

When the FEIS was prepared, the East Side Access Project’s design envisioned placing the cooling tower for the heating, ventilation, and air conditioning system of the new East Side Access Terminal on the roof of Grand Central Terminal. However, following completion of the FEIS, Metro-North Railroad completed a simulation modeling effort to address ventilation problems in Grand Central Terminal. Very high temperatures resulting from a build-up of heat from idling trains exist on the platforms and in the train yards, particularly on the lower level. As a result of the study, Metro-North is proceeding with a permanent ventilation strategy that will utilize the North Court roof of Grand Central Terminal, precluding use of this space for the East Side Access cooling tower, as was assumed in the FEIS. This rooftop space is the closest and most appropriate space to address Metro-North’s pressing need. Consequently, a new rooftop location is needed for the East Side Access Project’s cooling tower.

D. ALTERNATIVE B (50TH STREET FACILITY WITHOUT THROUGH DRIVE)

DESCRIPTION OF DESIGN

Alternative B represents the plans for the 50th Street facility before design modifications made in response to public comments in early 2004 and 2005. In this alternative, a 50th Street facility would house the critical ventilation equipment, loading dock, and cooling tower required for the
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East Side Access Project. It would also house other ancillary facilities, including cooling equipment, electrical substations to support building functions, and emergency generators. The facility would be located on East 50th Street between Park and Madison Avenues on a site presently occupied by four low-rise (five- and six-story) buildings, and would also include underground ventilation shafts and a freight corridor located beneath a portion of 50th Street (see Figure 2-2). The four existing buildings, at 44, 46, 48, and 50 East 50th Street, would be acquired and demolished. In addition, an underground easement beneath 300 Park Avenue would be required for a portion of the shafts and freight corridor between the 50th Street facility and the concourse at Grand Central Terminal.

The roof of the 50th Street facility would be approximately 124 feet above street level, with a 29-foot-high screening wall around the rooftop cooling tower, for a total height of approximately 153 feet. The facility would have three basement levels, with the lowest level at the East Side Access passenger concourse level. The facility would have six levels above ground. The ground floor would have a truck loading dock; the upper floors would house emergency generators, electrical equipment, tunnel ventilation fans, and air intake and exhaust structures. A three-cell tunnel would connect the 50th Street facility with the passenger concourse. One cell would be used as a corridor for freight transport and the other two as separate ventilation shafts for the fresh air intake and exhaust. The fuel tank required to run the emergency generator would be located in the lowest basement level. The roof of the 50th Street facility would be occupied by a three-cell cooling tower. The facility would also include other ancillary rooms, including one for water supply and one for communications.

The bulk and massing of the 50th Street facility would be similar to that of commercial buildings in the area. It would have setbacks consistent with those required by the New York City Zoning Resolution for a commercial building developed on this site. A 20-foot rear yard would also be maintained, consistent with the zoning code. More information on the appearance of the building is provided in Chapter 5 (“Visual and Aesthetic Considerations”) of this revised supplemental EA.

The capital cost of Alternative B would be approximately $114 million, including construction of the facility, fit-out and equipment, associated underground work, and real estate acquisition costs.

Drawings of the 50th Street facility in this alternative are provided in Figures 2-3 and 2-4. Each project element is described more fully below.

VENTILATION OF CONCOURSE, Caverns, AND TUNNELS

The East Side Access Project’s ventilation system will include five ventilation structures in Manhattan, serving the new station and Manhattan tunnels, as well as additional structures on Roosevelt Island and in Queens. In Manhattan, vent structures will be at the following locations:

- In the vicinity of 38th Street on the west side of Park Avenue, at the southern end of the tail tracks;
- In a new structure at 47 East 44th Street, at the southern end of the new concourse and caverns;
- In the 50th Street vicinity, at the northern end of the new concourse and caverns and southern end of the Manhattan approach tunnels;
• Below street level in a cavern at East 55th Street, between Park and Madison Avenues, midway along the Manhattan tunnels; and

• At 63rd Street, at the northern end of the Manhattan tunnels (in an existing MTA vent structure).

Additional ventilation shafts would be provided in existing shafts at the Roosevelt Hotel at 46th Street, and in the building at 383 Madison Avenue (at 47th Street) that have been reserved for use by the East Side Access Project. These are the only remaining existing shafts suitable for use by the East Side Access Project when the buildings were constructed. Other existing ventilation shafts are already in use by Metro-North Railroad or do not meet the needs of the project. For example, a ventilation shaft is present in the Colgate-Palmolive Building at 300 Park Avenue, but this shaft is too narrow for use by the project.

The 50th Street facility would house the intake and exhaust ventilation shafts serving the northern half of the caverns and the northern portion of the concourse, between 47th and 50th Streets. Ventilation air for this area of the caverns and concourse would flow through these shafts, driven by fans located elsewhere. The station fans would be located in the East Side Access Project’s concourse in Grand Central Terminal, at 48th/49th Streets, as in the FEIS design. Intake and exhaust ventilation shafts serving the southern half of the concourse and caverns would be housed in the 44th Street ventilation facility. The existing shafts in buildings at 46th and 47th Streets would also serve the concourse and caverns. The 50th Street facility intake shaft would have a capacity of 300,000 cubic feet/minute (cfm) and the exhaust shaft would have a capacity of 250,000 cfm.

The 50th Street facility would also house the shafts for the tunnel ventilation system and the four tunnel ventilation fans serving the southern portion of the Manhattan tunnels. This section of the tunnels—between 50th and 55th Streets—would be ventilated by the 50th Street facility operating in tandem with the facility at East 55th Street. The tunnel ventilation shaft would have a total capacity of 800,000 cfm, with each of the four fans having a capacity of 200,000 cfm.

In the 2002 interim design, the East Side Access Project’s tunnel ventilation fans were moved from the FEIS design location—the project’s concourse area at Grand Central Terminal—to a new location in a large cavern area to be excavated beneath approximately 51st Street. The cavern area was to be excavated to create room for the interlocking where tracks would split to access the upper and lower level platforms in the new East Side Access Terminal. However, excavation of that cavern area within the interlocking being carved out of rock beneath Park Avenue introduced the risk of substantial delay to the project’s construction schedule. Therefore, in Alternative B, the tunnel ventilation fans would be located within the above-ground 50th Street facility instead.

Under Alternative B, the intake/exhaust louvers for the tunnel ventilation fans would be on the facility’s 50th Street façade. The station exhaust louvers would be on the western façade of the northwest corner of the facility, in front of the building at 437 Madison Avenue, which is set back from its property line. All exhaust louvers would be separated from any fresh air intakes on adjacent buildings or on the 50th Street building itself by at least the minimum separation required by: the New York State Mechanical Code, which specifies a 10-foot separation between exhausts and intakes; and the New York City Building Code, which requires a 10-foot separation between exhausts and windows (except for combustion sources and hazardous exhausts, such as infectious medical waste, which require a 25-foot separation). While not subject to the New
Figure 2-2

Alternative B - Project Site
**Below Grade**
- 6,000-8,000 gallon fuel tank
- 2 freight elevators
- 4 tunnel vent fans @ 200,000 cfm (extends to 2nd floor)

**Ground Floor**
- 3-bay loading dock for 2 trucks and a trash compactor (requires trucks to back in from 50th Street)
- Outside air intake plenum

**Second Floor**
- 2 substations (low to medium voltage)

**Third Floor**
- Tunnel fan plenum

**Fourth Floor**
- 3 Chillers @ 1,000 tons
- 1 Chiller @ 200 tons

**Fifth Floor**
- 2 substations (low to medium voltage)

**Sixth Floor**
- Two 1.5-megawatt generators

**Roof**
- 3 screened cooling towers

**Building Height**
- Approximately 153 feet
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York City Building Code, MTA complies with the requirements of this code where it is practicable to do so.

Normal Ventilation

The station ventilation fans at 48th/49th Streets in the new East Side Access concourse at Grand Central Terminal would operate continuously to draw fresh air through the station. Under normal operating conditions, the concourse and cavern intake system would draw 60,000 to 200,000 cfm, and the exhaust system would exhaust 54,000 cfm to 180,000 cfm.

The fans for the tunnel ventilation system would not operate continuously. These fans would be used to cool the train tunnels when temperatures within the tunnels become too hot. This could occur during congested conditions or when the outside ambient temperature is 89º F or higher. In these conditions, the fans would operate at one-fourth capacity, providing a ventilation rate of 200,000 cfm. When the tunnels are congested with train traffic during warm weather (the summer and possibly portions of the spring and fall), the fans would operate at one-half capacity to keep the train tunnels from becoming too hot, providing a ventilation rate of 400,000 cfm.

Emergency Ventilation

During an emergency, such as a smoke condition, in the southern portion of the train tunnels (between 50th and 55th Streets), the emergency ventilation system would clear smoke from tunnels by providing longitudinal, or “push-pull” ventilation, in which fans on one side of the incident operate in supply mode, while fans on the opposite side operate in exhaust mode. The supply fans would establish a smoke-free zone for evacuation, rescue, and fire-fighting activities, while the exhaust fans would purge smoke from the tunnel system. The tunnel ventilation fans in the 50th Street facility would work in conjunction with fans in the 55th Street ventilation facility, and would function in either intake or exhaust mode, depending on the location of the incident relative to the position of the train in the tunnel. For a fire located anywhere else in the tunnels, the 50th Street tunnel ventilation fans may operate in support of the ventilation facilities at either 44th or 55th Streets, but no smoke would be exhausted from the 50th Street facility. The maximum ventilation rate during emergency conditions would be 800,000 cfm.

Smoke from a fire in the new passenger concourse and caverns would not be exhausted from the 50th Street facility. In the event of a fire in the concourse or caverns, smoke would be exhausted through the 44th Street facility. The 50th Street facility would exhaust only ambient air from the terminal during normal operations.

GOODS MOVEMENT AND WASTE REMOVAL

The 50th Street facility would provide a truck loading dock for the delivery of goods and the removal of trash from the new East Side Access concourse. The ground-floor loading dock area would include two bays for 30-foot-long trucks and one bay for a trash dumpster/compactor. The loading dock would face East 50th Street.

The new loading dock would be used primarily for deliveries to the East Side Access concourse and removal of trash from the concourse, including its service areas, retail spaces, and passenger areas. Because the new East Side Access concourse would be a fully integrated component of Grand Central Terminal, some deliveries and trash removal from the rest of the terminal could occur in the new facility to supplement the activities now occurring at the Depew Place dock.
The loading dock would include a security checkpoint, to ensure that all trucks arriving at the dock have appropriate security clearance. After being cleared, trucks would back into the loading area in this alternative. (Alternative C and Preferred Alternative D, described below, would not require trucks to back into the dock.) While loading and unloading at the dock, delivery trucks would be fully accommodated within the structure and would not extend out into the street. Trash pickups, however, may require the garbage truck to extend out into the sidewalk in this alternative. Goods delivered by truck would be transported between the loading dock and their destination in Grand Central Terminal via two freight elevators in the 50th Street facility and an underground freight corridor that would connect directly to the service corridor to be provided in the new East Side Access concourse at Grand Central Terminal.

The new loading dock would be similar to other loading docks in the area that support large office buildings (including those in adjacent buildings and across the street from the project site).

**COOLING OF TERMINAL**

The 50th Street facility would include equipment that is part of the climate control system serving the new East Side Access concourse and caverns. The facility’s rooftop cooling tower would also provide cooling for the electrical substations and communication rooms that support life-safety and security functions for the new terminal. In this alternative, a three-cell, 3,000-ton cooling tower would be located on the roof of the 50th Street facility, and associated piping and electrical substations would be housed inside. Warm water from the chillers, which would be located on the fourth floor of the facility under this alternative, would be circulated up to the cooling tower, where it would be cooled and returned to the chillers. A visual and acoustic screen would surround the cooling tower.

As described below in section F, “Preferred Alternative D,” the cooling tower is now proposed for an alternate location, on the rooftop of the adjacent Colgate-Palmolive Building at 300 Park Avenue.

**EMERGENCY GENERATORS AND ELECTRICAL SUBSTATIONS**

In this alternative, the 50th Street facility would include emergency generators, a fuel tank room, and electrical substations. Two emergency generators with a capacity of approximately 1.5 megawatts (MW) each would be located at the top (sixth) level of the facility. They would provide essential power to the concourse and caverns in the event of a power outage, to allow people in those areas to exit safely and rapidly from underground areas. They would also provide power for cooling the substations and communication rooms that support security and life-safety functions for the East Side Access terminal during an emergency. Equipment to be operated by the generators includes fire-life safety equipment, such as smoke exhaust equipment, fire alarm systems and voice communication systems, emergency lighting, and a fire pump at 50th Street; escalators for station evacuation; and critical power distribution systems, such as selected exhaust fans and substation controls. The generators would also provide enough power to allow railroad personnel to remain in the station during the power outage so that the station is secure and ready to restore operations in the minimum possible time following resumption of normal electrical power. The generators would not be used to provide traction power (i.e., third rail power) for the trains. Engine exhaust from the emergency generators would be discharged at roof level, through exhaust pipes at the front of the 50th Street facility. Warm air from the generator room (referred to as “spill air”) would also be discharged from louvers at the front of the facility.
The fuel tank room would be located in the lowest level of the facility in this alternative, as per the New York City Building Code. It would house an approximately 6,000- to 8,000-gallon fuel tank containing low-sulfur diesel fuel oil, used to power the emergency generators. The fuel tank’s size was dictated by the need to provide enough fuel to allow operation of the generators for up to 24 hours in the event of a power outage. The fuel tank would be comparable in size to those in nearby office buildings. The tank would be vaulted and located about 50 feet below grade in the lowest basement level of the new structure, which would be constructed in solid bedrock. The tank room would be surrounded by a 3-hour rated fire wall with other fire containment measures, and would have containment to prevent leaks. The tank would be subject to the New York State Department of Environmental Conservation’s petroleum bulk storage regulations and would be installed in accordance with the requirements of the New York City Fire Department (FDNY). Diesel fuel does not present a large risk of exploding or igniting, since it must be heated to a high temperature before it will burn. The “flash point” for diesel fuel (the point at which it will burn) is between 126º F and 205º F, meaning that the fuel does not give off combustible vapors until it is heated to that temperature. In contrast, gasoline is highly combustible, with a flashpoint of 45º F, indicating that it emits combustible vapors at all times.

MTA representatives met with representatives of the FDNY twice to review the proposed design of the emergency generators and fuel tank rooms under this alternative. FDNY indicated that the design for the generators and fuel tanks in this alternative is safe, appropriate, and consistent with the design of many nearby office buildings that also have emergency generators and fuel tanks.

As described below in the discussion of Preferred Alternative D, the fuel tanks required to power the emergency generators have been relocated to an alternative location not at the 50th Street site, which is also acceptable to the FDNY.

The electrical substations, which would be located on the second and fifth floors of the 50th Street facility, would step down incoming electrical power to the voltages required by the equipment housed within the proposed 50th Street facility. The substations would not be used for traction power. They would be medium- to low-voltage substations (two substations of 2,000 kilovolt amperes [KVA] and two substations of 1,500 KVA) providing power only to the signal room in the tunnel and to the functions (e.g., ventilation equipment and cooling equipment) housed in the 50th Street facility. The combined power of the four substations would be comparable to Consolidated Edison or owner-provided transformer vaults located in high-rise buildings (which typically have vaults on different floors, with four transformers typically of 1,000 KVA each). Such substations are common throughout Midtown Manhattan. They would be designed to minimize magnetic field levels at adjacent buildings through the use of state-of-art shielding and by maximizing, to the extent possible, the distance between the substations and the walls of the proposed facility that abut adjacent buildings.

ADVANTAGES OF ALTERNATIVE B DESIGN

The main advantages of this design relative to Alternative A (the FEIS design) are improved operational and maintenance efficiency, and reduced costs resulting from the consolidation of project elements in one location:

- Ventilation facility—The 50th Street facility allows for separate station and tunnel ventilation systems, optimizing their performance. Placing the intake and exhaust louvers above street level would address security concerns, improve the quality of air entering the passenger concourse, improve the ambience of the pedestrian experience at street level,
where exhaust would occur under Alternative A, and reduce utility relocations and street and sidewalk excavation during construction. As noted in Chapter 1 (“Project Purpose and Need”), providing elevated air intakes located within a facility owned and operated by the MTA would increase protection against the possible introduction of harmful substances into the air supply of the new terminal. Elevated air intakes would provide the additional benefits of cleaner air for the underground public spaces compared to the street-level grates. In addition, elimination of street grates would eliminate extensive cut-and-cover street excavation and costly relocation of Consolidated Edison underground vaults and other utilities.

- **Loading dock**—Locating the loading dock in an area of the concourse directly connected to the new East Side Access service tunnel in the new concourse at Grand Central would reduce conflicts with passenger activities compared to other locations. This alternative would have a three-bay loading dock to provide adequate capacity for East Side Access deliveries and trash removal. Locating the loading dock in a facility owned and controlled by MTA would allow MTA to have maximum control over security procedures employed at the dock.

- **Cooling equipment**—The cooling tower must be located outdoors on a single rooftop with an adequate amount of free space to accommodate its footprint and the screening wall that surrounds it. Because of the cooling tower’s significant weight and structural support requirements, placing the tower on the roof of a new building specifically designed to support it is preferable to using an existing building that must be extensively retrofitted. It is also highly desirable for the cooling tower to be placed on a building owned by MTA, to allow MTA to fully control access for maintenance and repair. The New York State Mechanical Code requires that cooling towers that are less than 5 feet above any nearby air intakes have a 20-foot horizontal separation from the intakes. This requirement is intended to prevent vapors from entering the building through windows, doors, and intake openings. The design proposed at the 50th Street facility in this alternative would meet these criteria.

- **Consolidated facility**—A centralized facility incorporating the ventilation intakes, exhausts, tunnel ventilation fans, loading dock, cooling equipment, emergency generators, and substations would result in improved operating efficiency and correspondingly reduced operating cost. The maintenance, testing, and repair of loading dock elevators, tunnel ventilation fans, the cooling tower, associated electrical substations, and emergency electrical generators would be greatly simplified, and less expensive, if all this equipment were housed in a centralized location. Moreover, combining these project elements into one single MTA-owned building allows MTA to provide a secure facility for all project elements. MTA would be able to restrict access to the property to MTA-approved personnel and could streamline security provisions by combining these facilities in one structure.

**CONSTRUCTION STAGING**

The 50th Street facility would use the project site as an access point for the East Side Access Project’s underground concourse and caverns at Grand Central Terminal. After the four existing buildings on the project site are demolished in this alternative, the site would be used for approximately 2½ years as an access point for the delivery of materials and workers to the concourse and caverns below. Materials to be delivered would include consumable hardware supplies, such as nails, shovels, garbage bags, and air and gas cylinders for welding; larger items, such as wood framing material, and reinforcing and structural steel; and concrete to
support construction of the northern end of the concourse and caverns. Large materials would continue to be delivered by rail from the Bronx and Queens.

Using the 50th Street site as a construction access and staging point would help to reduce the risk of delays to the project’s overall construction schedule by providing an additional access point to the project’s underground concourse and tunnels, supplementing the access to those underground spaces that would be provided at other locations in Manhattan (where project entrances are proposed and at the site of the new project vent structure on 44th Street). This would expedite completion of the East Side Access Project, bringing the benefits of this important regional transportation project to the region’s commuters and to Manhattan’s economy as soon as possible. Detailed information regarding these activities is presented in Chapter 15, “Construction Impacts.”

E. ALTERNATIVE C (50TH STREET FACILITY WITH THROUGH DRIVE)

DESCRIPTION OF DESIGN

In response to comments made during a public meeting in 2004 on the proposed 50th Street facility described above, a modification to the facility was developed. This modified alternative would be similar in size, bulk, and massing to Alternative B and would have all the same functions as that alternative. However, to eliminate the need for trucks backing into the loading dock entrance on 50th Street, a through drive extending from 49th Street to 50th Street would also be created (see Figure 2-5). This would allow trucks to enter the loading dock via a driveway on 49th Street and exit on 50th Street. Trucks would thus not have to back up into the loading bays.

For Alternative C, one additional two-story building would be acquired on 49th Street, directly behind the 50th Street portion of the project site. This building is located at 45 East 49th Street. With the new truck driveway and reconfigured loading dock, the configuration of equipment inside the 50th Street facility would be different from Alternative B. This altered internal configuration of equipment is reflected in slightly different bulk and massing for the building.

The capital cost of Alternative C would be approximately $135 million, including construction of the facility, fit-out and equipment, associated underground work, and real estate acquisition costs.

More information on the differences between Alternatives B and C is provided below. Drawings of Alternative C are provided in Figures 2-6, 2-7, 2-8, and 2-9.

Alternative C was identified as the preferred alternative in the January 2005 EA because of the benefits to traffic flow that it would provide relative to Alternative B, which would not have a through drive. Alternative C would eliminate the need for trucks to back into the loading dock on 50th Street. It would also eliminate any additional truck traffic bound for the dock from traveling on the western portion of the block, in front of the Palace Hotel. In addition, with its loading bays shifted within the facility, the 50th Street façade would be improved in terms of appearance, because it would have one loading bay door instead of three.

This alternative would also provide additional benefits in the form of increased space for construction vehicles during the construction period for the 50th Street facility, as well as during
use of the project site as a staging area and access point for construction of the East Side Access caverns and concourse.

The relative benefits of the Alternative C are discussed in greater detail in Chapter 7, “Traffic and Transportation,” and in Chapter 15, “Construction Impacts.”

VENTILATION OF CONCOURSE AND TUNNELS

Like Alternative B, Alternative C would house ventilation equipment for the northern portion of the caverns, a portion of the concourse, between 47th and 50th Streets, as well as the southern portion of the tunnels.

COOLING OF TERMINAL

This alternative would provide a rooftop cooling tower in the same location as proposed in Alternative B. The chillers would not be located in the 50th Street facility building under this alternative; they would be located in the East Side Access concourse.

GOODS MOVEMENT AND WASTE REMOVAL

The biggest difference between Alternative B and this alternative, which would have a through drive, is in the configuration of the ground-floor loading dock. In this alternative, a driveway from 49th Street would provide access to the loading dock, and the exit would be from a bay on 50th Street. Security credentials would be checked at a security station on 49th Street before trucks enter the driveway or loading dock.

This alternative would also provide room for two trucks to load and unload, and one bay for garbage trucks. It would have a larger area inside the 50th Street facility for truck maneuvers; up to five additional trucks could be stored within the driveway. While it is not anticipated that it would normally be necessary to store trucks within the driveway, this flexibility would be available for rare occasions when it may be required. Another advantage of this alternative is that trucks could be unloaded from the front while parked in the alley, which is more suitable for certain kinds of deliveries than unloading from the back at a standard loading dock. Finally, under this alternative, garbage trucks would be fully accommodated within the 50th Street facility when picking up trash and would not extend out into the sidewalk.

In response to input received from the public during the public outreach process, a variation of this alternative was examined that used the 49th Street driveway to provide access to both the East Side Access loading dock and the adjacent loading dock at 437 Madison Avenue. However, it was determined to be impractical, because of conflicting truck movements from the driveway to the two different docks and, more importantly, because of the security concerns raised by providing access to an MTA facility for trucks destined to a non-MTA facility. As noted above, locating the loading dock in a facility owned and controlled by MTA would allow MTA to have maximum control over security procedures employed at the dock.

EMERGENCY GENERATORS AND ELECTRICAL SUBSTATIONS

Substations and electrical equipment would be located on the third and fifth floors in this alternative. The emergency generator room would be at the sixth floor, and exhaust from the generators would be at the front of the 50th Street facility. Warm air from the generator room would also be exhausted at the front of the facility.
Figure 2-5

Alternative C - Project Site
**Below Grade**
- 6,000-8,000 gallon fuel tank
- 2 freight elevators

**Ground Floor**
- 3-bay loading dock for 2 trucks and a trash compactor
- 49th St. truck entrance (eliminates truck back-in movements on 50th Street)
- 49th St. guard booth
- 4 tunnel vent fans @ 200,000 cfm (extends to 3rd floor)

**Second Floor**
- Station air intake plenum

**Third Floor**
- 2 substations (low to medium voltage)

**Fourth Floor**
- Tunnel fan plenum

**Fifth Floor**
- 2 substations (low to medium voltage)

**Sixth Floor**
- Two 1.5-megawatt generators

**Roof**
- 3 screened cooling towers

**Building Height**
- Approximately 153 feet

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**Ground-Floor Plan**

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**Figure 2-6**

*Alternative C - Plan View*
**Section A** Looking South
(front of building from 50th St.)

**Section B** Looking West

**Figure 2-7**

*Alternative C - Elevation View*
Figure 2-8

Alternative C - Location of Key Building Elements

50th Street Elevation

Cooling Tower
Tunnel air intake or exhaust
Station fresh air intake
MTA Loading Dock
Colgate-Palmolive Loading Dock

437 Madison Dock

Metal Cladding
Loading Dock Roll-Up Door

49th Street Elevation

50th Street Facility EA
Due to building setback, 437 Madison ventilation louvers are more than 50 feet away from station exhaust (which emits only clean air from passenger areas).

Station Clean Air Exhaust on side of building

Existing 437 Madison sporadic vent louvers

Tunnel air intake or exhaust

Station fresh air intake

MTA Loading Dock

Existing Colgate-Palmolive Loading Dock

437 Madison

Figure 2-9

Alternative C - Placement of Station Air Exhaust Louvers
Chapter 2: Project Alternatives

ADVANTAGES OF ALTERNATIVE C DESIGN

Overall, this alternative would present the same advantages as Alternative B, including housing three critical project components—the ventilation facility, loading dock, and cooling tower—as well as other ancillary space, and providing improved operating efficiency and reduced operating cost relative to Alternative A.

Relative to Alternative B, this alternative would have somewhat greater acquisition costs and would require greater construction effort, because of the acquisition and demolition of an additional building and construction of the 49th Street entrance and truck alley. Otherwise, the cost of Alternative C would be similar to Alternative B. At the same time, this alternative would allow for improved loading dock operations, including elimination of backing-in movements on 50th Street; provision of a larger area inside the 50th Street facility for truck maneuvers; the ability to unload trucks from the front while they are parked in the alley; and full accommodation of garbage trucks within the facility when picking up trash, without extending out into the sidewalk. The aesthetics of the facility’s 50th Street façade would also be improved, because only one loading dock bay would face 50th Street, rather than two in Alternative B.

CONSTRUCTION STAGING

Alternative C, like Alternative B, would use the project site as an access point and staging area to facilitate for construction of the East Side Access concourse and caverns at Grand Central Terminal. After the five existing buildings on the project site are demolished, the site would be used for approximately 2½ years as an access point for the delivery of materials and workers to the concourse and caverns below. Using the 50th Street site as a construction access and staging point would help to reduce the risk of delays to the project’s overall construction schedule by providing an additional access point, supplementing the access that would be provided from the Bronx and Queens and at other locations in Manhattan. This alternative would provide advantages during construction compared to Alternative B, including additional space for truck loading and unloading, as well as smoother flow of construction vehicles into and out of the project site. Detailed information regarding these activities is presented in Chapter 15 of this revised supplemental EA.

F. PREFERRED ALTERNATIVE D (50TH STREET FACILITY WITH THROUGH DRIVE AND PUBLIC OPEN SPACE)

DESCRIPTION OF DESIGN

Following publication of the January 2005 EA, concerns were raised during public review of the project related to the overall size of the 50th Street facility in Alternatives B and C. Concerns were also raised regarding the proximity of the facility’s exhaust louvers and cooling tower to neighboring buildings and regarding the proposed location of the fuel tank required to operate the facility’s emergency generators in Alternatives B and C. In response to these concerns, additional studies were conducted of potential design modifications for the 50th Street facility. In particular, alternative locations were sought for the project’s cooling tower, emergency generators and exhaust, fuel oil storage tank, tunnel ventilation fans, and electrical substations to reduce the overall size of the 50th Street facility and to address concerns raised by the public. As a result, Preferred Alternative D is now proposed.

This new alternative incorporates the following modifications:
It relocates the facility’s cooling tower to the rooftop of the Colgate-Palmolive Building at 300 Park Avenue. The 50th Street facility’s 3,000-ton cooling tower would be located on the roof of 300 Park Avenue (on the 49th Street side), where an existing 2,700-ton cooling tower is now located. A new, 2,700-ton cooling tower would be provided for the Colgate-Palmolive building elsewhere on that building’s roof (on the Park Avenue side of the L-shaped building).

The emergency generator exhaust would also be relocated to the rooftop of the Colgate-Palmolive Building.

The East Side Access Project’s tunnel ventilation fans would be relocated partially below grade at the 50th Street facility.

The location of the intake and exhaust louvers would be modified from Alternatives B and C, with no exhaust louvers on the west façade of the building.

The fuel oil storage tank and electrical substations would be relocated to the East Side Access concourse.

As a result of these modifications, the above-ground structure at 50th Street would be much smaller than in Alternatives B and C (about half the width and less than half the height). A landscaped public open space would be provided on the remainder of the site.

In addition, a new construction sequencing plan has been developed to reduce the visible construction activity at the project site relative to the construction activity described in the January 2005 EA.

Preferred Alternative D, like Alternatives B and C, would consist of a 50th Street facility that would house the critical ventilation equipment and loading dock required for the East Side Access Project as well as certain other ancillary facilities. This alternative would provide drive-through access to the loading dock from 49th Street, like Alternative C. The five existing buildings on the project site, at 44, 46, 48, and 50 East 50th Street and 45 East 49th Street, would be acquired and demolished. In addition, an underground easement beneath 300 Park Avenue would be required for a portion of the shafts and freight corridor between the 50th Street facility and the concourse at Grand Central Terminal.

In the Preferred Alternative D, the 50th Street facility would consist of an L-shaped structure facing 50th Street, varying in height from 40 to 65 feet tall. The western half of the project site (approximately 40 feet of frontage on East 50th Street) would be occupied by a building containing the loading dock and tunnel and station intake and exhaust plenums. The station air intake plenum would be housed in a structure to the rear of the eastern half of the project site, where a water feature would form the south wall of the new open space. The remaining area on the 50th Street portion of the site would consist of a new open space. The new public open space is expected to include trees, seating, landscaping, and the water feature along the rear wall. Like Alternative C, Preferred Alternative D would also include an approximately 20-foot-high enclosed through drive from East 49th Street.

Like the other build alternatives, the facility would have three basement levels, with the lowest level at the East Side Access passenger concourse level. The basement would house the freight elevator, tunnel and station ventilation shafts, and emergency generators.

Alternatives B and C would include space to accommodate the tunnel ventilation fans, significantly reducing the amount of rock excavation required for the project’s caverns compared...
to the interim design. To accommodate the fans, the 50th Street facility’s height in those two alternatives was 153 feet (to the top of the cooling tower screen). However, in response to public comments on the January 2005 EA, the facility’s height and bulk have been substantially reduced by relocating the tunnel ventilation fans partially below grade at the 50th Street facility.

The capital cost of Preferred Alternative D would be approximately $176 million, including construction of the facility, fit-out and equipment, associated underground work, and real estate acquisition costs. This is greater than the cost of Alternatives B and C.

Drawings of Preferred Alternative D are provided in Figures 2-10, 2-11, 2-12, 2-13, 2-14, and 2-15. Each project element is described more fully below.

**VENTILATION OF CONCOURSE, CAVERNS, AND TUNNELS**

Like the 50th Street facility in Alternatives B and C, Preferred Alternative D would house ventilation equipment for the northern portion of the caverns, a portion of the concourse, between 47th and 50th Streets, as well as the southern portion of the tunnels. The tunnel ventilation fans would be located partially below grade at the 50th Street facility. The ventilation exhaust louvers for the station would be on the north (front) façade of the facility and the ventilation exhaust louvers for the tunnel air would be on the eastern façade. Warm air from the emergency generator room would also be exhausted through the front façade. The distances between exhaust louvers and windows/air intakes of other buildings would exceed by at least three or four times the 10-foot requirement of the New York State Mechanical Code (the New York City Building Code does not mandate minimum separation between exhausts and intakes, except in the case of “air drawn from hospital operating rooms…” (§27-254(e)(3))).

**GOODS MOVEMENT AND WASTE REMOVAL**

Like Alternatives B and C, Preferred Alternative D would provide a new loading dock and freight elevator to allow deliveries to the East Side Access terminal. Drive-through access to the loading dock would be provided from 49th Street, so that trucks could pull into the dock from East 49th Street and exit from 50th Street. The loading dock would have room for one to two trucks for unloading and a trash compactor, as well as space for up to three additional trucks in the driveway.

**COOLING OF TERMINAL**

After publication of the January 2005 EA, additional evaluation was conducted of potential alternative locations for the project’s cooling tower. As a result of this evaluation and in response to comments from the public, the East Side Access Project’s cooling tower is now proposed to be located on the roof of the adjacent Colgate-Palmolive Building at 300 Park Avenue. It is no longer proposed for the roof of the 50th Street facility. This alternative, like Alternative C, also would not include chiller equipment, which would be located off-site in the concourse.

The Colgate-Palmolive Building is L-shaped, with frontage along the entire blockfront of Park Avenue between 49th and 50th Streets and along the north side of 49th Street behind the site of the 50th Street facility. The building is currently served by a 2,700-ton rooftop cooling tower that is located on the portion of the building along 49th Street. With the proposed design, the 50th Street facility’s cooling tower would be relocated to the rooftop of the Colgate-Palmolive Building at 300 Park Avenue. The 50th Street facility’s 3,000-ton cooling tower would be
located on the roof of 300 Park Avenue (on the 49th Street side), where an existing 2,700-ton cooling tower is now located. A new, 2,700-ton cooling tower would be provided for the Colgate-Palmolive building elsewhere on that building’s roof (on the Park Avenue side of the L-shaped building).

New pipes would be run along the outside of the Colgate-Palmolive Building to allow condenser water to circulate between the chillers and the rooftop cooling tower. An easement agreement would be required to set forth the arrangements for MTA to access the cooling tower on the rooftop of a building not owned by MTA. The easement agreement would also provide for MTA access to the cooling tower pipes, and the emergency generator exhaust flue pipes described below.

The cooling tower’s location on an existing building would require that the roof of that building (i.e., the Colgate-Palmolive Building) be retrofitted to accommodate the new equipment. In addition, maintenance and repair of the cooling tower and piping would be complicated by the fact that they would be located in a building of different ownership. Nonetheless, this alternative is acceptable from an operational standpoint and addresses public concerns about potential air quality issues associated with placement of a cooling tower on the roof of the 50th Street facility. Significant cooperation from the owners of the Colgate-Palmolive Building has made it possible to develop this option and an agreement to build and maintain the required MTA infrastructure is under development.

**EMERGENCY GENERATORS AND ELECTRICAL SUBSTATIONS**

Following publication of the January 2005 EA, additional evaluation was conducted of potential alternative design options for the project’s emergency generators, fuel storage tanks, and substations. As a result of this evaluation, the emergency generators have been relocated to a lower level of the 50th Street facility, and the 6,000- to 8,000-gallon fuel tank required to operate the emergency generator is now proposed for a location in the East Side Access concourse at Grand Central Terminal, rather than in the 50th Street facility. The project’s substations have also been relocated elsewhere, away from the 50th Street facility.

The exhaust for the generators would be directed in a flue to the rooftop of the Colgate-Palmolive Building at 300 Park Avenue. This flue would run in a pipe chase up the side of the Colgate-Palmolive Building, together with the cooling tower lines described above.

In this revised location, as at the 50th Street facility, the fuel tank would be located in a vaulted tank room surrounded by a 3-hour rated concrete fire wall with other fire containment measures, and would have containment to prevent leaks. The tank would be subject to the New York State Department of Environmental Conservation’s petroleum bulk storage regulations and would be installed in accordance with the requirements of the FDNY.

This new location would increase the distance between the fuel tanks and the generators, requiring a longer fuel line, encased in concrete, that would run from the tank to the generators. An additional fuel pump would also be required to transport the fuel to the generator room at the 50th Street facility. In addition, a concrete-encased fuel filling pipe would run from the street to the tank.

**NEW PUBLIC OPEN SPACE**

Preferred Alternative D would have a substantially smaller 50th Street facility than in Alternatives B and C. As a result, a new public open space would be provided on the eastern half
New 300 Park Avenue Cooling Tower
(Current Location of 300 Park Avenue Cooling Tower)

New ESA Cooling Tower

Previous Design
(Alternatives B and C):
   Height: 153'-0"
   Width: 80'-0"

Preferred Alternative D:
   Height: 62'-0"
   Width: 40'-0"

Profile of existing buildings
(Water tower ±124'-0"

Context Elevation Looking South

Figure 2-10

Preferred Alternative D - Context Elevation
Below Grade
• 1 freight elevator
• 4 tunnel vent fans @ 200,000 cfm (extends to Concourse level)
• Two 1.5-megawatt generators

Ground Floor
• Single drive-through loading dock for 1-2 trucks and a trash compactor
• Guard booth
• Public open space

Second Floor
• Station Exhaust (Spill Air) & Generator Room Spill Air

Third Floor
• Tunnel fan plenum

Building Height
• Approximately 62 feet

Note: 3 Cooling towers and generator exhaust on roof of 300 Park Avenue
New Pipe Chase to Roof of 300 Park Avenue (cooling tower & generator exhaust pipes)

Station Exhaust (Spill Air) & Generator Room Spill Air

Station & Generator Room Supply Air

Tunnel vent fans below

Figure 2-12
Preferred Alternative D - Section Elevation Looking South
Figure 2-13

Preferred Alternative D - Section Elevation Looking East

New Pipe Chase to Roof of 300 Park Avenue (cooling tower & generator exhaust pipes)

Station & Generator Room Supply Air

Stone Veneer at Public Open Space

Gated Access Control at 50th Street
New Pipe Chase to Roof of 300 Park Avenue (cooling tower & generator exhaust pipes)

Station & Generator Room Supply Air

Tunnel Air Intake & Exhaust

Station Exhaust (Spill Air) & Generator Room Spill Air

Figure 2-14

Preferred Alternative D - Location of Key Building Elements
Figure 2-15
Location of Rooftop Cooling Tower Units on Colgate-Palmolive Building

Location of New Cooling Tower on 300 Park Avenue

Existing Cooling Tower Unit on 300 Park Avenue; Location to Be Used for New ESA Cooling Tower (Preferred Alternative D)
of the site facing 50th Street. This public open space would be approximately 40 feet wide by 60 feet deep, and is anticipated to include landscaping, seating, and a water feature along the rear wall. Security gates at the front of the space would allow it to be closed at night. The design of this new public open space would be coordinated with interested stakeholders.

**ADVANTAGES OF PREFERRED ALTERNATIVE D DESIGN**

Overall, as described earlier under “Advantages of Alternative B Design,” this alternative would present the same advantages as Alternatives B and C, including providing locations for three critical project components (the ventilation facility, loading dock, and cooling tower), and providing improved operating efficiency and reduced operating cost relative to Alternative A. It would also allow for the improved loading dock operations and benefits to traffic resulting from provision of the drive-through access to the project’s loading dock. In addition, Preferred Alternative D provides the benefit of an improved design that responds to public concerns by relocating certain project elements (i.e., station and tunnel exhaust louvers, cooling tower, fuel tanks, emergency generator exhaust) and by substantially reducing the bulk of the 50th Street facility. The new facility would be approximately the same height as the existing buildings on the site today. Finally, this alternative also provides a new public amenity, a public open space in an area of Midtown where public open spaces are scarce. As noted above, the new Preferred Alternative D does have some disadvantages relative to Alternatives B and C, including the need to accommodate the cooling tower on a privately owned building and the alternative’s additional cost. However, on balance, the advantages presented by this alternative outweigh the disadvantages. For these reasons, this new alternative is the preferred alternative for the 50th Street facility.

**MODIFIED CONSTRUCTION SEQUENCING PLAN**

In response to public comments regarding the length of the construction period and use of the 50th Street site for East Side Access construction access and staging, the construction sequencing for the 50th Street facility has been changed. Access and staging for the new LIRR concourse construction would no longer occur on the vacant site after demolition of the five buildings on the site. Under the revised plan, which is presented in detail in Chapter 15, “Construction Impacts,” construction of the 50th Street facility—including building demolition, street excavation and shaft construction, construction of the facility, and most of the facility fit out—would occur within the first 2½ years. Once the facility is complete, the loading dock would be used to accept deliveries related to construction activities occurring below for the new LIRR concourse at Grand Central Terminal. Materials would be moved from the dock to the concourse level via cranes within the 50th Street facility, using the facility’s freight elevator shaft. Like Alternative C, this alternative would also provide advantages during construction compared to Alternative B, including additional space for truck loading and unloading, as well as smoother flow of construction vehicles into and out of the project site.

Once the concourse is complete, some final interior work would be required at 50th Street to install the freight elevator. This new construction plan would reduce the time when noticeable construction activities would occur at the site from approximately 6 years to less than 2½ years.
G. OTHER ALTERNATIVES CONSIDERED BUT ELIMINATED

50TH STREET FACILITY WITH ALTERNATIVE VENTILATION EXHAUST LOCATIONS

In response to comments made by the public, an alternative that would relocate the tunnel ventilation exhaust from the proposed 50th Street facility was evaluated. This alternative would place the ventilation exhaust on the roof of the adjacent building at 300 Park Avenue. An exhaust flue would be constructed along the side of the 300 Park Avenue building to carry the exhaust to the rooftop, 300 feet above street level.

Engineering analysis for this alternative indicates that such an exhaust flue would require substantial structural reinforcements to the 300 Park Avenue building. The shaft would be a 400-square-foot masonry structure, which would need to be seismically restrained and protected against the wind. It would also substantially increase the required exhaust fan capacity in the 50th Street facility, in order to overcome the flow resistance introduced by the exhaust flue. The 50th Street facility would be larger, to accommodate the larger, more powerful fans and the shaft that would extend through all of floors in the building. Because of the construction and operational difficulties of this alternative, it was considered neither reasonable nor practicable and was dropped from further consideration.

50TH STREET FACILITY WITH ALTERNATIVE DESIGNS FOR COOLING TOWER

In response to comments made by the public about the proposed design at 50th Street, several alternatives were investigated that located the East Side Access Project’s rooftop cooling tower on the roof of a building adjacent to the 50th Street facility. In this alternative, the cooling tower would be relocated from the top of the 50th Street facility to the roof of one of the adjacent buildings fronting on Park or Madison Avenue—either 300 Park Avenue (Colgate-Palmolive Building) or 437 Madison Avenue.

The January 2005 EA noted that MTA prefers to place the 50th Street facility’s cooling tower on the rooftop of a building owned and controlled by MTA, to allow MTA to have full control over access to the cooling tower for maintenance purposes. The January 2005 EA also discussed the need for retrofitting the Colgate-Palmolive Building’s roof to accommodate a new cooling tower, and the difficulties associated with constructing the extensive piping for chilled water and electrical conduits to the cooling tower if located on the Colgate-Palmolive Building’s roof. Given these concerns and the additional cost associated with such an alternative, the January 2005 EA described this option as not practicable, given that the 50th Street facility’s own rooftop was available for this purpose. In the February 2005 public meeting and public comment period, however, extensive comments were made expressing concern about the proposed location for the cooling tower on the roof of the 50th Street facility. In response to those concerns, more detailed analysis was conducted of the possibility of placing the cooling tower on the roof of the adjacent Colgate-Palmolive Building and, as noted above, the project’s cooling tower is now proposed for the roof of the Colgate-Palmolive Building at 300 Park Avenue.

The evaluation also considered placing the cooling tower on the roof of the adjacent building at 437 Madison Avenue. That alternative presented several significant problems, however. Similar to Preferred Alternative D, piping would have to be run from the 50th Street facility to the roof of 437 Madison Avenue. Although this piping could potentially be installed in existing shafts, this would present significant difficulties, and would likely cause extensive disruption to existing
tenants. The piping would have to be routed through the building’s parking garage, potentially eliminating several parking spaces. Reinforcement of the adjacent building rooftop would be required, given the significant weight of the cooling tower. Rigging and installation of the cooler tower on the rooftop of the adjacent buildings would pose significant problems because of the height of the rooftops—approximately 520 feet for the building at 437 Madison Avenue.

As a result of these complications, locating the cooling tower on the roof of 437 Madison Avenue was determined to be neither reasonable nor practicable from an engineering or operational standpoint, and was dropped from further consideration.

50TH STREET FACILITY WITH ALTERNATIVE EMERGENCY GENERATOR LOCATIONS

In response to concerns expressed during the public comment period about the presence of emergency generators and the below-ground fuel tank required for those generators, alternative locations for the generators and/or fuel tanks were sought. These alternatives included: (1) alternative locations for the generators and fuel storage; (2) alternative locations for the fuel storage; and (3) alternative power supply. These are described below.

The emergency generators must be placed in a location that meets the following criteria:

- The generator room must be properly ventilated by cross air flow pattern (i.e., fresh air supply at one side of the room and spill air at the opposite side of the same room). The fresh air provides the ventilation required for combustion and cools the engine and radiator.

- The two 1.5-megawatt generators require at least 3,100 square feet of floor area. This space is required to house the generators themselves, as well as associated equipment such as switchgear, controls, batteries, and sound attenuation devices.

The fuel tank that supplies the emergency generators also has the following siting criteria:

- Fuel supply should be large enough to allow operation of the generators for up to 24 hours in the event of a power outage. This is necessary because of the difficulty of supplying additional diesel fuel during a blackout. The 6,000- to 8,000-gallon tank needed for this duration requires a storage room of approximately 900 square feet, encompassing the tank, fuel pumps, and fire protection elements.

The generators and fuel tanks are also ideally located in relative proximity to each other, to avoid long fuel supply lines. Long fuel lines are less secure and at greater risk of disruption during an emergency.

ALTERNATIVE LOCATIONS FOR GENERATORS

Different locations within the East Side Access terminal at Grand Central Terminal were sought to accommodate the emergency generators, so that the generators and the associated fuel tanks could be located away from the 50th Street facility. If off-site locations were identified for the generators, it was assumed that the fuel tanks could also be located in the immediate proximity. Locations evaluated included the underground concourse level as well as locations in the ventilation building to be constructed on East 44th Street. However, no alternative locations are available for the emergency generators that have adequate room for the generators and the shafts required for combustion (intake) air and for generator exhaust. No locations on the concourse level were identified that could provide large enough shafts for supply and exhaust air. All existing railroad shafts to outside air are already in use or identified for other East Side Access
functions, and the New York State Mechanical Code and New York City Building Code both prohibit the use of sidewalk gratings for generator flue discharge. The new vent building on East 44th Street does not have enough room to house the emergency generators.

The emergency generators also cannot be located away from the new East Side Access terminal, since the emergency power would have to be transmitted via a dedicated electric feeder line, which would be subject to disruption during an emergency. Since the purpose of the generators is to supply power to the terminal during an emergency, this alternative would not support that purpose.

As a result of these investigations, a new location for the emergency generators at the 50th Street facility was identified. Rather than being located on an upper floor of the 50th Street facility, the generators are now proposed in an underground location beneath the 50th Street facility.

**ALTERNATIVE POWER SUPPLY**

The possibility of using natural gas rather than diesel fuel to power the generators was also considered. As noted above, the primary function of the emergency generators is to allow rapid and safe evacuation of the concourse and caverns during a power outage. The National Electrical Code does not permit use of natural gas to power emergency generators for life-safety functions, because of the possibility of interruption during an earthquake. Therefore, this alternative would have a 2,500-gallon diesel fuel tank that would power a 1.25-megawatt generator, large enough to provide up to 24 hours of generator operation for life-safety and evacuation functions. The remaining emergency generator functions would be powered by two 1.5-megawatt generators fueled by natural gas. However, the proposed 50th Street facility does not have adequate space to house the three generators required in this alternative.

Back-up batteries rather than generators cannot be used to power the motor-driven equipment in the East Side Access terminal, such as the elevators, escalators, and smoke exhaust fans. Using batteries for the other project elements, such as lighting, security, and telecommunications, is also not feasible, since even with very large battery installations, the power would only be available for up to 4 hours. For these reasons, using batteries as an alternative power supply would not substantially reduce the size of the generators or the fuel storage needs.

**ALTERNATIVE LOCATIONS FOR PROJECT ELEMENTS IF NOT LOCATED IN A CENTRALIZED FACILITY**

To eliminate the need for a centralized facility, alternative locations for the most critical elements housed in the building—the loading dock and ventilation facilities—would have to be identified. Alternative locations for these project components were sought, but the alternatives identified were not considered reasonable, as described below.

**LOADING DOCK**

As noted in Chapter 1, “Project Purpose and Need,” the project’s loading dock should be located near the new East Side Access terminal at Grand Central Terminal and provide access to the terminal directly from the loading dock. As a consequence, the loading dock should be located between Park and Madison Avenues and between East 43rd and 50th Streets.

One possibility for the new loading dock would be to acquire space in an existing office building for this purpose. In addition to the dock itself, the new loading dock would require two large freight elevators with shafts down to the train terminal complex below.
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At any location in an existing office building, construction activities for a new loading dock would result in significant disruption to the tenants of the existing building during construction. To create the freight elevators required to serve the loading dock, large shafts would have to be constructed through the lower level of the existing office building, and, depending on the location of the building relative to the concourse, a tunnel might have to be constructed below the building to connect the freight elevators to the concourse. This would interfere with the existing building’s systems, including elevator shafts, HVAC and electrical ducts, and utility feeds. However, since the majority of the building would continue to house existing tenants, operation of all building systems would have to be maintained during construction.

Locations for a new loading dock should be close to the new East Side Access concourse, with ability to access the project’s service corridor without adversely affecting Metro-North’s operations. The dock should be located on a side street and should be placed so as to minimize adverse effects to existing land uses and historic resources. In this area—between 43rd and 50th Streets, west of Metro-North’s active tracks—few potentially suitable locations are available. Three possible locations were identified for acquisition within existing office buildings: 347 Madison Avenue and the 48th and 49th Street facades of 280 Park Avenue.

The building at 347 Madison Avenue, located between 44th and 45th Streets, is currently owned by MTA and fully occupied by MTA office space and by ground-floor retail space. A new loading dock in this building would connect to the southern portion of the East Side Access concourse below. However, because of the building’s position above the concourse, the new freight elevator would not be connected directly to the service corridor in the East Side Access concourse. All deliveries and trash removal would be required to pass through the main East Side Access pedestrian concourse to reach their destinations.

The office building at 280 Park Avenue is located between 48th and 49th Streets. A new loading dock on the 48th Street side of the building would be located directly above the East Side Access concourse. This location is the only possible site above the concourse that would allow freight elevators to pass through the Metro-North Railroad upper level track area without adversely affecting the tracks. However, the operating spaces in the basement levels of 280 Park Avenue would have to be displaced. In addition, the loading dock would be adjacent to a through-block pedestrian plaza that extends from the end of Vanderbilt Avenue at East 47th Street to East 49th Street in a highly visible location in a prime office district.

A new loading dock on the 49th Street side of 280 Park Avenue would involve the creation of an additional bay at the existing Bankers Trust loading dock and would require only minimal horizontal excavation to connect to the concourse. However, this option would provide only one new bay, which would not create enough capacity to adequately handle East Side Access Project deliveries and pickups. In addition, the operating spaces in the basement levels of 280 Park Avenue would have to be displaced, which could result in adverse effects to the rest of the building that would remain. Finally, sharing the loading dock with non-MTA users is not desirable from a security standpoint.

VENTILATION FACILITIES

Alternative concepts to street-level grates for the station and tunnel air intake and exhaust were explored, including vents on the roofs of existing buildings, grills or louvers in the facades of existing buildings, and pylons installed in open plazas or sidewalks. Based on the ventilation requirements for the concourse and caverns, these elevated structures would require a considerable amount of space for the quantity of air that is required. The tunnel air intake and
exhaust would require a structure with a base of about 600 square feet, extending up (through or attached to a building) to either the roof or an intermediate floor. A pylon structure would be about 10 feet high. The station air intake and exhaust would be separate structures and require bases of 300 and 250 square feet, respectively, and extend up either 10 feet high or to the façade or roof of an existing building. Given the dimensions of these structures, they could not be located in existing plazas or affixed to existing buildings without significant construction disruption and the potential for permanent adverse visual and urban design impacts. As described above, the tunnel ventilation exhaust on the roof of 300 Park Avenue, with the exhaust/intake flue constructed along the side of the building to carry the exhaust to the rooftop was not practicable. Similar problems would be encountered with any other existing building. Multiple buildings would be affected and significant disruptions to tenants would be expected.

Ventilation equipment located within a portion of an existing office building would result in similar difficulties to those described for the loading dock alternatives, above. The selected building would have to be located near the north end of the concourse, at or close to 49th or 50th Street. Several above- and below-grade floors of the building, or portions thereof, would have to be acquired. In addition to the ventilation equipment, two substations would also have to be located in the vicinity of the fans. Construction activities at the building would result in significant and prolonged disruption to its tenants.

There are no plazas or sidewalks in the area that were identified to be large enough to support ventilation pylons. For example, the plaza at 437 Madison Avenue (between 49th and 50th Streets), which is about 3000 square feet (about 15 feet by 200 feet) is a typically sized plaza in the area. In addition to monopolizing a good portion of the plaza, construction of the pylons at the plaza would still be difficult due to problems associated with underground utilities that serve the building and the fact that the plaza is raised. In addition, this alternative location would result in major disruption to the two tenants sharing the plaza—Wachovia Bank and Berkeley Caterers. Furthermore, a significant portion of the basement-level parking garage and intermediate storage area in the building at 437 Madison Avenue would have to be acquired to house a portion of the ventilation structure. The presence of a large number of building utilities, including Consolidated Edison transformer vaults, beneath the street and sidewalk, would be a notable impediment to design and construction.

ALTERNATIVE LOCATIONS FOR A CENTRALIZED FACILITY

As noted above, combining various project elements into one centralized facility allows for more efficient design and operations in the new building. To meet the siting criteria for the various project elements to be included, the facility must be located between approximately 48th and 50th Streets, between Park Avenue and Madison Avenues. The facility must also be west of the existing trainshed below. (More information on the siting criteria is provided in Chapter 1, “Project Purpose and Need.”)

Other than the low-rise properties on 49th and 50th Streets proposed to be acquired for construction of the new 50th Street facility, large high-rise office buildings occupy all properties near the north end of the new concourse area in the zone appropriate for a new ventilation structure.

To create a centralized East Side Access structure that combines the various ancillary facilities at a site other than the one proposed on 49th and 50th Street, a parcel occupied by a large existing office building would have to be acquired. If such a building were acquired in full and demolished to be replaced by a new East Side Access structure, property acquisition costs would
be prohibitive and the number of tenants displaced would be much greater than with the existing proposal. Furthermore, the resulting structure would be similar in design, appearance, and function to the structure currently proposed, except that it would be in a different location. Because of the substantial costs and impacts associated with demolition of a large office building, this alternative is not considered reasonable or practicable.

Another option would be to acquire a portion of an existing large office building, so that the vent structure and loading dock could be placed within that structure. The selected building would have to be located west of the existing Grand Central Terminal trainshed, because locations above the trainshed would result in permanent closures to the Metro-North tracks below or interference with the proposed new East Side Access terminal. Construction activities for the new building would result in significant and prolonged disruption to the tenants of the existing building during construction. Several above- and below-grade floors of the building, or portions thereof, would have to be acquired. To create the freight elevators required to serve the loading dock and the shafts required for the ventilation system, large shafts would have to be constructed through the lower level of the existing office building, and tunnels would have to be constructed below the building to connect the ventilation system and freight elevators to the concourse. This would interfere with the existing building systems, including elevator shafts, HVAC and electrical ducts, and utility feeds. However, since the majority of the building would continue to house existing tenants, operation of all building systems would have to be maintained during construction. Furthermore, the depth of excavation for the new facility would likely require underpinning of the office building. Because of the substantial costs and impacts associated with this alternative, it is not considered reasonable or practicable.

**ALTERNATIVES TO USING 50TH STREET SITE FOR CONSTRUCTION STAGING**

Under Preferred Alternative D as well as Alternatives B and C, the project site would be used as an access point and staging area for construction of the East Side Access concourse and caverns. The purpose of using the 50th Street site as a staging area is to use a shaft that must be constructed in any case for multiple purposes; use of the 50th Street site is proposed since the off-street ventilation and freight elevator shafts that would be constructed for the new facility would also provide ready access to the project’s underground tunnels and concourse during the construction of the new terminal. The other access points being constructed as part of the East Side Access Project, such as pedestrian entrances to the new terminal, will also be used for construction access to the underground spaces. Construction of a new shaft solely for use during construction staging would result in unnecessary expense and disruption. Furthermore, no other off-street locations are available in Midtown that would allow project staging without closing portions of the sidewalk or street for that purpose.

Several alternatives to this use of the 50th Street site were investigated and are described below.

One alternative would be to find another site in Manhattan to serve as an access point and staging area for construction of the concourse and caverns. To create such a site, a parcel occupied by a large existing office building in the vicinity of the proposed East Side Access terminal would have to be acquired. If such a building were acquired in full and demolished to serve as a construction staging area for the East Side Access Project, property acquisition costs would be prohibitive and the number of tenants displaced would be much greater than in the existing proposal. Because of the substantial costs and impacts associated with demolition of a large office building, this alternative is not considered reasonable or practicable.
Because many East Side Access construction activities will rely on the limited tunnel access available from Queens and the Bronx, delivering all concourse and cavern construction materials via the same routes would put the project’s construction schedule at risk of serious delays. As a result, this is not considered to be a practicable alternative.

H. SUMMARY OF REASONABLE ALTERNATIVES

Based on the analysis presented in this chapter, the alternatives determined to be reasonable and practicable are Preferred Alternative D and Alternatives B and C. Environmental impacts for these alternatives are assessed in the chapters that follow, and are compared to impacts for Alternative A.