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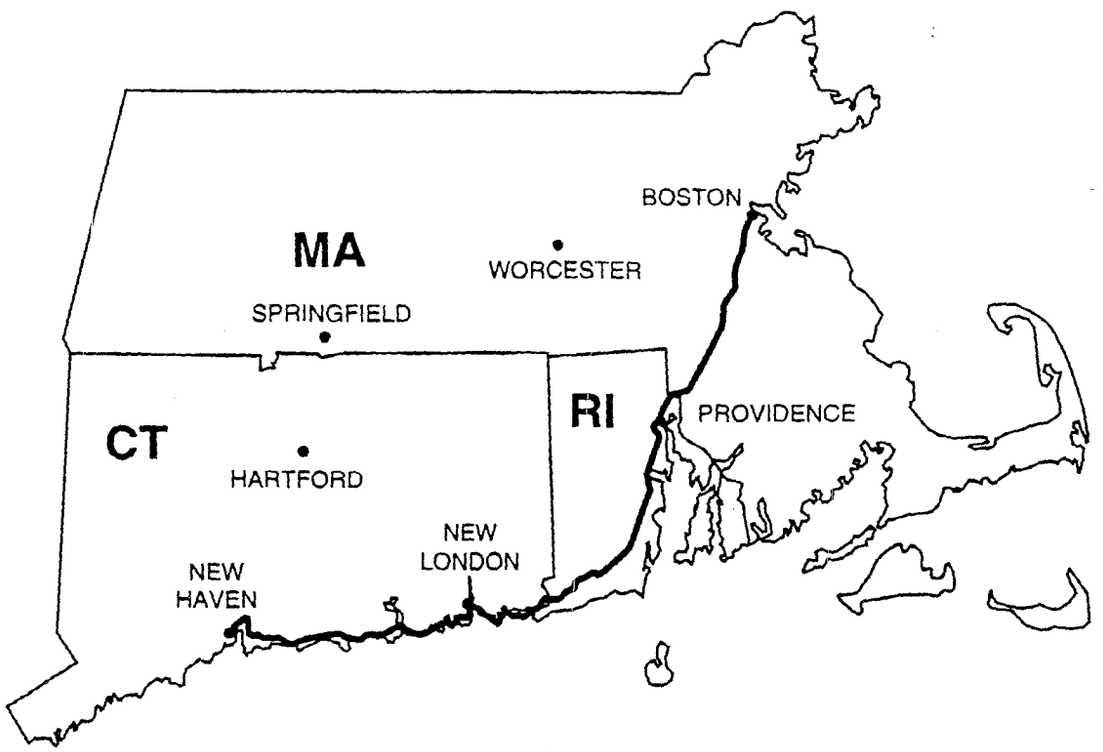
U. S. Department
of Transportation
Federal Railroad Administration

Appendix to the Final Environmental Impact Report Supplement

Office of Railroad Development
Washington, D.C. 20590

Northeast Corridor Improvement Project
Electrification - New Haven, CT to Boston, MA



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Cambridge, MA 02142-1093

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13. ABSTRACT (Maximum 200 words)

This document is an appendix to the Final Environmental Impact Report Supplement, published on February 15, 1995, addressing the proposal by the National Railroad Passenger Corporation (Amtrak) to complete the electrification of the Northeast Corridor main line by extending electric traction from New Haven, CT, to Boston, MA. The purpose of this document is to discuss the selection of the Boston area electrical substation site and the relocation of a paralleling station in East Foxboro.

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U.S. Department
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Administration**

400 Seventh St., S.W.
Washington, D.C. 20590

May 15, 1995

The Honorable Trudy Coxe
Secretary
Executive Office of Environmental Affairs
The Commonwealth of Massachusetts
100 Cambridge Street
Boston, Massachusetts, 02202

Re: Northeast Corridor Electrification FEIS/R EOEA 9134

Dear Secretary Coxe:

The Federal Railroad Administration (FRA) has submitted to the MEPA Unit the final environmental impact statement and final environmental impact report (FEIR) on the proposal by the National Railroad Passenger Corporation (Amtrak) to extend intercity electric train operation from New Haven, CT to Boston, MA. Subsequent to the submission of the FEIR, at the request of the MEPA Unit, FRA also submitted a supplement to the FEIR.

In the FEIR and the FEIR Supplement, FRA recognized that there were some unresolved issues as they related to the location of the Boston-area electrical substation site required by the proposed project. In those documents, FRA proposed deferring the decision on that substation site until Amtrak, the MBTA and the communities involved had resolved locational and design issues. FRA would then prepare appropriate supplemental environmental documentation.

In my letter of March 24, 1995, I indicated that FRA had received a number of comments on the FEIS/R suggesting that a decision on this site should not deferred. In addition, the review of alternatives progressed more quickly than FRA anticipated. At that time, FRA and Amtrak withdrew the FEIR with the expectation that the FEIR and appropriate supplemental information would be resubmitted in the near future when a decision had been made on the location of Boston-area electrical facilities. An extensive review of potential alternative sites for this electrical facility was undertaken by Amtrak, the Massachusetts Bay Transportation Authority (MBTA), the Massachusetts Highway Department, the Massachusetts Executive Office of Transportation and Construction and FRA. Based on this analysis, Amtrak, the project proponent, has incorporated into its Proposed Action the location of this site at the soon-to-be vacated MBTA police headquarters in Cabot Yard near South Station. A smaller electrical facility, a paralleling station, would be required in Roxbury.

FRA has also received a number of letters commenting on the FEIS/R that expressed concern over the location of a paralleling station in East Foxboro. After evaluating Amtrak's design, the requirements for rail operations in 2010 and the availability of sites, FRA identified a location near mile post 205 of the Northeast Corridor main line that addresses the concerns raised in these comments. Amtrak has incorporated this site into its project plans as well.

Both of the new sites are discussed in detail in the enclosed appendix to the FEIR Supplement. FRA requests that the MEPA Unit arrange for printing a notice of the availability of the FEIR and the supplemental documentation in the next publication of the Commonwealth's *Environmental Monitor.*

FRA appreciates the support that we have received from the MEPA Unit staff in facilitating the review of the FEIR. Should your continuing review of the FEIR identify any issues that require further elaboration, FRA will provide such elaboration in a timely manner.

Sincerely,

Mark E. Yachmetz
Chief
Passenger Programs Division

cc: Glenn Goulet
Michael Saunders

PREFACE

The National Railroad Passenger Corporation (Amtrak) proposes to complete the electrification of the Northeast Corridor main line by extending electric traction from New Haven, CT, to Boston, MA. The Federal Railroad Administration (FRA) prepared a combined environmental impact statement, required by the National Environmental Policy Act of 1969, and environmental impact report, required by the Massachusetts Environmental Policy Act (MEPA), analyzing this project. This combined document, the *Final Environmental Impact Statement/Report and 4(f) Statement, Northeast Corridor Improvement Project, Electrification -- New Haven, CT to Boston, MA* (FEIS/R), was published and made available for public review in November 1994.

On February 15, 1995, the FRA issued a supplement to the Final Environmental Impact Report (FEIR Supplement), that discussed alternative locations of the electrical substation that would be needed in the Boston area. Since the FEIR Supplement was released, the city of Boston and several state and local officials requested that Amtrak and the Massachusetts Bay Transportation Authority (MBTA) reevaluate the feasibility of a site in the vicinity of South Station that would have less community impact.

This document is an appendix to the FEIR Supplement that discusses the South Station area electrical substation facility. In addition, the appendix addresses concerns expressed over the East Foxboro parallelling station.

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1 square yard (sq yd, yd^2) = 0.8 square meter (m^2)	1 square kilometer (km^2) = 0.4 square mile (sq mi, mi^2)
1 square mile (sq mi, mi^2) = 2.6 square kilometers (km^2)	10,000 square meters (m^2) = 1 hectare (he) = 2.5 acres
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1 gallon (gal) = 3.8 liters (l)	
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1 cubic yard (cu yd, yd^3) = 0.76 cubic meter (m^3)	1 cubic meter (m^3) = 1.3 cubic yards (cu yd, yd^3)
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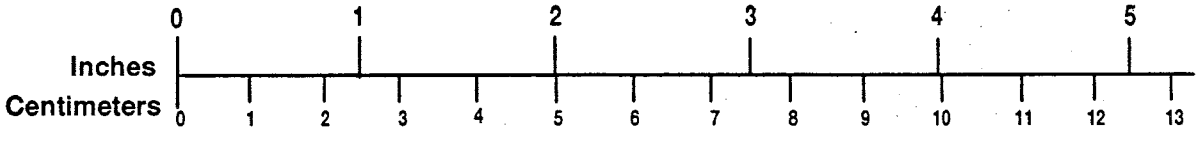

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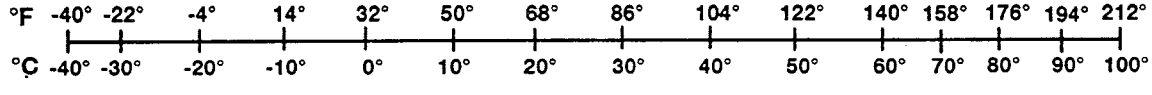

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I. INTRODUCTION

On February 15, 1995, the Federal Railroad Administration (FRA) issued a supplement to the Final Environmental Impact Report (FEIR Supplement) on the proposal by the National Railroad Passenger Corporation (Amtrak) to extend electric train operation between New Haven, Connecticut, and Boston, Massachusetts, and thus complete the electrification of the main line of the Northeast Corridor (NEC).

Section I of the FEIR Supplement discussed the alternative sites that were considered for the location of the electrical substation that would be needed as part of the proposed project in the Boston area. In that document, FRA concluded that Amtrak's original proposal of locating this substation in the Roxbury Crossing area was technically superior. However, a site in Clarendon Hills was identified that might also meet the technical needs of the proposed electrification system, although additional power loading studies were needed to confirm the technical acceptability of this site. Other alternatives at Canton, Hyde Park, and South Station were considered. However, the analysis showed that each was technically inferior to the Roxbury location and yet would still require the location of an electrical facility, albeit a smaller paralleling station, in the Roxbury area.

Since the FEIR Supplement was released, a number of events have occurred. First, Amtrak completed its power load analysis of the Clarendon Hills site and concluded that the site was not desirable for technical reasons. Amtrak held public outreach sessions at Roxbury Community College on March 6, 1995, and at the Hyde Park Municipal Building on March 7, 1995, to obtain community reaction to alternative substation siting proposals. Finally, the city of Boston and several state and local officials requested that Amtrak and the Massachusetts Bay Transportation Authority (MBTA) reevaluate the feasibility of a site in the vicinity of South Station that would have less community impact.

Amtrak, the Massachusetts Executive Office of Transportation and Construction (EOTC), MBTA, the Massachusetts Highway Department (MHD), and FRA have surveyed a number of possible sites in the South Station area. The site of the former MBTA police headquarters building in Cabot Yard adjacent to South Station, coupled with a paralleling station in the Roxbury area, has been found to be technically feasible. Amtrak, the project proponent, has adopted this location as part of its proposed project.

In addition to the concerns expressed over the location of the northernmost substation, FRA received a number of comments concerning Amtrak's proposed location of a paralleling station approximately at milepost 205.70 in East Foxboro and its proximity to a residential area. After a review of the comments, the capability of the proposed electrical system, and projected rail operations in this area, FRA identified a possible alternative site near milepost 205.00 that could accommodate this paralleling station. Amtrak now plans to develop this site for this purpose.

The following appendix discusses each of these sites.

II. BACKGROUND ON THE PROPOSED ELECTRIFICATION PROJECT

1. Purpose of the Electrification Project

Amtrak proposes to extend electric traction power to Amtrak's Northeast Corridor (NEC) main line between New Haven, CT, and Boston, MA. This would complete the electrification of the Northeast Corridor and permit the operation of electric trains over the entire length of the NEC from Boston to Washington, D.C. The Proposed Action is part of the continuing program of improvements to the main line of the NEC that was authorized by Congress to improve rail passenger service on the Washington-New York City-New Haven-Boston route through reduced travel times and increased reliability.

The electrification of the route segment between New Haven and Boston, the only remaining non-electric segment on the NEC main line, will help achieve the program goal of reduced travel times and increased reliability in two ways:

- Electric powered trains have operating characteristics (e.g., maximum speed, acceleration and deceleration rates, reliability, and cost of maintenance) that make them superior to the diesel-electric trains currently serving the New Haven to Boston route.

- Completion of electrification north of New Haven will eliminate the time-consuming change from diesel to electric locomotives that presently takes place in New Haven, permit through train service between Boston and Washington, and help to address the growing congestion in New York City's Pennsylvania Station.

Reduced travel times and increased reliability will increase the attractiveness of rail travel over alternate means, primarily private automobile and commercial airline. There are attendant benefits to the potential diversion of traffic from both of these modes. These include reduced vehicular traffic on major highways in the northeast and on surface roads around the region's major airports, as well as reduced air traffic at regional airports. This, in turn, may delay or eliminate the need for new or expanded highway and airport facilities in the Boston and New York City metropolitan areas. Reductions in air and vehicular traffic, as well as the replacement of diesel locomotives with electric locomotives between New Haven and Boston, will also result in improved air quality and other environmental benefits.

2. Description of the Proposed Electrification System

The proposed electrification design is known as a 2 x 25 kilovolt (kV) autotransformer overhead catenary system. This design includes a contact wire and a feeder, each of which is energized at 25 kV, supported on poles above the rail line. Amtrak's proposed system would obtain electrical power from four substations spaced 44 to 53 miles apart along the route, with the northernmost substation located in the Boston area. The limited number of substations required was one of the reasons this particular design was chosen. (By way of comparison, Amtrak's existing electrification system between Washington and New York City, which was built in the mid 1930s, has substations spaced every 6 to 10 miles.)

Substations, sited in proximity to the right-of-way, contain transformers that "step down" the 115 kV power from local utility transmission lines to 25 kV. The 25 kV feed is then connected to the catenary and feeder systems for use by the locomotive. The system has stringent voltage level and reliability requirements. To meet these requirements, other electrification facilities will be developed, including switching stations, which assist in providing backup power should an adjacent substation experience an outage, and paralleling stations, which serve to equalize the voltage along the tracks.

The current impetus for developing the electrification system is Amtrak's plans to establish high-speed rail service between Boston and New York City with trip times under three hours. However the Massachusetts Bay Transportation Authority (MBTA) plans, at some unspecified future date, to convert its commuter rail operations to electric operation. Electric commuter service offers performance benefits (quicker acceleration and higher speed) and environmental benefits (less noise and air pollution) than the diesel locomotives currently used. In recognition of these plans, Amtrak's designers, to the extent practicable, have tried to size and select locations for facilities to accommodate the future conversion of MBTA to electric operation[1].

The system is being designed for Amtrak by the Morrison Knudsen Corporation, L.K. Comstock Corporation, and the Spie Group (MK), a joint venture of three engineering and construction firms contracted by Amtrak to design and install all railroad electric power system components necessary to operate high-speed electric locomotive-hauled passenger trains between Boston and New Haven.

[1]Pursuant to the agreement between Amtrak and the MBTA covering intercity rail passenger service on the NEC in Massachusetts, all improvements to the NEC undertaken by Amtrak, including the proposed electrification project, become the property of the MBTA.

III. BOSTON AREA SUBSTATION LOCATION

1. Boston Area Substation Requirements

The Boston Terminal Area (BTA), including the South Station complex, a storage yard, and the Southhampton service facility, will create a heavy load on the electric traction power system. As a consequence, it is important to have a substation in close proximity to the end of the line. In addition, a strong power supply in the vicinity of the Southwest Corridor could avoid the need to use a feeder between the substation and South Station, and eliminate this component from the overhead catenary system in that area. The benefit to this is that it would eliminate the need to route the feeder through the highly constricted areas under the numerous low bridges and tunnels through the Southwest Corridor and on to South Station.

Amtrak's initial plans for the electrification system included the proposed location of the northernmost substation site in the Roxbury Crossing area of Boston across the street from an existing MBTA substation that serves the Orange Line. Amtrak's designers selected this site for three main reasons. First, vacant land, under MBTA ownership, is available adjacent to the tracks, precluding the issue of acquiring occupied or private property. Second, an ample 115 kV power supply with backup capabilities exists at the property line under Tremont Street, eliminating the need for extending power lines long distances under city streets. Third, the location at Roxbury Crossing would eliminate the need for any additional electrical facilities between Readville (MP 219.08) and South Station (MP 228.00) either as part of Amtrak's electrification project, or at some future date when the MBTA converts to electric traction.

Amtrak's preliminary design of the electrification system, including the placement of the substation at the Roxbury Crossing site, was presented in the draft environmental impact statement/report (DEIS/R) published for this project in October 1993. A substantial number of comments were received expressing concerns with respect to the location of a substation at the Roxbury Crossing site. Based on these comments, Amtrak and its design team undertook a comprehensive review of potential alternative sites to the facility proposed at Roxbury Crossing.

In addition, FRA retained De Leuw Cather and Company, a transportation engineering and design firm experienced in railroad electrification, to conduct an independent assessment of potential sites for the Boston area substation. FRA's environmental consultant, Daniel, Mann, Johnson, and Mendenhall, Inc., and Frederic R. Harris, Inc. (DMJM/Harris) undertook a review of the potential sites identified by Amtrak, MK, and De Leuw Cather.

All sites have shortcomings, either technical or environmental. The Roxbury Crossing site is the technically superior site. The purpose of the alternatives review was to determine whether there was a suitable alternative that avoided the location of the substation at that site. Three of the alternative sites for substations that were identified, Canton, Hyde Park, and South Station, would require the use of the Roxbury Crossing site, or some property in very close proximity to it, for a paralleling station. FRA initially concluded that this was a sufficient reason to dismiss these sites from further consideration. However, the city of Boston and several state and local officials requested that Amtrak and MBTA reevaluate the opportunities for locating a site in the vicinity of South Station that was not in a residential area.

2. South Station Substation Site Analysis

Amtrak, EOTC, MBTA, MHD, and FRA conducted an extensive analysis of possible sites in the vicinity of South Station. As stated in the FEIS/R and the FEIR Supplement, the location of any site in this area is complicated by the Central Artery/Tunnel Project (CA/T) and its need to utilize almost every vacant parcel in the area for construction or construction staging. There are no sites available in the immediate South Station area. Five sites were identified in or near the Amtrak and MBTA yards that support operations at South Station. These are the site of the MBTA police headquarters in Cabot Yard, which is being vacated, the Broadway Tower site, the Quincy (Americold) Cold Storage area site, the MBTA service and inspection yard site, and the Amtrak service and inspection yard site. These sites are shown on Figure 1.

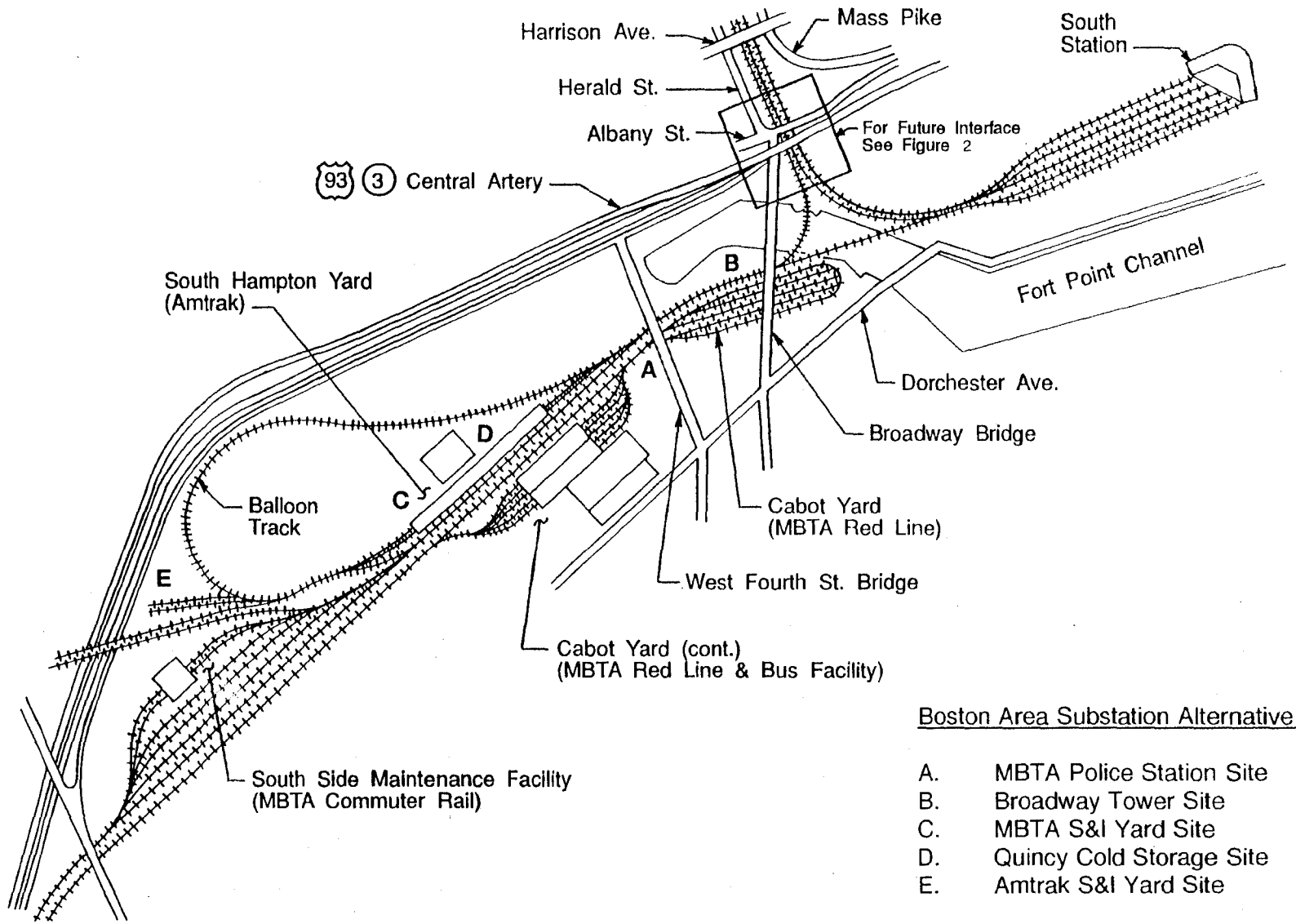
2.1 Common Features of All South Station Site Alternatives

Power Supply: All five sites would obtain power from the two 115 kV high pressure oil filled (HPOF) underground cable circuits connecting the New Boston 1 generating unit to the Kingston Street Substation that currently run under Broadway and over Cabot Yard on the Broadway Bridge. These transmission lines are heavily loaded but appear to have adequate capacity for serving the projected intercity rail needs.

In general, connections are not made to electric transmission lines between a generating plant and the first substation, and Boston Edison Company (BECO) has expressed concerns regarding the addition of a traction substation directly to these lines due to their importance in the overall Boston area transmission system. This will require the development of a combined BECO substation and Amtrak traction substation south of the Broadway Bridge in the Cabot Yard and a buried concrete encased duct bank under Foundry Street between the transmission lines and the substation.

Connections to the Traction System: To avoid the disruption associated with routing the electrification system's cables under city streets, the 25 kV feeds from the traction substation would cross the Cabot Yard tracks and the Fort Point Channel on the relocated wye track bridge and connect to the Amtrak/MBTA main line in the vicinity of where the tracks cross under the Fitzgerald Highway, just outside of South Station (see Figure 2). A number of activities associated with the development of the Central Artery/Tunnel (CA/T) project are planned for this area. To minimize disruption both to the electric traction system during CA/T construction and to CA/T construction efforts, between the traction substation and joining the NEC main line at Fitzgerald Highway, the feeder cables will be placed on poles through Cabot Yard.

From that point to Tremont Street, the feeder cables would be located in a concrete conduit bank that would be developed below track level. A switch house would be developed at track level near Tremont Street to regulate the current flowing to South Station and the tracks to the south and west. (In this area, track level is below street level.) From Tremont to Massachusetts Avenue, the feeder cables would be attached to the walls of the cut and tunnel sections through the Back Bay station and the decked-over portions of the Southwest Corridor. South of Massachusetts Avenue, the feeder cables would be placed on the catenary supports in a manner similar to the rest of the electrified system east of New Haven. The final details of this aspect of



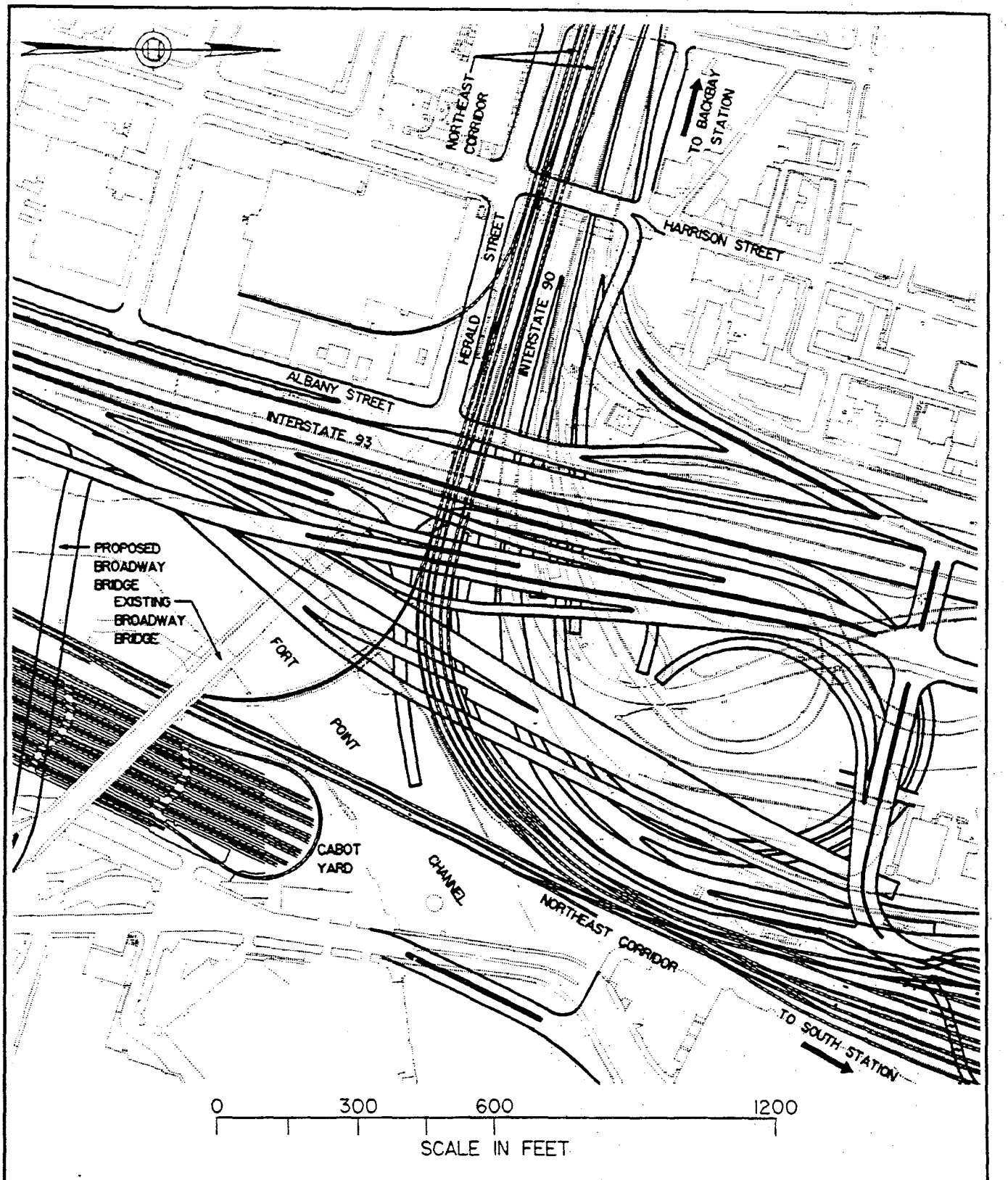
Boston Area Substation Alternative Sites

A. MBTA Police Station Site
B. Broadway Tower Site
C. MBTA S&I Yard Site
D. Quincy Cold Storage Site
E. Amtrak S&I Yard Site

NEC BOSTON AREA SUBSTATION ALTERNATIVE SITES

Northeast Corridor Improvement Project
Electrification - New Haven CT to Boston MA

Figure 1



NEC/CA/T FUTURE INTERFACE

Northeast Corridor Improvement Project
Electrification - New Haven CT to Boston MA

Figure 2

the project, including preservation of the integrity of the Project MUD membrane during development of the concrete conduit bank and the attachment of the cables to the walls, will be developed during final design.

Additional Electrical Facilities: This arrangement involves providing all power between Southampton Yard and South Station to Norton, MA, from the traction substation near South Station. Absent a paralleling station in the vicinity of Roxbury, unsatisfactory voltage drops would occur. Paralleling stations, which are the smallest electrical facilities included in the electric traction system, consist of connections to the catenary system, an autotransformer and switch gear to equalize the voltage between the two tracks, and a small control building. Amtrak plans to develop this facility at the site in Roxbury that Amtrak originally proposed to develop the substation.

2.2 Alternative Substation Sites

2.2.1 MBTA Police Station Site

This site is presently the headquarters of the MBTA police and is bounded by West Fourth Street on the north, the MBTA bus repair facility and parking lot on the east, and the tracks of Cabot Yard and the MBTA's Red Line repair facility on the south and west, respectively. The MBTA police are presently vacating this building and MBTA has offered it to Amtrak for use as the traction substation site. The substation would be a "split" design with primary utility connection on the site of the existing police building and the traction substation across Foundry Street to maintain access to the MBTA bus garage (see Figure 3).

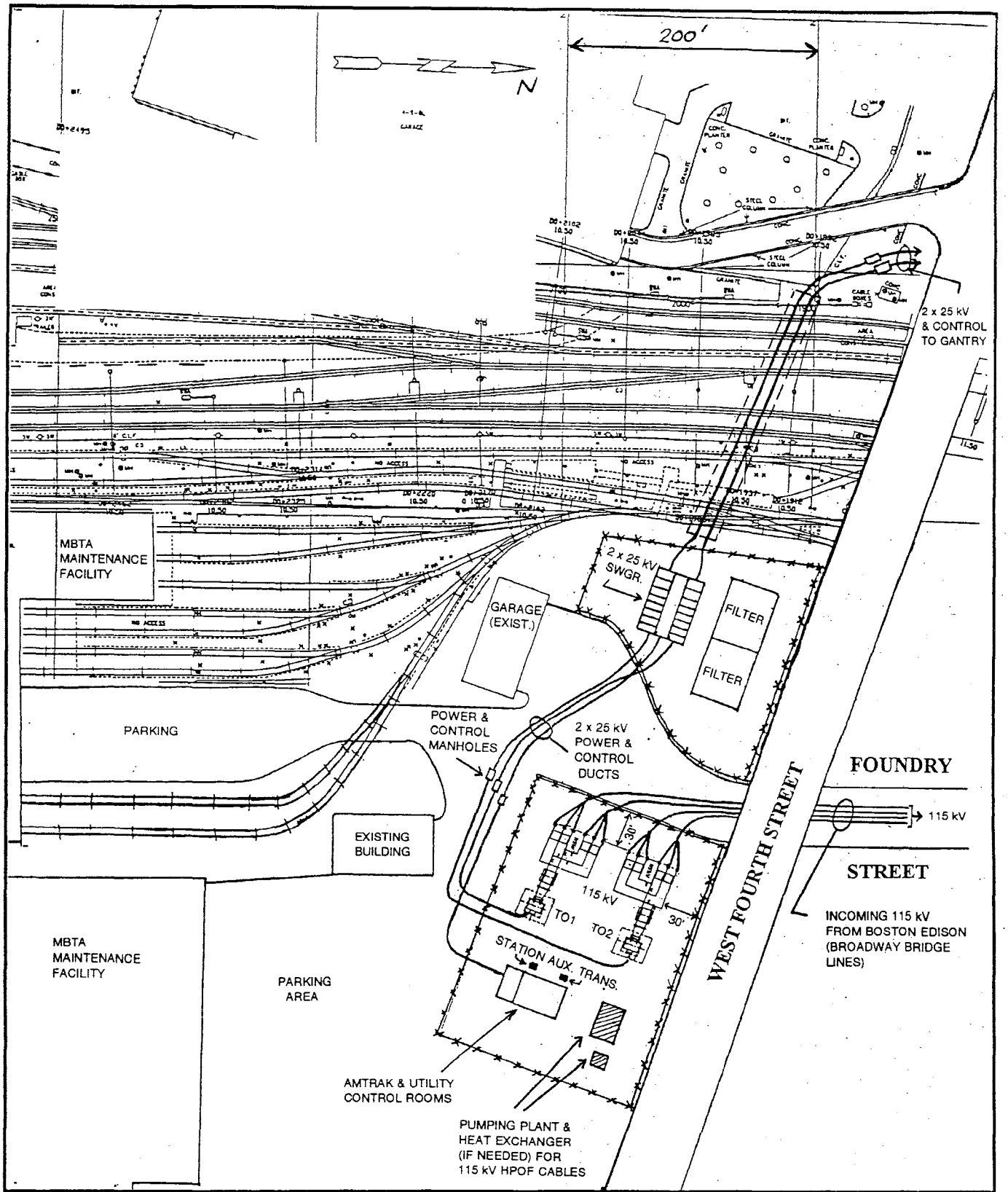
2.2.2 Broadway Tower Site

This site is located south of the existing Broadway Bridge, on the eastern side and adjacent to the Fort Point channel. The site is presently cleared and used as a material storage yard for the CA/T Project. The Broadway Bridge is slated to be relocated as part of the CA/T Project and the site is constrained by the existing bridge on the north, the new bridge on the south, the Dorchester mainline on the west, and the Fort Point Channel on the east.

A new wye connection to the NEC main tracks, which is required for access from the Amtrak and MBTA yards to South Station, is also proposed to be constructed across this property. There is inadequate room for both the wye connection and the substation and no available alternative location to the wye connection. As a consequence, this alternative site was not pursued.

2.2.3 Quincy (Americold) Cold Storage Area Site

This triangular site is located north of the Quincy (Americold) Cold Storage facility and is bounded by the Dorchester main line, the cold storage building, and an access road. The access road is, in turn, bounded by tracks providing access to the new car washer facility and cannot be relocated. There is insufficient space in this location without incorporating the access road and loading docks of Quincy Cold Storage. This, in effect, would require additional condemnation and potential relocation of this business. As a consequence, this alternative site was not pursued.



NEC MBTA POLICE STATION SITE PLAN CONFIGURATION

Figure 3

Northeast Corridor Improvement Project
Electrification - New Haven CT to Boston MA

2.2.4 MBTA Storage and Inspection (S&I) Yard

This site consists of three parcels located opposite to the MBTA S&I facility and adjacent to the MBTA fuel tanks, and is bounded on one side by the access road to the Quincy (Americold) Cold Storage facility and on the other by the Dorchester main line. The extension of the connection to the new BECO substation and connection of the 25 kV feeders from the traction substation to the NEC main line would involve the addition of over 5,000 feet of new power cables in Cabot Yard, adversely affecting the flexibility of MBTA operations in this area. In addition, the electrical facilities would be in close proximity to MBTA's diesel fuel storage tanks, which would create safety concerns. There were no offsetting advantages of this site when compared to the MBTA police headquarters site and it was not pursued.

2.2.5 Amtrak Storage and Inspection (S&I) Facility

This site is located between the Dorchester main line, the I-93 frontage road and the newly constructed CA/T haul road. The site is currently used for the storage of MBTA trains. MBTA presently does not have sufficient capacity to store its trains and use of this site would exacerbate the situation. As with the MBTA S&I site, the extension of the connection to the new BECO substation and connection of the 25 kV feeders from the traction substation to the NEC main line from this location would involve construction of significantly more new power cables in Cabot Yard. As with the previous alternative site, there were no offsetting advantages of this site when compared to the MBTA police headquarters site and it was not pursued.

3. Expanded Evaluation of the South Station Alternative Substation Site (MBTA Police Headquarters)

Based on the impact criteria used in the preliminary screening evaluation, further environmental review of the South Station alternative site was undertaken.

3.1 Land Use

The MBTA police headquarters building and parking area are surrounded on all sides by transit-related activities. The use of this site for the proposed substation would be consistent with existing land use. The paralleling station to be developed in Roxbury Crossing would be located on an undeveloped site bounded by the rail main line to the south, Tremont Street to the east, Gurney Street to the north, and Station Street to the west. Adjacent land uses are industrial and commercial with residential uses beyond. The facility is not out of character with its immediate surroundings, indeed it is across the street from an existing MBTA substation serving the Orange Line. Local residents have expressed concerns that the accumulation of such facilities in one area limits the opportunity for economic development by eliminating land that could be used for facilities that generate or attract employment. The paralleling station is small enough, however, that it could be incorporated into future development of the site.

3.2 Socioeconomics

As the proposed substation and paralleling station sites are in areas primarily devoted to industrial and commercial uses, there should be no impacts on property values. Both sites are publicly owned, therefore, there would be no impact on property values.

Executive Order 12898 requires that the impact of a proposed project on minority and low income populations be addressed. Population statistics for the census tracts containing proposed facilities are presented in Table 1.

Table 1. MBTA Police Station and Roxbury Crossing Site Census Information

TOTAL POPULATION	MEDIAN INCOME	RACE BY %	
MBTA Police Station Site			
504	$26,510	White	96.20
		Black	0.00
		Amer. Indian	0.00
		Asian, Pac. Isl.	3.80
		Other	0.00
Roxbury Crossing			
2,736	$16,654	White	13.40
		Black	38.1
		Amer. Indian	0.4
		Asian, Pac. Isl.	1.9
		Other	46.2

Source: U.S. Census Bureau, 1990

The Roxbury Crossing qualifies as a minority, low income area. Of the 26 facilities proposed by Amtrak as part of the electrification project, it is the only site that falls into either of these categories. Therefore, Amtrak's proposal does not disproportionately affect minority or low income populations.

3.3 Archaeological and Historic Resources

A preliminary archaeological survey (site walkover and archives search) was conducted for the proposed substation site. This area was recently disturbed by the construction of the MBTA

police headquarters building and adjacent parking. The MBTA police headquarters, built within the last 40 years, is not considered significant. Prior to that construction, this site was part of a heavily used rail yard. That yard was built on fill covering the South Cove, an open body of water initially filled in the 1830's. Soil in this area is classified as Udorthent/Urban Land complex, a category used to describe soils that have been cut or filled to the point that their original composition is uncertain.

Boston University's Office of Public Archaeology (OPA), in their Phase II site examinations of the Central Artery corridor, investigated an area immediately adjacent to the north border of the project area (Elia, et al., 1989). This study area, termed SCO2, was bounded by Kneeland, Albany, and West Fourth Streets and the Fort Point Channel. Excavation of a 30 x 50 foot trench south of Broadway Bridge was designed to uncover evidence of Cobb's Wharf (circa 1814), one of the first wharves in the South Cove area. OPA encountered no evidence of the structure and concluded that their placement of the trench had been too far to the east. They recommended no further survey for the area (Elia, et al., 1989:67).

Both the proposed substation and the corresponding utility corridor are located within what would have been the South Cove until filling began in earnest during the 1830's. Since the project area was open to water from the time sea level stabilized until the time it was filled, it is not likely to contain native American or significant Euro-American cultural resources. No archaeological survey is recommended for this area.

The northwest corner of this intersection is mostly occupied by the parking lot associated with 135 Dorchester Avenue, and the northeast corner has modern concrete-block garages and repair shops. In the Boston Landmark Commission's *Comprehensive Survey of South Boston* (1981), this was not an area recommended as an eligible historic district.

However, three buildings in this vicinity are of historic interest: the stone Sts. Peter and Paul Church on Broadway, the rear elevation of which is visible from the intersection; 135 Dorchester Avenue, a c.1900 5-story brick factory; and 99-105 West Fourth Street, a building that includes an early 19th-century Federal-style building, a rare remnant from that period, and a later brick tenement. The latter two are regarded as historic buildings "important to the character of their particular street, neighborhood, and area," and are regarded as possibly eligible for the National Register. It should be noted that 99-105 Dorchester Avenue has been altered since the survey by having its distinctive gable roof replaced by a flat roof.

As the church is extremely remote and faces away from the proposed construction, there is no effect, visually or otherwise, upon this resource.

The former factory at 135 Dorchester Avenue is separated from the project by the parking lot and by West Fourth Street, which is quite wide at this point; moreover, it faces away from the project. The project therefore will be visible from the historic property, but will have little adverse impact, especially since this area is already dominated by modern construction.

The property at 99-105 West Fourth Street is separated from the project by a wide street and faces away from the new construction, therefore, the construction is considered to have a minor visual impact upon the property's setting, which already is dominated by modern construction.

The FRA has concluded that there would be no adverse effect on the properties.

The Roxbury Crossing site has been disturbed by 20th century construction/land modification activities. Because of this disturbance, this site is also unlikely to yield intact cultural material. This site is vacant, however it is located adjacent to the Stony Brook Brewery Historic District and the Parker Hill/Mission Hill North Slope Historic District. The Memorandum of Agreement among FRA, Amtrak, the Massachusetts Historic Commission (MHC), and the Boston Landmarks Commission (BLC) requires Amtrak to consult with MHC and BLC during final design to arrive at an acceptable methodology for visually screening any electrical facility developed at this site from the neighborhood.

Feeder line connections will be aerial between the traction substation and where the NEC main line passes under the Fitzgerald Highway and then will be incorporated within the area disturbed when the NEC main line from South Station to Massachusetts Avenue was depressed. As a consequence, there would be no archaeological impact in this area.

3.4 Noise and Vibration

3.4.1 Operational Noise

The proposed fixed facilities would contain noise-generating electrical and mechanical equipment, specifically transformers and HVAC units. Based on calculations performed in the DEIS/R and carried forward to the main FEIS/R document, specific sensitive receptor impact zones were established for impacts related to substations. These include daytime land uses (schools, churches, etc.) within 280 feet or nighttime land uses (residences, hospitals, etc.) within 500 feet.

An assessment of the substation site indicated that daytime and nighttime sensitive receptors would be located within the impact zone. A church is located within 250 feet, and a multi-unit apartment complex is located approximately 300 feet from the center of the proposed substation. However, these receptors are located next to MBTA's Cabot Yard, which includes the bus garage and Red Line maintenance repair facility. The residential building borders the intersection of West Fourth Street and Dorchester Avenue, which has large volumes of highway traffic. These external noise generators and the depressed nature of the substation site would minimize the potential for adverse noise impact. In addition, appropriate noise suppression measures would be incorporated into the facility design to ensure that its operation does not raise noise levels at the sensitive receptors above the threshold of impact.

The potential noise impact from the location of a substation at the Roxbury Crossing site was evaluated in the FEIS/R. This analysis found that no sensitive receptors would be affected. Since the paralleling station is a much smaller facility and generates less noise than a substation, no noise impact is anticipated at this location.

3.4.2 Operational Vibration

No operational vibration impacts regarding this site are anticipated.

3.4.3 Construction Noise

The proposed facilities would take approximately 3 to 4 months to construct. During this time, the surrounding area would be subject to noise created by light industrial construction equipment such as graders, bulldozers, backhoes, cranes, and trucks. Based on impact criteria, it was determined that sensitive receptors within 180 feet would experience construction noise impacts. The closest sensitive receptor is a residential unit approximately 150 feet from the edge of anticipated construction. However, since construction would occur during daytime periods and residential units are considered nighttime receptors, no impact would be expected.

3.4.4 Construction Vibration

Ground-borne vibration would be created by construction activities at the proposed facility site. Given anticipated equipment required for construction, impact distances were developed based on impact criteria. As such, it was determined that vibration impacts would occur within 70 feet for buildings where low ambient vibration is essential for interior operations, 85 feet for residences, and 135 feet for institutional uses with primarily daytime use. However, no receptors within these categories are located within the indicated impact zones. Therefore, no adverse effects would result.

3.5 Electromagnetic Fields and Interference

The substation, and connecting transmission lines and feeders would be located in an existing rail yard. No residences or commercial facilities are within 150 feet and therefore there should not be any changes to exposed populations related to the selection of this substation site. The utility feed for the proposed facility would run underground beneath Foundry Street from the site (adjacent to West Fourth Street) north to Broadway where it would connect with existing 115 kV lines. While this route would not expose residential receptors to EMF, occupational exposure could occur on an irregular basis to those MBTA employees working within Cabot Yard.

The FEIR Supplement estimated that the location of a substation at the Roxbury Crossing site would not result in an increased EMF exposure at residential receptors but could potentially result in increased EMF exposure to 21 employees in commercial buildings near the site. The potential for exposure from the paralleling station would be somewhat less.

With respect to interference, no electrical interference would occur as a result of the operation of this facility. As discussed in Section 4.5 of Volume I of the FEIS/R, interference is not the result of energizing the catenary system or maintaining power levels, which is the primary function of these facilities.

3.6 Transportation

As stated in the FEIS/R and the FEIR Supplement for this project, one design criterion for Amtrak's proposed electrification system is that the system, to the extent possible, will be sized in such a way as to accommodate future conversion of MBTA operations to electric traction. Locating the Boston area substation in the South Station area will accommodate Amtrak's projected intercity rail service and initial levels of electrified commuter service. However, because of its location at the extreme end of the line, the additional demands placed on this system by commuter trains, if or when MBTA decides to convert a large number of its commuter trains to electric power, would exceed the capacity of the system. As part of conversion to electric operation, the facilities to be developed by Amtrak as part of this project from Canton north might have to be upgraded or additional electrical facilities developed. Since such a proposal would most likely involve the use of Federal funds, separate environmental documentation under NEPA and MEPA would be required before such changes could be undertaken.

3.7 Visual Resources

The substation site and the route of the aerial transmission lines are surrounded by rail-related facilities. As a result, there should be little or no visual impact from the location of this substation and related facilities.

The paralleling station is small enough that it could be incorporated into future development of the site. In the absence of such development, Amtrak has committed to visually screen any electrical facility developed in this location from the neighborhood in the Memorandum of Agreement concerning historic preservation. Therefore, this facility should not adversely affect visual resources.

3.8 Natural Resources

No adverse impacts are anticipated to wetlands, wildlife, endangered species, floodplains, coastal resources, or water resources.

3.8.1 Wetlands

There are no wetlands associated with either the proposed substation or paralleling station site. The National Wetlands inventory map for Boston South (1977) indicates the Fort Point Channel, a subtidal estuary, lies 400 feet to the northwest of the substation site. The Suffolk County Soil Survey describes site soils as Urban, Wet Substratum, indicating the area is considered to be historically filled tideland, however, it would be considered "landlocked" and not fall under Massachusetts' Public Waterfront Act.

3.8.2 Wildlife

The site characteristics for the proposed substation and paralleling station locations are urban landscape with little or no habitat values available. Vegetation noted included scattered ornamentals planted around the police station and typical urban "volunteer" plants in the vacant

area in Roxbury. No wildlife was observed in the area and the sites would have little wildlife value. Development of these sites would not be expected to impact the overall availability of habitat in the vicinity.

3.8.3 Floodplains

Neither site is located in any floodplains according to the FEMA Flood Insurance Rate maps for Boston.

3.8.4 Coastal Zone

The proposed substation site is located within the area of coastal influence and the coastal boundary and will require a Federal consistency concurrence under the Coastal Zone Management Program (301 CMR 20.00). However, given the current use of the site, no impacts are anticipated.

3.8.5 Water Resources

The Massachusetts Department of Environmental Protection, Water Resources Department, noted no water or aquifer protection districts occur in Boston. Surface water is limited to the Fort Point Channel, which is located more than 400 feet from the proposed substation site.

3.9 Hazardous Materials

Construction of the substation would involve demolition of the existing police building and some soil excavation and site grading at the substation site. The Roxbury Crossing site has a history of transportation and commercial uses and was the site of a gas station prior to 1955.

An environmental database search did not produce any listed releases of hazardous waste, at either site or in close proximity to them. However, the site ownership review indicated former transportation and commercial uses, which may then lead to slight levels of contamination present on the site. Prior to disposal of excavated soil and other construction materials from this site, a sampling program would be developed to assess compliance with all appropriate Federal and state regulations.

4. Evaluation Results

Amtrak's analysis of the electrical system loading eliminated the Clarendon Hills site discussed in the FEIR Supplement from further consideration for technical reasons. Two alternative approaches remain for the location of the Boston area substation. The first is a location in or near Roxbury Crossing. This area is the technically superior location for the substation. It would meet the needs of both intercity and the MBTA commuter rail electric operation. This alternative is also significantly less expensive. On the other hand, there is community concern with regard to this site, particularly that the location of a substation there would hinder opportunities for economic revitalization of the area.

The location of the traction substation at South Station is technically inferior. It would require the development of one additional electrical facility (which would be located in Roxbury) to meet the needs of intercity rail passenger service. Future conversion of large numbers of MBTA commuter trains to electric operation would likely require modification to the electrical facilities developed by Amtrak or the construction of additional facilities. The construction of feeder lines between the traction substation and South Station will require design development to limit impacts to those portions of the Central Artery/Tunnel Project in the vicinity of South Station. From South Station to Roxbury, the location of the feeder lines in the constrained Back Bay tunnels and station and in the Southwest Corridor will be difficult, most likely cause delays on intercity and commuter service, and be expensive.

However, this alternative avoids the location of the substation in Roxbury, although a smaller facility would still be required in this neighborhood. Moving the substation to South Station is supported by the city of Boston, and several State and local officials. As a consequence, Amtrak has included this site as part of its proposal to develop the electrification project.

FRA still believes that there may be opportunities for Amtrak, the MBTA, and the community of Roxbury to work together to craft a better solution -- a solution that meets the community's needs and concerns yet yields better technical performance at lower cost. Should these parties develop an alternative that meets their various needs, FRA would be pleased to consider a modification to FRA's preferred alternative with regard to the Boston-area substation. If the merits of such a change could be demonstrated, appropriate supplemental environmental documentation would be prepared.

IV. EAST FOXBORO PARALLELING STATION

1. Background

Amtrak's original plans included the location of a paralleling station near milepost 205.7 in East Foxboro. Comments received on the FEIS/R expressed concern with this location because of its proximity to a residential area. Amtrak met with community officials and suggested a relocation of this facility to a site approximately 1,000 feet east. However, the town had similar concerns with this site. Another site has been identified approximately 3,500 feet west of the original site near milepost 205.00 that addresses the community's concerns (see Figure 4). Amtrak proposes to develop a paralleling station at this site.

2. Site Evaluation

2.1 Land Use

The proposed East Foxboro paralleling station site is immediately east of an existing railroad embankment on an undeveloped parcel in a general industrial zone just north of the Foxboro/Mansfield boundary. The existing tracks are elevated between eight and ten feet above the ground surface at the station site. The paralleling station locus is bordered on the east-northeast by a parking lot and trailer storage area associated with the Tighe Trucking Distribution Company. The Tighe building is south of the proposed site. Beyond the ROW, a small waterbody and associated wetlands encompass the entire western boundary. The nearest residential uses are located approximately 1200 feet to the northeast and 1100 feet to the southwest. In both cases these sensitive areas would be well buffered from the site by wooded areas, transportation and industrial uses, and the ROW. Given the character of the surrounding area, this site is well suited for the proposed use.

2.2 Socioeconomics

The proposed site is owned by the MBTA. As such, the land is currently exempt from taxation, and would remain so if a paralleling station were constructed at the site. Therefore, development of this site would not impact the tax base of the town of Foxboro.

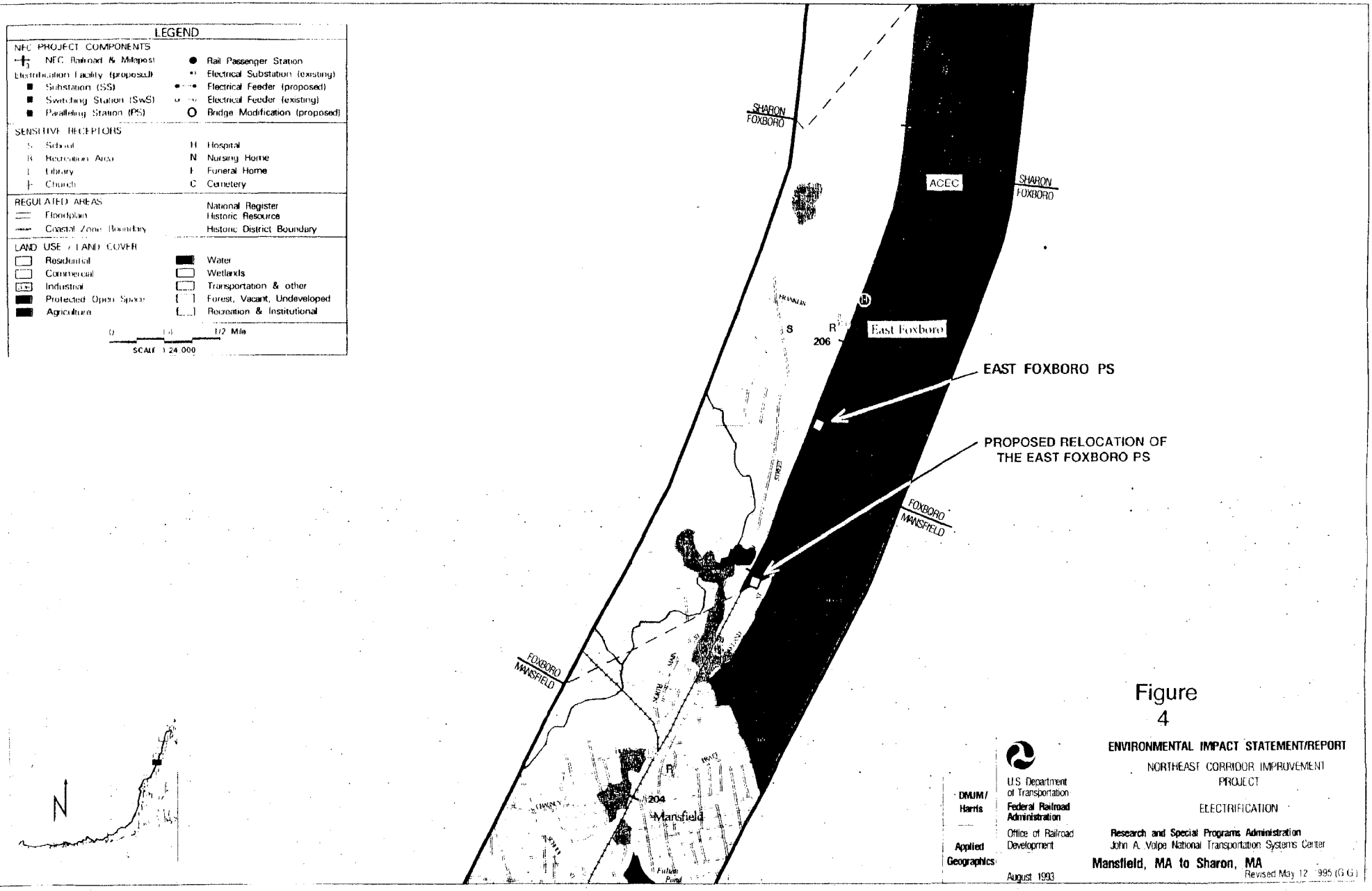


Figure
4

ENVIRONMENTAL IMPACT STATEMENT/REPORT

NORTHEAST CORRIDOR IMPROVEMENT PROJECT

ELECTRIFICATION

Mansfield, MA to Sharon, MA

Revised May 12 1995 (G G)

U.S. Department of Transportation
Federal Railroad Administration
Office of Railroad Development

Research and Special Programs Administration
John A. Volpe National Transportation Systems Center

DMJM / Harris

Applied Geographics

August 1993

As indicated in Part III, Section 3.2, Presidential Executive Order 12898 requires that the impact of the proposed project on minority and low income populations be addressed. Generally, no component of the project should have a disproportionate impact on these population groups. Census tract information for this site is presented in Table 2.

Table 2. East Foxboro Site Census Information

TOTAL POPULATION	MEDIAN INCOME	RACE BY %	
3318	$49,340	White	98.60
		Black	0.50
		Amer. Indian	0.00
		Asian, Pac. Isl.	0.70
		Other	0.20

Source: U.S. Census Bureau, 1990

As with all but one of the 26 facilities to be developed for this project, this site would not be located in a low income or predominately minority community.

2.3 Archaeological and Historic Resources

A preliminary archaeological survey (site walkover) was conducted for the proposed paralleling site. Archaeological sensitivity within the proposed paralleling station site is low, considering the moderate-to-severe landscape alterations that have occurred there. The likelihood of cultural material recovery within a meaningful context is very low. Therefore archaeological investigations are not recommended. The site is immediately adjacent to the railroad road bed in a wooded/modern industrial area.

Although there is an old brick factory, possibly of historic significance, near the pond, the new construction lies on the other side of the tracks, at a lower elevation, and will not, therefore, have any visual impact on the pond or factory. Almost one mile south of the proposed site is the 1903 Lowney Chocolate Factory, identified in the first report as an eligible historic property. Because of the distance, however, and the fact that only a small portion of the rear of the factory has even a remote view of the site of the proposed construction, there will be no impact on this resource.

FRA has concluded that there would be no effect on this property.

2.4 Noise and Vibration

2.4.1 Operational Noise

The proposed fixed facility would contain noise-generating electrical and mechanical equipment. The major sources of noise at this facility are expected to include transformers and HVAC units. Based on analysis in Volume I the FEIS/R (Section 4.4), specific sensitive receptor impact zones were established for impacts related to paralleling stations. These include daytime land uses (schools, churches, etc.) within 200 feet or nighttime land uses (residences, hospitals, etc.) within 350 feet. An assessment of the proposed facility site indicates that no daytime or nighttime sensitive receptors would be located within the impact zones. Therefore, no noise impacts would be expected at this site.

2.4.2 Operational Vibration

No operational vibration impacts regarding this site are anticipated.

2.4.3 Construction Noise

The proposed facility would take approximately 2 to 3 months to construct. During this time the surrounding area would be subject to noise created by light industrial construction equipment such as graders, bulldozers, backhoes, cranes, and trucks. Based on impact criteria, it was determined that sensitive receptors within 180 feet would experience construction noise impacts. As indicated above, no sensitive receptors are located within this distance from the proposed facility.

2.4.4 Construction Vibration

Ground-borne vibration would be created by construction activities at the proposed facility site. Given anticipated construction equipment required for construction, impact distances were developed based on available impact criteria. As such, it was determined that vibration impacts would occur within 70 feet for buildings where low ambient vibration is essential for interior operations, 85 feet for residences, and 135 feet for institutional uses with primarily daytime use. However, no receptors within these categories are located within the indicated impact zones. Therefore, no adverse effects would result.

2.5 Electromagnetic Fields and Interference

Unlike substations, which feed the electrical system, paralleling stations generally maintain existing power levels between catenary segments along the ROW. As a result, they do not have additional power requirements, such as utility feeds, which would increase electromagnetic field exposure. Therefore, no additional populations would be exposed to EMF as a result of the construction of this facility.

With respect to interference, no electrical interference would occur as a result of the operation of this facility. As discussed in Section 4.5 of Volume I of the FEIS/R, interference is not the result of maintaining power levels, which is the primary function of this facility.

2.6 Transportation

This site marginally exceeds the design standards of Amtrak's electrification system. Under normal conditions it would accommodate the intercity and commuter demand with, at most, only a slight degradation in performance. However, the ability to maintain service at these levels during the maintenance of, or in the event of a failure at, adjacent facilities would be compromised.

2.7 Visual Resources

This site is located in an area generally characterized by industrial and transportation uses as well as wooded areas. As such, the visual impact of siting a paralleling station in this setting would be relatively minor. Although there are some natural areas to the northwest that are utilized for passive recreation such as fishing, or are directly visible from the road, the areas closest to the facility (directly to the west) are not. Therefore, the facility would not interfere with any views or detract from enjoyment of natural features.

2.8 Natural Resources

The proposed site is a landscape modified by a succession of modern alterations, which is best characterized as urban-industrial. Extant vegetation is successive regrowth within an area of topsoil removal. Scattered deciduous saplings and field grasses are predominant in a ground cover of rock, crushed stone (railroad ballast) and intermittent industrial debris. It is probable that the sequence of landscape alterations here began with modifications during the railroad bed construction and were followed by the building and related construction of the Tighe complex. The greater project area is characterized by spoil piles, redeposited fill mounds, construction and industrial debris scatters, and abrupt topographic changes indicating heavy equipment modifications. The topography within the proposed paralleling station site results from stripping and subsequent redisposition of railroad construction materials along with piles of rock, sand, and gravel, partially overgrown with grasses. No adverse impacts on wetlands, wildlife, endangered species, floodplains, coastal resources, or ACECs are expected to result from development of the site.

2.8.1 Wetlands

No wetlands occur on the site. The site, however, is within 100 feet of wetlands downstream from Glue Factory Pond, as well as the pond itself. Mitigation measures required as part of the project, including the use of Best Management Practices, should avoid any significant adverse impact.

2.8.2 Wildlife

Site characteristics of the proposed facility include a largely open area with forested portions adjacent to an industrial building located to the southwest. Overstory species were generally limited to black oak (*Quercus velutina*), with scattered shrubs of staghorn sumac (*Rhus typhina*) and black cherry (*Prunus serotina*) noted. The understory consists of species such as little bluestem (*Schizachyrium scoparium*), goldenrod (*Solidago spp.*), and mullein (*Verbascum thapsus*). The Norfolk County Soil Survey indicates the site contains Hinkley sandy loam and excessively drained soil.

No wildlife was noted in the field, however the site would be expected to provide habitat in the form of vegetative diversity in the surrounding area. The sparse cover would limit its overall value for wildlife, however. Development of the site would not be expected to impact the overall availability of habitat in the vicinity. No impacts on endangered or threatened species are anticipated.

2.8.3 Floodplains

The proposed site is not located in any floodplains according to the FEMA Flood Insurance Rate Map for Foxboro, Massachusetts.

2.8.4 Coastal Zone

The proposed substation site is located outside the area of coastal influence and the coastal boundary.

2.8.5 Water Resources

The Town Conservation Administrator for Foxboro indicated no municipal wells are located in the area under review. However, the site is located within a proposed town aquifer protection district. Surface water associated with this site is limited to Glue Factory Pond and an adjacent outlet stream, both of which are on the opposite side of the rail roadbed from the proposed site.

The potential for adverse impacts on water quality during construction would be mitigated through the use of Best Management Practices. As discussed in the FEIS/R, paralleling facilities are being designed to incorporate a number of features that would minimize the potential for any adverse impact on water quality during operation. Transformers and electrical equipment do not contain PCBs and use only mineral oil for cooling and lubrication. In addition, the facility would include measures to contain any spill and to alert system managers in the event of a failure. As a consequence, no impact on water resources is anticipated.

2.8.6 Areas of Critical Environmental Concern

The proposed paralleling station site is located just east of the western boundary of the Canoe River Aquifer Area of Critical Environmental Concern. Project plans incorporate measures to minimize and control storm water runoff, erosion and sedimentation as well as minimize any

potential impact on nearby wetlands and the aquifer below the site. As a consequence there should be no adverse impact on the ACEC.

2.9 Hazardous Materials

A site inspection did not indicate any evidence of soil contamination. However, the use of this site for transportation purposes over the last century and a half indicates that there is the potential that slight levels of contamination could be present on the site. Prior to disposal of excavated soil and other construction materials from this site, a sampling program would be developed to ensure compliance with all appropriate Federal and state regulations.

3. Evaluation Results

The vacant site at milepost 205.00 offers the potential to accommodate the concerns raised by the community regarding the location of this facility. Amtrak will establish a process through which appropriate local officials can participate in the final design of this facility through the review and comment of plans to ensure these concerns are addressed.