A. INTRODUCTION

This chapter describes the project alternatives under consideration for reconstruction of Route 9A from West Thames Street to Chambers Street. It begins with a summary of the planning goals and issues underlying the development of the alternatives. The study issues and alternatives are then described, followed by a discussion of alternatives considered but discarded. A description of the analysis framework to be undertaken in the technical chapters also is included.

B. DEVELOPMENT OF ALTERNATIVES

The Route 9A project alternatives were developed as a direct response to the following considerations:

- Project goals to (1) permanently restore the functionality of Route 9A; (2) improve pedestrian movements along and across Route 9A; (3) provide an appropriate and respectful setting for the World Trade Center (WTC) Memorial; (4) enhance green areas and open space; (5) support economic recovery and development of Lower Manhattan; (6) ensure community involvement and public participation in an open and inclusive process; (7) coordinate with other major transportation and development projects; (8) avoid or minimize environmental and construction impacts to the community; and (9) provide a safe, timely, and cost-effective transportation solution.

- State and federal regulations requiring the consideration of a full range of alternatives. In addition to the No Action and Build Alternatives, non-reconstruction alternatives which maximize the efficiency of the existing roadway at a low capital cost were considered.

- The need for Route 9A to serve regional, arterial, and local transportation requirements. Route 9A provides a crucial link in the region’s transportation network, connecting directly or via tunnels to numerous arterials in Manhattan, Brooklyn, and New Jersey.

- The existing physical and operational problems of the present, interim six-lane roadway that was constructed after September 11, 2001.

- Detailed engineering and cost studies which reflected the physical constraints of the roadway corridor. The highly developed and dense infrastructure of the Route 9A corridor would impose certain physical constraints on the construction of any of the Build alternatives, including the need to protect the WTC Site slurry wall; the location of connections to other transportation facilities such as tunnels and major surface arterials; the presence of major utilities that would affect the location of depressed roadway sections; building and other appurtenances (such as ventilation structures for the Port Authority Trans Hudson [PATH] tubes) that limit the potential width of the roadway; and existing land uses and operations requiring access on both sides of the roadway.
Detailed travel demand and traffic studies. A comprehensive approach to understanding travel patterns (vehicular and pedestrian) in Manhattan through field surveys, use of computer simulation modeling, and development forecasting was conducted. An evaluation of transportation (traffic, transit, and pedestrians) needs and impacts is included in Chapters 8A through 8C.

Coordination with public planning and projects in Lower Manhattan, as described in Chapter 1, “Project Purpose and Need.” The development of alternatives for the project has been undertaken in consideration of plans for the redevelopment of the WTC Site and other Lower Manhattan Recovery Projects. Figure 2-1 shows other Lower Manhattan Recovery Effort Projects in the Route 9A corridor. The Route 9A Project has been closely coordinated with numerous agencies including the Federal Highway Administration (FHWA), Lower Manhattan Development Corporation (LMDC), Port Authority of New York and New Jersey (PANYNJ), New York City Department of Transportation (NYCDOT), Metropolitan Transit Authority (MTA), Federal Emergency Management Administration (FEMA), Federal Transit Administration (FTA), Hudson River Park Trust (HRPT), Battery Park City Authority (BPCA), New York State Department of Environmental Conservation (NYSDEC), and New York City Department of Environmental Protection (NYCDEP).

Comprehensive Community Participation Program. A public participation program gave the project team an opportunity to hear public concerns and respond to those concerns in the development of the project alternatives. In response to comments made at the June 2003 meeting, a six-lane No Action Alternative was added to the alternatives to be evaluated in the FSEIS. In addition, the program kept the public informed of the progress and results of the study.

C. DESIGN CRITERIA

Table 2-1 summarizes the design criteria and standards for the project. The criteria are presented in English units even though the current requirement for the New York State Department of Transportation (NYSDOT) contract documents is metric. The English units are presented because the key stakeholders (e.g., PANYNJ, BPCA, utility companies, New York City, adjacent developers, etc.) involved in the WTC Site use only English units. To eliminate conflicts between metric and English conversions, English units will be used.

D. DESCRIPTION OF THE ALTERNATIVES

The alternative development process considered a wide range of alternatives to address transportation needs and problems to meet project goals. The result was identification of a set of reasonable alternatives for study in this FSEIS, including a No Action Alternative. Alternatives include those that meet project goals and objectives and are thus suitable candidates for eventual selection as a recommended alternative. The alternatives considered are grouped as non-reconstruction and reconstruction alternatives in the discussion below.

A design speed of 40 mph was retained for Route 9A in keeping with the design and construction of this segment of Route 9A prior to September 11, 2001. In addition, 85th percentile studies were conducted in areas north and south of the six-lane interim road at the WTC Site. Those studies (Appendix E, “Traffic”) revealed consistency of speeds and retention of a 40 mph design speed.
FIGURE 2-1

PEDESTRIAN CONCOURSE (PA)

SLURRY WALL EXTENSION (LMDC/PA)

RIVER WATER INTAKE & DISCHARGE LINES (PA)

PATH PROJECTION VENTILATION/EGRESS (PA)

SITE EGRESS (LMDC/PA)

WTC SITE SOUTH EXPANSION (LMDC/PA)

BATTERY PARK CITY

WORLD FINANCIAL CENTER (BROOKFIELD PROPERTIES)

EXISTING BRIDGE TO BE REMOVED, REPLACED OR MODIFIED

SITE EGRESS (LMDC/PA)

VENTILATION/EGRESS (PA)

FREEDOM TOWER

WTC MEMORIAL

RIVER WATER INTAKE & DISCHARGE LINES (PA)

SLURRY WALL EXTENSION (LMDC/PA)

EXISTING BRIDGE TO BE REMOVED, REPLACED OR MODIFIED

SITE EGRESS (LMDC/PA)

PATH PROJECTION VENTILATION/EGRESS (PA)

BATTER TPARK CITY

WORLD FINANCIAL CENTER (BROOKFIELD PROPERTIES)

EXISTING BRIDGE TO BE REMOVED, REPLACED OR MODIFIED

SITE EGRESS (LMDC/PA)

VENTILATION/EGRESS (PA)
### Table 2-1
Design Criteria (NYSDOT-2004 HDM/2004 AASHTO)—English Units

<table>
<thead>
<tr>
<th>Design Criteria [NYSDOT-HDM / 2001 AASHTO]</th>
<th>Route 9A Mainline</th>
<th>Local Streets</th>
<th>Short Bypass</th>
<th>West Street/BBT Ramp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Functional Classification</td>
<td>Principal</td>
<td>Urban Arterial</td>
<td>Principal</td>
<td>Ramp</td>
</tr>
<tr>
<td></td>
<td>Urban Arterial</td>
<td>Other</td>
<td>Urban Arterial</td>
<td>Underpass</td>
</tr>
<tr>
<td>Design Speed</td>
<td>40 mph</td>
<td>30 mph</td>
<td>40 mph</td>
<td>30 mph</td>
</tr>
<tr>
<td>Minimum Lane Width</td>
<td>11 ft</td>
<td>11 ft</td>
<td>11 ft</td>
<td>11 ft</td>
</tr>
<tr>
<td>Shoulder Widths</td>
<td>None</td>
<td>None</td>
<td>4</td>
<td>Match exist</td>
</tr>
<tr>
<td>Maximum Grade</td>
<td>7% (Des.)</td>
<td>7%</td>
<td>7%</td>
<td>7%</td>
</tr>
<tr>
<td>Maximum Degree of Curve &amp; Maximum Superelevation</td>
<td>10.75°</td>
<td>19.10°</td>
<td>10.75°</td>
<td>25°</td>
</tr>
<tr>
<td>Minimum Stopping Sight Dist.</td>
<td>305 ft</td>
<td>200 ft</td>
<td>305 ft</td>
<td>200 ft</td>
</tr>
<tr>
<td>Minimum Curb Offset</td>
<td>1 ft</td>
<td>1 ft</td>
<td>1 ft</td>
<td>1 ft</td>
</tr>
<tr>
<td>Minimum Vertical Clearance</td>
<td>14.5 ft</td>
<td>14.5</td>
<td>14.5 ft</td>
<td>14.5 ft</td>
</tr>
</tbody>
</table>

**Notes:**
- English units are used to eliminate metric/english conflicts with key stakeholders involved in design process.
- Local streets include all Rt-9A intersecting cross streets and the Surface West Street in the Short Bypass Alternative between touchdown points.
- Minimum SSD for Sag Curves based on Riding Comfort L=AV^2/46.5.
- Standard is 14°-0° minimum clearance (with provisions for two-3 inch overlays).

<table>
<thead>
<tr>
<th>Other Criteria</th>
<th>Tunnel Vertical Clearance</th>
<th>Tunnel Structural Capacity</th>
<th>Pedestrian Bridge Vertical Clearance</th>
<th>Sign Structure Vertical Clearance (Bottom Truss)</th>
<th>Parking Lanes</th>
<th>Normal Cross Slope</th>
<th>Curb Reveal</th>
<th>Curb Offset for Low Profile Concrete Safety Barrier</th>
<th>Rollover (between travel lanes-edge of travel way)</th>
<th>Pedestrian Accommodation</th>
<th>Desirable shoulders are 10 feet right and 5 feet left (2 foot min).</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>14.5 ft</td>
<td>AASHTO MS23 (HS25) liveload</td>
<td>15.5 ft (Min.), 16.5 ft (Des.)</td>
<td>15.5 ft + 1.5 ft = 17.0 ft</td>
<td>10 ft</td>
<td>3/16 in/ft (Min.), ¾ in/ft (Des.)</td>
<td>7 in (Des.)</td>
<td>5 in (min)</td>
<td>4% max</td>
<td>in accordance with ADA Guidelines</td>
<td></td>
</tr>
</tbody>
</table>

**Non-Reconstruction Alternatives**

**Public Transportation Alternatives**

The 1994 Route 9A EIS considered transit operations in the development of alternatives. Public transportation alternatives to improve Route 9A included additional local or express bus service or a dedicated transitway within the corridor. However, examination of these options found that such alternatives could not meet most project needs or address most project goals and objectives. More local bus service could improve transportation for riders with origins and destinations...
along the corridor or on crosstown connections. Increased express bus or van service could serve those making work trips between midtown or downtown points in the corridor and more distant areas. However, these improvements would affect only a small portion of travelers who use Route 9A. Increased bus service could not accommodate through travel, nor could it serve those commuters with one end of their trip in an area not accessible by public transit. Bus service is also less efficient in serving travelers during non-peak hours or on weekends. At these times, demand is usually so light that service must be curtailed or, in some cases, not offered. Furthermore, it would not address goods movement in the Route 9A corridor.

The limited benefits of providing a dedicated transitway within the Route 9A corridor were documented in the 1989 New York City Department of City Planning’s (DCP) “West Side Transitway Planning and Feasibility Study.” In this study, the potential ridership and financial viability of a light-rail transitway were evaluated for the entire Route 9A corridor. The study concluded that the Route 9A segment south of 30th Street would have low demand for service and such a transitway would not be warranted. The small ridership would be possibly diverted from existing subway lines.

In addition to the above considerations, the project goals and objectives for this FSEIS are somewhat different than for the 1994 Route 9A Preferred Alternative. Many of the project goals, such as restoring Route 9A capacity and the bikeway/walkway; providing more park/“green” area; facilitating all pedestrian movements in Lower Manhattan; and providing Route 9A compatibility with the proposed WTC Memorial Site would not be met by a public transportation alternative alone. Therefore, the public transportation alternative has been eliminated from further consideration for this project. Coordination of the Route 9A project with other on-going and proposed public transportation projects for Lower Manhattan will continue to ensure maximum compatibility of overall transportation improvements.

Transportation Systems Management (TSM), Transportation Demand Management (TDM) and Intelligent Transportation Systems (ITS) Alternatives

The strategies for this alternative were thoroughly explored in the 1994 Route 9A FEIS. A complete TSM alternative was developed for Route 9A from Battery Place to 59th Street. The consideration of HOV lanes was also thoroughly analyzed. Technical Memoranda entitled “Evaluation of a Transportation System Management Alternative” and “High Occupancy Vehicle Analysis” considered that those were not viable alternatives to the reconstruction of Route 9A. The current conditions and vehicular use of Route 9A has not significantly changed; therefore, that conclusion is still valid for the proposed project. In addition, the goals and objectives of the current Route 9A project are different and further indicate these strategies will not fulfill those needs. As in the case of the 1994 Route 9A FEIS, certain TDM strategies are encouraged and are compatible with the construction alternatives.

The inclusion of ITS improvements was considered in the 1994 Route 9A Project for the Preferred Alternative. A separate NYSDOT ITS installation project is currently underway for the Route 9A corridor. The project will provide such ITS elements as closed circuit television cameras; video image detectors or traffic controllers and related features; and fiber optic cables and conduits. The work from Battery Place to West Thames Street would also connect with the existing ITS system north of Chambers Street through a conduit system installed under the Route 9A bikeway/walkway. In addition, closed circuit television cameras and video image
detectors would be installed. The whole system would connect to the Joint Traffic Operation Center in Long Island City.

ITS work south of Chambers Street was initially held up after September 11, 2001 due to consideration of SEIS project alternatives, especially depressed roadway sections, that would affect any new installations. The current Route 9A project will consider and provide for the addition of these ITS features in the design stage. However, ITS work south of West Thames Street has been reactivated, including provisions for ITS elements in the BBT to help in the coordination of overall construction in Lower Manhattan.

RECONSTRUCTION ALTERNATIVES

Three alternatives are under consideration for Route 9A between Chambers and West Thames Street: the No Action, the At-Grade, and the Short Bypass. There are no Short Bypass optional treatments for the southern portal since the Cedar Street Portal Option, which was identified in the Draft SEIS, has been discarded from further consideration. This section presents a detailed description, schedule, and cost for these alternatives. Appendix B contains detailed engineering drawings of the alternatives. Mobility Enhancement Concepts (TDM, TSM, Intelligent Transportation System) was considered in conjunction with the development and design of the preferred alternative in this Final Supplemental Environmental Impact Statement (FSEIS).

NO ACTION ALTERNATIVE

The No Action Alternative would make permanent the six-lane interim roadway that was constructed after the September 11 terrorist attacks. The interim roadway restored vehicular access and mobility between Liberty and Vesey Streets and allowed the reopening of the Brooklyn-Battery Tunnel (BBT). Reconstruction of the temporary pavement and other minor improvements would be necessary under this alternative (see Figure 2-2). The No Action Alternative also functions as a baseline against which the other alternatives are evaluated.

The alternative can be divided into three geographical sections:

West Thames Street to Albany Street

From West Thames Street to Albany Street, the No Action Alternative retains the existing roadway, four lanes northbound and three lanes southbound separated by the southbound West Street underpass connection to the BBT. The narrow, 10-foot-wide sidewalk east of the roadway and the northbound parking/standing lane would be retained. The temporary Rector Street pedestrian bridge would be removed. A possible future bridge at Rector/Carlisle is under study as is one outside the project limits at Morris Street. Any proposed pedestrian bridges would be evaluated for potential traffic, cultural, or environmental impacts in the future studies. No changes would be made to the existing bikeway, adjacent community/park facilities, lawn, and parking areas on the west side of Route 9A.

Albany Street to Murray Street

In the area adjacent to the WTC Site, the six-lane temporary roadway that was opened in March 2002 (replacing the eight-lane roadway damaged on September 11, 2001) would remain as the permanent Route 9A roadway. To accommodate the WTC slurry wall (the “bathtub”) and haul road, the alignment of the temporary roadway in the area between Cedar and Barclay Streets was shifted slightly westward of the pre-September 11, 2001 roadway; once it is no longer needed for construction, the haul road would be removed.
No Action Alternative

Section A-A

KEY ELEMENTS

- 6 lane roadway retained at WTC site
- Upgrades interim pavement conditions
- Adds turn lanes at Liberty and Vesey Streets
- Pedestrian bridge at Liberty (by others); possible future bridges under study at Rector/Carlisle & Vesey/Murray/Warren
- Retains existing grade
- Below grade PA/LMDC work in R.O.W. in 9A contract
The roadway’s temporary asphalt pavement would need to be replaced with permanent pavement. The current concrete median barrier, which separates the six lanes (three in each direction) would be replaced with a narrow, raised median area. Single left-turn lanes would be provided in both directions at Liberty Street and at Vesey Street in the southbound direction only (short single left-turn lanes currently exist on northbound Route 9A at Liberty Street and on southbound Route 9A at Vesey Street). There would be only minor changes in the roadway grade. The west-side frontage would remain. The Liberty Street pedestrian bridge would be modified or replaced, and the temporary Vesey Street bridge removed. A possible future bridge at Vesey, Murray, or Warren Streets is under study.

The six-lane roadway would transition to the pre-September 11, 2001 sections in the vicinity of Cedar and Barclay Streets, where four lanes exist in each travel direction. The west curb line would match the current west curb line, thereby retaining the pre-September 11, 2001 and current frontage at the World Financial Center (WFC).

The limited roadway work would be coordinated with the WTC Site and PATH improvements now under consideration by the Lower Manhattan Development Corporation (LMDC) and the Port Authority of New York and New Jersey (PANYNJ), respectively (see Figure 2-1). These actions include:

- Extension of the WTC Site and slurry wall south of Liberty Street;
- Possible relocation of WTC Site river water cooling intake and discharge lines;
- PATH ventilation and emergency egress;
- A planned pedestrian concourse beneath Route 9A in the vicinity of Fulton Street;
- Freedom Tower; and
- The WTC Memorial development.

**Murray Street to Chambers Street**

No changes would be made to the existing roadway except for concrete pavement repair as needed. The alternative would maintain the existing four lanes in each travel direction with separate left-turn lanes at northbound and southbound Murray Street, northbound Warren Street, and southbound Chambers Street. The 15-foot-wide east sidewalk would be retained, as would the current bikeway and walkway on the west side.

**Schedule**

The replacement of the temporary pavement on the interim roadway between Cedar and Barclay Streets is expected to take approximately 25 months to construct and would be coordinated with work related to the WTC Site and PATH. The other sections have new pavements with a 50-year design life and would need routine maintenance.

**Cost**

The total cost of a new permanent-type pavement from Albany to Murray Street and other improvements is expected to be approximately $135 million, including design, inspection, construction, and escalation.
AT-GRADE ALTERNATIVE

West Thames Street to Albany Street

The At-Grade Alternative would retain this section’s current lane configuration of four northbound lanes and three southbound lanes separated by the West Street Underpass (see Figure 2-3). To accommodate pedestrian enhancements, the narrow east sidewalk area would be doubled in width. To achieve this, the northbound parking lane between J.P. Ward Street and north of Rector Street would be eliminated. Vehicular travel lanes would remain in their current condition, except at Carlisle and Albany Streets where they would be shifted west of their current location by approximately 20 feet. A parking/taxi loading zone would be provided between Carlisle Street and Albany Street, and the right travel lane could be used as a loading/unloading lane during off-peak hours between J.P. Ward and Carlisle Streets. The alternative would include the continuous Class I bikeway west of the roadway, with some minor adjustments near Albany Street, and a continuous walkway, or promenade, separated from the bikeway by a planting strip. The temporary Rector Street bridge would be removed. A possible future pedestrian bridge in the vicinity of Rector Street or Carlisle Street is under study as is one outside the project limits at Morris Street. The temporary playgrounds and other current uses to the west of Route 9A would be reconfigured as part of the proposed Hudson River Park (HRP).

Albany Street to Murray Street

In the vicinity of the WTC Site, the At-Grade Alternative would restore the eight-lane configuration (four through lanes in each travel direction plus left-turn lanes) that existed prior to September 11, 2001. To improve pedestrian movements along and across West Street, a new at-grade pedestrian crossing with wide crosswalks would be provided at Fulton Street. Vehicles exiting the new westbound Fulton Street would be able to turn north or south at a T-intersection. Double left turns are provided at Liberty Street (northbound and southbound), single left turn at Vesey Street (southbound), and dual left turns at Murray Street (northbound and southbound). A median varying in width (20-foot minimum) would provide a pedestrian refuge between the northbound and southbound roadway. The At-Grade Alternative is compatible with the proposed underground pedestrian concourse planned by the Port Authority. The temporary Vesey Street Bridge would be removed. A modified, or replacement, bridge would be provided by others at Liberty Street. A pedestrian bridge at Vesey Street, Murray Street, or Warren Street is also a possibility, pending further study. A westerly shift in the Route 9A alignment is possible to avoid the Liberty Street pedestrian bridge pier in the northbound roadway and will be evaluated as the design progresses.

To provide more frontage area to accommodate pedestrians adjacent to the WTC Site, the northbound roadway would be shifted west (outside of the WTC bathtub slurry wall), and the east sidewalk area between Albany and Murray Streets would be widened. The shift in the roadway would result in a narrower frontage area at the WFC and a wide sidewalk area west of the WTC Site slurry wall adjacent to the WTC Memorial and Freedom Tower. A wide frontage/sidewalk area would also be provided between Fulton and Vesey Streets, and adjacent to the proposed Freedom Tower. The width of the east sidewalk in front of the Verizon Building between Vesey and Barclay Streets would also increase from the existing 15-foot width.

The At-Grade Alternative would accommodate the BPC Site 26 development and the WTC Site and PATH improvements identified by the PANYNJ and LMDC in the corridor, including the following (see Figure 2-1):
**KEY ELEMENTS**

- **8-lane shifted at-grade roadway similar to pre-9/11 conditions**
- **Wide frontage/sidewalk area adjacent to the WTC Memorial and Freedom Tower**
- **Improvements to median and increased planting**
- ** Raises grade of 9A surface for compatibility with WTC site**
- **Pedestrian bridge at Liberty (by others)**
- **Possible future bridges under study at Rector/Carlisle & Vesey/Murray/Warren**
- **Possible to include below grade PALMDC work in R.O.W. in 9A contract**
- **Frontage treatment including bikeway, walkway and layby between Albany & Murray Streets to be evaluated in greater detail as design progresses**

**SECTION A-A**

**AT-GRADE ALTERNATIVE**

*At-Grade Alternative*
Route 9A Project FSEIS

- Extension of the WTC Site and slurry wall south of Liberty Street;
- A pedestrian concourse;
- PATH ventilation and emergency egress;
- Possible relocated WTC Site river water intake and discharge lines; and
- The Freedom Tower and Memorial.

The grade of the roadway between Cedar and Vesey Streets would be raised to be comparable to the WTC Site grading and minimize the flooding potential of the WTC Site during a 100-year storm. With the regrading, the steps that lead to WFC buildings would be eliminated. The grading change is achieved while retaining the elevation at the sidewalk at the arcade corner of the Verizon Building at the Vesey/West Street intersection. Frontage elements at WFC and at Site 26 will be evaluated in greater detail as the design progresses and modified to meet higher grades of the At-Grade Alternative’s southbound roadway.

Murray Street to Chambers Street

Between Murray and Chambers Streets, the current four northbound lanes would be maintained as in the No Action Alternative. The four-lane southbound and northbound roadways would be retained and a new southbound left turn lane added at Warren Street to help facilitate southbound Route 9A left turn movements. The sidewalk on the east side of Route 9A would be improved with urban design features but the 15-foot width would be retained. The median width in that area would be retained except for the new left turn lane at Warren.

Modified Features from the DSEIS

The At-Grade Alternative includes the following modified design features from the At-Grade Alternative contained in the DSEIS:

- Reduced median width between Liberty and Vesey Streets and a single southbound rather than dual left turn lanes at Vesey Street to increase frontage at the Memorial and Freedom Tower.
- Dual left turn lanes at Murray Street rather than single left turns.
- Retention of the existing pavement and east sidewalk widths.
- Retention of left turn lane configurations at Murray and Warren Street intersections to allow concurrent dual left turn movements.
- Retention of all roadway pavement north of Barclay Street.

Schedule

Construction for the At-Grade Alternative would take approximately 26 months to construct.

Cost

The total estimated cost of the At-Grade Alternative is approximately $265 million, including design, inspection, construction, and escalation.

SHORT BYPASS ALTERNATIVE

The Route 9A Short Bypass Alternative would reconstruct eight lanes in front of the WTC Site, and would feature four lanes placed below ground and four lanes at the surface (see Figure 2-4). Through traffic, which is estimated to make up a majority of the total traffic would travel below
KEY ELEMENTS

- 8-lane roadway: 4 at-grade, 4 below grade (in bypass)
- Southern terminus of portal at Liberty Street; Northern terminus at Vesey Street
- Substantial conflict with ECS/Verizon lines and Vesey outfall sewer at Vesey Street
- Creates a park-like setting adjacent to the WTC Memorial (wide frontage)
- Wide frontage/walkway area at Freedom Tower
- Major traffic shift from at-grade to depressed/covered bypass
- 3A Northbound lanes provided at Warren and Chambers Streets
- With depressed bypass, no pedestrian bridge at Liberty Street; Possible future bridges under study at Rector/Carlisle & Murray/Warren
- Raises grade of 9A surface for compatibility with WTC site
- Below-grade PA/LMDC work in R.O.W. in 3A contract
- Compatible with direct underground truck ramp exit connection from WTC Site Security Area to Northbound bypass
- Frontage treatment including bike lane, walkway and layby between Albany & Murray Streets to be evaluated in greater detail as design progresses
Chapter 2: Project Alternatives

ground in a covered roadway, with portals at Liberty Street (south end) and Vesey Street (north end). The bypass would surface at Albany Street and Murray Street. Local traffic would remain on the four surface lanes.

Optional south end portal treatments and concepts were evaluated for Cedar and Albany Streets and both were discarded from further consideration (see concepts and options discarded under Section E).

Concepts for north end portal locations to the north of Vesey Street were also studied at Barclay Street and Murray Street, but were also discarded from further consideration (see concepts discarded under Section E).

West Thames Street to Albany Street

In this area the Short Bypass Alternative is identical to the At-Grade Alternative except for minor differences in the alignment of the Albany Street intersection, where the entrance to the Short Bypass begins. The temporary Rector Street bridge is removed and a possible future bridge at either Rector or Carlisle is under study. A possible future bridge is also under study outside the project limits at Morris Street.

Albany Street to Murray Street

From Albany Street to Murray Street, the 1,100 foot long depressed bypass would be parallel to and approximately 15 to 20 feet from the WTC Site slurry wall. The roadway rises to the surface south of Murray Street, where there is a signalized intersection. Left turns would not be permitted on Route 9A at either Murray or Albany Streets, but vehicles from westbound Fulton Street would be able to access both the northbound and southbound surface roadways. The two southbound surface lanes would be located at the existing west side curb line, and a wide frontage area at the WFC site, between Liberty and Vesey Streets, would be maintained. To create a wider frontage and sidewalk area in front of the WTC Memorial and Freedom Tower, the two northbound lanes would be shifted west of the slurry wall to the greatest extent possible. The east sidewalk in front of the historic Verizon Building would be widened from 15 to 20 feet.

Frontage treatments at the WFC and BPC Site 26 will be evaluated in greater detail as the design progresses.

Extensive relocations of utility systems in the corridor would be required between Albany and Murray Streets, including that of a 78-inch interceptor sewer and related regulator tide gate, and outfall sewer at Vesey Street. Several hundred communication conduits and cable/fiber optic lines that connect to the Verizon building at Vesey Street would also be relocated.

The grade of the surface streets would be raised to be consistent with the WTC Site elevations and the PANYNJ plans to raise the WTC Site slurry wall to avoid flooding during the 100-year storm and to accommodate the subsurface roadway, PATH concourse and infrastructure, utilities, and plantings. This would necessitate adjustments to the top of the slurry wall and the grades at the entry to Site 26, 1 WFC, 2 WFC, 3 WFC, the Winter Garden, and garage entry. Like the At-Grade Alternative, the existing grade at the Vesey/West Street and Verizon Building arcade intersection would be retained.

Pedestrians would be able to cross the two, two-lane divided surface roadways on a wide crosswalk between the WFC and WTC sites at Fulton Street. To provide ample refuge for pedestrians, the northbound and southbound lanes would be separated by a median, that would vary in width from approximately 20 feet up to 100 feet wide at the Liberty and Vesey Street
crossings. This alternative would modify, but retain the wide 2 WFC/3 WFC frontage, Route 9A bikeway/walkway, and proposed Hudson River Park along the west side of Route 9A.

The Short Bypass Alternative would remove the temporary Vesey Street pedestrian bridge. The Liberty Street pedestrian bridge would no longer be necessary once construction is complete. A possible future bridge at Murray Street or Warren Street will be studied.

The bypass structure would include a jet fan ventilation system mounted in bypass roof notches to minimize the width of the bypass structure. Related tunnel systems (fire, life-safety, closed circuit TV/ITS/traffic control monitoring, etc.) would also be incorporated, including a drainage pumping station located beneath each end of the bypass for storm water discharge.

Like the other alternatives, the Short Bypass Alternative would incorporate the possible WTC Site and PATH improvements identified by PANYNJ and LMDC, including a truck exit ramp from the WTC Site which would connect to the northbound bypass below Liberty Street with an acceleration lane. The PATH concourse and WTC Site river water intake and discharge lines would be located beneath the bypass structure. Ventilation requirements and emergency access for the PATH tubes will be studied during design development in conjunction with PANYNJ.

Murray Street to Chambers Street

The Short Bypass Alternative would provide the same treatment in this section as described for the At-Grade Alternative. Urban design enhancements would be included. The east sidewalk width would remain at 15 feet.

Modified Features from DSEIS

The Short Bypass Alternative includes the following modified design features from the Short Bypass Alternative contained in the DSEIS:

- Narrower median width between Liberty and Vesey Streets and realignment to increase frontage at the Memorial and Freedom Tower.
- Surface street left turn pockets added at Liberty and Vesey Street intersections.
- Narrowing of the bypass structure by placement of jet fans in roof notches rather than at the side walls to reduce utility conflicts and costs.
- Retention of existing surface roadway pavement and east sidewalks north of Murray Street.

Schedule

Construction of the Short Bypass Alternative would take approximately 43 months to construct.

Cost

The total cost of the Short Bypass Alternative including design, inspection, construction and escalation, is estimated at approximately $895 million.

E. DISCARDED ALTERNATIVES AND CONCEPTS

INTRODUCTION

This section presents the alternatives, concepts, and options that were discarded because they did not adequately meet the project needs or goals and objectives. An alternatives screening process resulted in the advancement of three feasible and reasonable alternatives for further study and consideration.
Alternatives eliminated during the screening, summarized in Table 2-2, include various Long Tunnel Concepts (LTC) and a Lowered Roadway with Pedestrian Deck treatment at the WTC Site.

<table>
<thead>
<tr>
<th>Alternatives/Concepts Considered</th>
<th>For Further FSEIS Analyses</th>
<th>Alternative Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Route 9A/West Street (West Thames Street to Chambers Street)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Action</td>
<td>Yes</td>
<td>Post-September 11, 2001 six-lane interim roadway with minor upgrade (pavements, etc.)</td>
</tr>
<tr>
<td>At-Grade</td>
<td>Yes</td>
<td>1994 FEIS Preferred Alternative (eight lanes) realigned for exposed WTC Site slurry walls</td>
</tr>
<tr>
<td>Lowered Roadway with Pedestrian Deck (Discarded)</td>
<td>No</td>
<td>Lowered eight-lane Route 9A with pedestrian deck at WTC Site</td>
</tr>
<tr>
<td>Short Bypass</td>
<td>Yes</td>
<td>Four-lane depressed/covered roadway for through traffic with 4 surface lanes for local traffic</td>
</tr>
<tr>
<td><strong>Route 9A/West Street (Battery Place to Chambers Street)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Long Tunnel (Discarded)</td>
<td>No</td>
<td>Four-lane depressed Long Tunnel with six surface lanes from Murray Street to BBT Plaza and Battery Park Underpass</td>
</tr>
<tr>
<td>Mobility Concept/Alternatives (Discarded)</td>
<td>*</td>
<td>Public Transportation Alternative TSM, TDM, and ITS Concepts</td>
</tr>
</tbody>
</table>

**Table 2-2**

**FSEIS Range of Alternatives/Concepts**

**Note:** * To be incorporated to the extent possible into the selected alternative.

**CONCEPTS DISCARDED**

All alternatives and concepts were evaluated using the alternatives screening process briefly summarized in this section. The Lowered Roadway with Pedestrian Deck and LTC have been discarded from further consideration and will not be further developed and/or studied.

**LOWERED ROADWAY WITH PEDESTRIAN DECK CONCEPT AT THE WTC SITE—WEST STREET (LIBERTY STREET TO VESEY STREET)**

The Lowered Roadway with Pedestrian Deck Concept is not being considered for further evaluation and study due to its incompatibility with the setting of the WTC Site Memorial featured in the selected Studio Daniel Libeskind plan for the WTC Site. The Memorial plan by Michael Arad and Peter Walker, which was selected in January 2004, also is incompatible with the deck pedestrian alternative. Incompatibilities include:

- The Pedestrian Deck Concept proposed a pedestrian-only deck over a depressed Route 9A adjacent to a portion of the WTC and WFC sites. The WTC Site plan, however, would extend Fulton Street through the site to Route 9A; Fulton Street would be unable to connect with a depressed Route 9A roadway without itself being lowered. This would create significant grading and access problems. The portal would also be situated opposite the Freedom Tower and would create access, frontage, and grading issues.

- The lowered roadway concept would require extensive changes in Route 9A frontage and access to 2 WFC, 3 WFC, and the Winter Garden.
Depressing the eight lanes would require extensive utility relocation due to the width of the structure and median which leaves insufficient space for north-south utilities in the corridor.

LONG TUNNEL CONCEPT (BATTERY PLACE TO CHAMBERS STREET)

Table 2-3 summarizes the reasons for discarding the LTC, which include its inability to meet numerous project goals and objectives, its significant construction impacts and disruption to the surrounding community, and its lengthy closures of the approach ramps to the BBT and Battery Park Underpass during construction, resulting in significant traffic impacts to those heavily traveled roadways. In addition, the LTC would allow the reduction of only one lane in each direction on the surface and would cost approximately $2.3 billion. With certain LTCs, only 30 percent of the total traffic in the Route 9A corridor would use the tunnel.

<table>
<thead>
<tr>
<th>Goal</th>
<th>Comparative Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goal 1—Permanently Restore the Transportation/Mobility Functionality of Route 9A</td>
<td>The LTC requires three surface street lanes and turn lanes in each direction and constricts bikeway/walkway design at three tunnel access locations. The ramps and portals for Rector Street and Battery Place connections narrow the available area for the north-south linear park/bikeway/walkway. Local access and circulation to and from Route 9A would be severely hampered by the LTC.</td>
</tr>
<tr>
<td>Goal 2—Improve Pedestrian Movements Along and Across Route 9A</td>
<td>The LTC would not improve and might hinder pedestrian access and connectivity in the vicinity of Rector Street/BBT/BPU* because of the tunnel portals for ramp connections and end of the long tunnel.</td>
</tr>
<tr>
<td>Goal 3—Provide for an Appropriate and Respectful Setting for the WTC Site Memorial</td>
<td>The LTC would require three at-grade lanes in each direction which would carry 60-70 percent of the total Route 9A traffic.</td>
</tr>
<tr>
<td>Goal 4—Enhance Green Areas and Open Space</td>
<td>LTC Tunnel ventilation buildings and stacks would be needed with potential visual impacts.</td>
</tr>
<tr>
<td>Goal 5—Support Economic Recovery and Redevelopment</td>
<td>The LTC would create a long period of traffic/community disruption (5-6 years of construction), thereby exacerbating access traffic and economic conditions in the area. The long duration/disruption caused by LTC construction could delay the revitalization of the Lower Manhattan area. The construction operations impact to traffic BBT and BPU approaches would cause congestion throughout the area.</td>
</tr>
<tr>
<td>Goal 6—Provide a Safe, Timely and Cost-Effective Solution</td>
<td>The LTC would require a 5-6 year construction period. The long construction duration for the LTC (5-6 years) and local area disruption during that period would cause extensive traffic delays, and restricted access to the area. Operation of the Long Tunnel would be complex and costly. Total operation and maintenance costs would increase. The significant cost ($2.3 B) outweighs any added benefits that might be provided at locations south of the WTC Site.</td>
</tr>
</tbody>
</table>

Note: *BPU=Battery Park Underpass

Several options for the LTC also were considered but discarded from further consideration. Geometric variations, which provided additional direct Route 9A/BBT/Battery Park Underpass interchange traffic movements below grade, were deemed impractical because of physical constraints, major property acquisition needs, construction impacts, constructibility issues and cost. Elimination of local ramp connections at the south end also was considered but discarded due to the excessive traffic that would have resulted on the surface roadways, and the operational needs of the complex tunnel connection systems at the BBT, the Battery Park Underpass, and Route 9A tunnels. One option located the tunnel portal north of Chambers Street instead of north of Vesey Street, another ended the tunnel north of Murray Street. These particular concepts were discarded since they were either impractical, more costly, or placed much greater traffic volume on the surface streets.
It is therefore concluded that further study and/or consideration of the LTC are not warranted.

**MOBILITY ALTERNATIVES/CONCEPTS**

As discussed previously, the Transit Alternative was evaluated in the 1994 Route 9A FEIS and found not to satisfy the vehicular traffic needs provided by a reconstructed Route 9A. Because similar demands, needs and traffic service exist today, the alternative remains unfeasible. The project has the capability to incorporate Mobility Enhancement concepts including TDM, TSM and ITS systems into the design. These measures will therefore be considered for inclusion with the Preferred Alternative.

**SUMMARY**

Table 2-4 is a summary of the reasons for discarding the Lowered Roadway with Pedestrian Deck and LTC concepts.

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Reasons for Discarding</th>
</tr>
</thead>
</table>
| Pedestrian Deck with Lowered Roadway Concept | • Not compatible with Studio Daniel Libeskind WTC Site plan, Freedom Tower, and/or with Michael Arad/Peter Walker Memorial design.  
  - Fulton Street Extension to Route 9A for vehicles and pedestrians not compatible with elevations and site access.  
  • Severe utility impacts.  
  • Potentially conflicts with proposed PATH underground concourse connection between WTC Site and WFC due to width required for eight-lane roadway. |
| LTC | • Requires longer and more complex environmental process.  
• Significant cost with minimal benefits  
  - Only 30 percent of the traffic would use the tunnel  
  • Would require six thru lanes plus turn lanes on surface.  
• Significant construction impacts.  
  - Major feasibility issues regarding utility and interceptor sewer relocations.  
  - Community disruption during five to six year construction period.  
• Significant impacts to traffic flow during construction.  
• Security and operation concerns/cost.  
  - Impact on operation of express bus operations at BBT and BPU portals.  
  - Reduces local access due to portals/ramps creating circulation impacts. |

**DISCARDED SHORT BYPASS ALTERNATIVE – CEDAR PORTAL OPTION**

A Cedar Street southerly portal option of the Short Bypass Alternative presented in the DSEIS was dropped from further consideration since it would have more adverse effects, and not perform as well as the retained Short Bypass with a Liberty portal. The Cedar Portal Option had been presented in the DSEIS to assess whether there were any benefits with having the bypass coincide with the southerly extension of the WTC Site to Cedar Street.

The Cedar Portal Option was dropped for the following reasons:

- The Cedar Portal Option did not enhance the placement of WTC Site access ramps and other features at the WTC South Site. After careful consideration LMDC, in coordination with
PANYNJ, NYCDOT and NYSDOT, selected a ramp configuration that had Liberty Street (south side) as the primary access routing to the subsurface garage and security area. In addition LMDC determined that Liberty Park would be elevated over the ramps at West Street and that St. Nicholas Church would be sited near Greenwich Street.

- Southbound surface West Street traffic, due to the elimination of the Albany Street–Route 9A intersection, would not be able to access the West Street Tunnel to the BBT. This would have resulted in more surface traffic (approx. 200 vehicles/hr) on Route 9A to make a Battery Place U-turn. This added traffic would twice enter the complicated, heavily-traveled, and congested BBT/Route 9A intersection at West Thames Street.

- The Cedar Portal Option affected the community facilities on the west side between West Thames Street and Albany Street and resulted in a 0.3 acre reduction in proposed HRP land at that location.

- Northbound surface traffic from Carlisle and Albany Streets would not be able to access the northbound bypass.

- The Cedar Street Portal Option eliminated the Albany Street intersection, one of the two egress points from the southern area of Battery Park City to Route 9A and inland streets.

- The Cedar Portal Option had two more Route 9A intersection movements operating as LOS E/F and one more Route 9A intersection impacted by queuing than the Liberty Portal Option.

- The extensive Verizon facilities at Liberty Street would still require relocation despite the southerly extension of the bypass portal.

- Disruption to storm sewer outfall, tide gate chambers, and regulator #M-6 would be avoided as would work in BPC south of Albany Street with the elimination of the Cedar Portal Option.

- Construction of a Cedar Portal would have increased construction duration considerably due to greater involvement with the West Street Underpass. Construction would involve complex MPT/staging at the West Street Underpass approach to the BBT affecting normal traffic operations there for an extended time period. More extensive utility relocations (e.g., ECS/Verizon) would also be required.

- The location of the security checkpoint at the southbound entry to the BBT (West Street Tunnel), because of physical constraints, would be in a poor location resulting in operational issues for the BBT forces as well as potential conflicts and traffic problems with other bypass traffic not destined for the BBT.

- The Cedar Street Portal Option would have been more costly than the Liberty Street Portal Option.

**DISCARDED SHORT BYPASS ALTERNATIVE – ALBANY PORTAL CONCEPT**

A more southerly portal for the Short Bypass was also considered at Albany Street. That concept was discarded from further consideration due to its significant utility sewer system, proposed Hudson River Park, and construction impacts.
DISCARDED SHORT BYPASS ALTERNATIVE – BARCLAY AND MURRAY PORTAL CONCEPTS

Based on comments, a more northerly portal was considered after the DSEIS and studied for the Short Bypass. These concepts were discarded due to traffic and visual considerations in addition to increased construction duration and cost.

DISCARDED OPTION FOR A WTC EGRESS RAMP IN THE MEDIAN OF THE AT-GRADE ALTERNATIVE

This option had been considered in the DSEIS but was discarded due to physical constraints, traffic and operational issues, and adverse visual impacts adjacent to the Memorial and WTC Site.

F. FRAMEWORK FOR ANALYSIS

The following discusses the analysis framework used to analyze the three Route 9A Alternatives (No Action, At-Grade, and Short Bypass) deemed feasible and reasonable.

APPROACH TO CUMULATIVE EFFECTS

FEDERAL GUIDANCE

A Memorandum of Understanding (MOU) was prepared jointly by FEMA, the FTA, the Federal Highway Administration, the U.S. Department of Housing and Urban Development (HUD), the New York State Urban Development Corporation (Empire State Development Corporation) and its subsidiary LMDC, the U.S. Coast Guard, EPA, the U.S. Army Corps of Engineers, the U.S. Fish and Wildlife Service, and the National Marine Maritime Fisheries Service in June 2002. This MOU established the protocol for cooperation and oversight of federally funded projects resulting from the September 11, 2001 terrorist attacks. The MOU specified the role of the participating government entities and defined procedures and commitments to ensure a comprehensive yet expeditious environmental review process under the National Environmental Policy Act (NEPA).

To further the federal coordination established by the MOU, the FTA Lower Manhattan Recovery Office published its “Approach to Cumulative Effects Analysis for the Lower Manhattan Recovery Effort” in July 2003. This document provides guidance for the sponsoring agencies being funded from the $4.55 billion Lower Manhattan Transportation Recovery Projects. As described in this report, the cumulative analysis approach will be coordinated under the MOU—Environmental Coordination and Review among the federal partners, which was signed by 11 participating federal and state agencies in August 2002. The principal features of the coordinated analysis are:

- Promoting efficient project delivery and environmental stewardship;
- Advancing each project independently, but in a coordinated manner; and
- Focusing attention on critical environmental factors.

The approach promotes environmental stewardship through the complete and proactive evaluation of environmental factors, but includes measures to streamline the review and project delivery. Agencies involved in the Lower Manhattan Transportation Recovery Projects have developed Environmental Performance Commitments (EPCs) for the avoidance and reduction of
potential impacts in advance of the environmental review process. These EPCs incorporate design features and construction practices to preserve the capacity of the local environment and successfully allow for the development of all of the transportation recovery projects.

The coordinated approach will ensure consistency among projects through a consistent set of analysis assumptions and methodologies for all of the transportation recovery projects. As a project advances through the NEPA process, its analysis and any identified impacts will be incorporated into the documentation of later projects to ensure a consistent, up-to-date, and comprehensive evaluation of potential cumulative effects.

To expedite the environmental review process, the study of cumulative effects will focus on subject areas that are prone to potential adverse effects. The federal partners and local project sponsors have coordinated to identify five key areas with the highest potential for adverse cumulative effects: access and circulation, air quality, noise and vibration, cultural and historic resources, and economic factors. The local project sponsors will coordinate with the FTA and EPA to develop consistent methodologies, assumptions, data sources, and impact criteria for the evaluation of impacts under each of the five cumulative effects subject areas.

The temporary waiver of most transportation conformity requirements provided by Public Law 107-230 allows for these projects to proceed without a full conformity determination. To meet obligations set forth with the conformity waiver, the framework recognizes the need and value of interagency consultation and is consistent with the enhanced interagency consultation procedures set forth during the transportation conformity waiver period.

**ENVIRONMENTAL ANALYSIS FRAMEWORK**

In response to the federal guidance provided by the FTA, the governmental entities involved with the recovery efforts in Lower Manhattan have developed an environmental analysis framework. This framework was prepared by PANYNJ, MTA, NYSDOT, and LMDC, in cooperation with the FTA and interested federal agencies. It is anticipated that, at a minimum, this framework will be used by PANYNJ, MTA, and NYSDOT for the preparation of environmental documentation for each of their proposed Lower Manhattan Transportation Recovery Projects. Local Project Sponsors will be introduced to this framework, as appropriate, when additional Federal Transportation Recovery Projects are identified and prioritized.

The framework considers the regulations set forth by the Council on Environmental Quality (CEQ) and takes into account the guidance in State Environmental Quality Review Act (SEQRA) regulations, the New York *City Environmental Quality Review (CEQR) Technical Manual*, industry best practices, and public input. The framework consists of the following components:

- Green Design, Green Construction, and Sustainable Design Principles;
- Construction Environmental Protection Plan;
- Public Involvement and Governmental Entities Coordination Plan; and
- Baseline Assessment of Resources and Coordinated Cumulative Effects.

**Green Design, Green Construction, and Sustainability Principles**

The Project Sponsors for the Lower Manhattan Recovery Projects have developed a common set of EPCs that they will each undertake such as design elements, construction techniques, and operating procedures that will lower the potential for adverse environmental impacts. These measures are incorporated into the analysis that follows and will diminish the likelihood of
adverse cumulative effects. In addition, project sponsors will undertake additional EPCs, as appropriate, based on the project’s particular nature, timing, and scope.

Construction Environmental Protection Plan

NYSDOT is currently determining how to implement EPCs on the Route 9A project and determining what procedures to be implemented to protect sensitive resources that may be affected by the project’s construction (see Table 2-5). This plan will describe how the initial condition of the resources will be assessed, how the construction work will be implemented to avoid or minimize impacts, and how the project will be monitored during construction. The plan will use the best available information from the ongoing construction coordination process for projects in Lower Manhattan and a shared projects inventory being developed by LMDC. The plan will also provide for an effective means of disseminating current information to the public and other developers and will reflect any revisions to the EPCs as modified by the Lower Manhattan Construction Coordination Act (August 2004).

Public Involvement and Governmental Entities Coordination Plan

As per the framework, NYSDOT has and will continue to engage the community at large (including environmental groups, interested governmental entities, and the general public) and will continue to inform and involve them as the project is advanced through the NEPA process.

NYSDOT has developed a public involvement plan that will guide the outreach for the project. A key goal of this plan is to communicate potential impacts during construction and to coordinate with other projects in the vicinity to avoid, or at least minimize, adverse effects on the environment. As the process continues, this plan will be updated to identify a protocol for:

- Addressing comments received during the construction phase;
- Communicating appropriate current information to the public, including implementation schedules; and
- Means and measures of on-going coordination with other projects. The process will build on an existing construction coordination protocol among parties already involved in rebuilding Lower Manhattan.
### Table 2-5
**Environmental Performance Commitments**

<table>
<thead>
<tr>
<th>Technical Area</th>
<th>Proposed Commitments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Air Quality</strong></td>
<td>Use ultra low sulfur diesel fuel in off-road construction equipment with engine horsepower (HP) rating of 60 HP and above.</td>
</tr>
<tr>
<td></td>
<td>Where practicable, use diesel engine retrofit technology in off-road equipment to further reduce emissions. Such technology may include Diesel Oxidation Catalyst / Diesel Particulate Filters, engine upgrades, engine replacements, or combinations of these strategies.</td>
</tr>
<tr>
<td></td>
<td>Limit unnecessary idling times on diesel powered engines to 3 minutes</td>
</tr>
<tr>
<td></td>
<td>Locate diesel powered exhausts away from fresh air intakes.</td>
</tr>
<tr>
<td></td>
<td>Control dust related to construction site through a Soil Erosion Sediment Control Plan that includes, among other things: a) spraying of a suppressing agent on dust pile (non-hazardous, biodegradable); b) containment of fugitive dust; c) adjustment for meteorological conditions as appropriate.</td>
</tr>
<tr>
<td><strong>Noise and Vibration</strong></td>
<td>Where practicable, schedule individual project construction activities to avoid or minimize adverse impacts.</td>
</tr>
<tr>
<td></td>
<td>Coordinate construction activities with projects under construction in adjacent and nearby locations to avoid or minimize impacts.</td>
</tr>
<tr>
<td></td>
<td>Consider condition of surrounding buildings, structures, infrastructures, and utilities where appropriate.</td>
</tr>
<tr>
<td></td>
<td>Prepare contingency measures in the event established limits are exceeded.</td>
</tr>
<tr>
<td><strong>Cultural and Historic Resources</strong></td>
<td>Establish coordination among projects to avoid or minimize interruption in access to cultural and historic sites.</td>
</tr>
<tr>
<td></td>
<td>Initiate public information and involvement outreach with sensitivity to local cultural resources.</td>
</tr>
<tr>
<td></td>
<td>Identify public information outlets that will receive and provide current information about access during construction.</td>
</tr>
<tr>
<td></td>
<td>Consult with the New York State Office of Historic Preservation and the New York City Landmarks Preservation Commission regarding potentially impacted, culturally significant sites. Monitor noise and vibration during construction at such sites as appropriate.</td>
</tr>
<tr>
<td><strong>Access and Circulation</strong></td>
<td>Establish a project-specific pedestrian and vehicular maintenance and protection plan.</td>
</tr>
<tr>
<td></td>
<td>Promote public awareness through mechanisms such as: a) signage; b) telephone hotline; and c) Web site updates.</td>
</tr>
<tr>
<td></td>
<td>Ensure sufficient alternate street, building, and station access during construction period.</td>
</tr>
<tr>
<td></td>
<td>Regular communication with New York City Department of Transportation and participation in its construction efforts.</td>
</tr>
<tr>
<td><strong>Economic Effects</strong></td>
<td>Coordinate with LMDC, Downtown Alliance or other entities to minimize residential and retail impacts as required through: a) relocation assistance, as applicable, to persons to businesses physically displaced by the project; and b) focus on essential business and amenities to remain in Lower Manhattan.</td>
</tr>
<tr>
<td></td>
<td>Add appropriate signage for affected businesses and amenities.</td>
</tr>
<tr>
<td><strong>Design for the Environment</strong></td>
<td>Energy Efficiency/Renewable Energy</td>
</tr>
<tr>
<td></td>
<td>Enhanced Indoor Environmental Quality (IEQ)</td>
</tr>
<tr>
<td></td>
<td>Conserving Material and Resources</td>
</tr>
<tr>
<td></td>
<td>Environmentally-friendly Operations &amp; Maintenance</td>
</tr>
<tr>
<td></td>
<td>Water Conservation and Site Management</td>
</tr>
<tr>
<td></td>
<td>Waste Management and Recycling (including during construction)</td>
</tr>
</tbody>
</table>
Baseline Assessment and Coordinated Cumulative Effects Analysis Approach

The framework establishes the components of the baseline assessment and coordinated cumulative effects analysis to be used for the Federal Transportation Recovery Projects. These parameters will be applied to the study of cumulative effects in the FSEIS. The guidelines specifically addressed in the framework are as follows:

• Each Project Sponsor will address cumulative effects, as applicable, as part of its independent project-specific environmental review process.

• The baseline to be used for the No Action comparison required under NEPA will be pre-September 11, 2001 conditions.

• The baseline for environmental review of construction-related impacts for each project will be adjusted to reflect, where appropriate, conditions anticipated to be in effect at the time of construction.

• Project Sponsors will share appropriate information, databases and documentation of the baseline and forecasted conditions.

• Each Project Sponsor will apply a consistent approach for the evaluation of cumulative effects focused on the six following environmental resource areas: air quality (including the Enhanced Procedures during the Transportation Conformity Waiver Period); pedestrian and vehicular access and circulation; historic and cultural resources; noise and vibration; business/economic interests; and design for the environment.

• The geographic area for analysis will be the area of Lower Manhattan south of Canal Street, but where appropriate, the geographic area may be adjusted for specific resources.

• Each Project Sponsor will adhere, at a minimum, to the set of common EPCs to lower the potential for adverse environmental impacts, thereby lessening the potential for each project to contribute to overall adverse cumulative effects.

As each project matures through the NEPA process, the findings of the project will be incorporated into the cumulative effects analysis for the projects that follow it. As such, the project on which findings have been issued will constitute an existing condition for the cumulative effects analysis of the next project.

ANALYSIS YEARS

2003 is the year for analysis and description of existing conditions. There are three future analysis years considered in the evaluation of environmental effects and impacts in this FSEIS. The analysis years are the Construction Period, 2009 (Estimated Time of Completion) and 2025 (Design Year). A description of each of these years is as follows:

• Construction Period—This period is analyzed and evaluated for construction impacts of each alternative. Conditions are analyzed considering the impacts of the Route 9A reconstruction, as well as cumulative effects from other construction projects in Lower Manhattan.

• Estimated Time of Completion, 2009—The estimated time of completion (ETC) and full operation is 2009. Conditions are analyzed for each alternative and include impacts from other construction projects in Lower Manhattan (i.e., construction-generated traffic as well as restricted circulation patterns).
Route 9A Project FSEIS

- Design Year, 2025—In the design year, potential long-term impacts of the alternatives, including the no action, are assessed using future NYMTC forecasts of population, employment, and land use development. These forecasts are the basis from which the future demand for transportation service in the corridor is determined. The long-term evaluation of the alternatives from a transportation and environmental perspective are also considered in the context of these future forecasts.

SELECTION OF 2025 DESIGN YEAR

Typically, for major highway projects the design year is 20 years after the estimated time of completion (ETC+20) to assure that the investment in the transportation facility is appropriate and adequate for the “life” of the new/improved facility. When a structure is involved (e.g., a bridge, tunnel, etc.) NYSDOT procedures call for a design year that is 30 years after the estimated time of completion (ETC+30). However, as discussed below, for this FSEIS certain conditions exist that warrant an alternate procedure.

If the ETC+20 criteria were used for this project it would result in a 2029 design year. At the time of the DSEIS preparation, NYMTC did not have forecasts beyond 2025 and Best Practices Model results for that year have not been accepted. The year 2025 also coincides with the agreed upon future year analyses being used in other environmental documents for federally funded Lower Manhattan Recovery Projects.

The 2025 design year used for this project is essentially analogous to the more standard ETC+20. However, as discussed above, NYSDOT design criteria requires the use of ETC+30 when a structure alternative, such as the Short Bypass, is involved. Based on an evaluation of the conditions and circumstances involved with constructing this project in Lower Manhattan, the use of ETC+20 as the design year has been determined to provide a more meaningful analysis in the FSEIS. The following discussion provides the basis for using a design year of ETC+20 versus ETC+30:

- The discussion on “Potential for Induced Traffic Demand” in the 1994 FEIS discusses several issues related to the fact that Route 9A traffic would not be significantly different for any particular future year. This is because the entrance/exit capacity of the bridges/tunnels servicing Manhattan are of finite capacity. The peak hour traffic volumes, those primarily used in analysis, are especially constrained by these capacity limitations, and that has not changed to date.

- The width of the Route 9A right-of-way at the WTC, as well as for the entire project length, is limited because of the presence of utilities, adjacent buildings, the WTC slurry wall, and the Battery Park Underpass and BBT ramps. The right-of-way at the approaches and connection to the Short Bypass is restricted, further limiting the ability to expand the roadway width and capacity by providing a wider depressed section. The addition of lanes or a wider structure is limited by these features, which will not change beyond ETC+20.

- Other major transportation projects related to the Lower Manhattan recovery effort are using a design year of 2025 even though major structures are also included in these projects. These include PANYNJ’s Permanent WTC PATH Terminal and MTA/NYCT’s Fulton Street Transit Center and South Ferry Terminal Projects. Using the same design year for the Route 9A Project is consistent with the mandate for coordination among all project sponsors of federally funded projects which provides for a common baseline to compare individual and cumulative effects.

*