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Northeast Corridor High Speed Rail Passenger Service Improvement Project

TASK 7A - TERMINALS

May 1975
FINAL REPORT

Prepared for

DEPARTMENT OF TRANSPORTATION
Federal Railroad Administration
Office of Northeast Corridor Development
Washington, D.C. 20590

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16. Abstract

A significant requirement of the Regional Rail Reorganization Act of 1973 is the establishment of improved high speed rail passenger service consonant with the recommendations of the Secretary of Transportation in his report of September 1971 entitled "Recommendations for Northeast Corridor Transportation." Engineering studies were undertaken to a) assist the Federal Railroad Administration in the development of detailed plans for the service, and b) provide inputs to the United States Railway Association for the development of preliminary and final system plans for the region.

An essential element of any intercity passenger transport system is the interface with local transportation – both public and private. In recognition of this critical interface, a major task was undertaken to recommend a development program for upgrading fourteen major rail passenger handling terminals in the Corridor. The program was designed to meet overall goals and objectives of convenience, capacity, attractiveness and other level-of-service characteristics commensurate with high quality transportation facilities. The product which is contained in this Report consists of terminal performance standards, inventories of existing terminals and vicinity access/egress facilities, and recommended concept development plans for the terminals, parking facilities and urban transportation infrastructures in which they are located. Preliminary estimates of costs associated with the development plans are also included in this Report.

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1.0 EXECUTIVE SUMMARY

1.1 BACKGROUND

Intercity passenger transportation in the United States is on the threshold of significant improvement. Nowhere is this more evident than in the Northeast Corridor—the coastal region encompassing metropolitan areas from Washington, D.C. to Boston, Massachusetts, and containing approximately 20 percent of the nation's population. Highway traffic volumes continue to exceed capacities of the interstate network, while economic, environmental and societal factors have sharply curtailed further expansion.

Similar problems exist with the commercial airways system. Community resistance to a fourth airport for the New York Metropolitan Region has stymied development for more than a decade, and in other cities hopes are dimming for additional facilities.

In searching for alternative solutions, authorities are turning to the intercity railroad mode which has suffered a long decline. Research related to pollution and energy consumption encourages a revitalized railroad system. Rights-of-way throughout the Corridor can accommodate considerably greater traffic volumes without the need for taking more land. Point-to-point speeds can also be increased without extensive route realignment.

As a result of these conditions, the U.S. Department of Transportation (DOT) initiated a series of studies which led to recommendations in the Regional Rail Reorganization Act of 1973 for high-speed passenger service in the Corridor. In order to accomplish this objective, the Federal Railroad Administration (FRA) has undertaken a detailed engineering study consisting of eleven tasks:

Task 1	Alternate Northeast Corridor Strategies; Demand Estimates.
Task 2	Determination of Immediate Track Upgrading Requirements.
Task 3	Track and Structures Upgrading Standards Development.
Task 4	Definition of System Design and Impacts.
Task 5	Electrification.
Task 6	Risk Analysis of Joint Passenger/Freight Operation.
Task 7	Terminals and Shops.
Task 8	Local Coordination System Development.
Task 9	Rolling Stock Performance and Cost.

Task 10 Grade Crossing and Fencing.

Task 11 Detailed Physical Plant Improvements and Costs.

1.2 FEATURES OF THE NEW HIGH-SPEED RAIL (HSR) SYSTEM

Implementation of the new HSR system in the Northeast Corridor will provide the intercity passenger with performance and level of service characteristics compatible with developing technologies of high-speed, ground transport systems. It is also intended to accommodate the increasing demand of the public for both business and pleasure travel.

The planned system, in terms of travel times, frequency of service and convenience, will be competitive with the air mode and will provide an attractive alternative to individuals or groups traveling by other ground modes. The planned capacity of the HSR system, over the entire Washington to Boston Corridor, will accommodate a high-forecast demand of close to 40 million passengers by 1990, almost a 400 percent increase over 1973 passenger volumes carried by Amtrak. Even greater capacity is available to provide expansion potential beyond 1990 demands.

Travel times between the city centers of Washington and New York will be 2 hours and 30 minutes, with 5 intermediate stops; the New York–Boston trip will be 3 hours, with 5 intermediate stops. Train scheduling, another major element of travel convenience, will provide a minimum of one train every half hour for the major cities in the Corridor during an 18-hour travel day.

Operation of the HSR system along the Northeast Corridor will have a positive impact on the physical environment. Electrification of the right-of-way and improved track structures will minimize air and noise pollution generated by HSR. The use of existing rights-of-way will insure that rail-generated noise will not be increased, and disruption in existing land-use patterns will be minimal. Increased HSR patronage, through modal shifts from air and highway modes, both of which are sizable contributors to air and noise pollution, will further reduce the overall pollution conditions along the Corridor.

Implementation of the HSR system also has the potential for making a significant contribution to energy conservation. Rail transport, utilizing electrically powered trains, consumes less energy per seat-mile than most other modes; it is the only mode not totally dependent on petroleum.

The vehicles, terminals and services comprising the HSR system will have as their dominant characteristics dependability, comfort, safety and convenience. New trains will be electrically propelled and capable of sustaining speeds of 150 miles-per-hour with a new degree of riding comfort. Individual temperature control, lighting, reclining seats and fold-down trays will be provided to offer rail passengers the high quality of transportation normally associated with air travel. Food, beverage and cocktail services will be available for all classes of travel as a part of each train consist. Roadbed, propulsion equipment and train control improvements will provide the passenger with a smooth ride, low noise levels and reliable on-time service.

Marketing, public relations and advertising programs, which must be an integral part of the project, will be oriented toward stimulating modal shifts by providing frequent, reliable and comfortable trains operating between the centers of major cities in the Northeast Corridor.

1.3 TERMINALS STUDY

The importance of the interface, or link between intercity and urban transportation systems, has not always been accepted. As a result, certain segments of the nation's intercity network have not developed to their full potential. Authorities responsible for pursuing the concept of HSR for the Corridor recognized, at an early stage, the integral role played by the terminal in the total intercity-urban transportation system. It is a function which must be described not only in terms of capacity but, more importantly, in terms of passenger processing, speed, convenience and aesthetic appeal.

In addition to the terminal itself, the success of an intercity mode is dependent upon the effectiveness of access transportation, both public and private, not only within the vicinity of the terminal, but throughout the metropolitan region. Unless they are able to perform favorably in terms of speed, safety, reliability and convenience, a significant percentage of potential riders will utilize other modes, such as the auto, or refrain from travel altogether.

These factors required a thorough study of the major existing Northeast Corridor railroad terminals. Task 7 was divided into two segments. Task 7A, concerning passenger terminals, is the subject of this report. Fourteen terminals, along the Corridor, were selected for an inventory, analysis and preparation of recommended development plans for refurbishing, expansion or new construction based on patronage projections provided by Task 1. These are:

(1) Union Station, Washington, D.C.
(2) New Carrollton Station, New Carrollton, MD
(3) Penn Central Station, Baltimore, MD
(4) Wilmington Station, Wilmington, DE
(5) Penn Central Station, 30th Street, Philadelphia, PA
(6) Trenton Station, Trenton, NJ
(7) Metropark Station, Iselin, NJ
(8) Penn Central Station, Newark, NJ
(9) Pennsylvania Station, New York City, NY
(10) Stamford Station, Stamford, CT
(11) New Haven Station, New Haven, CT
(12) Union Station, Providence, RI
(13) Route 128 Station, Dedham, MA
(14) South Station, Boston, MA

Studies of a similar nature will be undertaken for other potential HSR terminals during the course of detailed planning and design of the system.

1.4 PLANNING AND DESIGN OBJECTIVES

The overall planning and design objectives, for passenger handling facilities along the Corridor, have been oriented toward providing a physical environment and atmosphere commensurate with attractive transportation service. The terminals will be totally upgraded and refurbished to accommodate projected peak-hour traffic demands. New or expanded facilities will be provided for passenger handling and rail operations where present terminals are inadequate. The facilities will be clean, comfortable, well lighted, environmentally controlled and aesthetically compatible with the historic character of the terminal and its geographic area, in terms of scale, color and materials. Terminal exteriors, canopies and entries will be refurbished, and landscaping will be incorporated as part of the general upgrading of the facilities and properties comprising the terminal complex. Vehicular access/egress, curbside drop-off/pick-up and parking facilities, convenient to the terminals, will be provided at each location. They will have sufficient capacity for typical peak hour and peak-day demands.

Ticketing services will be readily accessible, with sufficient capacity, to minimize passenger queuing/waiting times. Information display systems will be fully automated and easily viewed to provide current and reliable train information.

Computerized reservation systems will generate prompt, accurate and current documentation. Automated ticket-issuing equipment is also planned for the high capacity terminals. Baggage check-in and claim facilities will be conveniently located to main-terminal entry and exit points with adequate facilities to accommodate surge demands. Platform access/egress will be accomplished by escalators and elevators in addition to stairs. All platforms will be at train-floor level to facilitate boarding and alighting. Provisions for the handicapped will be incorporated in the design of all public-use facilities.

Concessions and public services will be conveniently located and of sufficient quantity to accommodate projected peak-hour-demands. Processing facilities, for intermodal connections, will be an integral part of the terminal complex to assure adequate interface with commuter rail, rapid transit, and local and regional bus systems, where such connections are available.

1.5 TASK APPROACH

Passenger terminals throughout the Corridor require varying degrees of remodeling, refurbishing and/or expansion to accommodate the anticipated 1990 rail-passenger patronage generated by the HSR system. Level of service and performance standards have been developed as a basis for assessing the adequacy of existing facilities and generating specific development plans for the 14 terminals. The standards will allow wide latitude in specific design application.

Following a description of standards (Chapter 5), the study focuses on each of the 14 locations included in this Study (Chapters 6-19). Initially, a description is presented of the terminal in its urban setting, together with the status of local transportation. As a next step, the study focuses on the terminal complex by describing existing facilities and their adequacy for future patronage levels. Improvements in access by private and public modes are then recommended. An

analysis of current development plans was undertaken prior to generating recommended development plans for improvement and expansion, as required by the service and performance standards.

The range of improvements proposed for each terminal has been organized into three primary categories as follows:

(1) **Refurbish/Remodel** – Minor alterations such as acoustic treatment, painting, lighting, elevators, escalators, platform rehabilitation, information systems, exterior landscaping, new furnishings and incorporation of adequate heating, ventilating, and air conditioning systems.

(2) **Alterations/Expansion** – In addition to general rehabilitation, as above, passenger processing facilities, waiting rooms, concessions and public services will be expanded, relocated or reconstructed within the existing terminal envelope.

(3) **New Facilities** – Where present facilities are inadequate to meet projected passenger demand, or where an existing facility has been converted to a non-transportation function, new facilities will be constructed providing all passenger handling functions, including vehicular access/egress, drop off/pick up, parking, ticketing and baggage handling, waiting areas, platform access/egress, public services and concessions.

1.6 SYNOPSES AND TERMINAL SUMMARY TABLE

Following is Table 1-1, the Terminal Data Summary, which consolidates data on the following aspects of each location:

(1) Present and 1990 high-patronage levels.

(2) Activity level classifications.

(3) Modal split projections for the year 1990.

(4) Required HSR parking spaces.

(5) Classifications of improvement plans.

(6) Estimated costs.

This section is followed by two-page synopses of each of the 14 terminals. Each includes a summary description of existing facilities, present and future levels of activity and proposed improvements.

The development anticipated at each of the 14 terminals including structures for passenger processing and vehicle parking, but excluding track, electrification and train control, has resulted in a preliminary estimated total cost of $193,540,000.

TABLE 1-1. TERMINAL DATA SUMMARY

Terminal	PATRONAGE – ONE WAY*** 1974 Average Day Amtrak*	Comm	1990 Design Day HSR*	Comm	1990 Peak Hr HSR	Comm	Activity Level**	MODAL SPLIT (%) Park & Ride	Passenger Kiss & Ride	Rail Transit	Bus	Taxi & Limo.	Walk	HSR Park'g Space Req'd	Alterations	Alterations & Additions	New Terminal	CAPITAL COSTS $ Terminal Building	Parking Facilities	Land Acquisition	Total
Washington Union Sta.	3000	2100	15,400	13,300	2300	6500	A	8	4	3	35	15	20	10	1200			•	16,848,000	3,960,000		20,808,000
New Carrollton	250	0	2700	0	400	0	C	40	10	20	8	15	2	5	1100			•	3,481,000	2,365,000	600,000	6,446,000
Baltimore	1900	150	9000	1700	1400	1000	A	30	10	25	15	5	10	5	2700		•		5,311,000	8,910,000	600,000	14,821,000
Wilmington	900	600	5700	1700	900	700	B	40	15	25	0	10	5	5	2300		•		4,694,000	7,590,000	2,000,000	14,284,000
Philadelphia 30th St.	5400	9500	22,000	20,500	3300	6800	A	8	4	8	30	20	20	10	1800	•			6,990,000	5,940,000		12,930,000
Trenton	2400	1500	6500	2900	1000	900	B	45	15	20	0	10	5	5	2900		•		3,628,000	9,570,000		13,198,000
Metropark	150	1700	2100	2500	300	800	C	60	10	20	0	3	2	5	1300			•	4,535,000	4,290,000		8,825,000
Newark	1600	12,000	5400	22,200	800	10,200	B	25	10	15	20	20	5	5	1400		•		7,523,000	2,970,000	300,000	10,793,000
New York Penn Sta.	9600	95,000	37,100	125,500	5600	48,600	A	2	1	2	50	20	15	10	700		•		14,838,000			14,838,000
Stamford	100	2200	1200	3200	200	1400	C	60	10	15	0	7	3	5	700			•	4,012,000	2,310,000	290,000	6,612,000
New Haven	600	700	5200	1100	800	500	B	50	15	20	0	7	3	5	2600		•		7,459,000	8,580,000		16,039,000
Providence	350	200	5100	6300	800	3300	B	40	12	20	0	15	3	10	2000		•		4,693,000	6,600,000		11,293,000
Route 128	150	400	2000	700	300	400	C	70	7	20	0	1	1	1	1400			•	3,863,000	4,620,000		8,483,000
Boston South Sta.	700	3800	11,200	7100	1700	4400	A	8	4	8	40	20	10	10	900			•	11,700,000	2,970,000		14,670,000
													Totals		23,000				99,575,000	70,675,000	3,790,000	174,040,000
																					Landscaping	500,000
																					Furnishings	1,500,000
																					Architectural Engineering & Construction Contingencies	17,500,000
																					Grand Total $	193,540,000

* Average Day and Design Day Patronage figures derived under Task 1.

**Activity Level A – HSR design-day patronage is 9000 and above one way.
Activity Level B – HSR design-day patronage is 5000 to 9000 one way.
Activity Level C – HSR design-day patronage is less than 5000 one way.

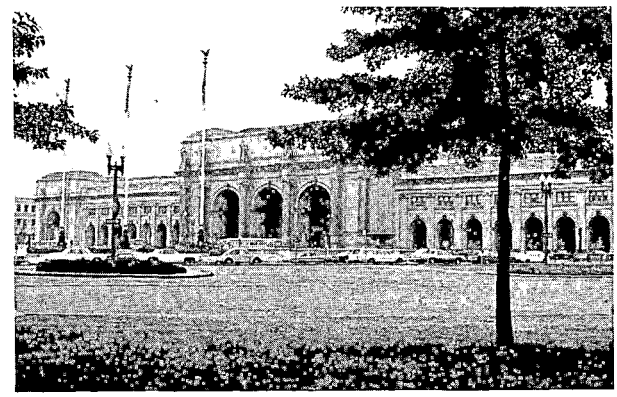
***One half of daily total (boarding and alighting).

UNION STATION – WASHINGTON, D.C.

Owner: Washington Terminal Co. owned by Penn Central Transportation Company and Chessie System

Users: Amtrak
Penn Central
Chessie System
Southern Railway
MDOT Suburban

Date Constructed: Terminal in 1908
Metroliner Platform in 1969



Facilities: Terminal building; concourse leading to track platforms; low and high-level canopied platforms; and, connecting stairways, escalators and elevators.

Present and Projected Activity:

One-Way Patronage				Estimated 1990 Access Mode To Terminal		Estimated 1990 Parking Req'd For HSR
Rail Service Type	1974 Average Daily	1990 Peak Design Day[1]	1990 Peak Hour	Mode[2]	Percent[3]	No. of Spaces[4]
HSR	3,000[5]	15,400	2,300	P & R	8	1,200
				Passenger	4	
Commuter	2,100	13,300	6,500	K & R	8	
				Rail Transit	35	
				Bus	15	
Total	5,100	28,700	8,800	Taxi & Limo	20	
				Walk	10	

1) High Projection.
2) P & R equals Park-and-Ride; Passenger equals Passenger in park-and-ride car; K & R equals Kiss-and-Ride.
3) Approximate Median Value.
4) Rounded-off Number.
5) Amtrak Service.

Location: North of Capitol Building; northwest of the Mall. Approximately seven blocks east of CBD.

CENTRAL BUSINESS DISTRICT

Major access from south provided by Center Leg Freeway (I-95); on and off-ramps three blocks west of terminal. Three major arterials fan out from Union Plaza at front of terminal.

Terminal served by 11 Metrobus routes and extensive taxi system. Intercity bus terminals approximately ten minutes from terminal; area airports between 20 and 50 minutes away. Pedestrian access impaired during peak hours.

Primary mode of access to terminal via taxi and auto.

Government, business and tourist activities predominate in general area west of terminal. Considerable renewal activity currently under way to the west (downtown); to the north (industrial, office, commercial); to the east (neighborhood renewal); and to the northeast (residential, institutional).

Existing Facility Condition: Structure appears sound. Exterior surfaces need cleaning. Painted surfaces need refurbishing. Low-level platform surfaces are cracked. Canopy steelwork needs repainting and canopy roofs need repair. Interior surfaces need cleaning and refurbishing. Conversion of Union Station into National Visitor Center (NVC) currently under way.

Current Development Plans: Terminal currently being redeveloped as NVC to include multi-level parking structure over tracks; new railroad terminal to be relocated below parking garage.

Rapid-transit subway station currently under construction at Union Station with direct access to rail terminal.

Reconstruction of H Street as overpass over tracks, connecting with I-95. Rechannelization of Union Plaza.

Numerous plans proposed for development of an intermodal terminal complex using air rights over existing tracks between present concourse, NVC parking structure and new H-Street viaduct. Participants have included Department of the Interior, DOT, Amtrak, Railroads and Intercity Bus Carriers. Recent legislation, the 1974 Amtrak Improvement Act, calls for DOT to plan and design "model" intermodal terminal at Washington Union Station. The Department is currently developing a work program and timetable for accomplishment of this project. The resultant multi-functional complex will incorporate HSR intercity rail passenger handling facilities, other intercity and commuter rail and intercity bus facilities.

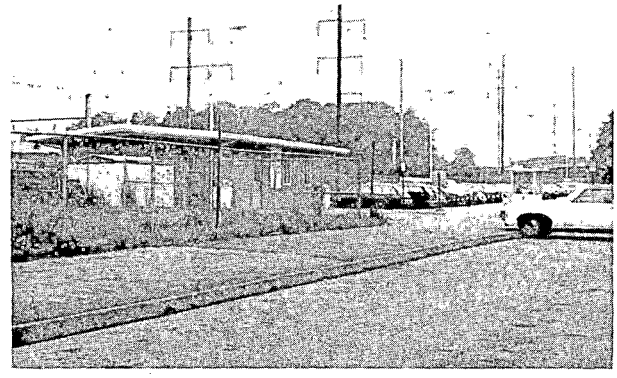
Facility and Site Improvements: Due to the recent enactment of the 1974 Amtrak improvement Act, one provision of which calls for DOT to plan and design a "model" intermodal terminal at Washington Union Station, the report has not addressed itself to recommending facility and site improvements to accommodate the future high-speed intercity rail passengers.

The railroad station currently under construction by Terminal Realty Baltimore Company will serve the interim rail passenger processing needs and will most likely be converted to a rail operations facility once the intermodal terminal is complete.

Cost Improvements: DOT has estimated that the costs of constructing a fully integrated intermodal terminal with requisite parking for all demand to be in the range of $30-40 million. The high-speed rail intercity portion of this project is estimated to cost approximately $20 million. This cost has been included in the summary tabulation of terminal development expeditures in this report.

NEW CARROLLTON STATION – NEW CARROLLTON, MARYLAND
(Inventory is for existing Capital Beltway Station.)

Owner: Land owned by state of Maryland
Structure owned by Prince Georges County



User: Amtrak

Date Constructed: 1969

Facilities: Single-story sheetmetal building, concrete pedestrian underpass, enclosed stairways, two canopied high-level platforms and adjacent paved parking lots. Facilities are temporary; built as demonstration project.

Present and Projected Activity:

One-Way Patronage				Estimated 1990 Access Mode To Terminal		Estimated 1990 Parking Req'd For HSR
Rail Service Type	1974 Average Daily	1990 Peak Design Day[1]	1990 Peak Hour	Mode[2]	Percent[3]	No. of Spaces[4]
HSR	250[5]	2,700	400	P & R	40	1,100
				Passenger	10	
Commuter	0	0	0	K & R	20	
				Rail Transit	8	
				Bus	15	
Total	250	2,700	400	Taxi & Limo	2	
				Walk	5	

1) High Projection.
2) P & R equals Park-and-Ride; Passenger equals Passenger in park-and-ride car; K & R equals Kiss-and-Ride.
3) Approximate Median Value.
4) Rounded-off Number.
5) Amtrak Service.

Location: Approximately 11 miles northeast of downtown Washington, D.C. and three miles from University of Maryland at College Park.

Terminal situated in Ardmore Triangle which is bounded by U.S. Route 50, I-495 (Capital Beltway) and Penn Central tracks.

Passenger access to terminal via auto, taxi or limousine. No public bus service or pedestrian access to terminal; no intercity bus terminals or commercial airports in terminal vicinity.

General terminal area primarily suburban residential; commercial and industrial development is increasing.

Existing Facility Condition: Structures in sound condition. Exterior surfaces in good condition. Interior surfaces need refinishing. Utilities adequate for current needs.

Current Development Plans: Plans for joint facilities to serve Metro and Amtrak patrons at proposed site for WMATA's New Carrollton Station developed by engineering consultants to WMATA, U.S. DOT and Amtrak; these plans include facilities for intermodal transfer, parking, street and highway access and feeder-bus service. The Metro portion of the station is to be under construction this year.

Future development likely in Prince Georges County; high-density residential, business and retail uses planned for Ardmore Triangle.

Facility Improvements: To meet 1990 demand: relocation of intercity facilities from Capital Beltway to New Carrollton Station to accommodate HSR patrons. Phase I: construction of terminal building shell and associated passenger facilities, connecting Metro/HSR pedestrian passage and joint-use kiss-and-ride facilities and bus and taxi bays; and, provision of landscaping, sidewalks and roadway lighting by WMATA. Phase II: construction of passenger processing facilities in terminal shell and accessible from connecting passage; construction of 1200-foot-long center high-level HSR platform and related track work; installation of stairways, escalators and elevators; and, construction of 1,100-space parking lot. Also removal of existing temporary facilities and restoration of site at Capital Beltway.

Site Improvements: Additional patronage requires: implementation of street improvements proposed in joint development concept for New Carrollton Station; additional coordinated studies to determine specific intersection improvements; re-analysis of parking requirements after inauguration of Metro service; and, further study of HSR transit requirements during final planning of feeder-bus system.

Cost of Improvements: Phase II

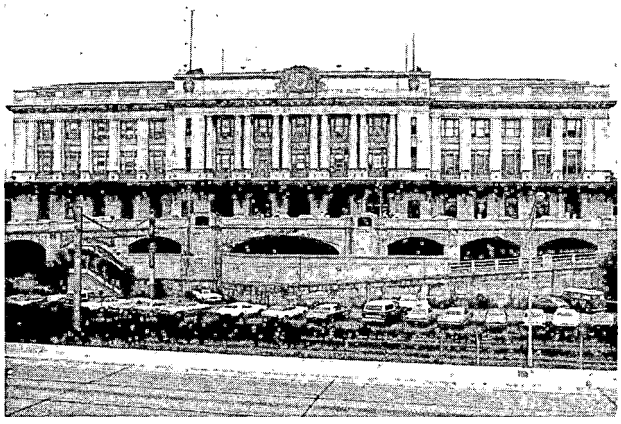
Terminal Building	$3,481,000
Parking Facility	2,365,000
Land Acquisition	600,000
Total	$6,446,000

PENN CENTRAL STATION – BALTIMORE, MARYLAND

Owner: Penn Central Transportation Company

Users: Amtrak
Penn Central
MDOT Suburban

Date Constructed: Main terminal building 1911
High-level Metroliner Platform 1969



Facilities: Terminal building with street-level passenger processing area of 23,000 square feet, including concourse over tracks; two low-level platforms; one high-level Metroliner platform 600 feet long; and, a 200-space capacity parking lot on Penn Central property. Excess area of about 60,000 square feet available on upper floors for commercial or other uses.

Present & Projected Activity:

One-Way Patronage				Estimated 1990 Access Mode To Terminal		Estimated 1990 Parking Req'd For HSR
Rail Service Type	1974 Average Daily	1990 Peak Design Day[1]	1990 Peak Hour	Mode[2]	Percent[3]	No. of Spaces[4]
HSR	1,900[5]	9,000	1,400	P & R	30	2,700
				Passenger	10	
Commuter	150	1,700	1,000	K & R	25	
				Rail Transit	15	
Total	2,050	10,700	2,400	Bus	5	
				Taxi & Limo	10	
				Walk	5	

1) High Projection.
2) P & R equals Park-and-Ride; Passenger equals Passenger in park-and-ride car; K & R equals Kiss-and-Ride.
3) Approximate Median Value.
4) Rounded-off Number.
5) Amtrak Service.

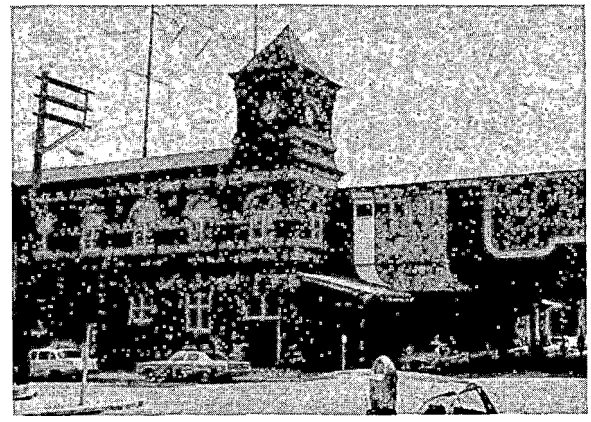
Location:	Approximately 1 mile north of the Central Business District. Bounded by Interstate Highway 83, and high-capacity arterials—Charles Street and St. Paul Street. Access provided by local bus, taxi, and private vehicles. Eight blocks to intercity bus, private transportation to airport. Land use is high-density housing mixed with commercial, office, and light manufacturing on the south and east; and, lower-density residential and mixed, changing uses on the north.
Existing Facility Condition:	Terminal in good structural condition. Interior surfaces need refurbishing. Ticketing area must be made secure, and office areas rearranged. Low-level platforms are outmoded; Metroliner platforms in good condition, but due to track geometry cannot be expanded for future needs.
Current Development Plans:	Urban renewal in area south of terminal. Mass rapid-transit rail being planned. Interior and exterior terminal renovation under study by the City and Amtrak.
Facility Improvements:	To meet 1990 demand: interior renovation and concourse expansion required; platforms raised to high level; new 1200-foot-long HSR platform constructed; escalators, stairs, and elevators installed; and, ticketing area expanded and made secure.
Site Improvements:	Increased patronage requires: additional bus bays; parking space for 2,700 cars; Charles Street Bridge widened; taxi queuing and kiss-and-ride lanes improved; sidewalks reconstructed; and, direct access provided to a proposed rapid-transit station.
Cost of Improvements:	Terminal Building $ 5,311,000 Parking Facility $ 8,910,000 Land Acquisition $ 600,000 Total $14,821,000

WILMINGTON STATION – WILMINGTON, DELAWARE

Owner: Penn Central Transportation Company

Users: Amtrak
Penn Central
SEPTA Suburban

Date Constructed: Main terminal building 1905
High-level Metroliner platform 1969



Facilities: Multi-level terminal building with passenger processing area on the main floor; two low-level commuter platforms; and, one high-level Metroliner platform. South of the tracks, terminal is a three-story structure; upper floors are little used and house railroad operations' offices. North of the tracks, building is a two-story structure with a clock tower; a portion of second floor serves as a waiting room for commuters.

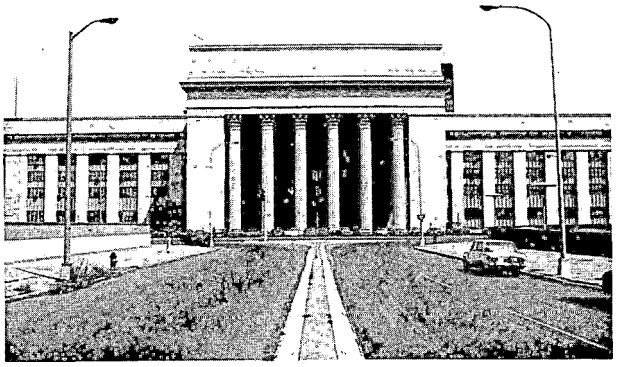
Present & Projected Activity:

One-Way Patronage				Estimated 1990 Access Mode To Terminal		Estimated 1990 Parking Req'd For HSR
Rail Service Type	1974 Average Daily	1990 Peak Design Day[1]	1990 Peak Hour	Mode[2]	Percent[3]	No. of Spaces[4]
HSR	900[5]	5,700	900	P & R	40	2,300
				Passenger	15	
Commuter	600	1,700	700	K & R	25	
				Rail Transit	0	
Total	1,500	7,400	1,600	Bus	10	
				Taxi & Limo	5	
				Walk	5	

1) High Projection.
2) P & R equals Park-and-Ride; Passenger equals Passenger in park-and-ride car; K & R equals Kiss-and-Ride.
3) Approximate Median Value.
4) Rounded-off Number.
5) Amtrak Service.

Location:	Southern fringe of CBD. Bounded by Front Street, French Street, and Walnut Street (northbound U.S. Route 13). Access by private vehicle, local bus, taxi and walking; one block from intercity bus depot. Land uses range from high-density commercial office in CBD to substandard residential and deteriorated, vacant commercial in immediate terminal area. Extensive renewal under way and proposed.
Existing Facility Condition:	Terminal building is deteriorated; exterior requires considerable repair. Interior requires repair and refurbishing. Upper floors are little used. Existing utilities are inadequate and outmoded. Low-level platforms are outmoded; an additional track is required.
Current Development Plans:	Wilmington Boulevard Project, proposed immediately north of terminal; includes I-95 connector to CBD, proposed transit and new bus terminal. Urban renewal in area north of terminal.
Facility Improvements:	To meet 1990 demand: major reconstruction of terminal required including demolition of existing upper floors to platform level; excavation of main floor to sidewalk level; interior renovation; exterior remodeling; construction of new high-level commuter platforms; extension of Metroliner platform to 1,200 feet; construction of escalators, stairs and elevators; and, expansion of service areas and utility systems.
Site Improvements:	Increased patronage requires parking space for 2,300 cars; street modifications; improved kiss-and-ride and local bus transfer; improved pedestrian access from CBD and parking facility.
Cost of Improvements:	Terminal and Site Work $ 4,694,000 Parking Structure 7,590,000 Land Acquisition 2,000,000 Total $14,284,000

PENN CENTRAL STATION – 30TH STREET, PHILADELPHIA, PENNSYLVANIA



Owner: Penn Central Transportation Company

Users: Amtrak
Penn Central
SEPTA Suburban
Penn DOT

Date Constructed: Approximately 1930

Facilities: Four-level structure; main floor at street level; long-distance tracks and passenger platforms one level below; commuter facilities on intermediate upper level; and, commuter tracks one level above. Also, stairways, escalators and elevators.

Present and Projected Activity:

One-Way Patronage				Estimated 1990 Access Mode To Terminal		Estimated 1990 Parking Req'd For HSR
Rail Service Type	1974 Average Daily	1990 Peak Design Day[1]	1990 Peak Hour	Mode[2]	Percent[3]	No. of Spaces[4]
HSR	5,400[5]	22,000	3,300	P & R	8	1,800
				Passenger	4	
Commuter	9,500	20,500	6,800	K & R	8	
				Rail Transit	30	
				Bus	20	
Total	14,900	42,500	10,100	Taxi & Limo	20	
				Walk	10	

1) High Projection.
2) P & R equals Park-and-Ride; Passenger equals Passenger in park-and-ride car; K & R equals Kiss-and-Ride.
3) Approximate Median Value.
4) Rounded-off Number.
5) Amtrak Service.

Location:

Across the Schuylkill River; west of the CBD. Adjacent to the Schuylkill Expressway, I-76.

Access provided primarily by commuter rail, rapid transit and auto; also by bus, taxi and walking.

Good connections to all public transportation systems; however, surface systems face congestion and underground transit is unattractive. Short taxi ride from intercity bus and other commuter rail terminals; approximately 6.5 miles from airport.

Located near most major activity centers in CBD, but separated by river. General terminal area consists primarily of business activities.

Existing Facility Condition:

Structural integrity is good. Utilities are adequate for current needs.

Current Development Plans:

Redevelopment of office/business area east of river likely to continue.

Proposed commuter rail connection linking the three rail terminals and proposed rail line to airport.

Facility Improvements:

To meet 1990 demand: expansion of passenger facilities including waiting area for HSR passengers; expanded ticket facilities; improved public address system; provisions for air conditioning and upgrading plumbing, heating and lighting; renovated space for concessions; and, cleaning and refurbishing of interior and exterior surfaces.

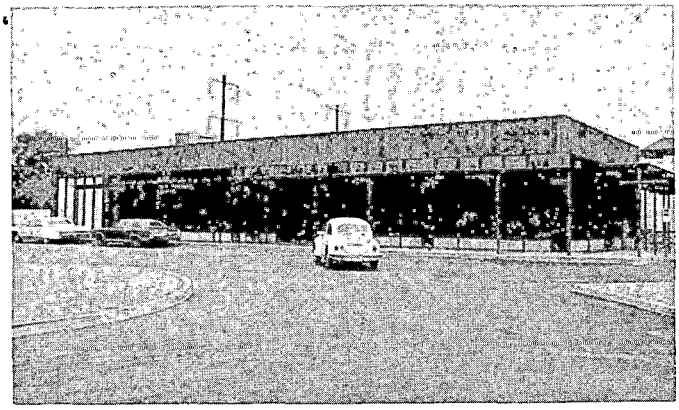
Site Improvements:

Increased patronage requires: improved public transit service to terminal; rehabilitation of public transit connections at terminal; construction of multi-level parking garage with enclosed pedestrian overpass to terminal; and, circulation improvements including reduction of metered parking, pedestrian islands, one-way streets, bus and taxi lanes, kiss-and-ride areas and sidewalks.

Cost of Improvements:

Terminal Building	$ 6,990,000
Parking Facility	5,940,000
Total	$12,930,000

TRENTON STATION – TRENTON, NEW JERSEY



Owner: State of New Jersey

Users: Amtrak
Penn Central
N.J. DOT Suburban
SEPTA Suburban

Date Constructed: Terminal completely rebuilt in 1971

Facilities: Main terminal building; elevated connecting passenger concourse leading from terminal out over tracks; two high-level platforms; stairs, escalators and elevators; and, platform canopies and enclosed shelters.

Present and Projected Activity:

One-Way Patronage				Estimated 1990 Access Mode To Terminal		Estimated 1990 Parking Req'd For HSR
Rail Service Type	1974 Average Daily	1990 Peak Design Day[1]	1990 Peak Hour	Mode[2]	Percent[3]	No. of Spaces[4]
HSR	2,400[5]	6,500	1,000	P & R	45	2,900
				Passenger	15	
Commuter	1,500	2,900	900	K & R	20	
				Rail Transit	0	
				Bus	10	
Total	3,900	9,400	1,900	Taxi & Limo	5	
				Walk	5	

1) High Projection.
2) P & R equals Park-and-Ride; Passenger equals Passenger in park-and-ride car; K & R equals Kiss-and-Ride.
3) Approximate Median Value.
4) Rounded-off Number.
5) Amtrak Service.

Location:	Approximately one-half mile from core of CBD. Intersection of Trenton Freeway and John Fitch Expressway less than one mile from terminal. Terminal bordered by Clinton Avenue, Walnut Avenue Extension and Fairview Avenue. Access provided primarily by automobile. Local bus service to terminal is fair. Intercity buses stop across street from terminal. Good highway connections to Mercer County Airport approximately eight miles away. General terminal area predominantly high-density residential and deteriorating.
Existing Facility Condition:	Terminal in excellent condition. Utilities adequate for current patronage. Parking supply inadequate for current demands.
Current Development Plans:	"Safe and Clean Neighborhood Program" to provide additional police and trash collection services in residential areas near terminal. Renewal activities proposed in several neighborhood commercial areas near terminal.
Facility Improvements:	To meet 1990 demand: expansion of terminal east and west of concourse to include waiting area and expanded ticket, information and baggage handling facilities; reconstruction of part of HSR platform; additional platform canopies; provisions for gated passage to HSR platform; and, additional concessions.
Site Improvements:	Additional patronage requires: improvements to local street system; construction of multi-level parking garage southeast of the terminal with direct connection to concourse; provisions for short-term parking, kiss-and-ride areas, bus and taxi bays and intercity bus service; and, improved public transit service to terminal.

Cost of Improvements:

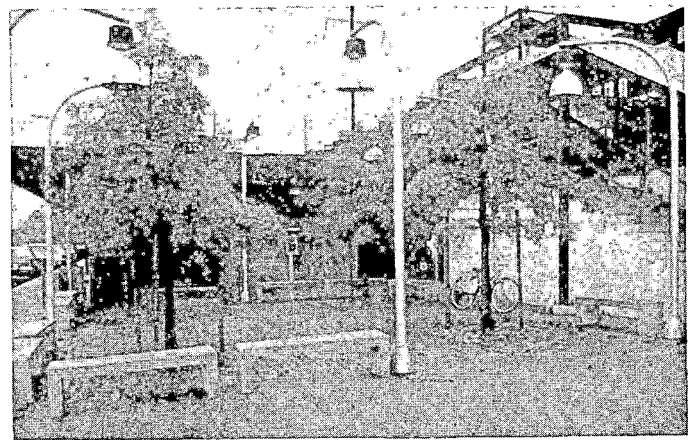
Terminal Building	$ 3,628,000
Parking Facility	9,570,000
Total	$13,198,000

METROPARK STATION – ISELIN, NEW JERSEY

Owner: State of New Jersey

Users: Amtrak
Penn Central
N.J. DOT Suburban

Date Constructed: Terminal, platforms and tunnel 1971



Facilities: Terminal building with street-level passenger processing area; two high-level platforms; an underground tunnel and stairway for access to platforms; and, an 822-car parking lot on terminal property.

Present and Projected Activity:

One-Way Patronage				Estimated 1990 Access Mode To Terminal		Estimated 1990 Parking Req'd For HSR
Rail Service Type	1974 Average Daily	1990 Peak Design Day[1]	1990 Peak Hour	Mode[2]	Percent[3]	No. of Spaces[4]
HSR	150[5]	2,100	300	P & R	60	1,300
				Passenger	10	
Commuter	1,700	2,500	800	K & R	20	
				Rail Transit	0	
				Bus	3	
Total	1,850	4,600	1,100	Taxi & Limo	2	
				Walk	5	

1) High Projection.
2) P & R equals Park-and-Ride; Passenger equals Passenger in park-and-ride car; K & R equals Kiss-and-Ride.
3) Approximate Median Value.
4) Rounded-off Number.
5) Amtrak Service.

Location:

Near the township line of Woodbridge and Edison Townships in Middlesex County, New Jersey.

Bounded by the Lincoln Highway, the Garden State Parkway, Middlesex-Essex Turnpike and Wood Avenue South.

Access by private vehicles and taxis. Nearest bus transportation is approximately one-quarter of a mile from terminal.

Land use is predominantly residential with some very large commercial complexes, including two shopping centers; to the southwest there are large areas of vacant land.

Existing Facility Conditions:

Terminal in generally good condition. Inadequacies include minimal operational facilities; not enough ticket windows; no electronic scheduling board or public address system; no porter service or public storage lockers; inadequate toilet and rest room facilities; very limited number of vending machines; and, a lack of security surveillance. In addition, the existing high-level platforms are not adequate for combined HSR and commuter requirements. Parking area does not meet existing needs.

Current Development Plans:

Traffic congestion in area precludes major commercial development in near future.

State of New Jersey is currently implementing an extensive highway-improvement program to relieve traffic congestion in vicinity of Metropark.

Parking lot will be enlarged by construction currently under way.

Facility Improvements:

To meet 1990 demand: demolition and reconstruction of terminal building required; construction of new center high-level platform and tracks to accommodate HSR would involve demolition and reconstruction of one existing platform and track; and, construction of new tunnel for access to HSR platform.

Site Improvements:

Increased patronage requires: construction of parking deck over a portion of parking lot; highway improvements to provide direct rapid-transit access to terminal; and, provisions for exclusive bus lane and kiss-and-ride parking at terminal.

Cost of Improvements:

Terminal Building	$4,535,000
Parking Facility	$4,290,000
Total	$8,825,000

PENN CENTRAL STATION – NEWARK, NEW JERSEY

Owner: Penn Central Transportation Company

Users: Amtrak
Penn Central
N.J. DOT Suburban
Central Railroad of New Jersey
Reading Company
PATH

Date Constructed: Terminal Building
1937

Facilities: Terminal building with 100,000-square-foot passenger processing area at sidewalk level; six platforms on two levels; and, an enclosed pedestrian bridge.

Present and Projected Activity:

One-Way Patronage				Estimated 1990 Access Mode To Terminal		Estimated 1990 Parking Req'd For HSR
Rail Service Type	1974 Average Daily	1990 Peak Design Day[1]	1990 Peak Hour	Mode[2]	Percent[3]	No. of Spaces[4]
HSR	1,600[5]	5,400	800	P & R	25	1,400
				Passenger	10	
Commuter	12,000[6]	22,200	10,200	K & R	15	
				Rail Transit	20	
				Bus	20	
Total	13,600	27,600	11,000	Taxi & Limo	5	
				Walk	5	

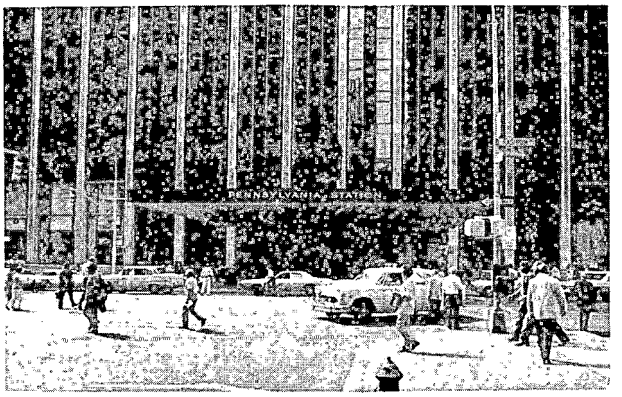
1) High Projection.
2) P & R equals Park-and-Ride; Passenger equals Passenger in park-and-ride car; K & R equals Kiss-and-Ride.
3) Approximate Median Value.
4) Rounded-off Number.
5) Amtrak Service.
6) Exclusive of PATH.

Location:	Approximately three blocks east of CBD. Bounded by Raymond Plaza West, Raymond Boulevard, Raymond Plaza East and Market Street. Access provided by local bus, rapid transit, taxi, private vehicle or walking. Land use is predominantly high-density commercial, office and industrial, with some middle-income residential.
Existing Facility Condition:	Terminal is structurally sound. Both interior and exterior surfaces are in need of cleaning and painting. Some major facilities are inoperative. Lighting and acoustics are poor. Heating and ventilation system is barely adequate and does not include central air conditioning. Platforms are adequate but need refurbishing.
Current Development Plans:	Fifteen renewal projects are in progress or recently completed. These include major commercial, industrial and residential developments.
Facility Improvements:	To meet 1990 demand: renovate and remodel terminal interior; reconstruct all passenger facilities and concession areas; and, upgrade heating and ventilation system, including addition of air conditioning.
Site Improvements:	To accommodate anticipated patronage, parking space for 1,400 cars is required as well as intersection improvements, rehabilitation of underpasses and renovation of bus and subway facilities in the terminal.

Cost of Improvements:

Terminal Building	$ 7,523,000
Parking Facility	2,970,000
Land Acquisition	300,000
Total	$10,793,000

PENNSYLVANIA STATION – NEW YORK CITY, NEW YORK



Owner: Penn Central Transportation Company

Users: Amtrak
Penn Central
Long Island Rail Road (MTA)

Date Constructed: Extensively renovated in late 1960's

Facilities: Terminal covers approximately 1,000,000 square feet and consists of four levels: "C" level mezzanine, at street level; "B" level, main passenger level, one level below street; "A" level, concourse, two levels below street; and, platform level, below "A" level. Also, 11 high-level platforms, 21 tracks, and stairways, escalators and elevators are below the "A" level.

Present and Projected Activity:

One-Way Patronage				Estimated 1990 Access Mode To Terminal		Estimated 1990 Parking Req'd For HSR
Rail Service Type	1974 Average Daily	1990 Peak Design Day[1]	1990 Peak Hour	Mode[2]	Percent[3]	No. of Spaces[4]
HSR	9,600[5]	37,100	5,600	P & R	2	700
				Passenger	1	
Commuter	95,000	125,500	48,000	K & R	2	
				Rail Transit	50	
				Bus	20	
Total	104,600	162,600	54,200	Taxi & Limo	15	
				Walk	10	

1) High Projection.
2) P & R equals Park-and-Ride; Passenger equals Passenger in park-and-ride car; K & R equals Kiss-and-Ride.
3) Approximate Median Value.
4) Rounded-off Number.
5) Amtrak Service.

Location: Midtown Manhattan, close to garment manufacturing district, major retail district and major business, financial and entertainment activities. Underneath new Madison Square Garden complex and One Penn Plaza, high-rise office building.

Bounded by West 31st Street on south, West 33rd Street on north, 7th Avenue on east and 8th Avenue on west.

Access provided primarily by subway or commuter rail; also by bus, walking, taxi and underground pedestrian passageways.

Direct connections to local bus and rapid transit systems; easily accessible from intercity bus terminal and Grand Central Station; and, 30 minutes from regional airports.

General terminal area considerably deteriorated. Most buildings are older medium and high-rise structures with mixture of retail, office and garment industry activities.

Existing Facility Condition: Terminal not visible from outside. Exterior of contemporary architectural design. All approaches adequately protected against weather. Structural integrity is good. Interior clean and well-maintained with contemporary furnishings.

Current Development Plans: Redevelopment of terminal area for more intensive use, such as high-rise office and major retail activities, is likely.

City Planning Department considering alternatives for improved pedestrian and vehicular traffic flow in general terminal area and rehabilitation of underground pedestrian passageways.

Additional subway lines and rail links to terminal proposed.

Facility Improvements: To meet 1990 demand: separation of HSR traffic from commuter traffic; all commuter activities on "A" level.

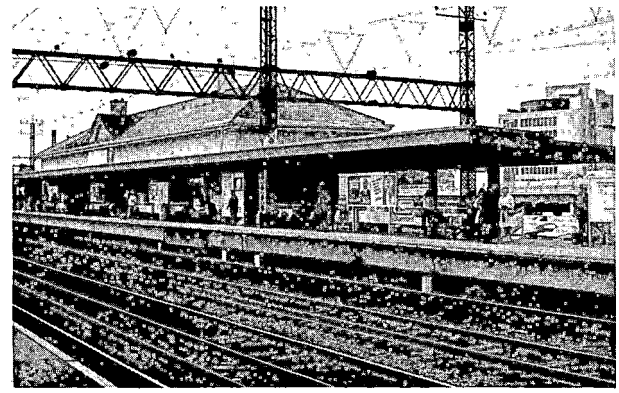
Widen center concourse ("A" level); extend Long Island concourse ("A" level) to form east concourse with direct access to HSR platforms; widen east-west concourse ("B" level); install ticket facilities for HSR patrons; expand main waiting area and increase seating; widen corridors leading to subways; and, add stairways and escalators.

Site Improvements: Increased patronage requires: strict parking regulations and other controls to improve pedestrian and vehicular traffic flow; improve information and directional signing for subway, bus routes and taxi stands; and, rehabilitate subway stations, subway entrances to terminal and underground passageways.

Cost of Improvements:

Terminal Building	$14,838,000

STAMFORD STATION – STAMFORD, CONNECTICUT



Owner: Transportation Plaza Associates, State of Connecticut

Users: Amtrak
Penn Central
MTA-CTA Suburban

Date Constructed: Buildings 1895
High-level platforms and canopies 1972-1973

Facilities: One and one-half-story brick terminal building; two canopied high-level platforms; pedestrian underpass; stairways; another brick building across tracks used as bus depot; and, adjacent paved areas used for parking and vehicular access.

Present and Projected Activity:

One-Way Patronage				Estimated 1990 Access Mode To Terminal		Estimated 1990 Parking Req'd For HSR
Rail Service Type	1974 Average Daily	1990 Peak Design Day[1]	1990 Peak Hour	Mode[2]	Percent[3]	No. of Spaces[4]
HSR	100[5]	1,200	200	P & R	60	700
				Passenger	10	
Commuter	2,200	3,200	1,400	K & R	15	
				Rail Transit	0	
				Bus	7	
Total	2,300	4,400	1,600	Taxi & Limo	3	
				Walk	5	

1) High Projection.
2) P & R equals Park-and-Ride; Passenger equals Passenger in park-and-ride car; K & R equals Kiss-and-Ride.
3) Approximate Median Value.
4) Rounded-off Number.
5) Amtrak Service.

Location: A few blocks south of CBD. On-off ramps for Connecticut Turnpike within one block of terminal. Near major arterials including North State Street (directly north), Washington Boulevard and Atlantic Street.

Auto dominates modes of access to terminal. Intercity and local bus service at depot south of terminal building; taxi service also available. Regional airports at least 45 minutes away.

Immediate terminal area contains mixed land uses, predominantly residential and industrial, with older substandard structures. Urban renewal project currently underway northeast of the terminal.

Existing Facility Condition: Building shells appear sound. Exterior surfaces shabby and unattractive. Wood surfaces need reconditioning. Platforms and canopies in good condition. Interior surfaces need reconditioning. Rest room surfaces dirty and deteriorated. Utilities adequate for current needs.

Current Development Plans: Transportation Plaza Associates plans to develop terminal environs into business and transportation center, including multi-storied buildings, new rail terminal integrated with office structure, multi-modal transportation facilities and 1,000-space parking garage.

"Basic Policies for the Master Plan" proposes high-density residential, office and commercial uses north of terminal; and, consolidation of warehouse and industrial facilities and new residential development south of terminal.

Increased bus service and associated facilities under Connecticut Transportation Master Plan.

Facility Improvements: To meet 1990 demand: demolish existing terminal facilities; rearrange and reconstruct trackage; construct 1,200-foot-long, high-level center platform for HSR use; construct new high-level commuter platform; and, construct integrated terminal complex with ground-level building and associated passenger facilities, shelter and concourse overpass.

Site Improvements: Increased patronage requires: street improvements and modifications in immediate terminal area; construction of multi-level parking structure, east of terminal, with direct access to terminal building; provision of taxi stand, bus-berthing areas and kiss-and-ride areas on ground floor of parking structure; expansion of bus service to terminal; and, provision for kiss-and-ride areas west of terminal.

Cost of Improvements:

Terminal Building	$4,012,000
Parking Facility	2,310,000
Land Acquisition	290,000
Total	$6,612,000

NEW HAVEN STATION – NEW HAVEN, CONNECTICUT

Owner: State of Connecticut
Main terminal building, currently unused, owned by state and city of New Haven.

Users: Amtrak
Penn Central
MTA-CTA Suburban

Date Constructed: Original terminal building 1920
Commuter platforms 1971-1972

Facilities: Present operating facilities: small concrete-block and glass ticket office; waiting area in subway underpass beneath tracks; two high-level commuter platforms; three low-level platforms; and, Passenger Services office. Unused terminal building is a four-story brick and masonry structure, approximately 300' x 90'.

Present and Projected Activity:

One-Way Patronage				Estimated 1990 Access Mode To Terminal		Estimated 1990 Parking Req'd For HSR
Rail Service Type	1974 Average Daily	1990 Peak Design Day[1]	1990 Peak Hour	Mode[2]	Percent[3]	No. of Spaces[4]
HSR	600[5]	5,200	800	P & R	50	2,600
				Passenger	15	
Commuter	700	1,100	500	K & R	20	
				Rail Transit	0	
				Bus	7	
Total	1,300	6,300	1,300	Taxi & Limo	3	
				Walk	5	

1) High Projection.
2) P & R equals Park-and-Ride; Passenger equals Passenger in park-and-ride car; K & R equals Kiss-and-Ride.
3) Approximate Median Value.
4) Rounded-off Number.
5) Amtrak Service.

Location: Just south of CBD; close to most major activities.

Intersection of I-95 and I-91, less than one mile from terminal.

Access provided by local bus, taxi and private vehicles. Near intercity bus terminals and approximately five miles from Tweed-New Haven Airport.

Area west of tracks undergoing major redevelopment. North of State Route 34, primarily intensive commercial uses including major new retail, office and business facilities. South of State Route 34, primarily residential with limited commercial and industrial activity.

Existing Facility Condition: Temporary facilities: exterior surfaces serviceable. Low-level platforms need reconditioning. Interior structure sound, but surface finishes have been vandalized. Ticket office carpeting worn and soiled.

Original terminal: exterior surfaces need cleaning and minor repairs; interior surfaces grimy and deteriorated. Fixtures vandalized. No apparent structural weaknesses. Basement air saturated with diesel oil fumes and oil film on ground water table in basement area. Soil may be contaminated. Steam-heated radiators leaking. Plumbing pipes are corroded and need repair.

Current Development Plans: Multi-modal transportation center involving rehabilitation of old terminal, construction of new parking garage and commercial facilities.

Operational improvements to alleviate congestion.

Facility Improvements: To meet 1990 demand: restore old terminal building and associated passenger facilities; construct new 50-foot-wide high-level concourse overpass and enclosed walkway to platforms; construct two new 1200-foot-long high-level platforms; recondition existing high-level platforms; seal up subway underpass; remove fuel oil contaminants; and, relocate engine fueling facilities.

Site Improvements: Increased patronage requires: eliminate on-street parking near terminal; rechannel Union Avenue; restripe where necessary; construct multi-level parking garage with connecting overhead walkway to terminal; construct kiss-and-ride facilities and bus, taxi and limousine bays; and, improve local bus service and pedestrian access.

Cost of Improvements:

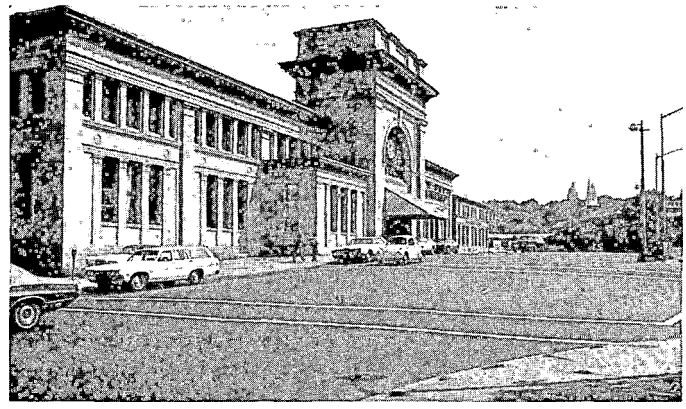
Terminal Building	$ 7,459,000
Parking Structure	$ 8,580,000
Total	$16,039,000

UNION STATION–PROVIDENCE, RHODE ISLAND

Owner: Penn Central Transportation Company (Subject to claims by the Providence and Worcester Railroad Company)

Users: Amtrak
Penn Central

Date Constructed: 1898



Facilities: Terminal building with street-level passenger processing area of 21,000 square feet; two pedestrian underpasses, each 18 feet wide; three low-level center platforms of varying lengths; and, stairways leading from underpasses to platforms. 48,000 square feet of additional space in three ancillary structures.

Present & Projected Activity:

One-Way Patronage				Estimated 1990 Access Mode To Terminal		Estimated 1990 Parking Req'd For HSR
Rail Service Type	1974 Average Daily	1990 Peak Design Day[1]	1990 Peak Hour	Mode[2]	Percent[3]	No. of Spaces[4]
HSR	350[5]	5,100	700	P & R	40	2,000
				Passenger	12	
Commuter	200	6,300	3,300	K & R	20	
				Rail Transit	0	
Total	550	11,400	4,000	Bus	15	
				Taxi & Limo	3	
				Walk	10	

1) High Projection.
2) P & R equals Park-and-Ride; Passenger equals Passenger in park-and-ride car; K & R equals Kiss-and-Ride.
3) Approximate Median Value.
4) Rounded-off Number.
5) Amtrak Service.

Location: On northeastern boundary of the CBD.

Terminal faces Exchange Terrace. Main terminal platforms, Exchange Terrace and a parking deck are on viaduct over Francis Street, a north-south artery.

Access provided by local bus, taxi and private vehicles. Less than two blocks to intercity bus terminal; transportation to airport by taxi or private vehicle.

Land use is high density to the south where the CBD is located. To the north, vacant land and parking areas separate the terminal from the State Capitol.

Existing Facility Condition: Some corrosion is evident in the steel frame viaduct. Masonry surfaces of terminal building are in need of repair and degradable materials should be replaced. All interior surfaces in need of repair and rehabilitation. Concourse area is dilapidated and should be demolished. Pedestrian underpass is subject to surface leakage and needs extensive reconstruction work. Heating facilities are inadequate. Electrical, water and sanitary disposal services are adequate at current usage level.

Current Development Plans: One public redevelopment project in western portion of CBD is nearing completion.

Facility Improvements: To meet 1990 demand: exterior of terminal should be repaired and renovated; interior should be rearranged and remodeled including installation of closed-circuit TV monitoring system. Repair and renovation of pedestrian underpasses would include installation of escalators, elevators and stairways.

Site Improvements: Increased patronage requires: modifications in circulation and parking south of terminal; traffic circulation north of terminal should be modified following completion of Civic Center Interchange. Construction of parking facility, north of tracks, to provide 2,000 spaces; taxi and limousine bays, and new or relocated bus stops in addition to kiss-and-ride loading/ unloading zones.

A thorough analysis of the Francis Street railroad viaduct will be conducted under Task 11 of the NEC-HSR improvements project.

Cost of Improvements:

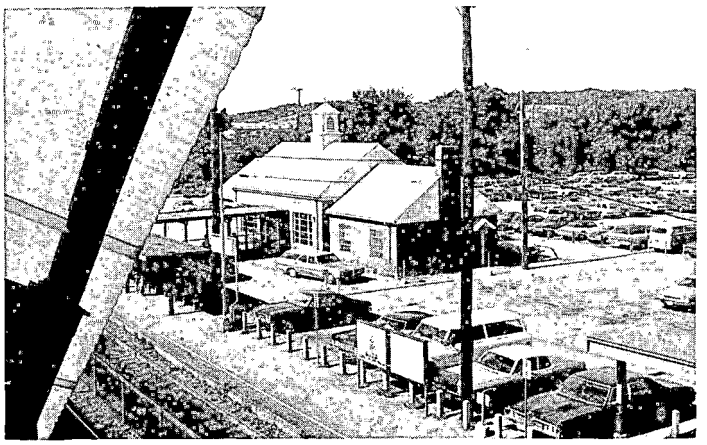
Terminal Building	$ 4,693,000
Parking Facility	$ 6,600,000
Total	$11,293,000

ROUTE 128 STATION–DEDHAM, MASSACHUSETTS

Owner: Massachusetts Bay Transportation Authority

Users: Amtrak
Penn Central
MBTA Suburban

Date Constructed: Terminal, shelter and overpass 1965



Facilities: Single-story brick terminal building; brick shelter building; two low-level canopied platforms; sheltered pedestrian walkway over tracks; canopied stairs connecting platforms to overpass; 560-space parking lot; and, kiss-and-ride areas.

Present & Projected Activity:

One-Way Patronage				Estimated 1990 Access Mode To Terminal		Estimated 1990 Parking Req'd For HSR
Rail Service Type	1974 Average Daily	1990 Peak Design Day[1]	1990 Peak Hour	Mode[2]	Percent[3]	No. of Spaces[4]
HSR	150[5]	2,000	300	P & R	70	1,400
				Passenger	7	
Commuter	400	700	400	K & R	20	
				Rail Transit	0	
Total	550	2,700	700	Bus	1	
				Taxi & Limo	1	
				Walk	1	

1) High Projection.
2) P & R equals Park-and-Ride; Passenger equals Passenger in park-and-ride car; K & R equals Kiss-and-Ride.
3) Approximate Median Value.
4) Rounded-off Number.
5) Amtrak Service.

Location:

Approximately 12 miles southwest of Boston at intersection of Route 128 and I-95.

Route 128, University Avenue and Green Lodge Street adjacent to terminal.

Utilized by residents of Dedham, Westwood, Norwood and Canton. Access provided primarily by automobile.

Land use primarily residential, with areas of limited and light industrial activity and some preserved open-space areas.

Existing Facility Condition:

Terminal building, shelters, crosswalk and connecting stairways in good structural condition. Interior surfaces need refurbishing. Utilities are adequate, but ticket office needs air conditioning. Exterior building, canopy and platform surfaces need refurbishing.

Current Development Plans:

Future intensive development not likely in general terminal area.

Improvements to commuter rail lines presently utilizing terminal under "Transit Development Program".

Terminal site designated as transportation center under MBTA's "Transportation Plan for the Boston Region 1974-1983".

Facility Improvements:

To meet 1990 demand: construct new terminal building, high-level concourse overpass, 1200-foot-long HSR center high-level platform and two 850-foot-long commuter side platforms, with stairways, escalators and elevators; rearrange existing tracks; and, add two HSR tracks.

Site Improvements:

Increased patronage requires: stripe and rechannel adjacent streets; install adequate street signing to and from I-95; pave road leading to east side of terminal; and, construct new HSR parking structure for 1400 cars on air rights over existing parking lot, sidewalks from parking lot to terminal entrances, new kiss-and-ride facilities and bus and taxi bays.

Cost of Improvements:

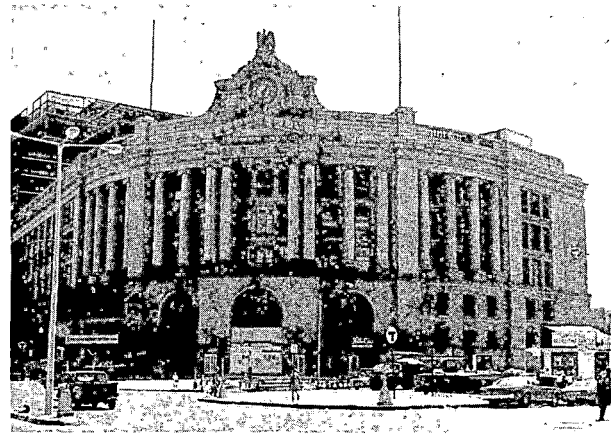
Terminal	$3,863,000
Parking Facility	4,620,000
Total	$8,483,000

SOUTH STATION – BOSTON, MASSACHUSETTS

Owner: Boston Redevelopment Authority (BRA)

Users: Amtrak
Penn Central
MBTA Suburban

Date Constructed: 1898



Facilities: Remaining portion of the five-story building consists of a part of the original concourse; a waiting room, and passageways on ground floor; offices on second, third, and fourth floors; and, a nearly deserted fifth floor. Original entrances facing Dewey Square and on Atlantic Avenue are intact. Of eight low-level canopied platforms, three are presently not in use.

Present & Projected Activity:

One-Way Patronage				Estimated 1990 Access Mode To Terminal		Estimated 1990 Parking Req'd For HSR
Rail Service Type	1974 Average Daily	1990 Peak Design Day[1]	1990 Peak Hour	Mode[2]	Percent[3]	No. of Spaces[4]
HSR	700[5]	11,200	1,700	P & R	8	900
				Passenger	4	
Commuter	3,800	7,100	4,400	K & R	8	
				Rail Transit	40	
Total	4,500	18,300	6,100	Bus	20	
				Taxi & Limo	10	
				Walk	10	

1) High Projection.
2) P & R equals Park-and-Ride; Passenger equals Passenger in park-and-ride car; K & R equals Kiss-and-Ride.
3) Approximate Median Value.
4) Rounded-off Number.
5) Amtrak Service.

Location:

At the eastern edge of the CBD.

Bounded by Summer Street, Atlantic Avenue, Fort Point Channel and railroad terminal trackage.

Land use is high density and includes CBD shopping district; a Massachusetts government center; regional financial and business establishments; health, educational and research facilities; and, a residential area. Some vacant land exists in the immediate vicinity of the terminal.

Existing Facility Condition:

All interior and exterior areas are dilapidated. Corridors are substandard and concourse area has no access to natural lighting. Entire structure needs extensive renovation, demolition and reconstruction in some areas, and extensive new construction. Low-level platforms are outmoded and track area needs rearranging.

Current Development Plans:

Considerable urban renewal has been accomplished in immediate vicinity. Future development is planned in the CBD and under consideration for the side of Fort Point Channel facing South Station. The BRA is formulating plans for multiple use development of the terminal property including intercity bus facilities.

Facility Improvements:

To meet 1990 demand: renovation of all existing areas; demolition of existing concourse with reconstruction at high-level platform elevation, including new entrance and stairs from Atlantic Avenue, rearrangement and reconstruction of rail beds and trackage; and, construction of two 1,200-foot high-level platforms to serve HSR tracks and three 850-foot high-level platforms to serve commuter tracks, with canopies and other ancillary features.

Site Improvements:

Increased patronage requires: addition of multimodal facility; parking space for 900 cars; recirculation and rechannelization of traffic in terminal area; intersection improvements; and, construction or reconstruction, as required, of all curbs, roadways, sidewalks and safety islands adjacent to terminal.

Cost of Improvements:

Terminal Building	$11,700,000
Parking Facility	$ 2,970,000
Total	$14,670,000

2.0 INTRODUCTION: CONCEPTUAL BASIS FOR TERMINAL IMPROVEMENT PROGRAM

In the past quarter century, overall intercity passenger travel in the Northeast Corridor (Washington, D.C. to Boston, Massachusetts) has increased dramatically while rail passenger traffic has substantially declined. For example, the 1971 rail passenger traffic between New York and Boston was only 5 percent of the 1944 volume between those two cities. Of the three transportation modes serving the Corridor – air, railroad and highway – nearly all efforts to raise the capacity level of technology and attractiveness have been concentrated on two modes – highway and air.

The next 15 years will see an increase in the volume of Corridor travel at the annual rate of between 2.2 and 3.8 percent. Environmental considerations as well as critical limitations on energy resources militate against continued emphasis upon improvement and expansion of the air and highway modes. It is necessary, therefore, to turn to the third, long neglected mode – the railroad.

The product of this engineering study is a series of recommendations for a new generation of facilities, vehicles, power collection and train control, which will provide intercity train service at speeds up to 150 MPH. Yet it must be recognized that the intercity rail line will be only one element – or link – in a vast and complex system moving travelers between their origins and ultimate destinations, scattered over an immense area.

In an experiment conducted not long ago, it was demonstrated that a traveler experienced 23 separate and distinct stages of moving and waiting during the course of a trip, principally by air, between a point in Northern New Jersey and Cambridge, Massachusetts. The advantages of high-speed transport were largely cancelled out at the interfaces from bus to train, train to train, city terminal to airport terminal, check-in counter to loading gate, etc.

Usually the unfortunate intercity traveler is part of a series of batch processes, when what he needs most is to be able to insert himself into a continuous flow to his destination. But the difficulty he faces in doing this is twofold. First, a traveler's movements by public transportation are sadly mismatched. Second, the geographic origins and destinations of his journeys are randomly dispersed. The word *terminal* is a misnomer for the traveler who begins and ends most journeys at office or home. For him, transportation-system terminals are nodes where he trades one form of movement for another, or where paths of vehicles moving in various directions intersect.

At each node, he merges with all of the individual processes of other passengers whose journeys parallel his. With every form of public transportation, the journeys between nodes are batch processes, and time is lost in getting to and entering the batch, and in waiting for its movement to begin.

Yet as a system problem, deployment of public transportation means more than containerizing passengers and propelling the package from terminal to terminal. Information must be communicated, fares dispersed, baggage handled and vehicles boarded. Transportation nodes are intersections of human and vehicular traffic, both of which must be guided and controlled – the former by psychology, sociology and information technology, and the latter by engineering of the interrelations among devices.

All of these processes in the nodes take time. Travelers find themselves abandoned in all the loose ends of otherwise well-engineered transportation systems coming together near each other, but not so near that they transfer easily.

To be successful, public transportation must be attractive enough as a service to be preferred to the automobile. The prospect of increased road and parking congestion, because of the decline of public transportation – particularly the railroads, has reached crisis proportions in many heavily populated areas in the Northeast Corridor. It is to meet this crisis, that the HSR project was inaugurated, and considerable attention has been focused on the major problem areas just described: the interface and its role in connecting the intercity transportation system with urban access links.

Broad goals have been established for Task 7A. The terminal structure should be easily negotiated. The path of the traveler, from one mode to another, should be uncomplicated and well marked. This is especially important for the stranger with inherent problems of orientation and uncertainty. The facility should also offer sufficient amenities to make the journey a pleasant one regardless of its frequency. The HSR system will be functioning in a highly-competitive market situation where speed, alone, will not be a decisive factor. Nor will it suffice to have high-quality, on-board accommodations. A traveler's experience begins at his origin and continues to final destination. Those segments of his experience, associated with the interfaces, will be as impressive as any other.

Beyond the facility itself is what may be termed the "approach." This includes not only the arterial network and public transportation, but parking facilities as well. These, too, should serve to facilitate travel and not act as obstacles, which has so often been the case with major transportation terminals. Techniques for improving these aspects will be outlined in the next chapter.

However, an important point must be emphasized here. The study recommends a considerable expansion of parking facilities at high cost throughout the Corridor. It may be argued that this merely encourages greater use of the automobile and a neglect of transit, with the consequent increase in congestion and pollution. The fact remains, however, that the next 15 years will not see a substantial shift from private transportation to transit even under the most optimistic estimates. Modal split projections from Task 1 support this fact. If the HSR terminals are to offer convenience for all modes of arrival, they must provide adequate parking. It should be noted that the heavy requirement of public support may be offset by private participation, which is common in the parking industry.

Beyond the terminal approach is the regional transportation system composed of a complex arterial network, together with transit routes and services. Without sufficient orientation of these systems toward the HSR terminal, the intercity system will have difficulty prospering. It will be incumbent upon local government officials and transportation authorities, in each of the 14 locations, to view their HSR terminals as a community asset which must be supported in a regional context.

Apart from expansion of street and highway systems, which may be difficult to accomplish in future years, traffic control systems, such as those engendered by TOPICS programs, should serve to reduce local origin – HSR terminal travel times. Transit development should emphatically be focused on the railroad terminal. There are no two more mutually-supportive systems than HSR and urban transit. Rail transit planning, related to the urban core, would be illogical without consideration of a direct, physical connection with the HSR terminal. Express bus and other specialized transit services would be appropriate for orientation toward the terminal from major activity centers.

In summary, all of the factors enumerated above form ever widening horizons from HSR:

– beyond the train door to the terminal structure;

– beyond the structure to the terminal approach;

– and, beyond the terminal approach to the entire regional transportation infrastructure.

Since they closely and continuously interact, none can be neglected if HSR is to be successful. This is the conceptual basis for all findings and recommendations which follow.

3.0 STUDY FRAMEWORK

3.1 INTRODUCTION

The study framework for the review of terminal facilities (Task 7A) has been based on a number of previous studies of the Northeast Corridor, other tasks comprising the engineering study and discussions with representatives of the FRA.

The overriding goal of this Task is to identify those terminal improvements, planned or required, which would attract travelers in the Northeast Corridor to the High-Speed Rail (HSR) mode.

To this end, performance standards were developed for various components of the total HSR system. These standards served as the criteria against which the effectiveness of existing facilities were measured. In other instances, such as forecasting patronage on the HSR, a level of service was assumed consistent with the expressed objectives of the FRA and as supported by previous studies. Criteria generally fall into the following categories:

(1) Operational service levels including schedule, equipment and operating characteristics.

(2) Terminal location characteristics and their interface with other regional transportation facilities.

(3) Operational aspects of terminal accessibility.

(4) Ability of the interior of the terminal to meet the needs of the terminal user.

(5) Recognition of institutional constraints which could modify the effectiveness of proposed improvements.

Each of these categories is discussed below with the exception of internal terminal performance. Criteria for the latter are considered in Chapter 5, Passenger Terminal Performance Standards.

3.2 OPERATIONAL SERVICE LEVELS

Service levels for the HSR program were developed to market a rail service which will maximize rail patronage. The service upon which future passenger patronage figures were developed in Task 1A of this study includes:

(1) An attractive schedule.

(2) Reliable service.

(3) Comfort.

(4) Convenience.

(5) Safety.

(6) Competitive trip times.

(7) Economy.

Future patronage was predicated upon train service every 30 minutes for major city pairs along the entire Corridor from Washington to Boston. Between Philadelphia, New York and New Haven the frequency of service could be increased, as required. In all instances, it was assumed that trains would operate on schedule and have sufficient seating capacity to accommodate all passengers.

Each train would be comprised of coach as well as first class, reserved-seat accommodations. The pricing structure would match coach fares with intercity bus fares, while first class fares would be competitive with air fares for similar trips.

Patronage projections were based upon a travel time between Boston and New York of two hours and forty minutes and, between New York and Washington, two hours and twenty minutes. A passenger traveling between Boston and Washington would dwell an additional 5 minutes in the New York Penn Central Station. Travel time between intermediate terminals along the Corridor would be proportionate to distance. Rail improvements anticipated would permit a maximum operating speed of 150 MPH.

The needs and desires of the Northeast Corridor traveler were enumerated in a 1970 study.* This study reinforced the assumptions upon which patronage figures were predicated. It indicated that speed and time are salient aspects of travel. Travel costs are a minor concern of the business traveler and a major concern of the non-business traveler. The study demonstrated that although schedule reliability is not a function of mode determination, airline schedule unreliability is deplored without resentment, while railroad unreliability arouses heated complaint. Therefore, in the present study, the marketing aspects and operations of the HSR system were assumed to have overcome this psychological disadvantage. In addition, the marketing strategy must assure such physical comforts as a smooth ride, seating comfort, leg room, temperature and security from attack or affront by "dangerous" or "undesirable characters". The rail passenger must perceive that the risk of accident is low.

The study also itemized attitudinal value considerations which must be met to effectively market HSR. These include such items as cleanliness; availability of food and drink, if only as a symbol of hospitality; feeling welcome through courteous personalized service; removing the feeling of rigidity enforced by timetables; and, in general, making the whole trip "fun" and worry free. To accomplish this, the passenger must be informed and knowledgeable about where to go and what to do.

Although many of these factors are primarily related to the equipment and operations of the train, they also apply to terminal facilities. Safety, comfort, feeling welcome, a sense of "fun" and the removing of the unknown from travel are primary goals. The 1970 study also emphasized the goals used for the terminal evaluations. These included:

(1) Ease of access to terminals.

* National Analysts, Inc.; The Needs and Desires of Travelers in the Northeast Corridor: Department of Transportation, Washington, D.C.; February 1970.

(2) Ease and convenience of parking.

(3) Availability of alternative transport modes to and from the terminal.

(4) Sense of security in the terminal area.

Projected HSR Patronage

Patronage projections in Task 1 of this study were estimated based on the proposed high level of service, together with present Amtrak operating experience in the Corridor modified to reflect shorter trip times. In addition, the following were also assumed:

(1) Continuing growth of total travel;

(2) Diversion of all one-person car trips and 50 percent of all two-person car trips in the Corridor to HSR;

(3) Diversion of trips from air and bus to HSR in accordance with modal split diversion curves; and

(4) Induced HSR patronage of 5 to 10 percent in each segment, assuming fuel costs at June 1974 levels; induced HSR patronage of 10 to 25 percent if fuel costs double.

In calculating patronage diverted from automobile to HSR, however, it was also assumed that there would be local public-transit improvements, that suburban stations would be highly accessible, that adequate parking spaces would be available, and the improved rail service would include adequate off-peak service as well as service reverse to the predominant direction of travel.

Based on these assumptions, it was projected that HSR could attract approximately 42 percent of all person trips between city pairs in the Corridor. Potential HSR use is also indicated by historic patronage data for the Corridor, and recent Amtrak experience. In 1944, over 4.4 million passenger trips between Boston and New York were made by rail. More recently, Amtrak patronage between these cities has increased from 219,000 trips in 1971 to 346,000 trips in 1972 and 455,000 trips in 1973.

High and low 1990 HSR patronage was projected in Task 1 for 18 stations along the Northeast Corridor. High figures were approximately twice the low estimated ridership.

Table 3-1 indicates the design-day, high estimate ridership for the 14 terminals studied in this task, together with the 1973 Amtrak average day ridership and the assumed daily peak-hour HSR ridership. Present and projected commuter use of each terminal is also shown. The estimates in Table 3-1 were used to develop the maximum level of activity to be accommodated within each terminal, and potential requirements in terms of access mode: bus and rail transit, autos and taxis.

The future proportion of peak-hour HSR passengers to the total peak-hour passenger use of a terminal varies considerably, from less than 15 percent of the total at Stamford to nearly 60 percent in Baltimore. The terminal facility must be adequate to handle the total maximum passenger

TABLE 3-1

SUMMARY OF EXISTING AND PROJECTED HSR AND COMMUTER RIDERSHIP BY TERMINAL PER DAY (ONE-WAY)[1]

TERMINALS	1974 Average Day		1990 Peak Design Day		1990 Peak Hour[2]	
	Amtrak	Commuter	HSR[4]	Commuter	HSR	Commuter
Washington, D. C.	3,000	2,100	15,400	13,300	2,300	6,500
New Carrollton	250	0	2,700	0	400	0
Baltimore	1,900	150	9,000	1,700	1,400	1,000
Wilmington	900	600	5,700	1,700	900	700
Philadelphia - 30th	5,400	9,500	22,000	20,500	3,300	6,800
Trenton	2,400	1,500	6,500	2,900	1,000	900
Metropark	150	1,700	2,100	2,500	300	800
Newark[3]	1,600	12,000	5,400	22,200	800	10,200
New York	9,600	95,000	37,000	125,500	5,600	48,600
Stamford	100	2,200	1,200	3,200	200	1,400
New Haven	600	700	5,200	1,100	800	500
Providence	350	200	5,100	6,300	800	3,300
Route 128	150	400	2,000	700	300	400
Boston - South	700	3,800	11,200	7,100	1,700	4,400

1) High estimate is equal to one-half of daily total; low estimates were approximately 50 percent of numbers shown.
2) Peak hours for HSR and commuter demand may not coincide.
3) Not including PATH.
4) Bechtel, Inc., Task 1 Report Demand Analysis.

NOTE: Commuter patronage estimates for Philadelphia, Trenton, Metropark, Newark and New York were revised subsequent to preparation of this Table. Final Demand Estimates, for Suburban Ridership Task 1 Report, projects 1990 design-day commuter patronage of 22,300, 3,800, 2,300, 22,100 and 124,900, respectively, at these stations.

volume passing through the terminal during that peak period. These total volumes then dictate the design and size of future terminal improvements such as platform space, ticket sales space and waiting areas. How these passengers travel to and from the terminal will indicate the highway and street improvements, if any, required in the terminal vicinity, and the relative severity of impact of traffic generated by the terminal on surrounding areas.

Future changes had to be anticipated. While improved HSR service will increase Amtrak use, planned developments will increase other railroad users of the terminals e.g., the Long Island Rail Road in New York's Penn Station. Increased reliance on local transit systems was also anticipated. The development of linkages between HSR and rapid transit, as at the New Carrollton Station, or future intermodal centers, as proposed in Wilmington and New Haven, will attract more travelers to the terminal. This could reduce traffic congestion, increase accessibility to HSR and stimulate the level of activity in the surrounding area.

3.3 REGIONAL ACCESSIBILITY

The 14 terminals included in this Task 7A analysis, serve urban areas of varying geographical size, population density and economic status. In addition, access modes differ substantially. For example, at New York's Pennsylvania Station, access is primarily by subway, bus, taxi and walking. Access to New Carrollton Station, Maryland, is almost solely by auto.

This variance in residence, distance and transport mode availability factors, coupled with certain HSR service concepts, necessitated a general approach to calculating and evaluating the impact of time required for access to terminals. The proposed dual-fare structure increases the potential distribution of trip origins and socio-economic characteristics of HSR patrons.

The availability of public transportation access to the terminal area is also anticipated to change before HSR service is initiated, and to be further modified by the study design year of 1990. A mass transit system is under construction in Washington, D.C. with transit stations at both Washington's Union Station and New Carrollton Station in Maryland. Baltimore is currently planning a transit system with a transit station at or near Penn Central Station. Local buses currently provide some degree of service to most of the terminals analyzed. If projected travel demands become great enough, local buses can be rerouted to increase bus service to the terminals. New Haven, Wilmington and Boston are among cities currently studying the potential of converting their terminals to multi-modal complexes.

The expressed desires for public transportation improvements, the demand and need for energy conservation and the increasing congestion on highways and airline terminals all exert pressures to improve public transportation. Therefore, from various points of view – including achieving maximum use of the HSR system – a comprehensive network of connecting transportation facilities is desirable in each of the HSR terminal areas.

Coordination of Transportation Systems

Future success of the HSR system will depend in part on ease of access to the terminal area. The mode of access has been studied over the years prior to the establishment of Amtrak service. A 1974 study in Baltimore indicated that the principal modes utilized for travel to the terminal were automobile, taxi, bus and walking. The percentage of distribution is listed in Table 3-2.

TABLE 3-2

MODE OF ACCESS TO BALTIMORE STATION 1974*

Access Mode	Percent of Sample	
	Commuting Trip	Business Trip
Automobile		
Kiss-and-Ride	32	28
Park-and-Ride	40	44
Rental-car	0	2
Taxi	6	19
Bus	18	2
Walk	4	4
Other	0	1

Baltimore has planned a rapid transit system which has the potential to permit a direct interface with the rail terminal facility. Over 87 percent of those using the Baltimore terminal started their trips within ten miles of the terminal, and 67 percent originated less than five miles from the terminal. These distances are within the service areas of local transit systems, demonstrating the potential for coordinated transportation facilities.

A terminal accessibility-time scale was developed in previous studies for the Corridor. These access and terminal impedance times were used in patronage projections of Task 1A. Table 3-3 lists the average access and terminal impedance time for bus, rail and air passengers at terminals in major cities along the Corridor. The times shown are a weighted average of trip times to each terminal. The weighted averages took into account the percentage of trips by local mode of transportation – auto, bus, etc. – and the distribution of travel origins – downtown, suburbs, etc. The 1969 findings were developed from 1965 data. Deducting the 15 minutes terminal-access time, the actual, weighted average trip to or from bus stations varied from 8 minutes in Providence to 67 minutes in Trenton. For railroad terminals, the travel times varied from 8 minutes in Providence to 26 minutes in Newark and New York. Assuming a constant 30-minute terminal time at airports, the weighted-average access time ranged from 15 minutes in Boston to 89 minutes in New Haven.

* Survey accomplished by Baltimore Regional Planning Council – August 1974.

TABLE 3-3

ESTIMATES OF AVERAGE ACCESS AND TERMINAL IMPEDANCES

TIME BY MODE (MINUTES)

Location	Bus[1]	Rail[1]	Air[2]
Washington	34	33	64*
New Carrollton	–	–	–
Baltimore	25	27	60
Wilmington	26	26	91
Philadelphia - 30th	28	27	59
Trenton	82	20	98
MetroPark	–	–	–
Newark	48	41	73
New York	48	41	73
Stamford	56	39	92**
New Haven	39	29	119
Providence	23	23	51***
Route 128	–	–	–
Boston - South	31	33	45

[1]Terminal access time - 15 minutes; terminal egress - 10 minutes

[2]Assumed constant 30 minutes of air terminal time.

* Average Value – Dulles and National Airports

** Hartford – Bradley Field

*** Providence – Green Field

SOURCE: PM&L; Access and Demand Data Used in Development and Calibration at the NEC – Transportation Models NECTP-17-PB190-137, Department of Transportation; Washington, D.C.; December 1969.

A basic objective of the present study was to maximize the ease of access to the rail terminal. Consideration was given to the terminal site as it related to the interstate highway system, other freeways and major streets serving the city and surrounding urban area. Present, proposed and planned fixed-guideway transit systems were also noted and direct interface encouraged. Both local and intercity bus connections and service areas are significant access modes. Reflecting previous studies and the apparent need for the interface of all possible local transportation facilities, the basic provision for intermodal exchange facilities was considered at each terminal. Inherent in the evaluations of existing terminals and the suggested improvements was the need to increase the number of alternative modes, improve the access available and decrease the dependence upon the automobile to complete a trip.

Transportation Centers

Newark terminal presently is a multi-modal transportation center. The interchange between train, local bus, intercity bus, commuter train, rapid transit, light rail, taxi and automobile is possible. Similar facilities are proposed at Boston, New Haven, Providence, Stamford, Trenton, Wilmington and Washington, D.C. Where plans have been proposed for incorporating the rail terminal with other modes, they have been reinforced by this study. In every situation, a maximum possible interface of all modes of transportation is suggested and wherever possible, existing concept plans are incorporated.

Terminal Location

The total travel experience of the HSR patron includes a sense of security in the vicinity of the terminal. The terminals were historically a hub of the community, but in most instances they are currently located in neighborhoods undergoing change and which are some distance from primary business, institutional or industrial activity centers of the city.

Recognition of this condition is reflected in the numerous redevelopment proposals and plans of the cities as well as the many private development activities under way or proposed.

Implied in the effectiveness of the HSR system is the increased activity and business vitality of the areas in the vicinity of the terminals, and improved "housekeeping" within the terminal neighborhood. Improved curbs and sidewalks, street resurfacing, good lighting and street cleaning, as well as landscaping, can all increase the feeling of security, attractiveness and well-being in the terminal neighborhood.

3.4 TERMINAL OPERATIONS AND ACCESSIBILITY

As this study focuses more closely on the terminal and its immediate surrounding area, the goals and improvements necessary to assure an effective HSR system become progressively more specific. Set forth below are the goals and objectives which apply to the ease of travel within the immediate terminal area as well as interface with various access modes. Problems involved include vehicular and pedestrian traffic congestion, the conflicts between them, hazardous intersections, lack of signalization and channelization and overall traffic safety and flow.

The following specific goals and objectives were established to document the needed improvements at the terminal.

Traffic Circulation

Existing and proposed streets must be adequate to handle the automobile, truck and pedestrian traffic created by existing and/or new building development in the area as well as by the increased terminal patronage expected.

Long-Term Parking

While diversion from private to public modes of local transportation is expected to occur, substantial capacity for private parking will still be required. Recommendations were therefore prepared for facilities to be integrated with overall terminal development to specifically accommodate HSR patronage. Basic objectives were that parking be readily available, convenient, offered at moderate prices and adequately identified to potential users. At each terminal, consideration was given to costs of land acquisition for surface parking versus multideck structures. Existing parking at each terminal will be used for other than HSR patrons.

Bus Stops

Bus stops were to be located immediately adjacent to terminal entrances and sheltered from the weather. Bus access to the terminal was considered of higher priority than taxi or kiss-and-ride automobile facilities, and on an equal basis with pedestrian or rapid transit.

Rapid Transit Interchange

Where rapid transit facilities are being proposed, direct links between rapid transit station and rail terminals are suggested where not already proposed in existing plans.

Taxis

The relative expected importance of this transportation mode at each individual terminal would be reflected in the space allocated for this purpose. Specific taxi-loading areas were designed and sized to meet anticipated demands. The priority of this feature varied with the anticipated taxi use at the terminal as did the necessity for separate drop-off and pick-up locations. The size of stacking space varied with taxi use at each terminal.

Kiss-and-Ride Automobile Access

Adequate areas to meet this need varies with size of the urban geographic area, population densities and availability of alternative modes. Suburban and beltway terminals particularly require designation of major drop-off and pick-up areas. Major city terminals have small space allocations for this purpose. Longer dwell times have been anticipated for picking up than for dropping off patrons at the terminals.

Motorcycles and Bicycles

Although currently not a major access mode to the terminals, storage facilities should be provided to encourage bicycle use. It was assumed that motorcycles and bicycles would be primarily used by the daily commuter, and the limited additional space required for HSR patrons' bicycles could be incorporated with the commuter bicycle facilities to be provided. Motorcycle parking is assumed to be located in, and incidental to, the automobile parking facilities.

Limited Mobility Patrons

Both the elderly and handicapped HSR and commuter patrons require special design features to insure their mobility. Wider parking spaces located close to the terminal and provision for ramps and elevators for vertical movement are incorporated in the proposed terminal improvements.

Connections with Other Intercity Transportation

A primary goal of the improvements is to maximize coordination of all transportation facilities. Therefore, improvements for increasing the interchange of passengers between the HSR terminals and other train stations, intercity bus terminals, and airports were considered.

Improved connections, between intercity transportation terminals of varying modes (rail, air and bus) are dependent on the effectiveness of the local transportation system. Presently, connections are often poor and depend largely on taxis and, in the case of rail and bus terminal connections, sometimes walking. Bus and rapid transit service between such terminals should be provided.

Rental cars are often an important connecting mode, particularly for business trips. Therefore, rental car outlets are proposed for the concession area of each terminal, with the location of car storage to be determined by the individual rental agency.

3.4 PROGRAM FLEXIBILITY

The suggested improvements are based on a review of existing and proposed plans for the HSR system, land use developments in the vicinity of the terminals, as well as continuing coordination of regional transportation facilities. Design and improvement criteria were developed from present documentation and past experience of the consultant staffs and reflect anticipated changes over the years. Several factors will have major consequences on the suggested improvement program.

The effective coordination of local and regional transportation systems could modify existing access modes to the terminal. As more patrons use non-automobile modes to get to the terminal, the reduced dependence on the auto would be further enhanced and a reduction of parking facilities would be possible.

Terminal use criteria has been established in terms of HSR patronage and other rail commuters. As more fully integrated transportation centers are realized, verification of the assumed design criteria would be desirable.

New terminal neighborhood developments are dependent upon the demand for commercial and residential space, effective marketing and general economic conditions. Major variations in present city plans and changes in economic conditions would suggest a re-evaluation.

Other conditions are subject to change as plans are modified to meet new demands. Local and intercity bus routes are subject to change. Traffic operational improvements, such as signal modifications, turn movements, street widening and designation of one-way streets, could modify the suggested development plan.

The proposed improvement program, however, is sufficiently broad in scale to permit flexibility in the ultimate development.

3.5 INSTITUTIONAL IMPLICATIONS

Basic premises of the ongoing studies and evaluations of a Northeast Corridor Transportation system have included:

(1) The need for a comprehensive network of transportation facilities – commuter rail, local transit, intercity bus, and the NEC rail service – in the entire Corridor service area to enhance the acceptance and effectiveness of the total system concept.

(2) A positive Amtrak marketing strategy to attract patrons. This strategy includes enhancement of rail travel through fast and frequent service, attractive and comfortable trains, pleasant and efficient terminals, safe and easy access to terminal locations and patron services similar or equivalent to other transportation modes.

While these basic premises are inherent in the Amtrak concept and fall within the responsibility of HSR, other institutional considerations are not within the direct control of HSR and are a result of local historical, economic and political forces. Several of these latter considerations were mentioned in an earlier study of the Corridor.*

They include the need for:

(1) Cooperation and coordination between metropolitan, state and federal agencies, other than private carriers, to assure efficient interfacing of modes and carriers.

(2) Command and control of physical facilities such as terminals and guideways.

*Department of Transportation – Recommendations for Northeast Corridor Transportation; Washington, D.C.: September 1971.

(3) Consistent procedures to identify and allocate maintenance and operational costs.

(4) Simplification of jurisdictions of viable carriers.

(5) Equitable transportation regulation, taxation and financing policies.

These institutional considerations are reinforced by data developed for this study.

Ownerships of terminal properties vary significantly. The Stamford Station, for instance, is privately owned and the Boston South Station is owned by a non-transportation-oriented public agency – the Boston Redevelopment Authority (BRA). Other terminals are owned by the municipality or the railroad operating corporation. In the case of Washington's Union Station, the lease control is with the federal government.

Other restrictions not directly related to transportation can have either a delaying or terminating effect upon potential effective development. Examples of this are the current procedures established by the Environmental Protection Agency for complex-source air pollution controls as well as parking management plans coupled with air quality standards now becoming effective in the major metropolitan areas. For example, the parking to be made available to HSR patrons at the Union Station, National Visitor Center, Washington, D.C., has been restricted by an EPA ruling to a total number of spaces substantially less than required at this location. As a result, a primary design premise cannot be accommodated in an optimum manner, and parking requirements can only be met through shuttle service to satellite areas.

In summary, there is a vital need for concerted action by federal, state and local agencies, the cooperative effort of private organizations and trade groups, and the subjugation of parochial interests of transport carriers – both public and private – to achieve an effective transportation system throughout the Northeast Corridor.

4.0 METHODOLOGY

Introduction

The land use, transportation, architectural and engineering methodology applied to each terminal essentially consisted of the following elements:

(1) Examination of reports and data collected as part of Task 8.

(2) Assembly and analysis of additional existing reports.

(3) Assembly and examination of available maps, drawings, plans, aerial photographs and train and transit schedules.

(4) Field surveys including land use observations, transportation access observations, parking counts and terminal architectural and engineering observations and measurements.

(5) Interviews with local transportation and traffic personnel, city planners, redevelopment officials and railroad personnel.

4.1 COMMUNITY SETTING

The purposes of the community location/land-use analyses were to determine the terminal's relationship to major activity centers which might play a major role in influencing HSR use; to inventory generalized land uses in the terminal area; to determine recent land-use trends and the plans for future development potential in the terminal area; and, in some cases, determine potentially desirable land-use changes in the immediate area of the terminal, by 1990.

Relevant published reports on existing and future land-use were collected, and interviews were conducted with local planning and redevelopment officials. The following types of reports, data and maps were collected, examined and used, when appropriate.

(1) Task 8 reports.

(2) Aerial photographs.

(3) Maps of existing and projected land use, and building conditions.

(4) Zoning ordinances and maps as alternative to future development plans.

(5) Regional land-use plans and background data reports.

(6) Community master plans and background data reports.

(7) Redevelopment and renewal programs.

(8) Plans of specific renewal projects.

(9) Special planning studies for areas around the terminal.

(10) Data on any private development/redevelopment projects in the terminal area.

(11) Various miscellaneous reports dealing with topics, such as population growth and economic conditions.

A field survey was made of the existing land use in the vicinity of each terminal to identify present land-use characteristics including intensity and type of existing developments, general condition of structures and street areas, general safety of the area, recent building trends, land available for future terminal-related uses (such as possible parking structures) and general compatibility of the area with the HSR terminal.

A list of reports examined and officials interviewed is presented in the bibliography for each terminal. Officials interviewed included staff of various city and county planning departments, renewal agencies and economic development agencies.

4.2 PATRONAGE ESTIMATES AND PROJECTIONS

4.2.1 EXISTING PATRONAGE

Existing Metroliner and commuter patronage at each terminal were estimated on the basis of Federal Railroad Administration records, the Task 1 Report, and interviews with local railroad operating agencies.

Following examination of FRA annual data for 1973 and 1974, on-and-off counts made on November 16 and 22, 1973, were examined in detail and peak-period Amtrak travel estimates for each station were developed from these counts. These 1973 data were selected in preference to counts for 1974 since they were in a computer format and more accessible for this study's purpose.

One-way Amtrak patronage was assumed to be one-half the high daily total. While it was recognized that an Amtrak patron would be less likely than a commuter to depart and return to his station of origin on the same day, it was assumed that this estimate was sufficiently accurate to evaluate existing terminal operations. Some variation in HSR traffic flow by day of the week was taken into account in 1990 projections; however, FRA counts are grouped by primary stations; for example, data for South Station, Boston, include counts for Back Bay and Route 128. In the present study, these grouped counts were distributed to secondary stations in accordance with percentages developed in Task 1, with minor local adjustments, Secondary station loadings were taken to be a fraction of the primary station, rather than a fraction of the combined total. This slightly decreased the loadings assigned to secondary stations.

Existing commuter patronage was estimated for each station on the basis of 1974 counts for commuter lines reported in Task 1. These data included estimated one-way weekday traffic at certain major terminals, but did not assign traffic to secondary stations. In this Study, secondary-station loading factors to convert total line traffic to individual stations were derived from data furnished by local operating agencies and an examination of commuter train schedules.

The calculations for the 14 terminals, documented in this report, did not include the redistribution of the patronage at the four additional stations projected in Task 1 of approximately 9,000 HSR patrons. If this "missing" peak design day ridership at New London (2900), Bridgeport (1100), Rye-New Rochelle (1100) and North Philadelphia (4000) are redistributed to adjoining stations, some modification of future terminal concepts would result. Assuming the addition of North Philadelphia HSR patronage (4000) to Philadelphia (22000) by mode of access, no significant modification is anticipated. However, if one-half of the HSR patrons of Bridgeport (1100) and Rye-New Rochelle (1100) would use the adjoining Stamford terminal (1200), a substantial modification could result. The 1100 (550+550) additional patrons at Stamford would increase the anticipated HSR patronage from 1200 to 2300 patrons. The effect of this change in patronage level, for example, would be to double the need for parking for HSR patrons at Stamford. This imposes additional constraints on space available for total commuter and HSR parking, as well as the terminal facilities and has not been accounted for in the development plans for this report.

4.2.2 PROJECTED 1990 PATRONAGE

All conceptual designs prepared were based on 1990 patronage projections. These included "high" HSR projections for each station, developed in Task 1, together with high estimates of commuter line traffic. Where new commuter lines have been proposed, it was assumed that these would be operational by 1990. Station loading factors developed for existing traffic were applied to produce 1990 design-day commuter patronage.

The design day two-way or total traffic would, theoretically, be double the design day one-way patronage. The one-way figures have been used throughout. For most architectural design considerations, one-way patronage was desirable. For analyzing the parking requirements, the one-way patronage was necessary.

For instance, unlike HSR traffic, commuter traffic has specific "directional" characteristics which must be taken into consideration in evaluating such design factors as parking characteristics. For example: in the Boston area, most commuter trips originate at suburban stations and terminate at South Station, precluding the need for major commuter parking facilities at South Station. The directional nature of commuter traffic was taken into account in all concept plans.

4.2.3 PEAK-HOUR PATRONAGE

Peak-hour HSR patronage in 1990 was established as 15 percent of one-way design day volume, based on analyses of existing Metroliner traffic characteristics. It is believed that 15 percent can be established as an upper bound condition; it was assumed that any increase above 15 percent of one-way traffic would be handled by the scheduling of trains and by train size.

Peak-hour commuter traffic was estimated on the basis of peak-hour factors for traffic by lines to and from major destinations developed in Task 1. These factors were utilized for secondary as well as primary stations, with peak periods for secondary stations assigned to reflect train time from the major terminals. Since morning peak-hour factors were equal to or greater than evening factors in all cases, morning factors have been used. These factors ranged from 30 percent to 70 percent of the one-way design day volume.

4.3 PARKING AND ACCESS MODE

The purposes of the transportation analysis were to evaluate existing access characteristics to Northeast Corridor rail terminals; project future modes of access to the terminal; and, prepare a 1990 conceptual plan which can accommodate the projected HSR patronage by projected mode of arrival. Available reports and data were assembled, field surveys and interviews were conducted, the existing adequacy of access to the terminal was evaluated and existing problems were determined.

The data collection phase included assembling available published studies, plus interviews with responsible local officials. The following types of reports and data were sought for each city to be served by HSR.

(1) Long range transportation plans.

(2) Short range transportation plans.

(3) TOPICS studies.

(4) Capital improvement programs.

(5) Access mode studies.

(6) Transit routes and schedules.

(7) Functional street network plans.

(8) Parking studies or inventories.

A field inspection of each terminal was made to identify present access characteristics, including available parking and drop-off and pick-up areas for buses, taxis, automobiles and rental cars. Existing and proposed rapid transit systems were examined, including connections to the systems, in the cities where rapid transit exists or is proposed.

A list of reports consulted and officials interviewed is presented in the bibliography for each terminal.

The 1990 concept, developed for each terminal, has considered the existing facilities at the terminal, special features of each terminal location, projected HSR patronage and an assumed 1990 modal split for arrivals at individual terminals.

The assumed 1990 modal split developed for each terminal is unique to the characteristics of the expected mode of arrival at that particular terminal. The modal-split percentages used are shown in Table 4-1. The figures are based on a number of considerations, including previous studies done for some terminals, field observations of the present mode of arrival, an assessment of existing available facilities and probable future developments and known plans and improvements, such as transit improvements.

It should be stressed, however, that the 1990 modal splits, assumed for each terminal, are professional judgements based on professional experience and available information. Most studies of existing modal-split characteristics, at each terminal, predate the present Metroliner service; therefore, it would be desirable to undertake a modal split study of present arrivals at each terminal as a part of a detailed marketing analysis of the overall HSR Corridor system.

4.3.1 COMMUTER PARKING REQUIREMENTS

This report documents parking requirements for HSR patrons in 1990 at each of the 14 terminals studied. Based on projected 1990 patronage and forecast modal split, it is estimated that a total of 23,000 spaces will be required specifically for HSR patron use. Capital cost estimates were based on these forecasts, and do not include provision for commuter parking nor rapid transit parking where applicable.

While detailed analysis of commuter parking requirements is beyond the scope of this report, a preliminary evaluation was made of commuter parking needs at each of the HSR terminals studied. In this evaluation, the modal split forecast for HSR patrons was also assumed for commuters; the directional nature of commuter traffic was taken into account, however, and it was assumed that there would be no commuter parking requirement at Union Station, Washington; New Carrollton Station, Maryland; Pennsylvania Station, New York; or South Station, Boston. A summary of estimated HSR and commuter parking requirements in 1990 is presented in Table 4-2.

As indicated, a total of 9,100 commuter spaces may be required. The effects of HSR parking, at large commuter stations, is discussed by station below.

Baltimore – The existing Lanvale-Street parking lot has capacity for 200 cars. In this report, it is proposed that the parking area be vacated and a 1,200-space parking structure be built for HSR patrons on air rights over the north concourse. Two hundred additional commuter spaces could be furnished by increasing the capacity of the proposed HSR facility to 1,400 cars, or by constructing the HSR facility above the existing lot, retaining existing spaces for commuter use. The first alternative would require an additional floor in the parking structure; construction above the existing lot would result in a minimal increase in estimated costs.

TABLE 4-1

ESTIMATED 1990 ACCESS MODES TO STATIONS[1]

PERCENTAGES OF DAILY PASSENGER ARRIVALS TO STATIONS VIA:

Terminals	P&R[3]	Passenger	K&R[3]	Rail Transit	Bus	Taxi & Limo.	Walk
	L/H/M[2]	L/H/M	L/H/M	L/H/M	L/H/M	L/H/M	L/H/M
Washington, D.C.	5/10/8	2/5/4	5/10/8	30/40/35	10/20/15	15/25/20	5/15/10
New Carrollton	25/50/40	5/15/10	15/25/20	5/10/8	10/20/15	0/5/2	5/15/5
Baltimore	25/35/30	5/15/10	25/40/25	15/25/15	5/10/5	10/15/10	5/10/5
Wilmington	30/50/40	10/20/15	20/35/25	0/0	10/15/10	5/10/5	5/15/5
Philadelphia	5/10/8	2/5/4	5/10/8	20/40/30	15/25/20	15/25/20	5/10/10
Trenton	40/55/45	10/20/15	15/25/20	0/0	5/15/10	5/10/5	5/10/5
Metropark	50/70/60	5/10/10	15/25/20	0/0	1/5/3	1/5/2	5/15/5
Newark	20/35/25	5/15/10	10/20/15	15/25/20	15/25/20	5/10/5	5/10/5
New York	1/5/2	.5/2/1	1/5/2	40/50/50	10/20/20	5/15/15	5/10/10
Stamford	50/70/60	5/15/10	10/25/15	0/0	5/10/7	1/5/3	5/15/5
New Haven	40/65/50	10/15/15	15/25/20	0/0	5/10/7	1/5/3	5/10/5
Providence	30/50/40	10/15/12	15/25/20	0/0	10/20/15	1/5/3	5/15/10
Route 128	60/80/70	5/10/7	15/25/20	0/0	0/5/1	0/1/1	0/5/1
Boston-South	3/10/8	1/5/4	5/10/8	30/40/40	10/20/20	5/15/10	5/15/10

1) HSR and Commuter mode of arrival is assumed to be the same.

2) H equals High, L equals Low and M equals Approximate Median Value.

3) P & R equals Park-and-Ride; K & R equals Kiss-and-Ride.

TABLE 4-2. SUMMARY OF HSR AND COMMUTER PARKING REQUIREMENT FOR 1990

HSR Terminal	Park & Ride Mode of Arrival[1/]	1990 Design Day Comm Patronage[2/]	Approximate Comm Park'g Spaces Req'd	1990 Design Day HSR Patronage[3/]	HSR Park'g Spaces Required	Total Park'g Req'd for Train Users[4/]	Existing Parking Spaces[5/]	Additional Park'g Spaces Required
Washington Union Sta.	8	0	0	15,400	1,200	1,200	100	1,100
New Carrollton	40	0	0	2,700	1,100	1,100	0	1,100
Baltimore	30	700	200	9,000	2,700	2,900	200	2,700
Wilmington	40	1,700	700	5,700	2,300	3,000	200	2,800
Philadelphia 30th St. Sta.	8	600	50	22,000	1,800	1,850	600	1,250
Trenton	45	2,900	1,300	6,500	2,900	4,200	800	3,400
Metropark	60	2,500	1,500	2,100	1,300	2,800	800	2,000
Newark	25	8,700	2,200	5,400	1,400	3,600	1,400	2,200
New York Penn Sta.	2	0	0	37,100	700	700	0	700
Stamford	60	3,200	2,000	1,200	700	2,700	700	2,000
New Haven	50	1,100	600	5,200	2,600	3,200	500	2,700
Providence	50	125	50	5,100	2,000	2,050	0	2,050
Route 128	70	700	500	2,000	1,400	1,900	500	1,400
Boston South Sta.	8	0	0	11,200	900	900	0	900
		Totals	9,100		23,000	32,100	5,800	26,300[6/]

1/ Median value in percent; same mode of arrival assumed for both commuter and HSR (see Table 4-1).

2/ One-way commuter patronage originating at HSR stations.

3/ One-way HSR patronage originating at stations.

4/ Numbers previously rounded-off for both commuter and HSR separately. Thus, figure may not equal station patronage total times percentage via park and ride mode.

5/ These include only off-street parking spaces, adjacent to the terminals, which have been determined as those directly operated for train users, based on field observation; numbers are rounded-off.

6/ In addition to 5,800 existing parking spaces, located directly at the terminals, there are about 12,300 off-street public parking spaces available to train users within 1,200 feet of the terminals. Further discussion of these spaces is given in Chapters 6 through 19. If these spaces were considered, the additional spaces required for 1990 would be reduced to 14,100.

Wilmington – It is estimated that 700 spaces may be required for commuter by 1990. Existing lots in the terminal area are inadequate to meet this demand. A 2,300-space parking structure is proposed for HSR patrons. Cost estimates include land acquisition. The commuter-railroad operating agency may wish to consider the desirability of sharing costs to permit a 700-space expansion of the proposed structure to meet 1990 commuter needs.

Trenton – The 1990 commuter parking requirement is estimated at 1,300 spaces. A 3,000-space structure for HSR patrons is proposed south of the terminal, replacing an existing 160-space lot. Cost estimates for this facility did not include land acquisition. The proposed HSR structure could be expanded to accommodate commuter parking, or constructed above the lot, retaining existing spaces for commuter use. The latter alternative would not substantially increase estimated costs.

Metropark – Ninety percent of the travelers using this station are commuters. It is estimated that 1,500 parking spaces will be required for commuter use by 1990. The State of New Jersey is presently expanding available parking to 1,334 spaces. The Task 7A report proposes a 1,300-space facility for HSR patrons; capital cost estimates do not include land acquisition. The structure could be built on air rights over the existing lots, at minimal additional cost, or expanded to accommodate both HSR and commuter cars.

Newark – Capital cost estimates cover space for only 900 HSR-patron cars; it was assumed that the 500 additional spaces estimated to be required by 1990 would be absorbed by the private sector. The 900-space parking facility would displace no existing commuter parking.

Stamford – It is estimated that up to 2,000 parking spaces will be required for commuters in 1990. The HSR parking requirement is estimated at 700 spaces. More than 90 percent of the current terminal users are commuters and the present supply is inadequate for the current demand. Since the 1990 demand for commuter parking will not be met by the current supply, commuter parking must be increased before 1990. The 1990 concept for Stamford envisions an eventual parking structure south of the tracks for HSR patrons. Land acquisition for parking is included in the capital cost estimate. By sharing in this project, the commuter operating agency could expand the parking supply for the commuters.

New Haven – Existing terminal use is almost equally distributed between commuters and Amtrak patrons. However, over 40 percent of existing parking spaces, adjacent to the terminal, are being used to satisfy competing parking demands. Therefore, only 30 percent of the existing parking spaces may actually be considered commuter parking. A parking structure with 1,475 spaces is already recommended for this area in the New Haven Transportation Center Plan. The Task 7A report suggests that an additional parking facility be built south of the terminal building to meet HSR demand. Capital costs were estimated for a 2,600-space structure. Thus, HSR parking spaces could be provided in the structure, north of the terminal (as proposed in the New Haven Transportation Center Plan) or south of the terminal, depending on the location of the 600 spaces required for commuters. Task 7A's capital cost estimate will remain the same in either case.

Route 128 – It is estimated that 500 parking spaces will be required for commuters in 1990. The existing supply is adequate for the 1990 commuter needs. It is proposed to use this entire parking area for HSR patrons. A parking structure could be built on air rights above the existing lot without diminishing the current supply, or an additional site may be purchased. Cost estimates include a parking structure.

4.4 TERMINAL FACILITIES

The purposes of the terminal evaluation were to determine the terminal's capability to meet the needs of, and to effectively process the terminal user. Functional and operational aspects were analysed in terms of present and anticipated levels of patronage.

The following procedures were used:

(1) A preliminary visit was made to each of the fourteen terminals along the Northeast Corridor for the purpose of determining the feasibility of retaining the facility at its present site or the need for its relocation to another area within the city to better accommodate future passenger movements.

(2) Following these preliminary visits, conferences were held with various city, county, and state agencies having interests in the Northeast Corridor High-Speed Rail Project. The purpose of these meetings was to become fully acquainted with current and long range projects which would influence terminal design considerations. This information has considerable impact upon the effectiveness of the terminal facility which is to accommodate high speed and commuter passenger traffic projected to the year 1990.

(3) All available data were obtained including plans, graphics, etc., for current projects underway as well as those scheduled for early implementation. Also included were proposed plans for each terminal structure. Certain agencies having a direct relationship with the terminal–such as public transportation authorities and the National Railroad Passenger Corporation–were also consulted. Wherever their plans for future improvements were available, they were given thorough consideration in the recommendations of this report.

(4) Each of the fourteen terminals, described in Chapters 6 thru 19, has been thoroughly inspected and surveyed by experienced licensed architects, engineers and technical staff. All terminals were examined on many occasions at various periods of the day to determine congestion currently being experienced by pedestrian and vehicular traffic. Particular attention was focused on morning and evening rush hours. Drawings for these terminals were obtained where possible to aid the survey teams. Where they were not available, field measurements were taken to prepare new drawings of existing conditions. Much valuable assistance for this task was provided by supervisory railway personnel at the various locations. The field survey included examination of existing mechanical and electrical equipment to determine the suitability of reuse or replacement. Rail operations at each of these terminals were evaluated with a view toward expanding capacity and flexibility.

(5) Each terminal was extensively photographed showing areas of the interior and exterior. The photography portrayed the most critical areas such as where structural deterioration existed and where vehicular traffic and parking congestion occurred.

(6) Intermodal transportation facilities and their effectiveness were also observed including rapid transit, bus, airport limousine, taxi service and personal vehicle arrivals and departures.

(7) Particular analysis was made to determine the ease of passenger access and egress into the terminal during rush periods with emphasis on the adequacy in the number of ticket windows, the time consumed for passenger ticketing, the availability of suitable waiting space and the sufficiency of baggage storage and handling.

(8) Railroad operations were discussed with supervisors at each location. They related to scheduling, passenger safety at high speed platforms, police surveillance at the terminal, and public security. A number of proposals were analyzed for input to this report.

(9) The element of passenger convenience was examined at each terminal to determine which of its many aspects would be relevant for the future. Particular emphasis was placed on sufficient space and comfort in the waiting room, access to public rest rooms, availability of limousine and car rental service, public telephones, postal facilities, the availability of food, refreshments and a news stand.

(10) Each terminal was thoroughly inspected for the practicality of preservation and those conditions which would necessitate major corrective measures. The existing structural and facing materials, both interior and exterior, were evaluated as to their soundness relative to terminal renovation. Areas within the terminal which did not appear suitable or sound were noted, so that recommendations for corrective action could be made.

(11) A thorough study was made to determine the number of passenger parking spaces available at each terminal to aid in projecting the amount of parking space needed to meet 1990 patronage levels. In many instances parking for passenger use was grossly inadequate.

(12) Specific attention was given to accessibility into the terminal, within the terminal and to train platforms by physically handicapped travelers. In many cases corrective measures will be needed to alleviate unsuitable conditions which at present make it extremely difficult or impossible for them to move through the facility.

The foregoing procedures, observations and data collected have been vital in establishing The Passenger Terminal Performance Standards set fourth in Chapter 5.

4.5 COST ESTIMATES

Recognizing that the terminal plans developed under this task are highly schematic, costs were largely developed on a square-foot basis with consideration being given to whether the terminal, under consideration, is being basically only refurbished, such as 30th Street Station in Philadelphia; alterations and additions to a relatively new terminal, such as Trenton, N.J.; or a completely new facility, such as Metropark Station in Iselin, N.J.

Square-foot costs, for the terminal, ranged from $30 to $70 per square-foot area being constructed or altered. In some cases, where applicable, the unit square-foot cost included plumbing, heating, ventilating and air conditioning and electrical work. Where these costs were significant, they were estimated separately and a much lower square-foot cost was used for the general construction.

Costs used for this report are mid 1974 dollars and must be escallated for consideration at later dates.

In addition to the area basis of estimating used for the basic terminals, unit costs were added at each terminal as follows:

Escalator	$100,000 each
Automatic Doors	$3,500/pair
Elevator	$50,000 each (includes shaftway)
Raised Platform	$25/ft^2
New Canopy	$10/ft^2
Tunnels Under Tracks (Pedestrian)	$1650/lin ft
Inspection Pits	$60 per lin ft
Stairways–6'-0" wide	$12,500 each
Stairways–10'-0" wide	$17,000 each
TV Surveillance System	$150,000 each
Electronic Schedule Boards	$20,000 each
Parking Lot–Surface	$700/Auto space
Parking Garage–Structure	$3000/Auto space
H.V.A.C.	$8/ft^2
Plumbing	$2/ft^2
Electrical	$5/ft^2

Each terminal estimate includes all costs for that terminal, such as platform raising or relocating, train inspection pits at terminals requiring this inspection and all improvements required for intermodal use of the facility.

To the individual terminal costs were added an estimating contingency varying from 15 percent to 30 percent, depending on the complexity of the terminal and the difficulty of construction. A 10 percent contingency was added to parking lot and garage estimates.

New Carrollton Terminal estimates, prepared by the design consultants for that facility, were used but reapportioned to fit this report's format.

Landscaping was estimated using an average cost of $30,000 per terminal plus contingency. It is recognized that the smaller suburban terminals may have extensive landscaping around the terminals and parking lots. There is less opportunity to provide extensive landscaping at the urban terminals. However, sidewalk tree wells or large pots, for trees and shrubbery, must be provided wherever possible at these locations.

Furnishings for all fourteen terminals were estimated to be 1-1/2 per cent of the total terminal costs, and include new carpeting, draperies, seating, office furniture and accessories in all public spaces as required.

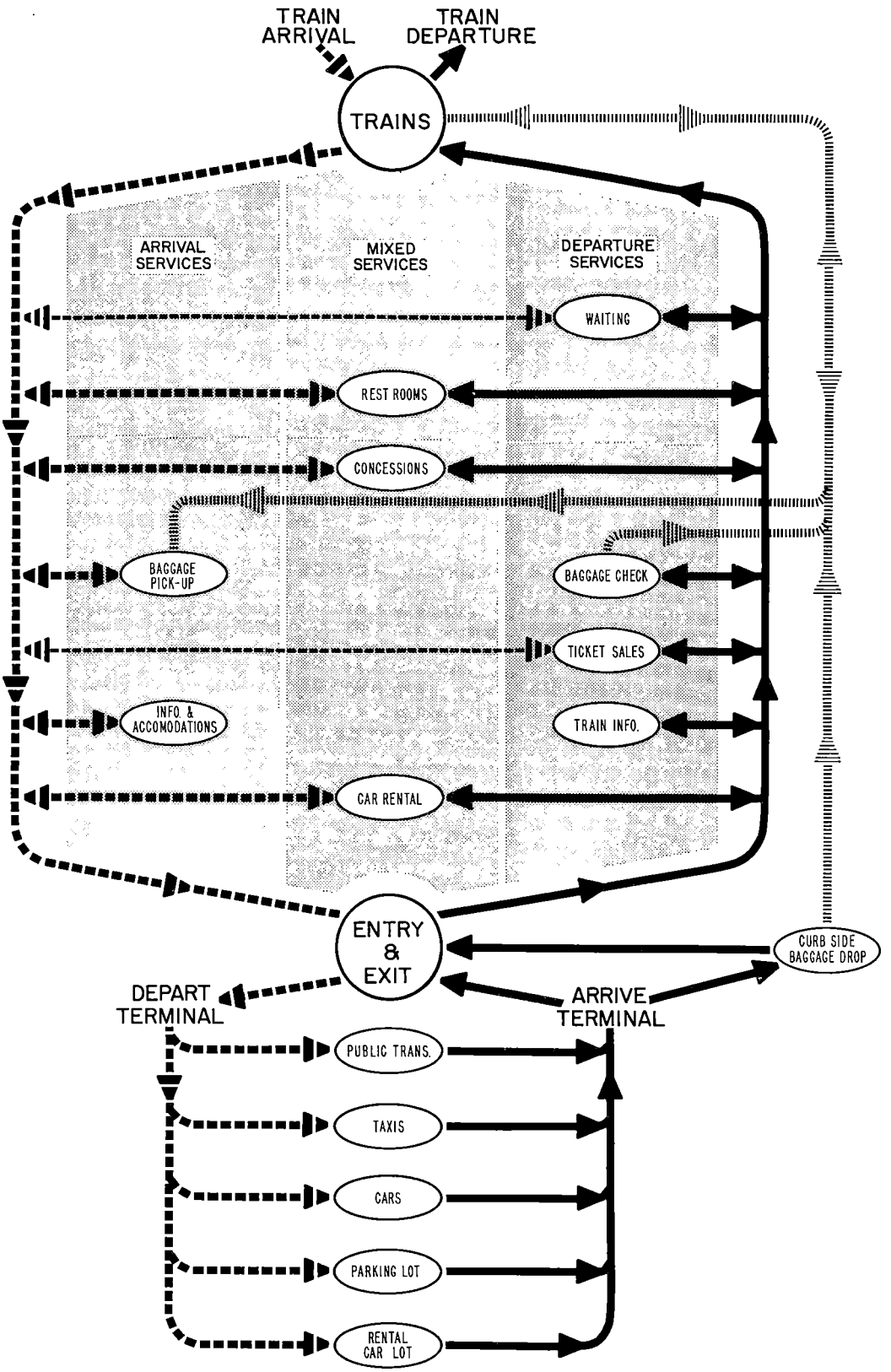
Costs for track realignment, gauntlets, switching, catenary changes, signaling, highway bridge alterations, etc., are not included in the terminal estimates. Non-corridor station control costs are included in Task II.

4.6 SCHEDULES AND PHASED CONSTRUCTION

An estimate was made of the construction time required for each terminal, based on the schematic plans developed for this report. In each case, this was an intuitive estimate based on the premise that basic rail service must remain operative throughout the construction, with a minimum of inconvenience to the passengers or the rail operations. This obviously requires phased construction at most terminals to minimize construction interference with service. In some terminals, the planned construction is such that the terminal must be closed for construction, and temporary facilities provided until the new facility is operative. In others, certain platforms must be worked on, one at a time, to keep as many tracks as possible operative.

A brief description of the major phases of construction, with specific problems, is presented at the end of each chapter.

PASSENGER FLOW DIAGRAM



5.0 PASSENGER TERMINAL PERFORMANCE STANDARDS

Introduction

The following standards and Passenger Flow Diagram (see opposite page) have been developed as a guide for future improvements of rail passenger handling facilities along the Northeast Corridor. Considerations, both aesthetic and functional, have been given to all significant facets with the aim of establishing optimal design and development criteria. Due to size, location and/or activity levels of certain terminals along the High-Speed Rail (HSR) system, some terminal facilities and passenger services may vary in quantity or, in particular cases, may not be included. See Table 5-1 for terminal patronage, activity level, modal split, and HSR parking requirements; Table 5-2 for functional component requirements for various activity levels; and, Table 5-3 for quantitative terminal standards.

Methodology

Quantitative information for these standards has been procured by field teams' compilation of data, from observation and measurement of pedestrian movements and traffic patterns at ticket purchase counters, stairways and other critical areas, in a specific number of terminals, along the Northeast Corridor. Qualitative criteria were established chiefly on the "Level of Service" concept, as defined by John J. Fruin PhD, in his publication, "Pedestrian Planning and Design", concerning pedestrian movement in rail terminals. Design criteria for railway passenger stations, as recommended in the American Railway Engineering Association – Bulletin 650, dated November-December 1974, were also studied.

Terminals have been categorized as follows:

Activity level A – Terminal is located in a large metropolitan area with HSR 1990 design-day patronage of 9000 and above, one way.

Activity level B – Terminal is located in a medium-sized metropolitan area with HSR 1990 design-day patronage of 5000 to 9000, one way.

Activity level C – Terminal is located in a small size metropolitan or suburban-type area with HSR 1990 design-day patronage of up to 5000, one way.

Heating, ventilation, air conditioning, electrical, plumbing and fire protection systems shall be in compliance with the National Bureau of Standards, Federal Energy Conservation Program Guide for Industry and Commerce, as published by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. (Catalog No. C-13-11-115) September 1974, The American Society of Heating, Refrigeration and Air Conditioning Engineers Guide, local building and fire protection codes and ordinances. Precedence shall be given to the Federal Energy Conservation Program Guide. Where local codes and ordinances conflict with the Federal Energy Conservation Guide, an appeal for exemption from the local codes and ordinances shall be requested.

TABLE 5-1

TERMINAL PATRONAGE, ACTIVITY LEVEL, MODAL SPLIT AND HSR PARKING REQUIREMENTS

Terminal	PATRONAGE–ONE WAY						Activity Level	MODAL SPLIT (%)							HSR Park'g Space Req'd*
	1974		1990												
	Average Day		Design Day		Peak Hr			Park & Ride	Passenger	Kiss & Ride	Rail Transit	Bus	Taxi & Limo.	Walk	
	Amtrak	Comm	HSR**	Comm	HSR	Comm									
Washington Union Sta.	3000	2100	15,400	13,300	2300	6500	A	8	4	3	35	15	20	10	1200
New Carrollton	250	0	2700	0	400	0	C	40	10	20	8	15	2	5	1100
Baltimore	1900	150	9000	1700	1400	1000	A	30	10	25	15	5	10	5	2700
Wilmington	900	600	5700	1700	900	700	B	40	15	25	0	10	5	5	2300
Philadelphia 30th St.	5400	9500	22,000	20,500	3300	6800	A	8	4	8	30	20	20	10	1800
Trenton	2400	1500	6500	2900	1000	900	B	45	15	20	0	10	5	5	2900
Metropark	150	1700	2100	2500	300	800	C	60	10	20	0	3	2	5	1300
Newark	1600	12,000	5400	22,200	800	10,200	B	25	10	15	20	20	5	5	1400
New York Penn Sta.	9600	95,000	37,100	125,500	5600	48,600	A	2	1	2	50	20	15	10	700
Stamford	100	2200	1200	3200	200	1400	C	60	10	15	0	7	3	5	700
New Haven	600	700	5200	1100	800	500	B	50	15	20	0	7	3	5	2600
Providence	350	200	5100	6300	800	3300	B	40	12	20	0	15	3	10	2000
Route 128	150	400	2000	700	700	400	C	70	7	20	0	1	1	1	1400
Boston South Sta.	700	3800	11,200	7100	1700	4400	A	8	4	8	40	20	10	10	900

*Park-and-ride percent (%) of model split times HSR 1990 design day equals HSR parking spaces required.

**SOURCE: Bechtel, Inc., Task 1 Report.

Handicapped and aged passengers shall have full accessibility to all terminal facilities and services, including access and egress, curbside load and unload, parking, rest rooms, ticket purchase, lockers, vertical and horizontal transport, based on ASA Standard A117.1-1961, American Standards Association and/or American National Standards Institute and/or the National Railroad Passenger Corporation Executive Memorandum 72-4.

5.1 VEHICULAR ACCESS AND EGRESS

Access routes from major arterials into the terminal area must be carefully analyzed. The routes should approach the terminal, with a minimum of turns and interference with other flows. Access points should not be located directly on major arterials, but should be evenly distributed to different sides of the terminal as much as possible. Major access points and circulation routes should be located closer to the periphery of the parking area to minimize vehicle-pedestrian conflicts. A minimum of two access points should be provided, with a minimum distance of 150 feet between access points. Terminal locations should be clearly identified through utilization of graphic symbols as a part of the freeway and major arterial access/egress system.

Maximum separation of vehicle modes should be provided at all access points, allowing highest priority for mass transportation modes, but consistent with their total demand volume. General priority ranking for vehicle access should be: bus (local, shuttle and intercity); taxi and limousine; kiss-and-ride; and, park-and-ride. However, pedestrian access should have equal priority with vehicle accessibility.

Provision for loading and unloading of all passengers should be made away from public thoroughfares. All access points shall be canopied or covered from the elements.

Approximate curb length, required per bus, is 140 feet (for a 40-foot long bus), and 40 additional feet per each additional bus. Approximate curb length, required per automobile, is 50 feet (per 20-foot long automobile), and 20 additional feet per additional automobile.

A detailed demand analysis is required for the actual number of access lanes and loading and unloading areas to be provided for each mode, based on peak fifteen-minute-demand volume, but a maximum design flexibility should be made to accommodate modal demand changes in the future. Thus, where an island is required, a minimum width per island should be five feet, and access lanes (or distance between islands) should be a minimum of 24 feet.

5.2 PARKING AREAS

Parking capacity will be based on a detailed estimate of demand, considering all modes of access to the terminal. Parking should be provided for all vehicles expected at the terminal.

Parking demand varies with the terminal setting, as well as its accessibility by all modes, including rapid rail transit, bus, taxi, walk, kiss-and-ride, etc. All terminals covered by this project have been categorized by projected peak-day passenger volumes. (See Table 5-1.) Based on modal split, such as park-and-ride, kiss-and-ride, bus, taxi, etc., at activity level A terminals, parking demands range from 2 to 20 percent of peak design-day patronage, of those arriving at the terminal; at activity level B terminals, parking demands range from 30 to 65 percent; and, at activity level C terminals, parking demands range from 50 to 80 percent.

Approximately 350 square feet per automobile is needed at the parking structures. This standard provides for access lanes and limited landscaping. Less area for parking will be required for parking lots. Except where special conditions require angle parking, right-angle parking should be used. Typical parking spaces should be 9 feet wide and 18.5 feet deep.

Parking facilities should include appropriate provisions for employees, valet and short term needs. Special parking provisions for handicapped, rental cars, motorcycles, bicycles, as well as for compact cars, should be made as required, based on detailed estimates of demands.

5.3 PASSENGER PROCESSING

Ticketing

The ticketing area shall be situated so that the public is directly confronted with, or directly guided to, the facility on entering the terminal. The ticket-selling facility shall be situated so as to allow ticket purchasers to form lines without crowding or disturbing others when leaving the counter. Ticket "windows" shall be at least 6'0", center to center.

Ticket counters shall be grouped for their specific function, such as commuter or HSR trains. These counters shall be easily identified from a minimum distance of 30 feet. One counter (minimum) shall be designated for interstate travel, involving other train connections and reservations. The number of ticket counters shall be determined by the peak hour patrons (see Table 5-1). The queuing area should not intrude on the main pedestrian traffic flow. Standard ticket counters shall be 42" high. It is anticipated that a process of automatic ticket purchase shall be implemented for both HSR and commuter service, which will minimize the dwell time for ticket purchase. Baggage check-in shall be provided at selected ticket counters.

Baggage Handling – Check-in and Claim

Baggage shall be routed in the quickest and most feasible manner from terminal entry to train, and from train to terminal exit. Baggage check-in and claim areas shall be located in close proximity to terminal main entrances and ticket selling areas. (Provision shall also be made for curbside baggage handling.) The baggage check-in and claim area shall have facilities for hold-over and unclaimed items.

Provision shall be made for exterior access to the main baggage room in order to handle delivery and/or pick up by motor vehicle. Transfer of baggage to or from trains and baggage rooms, which includes the use of baggage carts and/or vertical transportation (elevator or conveyor), shall be provided as required. Storage areas for baggage carts shall be provided in close proximity to the main baggage room and train platforms.

The baggage claim counter shall be placed in a visually identifiable location, with easy access from train platforms and to terminal exits. The claim counter shall be of sufficient proportions to handle peak loads. Security control shall also be provided to prevent theft or vandalism. The baggage check-in and claims queuing areas shall be capable of serving peak-hour passengers without inhibiting the main pedestrian traffic flow.

Waiting

Waiting areas shall comprise 8 to 15 percent of the area of the passenger terminal areas. The smaller the terminal, the larger the percentage of waiting area. Waiting areas shall be within convenient distance to all other terminal facilities, such as entry, ticketing, concourse, baggage handling, etc. Waiting areas shall be clearly and visually distinguishable. Total required seating is a variable, and is dependent upon the terminal's basic function and activity level, commuter, long distance, or a combination of these functions. The more heavily a terminal is commuter-oriented, the less waiting room area is necessary.

Waiting areas shall consist of comfortable, cushioned, individual seating arrangements, in group clusters of 10 to 15 seats, arranged on carpeted floor areas. All seating shall be of heavy duty materials which are fire and vandal-proof. Avoid typical row layout of long benches. Locate waiting areas off, but contingent to, the main pedestrian traffic flows. Drinking fountains, trash containers, ashtrays and clocks shall be provided for passenger convenience.

Waiting areas at major stations shall be divided into individual gated lounges related to specific train-departure gates.

5.4 PASSENGER CIRCULATION

Entrance Doors

The number of exits and entrances shall conform to local, state and federal codes, whichever requirements are the most stringent. Doors shall be either sliding or hinged, with all major entrances being treadle operated. Vision panels shall be provided in all entrance doors. Vestibules shall be provided at all major entrances to maintain interior climate control.

Pedestrian Ways (Pedways)

Design of pedways such as concourses, corridors, and aisles shall conform to pedestrian service standards, based on the freedom to select normal locomotion speed, the ability to pass slow moving pedestrians, and the relative ease to cross and reverse direction of movement. Ped-

ways shall accommodate an average area occupancy of 25 square feet per person at an average flow volume of 10 to 15 pedestrians per foot-width of walkway per minute (PFM).

Stairways and Ramps

Maximum consideration shall be given to the role of human characteristics, because of the greater safety hazards and energy expenditure required in locomotion on stairs. In addition to design judgement, in evaluating traffic patterns, and peaking characteristics recommended for use of walkway standards, the following factors shall be considered in stairway design:

(1) Stairs shall be located so as to be readily visible and identifiable as a means of direct access to the levels they are designed to interconnect.

(2) Clear areas, large enough to allow for queuing pedestrians, shall be provided at the approaches to all stairways.

(3) Stairways shall be well lighted.

(4) Stair nosing, riser, tread and railing configuration shall be designed to assist human locomotion, particularly for the physically handicapped persons.

(5) Riser heights shall be kept below 7", to reduce energy expenditure and to increase traffic efficiency.

(6) When a stairway is placed directly within a corridor, the lower capacity of the stairway shall be the controlling factor in the design of the pedway section.

(7) When minor, reverse-flow traffic volumes frequently occur on a stair, the effective width of the stair for the major-direction design flow shall be reduced by a minimum of one traffic lane, or 30".

(8) Average pedestrian area occupancy shall be based on 10 to 15 square feet per person, at an average flow volume of 7 to 10 pedestrians per foot-width of walkway per minute (PFM).

Ramp surfaces shall be non-slip and slopes shall not be greater than 1 to 12, or 8.33 percent. Ramp width shall be a minimum of 5'0", and handrails shall be provided on at least one side, at a height of 32". Handrails shall extend a minimum of 1'0" beyond the top and bottom of the ramp. Ramps shall have a minimum of 6'0" level extension at top and bottom.

Pedestrian Movers

Pedestrian movers (ped movers) shall include elevators, escalators and moving walks. Determining factors for capacity design of ped movers shall be the arrival process and boarding characteristics of the users. Reversible escalators shall be provided for each platform to accommodate all inbound or outbound passengers (a minimum of two per platform). A

minimum of one elevator to each platform shall be provided for aged or physically handicapped passengers.

Platform Access and Egress

Northeast Corridor train passengers will not be permitted access to platforms until their respective trains are scheduled for arrival at the platform. Gated access, by way of stairs and/or escalators to the platforms, will confine the passengers to the waiting areas until their train arrival has been posted on the electronic schedule boards and announced over the public address system. Then passengers will be allowed access to the platforms to be ready for boarding trains upon arrival. Passengers leaving trains will be required to leave platform areas, via gated stairs and/or escalators, and proceed to main terminal areas.

Platforms shall be canopied, where appropriate, to protect passengers from inclement weather. The level of the platform shall be 4'4" above the level of the rail. Platform pavement shall have a nonslip surface finish. Guardrails shall be erected, as necessary, for passenger control and safety, A painted safety marker, along the length of all platforms, shall delineate a safe area on the platforms during train movements through terminals. Platforms shall be of sufficient length to accommodate loading and unloading a 14-car train or approximately 1200 feet in length, with a minimum width of 24 feet. Canopies shall be the full length of the platform and overhang each end of the platform a minimum of six inches.

Graphics/Information Systems

Pedestrian circulation patterns shall be clear, simplified, and direct. A person, even if unacquainted, shall be able to "read" the terminal from any of its various areas, and be able to quickly determine where and how to go to accomplish any function. Directional and identification graphics incorporating U.S.D.O.T. recommended symbols shall be provided for all major processing, public service and concessionaire functions, including intermodal connections. All signing and graphics shall be integrated with the interior decor of the terminal facilities and be compatable with the historic character where appropriate.

5.5 PUBLIC SERVICES

Rest and Toilet Rooms

Rest rooms shall be located in convenient areas and shall be easily identifiable. Rest rooms shall be provided with fixture count based on passenger peak-hour-load. Assume 60% of peak-hour-load for men and 40% for women. Men's rest rooms shall consist of 50% urinals and 50% water closets. In addition, lavatories shall be provided which are equal to 2/3 of the sanitary toilet fixtures.

Toilet rooms shall be of sufficient size to accommodate wheelchair traffic. At least one stall, in each major toilet room, shall be 3'0" wide by 5'0" deep; have a 32" door that swings out; have handrails on each side, parallel to the floor and 33" high; and, have a water closet within 20" from the floor.

Lavatories shall also have narrow aprons so that people in wheelchairs can use them at normal mounting height. Mirrors and shelves shall begin no higher than 40" off the floor. At least one of each fixture shall be provided, a maximum of 40" off the floor.

Drinking Fountains

Drinking fountains shall be provided in all passenger waiting areas. Fountains shall be provided in pairs, one at normal mounting height and one at a lower level for children and the physically handicapped.

Telephones

Public telephones shall be located in areas contiguous to the main pedestrian traffic flow, and directionals and graphics shall be used for easy identification and location. Enclaves are acceptable where 15 to 20 telephones are grouped, offset from, but available to the main pedestrian traffic flow. A central directory reference shall be provided for each enclave, including directories for other large cities as well. Telephones, in quantity equal to 1-1/2 telephones for each 100 passengers per peak-hour-load, shall be provided. Courtesy telephones, identified for their specific function, shall be installed at convenient areas within the terminals, including telephones for hotel-motel reservations, rent-a-car, ground transportation and general information.

A telephone communication system for internal/external business use shall be provided, including satellite communication links to facilitate convenient passenger check-in and handling at all boarding gates, platform level entry (for HSR service only) and public information centers.

Lockers

Public lockers equal to 10% of HSR passenger peak-hour-load shall be provided for short-term luggage and parcel storage. Lockers shall be located within the terminal, out of the way of the main pedestrian traffic flow.

Information

The train information center shall be clearly visible to the pedestrian, easily identifiable and capable of handling peak loads. The information center should have provisions for the dispensing of schedules and information concerning available terminal facilities. It should also provide centralized electronic or electromechanical posting of train arrivals and departures. Satellite electronic posting shall be provided in other passenger areas, such as waiting rooms and main concourses. Digital clocks shall be provided adjacent to the train arrival and departure postings at the information center and also at all satellite postings.

The information center shall be in close proximity to the ticket purchase area, adequately manned to handle peak hour passengers and situated so as not to impede pedestrian flow.

Medical Facilities

Medical facilities and/or first aid stations shall be provided at all terminals. Smaller terminals shall have direct telephone-call lines to local rescue and/or first aid stations. Other terminals shall have an office with a nurse or medical corpsman in attendance, and a doctor on call. These facilities shall be available to both passengers and railroad personnel.

Public Address System

A public address system, audible and intelligible in all passenger areas, shall be provided for train arrival and departure announcements, passenger paging and general information. The public address system shall have a 10-decibel rating, above the maximum allowable decibel rating in each specific area of the terminal. The public address system shall also be linked with a telephone system, with telephones at convenient locations in the terminal to allow passengers to answer paging announcements.

Post Office

Depending on the activity level of the terminal, a fully-functioning post office or auxiliary-type postal service shall be provided. Stamp vending machines and a mail box are minimum requirements for all terminals.

Intermodal Transportation

Intermodal transportation facilities shall be provided at all terminals. However, every effort should be made to segregate these facilities from HSR passenger facilities. Information, ticketing, waiting areas, load and unload zones, for this function, should be so situated that users will not intrude on the HSR passenger processing. However, direction to this area should be in evidence in all passenger areas of the terminal. The intermodal facilities where applicable are:

Commuter Rail
Local/Regional Bus
Intercity Bus
Rail Rapid Transit
Airport Limousine or Rapid Transit

Traveler's Aid/General Information

A Traveler's Aid booth shall be located in a prominent section of the terminal to provide information for passengers desiring hotel accommodations, local travel directions and general information.

Express Package System

It is anticipated that the rail system will establish an Express Package System for sending packages to and receiving packages from other cities on the rail network. In activity level A terminals, a separate room with a counter shall be provided for the delivery and pick-up of packages and the holding of unclaimed packages. In activity level B and C terminals this function will be combined with baggage check-in and claim.

5.6 CONCESSIONS

Facilities shall be provided for various concessions in each terminal. The number, type and size of the concessions shall be dependent on the activity level of the terminal. See Table 5-2 for recommended concessions for various activity levels. Concessions shall be easily located, identifiable and accessible to pedestrian traffic flow and may include, but not be limited to, the following:

(1) News stand
(2) Restaurants (coffee shop and/or cocktail lounge-type)
(3) Vending machines
(4) Snack bar
(5) Car rental
(6) Barber shop
(7) Shoe shine and repair
(8) Dry cleaners
(9) Bank
(10) Haberdashery
(11) Drug store

5.7 RAIL OPERATIONS

Facilities for rail operations personnel shall be located in peripheral areas of the terminals, except facilities, such as Passenger Services office, Station Master's office and other rail offices which the passenger might have occasion to contact. Terminals, with a 1990 peak-design-day patronage of 5000 or more, shall provide a Manager of Passenger Services office, complete with comfortable waiting room and receptionist-secretary.

The area of administrative offices shall be proportional to requirements for the projected 1990 patronage (see Table 5-3). Each ticket office shall contain a secure safe area for storage of tickets and money. Activity level A and B terminals shall provide, separately from the ticket sales counters, a ticket clerk area; cashier's office with safe; supervisor's office with secretary; ticket storage and general supplies room; and employee's locker, dining and toilet rooms. At level A terminals, quarters shall be provided for railroad personnel "laying-over" between trips. Quarters shall include a small dining area, lounge and toilet facilities. Storage space, for onboard train supplies, shall be provided at designated terminals.

Service areas, such as service vehicle access and egress, baggage handling, train servicing shops and storage lockers, shall be so located that rail operations personnel and equipment will not interfere with passenger processing and traffic flow, except where it is absolutely necessary and inherent with the duties to be performed.

5.8 SECURITY

At activity level A and B terminals, a central security office and station, complete with a "hold" room, shall be provided for the terminal security force. The security force shall have a complement of personnel necessary to patrol the terminal areas on a continuing basis. The central sta-

tion shall be manned on a 24-hour basis and shall have instant two-way communication with patrolmen, via "walkie talkie" or other comparable communication equipment. In addition to patrolmen, TV surveillance cameras shall be provided in "danger" areas, such as certain corridors, underpasses or tunnels, outside of rest rooms, parking facilities or other areas considered potentially hazardous to pedestrians. Cameras shall be connected with a monitor which shall always be manned (viewed) in the central security station.

At activity level C terminals, where a full-time security force or facilities cannot be provided, a direct telephone line or alarm system, connecting with local police, shall be installed. At these terminals desk space shall be provided in the Supervisor's office for the Security Officer.

5.9 TERMINAL OPERATIONS FACILITIES

Custodial Stations

Adequate areas shall be provided for custodial services, including mop sinks, storage areas and locker facilities. Custodial stations shall be adequately dispersed throughout the terminal. Equipment rooms shall be provided for "out of sight" stowage of all mechanical cleaning equipment, tools and utensils.

Service Vehicles Access and Docks

Facilities shall be provided for service trucks in specific areas that will not interfere with vehicular or pedestrian traffic flow. Loading docks shall be provided for pick-up and delivery of baggage and packages, as well as refuse removal and fuel delivery. Truck traffic and dock area shall not be visible from the main entrances or from passenger areas within the terminal.

5.10 UTILITIES

Heating, Ventilation and Air Conditioning

All terminals shall be heated, ventilated and air conditioned in strict compliance with the previously mentioned energy conservation standards. Maximum Inside Design Conditions shall be as follows:

Space	Summer	Winter
Waiting Areas	75°F DB 50% RH	70°F
Concourse Areas	75°F DB 50% RH	70°F
Offices and Similar Areas	75°F DB 50% RH	72°F
Restaurants	75°F DB 50% RH	72°F

Where cooling is installed to supplement existing systems, space-mounted recirculating-type units may be applied, providing the introduction of sufficient ventilation air is accomplished by other means. This type of installation may also be utilized when upgrading or rehabilitating existing areas, such as lobbies, waiting areas, concourses or similar areas. Consideration shall be given to either fully or partially concealing the space-mounted air conditioning units or providing other architectural treatment to blend the units into the adjacent surroundings.

Ventilation

Outdoor air intake is necessary for the ventilation of air conditioned spaces. While many codes and ordinances require a minimum 10% of the total circulated air to be outdoor air, this percentage of outdoor air shall be set as a maximum for conservation of energy.

Toilet areas shall be maintained under negative pressure with all make-up air being transferred through transfer grilles and/or door louvers from adjacent areas. Exhaust air quantity shall meet the requirements of local and/or state codes and, in no case, shall be less than 10 air changes per hour.

Kitchen areas shall be maintained under negative pressure relative to the dining area. A positive means of air transfer shall be provided for transfer of air from the dining area to the kitchen. Additional makeup air, required for kitchen exhaust, shall be provided with a makeup air unit supplying air directly to the kitchen. The makeup air unit shall have sufficient heating capacity to maintain the temperature of the supplied air at no less than room temperature. Consideration shall be given to using a combination, makeup exhaust-air hood to minimize the requirement for preheating makeup air.

Temperature Control

Space temperature shall be controlled by space mounted thermostats in locking-type protective enclosures and set at temperatures in compliance with Energy Conservation guides.

All platform areas shall be "spot" heated against inclement weather and/or properly ventilated if below street level. Infrared-type "spot" heaters, or other means of snow melting shall be used to prevent snow or ice build-up on all platforms.

Plumbing

Water supply, sanitary and waste utilities shall be in strict compliance with local codes and ordinances.

Water closets and urinals shall be wall hung for easy and sanitary maintenance of rest rooms. Materials used in rest rooms shall be glazed masonry or epoxy-coated walls, non-slip terrazzo floors and malamine or epoxy-coated stalls and partitions. All materials shall be functional as well as bright and colorful.

Fire Protection and Alarm Devices

Sprinkler protection shall be provided throughout each facility. Systems shall be designed for ordinary hazard, except for storage areas which shall be designed for extra hazard occupancies.

Sprinkler heads shall be ordinary-degree rating, pendant-type in finished areas, with concealed piping, and upright-type in unfinished areas.

Kitchen areas shall be provided with carbon-dioxide detection systems, located inside exhaust hoods, ducts and over deep fat fryers.

Dry stand-pipe, fire protection systems shall be installed in areas subject to freezing.

Vibration

Vibration amplitude shall not exceed 0.0001 to 0.002 inches through the frequency of 10-150 CPS.

Electrical

Lighting design shall conform to the recommendations of the Illuminating Engineering Society, with the following general criteria:

Ticketing areas	100 footcandles
Waiting areas	30 footcandles
Concourse	10 footcandles
Platforms	20 footcandles
Baggage checking	50 footcandles
Parking areas	5 footcandles
Rest rooms	30 footcandles

Lighting layouts shall define various activity areas and shall assist in developing traffic routes. Light sources shall be selected for suitability and efficiency (min 55 lumens/watt).

In confined areas, such as offices and rest rooms, enclosed fluorescent fixtures shall utilize a combination of fluorescent and another type of high-intensity discharge lamp, such as mercury vapor or metal halide. Concourse and covered areas of platforms shall utilize enclosed fluorescent or mercury vapor lamps. Platforms beyond covered areas shall utilize mercury vapor or metal halide lamps. Special attention shall be given to the selection of lighting fixtures and luminaries to afford glare-free, dependable continuous operation and to be as vandal-proof as possible, in areas where accessible to the public. Recognizing the need for energy conservation, provision shall be made for reducing lighting levels during periods of diminished activity. Special electronic lighting-control devices should be provided at selected locations where applicable.

Other electrical systems shall be provided, as applicable, such as electronic gate interlocks for passenger control, TV surveillance system, independant power telephone for security forces, etc.

Distribution Systems

If a choice of voltage levels is available, the 480Y/277-volt, three-phase, four-wire system shall be utilized for all but the smaller installations for greater economy, in serving large loads and for long runs encountered in platform lighting.

Standby emergency power shall be provided for operation of essential lighting and public address systems.

All electronic equipment for ticketing, train arrival boards, etc., and other sensitive wiring systems, shall be insulated against interruption or breakdown.

5.11 INTERIOR DESIGN

Decor and Furnishings

In general the interior design of the terminals shall be such as to encourage passenger acceptance; that is, bright, cheerful, clean and comfortable, both visually and climatic.

Decor and appointments shall be selected to complement the particular environment, geographical location and/or the historical locale in which the terminal is situated.

Materials should be selected for durability, ease of maintenance, resistance to vandalism, and safety both for the building construction and for all furnishings and appurtenances.

Acoustics

A maximum decibel level of 70 shall be maintained in all passenger areas of the terminal. Materials, for furnishing and decor, shall also be selected to maintain and enhance acoustical integrity.

5.12 EXTERIOR CONSIDERATIONS

Exteriors of existing terminal buildings shall be renovated and refurbished to satisfy both aesthetic and functional considerations. Renovation shall be architecturally consistent with current and future community planning, redevelopment programs and historical preservation aspects. In general, terminals in this category shall have their exterior masonry cleaned, either by steam cleaning or sand blasting and loose masonry repaired and repointed. New doors and windows shall be installed where the existing doors and windows are in a deteriorated condition. Exposed ferrous-metal surfaces shall be cleaned of all rust and scale and be repainted.

New terminal exteriors shall be designed using as maintenance-free materials as possible, stressing permanence and cleanability.

Canopied entrances and covered walkways shall be provided for protection against the elements at all terminals.

Plaza-type approaches with plantings, general landscaping and outdoor seating arrangements shall be provided, where appropriate, to enhance the architecture and/or locale of the terminal, as well as parking facilities.

Outdoor lighting shall comply with standards, as set forth by the Illuminating Engineering Society, for each specific area in conjunction with the Energy Conservation Program. Outdoor lighting shall also function for accent purposes and passenger guidance as well as enhance safety requirements.

TABLE 5-2

SELECTED FUNCTIONAL COMPONENT REQUIREMENTS FOR VARIOUS ACTIVITY LEVEL TERMINALS

(●) Required (o) Optional (-) Not Essential

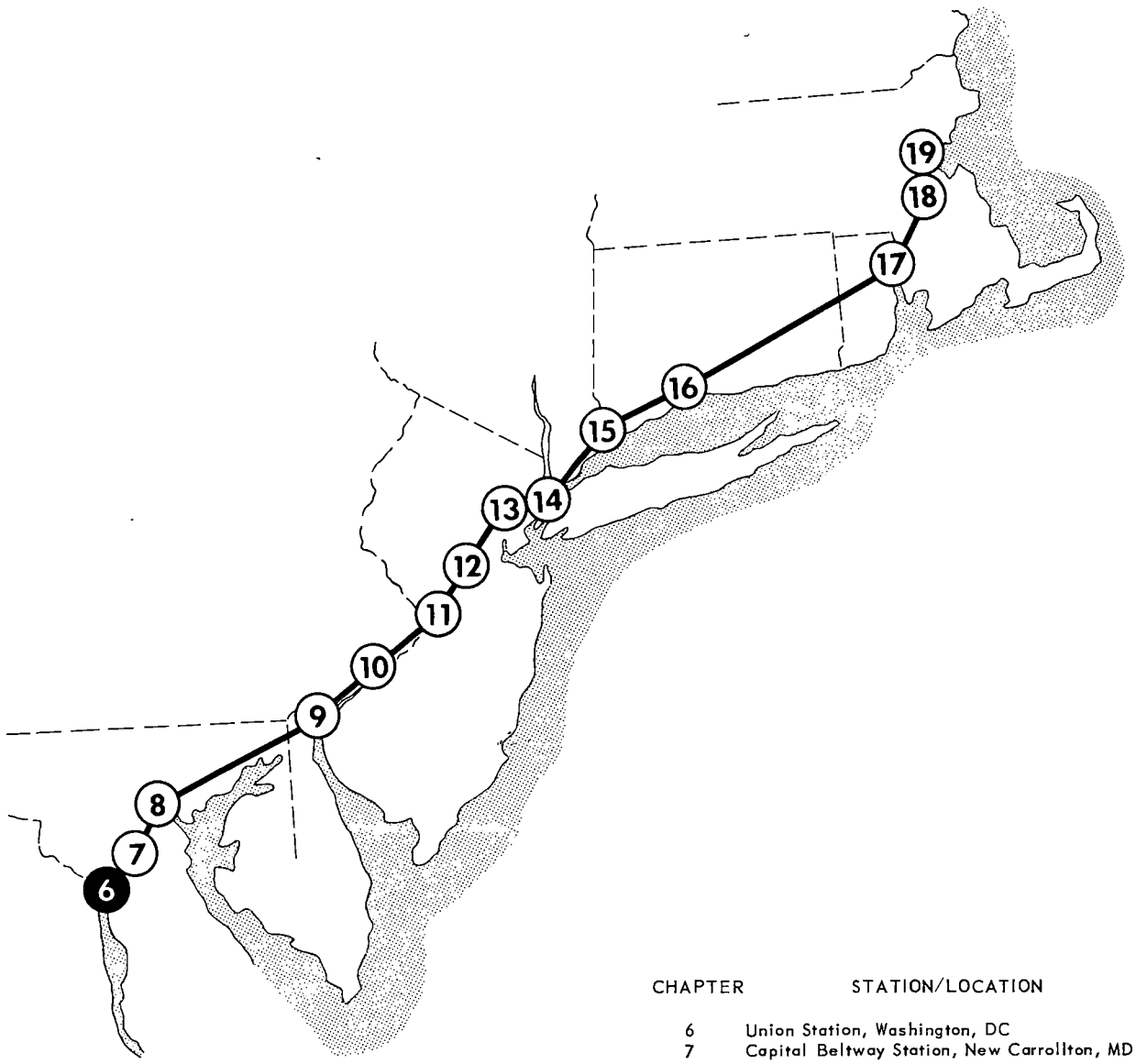
COMPONENT	Activity Level A	B	C
PUBLIC SERVICES			
Rest & Toilet Rooms	●	●	●
Telephones	●	●	●
Lockers	●	●	●
Information (Ground Transport)	●	●	o
Medical Facility/First Aid	●	●	●
Public Address System	●	●	●
Post Office	●	o	-
Mail Deposit	●	●	●
Stamp Vending	●	●	●
Traveler's Aid	●	o	-
Package Express Room	●	o	-
Western Union	●	o	-
Hotel Information	●	●	o
Nursery	o	-	-
TV Lounge	o	-	-
Security Police	●	●	●
Lost and Found	●	●	o
INTERMODAL PROCESSING			
Commuter Rail	o	o	o
Rail Rapid Transit	o	o	o
Local Bus	●	o	-
Intercity Bus	o	o	-
Airlines	o	o	-
CONCESSIONS			
Snack Bar/Coffee Shop	●	●	o
Sit Down Restaurant	●	o	-
Bar/Cocktail Lounge	●	o	-
News Kiosk	●	●	o
Sundry/Gifts	●	●	-
Flowers	o	o	-
Dry Cleaners	o	o	-
Barber Shop	●	o	-
Beauty Shop	o	o	-
Shoe Shine/Repair	●	●	-
Rent-A-Car	●	●	o
Sightseeing	o	o	-
Liquor Store	o	o	-
Bank	o	o	-
Food & Soft Drink Vending Machines	●	●	●
Drug Store	●	o	-
Haberdashery	●	-	-
RAIL OPERATIONS			
Service Desk	●	●	o
Mail Handling	-	-	-
Administration Offices	●	●	-
Baggage Handling	●	●	●
Station Master	●	●	o
Internal/External Communication	●	●	●
Employee Lounge/Lockers	●	●	o
Employee Rest Rooms	●	●	o
On-Board Crew Facilities	●	o	-
Employee Medical Facility	●	●	-
Commissary	●	o	-
Laundry	o	-	-
Storage	●	●	●

TABLE 5-3

PRIMARY TERMINAL ELEMENT SPACE REQUIREMENTS

TERMINAL ELEMENT	QUANTITY	PER PEAK HOUR	SIZE OR SPACE REQUIRED	SOURCE					See Modal Split
				Observation	Intuitive	Technical Code	Standards	Amtrak	
Curbside Pick-up & Drop-off									
Auto	1 space	Varies, depending on modal split	50' + 20'/auto		•		•		•
Taxi	1 space		50' + 20'/taxi		•		•		•
Bus	1 space		140' + 40'/bus		•		•		•
Parking									
Park & Ride	% of Modal Split of HSR Design Day Park & Ride		350 ft^2/car	•			•		•
Employees	Activity levels A & B 60% of normal 8 hr shift Activity level C 100% of normal 8 hr shift			•					
Passenger Processing									
Ticketing	Windows Required Per	Total HSR & Commuter Peak Hour	130 ft^2 each total including office back-up				•		
	1	1 to 74							
	2	75 to 149							
	3	150 to 249							
	4	250 to 324							
	5	325 to 449							
	1 additional	ea additional 250							
Baggage Check & Claim	Activity level A	10% of HSR passengers min	10 ft^2 each		•			•	
	Activity level B		1000 ft^2 total		•			•	
	Activity level C		500 ft^2 total		•			•	
Package Express	1 at Activity level A		500 ft^2 total		•			•	
	Activity levels B & C		Part of baggage check-in		•			•	
Waiting Rooms									
HSR Seating	20 seats	100 HSR	15 ft^2 each		•		•	•	
HSR Standing	80 spaces	100 HSR	10 ft^2 each		•		•	•	
Commuter Seating	1 seat	100 Commuters	15 ft^2 each		•		•	•	
Commuter Standing	25 spaces	200 Commuters	10 ft^2 each		•		•	•	
Circulation Space			add 10% of totals for seating and standing		•				
Platforms									
Length			1200 ft				•	•	
Width			24 ft min				•	•	
Canopy			1200 ft				•	•	
Access/Egress									
Elevator	1 per platform		5' x 7' 2000 lb cap.			•	•		
Escalators	2 per platform - reversible		48 in. width		•				
Stairs	2 per platform		Width per codes. 48 in. min			•			
Information									
Trains	1 at Activity levels A & B 0 at Activity level C		280 ft^2 Part of ticketing		•				
Intermodal Transportation	1 at Activity levels A & B 0 at Activity level C		140 ft^2 Part of ticketing		•				
Public Services									
Rest Rooms		Use National Plumbing Code for assembly areas for fixture counts based on total HSR and Commuter Peak Hour				•	•		
Men	60%								
Women	40%								
Telephones	3	200 HSR + Commuter	10 ft^2 ea incl circulation		•				
Lockers	1	10 HSR			•				
Lost & Found	1 at Activity level A 0 at Activity levels B & C		120 ft^2 Part of baggage		•				

STATION LOCATIONS ALONG NORTHEAST CORRIDOR



CHAPTER	STATION/LOCATION
6	Union Station, Washington, DC
7	Capital Beltway Station, New Carrollton, MD
8	Penn Central Station, Baltimore, MD
9	Wilmington Station, Wilmington, DE
10	Penn Central Station, 30th Street, Phila., PA
11	Trenton Station, Trenton, NJ
12	Metropark Station, Iselin, NJ
13	Penn Central Station, Newark, NJ
14	Pennsylvania Station, New York, NY
15	Stamford Station, Stamford, CT
16	New Haven Station, New Haven, CT
17	Union Station, Providence, RI
18	Route 128 Station, Dedham, MA
19	South Station, Boston, MA

6.0 UNION STATION, WASHINGTON, D.C.

6.1 STATISTICAL FRAMEWORK

6.1.1 OWNERSHIP AND USERS

Union Station is owned by the Washington Terminal Company, which is in turn owned by the Penn Central Transportation Company and the Chessie System. The terminal is used by Amtrak, the Penn Central, the Chessie System and the Southern Railway.

Union Station is currently under redevelopment as a National Visitor Center. Public Law 90-264 of 1968, the National Visitor Center Act, stipulated that once renovation of the building was completed, the Department of the Interior would commence 25-year lease payments to Washington Terminal for its use of the renovated building and parking garage. During or at the end of the 25-year lease, the Department of the Interior would have the option to purchase the structure for $1.00.

6.1.2 PROPERTIES AND FACILITIES

Union Station is a massive, multi-storied structure presently under reconstruction. Existing basic components include the terminal building, with a portion of the central waiting-room floor area removed; a spacious concourse leading to platforms; low-level canopied platforms serving through, terminal, and commuter trackage; and, a high-level canopied platform serving Metroliner trains. There are connecting stairways, escalators and elevators. Some of the covered walkways are temporary timbered structures. The station is listed in the National Register of Historic Places.

The terminal was constructed in 1908. The Metroliner platform was built in 1969.

6.1.3 CURRENT ACTIVITY LEVELS

Union Station is the southern terminus of the Northeast Corridor. Of the 92 trains entering or leaving Union Station on an average weekday, 50 are Amtrak trains serving the Corridor; 30 of these trains are Metroliners. Peak-day, one-way Amtrak patronage in 1974 was approximately 3,000. In addition, 2,100 riders patronized Penn Central and Chessie System commuter trains between Washington and Baltimore.

In addition to Northeast Corridor service, Amtrak operates three trains per day in each direction to Jacksonville, Orlando and Miami, Florida; two trains per day in each direction between Washington and Harrisburg (connecting with Kansas City service); and daily service to Chicago and Cumberland, Maryland. The Southern Railway provides service to and from Birmingham, Alabama.

Peak-hour use is between 5 p.m. and 6 p.m. when there are 12 trains serving the terminal. The morning peak-hour is between 7 a.m. and 8 a.m. with six trains in the terminal.

In 1968, a survey was conducted to determine modes of access to Union Station by passengers. The results of the survey were as follows:

Mode of Access	Percent of Total
Taxi	43
Auto	21
Bus	12
Train	9
Walk	10
Other	5

6.2 TERMINAL VICINITY INFRASTRUCTURE

6.2.1 LOCATION CONSIDERATIONS

The location of Union Station is shown in Figure 6-1, together with the existing transportation network in central Washington and existing and proposed centers of activity.

Location with Respect to Regional Highway System

Union Station is accessible from the south via I-295 and I-95. Ramps to and from the Center Leg Freeway to the Inner Loop Freeway (I-95) are three blocks west of the terminal. Access to and from the Center Leg Freeway is impeded, however, by extremely heavy traffic congestion in the vicinity of Union Plaza.

The Center Leg Freeway furnishes no direct high-speed connection to points north of the terminal. I-95 recommences at the Capital Beltway approximately nine miles north of the terminal. An indirect high-speed route to I-95 north is available via I-295, the Anacostia Freeway, the John Hanson Highway and the Capital Beltway, involving about 19 miles of travel.

Relationship to Other Inter-regional Transportation Facilities

The terminals, for the two major intercity highway carriers in Washington, Continental Trailways and Greyhound, are located west of Union Station at 12th Street and New York Avenue, N.W. These facilities are currently inadequate, and require bus loading and alighting in the street right-of-way adjacent to the terminals. Travel time from Union Station is under 10 minutes by auto or taxi, and about 15 minutes by bus. National Airport, the nearest air travel facility, is five miles away or about 15 to 20 minutes by auto. This facility is generally used for short range flight since its limited runway lengths restrict its use by long range jets. However, many of these flights are to other cities in the Northeast Corridor and, therefore, National Airport is in direct competition with HSR service for potential travelers.

The Baltimore-Washington International Airport (Friendship Airport) and Dulles Airport, in Virginia, are both about 30 miles, or 45 to 50 minutes away by auto.

There is no direct bus service from Union Station to any of the three airports.

Public Transit

A subway station on the Washington-Metropolitan Area Transit Authority Metro system is currently under construction at Union Station. Completion of this station and the initial section of the system is scheduled by 1976. Travel time between Union Station and the downtown core will be approximately four minutes.

Bus transportation is presently available. Eleven Metrobus routes serve Union Station. Four of these routes terminate at the terminal. Bus headways during peak hours range from 5 to 25 minutes; off-peak headways range from 15 minutes to one hour. Of the four routes terminating at Union Station, two operate only during rush hours and a third furnished daytime off-peak service only. All other buses operate approximately 20 hours a day. Fares are $0.40, with a free transfer in the District of Columbia, and $0.60 when trips cross into Maryland or Virginia.

Pedestrian access to Metrobuses, at Union Station, is difficult, since patrons must cross four lanes of taxi and passenger-car traffic, before reaching the bus queuing island.

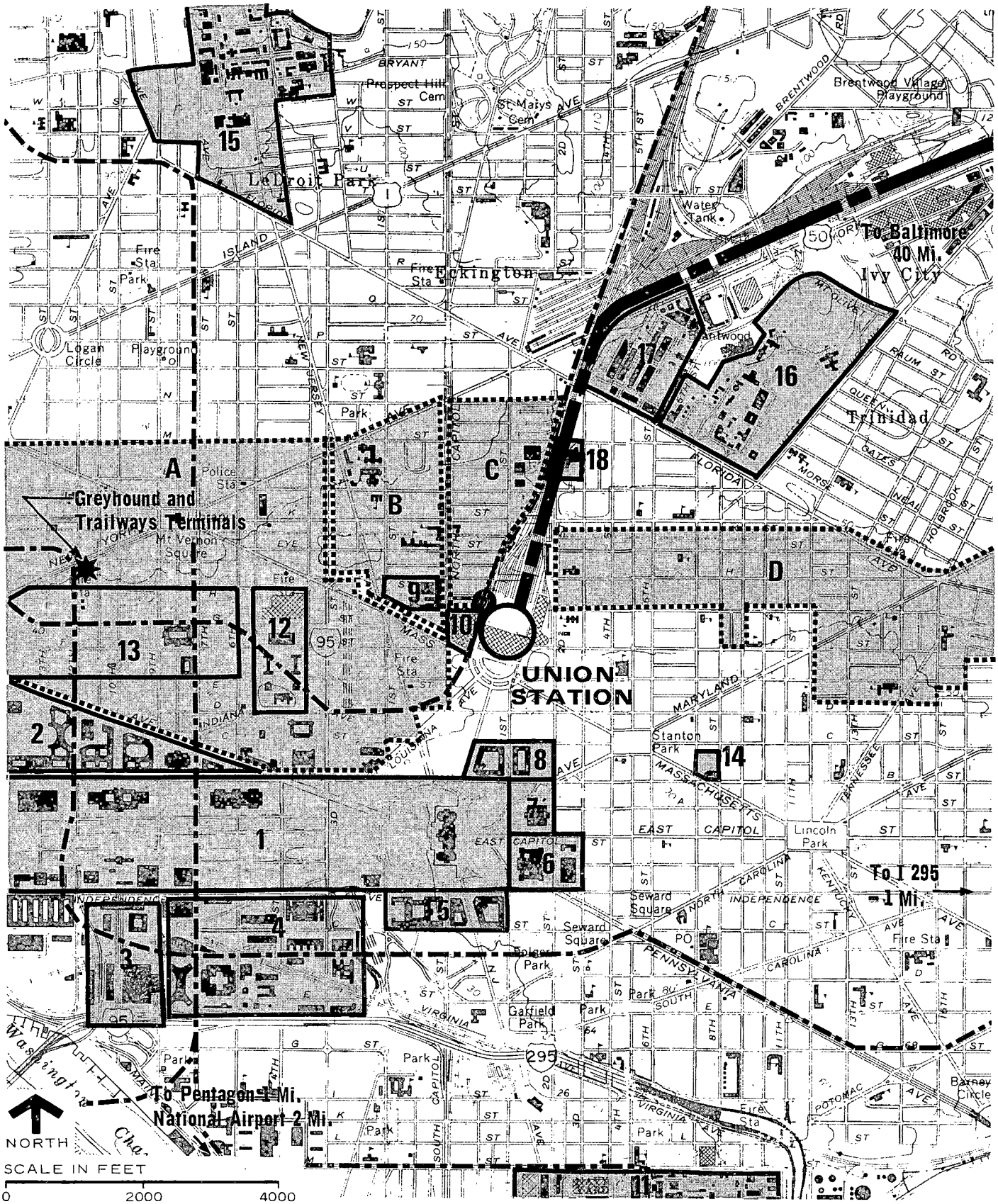
Relationship to Activity Centers

Union Station is located north of the Capitol building, and northwest of the Mall. It lies about seven blocks east of the downtown commercial core, in an area known as the East End. The Capitol, Senate and House Office Buildings, the Government Printing Office and other government offices generate a high volume of business-related trips, as well as a significant number of tourist trips. The nearby Mall area, along which are located the Smithsonian Institution, the National Gallery of Art, the Washington Monument and the Lincoln Memorial, is the focus for tourist trips to Washington. Other large activity centers near the terminal, including the City Post Office, colleges, medical complexes and the Washington Coliseum, attract significant numbers of trips of both local and regional origin.

Residential uses are intensely developed in the vicinity of the Capitol building. Housing-unit density drops as one proceeds away from the Capitol building. Residential uses are also predominant north and west of Union Station near Howard University.

The National Capital Planning Commission is presently preparing extensive East-End redevelopment plans leading to more intensive commercial, hotel and office concentrations in the general vicinity of the rail terminal. Construction is under way on the National Visitor Center utilizing the existing terminal building, in preparation for the Nation's bicentennial celebration.

Very little uncommitted undeveloped land presently exists in central Washington; however, considerable renewal activities are currently in progress in the vicinity of Union Station. These activities include downtown renewal to the west; industrial, office and commercial development to the north; neighborhood renewal to the east; and, residential and institutional development to the northwest.



STATION LOCATION
UNION STATION
WASHINGTON DC

FIGURE 6-1

TABLE 6-1

ACTIVITY CENTERS, CITY SETTING

EXISTING ACTIVITIES

1	The Mall – includes U.S. Capitol, Botanic Gardens, Hirshhorn Museum, Smithsonian Arts and Industries Building, Freer Gallery of Art, Museum of History and Technology, Museum of Natural History and National Gallery of Art
2	Federal Triangle – Federal Office complexes
3	L'Enfant Plaza – Large new office, commercial and apartment complex
4	Federal Office Buildings
5	House Office Buildings
6	Library of Congress and Folger Shakespeare Library
7	U.S. Supreme Court
8	Senate Office Buildings
9	U.S. Government Printing Office
10	City Post Office
11	Washington Navy Yard
12	Municipal Court Buildings and Federal General Accounting Office
13	Washington Central Business District – retail core area, also includes National Portrait and Fine Arts Gallery, Public Library and Ford's Theatre
14	Rogers Memorial Hospital
15	Howard University
16	Gallaudet College
17	Washington Market
18	Washington Coliseum

PROPOSED ACTIVITIES

A	Downtown Urban Renewal Area – contains Civic Center site
B	Northwest No. 1 Urban Renewal Area – residential and institutional redevelopment
C	Northeast No. 1 Urban Renewal Area – industrial, office and commercial redevelopment
D	"H" Street Urban Renewal Area – neighborhood redevelopment

6.2.2 LAND USE

Existing Characteristics of the Terminal Area

Figure 6-2 shows the immediate terminal area and local circulation system.

Union Station and the surrounding area are currently undergoing major change. In addition to renewed construction for the National Visitor Center, the Metro subway station is under construction at the west end of the present terminal building. To the northeast, east of 2nd Street, neighborhood renewal activities are in progress. To the southwest a new office-retail complex is under construction at North Capitol and E Streets, N.W.; and to the southeast, restoration activities continue in the Capitol Hill area.

The visual quality of the terminal area is currently adversely affected by construction projects, and by the recent utilization of open space for government parking. The Massachusetts Avenue and Union Plaza pavement is presently in a state of severe disrepair. Unused streetcar tracks are still in place. However, repairs and modification of traffic channelization are scheduled to begin next year, when the current subway construction has ended.

The open plaza, in front of the terminal, provides a direct sight line to and from the Capitol building, along a sequence of open spaces broken only by intersecting streets. The Columbus statue and the facade of the terminal are focal points of sight lines along streets radiating from the plaza. Modification of the plaza, in a way which would disrupt these sight lines and the station facade, would not be consistent with the intentions of the L'Enfant and McMillan plans.

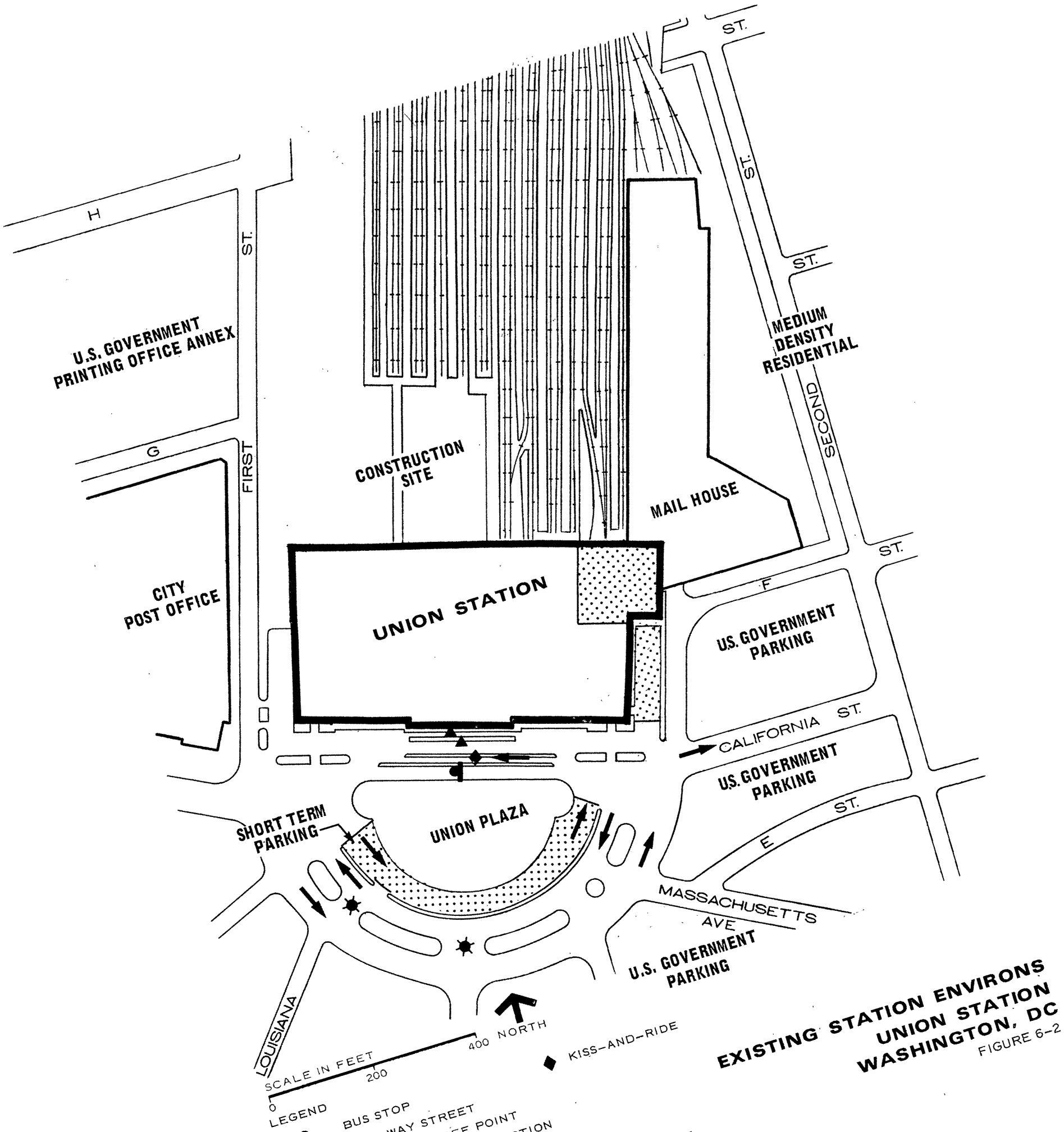
A major problem, directly related to the configuration of the Plaza, is the confusion created by the streets which radiate from its center. Visitors not familiar with the city become very disoriented, due to the confusing traffic patterns in the Plaza, the present construction and the lack of a predictable grid pattern of streets for reference.

Security in the immediate terminal area is not at present a major problem. Union Plaza is well lit by floodlights. People can be found walking or waiting in the plaza at all hours, even late at night. The frequency of bus service, the importance of the plaza as a bus transfer point, and the fact that the Union Station stop is a checkpoint for Metrobus schedules, as well as a changeover point for drivers, are all major factors contributing to the area's safety. Metrobus personnel and significant numbers of people, waiting at the bus stops, provide an effective deterrent to crime. Future development and renewal should have positive effects on crime rates in nearby blighted areas.

Planning Factors, General Terminal Area

Figure 6-3 shows the existing and proposed development around Union Station. Activity centers are listed in Table 6-2. Very little uncommitted undeveloped land exists in the vicinity of Union Station.

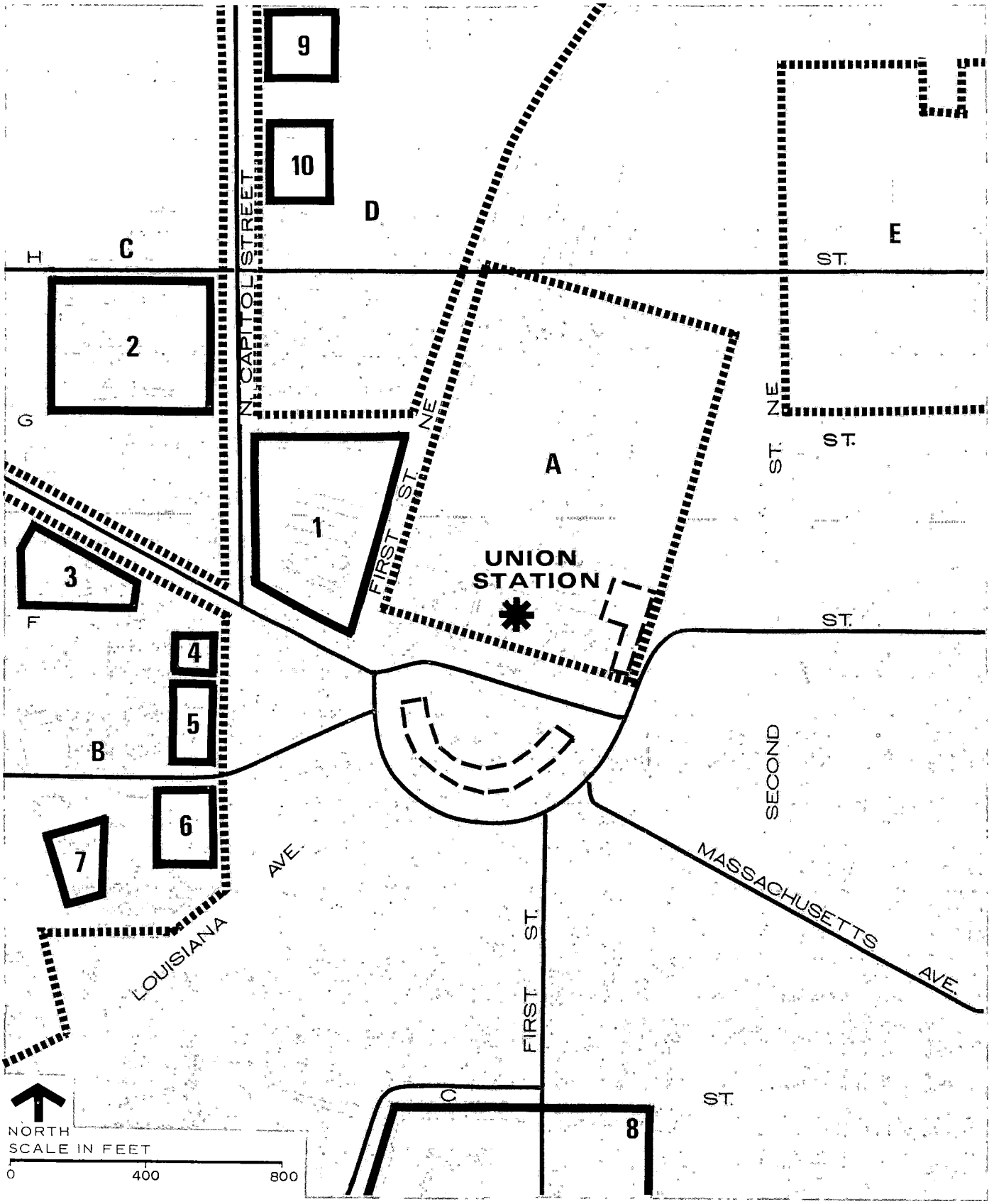
Immediately to the west of the terminal are the City Post Office and the U.S. Government Printing Office, both of which now require a close interface with rail transport. The City Post



DC/STV

EXISTING STATION ENVIRONS
UNION STATION
WASHINGTON, DC

FIGURE 6-2



PLANNING FACTORS
UNION STATION
WASHINGTON, DC

FIGURE 6-3

TABLE 6-2

ACTIVITY CENTERS, GENERAL TERMINAL AREA

EXISTING ACTIVITIES

1	U.S. Post Office
2	U.S. Government Printing Office
3	Large Vacant Office Building (GSA has appraised for possible use of the Federal Energy Commission)
4	Hotel Commodore
5	Securities and Exchange Commission
6	New Office and Retail Complex (*under construction*)
7	Quality Inn
8	Senate Office Building
9	Union Center Building
10	Federal Power Commission

PROPOSED ACTIVITIES

A	New Union Station and Visitors Center
B	Downtown Urban Renewal Area
C	Northwest No. 1 Urban Renewal Area
D	Northeast No. 1 Urban Renewal Area
E	"H" Street Urban Renewal Area

Office also utilizes the mail house to the east of the terminal. The Post Office has proposed expansion to the Government Printing Office annex, between G and H Streets N.E. and utilization of the remaining land on the site for new construction. The Government Printing Office has expressed a desire to relocate, and the National Capital Planning Commission (NCPC) will soon propose that the office relocate to a site approximately two miles distant to the northeast, and which also has rail access. Recently, post office officials have begun to express an interest in possible relocation as well.

The Downtown Renewal Area, west of the terminal, has as its primary focus the development of a compact pedestrian-oriented commercial area, with priority given to retail shopping functions, in addition to renewal of adjacent residential areas. Provisions for a Federal City College campus facility and a convention center are also included in the plan.

The Northwest No. 1 Urban Renewal Area immediately to the west, and north of the terminal, is intended for residential and related institutional use. Despite existing land and structures, all of the area within the project boundary is committed and includes a number of major subsidized and low-income housing projects.

The Northeast No. 1 Urban Renewal Area, located north of the terminal, is predominantly an industrial and heavy-commercial reuse area, with provision for expansion of the City Post Office and expansion or relocation of the Government Printing Office. Higher-density office and commercial uses have been permitted and encouraged along North Capitol Street. Much of this latter development has been completed at this time. It is expected that the City Post Office will occupy space remaining on the first tier block between G and H Streets N.E. This entire project area is essentially committed in scale and character, although some vacant lots do presently exist within its boundaries.

The H-Street Renewal Area, to the northeast, has as its objective to rebuild areas damaged during civil disorders of past years, and to eliminate conditions now blighting the area. The plan includes the staged redevelopment of residential areas along with commercial and public support facilities. This area currently experiences a high crime rate and is typified by run-down townhouses and apartments.

Pressure from extension of the Capitol Hill neighborhood, located to the south, has recently created a significant rise in H-Street Renewal Area property values as a result of speculation. A limited amount of private restoration work and new construction is occurring along the southern edge of the project area, but the full impact of the redevelopment effort, now typified by the Capitol Hill neighborhood, has not yet been felt. Many residents of this area must now seek new housing as buildings are passed from owner to owner, rents are increased or buildings demolished for new construction.

New private development is now in progress in the East End area, with the construction of a new high-rise office-commercial complex at North Capitol and E Streets N.W. among others. NCPC proposals for the East End area will be forthcoming. These proposals are expected to include an emphasis on hotel and commercial development, and rehabilitation and reuse of the Government Printing Office buildings.

Privately initiated residential renewal is occurring in the Capitol Hill neighborhood, due east of the Capitol building. This neighborhood is typified by restored townhouses, single-family units, multi-family flats or apartments. Some residential high-rise development can be found in the immediate vicinity of the Capitol building. This area has experienced a significant increase in median income in recent years, and restorations are occurring at an ever-increasing rate over an ever-widening area.

To the south is a broad expanse of park land, extending to the U.S. Capitol and the Mall. This park land is an integral part of the L'Enfant and McMillan plans for Washington. Some of this area has recently been taken over for use as on-grade government parking by permit only. Very little additional ground-level parking for government employees could now be added, by such taking, without disrupting the intentions of the plans. These plans provided for an uninterrupted landscaped vista between major public buildings, such as Union Station Terminal and the Capitol.

6.3 EXISTING PASSENGER HANDLING FACILITIES

6.3.1 PASSENGER ACCESS AND EGRESS

The main entrance to the terminal is at Union Plaza where passengers arrive by bus, taxi, limousine, auto and on foot. An entrance at 1st Street is presently little used because of construction activity outside the terminal. Doorways are within covered porticos of the building, with thresholds at sidewalk grade. See photo 1.

Automobile Access

Direct access to the terminal is via local arterial highways. The Center Leg Freeway (I-95) is a major access route from the south. On and off ramps are located just off Massachusetts Avenue three blocks west of the terminal. Major arterial streets fan out from Union Plaza, at the front of the terminal, and include Massachusetts Avenue, Louisiana Avenue, and 1st Street, N.E. Other highly trafficked arterials, in the immediate vicinity of the terminal, are North Capitol Street, H Street and K Street. Traffic on H Street is limited since the east-west underpass is closed for construction at this time.

Many intersections, in the terminal area, experience serious traffic congestion, particularly in peak periods. The City Post Office, on 1st Street, is a major generator of heavy truck traffic which adds to the local traffic problems.

A principal point of traffic congestion is the Plaza, carrying Massachusetts Avenue through-traffic in front of Union Station. Both signalization and channelization are inadequate. The through-traffic flow is frequently crossed by buses coming and going from D Street, N.W. and 1st Street, N.E., causing traffic slowdowns and hazardous conditions during the morning and evening rush periods. These conditions are compounded by Metro construction barricades, uneven pavement and unused trolley tracks embedded in the Massachusetts Avenue pavement. The intersection of Massachusetts Avenue and North Capitol Street is another problem area. Heavy truck traffic, to and from the City Post Office, is currently creating serious problems on North Capitol Street, and detrimentally affects traffic flow at the Massachusetts Avenue intersection.

Other Connections

The taxi system in Washington, D.C. is one of the most extensive in the country, with more cabs per capita than any other city in the nation. The minimum $0.85 fare will take a passenger to most major activity centers in the city, including the Mall, the uptown Connecticut Avenue area and the F Street downtown retail core. Taxis are available, at the stand, directly in front of the terminal entrance. Rental cars are available from both Hertz and Avis.

There is a low demand for kiss-and-ride facilities although passenger car drop-offs occur in a lane located between the bus and taxi lanes, immediately in front of the terminal.

For pedestrians, Union Station is about a 20-minute walk from the downtown core. Pedestrian access to the terminal is severely impacted during peak hours. Commuters walking to nearby government offices have a difficult time crossing the Plaza at the unsignalized intersections of Massachusetts Avenue with D Street, N.W. and 1st Street, N.E. Only those crossings, at the Louisiana and Delaware Avenue intersections, are protected by signals.

A commuter train-minibus service operates out of Union Station during commuter hours, providing services to the southwest employment area via Capitol Hill.

The Metroliner-Union Station Express Service has one daily trip in each direction to the Washington Hilton.

A tourist transit service is provided by the Mall Tourmobile Shuttle which is routed to serve the major tourist attractions in the city.

6.3.2 PARKING

Few parking spaces are available to the general public in the vicinity of Union Station.

There are no public parking lots or garages within a 1,200-foot walking distance of the terminal, with the exception of 100 spaces in two parking areas for rail patrons adjacent to Union Station.

There are a limited number of metered spaces on the southern perimeter of Columbia Park in Union Station Plaza. Additional spaces are located at the east end of the terminals, in a self-park and valet parking area. A limited amount of non-permit curb parking is also available in the vicinity; however, these spaces are normally occupied by area residents and government employees.

Most of the large parking lots and many of the curb spaces, in the immediate vicinity, are for the use of government employees only and require a special permit for their use. The blocks to the southeast and immediately adjacent to the plaza are occupied by government parking lots. Parking on California Street and 1st Street, N.E. is also by government permit only. The parking area, near the mail house and the postal shipping facility, is designated for use by city Post Office employees.

6.3.3 PASSENGER PROCESSING

For Existing Basement and Main Floor Plans, see Figure 16-4; for Existing Platform Plan, see Figure 16-5.

Functional Flow

Passengers entering the terminal from Union Plaza pass through a vestibule and into the main waiting room. The central floor area of the waiting room has been removed. Floor areas bordering on the interior walls have been left in place around the excavation to accommodate passenger movements. The excavation site is barricaded around the edges with plywood fencing. Temporary seating is arranged along the outer periphery of the barricade. See photo 2. Incoming passengers proceed around the barricaded area and pass by an information window on the way to ticket counters in the First Street lobby. Baggage may be checked at a counter located in a space adjoining the ticket lobby. Pretrip arrangements having been completed, passengers proceed to seating in the waiting room or to the concourse to queue up for departing trains. Passengers are admitted to trains under gated control. See photo 3. From the concourse, passengers go to train platforms using walkways, stairs or escalators.

Tracks No. 21 through No. 29 are through tracks, passing under the terminal at basement (tunnel) grade. Low-level platforms served by these tracks are reached by freight elevators, enclosed walkways, stairs and reversible escalators. See photo 4.

Tracks No. 11 through No. 20 terminate near the concourse at concourse grade. All tracks serve low-level platforms with the exception of tracks No. 17 and No. 18, adjacent to the high-level, canopied Metroliner platform. Platforms are reached by temporary wooden walkways which are protected by wooden canopies. See photo 5. At the present time Tracks No. 1 through No. 10 are not accessible from the concourse.

The physically handicapped are assisted by porters on entraining and detraining to low-level platforms, in negotiating sloping grades and during transport on freight elevators.

Information

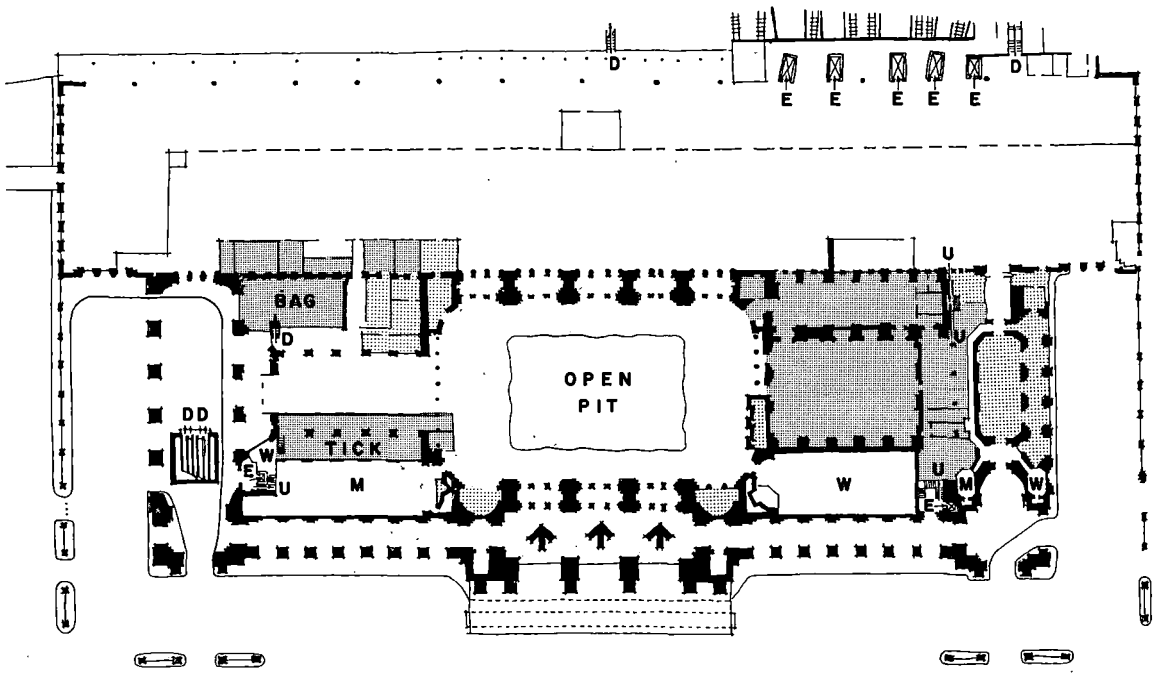
A train information window is located adjacent to the ticket selling area. See photo 6. Train information TV monitors are distributed throughout the main waiting room and concourse area.

The public address system is used to augment other train information sources.

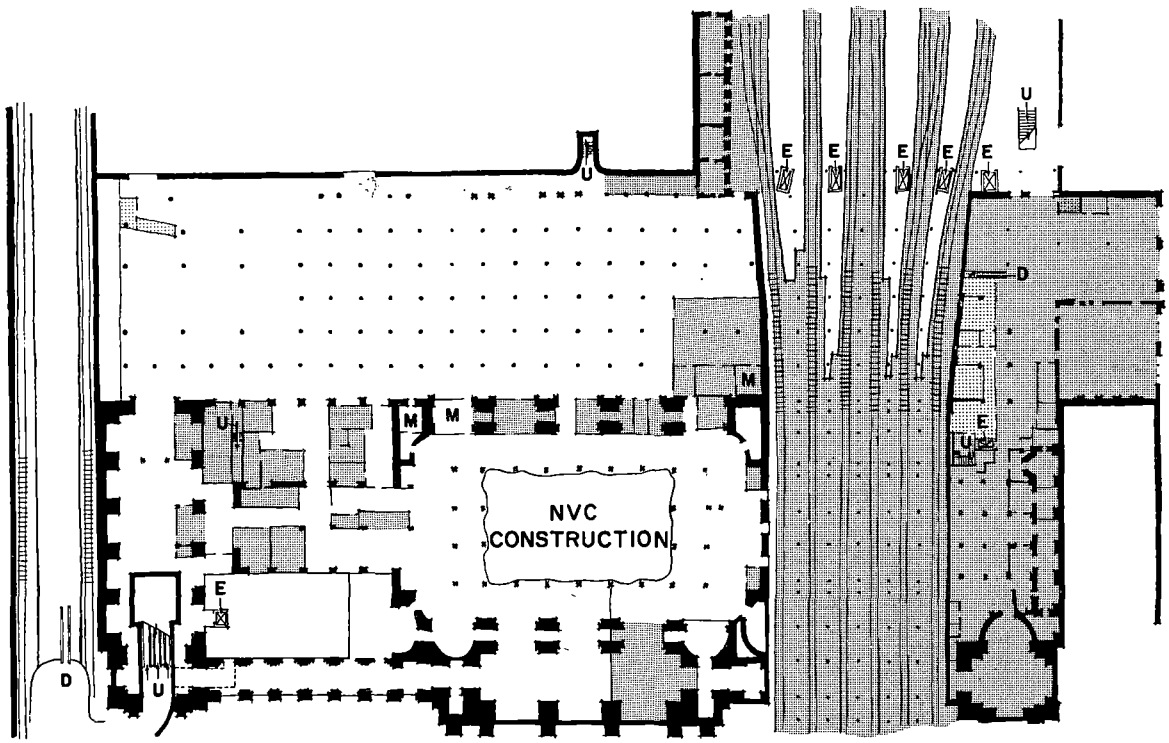
Ticket Purchase

Ticket counters are not readily visible upon entering the waiting room from Union Plaza.

All types of tickets are sold at 11 operating windows located in the First Street lobby. See photo 6. Additionally, Metroliner tickets are sold at a small office in the concourse.



MAIN FLOOR PLAN



SCALE IN FEET
0 50 100

NORTH

BASEMENT FLOOR PLAN

LEGEND

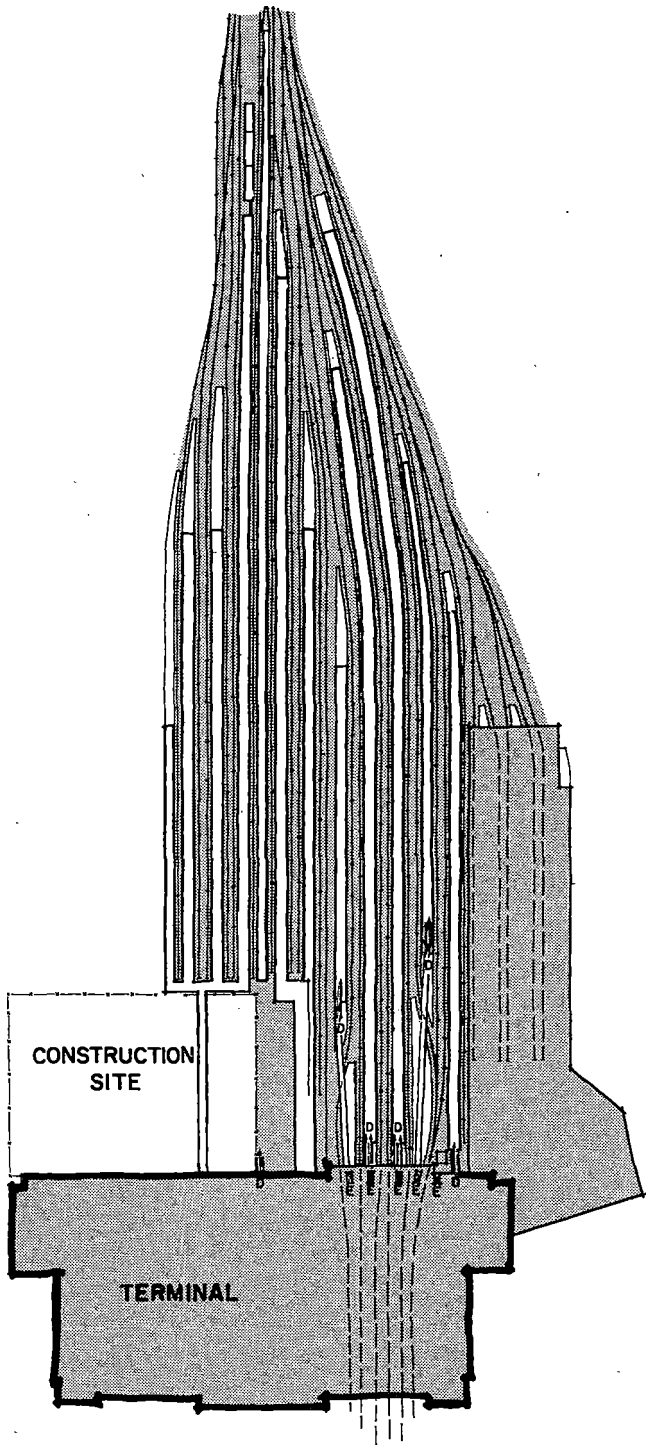
CONCESSION

RAILROAD FUNCTION

EXISTING UNION STATION
WASHINGTON, D C

DC/STV

FIGURE 6-4



PLATFORM PLAN

LEGEND

RAILROAD FUNCTION

EXISTING UNION STATION
WASHINGTON, D C

FIGURE 6-5

Baggage Handling

Baggage handling facilities are located in several rooms between the ticket lobby and the concourse. A baggage check-in counter is located in a space adjoining the lobby. Priority and economy express-package services are also processed at this counter. Baggage claiming facilities are located in a room projecting into the concourse.

Baggage is transported between the handling facilities and the train platforms by tractor-drawn carts. Freight elevators transport baggage carts between the concourse and the lower track levels.

Pools of self-service baggage carts are maintained and made available to passengers at platform, concourse and the Union Plaza entrance areas. Self-service baggage carts are not permitted on escalators.

Porter service is available for baggage handling assistance.

Waiting Area

Seating for approximately 200 people is provided by molded plastic chairs arranged about the central barricade in the main waiting room. See photo 2. No seating is available in the concourse or on the platforms.

Public Services

Men's and women's rest rooms adjoin the main waiting room. Public telephones are conveniently located in the ticket lobby, waiting room, concourse and on the lower platforms (tracks No. 21 through No. 29). Banks of storage lockers are located in the concourse, waiting room and ticket lobby. Within the waiting room are additional public services including a Western Union pay telephone, traveler's aid counter, rent-a-car facilities, hotel-reservation courtesy telephone, bus-information bulletin board and bus-tour information booth.

6.3.4 CONCESSIONS

A sandwich shop, snack bar, news stand, barber shop, shoe shine stand, liquor store, drug store, photo booth and vending machines for selling cigarettes, candy and refreshments are located within the terminal.

6.3.5 RAIL PASSENGER OPERATIONS FACILITIES

A staff of Amtrak representatives operate from mobile-trailer offices in the concourse. See photo 7. Surveillance is provided by terminal police that patrol the entire complex at all hours. Currently this terminal has no Station Master.

6.3.6 FACILITY CONDITION

Structural Integrity

Based on observation of the exterior and interior the building structures appear to be sound.

Exterior

Exterior building surfaces are in need of cleaning. Painted surfaces are in need of refurbishing.

Concrete platform surfaces (low level) are cracked, spalled and patched.

Canopy steelwork needs to be repainted. Canopy roofs need repair or replacement.

Interior

Interior stone surfaces are in need of cleaning; painted surfaces should be refinished. As expected, construction at the terminal is affecting passenger flow and processing.

6.4 FORECAST ACTIVITY LEVELS

6.4.1 PROJECTED DESIGN DAY PATRONAGE

The 1990 peak-design-day load is expected to be 15,400 HSR patrons and 13,300 commuters, for a total peak-day passenger load of 28,700, not including other Amtrak rail passengers.

Projected peak-hour-load is 2,300 HSR and 6,500 commuter passengers for a total loading of 8,800.

The continued growth of governmental and office activities in Washington should support the expected high level of usage of HSR. However, the probability of reaching the upper limit of patronage will depend upon the ability of the local transportation system to accommodate the increased loading, particularly in the immediate terminal area.

6.4.2 PROJECTED MODE OF ACCESS

The Metro rapid-transit system, currently under construction, should dramatically change the mode of arrival. Some 30 to 40 percent of 1990 arrivals will be by rapid transit. Taxis will account for 15 to 25 percent and bus 10 to 20 percent. Auto arrivals will be a relatively low percent of the total.

Percentages of daily passenger arrivals were projected by mode as follows:

	Percentage		
	Low	High	Median
Park-and-ride	5	10	8
Park-and-ride passenger	2	5	4
Kiss-and-ride	5	10	8
Rail transit	30	40	45
Bus	10	20	15
Taxi and limousine	15	25	20
Walk	5	15	10

6.4.3 PARKING REQUIREMENTS

Estimated parking requirements for HSR passengers, based on a 1990 design-day patronage of 15,400, is 1,200 parking spaces.

6.5 PLANS AND PROPOSALS

6.5.1 TERMINAL IMPROVEMENTS

Redevelopment of the Union Station terminal into a National Visitor Center, authorized by an act of Congress under the 1968 National Visitor Center Act, is currently under construction with completion scheduled for 1976. Work to date includes demolition of a large portion of the main waiting-room floor, and construction of column supports in an area adjacent to the concourse for a multi-level parking structure.

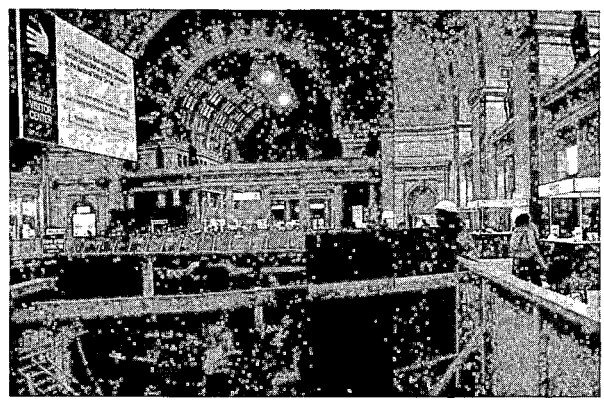
Construction is advancing on a rapid transit subway under the 1st Street portico. The WMATA subway station, known as Union Station, will be directly accessible from the present terminal ticket lobby and from a point north of the existing concourse. The Amtrak design group has developed concept plans for an interim Amtrak terminal for those portions of the existing terminal building not designated for immediate Visitor Center use.

Concurrently, the Department of the Interior, Department of Transportation, Amtrak, interested passenger carriers and terminal operators have been cooperating in the development of new intermodal transportation facilities to be situated over existing tracks between the present concourse and a new H-Street viaduct. Included would be rail, long distance bus, airline ticketing and airport shuttles, taxi, Metrobus and tourbus facilities. The 1974 Amtrak Improvement Act calls for planning and design of a "model" intermodal terminal at this site, to be undertaken by DOT.

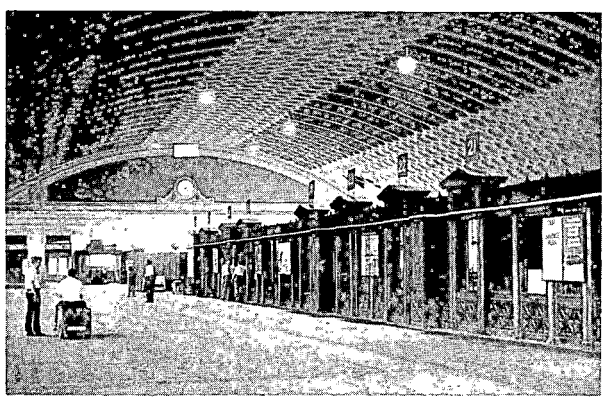
UNION STATION – WASHINGTON, DC

EXISTING FACILITY

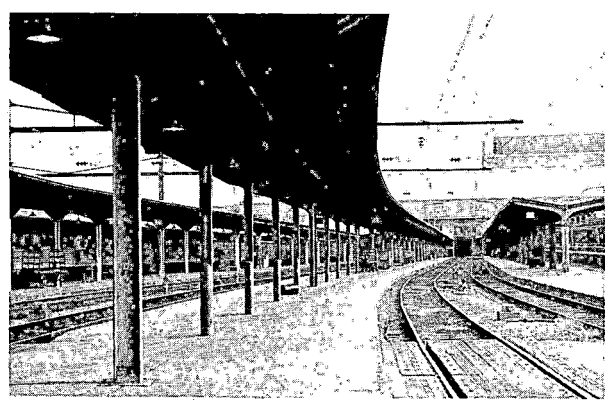
1. Main Entrance Facade and Covered Porticos



2. Existing Waiting Area (to be Converted to the National Visitor Center)



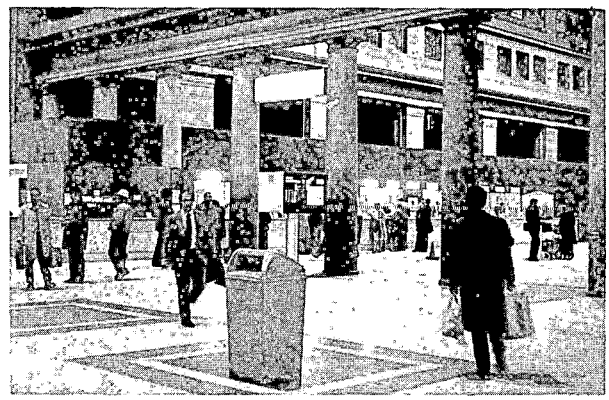
3. Concourse Gates to Train Platforms



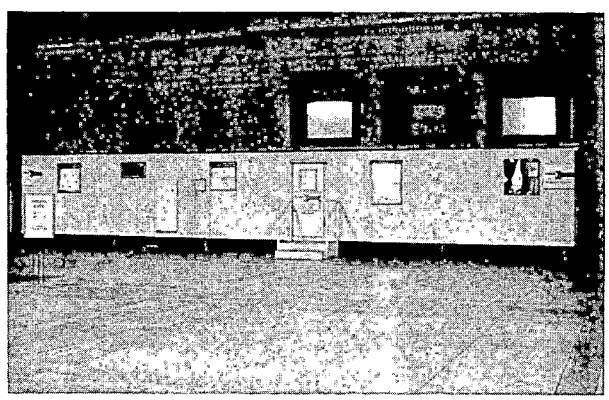
4. Lower-Level Tracks and Platforms

EXISTING FACILITY (Cont'd)

5. Temporary Walkway to Platforms



6. Information and Ticketing Area



7. Passenger Services Office in Trailer in Concourse Area

6.5.2 FUTURE LAND USE

Plans for the National Visitor Center indicate future substantial change in existing land use and traffic patterns at Union Station. The rail terminal would be relocated below a 1,200-car parking garage. The existing Union Station building, listed in the National Register of Historic Places, would be converted from a rail terminal facility to a multimodal service. Current plans include tour ticketing and charter bus facilities as well as the new rail facility, parking garage, intercity bus terminal and tourist-oriented informational displays. A pedestrian bridge is proposed to link the Visitor Center building with the garage and terminal complex.

There would be a weather-protected Metrobus stop, north of the terminal, near the new H Street overpass. Tourbuses would be rerouted behind the Visitor Center to a loading zone just above the rail terminal. Taxi drop-off areas would be located both north and south of the new rail terminal, and kiss-and-ride facilities would be provided to the north. Only tourmobiles would load at the Plaza side of the existing structure. Entrances to the Metro system would be in operation at the west end of both the Visitor Center and the rail terminal, and convenient to both.

It is probable that new hotel, retail and office buildings, proposed as part of the East End renewal, will have been constructed by 1990. The increase in trips, due to this construction and Visitor Center construction, should be offset by the added trip-carrying capacity of the Metro system.

6.5.3 STREET AND TRAFFIC IMPROVEMENTS

Included in plans for the Visitor Center complex and the Metro, H Street will be reconstructed as an overpass over the tracks, and Union Plaza will be rechannelized.

6.6 FACILITY AND SITE IMPROVEMENTS

Due to the recent enactment of the 1974 Amtrak Improvement Act, one provision of which calls for DOT to plan and design a "model" intermodal terminal at Washington Union Station, the report has not addressed itself to recommending facility and site improvements to accommodate the future high-speed intercity rail passengers.

The railroad station currently under construction by Terminal Realty Baltimore Company will serve the interim rail passenger processing needs and will most likely be converted to a rail operations facility once the intermodal terminal is complete.

6.7 COST IMPROVEMENTS

DOT has estimated that the costs of constructing a fully integrated intermodal terminal with requisite parking for all demand to be in the range of $30-40 million. The high-speed rail intercity portion of this project is estimated to cost approximately $20 million. This cost has been included in the summary tabulation of terminal development expenditures in this report.

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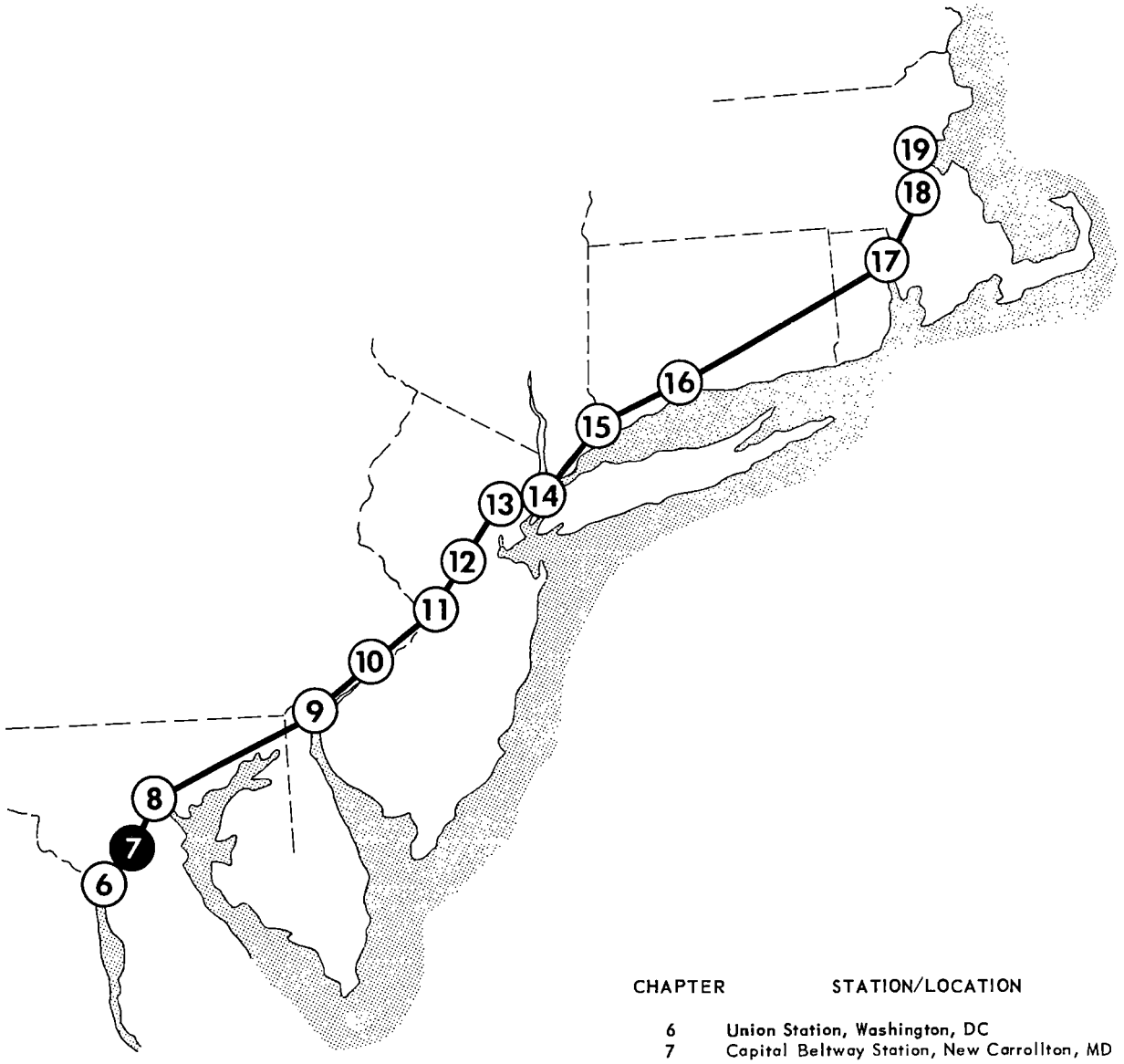
CAPITAL BELTWAY STA.
NEW CARROLLTON, MD

STATION LOCATIONS ALONG NORTHEAST CORRIDOR



CHAPTER	STATION/LOCATION
6	Union Station, Washington, DC
7	Capital Beltway Station, New Carrollton, MD
8	Penn Central Station, Baltimore, MD
9	Wilmington Station, Wilmington, DE
10	Penn Central Station, 30th Street, Phila., PA
11	Trenton Station, Trenton, NJ
12	Metropark Station, Iselin, NJ
13	Penn Central Station, Newark, NJ
14	Pennsylvania Station, New York, NY
15	Stamford Station, Stamford, CT
16	New Haven Station, New Haven, CT
17	Union Station, Providence, RI
18	Route 128 Station, Dedham, MA
19	South Station, Boston, MA

7.0 NEW CARROLLTON STATION, NEW CARROLLTON, MARYLAND
(Inventory is for existing Capital Beltway Station.)

7.1 STATISTICAL FRAMEWORK

7.1.1 OWNERSHIP AND USERS

Capital Beltway Station is situated on land owned by the State of Maryland; the structure proper is owned by Prince Georges County. The facility is used by Amtrak.

7.1.2 PROPERTIES AND FACILITIES

The terminal facility consists of a single-story sheetmetal building, a concrete pedestrian underpass, enclosed stairways, two canopied high-level platforms, and adjacent paved parking lots. Facilities are temporary and were built as a demonstration project in 1969.

7.1.3 CURRENT ACTIVITY LEVELS

Amtrak patrons can use the Capital Beltway Station only for trips to and from the north. The terminal does not serve commuter traffic to Union Station in Washington. Approximately 250 Amtrak patrons (one way) departed from or arrived at Capital Beltway Station on a peak day in 1974. All patrons arrived or departed by private car, taxi or limousine. There is no public bus service or pedestrian access to the terminal.

Twenty-two trains stopped at the terminal on an average weekday in 1974, including 16 Metroliners. Seven Metroliners furnished northbound service. The first train departed from Capital Beltway at 5:13 a.m. No trains stopped at the terminal between noon and 3 p.m. The last train departed at 11:16 p.m. During each hour service was offered, one or two trains used the terminal.

7.2 TERMINAL VICINITY INFRASTRUCTURE

7.2.1 LOCATION CONSIDERATIONS

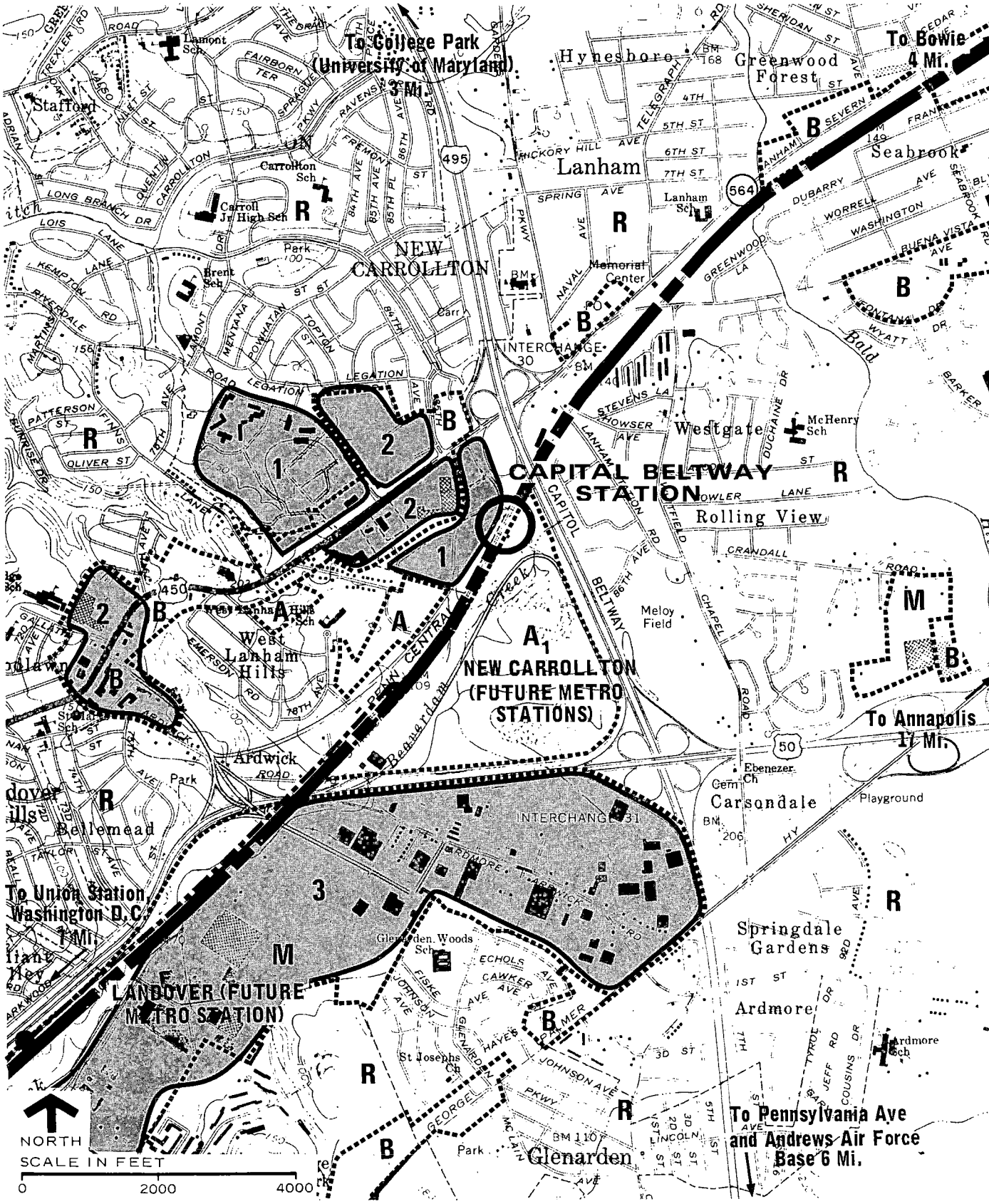
Figure 7-1 shows the location of Capital Beltway Station, the regional transportation network and general activity centers. Activity centers are listed in Table 7-1.

Location with Respect to Regional Highway System

The principal roadways in the area are the Capital Beltway to the east, which is the interstate circumferential highway for the Washington Metropolitan area; U.S. Route 50 to the south, and, Annapolis Road to the north. Capital Beltway Station is accessible from the northern Washington suburbs via the Beltway.

The Beltway also provides a direct high-speed link with the following major highways:

(1) I-95 to Baltimore, Maryland to the north and Richmond, Virginia to the south. This route is the major East Coast interstate highway.



LEGEND/ZONING

- TRANSIT LINE AND STATION (UNDER CONSTRUCTION)
- EXISTING ACTIVITY CENTER (SEE TABLE 7–1)
- HIGH SPEED RAIL
- PROPOSED ACTIVITY AND ZONING (SEE TABLE 7–1)

STATION LOCATION
CAPITAL BELTWAY STATION
LANDOVER, MD

FIGURE 7–1

TABLE 7-1

ACTIVITY CENTERS, CITY SETTING

EXISTING ACTIVITIES

1	Apartment Complexes
2	Commercial Development
3	Ardwick Industrial District – largely warehouses, includes Peoples Drug, Dart Drug, Montgomery Wards, A and P, Hechinger Company, Zamoiski Company

PROPOSED ACTIVITIES AND ZONING

A	Proposed Apartment Complexes
A1	Ardmore Triangle – proposed uses include apartments, offices, retail facilities as as well as the new Amtrak/Metro terminal
R	Residential Zoning
B	Commercial Zoning
M	Light Industrial/Warehouse Zoning

(2) The Baltimore-Washington Parkway.

(3) I-705 which is the south leg of I-70, providing a highway link to Pittsburgh.

(4) I-66, to be completed, providing a link to I-81, a major interstate route connecting with Harrisburg, Pennsylvania to the north and Roanoke, Virginia to the south.

Relationship to Other Inter-Regional Transportation Facilities

There are no intercity bus terminals or commercial airports in the general area of Capital Beltway Station, nor are there presently any direct connections with any terminals outside the area.

Existing Bus Service

There is no public bus or taxi service available at the Capital Beltway Station.

Relationship to Activity Centers

Capital Beltway Station is approximately 11 miles northeast of downtown Washington, D.C. and three miles from the University of Maryland campus at College Park. It is located in what is known as the Ardmore Triangle, which is bounded by U.S. Route 50, I-495 (Capital Beltway) and the Penn Central tracks.

The existing area is primarily in suburban-residential uses. However, commercial development is increasing in the general area. Nearby, there is a large complex of high industrial and warehouse facilities.

Nearby residential areas are moderately dense, consisting mostly of single-family housing, but also including a number of apartment projects. An apartment complex lies just west of the existing terminal. Just to the southwest of these apartments is an elementary school. More apartment development is expected in the future. Considerable commercial strip development, serving both local and regional needs, exists along Annapolis Road to the north.

Just south of the terminal location is the Ardwick Industrial District, a light warehouse area and a major employment center now being developed. Tracts in the district are owned by such major firms as Bekins Moving and Storage Company, Peoples Drugs, Hechinger Lumber Company and United Parcel Service. Existing development is at a very low density with single-story buildings, open storage and parking lots.

Prince Georges County, Maryland currently has a population of 661,000 and is projected to be the home for nearly one million people by 1990. The current rate of growth of the public, commercial and industrial sectors has declined compared with the 1960 – 1970 period, but nevertheless it is still increasing at a significant rate, with an average projected employment increment in excess of 6,500 persons per year. This represents approximately 15 percent of future projected employment growth in the Washington metropolitan region.

7.2.2 LAND USE

Existing Characteristics of the Terminal Area

Figure 7-2 shows the immediate terminal area and local circulation system.

The Ardmore Triangle is now vacant except for the Capital Beltway Station. A substantial portion of this land is within a flood plain. The area has remained vacant for some time, in spite of its close proximity to major roadways, because of inadequate local access.

The nearest development lies to the west of the railroad tracks, and consists of apartments and commercial development. Mixed single-family and apartment development prevails further west. Single-family housing, somewhat older, is also dominant to the east of the Beltway. The Ardwick Industrial District lies just south of U.S. Route 50.

Planning Factors, General Terminal Area

The dominant planning factor in the terminal area is the future extension of rail rapid-transit service along the railroad right-of-way to New Carrollton. This section of the Washington Metro system is scheduled to be in service by the late 1970's. Plans include the construction of a new joint Amtrak/Metro terminal on a site southwest of the existing Capital Beltway Station, as shown in Figure 7-3. Activity centers and proposed activities are listed in Table 7-2. The site is owned by the Washington Metropolitan Area Transit Authority. Operations at Capital Beltway Station would cease upon completion of the new joint facility.

The proposed joint Amtrak/Metro terminal would lie within the Ardmore Triangle. Planning for the Ardmore Triangle anticipates the impact of Metro service on local development. Virtually all of the land is presently zoned for light industrial use, although limited portions are designated rural-residential. The Master Plan for the Model Neighborhood adopted by Prince Georges County in June 1973 stated that the area was proposed for "development as a planned industrial park, including commercial offices and other intensive uses in a feasible mix, to be determined by access to the site; the impact of the Metro transit on development potentials; the desirable use of comprehensive design, innovative planning and incentive zoning; and, other new techniques and consideration."

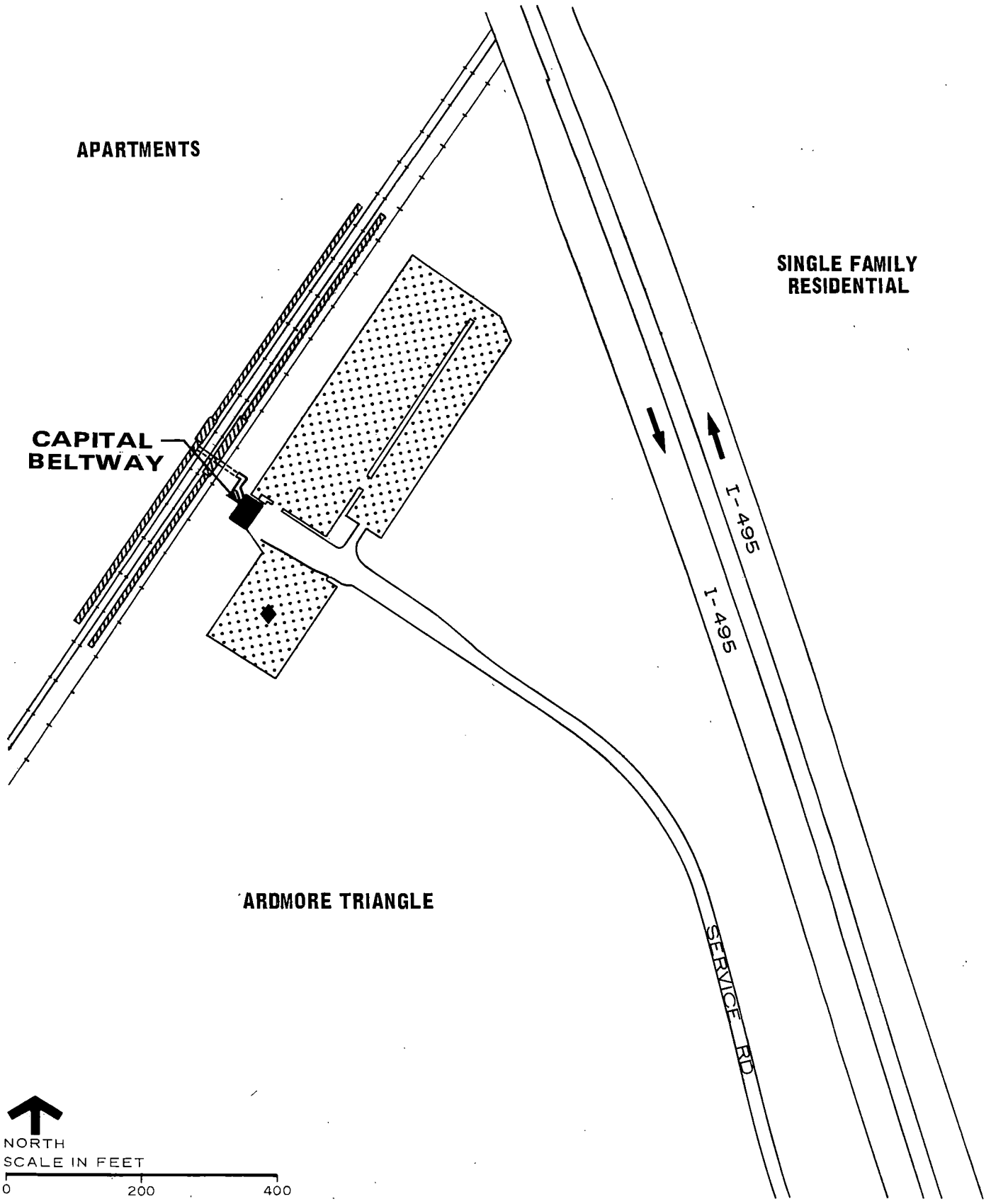
Current planning studies indicate a 1984-development potential for the Ardmore Triangle of 640,000 square feet of office space; 1,030 units of multi-family housing; and, 50,000 square feet of retail support facilities.

Most of the vacant land, to the west of the tracks, will be developed in the near future as medium-density apartment development. Planning studies have recommended that a small amount of this land, immediately adjacent to the proposed Metro parking area, be developed in offices and retail support facilities. There is an existing school just to the west of this currently vacant land.

7.3 EXISTING PASSENGER HANDLING FACILITIES

7.3.1 PASSENGER ACCESS AND EGRESS

All passengers arrive at the existing station by private car, taxi or limousine. Park-and-ride



EXISTING STATION ENVIRONS
CAPITAL BELTWAY STATION
LANDOVER, MD

FIGURE 7-2

and kiss-and-ride patrons walk to the terminal entrance and enter a waiting room at sidewalk level. See Figure 7-2. Entrance doorways are sheltered by roof overhangs. See photo 1.

Existing Automobile Access

The terminal is accessible only via an access road from U.S. Route 50; the latter route interchanges with the Capital Beltway (I-495) approximately one mile south of the terminal.

The heaviest traffic volumes in the area are now experienced on I-495, which carries approximately 5,400 vehicles during the morning peak hour. U.S. Route 50 carries 3,800 vehicles in the same peak hour. Despite the volumes of traffic, both roadways operate at a reasonable level of service.

The major traffic congestion in the area is experienced at the intersection of Annapolis Road and 85th Avenue, which is located just over 100 feet southwest of the Annapolis Road/I-495 interchange. This congestion is due primarily to the numerous commercial driveways in the area and the backup of left-turning traffic from the I-495 interchange.

Other Connections

Short-term parking spaces and the area directly in front of the terminal now serve as kiss-and-ride and pick-up areas.

Presently, there is no pedestrian or bicycle access to the terminal. The isolated site and lack of underpasses or overpasses make the terminal completely inaccessible by foot.

There are no rental cars available at the terminal.

7.3.2 PARKING

There are 265 paid long-term parking spaces and 51 free two-hour spaces at the terminal. The long-term spaces are nearly always used to capacity.

7.3.3 PASSENGER PROCESSING

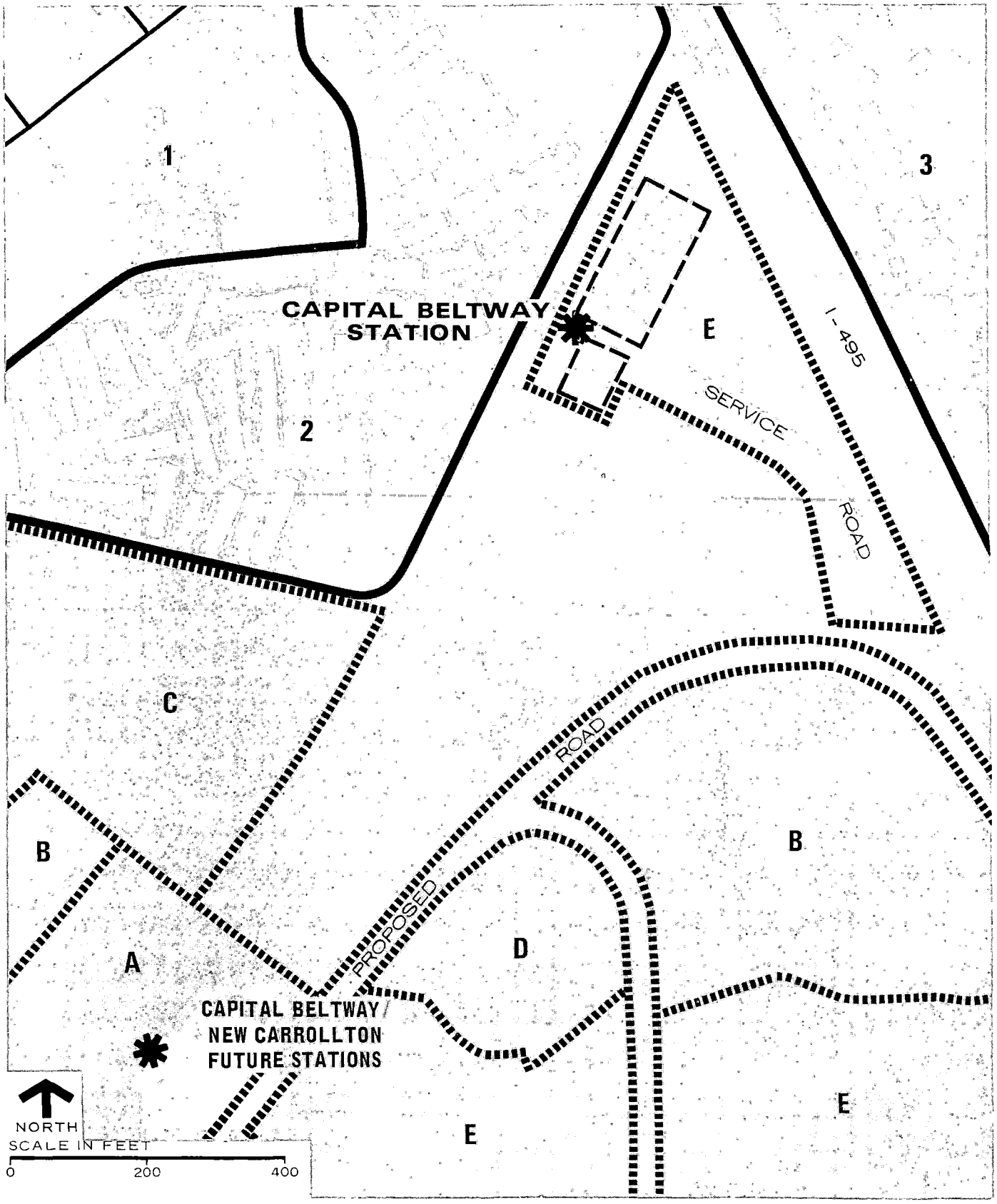
Functional Flow

Passengers enter the terminal waiting room, walk to the ticket counter, purchase tickets and proceed to seating in the waiting room or on the platforms.

To reach the platforms, passengers walk a short distance over a canopied walkway from the waiting room to a closed-in stairway, descend to an underpass, walk through a narrow underpass and ascend a stairway to either the eastbound or westbound platform. See photo 2.

The platforms are inaccessible to handicapped passengers because of the stairways.

Directional graphics are clear and effective except in the underpass where they are totally inadequate. See photo 3.



PLANNING FACTORS
CAPITAL BELTWAY STATION
LANDOVER, MD
FIGURE 7-3

TABLE 7-2

ACTIVITY CENTERS, GENERAL TERMINAL AREA

EXISTING ACTIVITIES

1	Commercial Development
2	Apartment Complex
3	Single-Family Residential

PROPOSED ACTIVITIES

A	Future Amtrak/Metro terminal
B	Office development
C	Medium-density housing
D	Multi-family housing (high-rise)
E	Public open space and water features

Information

Train information can be obtained at the ticket windows. It is also posted on a train information board and announced over a public address system.

Ticket Purchase

Two ticket windows are conveniently located in the waiting room where all types of tickets are sold.

Baggage Handling

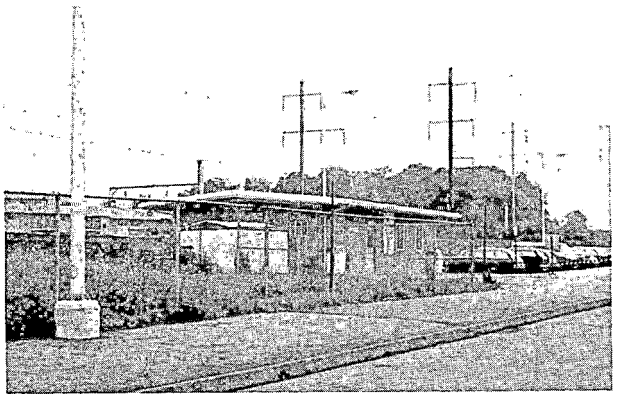
Baggage is not handled at this terminal. Passengers must handle their own baggage.

Waiting Area

The main waiting area, approximately 25 ft x 40 ft in size, is furnished with 30 molded plastic seats. Platforms are furnished with wooden benches, providing space for 30 people eastbound and 4 people westbound.

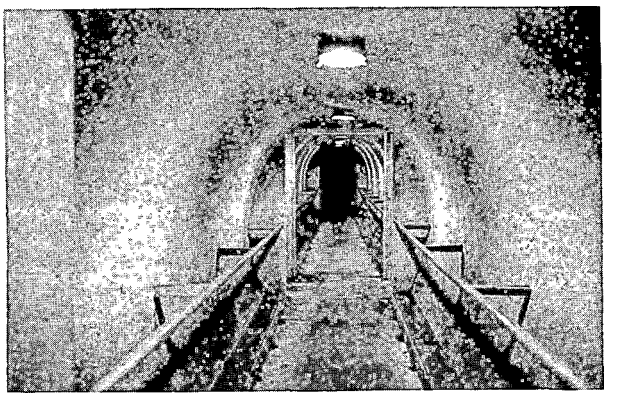
CAPITAL BELTWAY STATION – NEW CARROLLTON, MD

EXISTING FACILITY



1. Terminal Building and Parking Lot

2. Train Platform



3. Pedestrian Underpass

7.3.4 PUBLIC SERVICES

Rest Rooms

A men's and women's rest room are located within the terminal building.

Telephones

Public telephones are available at the terminal. One telephone is provided for taxi call service.

7.3.5 CONCESSIONS

Vending machines, dispensing newspapers and refreshments, are located in the waiting room.

7.3.6 RAIL PASSENGER OPERATION FACILITIES

An Amtrak representative has office space in the ticketing area of the terminal. Security is provided by roving patrolmen.

7.3.7 FACILITY CONDITION

Structural Integrity

The terminal building, platforms, canopies, underpass and stairways appear to be sound.

Exterior

Exterior surfaces of the facility are in good condition.

Interior

The interior surfaces of the underpass are in need of refinishing, with attention given to discouraging graffiti.

Utilities

Utility services provided are reported to be adequate at current use levels.

7.4 FORECAST ACTIVITY LEVELS

7.4.1 PROJECTED DESIGN DAY PATRONAGE

The 1990 peak-HSR-demand at New Carrollton Station is projected at 2,700 passengers per day (one way). It is assumed that there will be no commuter railroad service to Washington, D.C., since the Metro rapid-transit line will be in operation. HSR peak-hour-demand in 1990 is projected at 400 patrons.

7.4.2 PROJECTED MODE OF ACCESS

Although the future Amtrak terminal will be combined with a rapid transit station and extensive bus service is envisioned, the automobile is still expected to be the dominant mode of access for HSR patrons. From 25 to 50 percent of arrivals are expected to be by park-and-ride mode, and 15 to 25 percent by kiss-and-ride. Bus transit is expected to serve 10 to 20 percent of HSR patrons; rapid transit, only 5 to 10 percent.

Relatively light use of public transit is anticipated since feeder bus service will be heavily oriented to peak morning and evening hours, while arrivals and departures of HSR patrons will be distributed throughout the day. In addition, the availability of rapid transit service will not be comparable with such availability at downtown locations. The New Carrollton Metro Station will be at the end of a single rapid-transit line and will serve only a limited number of potential HSR patrons.

	Percentage		
	Low	High	Median
Park-and-ride	25	50	40
Park-and-ride passenger	5	15	10
Kiss-and-ride	15	25	20
Rail transit	5	10	8
Bus	10	20	15
Taxi and limousine	0	5	2
Walk	5	15	5

7.4.3 PARKING REQUIREMENTS

It is estimated that between 700 and 1,400 parking spaces will be required exclusively for HSR patrons, with an average median value of 1,100.

7.5 PLANS AND PROPOSALS

Plans for joint facilities to serve Metro and Amtrak patrons at the proposed site of WMATA'S New Carrollton Station have been developed by engineering consultants to the Washington Metropolitan Area Transit Authority, the U.S. Department of Transportation and Amtrak. This planning has included consideration of facilities for intermodal transfer, parking, street and highway access and feeder bus service.

This report concurs with the general station configuration, sequence of construction, and transportation network improvements proposed in the jointly-planned development concept. Minor modifications are recommended to improve access and interface for HSR patrons, and to accommodate HSR trains. These modifications are discussed in Sections 7.6 and 7.7 of this chapter.

7.5.1 WMATA/AMTRAK TERMINAL PLAN

Under the joint development plan, the train terminal and the Metro station would be separate structures, both situated at ground level with Metro tracks passing over the buildings on an elevated structure and earth fill. A pedestrian passageway, under the Metro tracks and the adjacent Penn Central tracks, would allow access from either side of the tracks. Bus bays and parking lots would be located on both sides of the tracks. The parking lot, north of the tracks, would be exclusively for Metro patrons. The south parking lots would serve Metro and HSR patrons. The terminal area plan is generally as shown in Figure 7-4.

The development concept includes construction of the HSR terminal shell during the WMATA Metro construction period. For purposes of this report, this period has been designated as Phase I construction. The common-connecting pedestrian passage and intermodal facilities would also be constructed during this phase, and costs shared on the basis of benefit to the user agency.

The train terminal would be completed, HSR platform constructed, and stairs and escalators installed during the HSR implementation period, designated here as Phase II construction. The complete scope of work is discussed in Section 7.7.

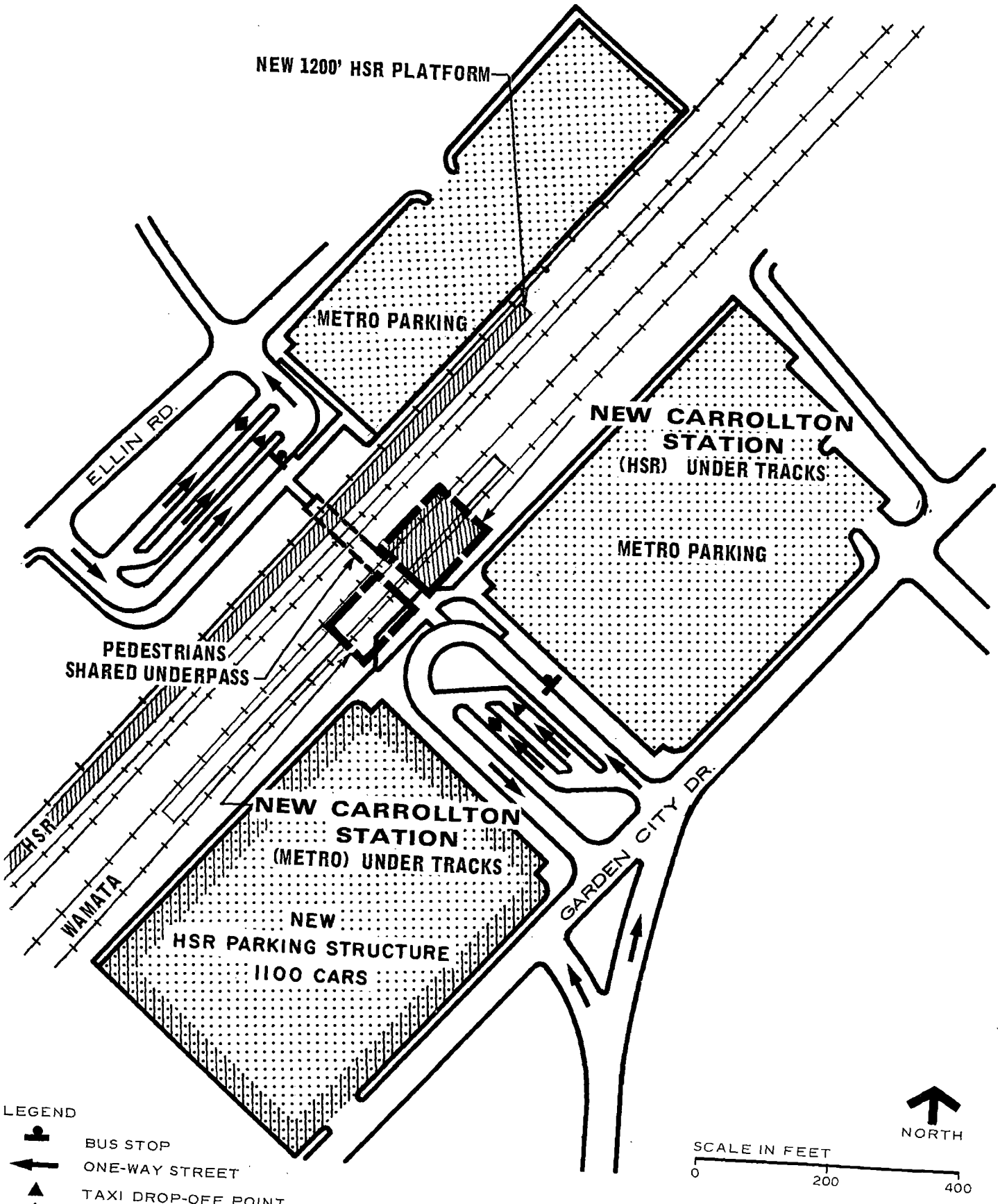
7.5.2 FUTURE LAND USE

The future Amtrak/Metro station at New Carrollton is likely to be a focus of future growth in Prince Georges County. The "Prince Georges County Transit Study, Phase I – Interim Report" prepared for the Maryland National Capital Park and Planning Commission by Development Research Associates, Team Four, Inc., and Walton-Madden-Cooper states that:

"Prince Georges County has two major development assets: greater land availability and correspondingly lower land costs than other areas of the Washington metropolitan region. These assets must be properly managed if the county is to enhance its future economic standings. The two most critical elements that should be incorporated in a sound, regional, public development strategy are: (1) the proper planning and implementation of support system development, and (2) the coordinated development of major project sites, especially transit station areas".

Anticipated land uses shown in Figure 7-3 correspond to those recommended in the Prince Georges County Transit Study.

It is expected that the Ardmore Triangle will be fully developed as a high-density residential, employment and retail mode in the near future, in coordination with the timing of the Metro rapid-transit station opening. The area northwest of the tracks is expected to be developed in limited office and retail commercial use, while the area adjacent to the terminal, southwest of the tracks, will be developed for offices, high-rise housing, retail support activities and retention ponds.



DC/STV

1990 CONCEPT
NEW CARROLLTON STATION
NEW CARROLLTON, MD

FIGURE 7-4

7.5.3 STREET AND TRAFFIC IMPROVEMENTS

Current planning includes proposals to improve highway access to the joint Metro/Amtrak terminal area from the south, and to intermodal facilities, the Metro parking lot and connecting pedestrianway from the north and west.

Highway access to the south station areas would be via Garden City Drive, linking to U.S. Route 50. U.S. Route 50 interchanges with I-495 approximately 1.5 miles from the new Amtrak/ Metro terminal site.

Additional freeway access from the west would be afforded by the extension of the East-West Highway (Maryland Route 401) proposed by consultants to the Maryland Department of Transportation. Interchanges are proposed with both U.S. Route 50 and Garden City Drive.

On the northwest side of the tracks, extension of 85th Avenue from the north is proposed in the plan prepared for Maryland DOT. Also recommended is the extension of Harkins Road from the Finns Lane intersection with Annapolis Road to an extension of Ellin Lane. The latter improvement would remove high-traffic volumes from an area now largely developed in single-family housing and the site of an elementary school.

7.5.4 TRANSIT IMPROVEMENTS

New Carrollton Station will be, for some time, the last station on one of the Metro rapid transit lines leading to downtown Washington. However, eventually the line is planned to be extended four additional miles to Bowie.

An extensive feeder-bus system consisting of metrobuses and metrocabs has been proposed to serve the New Carrollton Metro station. Metrobuses would operate on arterial and collector streets and would serve an area extending as far west as Bowie, four miles from the station. Metrocabs, resembling airport limousines or vans, would seat 10 to 15 people and be routed through residential areas. Present plans include bus bays immediately adjacent to the station both east and west of the tracks.

7.6 RECOMMENDED 1990 ACCESS/EGRESS AND PARKING PLANS

The recommended plan for street improvements, intermodal facilities, and parking in the vicinity of relocated New Carrollton Station is shown in Figure 7-4. This plan incorporates joint development concepts prepared by consultants to WMATA and U.S. DOT, together with operational modifications recommended to improve terminal interface with various access modes. Detailed recommendations for the new HSR terminal are presented in Section 7.7.

7.6.1 STREET AND TRAFFIC IMPROVEMENTS

It is estimated that approximately 400 HSR patrons will arrive at New Carrollton Station during the 1990 peak hour, and that as many as 300 could arrive by private car. The Washington Metropolitan Area Transit Authority has forecast that almost 3,000 Metro patrons will arrive at the adjacent New Carrollton Metro Station during the morning peak hour. As many as 900 Metro patrons could arrive by private car. If peak-demand periods for Metro and HSR service coincide, as many

as 1,200 cars could arrive at the joint terminal area during the peak hour. In addition, volumes of feeder-bus traffic and taxi traffic could be expected to peak during the same period. This volume of traffic will place a significant additional loading on the area's highway system.

It should be stressed that highway loadings, due to HSR, will be much less than the traffic generated by the Metro rapid-transit station, and by new development in the vicinity of the station.

This report concurs with street extensions and improvements proposed to afford better freeway access to the new Amtrak/Metro terminal area.

It is recommended, however, that further coordinated studies be undertaken to determine specific intersection improvements required to assure satisfactory operation of the highway system in the service area. In particular, separate traffic analyses are recommended to determine the optimum configuration for the Garden City Drive-U.S. Route 50 interchange, and for the proposed north-south access road linking the terminal area and U.S. Route 50. In addition, if 85th Avenue is extended as proposed, induced traffic could result in operational problems at intersections north and west of the terminal area.

7.6.2 PARKING

Between 700 and 1,400 parking spaces will be needed exclusively for HSR users. Current concept plans for the southeast terminal area incorporate 500 at-grade parking spaces for Amtrak patrons. The terminal area to the southeast is designated for both Amtrak and Metro parking, while the northwest station area will provide parking exclusively for Metro patrons.

If parking demand approaches the indicated levels, additional facilities will be required to serve HSR patrons. It is recommended that parking requirements be restudied after the inauguration of Metro service to evaluate total demand. If additional facilities are needed, consideration should be given to providing HSR parking spaces north of the tracks, either jointly with Metro, or in a separate lot. This would increase the convenience of terminal use for HSR patrons and would better distribute the traffic and parking load in the terminal area. Alternatively, or in addition, a parking structure could be built on the site planned for off-street parking south of the terminal.

7.6.3 INTERMODAL TRANSFER

Bus bays both in the north and south terminal area are included in joint development plans. It is recommended that taxi and kiss-and-ride loading zones be provided as shown in Figure 7-4.

The terminal area will be bisected by the railroad tracks. A pedestrian underpass is provided for access from the west, along with an open-space path system from the apartment development to the north and west. No pedestrian/bicycle improvements have been proposed to provide improved access to the south terminal area. If development in the Ardmore Triangle proceeds as proposed, pedestrian and bicycle access should be provided by means of a path system through the open space areas and the bordering of the retention ponds. This path system would be limited to those living and/or working within the triangle, but could eventually connect to a regional bikeways system.

7.6.4 FEEDER-BUS SERVICE

The feeder-bus system, planned by the Washington Metropolitan Area Transit Authority for rapid-transit station access, should result in a substantial diversion of potential auto trips to public transit, inducing added Metro patronage and minimizing the parking requirement for Metro passengers. Maximum demand for feeder-bus service would occur during morning and evening peak hours for commuter service.

If adequate feeder-bus service were also assured during off-peak hours, parking requirements for HSR patrons could also be minimized. It is recommended that HSR transit requirements be further studied during final planning for implementation of the feeder system.

7.7 RECOMMENDED 1990 PASSENGER TERMINAL PLANS

This report concurs with current planning by several agencies, including U.S.DOT, F.R.A. and Amtrak, that the temporary demonstration project known as New Carrollton Station be made permanent; but, that new train terminal facilities be constructed at a more suitable site, and that access to the terminal be improved. The temporary structures should be removed and the existing site returned to its original condition.

The report further concurs that the terminal should be located adjacent to the WMATA New Carrollton Station, now under development. Plans developed by engineering consultants jointly for WMATA, U.S.DOT, and Amtrak, indicate a train station shell to be constructed concurrent with the Metro construction. As shown in Figures 7-5 and 7-6, the train terminal and Metro station, both situated at ground level with Metro tracks passing over the buildings on structure and earth fill, would abut a pedestrian passage under both Metro and adjacent Penn Central railroad tracks. The passage would allow pedestrian access from either side of the tracks. The jointly planned development concept visualizes construction of the HSR terminal shell during the WMATA Metro construction period, designated herein as Phase I. The common connecting pedestrian passage, bus lanes, taxi stands and auto drop-off areas would also be constructed during this phase, and costs shared by user agencies. The train terminal would be completed, parking facilities provided, platforms constructed and stairs and escalators installed during Phase II, the HSR implementation period.

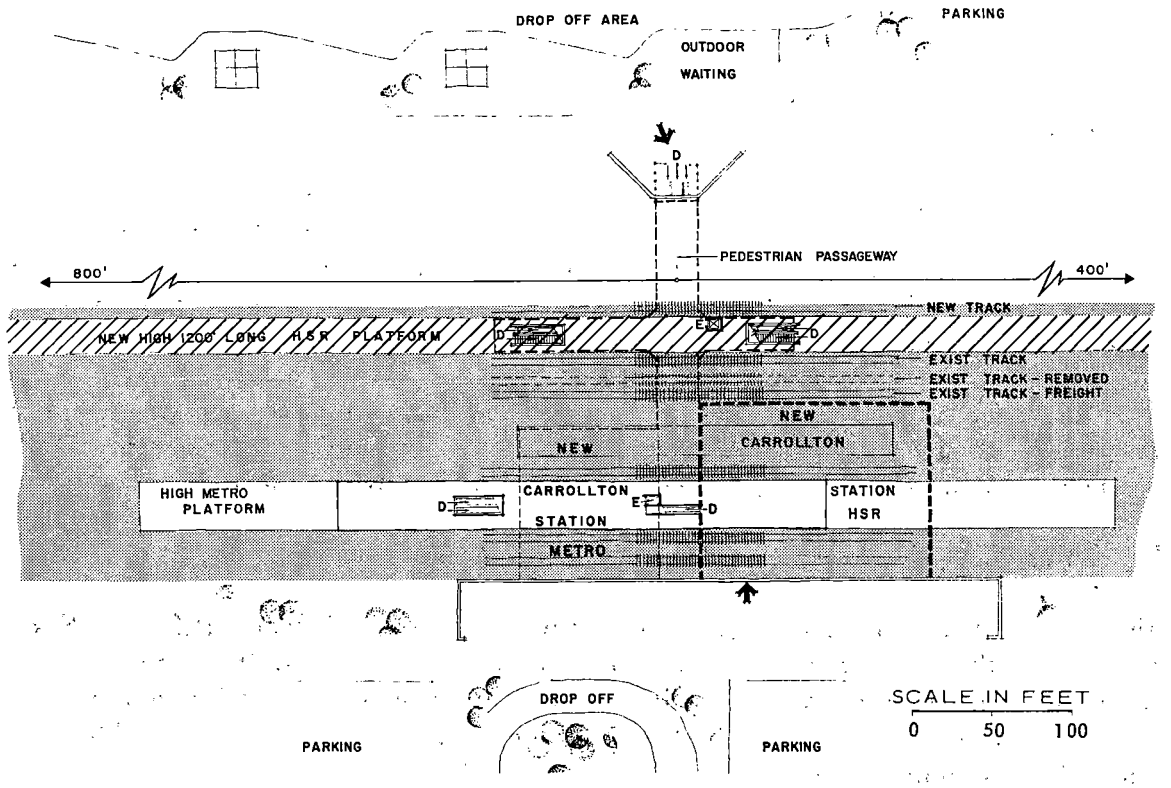
The complete scope of work is as follows:

Phase I construction period:

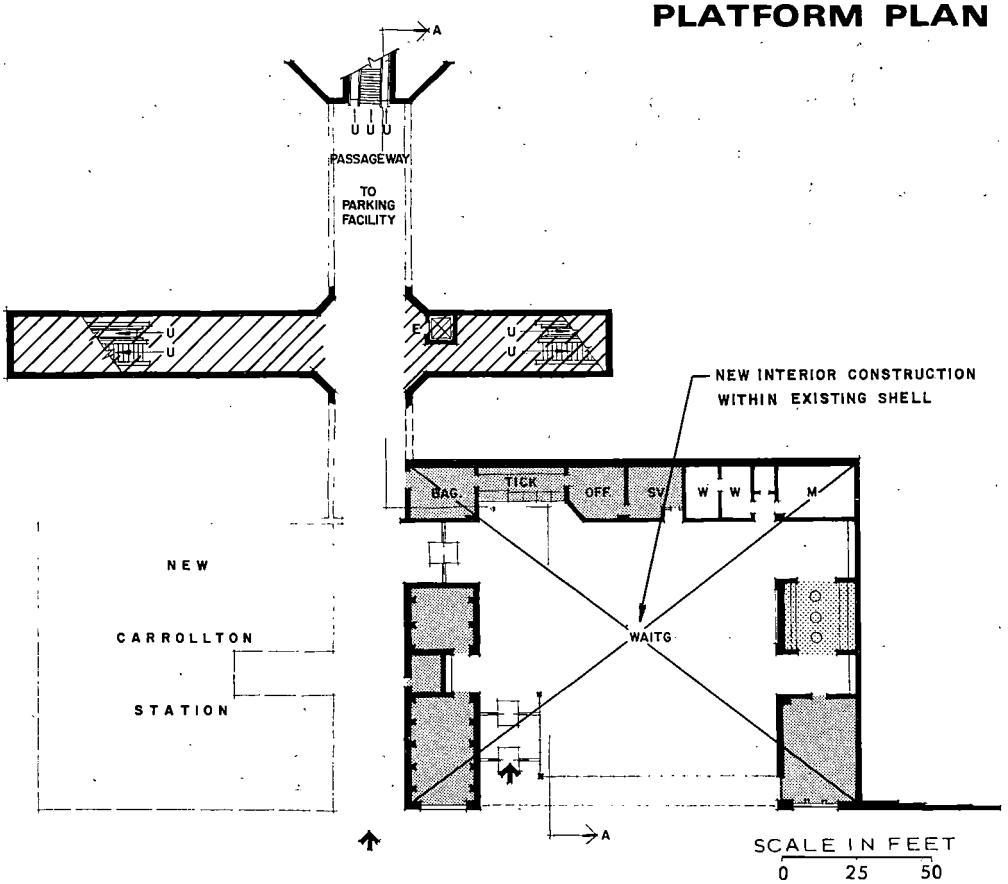
(1) Construct a one-story terminal building shell only, with adequate interior space provided for a waiting room, ticketing and rail operations offices, baggage handling facilities, information systems, rest and utility rooms and areas for minor concessions.

(2) Construct a pedestrian passage adequate both for Metro and 1990 HSR usage, jointly funded.

(3) Allocate contributory funds and construct bus and taxi berthing facilities, as well as short-term (kiss-and-ride) parking areas, on both sides of the tracks. These facilities will be jointly used by Metro and HSR patrons.



PLATFORM PLAN



NORTH

MAIN FLOOR PLAN

LEGEND

CONCESSION

RAILROAD FUNCTION

NEW ADDITION

1990 CONCEPT
NEW CARROLLTON STATION
NEW CARROLLTON, MD

FIGURE 7-5

CROSS SECTION A-A

1990 CONCEPT
NEW CARROLLTON STATION
NEW CARROLLTON, MD

FIGURE 7-6

(4) Provide outdoor-landscaped seating areas, sidewalks, textured crosswalks and accent and roadway lighting.

Phase II construction period:

(1) Construction of complete HSR passenger handling facilities within a shell built under Phase I as part of WMATA project.

(2) Extend the railroad embankment and adjust Penn Central tracks to allow construction of a 1200-foot-long center, high-level platform with full-length canopy, and complete with windbreaks, lighting, information systems and infrared heating devices.

(3) Install stairways, escalators and a combination baggage-passenger elevator, connecting the pedestrian passage and the train platform above.

(4) Construct a paved, fully-improved parking lot for 1,100 cars, including curbs, drainage facilities, lighting and landscaping on the southeast side of the terminal complex. Current plans call for a 500-space parking lot.

(5) Remove the existing, temporary Capital Beltway Station facilities, and restore the site to its original condition.

7.7.5 PASSENGER ACCESS AND EGRESS

HSR patrons would arrive at the terminal by bus, limousine, taxi or private auto. A few might choose the bicycle or walk-in modes. The main terminal building would be sited under elevated tracks of WMATA Metro along the eastbound (Philadelphia bound) side of Penn Central tracks. Bus and taxi berthing areas, and short-term parking zones would be directly in front of either end of the pedestrian passage. HSR long-term parking would be available on the eastbound side of the tracks.

One main doorway would admit passengers to the terminal at sidewalk grade. Another doorway from the passageway, also at ground elevation, would lead to the waiting room. Platform, passageway, and station buildings would be freely accessible to the physically handicapped traveler.

The passageway would be at eastbound parking-lot level; however, at its westbound terminus, escalators and stairs would lead up to the higher ground elevation of westbound parking areas. Pre-ticketed passengers would bypass the train terminal, enter the passageway from either end and proceed directly to the platform.

Automatically-activated doorways would aid handicapped persons and passengers carrying luggage. Overhead canopies would protect sidewalks directly in front of passageway and terminal entrance points.

Functional Flow

On entering the HSR terminal, passengers would walk through the waiting room to the ticket sales area for information, ticket purchase and baggage check. Waiting passengers would be seated in the waiting room, or proceed to the train boarding area situated in the pedestrian passageway.

The HSR platform would be under gated control. Passengers would ascend to the platform by means of escalators and stairways. An elevator would be available for use by handicapped patrons and other authorized personnel.

7.7.2 PASSENGER PROCESSING

Information

An electronic train information board would be displayed in the main waiting room. TV information monitors would be located in the passageway boarding areas.

Information and assistance would also be available at the ticket windows.

A public address system, audible on the train platform, in the passageway, along the exterior drop-off zones, as well as within the terminal, would augment other information sources.

Waiting

The waiting room, ticket and Passenger Services offices, rest rooms and utility quarters would constitute the main components of the terminal building proper. The waiting room would function as the prime passenger activity center. There would be clustered seating and the floor would be carpeted. A solar-tinted window wall would permit passengers to view activities in the terminal environs, and would aid surveillance for security and safety purposes.

Ticket Purchase

Ticket windows would be readily visible on entering the waiting room from curbside or from the pedestrian passage. A special window, reserved for physically handicapped travelers would be manned on demand.

Baggage Handling

Baggage would be checked and claimed at a counter adjacent to the ticket windows. Provisions would be made for sorting and short-term storage. A combination baggage-passenger elevator would be available for baggage transport to the HSR platform.

Pedestrian Passage and Boarding Areas

The passageway would connect parking and drop-off zones situated on both sides of the HSR/Metro rail system. The passage would allow entry to both HSR and Metro terminals, and would provide convenient, grade-separated access to the HSR platform above. Entry into the passageway would be at grade elevation on the eastbound side, and down by means of escalators and stairway from the higher elevation on the westbound side. This report recommends that two escalators, an elevator and a broad stairway be constructed at the west side of the passageway.

Boarding areas, at the foot of stairways and escalators leading to platforms, are visualized as widenings and extensions of the pedestrian passageway. Gated accesses to the HSR platform would be controlled by authorized personnel.

Platform

The new HSR platform, sited between the U.S. Route 50 bridge and track curvature to the northeast, would extend for 1200 feet between the east and westbound tracks. This 14-car-long platform, a standard adopted for all Northeast Corridor HSR platforms, represents an increase from the 900-foot-long platform proposed in the current jointly developed plan. Full length canopy, windbreaks with infrared heating devices, lighting and information systems would be provided.

Escalators, stairways and an elevator would connect to the passageway below.

7.7.3 PUBLIC SERVICES

Rest Rooms

Men's and women's rest room facilities would be located in the main waiting room.

Lockers

Public lockers for short-term baggage storage would be available in the main waiting room.

Telephones

Public telephones would be available in the waiting room, in the boarding areas and at the exterior drop-off zones.

Ground Transportation

Transit schedules and route maps would be displayed in the waiting room.

Taxi-call phones would be centrally located and available to all patrons of the combined transportation terminal.

7.7.4 CONCESSIONS

Space for vending machines would be assigned in the main waiting room.

7.7.5 RAIL PASSENGER OPERATIONS FACILITIES

Ticket and Passenger Services Offices

A supervisor's office would be partitioned off in the area behind the ticket sales counters. The supervisor would handle all passenger services and terminal administration functions. An adjacent room would contain a safe and storage space for tickets and supplies.

The ticket sales offices, complete with reservations and ticket issuing apparatus, would also have desk space for ticketing clerks.

Railroad security personnel would have desk space in the supervisor's office. TV scanning screens for closed-circuit TV surveillance cameras would be situated in the ticket office. Areas under surveillance would include entrances to the terminal, the passageway, stairs and escalators and the HSR platform.

7.7.6 UTILITIES

Heating, Ventilating and Air Conditioning

Planned construction would include heating and air conditioning of all passenger and office areas within the terminal. Boarding areas, within the passageway, would be ventilated and heated with infrared heating devices. Infrared heaters would also be placed on the platform windbreaks. A platform snow-melting system would aid passenger safety during inclement weather.

Electrical Service

Adequate electrical service and distribution would be provided for all air conditioning, ventilating, heating, elevator, escalators, snow melting and lighting loads.

An emergency lighting system would be maintained to allow passengers safe dispersal from platforms and passageway during night-time emergency conditions.

Adequate lighting levels would be maintained for safety, functionality, and for TV camera scanning.

7.7.7 CONSTRUCTION CONSIDERATIONS

Structural System and Exterior Surfaces

Contemporary building-construction techniques and regulations would govern development of the new terminal. The passenger processing building would be of reinforced concrete construction, approximately one story in height, slab on grade without basement and with a flat roof.

Exterior surfaces would consist of two dampproofed concrete walls surrounded by earth fill; and anodized-aluminum door and window walls with solar-tint polycarbonate glazing. Doors would be automatically-activated pairs, with sidelights and transoms.

The pedestrian passage would also be of reinforced concrete construction. Special techniques would be employed for construction under active Penn Central trackage.

Interior Surfaces

Finished surfaces would include:

(1) Waiting room – quarry tile and carpet floor; glazed tile and tinted window walls;

suspended acoustic-tile ceiling; and, flush-fluorescent light fixtures.

(2) Offices – carpet flooring; paneled and plastered wall surfaces; suspended acoustic-tile ceiling; and, flush-fluorescent lighting fixtures.

(3) Men's and women's rest rooms – ceramic tile floors and walls; wall hung fixtures, ceiling-hung toilet compartments; electric hand dryers; suspended plaster ceiling; and, high-level lighting.

(4) Pedestrian passageway and boarding areas–concrete surfaces; walls have special vandal-resistant coating; passageway has drainage facilities; fluorescent-lighting fixtures are recessed flush into concrete ceiling.

Landscaping

Components of a unified design, for the terminal environs, include plantings and trees along access drives, in loading zones and along both sides of tracks; accent and roadway lighting standards and fixtures; outdoor seating and information kiosks; and, textured sidewalk and crosswalk surfaces.

7.8 CAPITAL COSTS

Costs for completing construction of the intercity shell ($1,000,000), including provision of HVAC, plumbing and lighting systems ($563,000), were prepared jointly by WMATA, U.S. DOT and Amtrak. These costs, based on plans under development jointly for the above agencies, are a part of this cost summary. Cost estimates for other construction items listed below, are based on current unit prices for similar work:

New terminal	$1,000,000
Platform and canopy	739,000
Escalators, stairs and elevator	425,000
HVAC, plumbing and lighting	563,000
CCTV surveillance and electronic information systems	95,000
Paving, curbs and sidewalks	205,000
Subtotal terminal and site work	$3,027,000
Contingency – 15%	454,000
Total terminal cost	$3,481,000

Construction of the new HSR platform requires adjustment to existing trackwork and construction of a new track. Cost for trackwork, relocation of signals and communication lines, and adjustments to catenary support structures and wiring are not included in this estimate, but are included and documented in Task 11.

Parking lot construction cost was calculated at a rate of $770 per car space, and parking structure construction cost at a rate of $3300 per car space, for an approximate median of 1,100 parking spaces, within a range of 700 to 1,400 spaces required for HSR patrons. Land acquisition costs, listed below, were estimated by consultants retained jointly by WMATA, U.S. DOT, and Amtrak.

Parking Lot – 500 cars	$ 385,000
Structure – 600 cars	$1,980,000
Land Acquisition for Parking Lot	$ 600,000

7.9 SCHEDULING AND PHASING OF CONSTRUCTION

Current WMATA construction schedules indicate New Carrollton Metro Station to be operational by the late 1970's. The basic HSR terminal building shell shall be constructed concurrent with Metro facilities, including joint-use areas.

Subsequently, an estimated one-year construction period would be required to complete the HSR terminal building, rearrange track work on the Penn Central railroad embankment, and construct a new 1,200-foot-long HSR platform.

The HSR platform would be sited between existing track No. 3 and a new track No. 4, and approximately centered horizontally over the pedestrian passage below. This configuration would allow for a center-loaded platform (with accesses at approximately midpoint of the platform). Tracks would be adjusted, and the embankment extended as required to accommodate the new system.

The above construction staging would allow for a relatively safe trackside construction environment, with train service unimpeded. The existing Capital Beltway Station would remain in service until completion of the new terminal facilities.

7.10 SPECIAL CONSIDERATIONS

The plans currently being prepared for the HSR portion of this station, as a part of the WMATA construction package, should be modified to accommodate the public services, concessions and rail operations facilities considered to be necessary to meet the HSR patronage levels and performance standards developed in Chapter 5.

Extension of the earth embankment to the north (along the westbound side of tracks), which may be required to accommodate a new track No. 4, may infringe on vehicular access and parking space indicated on current development plans.

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Maryland National Parks and Planning Commission. **Suburban Transportation Center 1976** and Zoning Maps.

Washington Metropolitan Area Transit Authority. Proposed site plan, floor plan and renderings of the New Carrollton Metro Station.

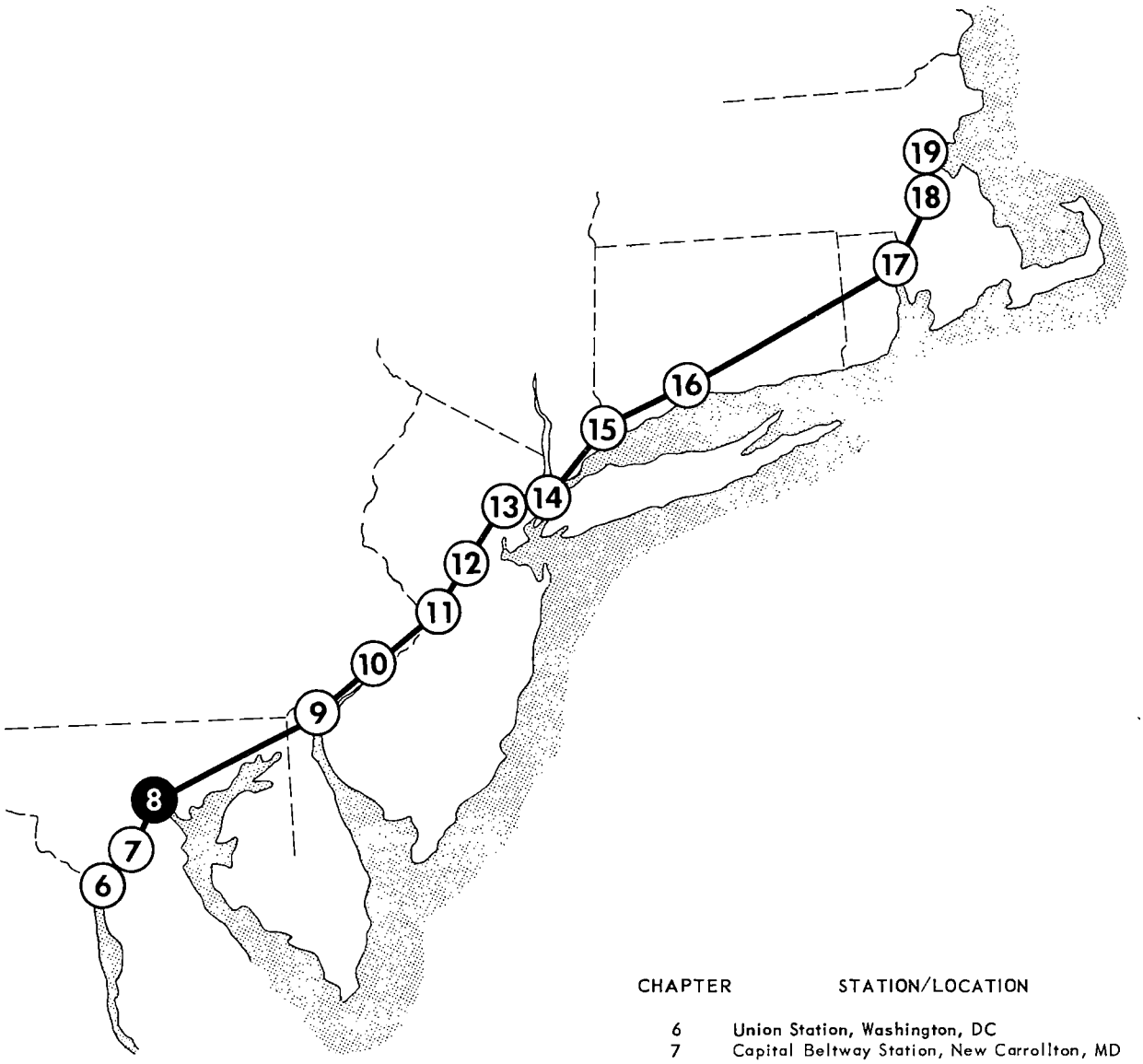
Personal interviews and communications

Carl Tacci, Project Manager (New Carrollton Station)
Washington Metropolitan Area Transit Authority

Cliff Gannet, Project Administrator (Beltway Station)
FRA/DOT

R. Johnson, Engineer
Amtrak

STATION LOCATIONS ALONG NORTHEAST CORRIDOR



CHAPTER	STATION/LOCATION
6	Union Station, Washington, DC
7	Capital Beltway Station, New Carrollton, MD
8	Penn Central Station, Baltimore, MD
9	Wilmington Station, Wilmington, DE
10	Penn Central Station, 30th Street, Phila., PA
11	Trenton Station, Trenton, NJ
12	Metropark Station, Iselin, NJ
13	Penn Central Station, Newark, NJ
14	Pennsylvania Station, New York, NY
15	Stamford Station, Stamford, CT
16	New Haven Station, New Haven, CT
17	Union Station, Providence, RI
18	Route 128 Station, Dedham, MA
19	South Station, Boston, MA

8.0 PENN CENTRAL STATION, BALTIMORE, MARYLAND

8.1 STATISTICAL FRAMEWORK

8.1.1 OWNERSHIP AND USERS

The Penn Central Station in Baltimore is owned by the Penn Central Transportation Company and used by Amtrak and the Penn Central.

8.1.2 PROPERTIES AND FACILITIES

Facilities include a terminal building with a 23,000-square-foot passenger processing area at street level; two low-level platforms; one high-level Metroliner platform 600 feet long; and, a 200-space-capacity parking lot on Penn Central property.

The terminal building is a five-story structure with a one-story concourse over the railroad tracks. Completed in 1911, the building is of cut-stone masonry.

8.1.3 CURRENT ACTIVITY LEVELS

Baltimore is only 30 minutes by train from Washington, D.C. The size of these two major urban areas and their physical proximity, as well as the convenience of rail service between the two cities, has resulted in growing use of Metroliner and Amtrak services. From 1972 to 1973, this link segment showed the highest percentage of rail travel increase (11 percent) of any city pair within the Northeast Corridor.

On an average weekday in 1974, a total of 52 Amtrak trains arrived from or departed for Washington at Penn Central Station, Baltimore. Thirty of these trains were Metroliners. Average weekday Amtrak patronage (one way) was 1,900 passengers.

The Penn Central operated four commuter trains to and from Washington daily with a combined one-way patronage of approximately 150 persons.

Morning peak-hour-demand at the terminal occurred between 7 a.m. and 8 a.m. when four trains arrived or departed. Five trains arrived or departed during the evening peak hour, 5:30 p.m. to 6:30 p.m.

The Baltimore Regional Planning Council conducted an origin-destination survey in August 1974 to determine mode of access to Penn Central Station. This survey was conducted to establish functional requirements for future terminal development. A follow-up survey is scheduled in the near future.

The survey showed that most patrons arrived by automobile. Park-and-ride and kiss-and-ride were almost equally important and together occounted for 70 percent of all arrivals. Modal distribution was:

Mode of Access	Percent of Total
Park-and-ride	34
Kiss-and-ride	36
Bus	12
Taxi	13
Walking	4
Other	1

8.2 TERMINAL VICINITY INFRASTRUCTURE

8.2.1 LOCATION CONSIDERATIONS

The terminal location is shown in Figure 8-1, indicating the transportation network and activity centers in the general city setting.

Location with Respect to Regional Highway System

Penn Central Station is readily accessible from the northern parts of Baltimore and its northern suburbs. The terminal is adjacent to the Jones Falls Expressway (I-83), which connects the Baltimore Beltway to the downtown. In addition, two high-capacity north-south arterials flank the terminal, linking the downtown and northern suburbs. From other parts of the Baltimore area, access to the terminal is less favorable. This is particularly true of the southern-most part of the city and southern suburbs. To reach Penn Central Station, from these areas, requires traveling through the congested core of the city or using a circuitous route.

I-695, the Baltimore Beltway, is a circumferential expressway around the City of Baltimore. From I-695, other expressways extend into the city for a limited distance. None of these expressway "spokes" actually penetrates the heart of the city, and there is no through expressway route in the city. The Jones Falls Expressway extends furthest into the core of the city, from the northwestern suburbs, for a distance of eight miles, to just short of the CBD.

The major north-south arterial through the heart of the city is State Route 2, a one-way pair comprised of adjacent St. Paul and Calvert Streets. St. Paul Street, one-way southbound, is immediately east of Penn Central Station.

Major routes, with a basic east-west orientation, include U.S. Route 1 and U.S. Route 40. U.S. Route 1 is four blocks north of Penn Central Station, while U.S. 40 passes through the CBD one mile south of the terminal.

Relationship to Other Inter-Regional Transportation Facilities

Terminals for both the Greyhound Line and Trailways are south of Penn Central Station near the CBD. Both intercity bus terminals are approximately one mile from the terminal, about five minutes by taxi from the terminal, and less than five minutes from the CBD. No intercity buses stop at Penn Central Station. The railroad and intercity bus terminals are connected by local bus routes, but a short walk or a transfer is required to make the connection.

The Baltimore-Washington International Airport (formerly Friendship Airport) is approximately ten miles from Penn Central Station. By auto, the travel time is about 25 minutes. There is no direct bus service between the terminal and the airport. A rapid transit line is proposed linking the airport and downtown Baltimore. Phase I rapid transit plans do not, however, include a direct link between Penn Central Station and the airport or downtown Baltimore.

In addition to Penn Central Station, there is a second railroad terminal in downtown Baltimore – the Camden Station. The Baltimore and Ohio Railroad operates six commuter trains daily from this terminal to and from Washington. Patronage is very light, with only 100 passenters using this terminal daily (one-way).

Existing Transit Service

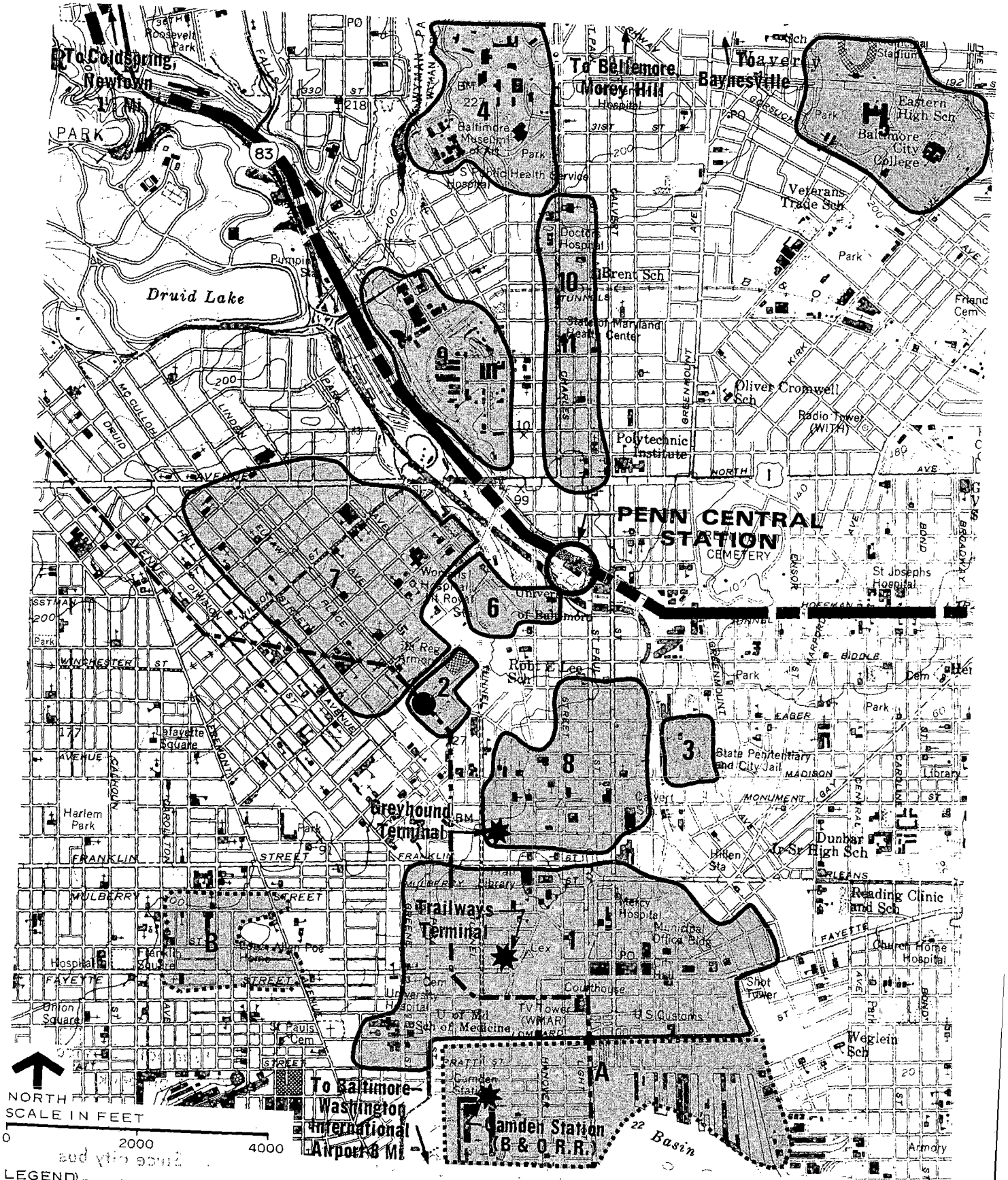
Three local bus routes, routes 3, 6, and 11, offer direct service to Penn Central Station with stops adjacent to the terminal.

Route 3, running along both Charles and St. Paul Streets, connects Baynesville, a suburb 7.5 miles north of the terminal, and the downtown. Bus service is frequent with peak-hour headways of five minutes or less, and headways of ten minutes or less during off-peak hours.

Route 6 connects Johns Hopkins University, north of the terminal, to the downtown area and continues through the downtown to the Riviera Beach area in Anne Arundel County. This route operates on 15-minute headways or less during peak hours and 30-minute headways during off-peak hours.

Route 11 connects the downtown with Murray Hill and the area north of the terminal. Service is good with peak-hour headways of seven minutes, and ten-minute headways during off-peak periods.

In general, bus access from the north or south is good during the entire day. Since city bus routes form a grid pattern, however, most passengers arriving from the east or west must transfer to one of the north-south routes to reach the terminal. The nearest east-west routes are on North Avenue and Preston Street, each three blocks from the terminal.



STATION LOCATION
PENN CENTRAL STATION
BALTIMORE, MD
FIGURE 8-1

TABLE 8-1

ACTIVITY CENTERS, CITY SETTING

EXISTING ACTIVITIES

1	Central Business District and Civic Center – including Charles Center and Hopkins Plaza; University of Maryland Hospital and School of Medicine; City Hall and Post Office; Civic Auditorium; and financial, business and retail concentration
2	State office complex and Armory
3	Maryland State Penitentiary
4	Johns Hopkins University and Public Health Service Hospital
5	Memorial Stadium and schools
6	Educational Institutions including University of Baltimore
7	Madison Park North and South Renewal Projects – primarily residential
8	Mount Vernon Renewal Project (historic area, art gallery and churches)
9	Industrial - Warehousing area and housing project
10	Series of Office Buildings along Charles and St. Paul Streets
11	State of Maryland Health Center

PROPOSED ACTIVITIES

A	Inner Harbor Renewal Areas
B	Orchard - Biddle - Poppleton Neighborhood Development Project – includes major new Social Security office complex, as well as new housing

Relationship to Activity Centers

The City of Baltimore had a population of 905,000 in 1970. The population of the Baltimore Standard Metropolitan Statistical Area was 2,071,000. Baltimore is a major center of business, government, financial, retail, educational and industrial activities, as well as being a major port city. The Port of Baltimore employs 65,000 workers; an additional 100,000 workers are employed in port-related industries. Major activity centers are shown in Figure 8-1, and listed in Table 8-1.

The core of the City of Baltimore is undergoing extensive renewal. An area of 1,000 acres, in the heart of the city, has been designated "MetroCenter"; the City is encouraging and coordinating private and public development to reinforce the downtown area as the center of economic, social and cultural activities for the region. MetroCenter includes the Mount Royal area, Mount Vernon, Charles Center and the Inner Harbor areas.

Charles Center, a 33-acre project, is the new focal point of civic and business activity. This major redevelopment project includes new high-rise office structures, major retail facilities, hotel accommodations, a new Civic Auditorium, landscaped plazas, parking facilities and pedestrian walkways. Charles Center is flanked by the city's financial district on the east and the main retail district on the west.

South of Charles Center, and the present CBD, lies the Inner Harbor area. This area is to be developed as a regional commercial and recreation complex, covering over 100 acres. Included will be many office structures, a hotel, apartments, promenades, restaurants, shops and theaters.

Penn Central Station is not in a particularly favorable location with respect to the CBD, Charles Center and the Inner Harbor area. These developments are over a mile south of the terminal, beyond reasonable walking distance. Under normal traffic conditions, however, they are within ten minutes by taxi or bus from the terminal.

Much of the area between Penn Central Station and the CBD is known as the Mount Vernon area. This is largely a restored historic residential area, where old churches and residences attract considerable tourist traffic.

In addition to the CBD, Charles Center and the Inner Harbor area, Figure 8-1 shows other major concentrations of activity within 1.5 to two miles of the terminal. The most significant of these are the Mount Royal area, the State office complex, John Hopkins University, Memorial Stadium and office buildings north of the terminal, along Charles and St. Paul Streets.

The Mount Royal area lies immediately southwest of the terminal, and is the site of the University of Baltimore and other cultural institutions. Within a half-mile of the terminal, also to the southwest, is the Maryland State office complex. The complex presently contains over 750,000 square feet of office space and employs nearly 4,000 persons; as many as 26,000 employees are forecast by 1985. State and local government agencies, depending upon their function, are major trip generators. It is not anticipated that a substantial number of these trips will be diverted to the proposed rapid-transit system. Thus, the complex could result in considerable increase in auto traffic in the vicinity of Penn Central Station.

Baltimore's Memorial Stadium, with seating for over 50,000, is about two miles northeast of the terminal. Currently, two professional teams have frequently scheduled events there. Penn Central Station is adjacent to the major north-south arterials which furnish access to the stadium. However, traffic generated by events at the stadium should not conflict with access to the terminal by rail users, since the normal peak hours of traffic to the terminal do not coincide with events at the stadium.

8.2.2 LAND USE

Existing Characteristics of the Terminal Area

Figure 8-2 shows the immediate terminal environs and local circulation system.

Due to topography and the existing transportation network, Penn Central Station is somewhat isolated. The main tracks lie directly north of the terminal; to the south is an employee parking area, the Northern Central Railway right-of-way and the Jones Falls Expressway. Charles and St. Paul Streets, which border the terminal on the west and east, respectively, are on structure over the depressed expressway and the track area. The only building adjacent to the terminal is the old post office, now used by the City Department of Finance. This building is also bounded by the tracks on the north and the Jones Falls Expressway on the South. The isolated setting is a possible deterrent to some potential terminal uses.

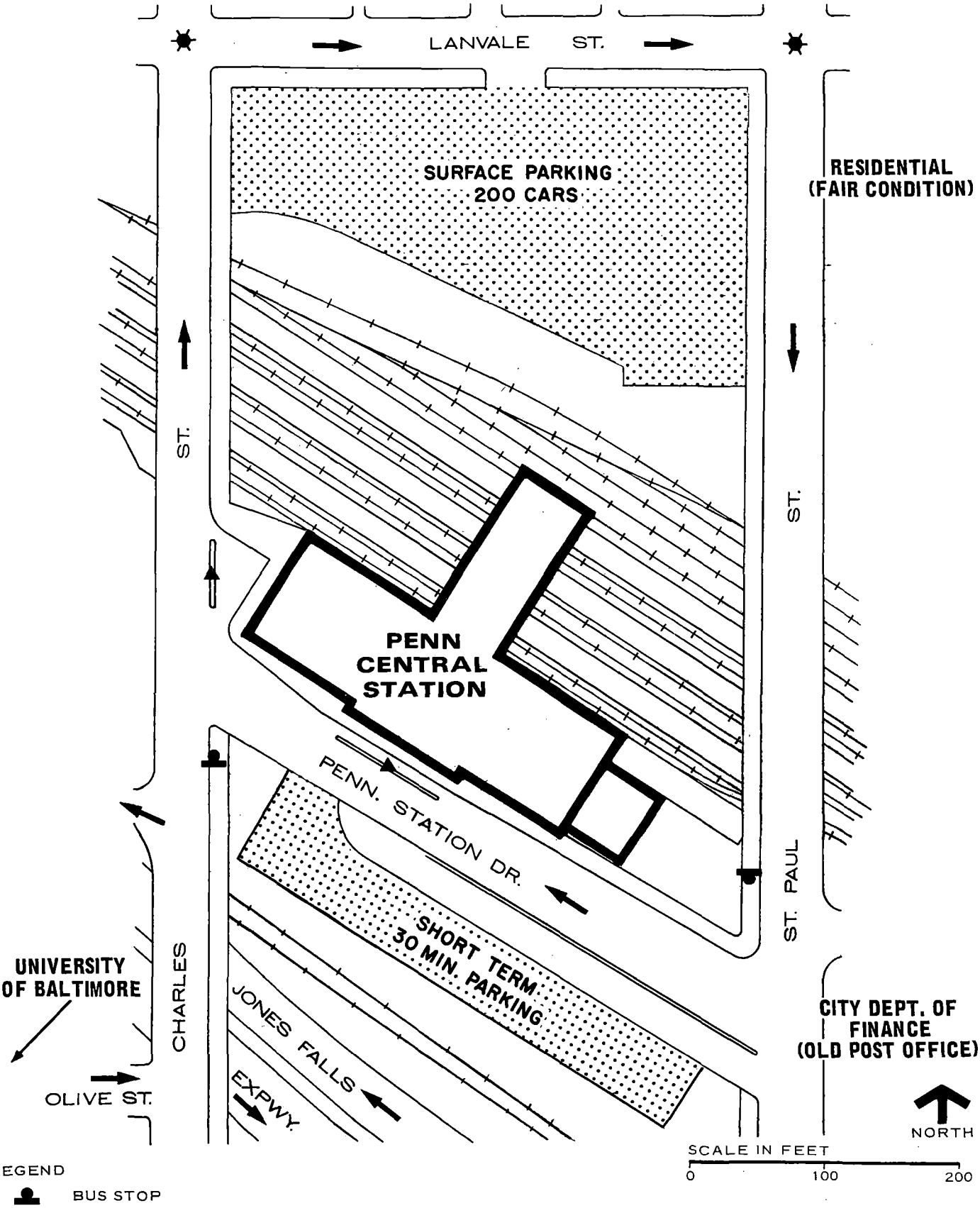
Immediately north of the tracks and the terminal is an off-street parking lot for railroad patrons. There is a concentration of commercial buildings along Charles Street; several are in poor condition. Buildings along St. Paul Street are primarily multi-family residential structures. While there is some deterioration, a number of these buildings are being renovated. While the existing setting of Penn Central Station is not particularly attractive, the area appears to be reasonably safe.

Planning Factors, General Terminal Area

Activity centers and other planning factors in the terminal area are shown in Figure 8-3, and listed in Table 8-2.

The Jones Falls Expressway and adjacent railroad tracks form a dividing line between two distinctly different areas. North of the terminal and railroad tracks, the area is predominantly one of older low and moderate-income row housing, with intermixed miscellaneous commercial uses, warehousing and light industry.

According to the 1970 census, more than a third of the families in the general area, north of the terminal, had incomes below the poverty level. Structural conditions are generally only fair with some vacant and dilapidated buildings. There is, however, some evidence of private rehabilitation of scattered older apartment buildings and commercial facilities; and beyond North Avenue (U.S. Route 1), a series of office buildings and businesses have developed along Charles and St. Paul Streets.



EXISTING STATION ENVIRONS
PENN CENTRAL STATION
BALTIMORE, MD
FIGURE 8-2

South of the terminal and the Jones Falls Expressway, land use is more intensive, and there are several significant traffic generators. Southwest of the terminal in Mount Royal Center is the University of Baltimore, one block from the terminal. The school has an enrollment of 2,000 day students and 3,000 evening students. There are no campus residence halls and none are planned. Approximately 85 percent of the students commute to the campus by automobile.

Three blocks southwest of the terminal is the Maryland Institute of Art, with an enrollment of 1,000 day students and 500 night students. The Lyric Theatre, located midway between these two institutions, schedules frequent concerts and plays, and generates a demand for 400 parking spaces. Further south and west is the Maryland State Government Complex and the National Guard Armory. A variety of moderate and small businesses, as well as two life insurance companies and a bank, employ a total of over 12,000 people, all within a rectangular area extending five blocks south of the terminal, bounded by the Jones Falls Expressway (I-83) and Howard Street on the west.

The remainder of the area, south of the terminal, is largely devoted to multi-family residential use, with some large apartment buildings. The area eventually merges with the Mount Vernon Urban Renewal area, where extensive rehabilitation of older residences has taken place for both residential use and small professional-type offices.

8.3 EXISTING PASSENGER HANDLING FACILITIES

8.3.1 PASSENGER ACCESS AND EGRESS

The terminal is bounded by Penn Station Drive, on the south, Charles Street on the west, Penn Central trackage on the north and St. Paul Street on the east. See photo 1 and Figure 8-3.

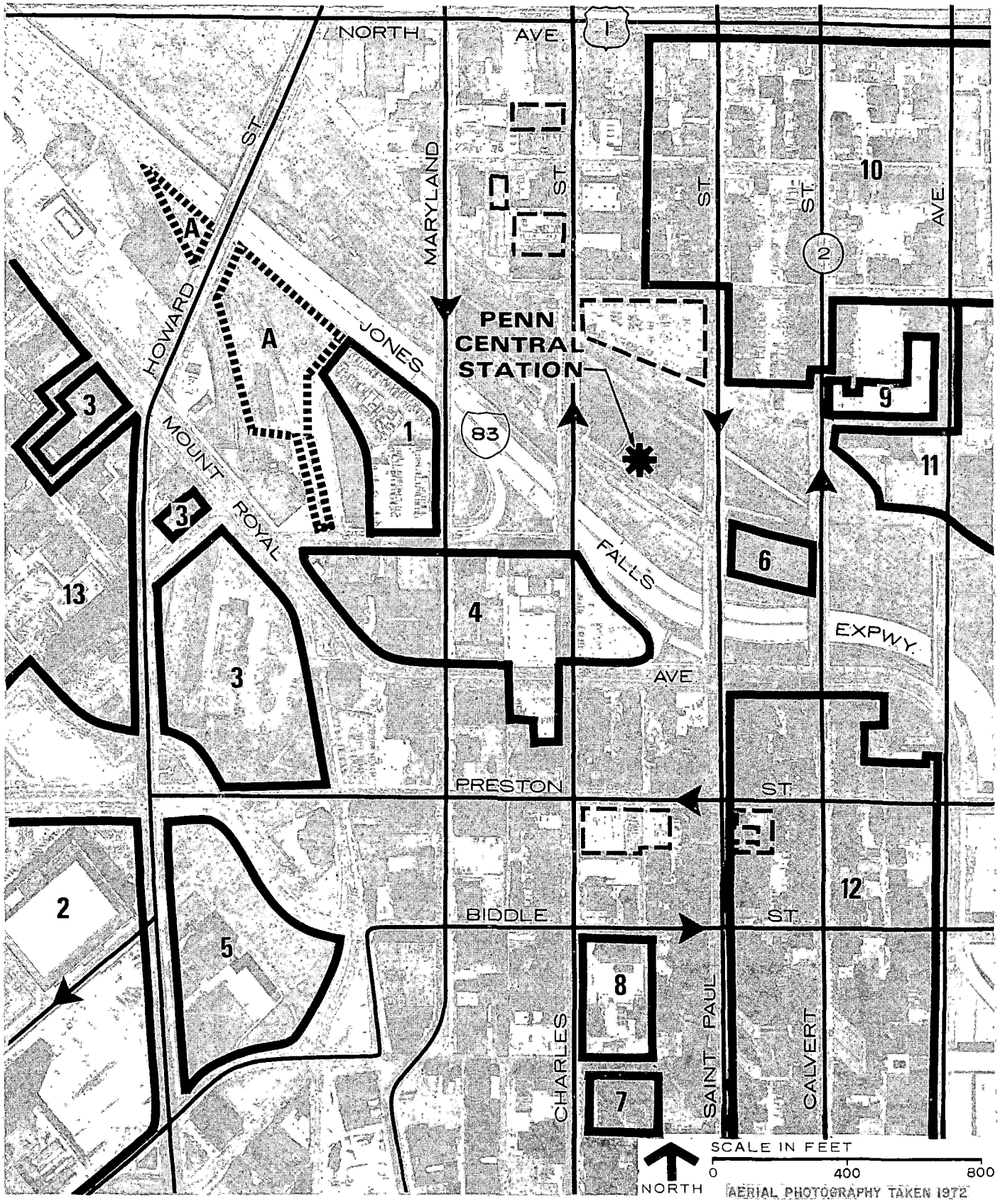
The main entrance for passengers, arriving by bus, taxi, auto drop-off or by foot, is at Penn Station Drive.

A second entrance is located on Charles Street. Both entrances are situated at sidewalk grade, and are protected by overhead canopies.

Automobile Access

The Jones Falls Expressway furnishes freeway access to Penn Central Station; two off-ramps (one to Maryland Street and one to St. Paul Street) and an on-ramp to Charles Street are within two blocks of the terminal.

St. Paul and Charles Streets furnish arterial access to and from the CBD. The one-way street system and preferential signal system facilitate traffic flow to and from the downtown. A computerized traffic-signal system is planned for the metropolitan area. While larger volumes of traffic are anticipated, future traffic conditions should be similar to those which exist today.



LEGEND

PARKING

BUS ROUTE

EXISTING ACTIVITY CENTER (SEE TABLE 8-2)

PROPOSED ACTIVITY CENTER (SEE TABLE 8-2)

PLANNING FACTORS
PENN CENTRAL STATION
BALTIMORE, MD
FIGURE 8-3

TABLE 8-2

ACTIVITY CENTERS, GENERAL TERMINAL AREA

EXISTING ACTIVITIES

1	U.S. Post Office and garage property
2	State Office Building Complex and Armory
3	Maryland Institute of Art
4	University of Baltimore and Lyric Theatre
5	Baltimore Life Insurance Company
6	Old Post Office (City Department of Finance)
7	Belvedere Hotel
8	Monumental Life Insurance Company
9	Schools 123 and 32
10	Single Family homes/apartments. Medium density, middle to moderate income
11	Warehousing, light industry, offices
12	Predominantly multi-family residential. Medium to high density
13	Madison Park South (Bolton Hill Area), including Sutton Place Appartments

PROPOSED ACTIVITIES

A	Proposed University of Baltimore parking

Most vehicular travel, in the vicinity of the terminal, requires use of that segment of Charles Street between Lanvale Street and Mount Royal Avenue. Since the on-ramp to Jones Falls Expressway is also located on Charles Street, this segment is the most heavily used roadway in the terminal area. The effect on Penn Central Station has been to reduce accessibility during the evening peak hour.

Charles Street, Lanvale Street, St. Paul Street and Penn Station Drive form a one-way loop around the terminal. Drivers arriving from the south, who wish to use the short-term parking spaces on Penn Station Drive, must circle the entire terminal block in order to reach the parking area. After picking up their passengers, they must again circle the terminal before heading south on St. Paul Street.

Access from the north is much simpler, since drivers may approach the terminal southbound on St. Paul Street, drop off or pick up passengers on Penn Station Drive, and then return north on Charles Street.

Other Connections

Taxis are readily available at the terminal. There is a taxi bay directly in front of the main entrance on Penn Station Drive and an additional drop-off area is provided on Charles Street. There are 1,151 licensed cabs in the city. Rates are $0.50 for the first one-third mile and $0.10 for each additional one-third mile.

Two rent-a-car agencies are housed within the terminal facility, Airways and Hertz. Airways' cars are parked on a lot one block northwest of the terminal. On an average day, five patrons rent this company's vehicles. Hertz provides pick-up service for their customers, from the terminal to their facility in downtown Baltimore. Hertz also provides a drop-off area for cars on the northeast side of Penn Station Drive.

Pedestrians and drivers, using terminal parking lots, must traverse at least one bridge to reach the terminal. This requires walking along a narrow sidewalk adjacent to a heavily traveled roadway.

8.3.2 PARKING

Parking appears adequate to meet existing terminal demand.

Free, short-term parking (30 minutes) is allowed directly in front of the terminal's main entrance for those waiting for arriving passengers. Curb parking is restricted in the vicinity of the terminal. Time limits range from one-half hour to four hours; where metered, the rates are $0.50 per half hour.

Within a 1,200-foot walking distance, there are 600 long-term parking spaces available to terminal users. Penn Central owns the parking lot directly north of the terminal (capacity 200) which is operated by the J&L Parking Company, specifically for railroad patrons. The parking rate is $2.00 per day. Other parking facilities have competitive prices and are also used by the rail patrons.

Free parking, for railroad employees, is provided directly below the Penn Central Station at track level.

There is an increasing demand for parking in the general terminal area, due to the proximity of the Mount Royal section of MetroCenter. Some improvement in the overall parking situation will take place with the construction of a new 580-space parking facility on the old Penn Central maintenance yard (Bolton Yards), southwest of the terminal. This facility is scheduled to be in service by 1980.

8.3.3 PASSENGER PROCESSING

For Existing Main Floor Plan, see Figure 8-4; for Existing Platform Plan, see Figure 8-5.

Functional Flow

On entering the terminal from Penn Station Drive, passengers walk through the waiting room, purchase tickets at the counter, check baggage, and proceed to seating in the waiting room or in the concourse. See photos 2 and 3.

Stairs, escalators and a moving ramp, in the case of the Metroliner platform, lead from the concourse to the respective platforms.

Platforms, Nos. 1, 2 and 3, are of low-level design. See photo 4. Access is controlled by doors at the top of the stairs.

Access to the high-level Metroliner platform (No. 4) is controlled at concourse level by a moveable barrier (stanchions and cordon). See photo 5.

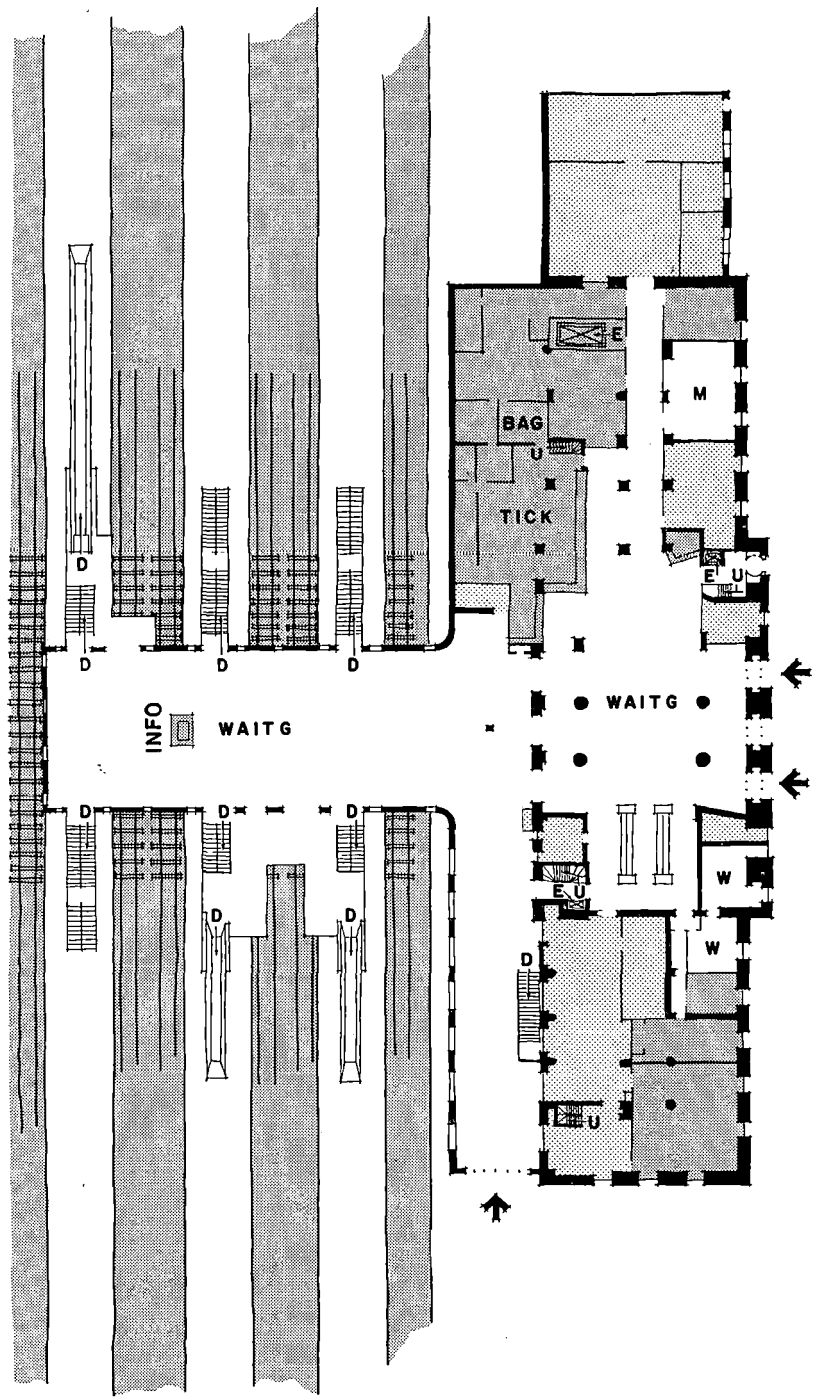
Platforms are 20 to 24 feet below concourse level.

Information

An information booth is located in the main concourse area. See photo 6. Above the booth an electronic train schedule board is prominently mounted, listing long distance and local train arrivals. Supplemental information boards are situated on the Metroliner high-level platform, but are not operational. Information can be obtained at this kiosk, as well as at the ticket windows. A public address system is operational, and announces train arrivals and/or departures.

Ticket Purchase

Ticket counters are readily visible on entering from the main entrance. See photo 7. Of 10 ticket selling positions, two dispense Metroliner tickets exclusively, six are available for all types of transactions and two are temporarily blocked off.



NORTH

SCALE IN FEET
0 25 50

MAIN FLOOR PLAN

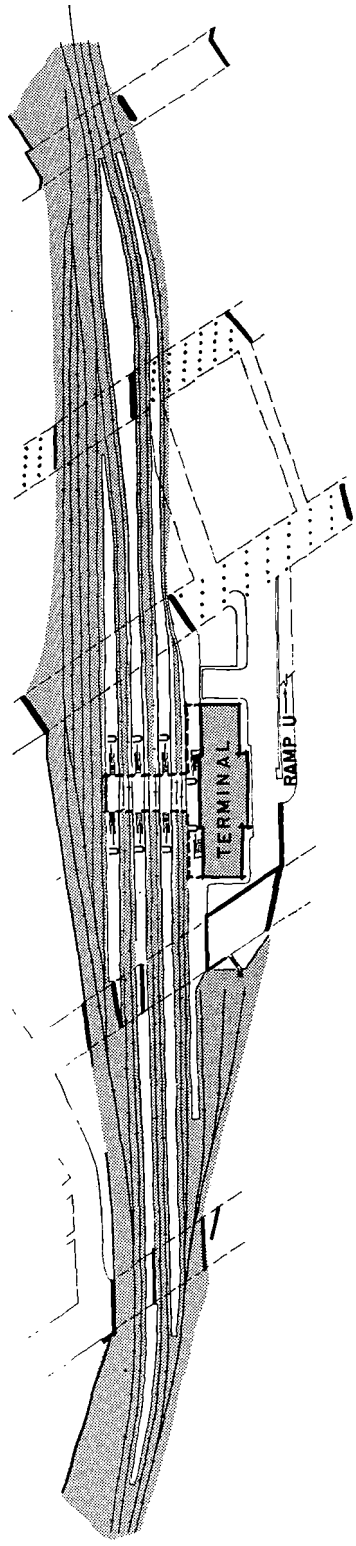
LEGEND

CONCESSION

RAILROAD FUNCTION

DC/STV

EXISTING PENN CENTRAL STATION
BALTIMORE, MD
FIGURE 8-4



NORTH

SCALE IN FEET
0 100 200

PLATFORM PLAN

LEGEND

RAILROAD FUNCTION

EXISTING PENN CENTRAL STATION
BALTIMORE, MD

FIGURE 8-5

DC/STV

Baggage Handling

Baggage is checked at one end of the ticket counter, pushed through a pass door, stored either in the ticketing area or in the baggage room (see photo 8), and processed to baggage-carrying carts. Baggage to be claimed follows the reverse route.

Freight elevators transport baggage between the storage room and platform No. 1. At-grade rail crossings connect low-level platforms No. 1 through No. 3. A ramp connection to the high-level train platform No. 4 completes the baggage handling facility.

Handicapped persons are assisted to and from trains via this baggage route.

8.3.4 PUBLIC SERVICES

Men's and women's rest rooms, storage lockers, pay telephones, car rental facilities, and mail boxes are located at main floor level. Additional pay phones are located in the women's waiting room and on the high-level platform.

8.3.5 CONCESSIONS

A restaurant, snack bar, barber shop, cocktail bar, news stand, shoe shine stands and various vending and amusement machines are located on the main floor level.

8.3.6 RAIL PASSENGER OPERATIONS FACILITIES

The Amtrak Manager of terminal Passenger Services and other supervisory personnel share office space situated adjacent to the baggage room.

Ticketing clerks occupy space next to the ticket counter sales area. See photo 7. Low partitions subdivide this space into office cubicles for the cashier, secretary and a general storage area. The ticket sales supervisor and the baggage room are accessible from the ticket office.

An open metal stairway leads from the ticket office up to a mezzanine, employee lockers and lunch room. Part of the lunch room also functions as ticket and general storage space.

Penn Central police forces occupy a two-room office suite adjacent to the women's lounge. A trackside office, accessible from platform No. 1, houses the Penn Central Station Master. Other Penn Central supervisory and general office personnel occupy portions of the second and third floor. The fourth floor is rented for a nominal fee to a local theater group.

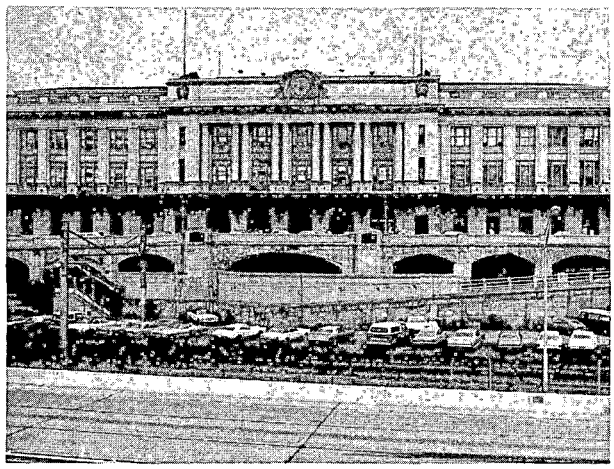
8.3.7 FACILITY CONDITION

Structural Integrity

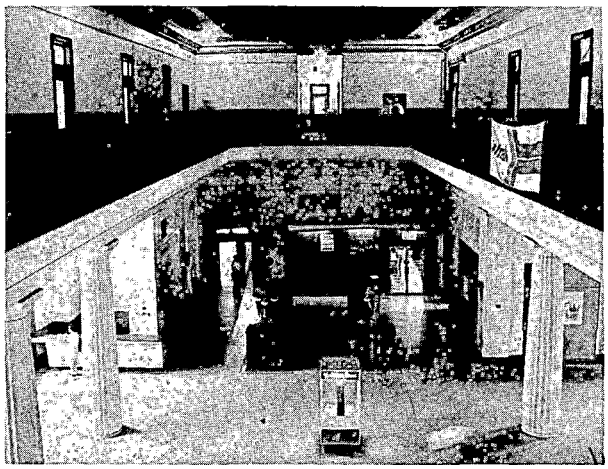
Masonry surfaces above street level appear to be sound. Some exposed masonry surfaces below street level show signs of deterioration. The concrete surfaces of the ramp structure under Penn Station Drive are crumbling.

PENN CENTRAL STATION – BALTIMORE, MD

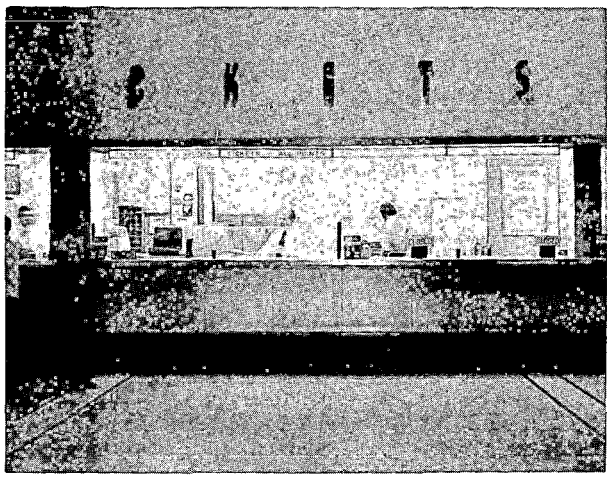
EXISTING FACILITY



1. Terminal Main Entrance Facade from Jones Falls Expressway



2. Interior Waiting Room

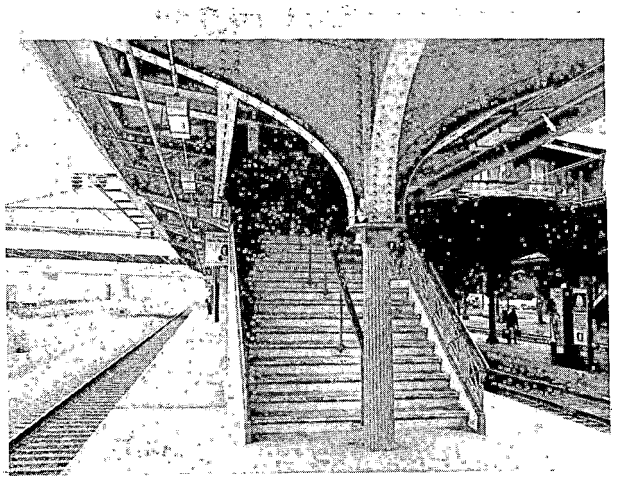


3. Ticket Sales Counter

4. Low-Level Platforms with Canopies and Concourse Above

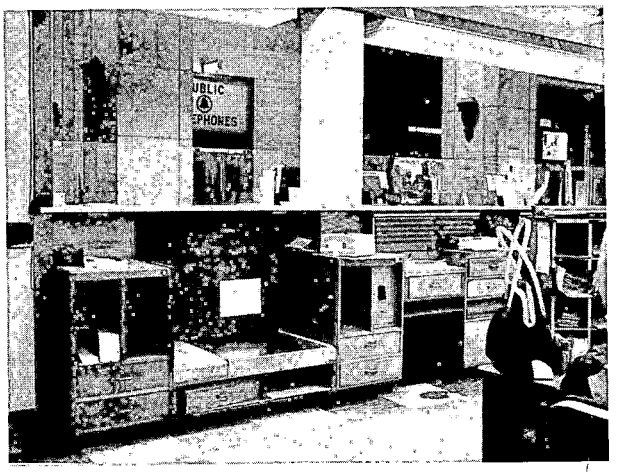
PENN CENTRAL STATION – BALTIMORE, MD

EXISTING FACILITY (Cont'd)

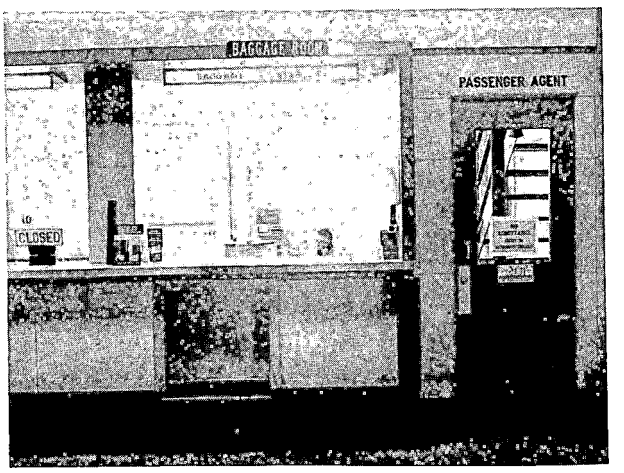


5. Stairway to High-Level Platform

6. Main Concourse View toward Information Booth



7. Ticket Office Sales Area



8. Baggage Counter

Exterior

Masonry building walls and roofing surfaces are in need of repair. Degradable building materials, such as wooden windows and doors, need to be replaced. Visible surfaces are in need of cleaning. Low-level platform surfaces and canopy roofs need renewal. The newer Metroliner platform appears to be in good condition.

Interior

The main waiting room, a two and one-half story space of classic design, is in need of cleaning, minor repair and refurbishing. Interior concourse surfaces are in need of general reconditioning.

The ticket sales area needs to be separated from other office functions and made more secure. All offices need reconditioning. Toilet rooms are outdated and difficult to maintain.

Utilities

Heating is provided by a 10-year old boiler plant reported to be in good condition.

Distribution of heat by cast-iron steam radiators is not uniform. Auxiliary gas-fired unit heaters are used as supplements in the main concourse.

No central air conditioning system exists at present. Individual window units serve various offices and shops. Ventilation is generally provided by opening windows. Water, electrical service, gas and sanitary waste disposal services are reported to be adequate for present needs.

Existing elevators are outmoded.

8.4 FORECAST ACTIVITY LEVELS

8.4.1 PROJECTED DESIGN DAY PATRONAGE

The 1990 peak-design day is expected to be 9,000 HSR patrons and 1,700 commuters (one way). The total peak-day loading would therefore be 10,700 per day or over a five-fold increase from the present terminal use, which is approximately 2,000 people per day.

A high level of HSR use is expected due to the continued growth of downtown activities in Baltimore and the convenience of using HSR for traveling to other cities in the Northeast Corridor, particularly for travel to Washington, D. C.

Peak-hour patronage is expected to reach 1,400 HSR and 1,000 commuter passengers for a total loading of 2,400.

8.4.2 PROJECTED MODE OF ACCESS

The projected mode of access calls for a substantial increase in transit use, but how large an increase depends on what rapid transit plans are eventually adopted. Although there will be a decline in the percentage of persons arriving by automobile, access by automobile is still expected to dominate, with an expected 25 to 35 percent of patrons using parking, and 25 to 40 percent depending on kiss-and-ride. Pedestrian traffic, between the Mount Royal area and the terminal, is also expected to increase.

Percentages of daily passenger arrivals were projected by mode, as follows:

	Percentage		
	Low	High	Median
Park-and-ride	25	35	30
Park-and-ride passenger	5	15	10
Kiss-and-ride	25	40	25
Rail transit	15	25	15
Bus	5	10	5
Taxi and limousine	10	15	10
Walk	5	10	5

8.4.3 PARKING REQUIREMENTS

Estimated parking requirements for HSR passengers, based on a 1990 design-day patronage of 9,000, range from 2,200 to 3,200 spaces with a median value of 2,700 spaces.

8.5 PLANS AND PROPOSALS

8.5.1 TERMINAL IMPROVEMENTS

No terminal improvement projects are under construction or in final design.

Requests for improvements by the Amtrak Manager of Passenger Services to alleviate operational deficiencies include:

(1) Improved security system at ticket sales area and cashier's office.

(2) Separation of functions within existing ticket office including sales area, clerk area, storage space and offices.

(3) Improvements to baggage handling and storage facilities.

(4) Provisions for employee's lounge, lunch room, toilets and locker room.

(5) Improvements to Passenger Service office.

The Amtrak Design Group has developed a terminal concept plan for rearrangement of interior terminal spaces and renovation of architectural surfaces. Suggested is a pedestrian passageway structure connecting the main concourse to a parking structure, to be located on the Lanvale Street parking lot, north of the terminal.

In August 1974, a local Baltimore architectural firm was commissioned by the Baltimore City Planning Department to study improvements to the interior of the terminal and the access to the parking lot. The Amtrak concept plan was made available to the firm as input data.

8.5.2 FUTURE LAND USE PLANS

Radical change in land uses in the area north of Penn Central Station appears unlikely. Rather, the area is expected to gradually rehabilitate and renew itself through scattered private efforts. Radical change at, and south of, the terminal is more likely.

Penn Central Station is on the northern fringe of MetroCenter. At the terminal, the MetroCenter plan recommends a concentration of transportation uses, including parking and a direct link to a future rapid-transit terminal, with an adjacent motel and restaurants. Related office and commercial space would be developed along Charles Street. The Jones Falls Expressway and the tracks, in the vicinity of the terminal, would be covered by a platform, with parks, plazas and parking, to create an environment to attract high-rise apartments and a variety of commercial uses at its borders.

Proposals for Mount Royal Center, southwest of the terminal, are related to the existing educational and cultural facilities in the area. They include: rehabilitation and completion of the Lyric Theatre; expansion of the Maryland Institute on its present site; and, expansion of the University of Baltimore on several sites around its present buildings. Additional parking and pedestrian overpasses would be built in the area.

Directly south of the terminal in the Mount Vernon area, the future land use is expected to be primarily residential, with parking in structures serving access points. Future commercial and service areas are expected to be oriented to local residential needs.

While some of the suggestions for MetroCenter are on a grand scale, they represent the official policy of the City Planning Commission, and the city has already been successful in implementing ambitious redevelopment plans in the Charles Center and Inner Harbor areas. The overall impact of the MetroCenter plan, on Penn Central Station, would be to tie the terminal area more closely to the heart of the city through the creation of an attractive setting, with nearby increased concentrations of cultural and government activities.

8.5.3 STREET AND TRAFFIC IMPROVEMENTS

The projected increased use of the terminal will have a significant impact on the existing highway facilities in the terminal area. There are, however, highway improvement plans which, if carried out, will minimize this impact. Among these are the extension of Jones Falls Expressway (I-83) to the Inner Harbor area; this would alleviate congestion caused by through traffic entering and leaving I-83 near the terminal. The Baltimore Development Program for 1973-78 also recommends the widening of North Avenue and the redesign of Mount Royal Avenue; both improvements would increase the traffic-carrying capacity of the arterial system, and result in improved traffic flow in the general area.

8.5.4 TRANSIT IMPROVEMENTS

A rapid transit system for the Baltimore region is now in the planning stage. In addition, an improved commuter rail system, in the Baltimore area, is under consideration. Both systems could improve accessibility to Penn Central Station as well as lessening parking needs, traffic congestion and highway trips.

The rapid transit system proposed for the Baltimore region is essentially a "star," with Charles Center at the axis. The regional system calls for six major transportation corridors, radiating from downtown to the north, northeast, southeast, south, west and northwest. The system is to be developed in stages, with Phase I implementation proposed in the northwest and south corridors.

The Phase I system would be composed of two high-speed rapid transit lines: the Northwest Line, linking Charles Center with Owings Mills in Baltimore County; and, the South Line, from Charles Center to the Baltimore-Washington International Airport and Marley in Anne Arundel County. The rapid transit station nearest to Penn Central Station would be Bolton Hill, to be located at the State office complex approximately one-half mile southwest. Special shuttle or feeder buses have been suggested to furnish a connection between Penn Central Station and the Bolton Hill rapid-transit station.

In the ultimate system, the North Line would be nearest to Penn Central Station. The actual alignment of this line and the terminal locations are presently being studied. The North Line is proposed for Phase II implementation of construction.

Alternatives to the North Line are also being examined. The Mass Transit Administration of the Maryland DOT has been studying a possible, new, commuter rail service. The new commuter service would extend from Cockeysville, in the northern suburbs, to Saratoga Street station in downtown Baltimore. It would operate on the Northern Central right-of-way. A stop would be provided at Penn Central Station. Platforms would be built south of the existing terminal at track level, where Penn Central employees currently park their cars. The new platforms would be connected to the existing terminal building.

8.6 RECOMMENDED 1990 ACCESS/EGRESS AND PARKING PLANS

The 1990 plan for Penn Central Station, Baltimore, includes street improvements, modifications in circulation and parking control, provision for a new parking structure, and mode interchange facilities, in addition to renovation and minor additions to the terminal building. The general concept plan is shown in Figure 8-6. Terminal improvements are discussed in Section 8.7.

8.6.1 STREET AND TRAFFIC IMPROVEMENTS

In addition to the major improvements proposed by the Baltimore Development Program for 1973-1978, specific street improvements are recommended for the immediate terminal area. These include modifications of Charles Street and Penn Station Drive, possible signal modifications, and alterations in the existing circulation pattern.

It is recommended that Charles Street be widened, south of the terminal, to minimize the conflict with the freeway-bound traffic, which turns left just south of the intersection of Charles Street and Penn Station Drive. This section of Charles Street is on structure over the Jones Falls Expressway.

It is proposed that Penn Station Drive be partly widened on the west side, established as one-way eastbound (instead of the present one-way westbound), and used for circulation and drop-off only.

All parking should be eliminated from Penn Station Drive.

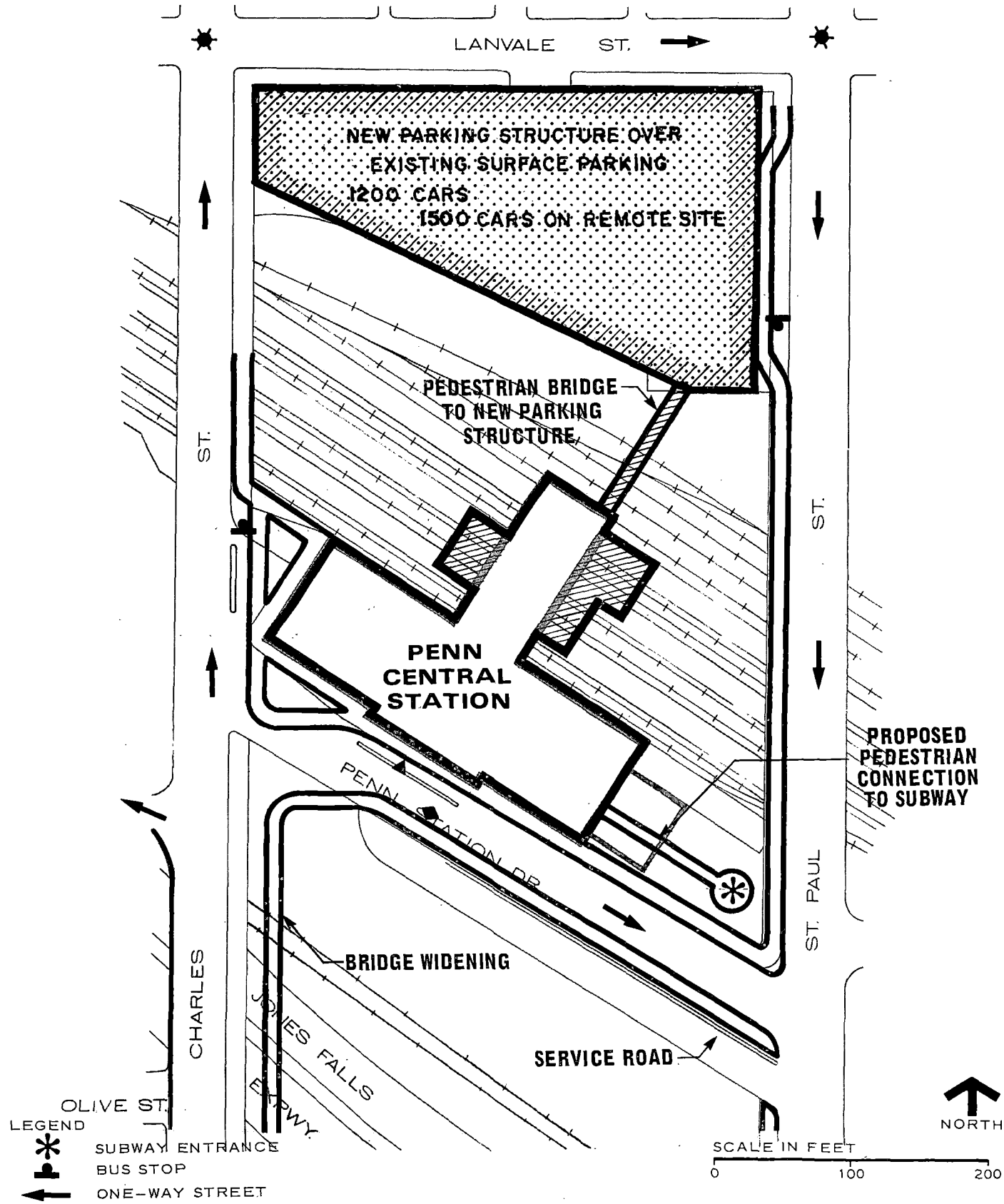
These improvements would facilitate access to the terminal from the CBD. Installation of a traffic signal at the St. Paul Street intersection may be required; however, the existing signal at Charles Street and Penn Station Drive could be eliminated.

Taxi and kiss-and-ride loading areas should be located on the ground level of the proposed parking garage, and along Penn Station Drive. The taxi loading area on Penn Station Drive would be directly at the main entrance, with kiss-and-ride loading and unloading on the south side of Penn Station Drive.

8.6.2 PARKING

The parking facility, to be built west of Penn Central Station, to serve the University of Baltimore, the Lyric Theatre and the Maryland Institute of Art, is expected to reduce the competition for parking spaces in the immediate vicinity of the terminal. However, the projected increase in HSR patronage will necessitate additional parking facilities.

A new parking garage is recommended on the site of the present parking lot, north of the terminal. The main entrance/exit to the garage should be on Lanvale Street. An entrance/exit on St. Paul Street should also be considered to facilitate use by patrons arriving from east and north of the terminal. The proposed parking garage should be connected to the rail terminal by a pedestrian bridge over the tracks.



1990 CONCEPT
PENN CENTRAL STATION
BALTIMORE, MD
FIGURE 8-6

The 1990 parking demand for HSR patrons is estimated to be between 2,200 and 3,200 spaces. The terminal site is insufficient to accommodate even the minimum projected total demand without constructing a facility so large that it would be extremely costly, unaesthetic and totally out of character with the area. Therefore it is recommended that a maximum of 1,200 spaces be provided at the site adjacent to the terminal. The remaining parking spaces required for HSR patrons could be furnished elsewhere, with shuttle service to the terminal.

8.6.3 INTERMODAL TRANSFER

Rapid Transit Interface

Encouragement should be given to establishing an alignment for the North Rapid Transit Line which will result in a stop at Penn Central Station, and thereby maximize the intermodal exchange capabilities with HSR. The 1990 concept plan envisages that the North Line would be built under St. Paul Street, with a pedestrian connection between Penn Central Station and the rapid transit station.

Bus Stops

Regardless of whether a new transit station or new commuter rail facilities are built at Penn Central Station, allowance must also be made for improved local bus service. The 1990 concept therefore includes provisions for local bus routings, with bus bays on both Charles Street and St. Paul Street. The one-way street system around the terminal does not make a local bus stop, at the main terminal entrance, desirable. Instead, the bus bays should be located to generally minimize walking distances to the terminal.

Intercity Bus-Rail Terminal Concept

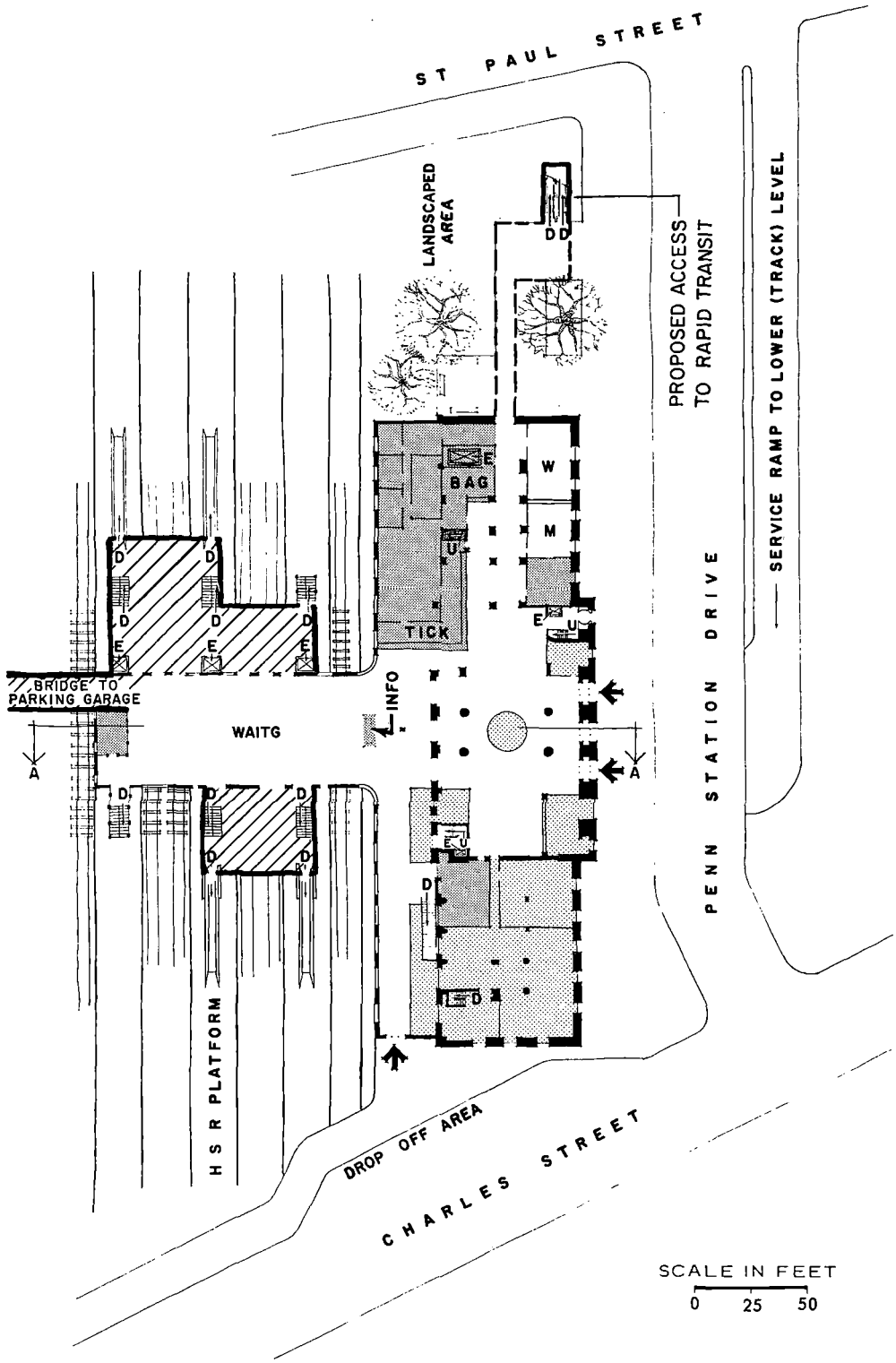
A combined rail and intercity bus terminal at Penn Central Station appears undesirable for several reasons. First, the additional traffic generated may be beyond the carrying capacity of adjacent streets, and could be detrimental to surrounding neighborhoods. Second, the location may be less advantageous to the bus lines than their existing facilities close to the CBD. Finally, there is no data indicating the existing or potential volume of bus-to-train transfers. It is recommended that consolidation of HSR service with an intercity bus depot, on the site, be considered only after detailed study of any potential benefits and impacts which could result.

8.7 RECOMMENDED 1990 PASSENGER TERMINAL PLANS

The proposed terminal plans are shown in Figures 8-7, 8-8 and 8-9.

8.7.1 PASSENGER ACCESS AND EGRESS

The proposed concept visualizes maintaining both the main entrance, facing Penn Station Drive, and the west end entrance, facing North Charles Street. A new east entrance, from a landscaped courtyard, would be developed in an area created by the demolition of an unused freight sales office. Entrance from the north would be via a pedestrian corridor over tracks linking the existing concourse and the new Lanvale Street parking facility.



MAIN FLOOR PLAN

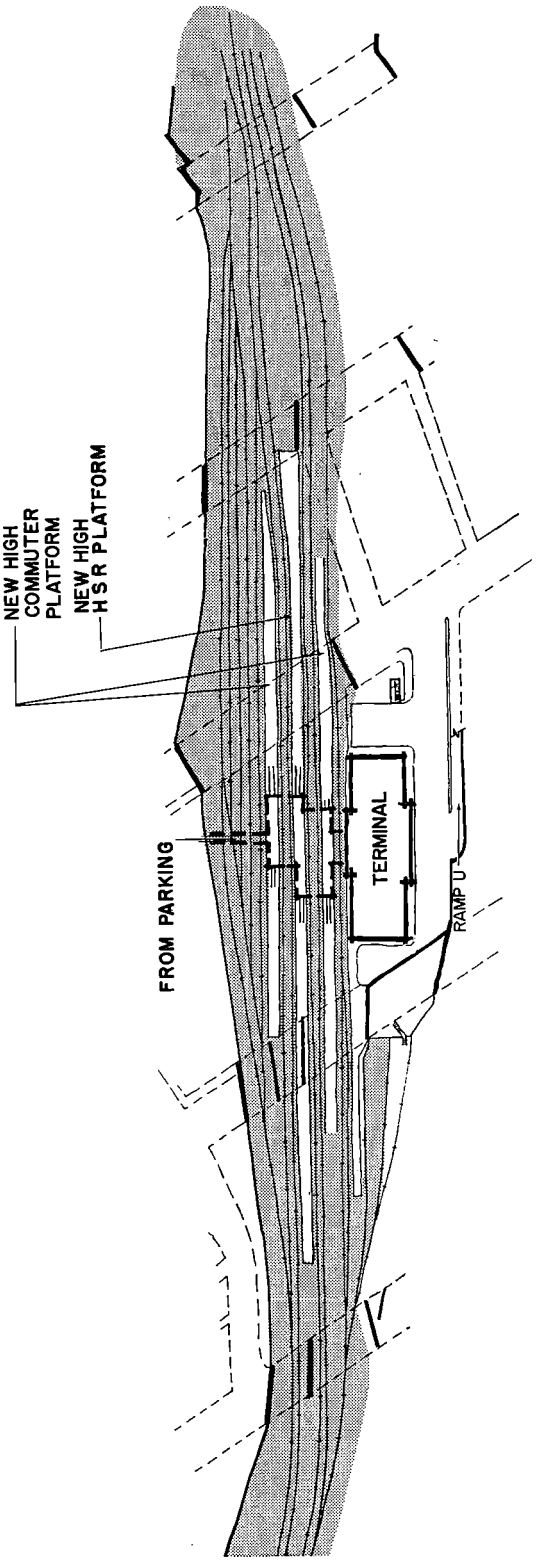
LEGEND

CONCESSION

NEW ADDITION

RAILROAD FUNCTION

1990 CONCEPT
PENN CENTRAL STATION
BALTIMORE, MD
FIGURE 8-7



SCALE IN FEET
0 100 200

NORTH

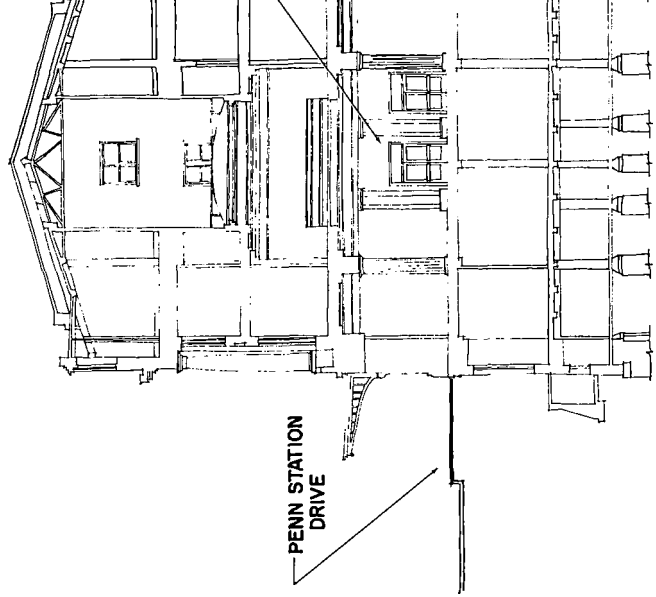
PLATFORM PLAN

LEGEND

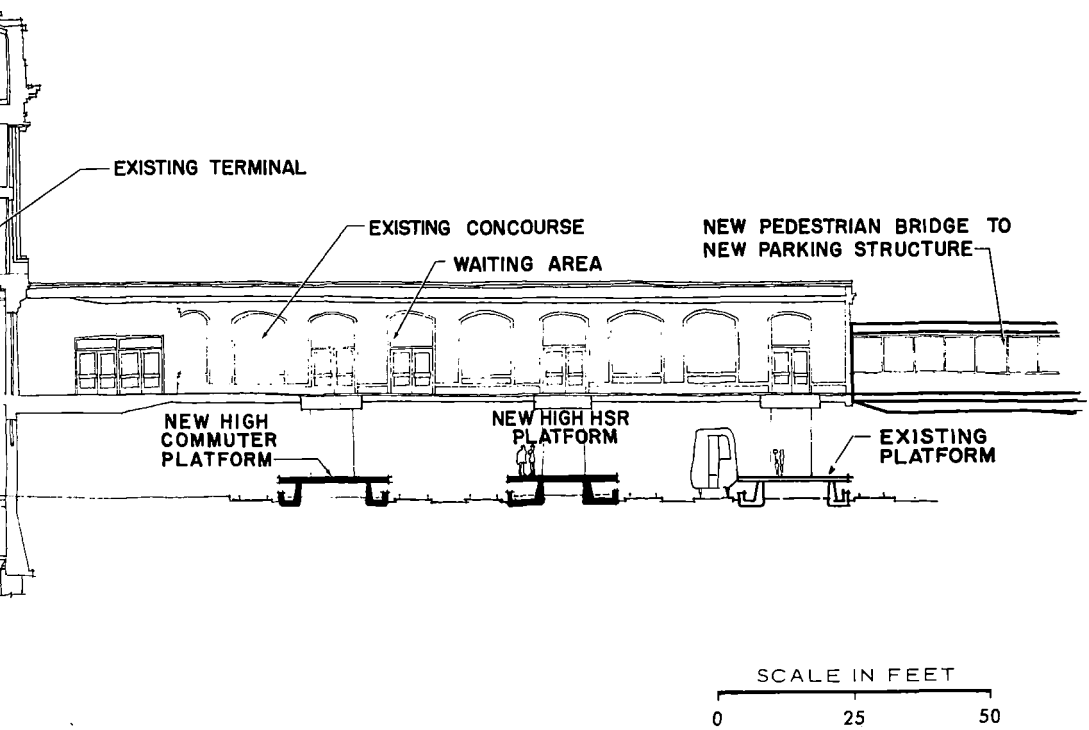
RAILROAD FUNCTION

1990 CONCEPT
PENN CENTRAL STATION
BALTIMORE, MD
FIGURE 8-8

DC/STV



1990 CONCEPT
PENN CENTRAL STATION
BALTIMORE, MD
FIGURE 8-9



SCALE IN FEET

0 25 50

CROSS SECTION A-A

Patrons arriving by taxi, limousine, auto drop-off or a shuttle bus would enter the terminal through the main entrance on Penn Station Drive. Passengers arriving by city bus would enter the Charles Street entrance from a curbside bus docking berth, or the Lanvale Street pedestrian corridor from a bus stop on St. Paul Street. Patrons, who have parked their cars, would also enter through the pedestrian corridor. Passengers transferring from the rapid transit station would enter a plaza area near Penn Station Drive and St. Paul Street, and walk a short distance to the new east terminal entrance.

The Charles Street and Lanvale Street entrances are intended for preticketed commuter use. Commuters would proceed directly into the concourse and down stairs and/or escalators to the short-haul commuter platforms. Returning commuters reverse this flow, using the concourse and corridors as train-to-curbside conduit, and, in effect, bypass the major processing areas.

Long-haul rail passengers, entering by the main Penn Station Drive entrance or by the new east-end plaza entrance, would proceed directly to the main waiting room. This space is visualized as the circulation center of the terminal. Ticket and baggage counters would be readily accessible from the lobby.

Trip arrangements completed, the passenger would proceed directly to the concourse waiting area or to a number of ancillary facilities accessible from the main lobby, including a restaurant, cocktail lounge, rest rooms, shops, terminal service manager or transportation office and traveler's aid booth.

Escalators, stairs and key-controlled elevators would carry passengers from the concourse to the train platforms. Access to the improved high-speed rail train platform would be controlled by the Train Master.

8.7.2 PASSENGER PROCESSING

Information

The information counter and electronic arrival and departure board would be relocated near the entrance to the north-south concourse, with remote TV monitors located at waiting, information and ticketing locations.

A public address system, audible on platforms and in other passenger processing or service areas, would augment visual information systems.

Waiting Room

The waiting room would be remodeled to serve as a lobby, circulation hub and access area to ticketing facilities, rest rooms, concessions and general operation offices. Connection to the concourse would be direct and easily visible. This area can become a natural display area for local industry, hotels and the city. Work required in this space would be complete cleaning, patching, painting, new lighting, and air conditioning.

Ticket Purchase

The present ticket counter would be replaced with new counters, and separated from the public by bulletproof glass. Slots for handling money and tickets and a suitable means of voice communication would be provided. Separate ticket windows would be designated for HSR and commuter trains. Ticket office functions would be separated from the sales counters.

Baggage Handling

Baggage check-in and claim counters would be adjacent to the ticket counter, with access to a storage room and freight elevator. Lost and found service would be furnished at this counter.

Concourse

The 25-foot-wide east-west concourse would be converted into a 15-foot-wide circulation corridor from Charles Street; the remaining 10-foot-width would be made available to concessions such as barber shop, shoe shine stand, vending area, photo booth, souvenir shop, etc. There would be a news stand at the intersection of the two concourses.

The main north-south concourse would be expanded to accommodate new elevators, stairways, additional escalators and queuing space at controlled accesses to the HSR platform. New group-terminal seating islands would be located at the center of the space. Seating areas would be carpeted and acoustically treated. Combination elevators would convey physically handicapped passengers and baggage from this area to each platform. The Train Master's office would be located at the north end of this concourse. Electrically-operated locked doors, actuated by terminal personnel from the information booth, would control access to the HSR train platform.

There would be telephone pedestal clusters (4 phones each) throughout the main concourse area. Additional telephones would be available on the platforms and near entrance vestibules.

Complete refurbishing of both concourses would include new wall and floor surfacing, new suspended acoustic ceilings, new lighting and new heating, ventilating and air conditioning systems.

Platforms

Platform No. 1, located adjacent to the terminal building, is not programmed for train service. Possible future uses of this area and portions of the basement would include additional concession space for a club, boutiques, etc. Access could be afforded by a new exterior stairway from the landscaped courtyard on the east end of the terminal and the existing platform stairs off the Charles Street entrance corridor.

Platform No. 2 is used for short-haul commuter trains (presently operated by Penn Central). A new canopied high-level platform, 850 ft long, would be built on the site of the existing No. 2 platform. The existing steel canopy framing on platform No. 2 would be cleaned and painted; skylight openings would be decked over and reroofed.

Platform No. 3, (the present Amtrak platform) would be rebuilt as a new canopied high-level platform, 1200 ft long. Tracks 3 and 4 would be repositioned to accommodate the new HSR platform.

Track geometry limits extension of platform No. 4, the present Metroliner platform. This platform is therefore programmed for use by other trains.

Platforms 2, 3 and 4 would be accessible by stairs, escalators and one elevator for each platform. Each elevator would be key-controlled, and used only by authorized personnel escorting physically handicapped passengers or for baggage.

The existing moveable ramp serving the Metroliner platform would be relocated for baggage handling. All stairways and escalators would be refurbished, and new escalators installed as required. Construction includes windbreaks and shelters; and, adequate lighting and infrared heating for each platform.

8.7.3 PUBLIC SERVICES

Rest Rooms

The women's lounge and rest room would be relocated in the southeast corner of the building, adjacent to the present men's rest room. Modern rest-room standards would govern new construction and the men's rest-room renovation, including ceramic tile walls and floors, wall-hung fixtures, ceiling-hung toilet compartments, electric hand dryers, suspended plaster ceilings, high-level lighting and adequate ventilation. Complete new plumbing and sanitary work, in this general area, would be required.

Lockers

Public lockers for short-term storage of baggage and personal belongings would be available the length of the east corridor, adjacent to ticketing, baggage claim and rest rooms.

Ground Transportation

Passengers would arrange for connecting transportation at a booth immediately inside the main entrance. This facility would be manned jointly, and offer direct phone lines to the various carriers. Services would include connections to other modes of travel, such as local and intercity bus, intracity rapid transit, airlines, limousine and taxi and car rental.

Travel Aid and Accommodations

A traveler's aid booth would be located opposite the ground transportation booth. Services would include general travel assistance, first aid, and directories for hotels, churches, local, state, and federal offices.

8.7.4 CONCESSIONS

Main floor concessions and commercial services would include: a news stand, restaurant, cocktail lounge, snack counter, barber and shoe shine service, gift and tourist shop, as well as food, drink, and entertainment vending machines. Additional floor area, available for commercial or railroad operations, includes:

	Approximate Square Feet
Basement Floor – track level	16,000
Mezzanine Floor	5,000
Cellar Floor	11,000
Second Floor	12,000
Third Floor	12,000
Fourth Floor	10,000

8.7.5 RAIL PASSENGER OPERATIONS FACILITIES

Passenger Services Office

A suite of offices, consisting of a waiting room, an office for the Passenger Service Manager, and desk space for his secretary, would be adjacent to the ticket sales area. These spaces would be renovated and air conditioned with carpeted floor, paneled and plastered wall surfaces, suspended acoustic-tile ceilings and flush-fluorescent lighting fixtures.

Ticket Offices

A suite of rooms, behind and separated from the ticket counter, would house the supervisor's office, cashier's office with safe, a sales and clerk area, storage room for tickets, supplies and equipment, and an employee's lounge with rest rooms. These areas would be air conditioned and finished with vinyl-asbestos floor tile, plastered wall surfaces, suspended acoustic-tile ceilings and flush-fluorescent lighting fixtures.

Security

A new security office would be constructed within part of a former telephone room. Closed-circuit TV cameras would scan platform levels, stairs and escalators, passageways and terminal entrances. TV screens would be monitored in the security office at all times of terminal operation.

8.7.6 UTILITIES

Heating, Ventilating and Air Conditioning

Planned renovations propose combining heating and air conditioning systems as follows:

(1) Waiting Room – Install a single-unit, direct-expansion air conditioning system with steam coils in the air handling unit. Extend ductwork from the air conditioning unit to the waiting room. Room air circulation would be contained in the lower level of the room. The high bay area would not be air conditioned.

(2) Concourse Areas – Install two roof-top, packaged single-zone air conditioning units with steam coils. Ducts would extend from the air conditioning units to ceiling and/or sidewall supply outlets.

(3) Offices and Ticket Areas – Install a multizone-type, direct-expansion air conditioning system with steam coils. Ducts would extend from the air conditioning unit to ceiling supply outlets for each cooling zone.

(4) Restaurant – Install a direct-expansion, single-zone air conditioning system with steam coils. Ducts would extend from the air conditioning unit to ceiling supply outlets.

(5) Toilet Areas – Provide mechanical exhaust system to properly ventilate areas.

(6) Kitchen – Install a ventilation system to properly ventilate the kitchen and appliances.

(7) Public Vestibules, Entrances and Exits – Install wall-mounted recirculating-type, fan-equipped heaters to effectively control air infiltration into the interior areas.

Electrical Service

Electrical service and distribution is adequate for present use. Additional capacity will be required for air conditioning, new elevators and escalators and increased lighting loads.

Water

Municipal water service is adequate for present and future terminal uses. New toilet facilities and relocated drinking fountains will require new piping within the building.

Gas

Gas service to and within the building is adequate for present and projected usages.

Sanitary Sewer

Relocation and updating of rest room facilities will require interior modifications to the sanitary sewer system.

8.7.7 EXTERIOR BUILDING RENOVATIONS

Exterior Masonry

All exposed masonry surfaces would be cleaned by sandblasting, steam cleaning or other appropriate methods. Joints would be pointed and restored as required.

Windows

Wood frames and sash on the main floor would be replaced with new bronze anodized-aluminum windows. Proportions and divisions would match the existing openings. All main floor sash would be required.

Upper story sash could also be replaced and existing window air conditioning units removed, with costs allocated to tenants. New spandrel panels could be provided with grills for future air conditioning and heating units as tenant needs require.

Entrances

All main passenger entrances to the building would have treadle-operated doors (one leaf-in pair and one leaf-out pair) with sidelights and transoms. The existing masonry openings would be utilized.

New canopies extending to the roadways would protect passengers at the Penn Station Drive and Charles Street entrances.

Landscaping

Terminal landscaping and street furniture would include planter boxes for trees and shrubs along Penn Station Drive and in the proposed entrance courtyard, at the east end of the terminal. Roadway and accent lighting standards and fixtures, outdoor seating, information booths, and textured sidewalk and crosswalk surfaces would also be proposed.

8.8 CAPITAL COSTS

Unit costs based on current prices have been developed for major renovation and construction items. These unit prices and the illustrated concept sketch plans form the basis for the following estimate of construction costs:

Terminal work, including renovation and new additions	$ 934,000
Platforms and canopies	1,423,000
Escalators, stairs and elevators	1,092,000
HVAC, plumbing and lighting	345,000
CCTV surveillance and electronic information systems	170,000
Sitework including paving, curbs and sidewalks	185,000
Widening of Charles Street bridge - 50% cost	100,000
Subtotal terminal and site work	$4,249,000
Contingency – 25%	1,062,000
Total terminal cost	$5,311,000

Construction of the HSR high-level platform requires minor track adjustments. Costs for trackwork, relocation of signals and communication lines, and catenary wiring adjustments are not included in this estimate.

The proposed widening of the Charles Street bridge over the Jones Falls Expressway assumes broad range benefits; therefore, 50 percent of the construction cost of this project is assumed chargeable to the HSR program.

Parking facility construction cost was calculated at a rate of $3,300 per car space, for an approximate median of 2,700 parking spaces, within a range of 2,200 to 3,200 spaces required for HSR patrons, as follows:

Parking structures	$8,910,000
Land acquisition for parking structure	$ 600,000

Site dimensions of the Lanvale Street parking lot, owned by Penn Central and operated by a private firm, indicate a maximum capacity of 900 car spaces on six parking levels. Therefore, land would have to be acquired to accommodate the remaining 1,800 cars. The indicated land acquisition cost, based on $2,000 per ground-floor car space, also assumes a maximum six-level parking facility.

8.9 SCHEDULING AND PHASING OF CONSTRUCTION

Early implementation is recommended for improvements in the ticket sales area and in the supervisory and Passenger Services offices.

Continuity of HSR and commuter service would be maintained on platform No. 4 (Metroliner) and platform No. 2, during construction of the new 1,200-foot-long HSR platform (platform No. 3). Minor track, turnout and catenary adjustments would be required in the vicinity of the St. Paul Street bridge pier. These adjustments allow for an essentially center-loaded (access at mid-points) HSR platform.

Upon inauguration of service at platform No. 3, commuter service would be relocated to platform No. 4, and platform No. 2 would be reconstructed to high-level, passenger-platform standards.

All terminal and site improvements would be undertaken during a two-year implementation period. Construction of a multi-deck parking structure on Penn Central property could be included in this time frame. As patronage and parking demand increases, it would be necessary to acquire property for construction of a second parking structure for use by HSR patrons.

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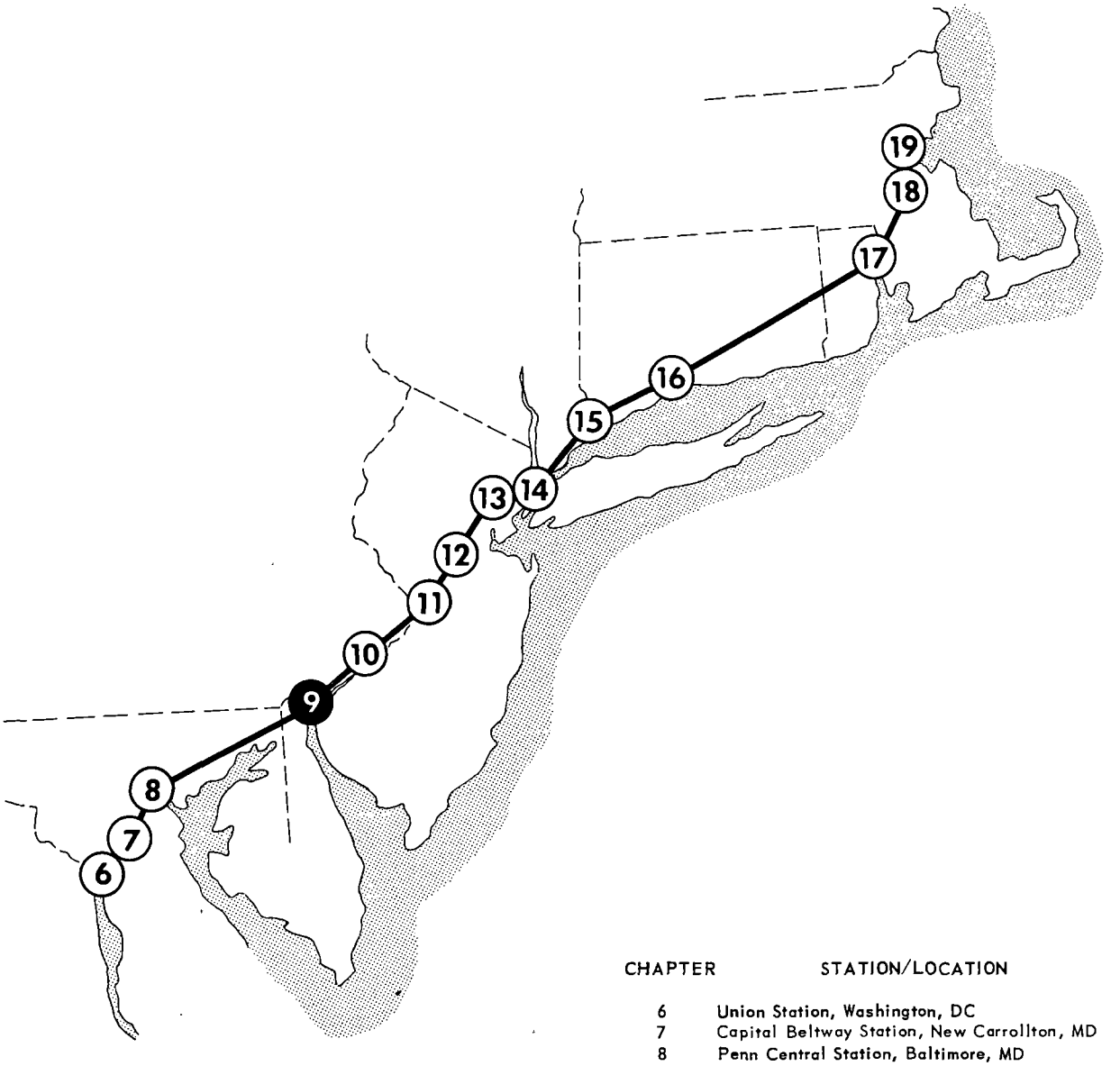
STATION LOCATIONS ALONG NORTHEAST CORRIDOR



CHAPTER	STATION/LOCATION
6	Union Station, Washington, DC
7	Capital Beltway Station, New Carrollton, MD
8	Penn Central Station, Baltimore, MD
9	Wilmington Station, Wilmington, DE
10	Penn Central Station, 30th Street, Phila., PA
11	Trenton Station, Trenton, NJ
12	Metropark Station, Iselin, NJ
13	Penn Central Station, Newark, NJ
14	Pennsylvania Station, New York, NY
15	Stamford Station, Stamford, CT
16	New Haven Station, New Haven, CT
17	Union Station, Providence, RI
18	Route 128 Station, Dedham, MA
19	South Station, Boston, MA

9.0 WILMINGTON STATION, WILMINGTON, DELAWARE

9.1 STATISTICAL FRAMEWORK

9.1.1 OWNERSHIP AND USERS

Wilmington Station is owned by the Penn Central Transportation Company and used by Amtrak and the Penn Central. Penn Central commuter operations between Wilmington and Philadelphia are subsidized by the Southeastern Pennsylvania Transportation Authority.

9.1.2 PROPERTIES AND FACILITIES

Facilities include a multi-level terminal building with a passenger processing area on the main floor; two low-level commuter platforms; and, one high-level Metroliner platform. South of the elevated tracks, the terminal is a three-story structure; upper floors are little used and house railroad operations' offices, and a large waiting room. North of the tracks, the building is a two-story structure with a clock tower; a portion of the second floor has two waiting rooms for commuters, which are closed to passengers.

The terminal building is a brick and granite structure, built in 1905. The Metroliner platform was constructed in 1969.

9.1.3 CURRENT ACTIVITY LEVELS

On an average weekday in 1974, 48 Amtrak trains stopped at Wilmington Station; 28 of these trains were Metroliners. In addition, 54 Penn Central commuter trains used the terminal. Peak-period use occurred between 6 p.m. and 7 p.m. when nine trains stopped at Wilmington. Six trains used the terminal between 7 a.m. and 8 a.m.

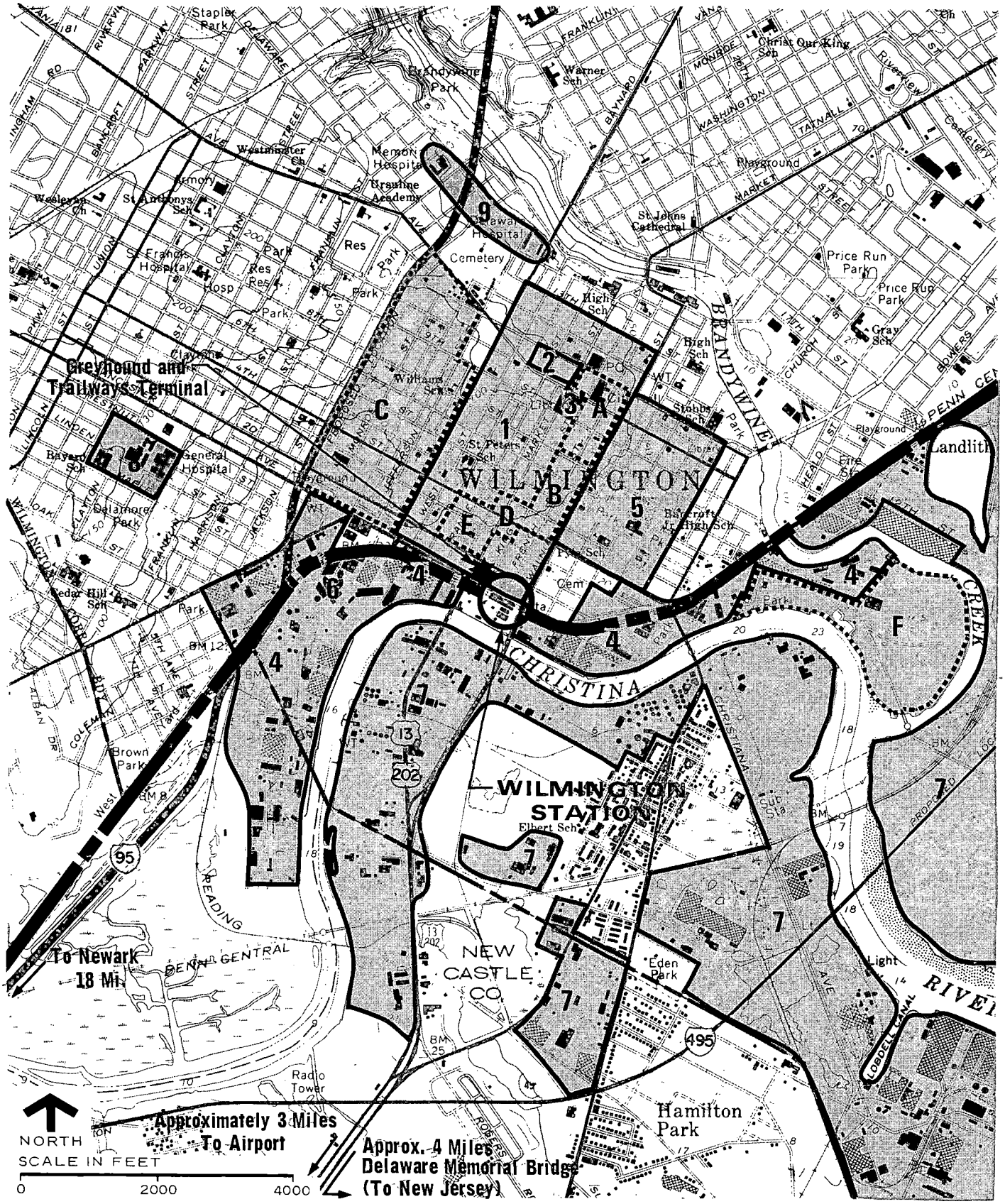
One-way patronage, originating or terminating in Wilmington, included 600 commuters and 900 Amtrak passengers. A 1973 survey indicated that New York trips accounted for approximately half of all Amtrak patronage; Philadelphia trips for 22 percent; and, Washington trips for 18 percent.

Most patrons arrive at the Wilmington Station by automobile. A survey conducted in 1966 indicated that 32 percent of arrivals were park-and-ride, 26 percent, kiss-and-ride, 14 percent, walking, 13 percent, bus transit, 10 percent, taxi, and five percent by other trains. While this survey was conducted prior to the introduction of Metroliner service and operation of local bus service by the Delaware Authority for Regional Transit, recent field observations indicated that survey percentages are still generally accurate.

9.2 TERMINAL VICINITY INFRASTRUCTURE

9.2.1 LOCATION CONSIDERATIONS

Figure 9-1 shows the location of Wilmington Station in relation to transportation facilities and major activity centers in the terminal area. Activity centers are listed in Table 9-1.



LEGEND

EXISTING ACTIVITY CENTER (SEE TABLE 9-1)

HIGH SPEED RAIL

PROPOSED ACTIVITY CENTER (SEE TABLE 9-1)

STATION LOCATION
WILMINGTON STATION
WILMINGTON, DE

FIGURE 9-1

TABLE 9-1

ACTIVITY CENTERS, CITY SETTING

EXISTING ACTIVITIES

1 Central Business District–includes new Market Street Mall, City Hall, and Major Office Buildings

2 Dupont Company Headquarters

3 Hercules Tower and Library

4 Wholesale and Light Industry

5 Medium-Low Density Residential

6 Delaware Power and Light Company Gas Works

7 Industrial

8 Hospital and School

9 Hospital area

PROPOSED ACTIVITIES

A Civil Center (Proposed Government Plaza and Retail Complex)

B Proposed Customs House Square Project–major commercial and offices

C West Center City Renewal Project

D Proposed Market Square Area

E Proposed Institutional and Cultural Complex and Delaware Technical and Community College

F Proposed Commercial-Recreation Area and Marina

Location with Respect to Regional Highway System

I-95, which forms an incomplete connection between Philadelphia and Baltimore, passes through the heart of Wilmington. Four miles south of the city, it interconnects with I-295 which crosses over the Delaware River via the Delaware Memorial Bridge to New Jersey. Presently, I-495, to the east, and State Route 141, to the west, are being built around the City. These two routes will function as a beltway around Wilmington, and as connectors to major outlying centers of activity.

I-95 currently serves as the major regional access route to central Wilmington. When completed, an I-495 connector to downtown will also serve as a major expressway route into the heart of the city. The I-95 interchange, nearest to Wilmington Station, is approximately 13 blocks west of the terminal. In addition, Market Street and Walnut Street (U.S. 13) furnish access to the terminal from the CBD and that part of New Castle County, south of the Christina River.

Relationship to Other Inter-Regional Transportation Facilities

The location of Wilmington Station is particularly favorable with respect to competing modes of intercity travel, namely intercity bus and air service. It is much more convenient to the CBD than the main intercity bus stop or the airport.

Although there is a bus station on King Street, two blocks northwest of Wilmington Station, it is little used. Most intercity buses now stop at Clemente's Travel Center, just south of the Greater Wilmington Airport and approximately six miles south of the railroad terminal on U.S. Route 13.

Commercial air service, at the Greater Wilmington Airport, is now limited to commuter service to Philadelphia. The airport is approximately five miles south of the terminal.

Most air travelers destined for or departing from Wilmington use Philadelphia International Airport; limousine service is available from the DuPont Hotel in Wilmington. There is no direct transit service between the terminal and the bus terminal or airport.

Existing Bus Service

The Delaware Authority for Regional Transit (DART) provides local bus service in Wilmington and the northern portion of New Castle County, population center of the State of Delaware.

Wilmington Station is served by three DART bus routes—routes 10, 11 and 12. Buses stop on Front Street in front of the terminal. Service is relatively limited. Headways range from 10 minutes, during peak hours, to 30 minutes in off-peak hours. By 7 p.m., most buses have ceased operation. In the CBD, patrons can transfer to other routes serving most of Wilmington; alternately, patrons can walk to the CBD and then take a bus.

DART is not authorized to operate in those parts of the Wilmington Standard Metropolitan Statistical Area within adjacent states limiting local transit coverage.

Relationship to Activity Centers

Wilmington Station is in a favorable location with respect to major existing and planned activity centers in central Wilmington. The terminal is located on the southern fringe of the CBD adjacent to the Christina River. Major office, governmental and commercial facilities, including the headquarters of E. I. du Pont de Nemours & Company, Inc., are five minutes away by car or taxi. Major commercial redevelopment projects are located between the terminal and the existing core of the CBD.

The City of Wilmington is the hub of an industrial concentration which extends into five counties in four states. Five miles southeast is the companion industrial county of Salem, New Jersey. Slightly further, approximately 15 miles southwest on I-95, is Cecil County, Maryland. Less than eight miles north of the city are the Counties of Chester and Delaware in Pennsylvania. The 1970 census indicated that there was extensive commuting between homes, in these outlying counties, and work in New Castle County, and vice versa. Metropolitan Wilmington had a population of a half-million, which could rise to 750,000 by 1980.

Plans for the redevelopment and renewal of the downtown area of Wilmington are summarized in a "Pilot Plan for Downtown Wilmington", by the City Department of Planning and Development. This plan calls for extensive renewal in the area from I-95 east to the Christina River and Brandywine Creek. The areas, east of Brandywine Creek and south of the Christina River, would remain in industrial uses. The river and the creek would become buffers between this industry and intense residential, retail, office, institutional and open space uses to the west and north. Progress toward achieving the goals of the plan has been slowed; nevertheless, the plan serves as a guide to future development.

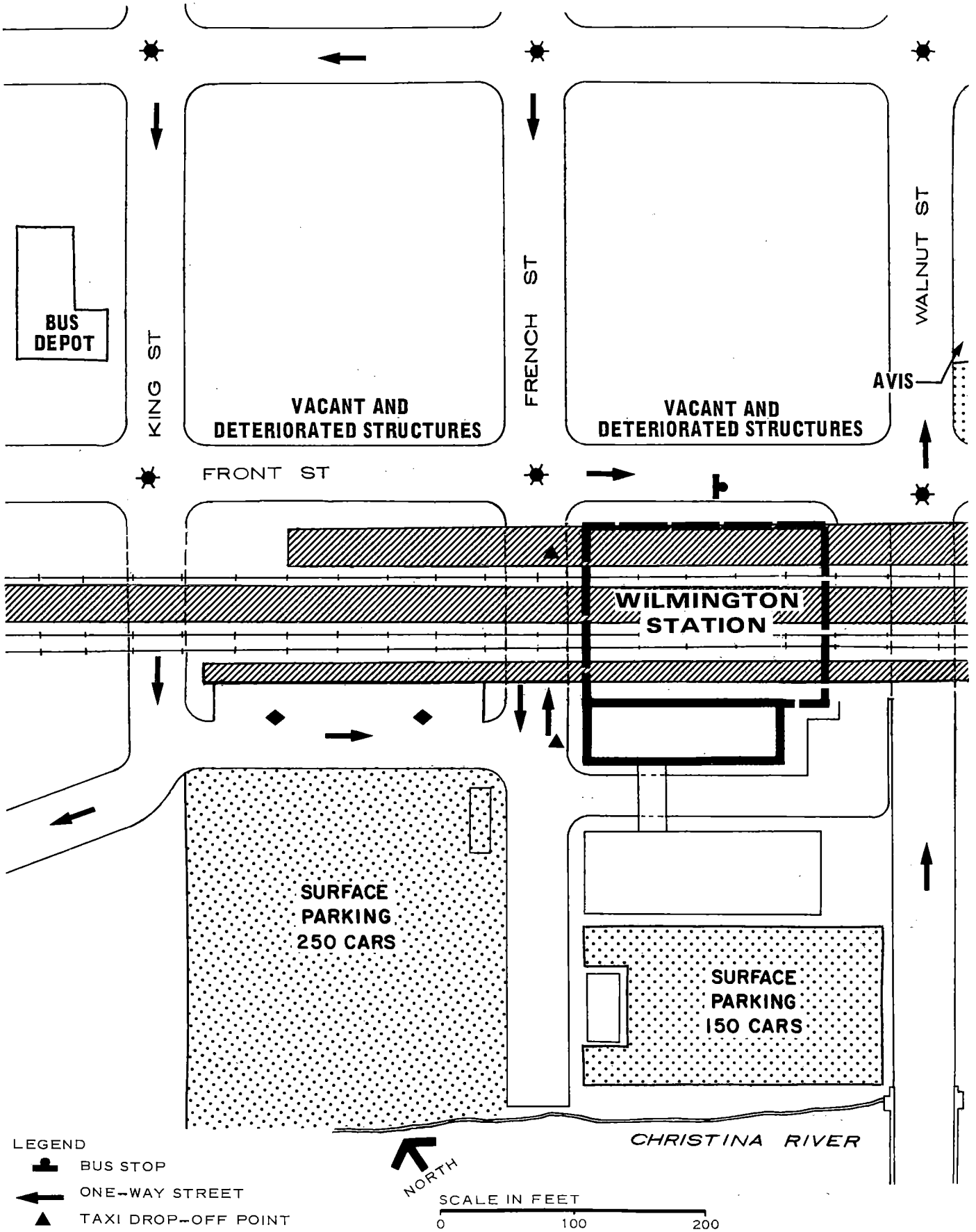
In addition to the concentration of activities in Wilmington itself, there are three other major existing and projected activity centers in nearby areas of New Castle County. Newark, Delaware, is 25 minutes by auto from Wilmington. It contains the University of Delaware, with 15,000 students, and a large Chrysler auto plant. Midway between Wilmington and Newark, along I-95, is the "Metroform" area. Ultimately this area is expected to provide jobs for almost 20,000 people, and is to be second only to the Wilmington CBD as a major employment center in the county. Residential development of the area southwest of the Wilmington Airport, between I-95 and U.S. Route 40, is anticipated to have an ultimate population of 100,000 residents by 1995.

9.2.2 LAND USE

Existing Characteristics of the Immediate Terminal Area

Land uses and the local circulation system, in the immediate area of Wilmington Station, are shown in Figure 9-2.

The immediate terminal surroundings are visually unattractive and security is perceived as a problem by patrons.



EXISTING STATION ENVIRONS
WILMINGTON STATION
WILMINGTON, DE

FIGURE 9-2

Many of the once-thriving small businesses and homes, in the immediate area, have fallen into disrepair in recent years. Vacant and dilapidated buildings border the terminal for several blocks to the north. Streets are often filled with litter, and lighting is inadequate.

In addition to the deteriorated condition of property surrounding the terminal, as well as the terminal property itself, the rail patron can see vacant lots, used and junk car lots and, across the Christina River, a semi-abandoned industrial area. The bus station, two blocks from the terminal, is also in poor condition.

Immediately south of the terminal building is a vacant five-story brick structure with an enclosed bridge connecting with the terminal. West of this structure is a small, two-story masonry building and a sheetmetal building. Both buildings are also vacant. Open space between the railroad and the Christina River is presently used for parking.

Planning Factors, General Terminal Area

Planning factors in the general terminal area are shown in Figure 9-3. Existing and proposed activity centers are listed in Table 9-2.

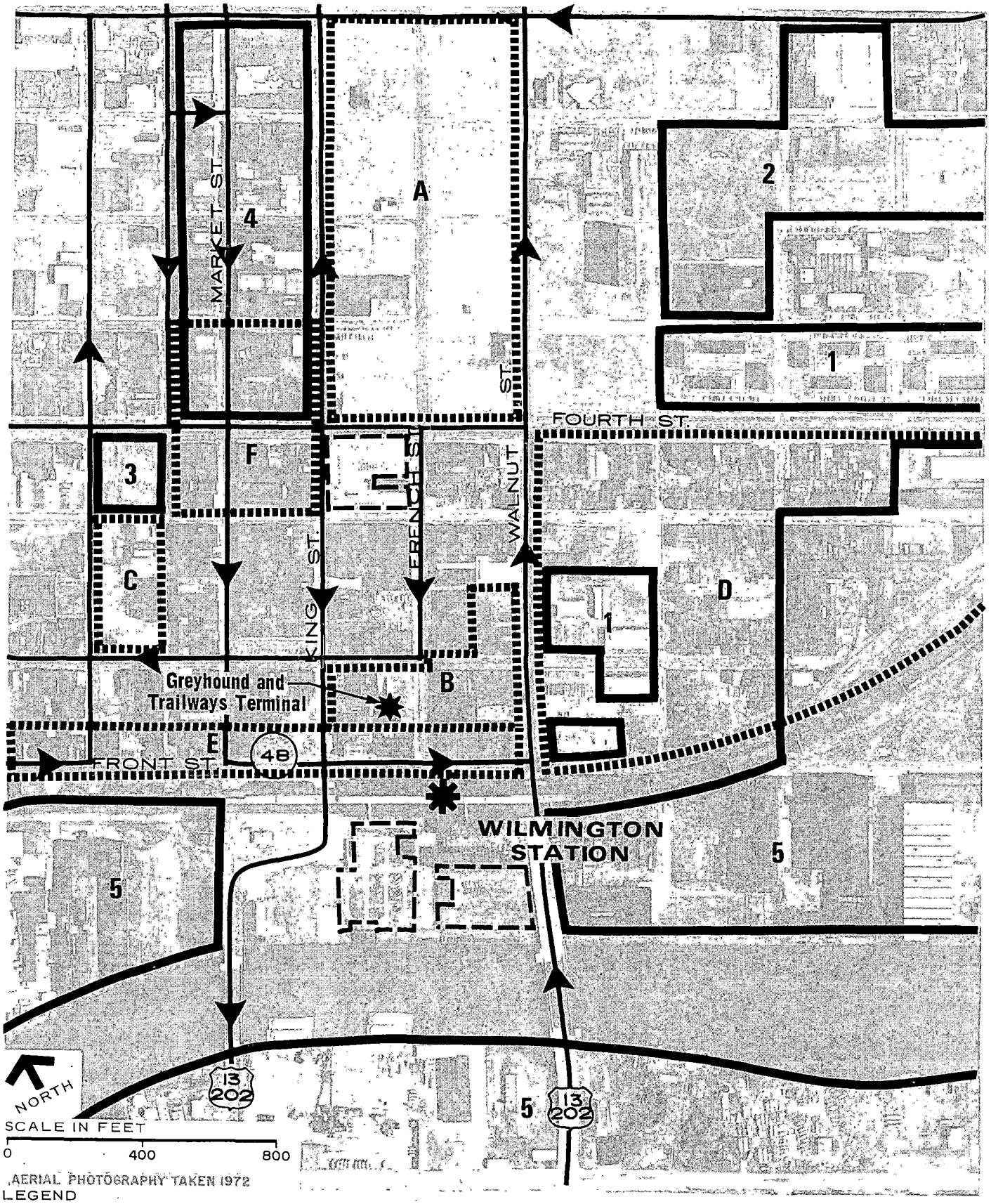
The area north of the terminal, bounded by Washington Street on the west and Walnut Street on the east, constitutes Wilmington's central business district. The major office buildings, hotel, government buildings and banks are clustered around Rodney Square, about ten blocks from the terminal. South of this complex, and toward Wilmington terminal, an eight-block area has been cleared for a major renewal project known as Customs House Square. Plans for this project are not finalized, due to present market conditions, but it is likely to consist of a complex of major commercial and office facilities. Adjacent areas along Market Street are the focus of the retail district, with a portion of a future pedestrian mall already completed. South of the retail area, and some five blocks from the terminal, the Delaware Technical and Community College is planning to construct new facilities.

Immediately opposite Wilmington Station, between Front Street and 2nd Street, is the right-of-way for the Wilmington Boulevard Project, a proposed expressway link between I-95 and Walnut Street to afford improved access to the CBD. A new bus depot, with possible provision for rapid transit, is planned north of the Boulevard and Front Street.

Most of the remaining area, in the vicinity of the terminal, is in residential uses; although some new subsidized housing has been built in recent years, housing is generally in substandard condition.

According to the 1970 census, 40 percent of the families in the area north of Front Street, in the five blocks east of I-95, had incomes below the poverty level. In the area east of Walnut Street, 27 percent of all families had incomes below the poverty level. Renewal projects, new housing and residential rehabilitation are planned for both areas.

The general area south of the terminal, across the Christina River, is in industrial and residential uses. In 1970, it had the highest concentration of low-income families in the city, with



PLANNING FACTORS
WILMINGTON STATION
WILMINGTON, DE
FIGURE 9-3

TABLE 9-2

ACTIVITY CENTERS, GENERAL TERMINAL AREA

EXISTING ACTIVITIES

1 Public Housing

2 Public Parks and Schools

3 Delaware Technical and Community College

4 Downtown Retail Core–including new Market Street Mall, under construction

5 Industrial/Wholesale Areas

PROPOSED ACTIVITIES

A Future Site of Customs House Square Project

B Proposed Bus and Possible Transit Station, and Parking

C Possible Future Expansion, Delaware Technical and Community College

D Asbury Heights Renewal Area

E Right of Way, Wilmington Boulevard

F Proposed Market Square Park

over 40 percent of the households living in low-rent public housing. Finally, in the general area, west of the terminal south of Front Street, is a strong working-class community which gives some stability and permanency to an otherwise decaying and transitional section of the city.

A major deterrent to train ridership appears to be the location of the terminal in this environment of apparent abandonment and insecurity. Although convenient to the CBD, this blighted area is considered unsafe by many. If redevelopment is delayed for any length of time, interim security measures should be taken, including additional police protection and better lighting.

9.3 EXISTING PASSENGER HANDLING FACILITIES

9.3.1 PASSENGER ACCESS AND EGRESS

Wilmington Station is bounded by Front Street on the north, Walnut Street on the east, a private alley on the south, and French Street on the west.

Two terminal entrances on French Street are used by passengers arriving by bus, taxi, or auto drop-off. Passengers who have parked their cars use the French Street Entrance, near the private alley on the south side of the terminal. See photo 1.

Secondary entrances from Front Street and from the private alley are little used. See photo 2. Another entrance from Front Street leads passengers up a stairway to the first floor level as well as up to the eastbound low-level platform. Passengers can also gain access to the westbound low-level platform via masonry steps at the corner of Front and King Streets. See photo 3.

All entrances to the first floor of the terminal are from four to nine steps above existing sidewalk grade. Only the two terminal entrances on French Street are protected by canopies. Other entrances are not protected.

Existing Highway Access

A one-way street system is in effect in central Wilmington. Front Street is one-way eastbound. Walnut Street, immediately east of the terminal, is one-way northbound. Walnut Street and Market Street, two blocks west of the terminal, are a one-way pair constituting U.S. Route 13. Consequently, both streets carry very heavy traffic volumes in the vicinity of the terminal.

The street system from Wilmington Station to the downtown core is a grid network. Traffic circulation is generally good; however, congestion is often experienced on Walnut Street between Front and 2nd Streets due to vehicles turning left on 2nd Street. Route continuity on a portion of Market Street, northwest of the terminal, has been disrupted by the construction of a pedestrian mall. Future plans also call for French Street to be closed between 4th and 8th Streets for redevelopment. These street closings may tend to decrease the accessibility of the terminal from the downtown area.

The regional access route to the general terminal area is I-95, which crosses Front Street approximately 12 blocks west of the terminal. The Maryland Avenue Interchange is approximately three blocks north and 10 blocks west of the terminal.

Other Connections

A taxi stand is located outside the terminal entrance on French Street. There are approximately 60 licensed taxi cabs in the city and there appears to be a high demand for taxi service between the terminal and CBD.

While the CBD is within reasonable walking distance and pedestrian access is relatively good, the fear of crime deters many potential pedestrians, particularly after dark.

Kiss-and-ride drop offs occur on Front Street, French Street and surrounding areas. There is a designated kiss-and-ride area on French Street.

No car rental agencies are located in the terminal building. There are direct telephone lines to two companies in the terminal, and pick-up service is furnished.

9.3.2 PARKING

There are approximately 400 parking spaces within a 1,200-foot-walking distance of the terminal. The greater part of parking in these areas is private. This is inadequate to meet present demand. Lots used by most railroad patrons are located on either side of French Street, behind the terminal and adjacent to the Christina River.

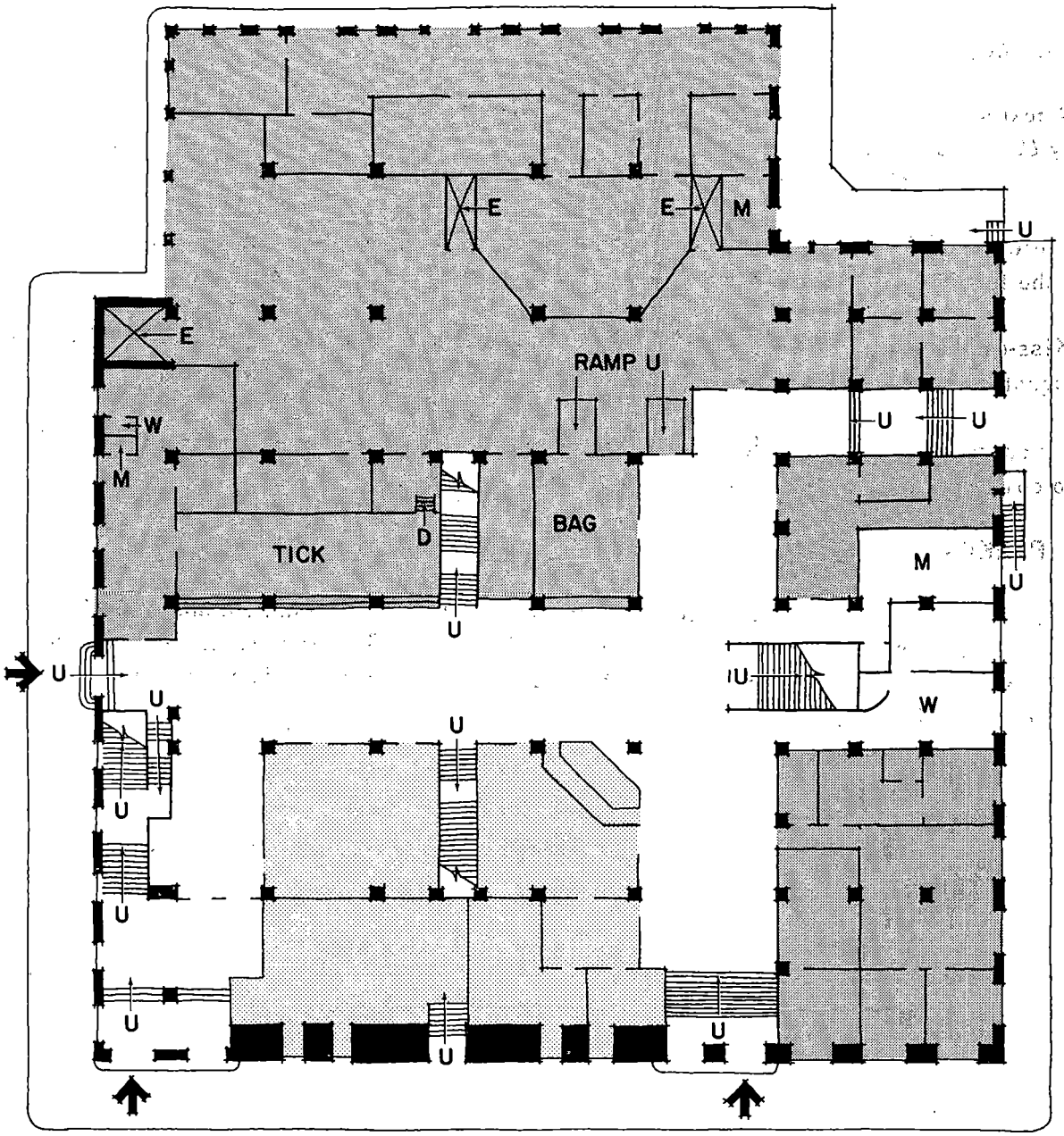
Discussions with local officials indicate that the number of cars parking in the terminal area has recently decreased, resulting in some alleviation of the parking problem. However, this appears to reflect fear of crime and vandalism, particularly after dark. There has been an increase in the use of taxis and kiss-and-ride facilities at the terminal.

9.3.3 PASSENGER PROCESSING

For Existing Main Floor Plan, see Figure 9-4; for Existing Second Floor Plan, see Figure 9-5; and, for Existing Platform Plan, see Figure 9-6.

Functional Flow

Upon entering the terminal from French Street, passengers walk at first floor level to the east end of the building where the ticket and baggage counters are located. See photo 4. Tickets can be purchased for Penn Central Commuter, Amtrak, and Metroliner trains. A limited amount of wooden seats are available to accommodate waiting passengers. These seats, however, are located too close to the ticket counters, causing congestion between ticket purchasers and waiting passengers. See photo 5. Passengers are allowed to proceed up stairways to low-level platforms (tracks No. 1 and No. 3) where limited seating is available on the platforms and within part of the second floor of the terminal (eastbound waiting room). See photo 6. Low-level platforms are about 20 feet above first floor level. Stairways to the high-level center platform, servicing Metroliners, are gated and controlled by the Station Master on the first floor level. Total rise to the center platform is about 23 feet 8 inches. See photo 7.



SCALE IN FEET

0 25 50

NORTH

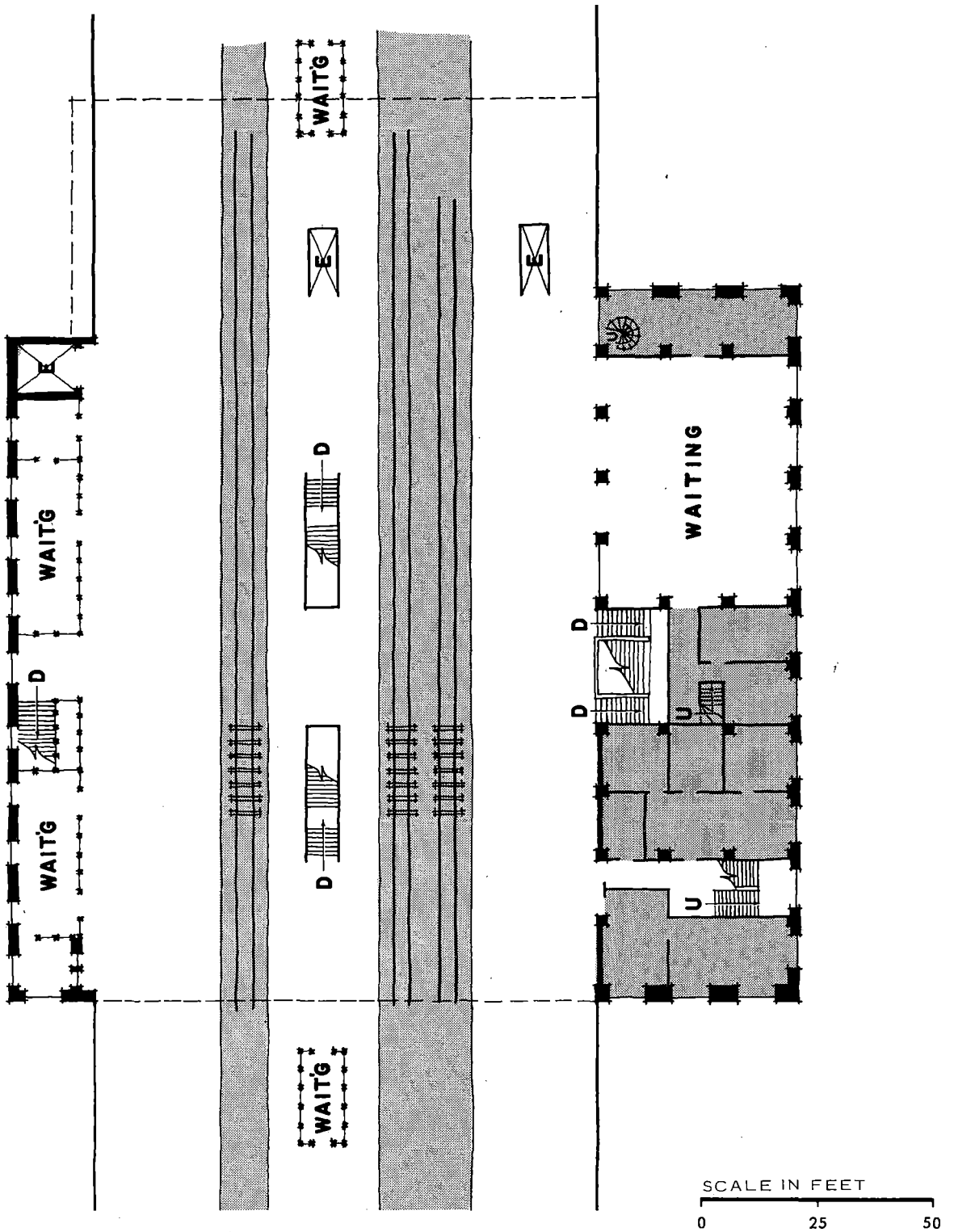
MAIN FLOOR PLAN

LEGEND

CONCESSION

RAILROAD FUNCTION

EXISTING WILMINGTON STATION
WILMINGTON, DE
FIGURE 9-4



SECOND FLOOR PLAN

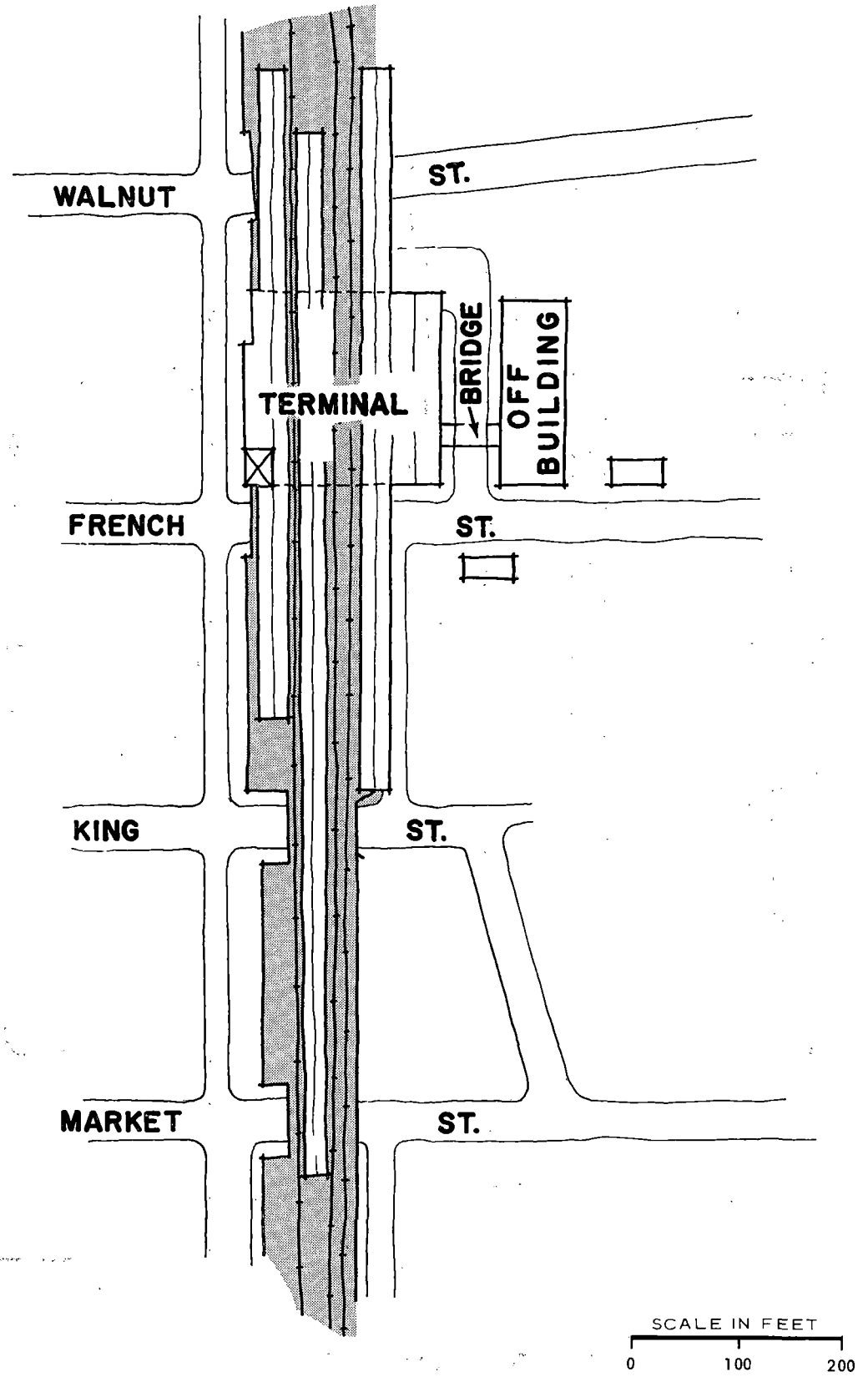
NORTH

LEGEND

RAILROAD FUNCTION

EXISTING WILMINGTON STATION
WILMINGTON, DE

FIGURE 9-5



PLATFORM PLAN

LEGEND

RAILROAD FUNCTION

EXISTING WILMINGTON STATION
WILMINGTON, DE

FIGURE 9-6

Handicapped passengers need assistance to enter the terminal, due to steps at all entrance-ways. After purchasing tickets, these passengers may use the first floor waiting room and/or proceed to all upper platforms via the elevator. From the center platform, handicapped passengers can be wheeled onto trains; however, from the low-level platforms, they must be lifted to train car level. See photo 8.

Ticket Purchase

The ticketing area consists of six windows which serve Penn Central commuters, Amtrak passengers (for short and long haul) and Metroliner passengers (high-speed service). Train information is also provided by the ticket clerks. See photo 4.

Information

This terminal has no information counter or TV monitoring system. Passengers needing assistance regarding travel problems can obtain information only at the ticket windows. An electronic train scheduling board is located on the first floor, in the center of the terminal. This board is situated above a brick planter and divides the first floor level into two waiting rooms.

Baggage Handling

Baggage is checked at one end of the ticket counter, pushed through a pass door, and stored in a corner of the ticket office. See photo 4. (The former baggage room is presently used as an employee's lunch room.) Baggage may also be claimed at the ticket counter. Most of the baggage is carried by passengers to the upper passenger platforms. Only heavy baggage, or baggage for the handicapped, is transported by elevator to the upper platform area. There is limited porter service available.

9.3.4 PUBLIC SERVICES

Storage lockers, coin operated telephones, rental car courtesy telephones, and men's and women's rest rooms are located on the first floor of the terminal building.

9.3.5 CONCESSIONS

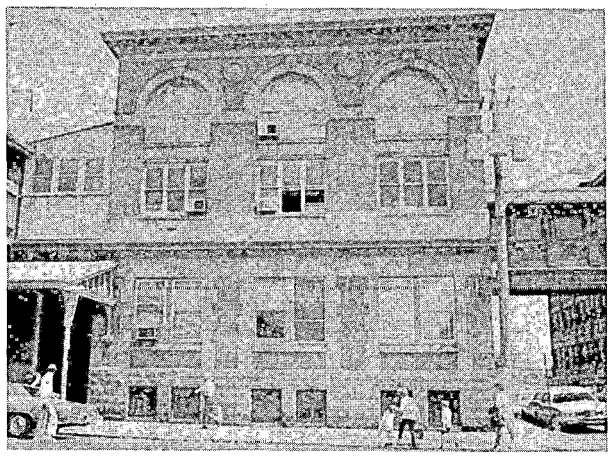
A small coffee shop/lunch room, a cocktail lounge, news stand and shoe shine stand are located within the terminal on the first floor level. There are no vending machines available for public use.

9.3.6 RAIL PASSENGER OPERATIONS FACILITIES

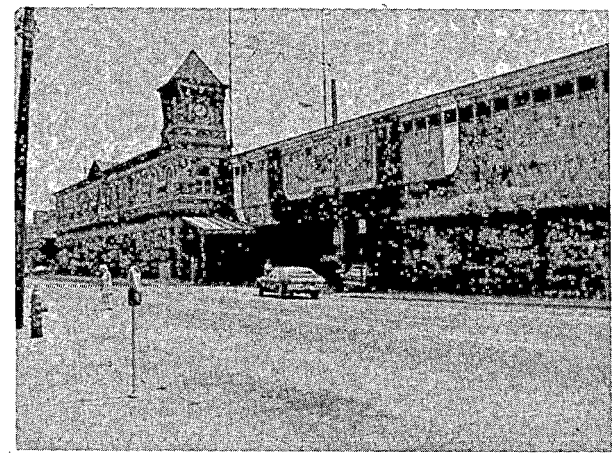
This area has office space for a Penn Central manager, cashier's space for ticket and currency safekeeping, and men's and women's employee toilet rooms, located to the immediate east of the ticket area. Toilet and locker rooms, situated at the extreme east end of the terminal, are for the use of railroad maintenance personnel.

WILMINGTON STATION – WILMINGTON, DE

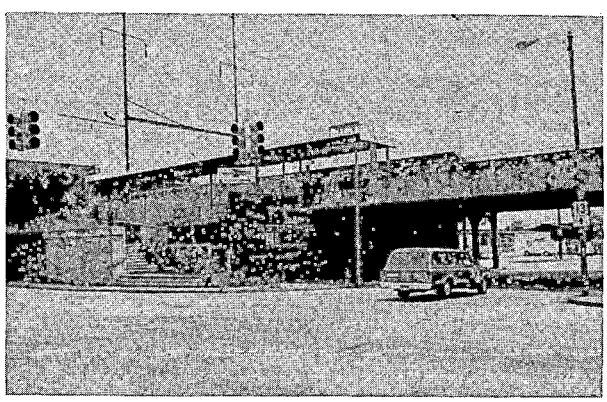
EXISTING FACILITY



1. French Street Entrance to Terminal



2. Front Street Entrances to Terminal

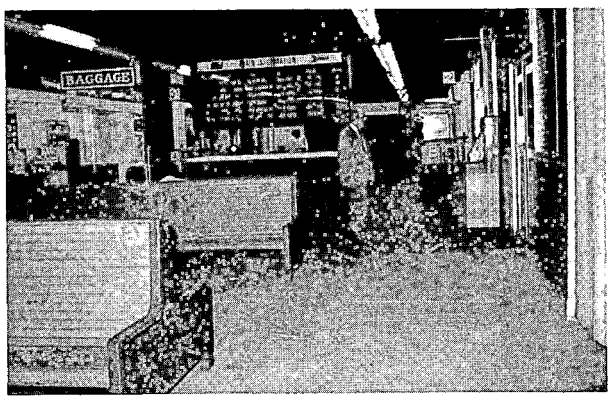


3. Masonry Steps to Westbound Platform from Front and King Streets

4. Ticket and Baggage Counters

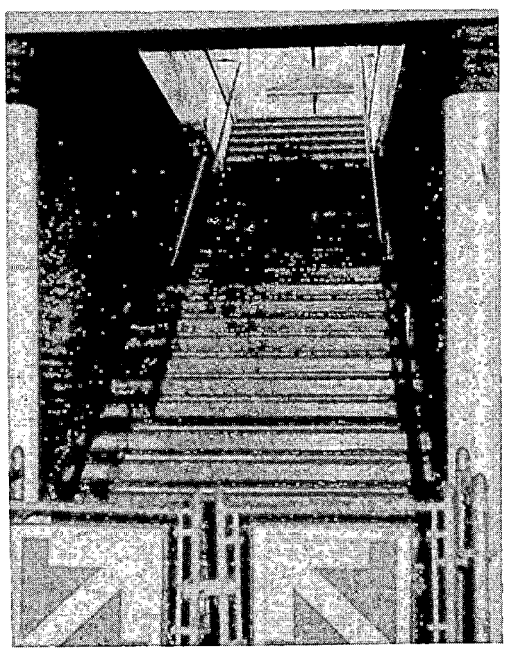
WILMINGTON STATION – WILMINGTON, DE

EXISTING FACILITY (Cont'd)



5. Main Waiting Room

6. Terminal Platform Level and Waiting Area



7. Gated Stairway to Center Platform

8. Center Passenger Platform

There are no facilities for porters. The security office is located on the second and third floor levels. This area is little used.

The Penn Central Station Master's office and control tower are located on the second floor. An electronic control room is located on the first floor level.

9.3.7 FACILITY CONDITION

Exterior

The exterior of the Wilmington terminal requires considerable repair and a thorough cleanup. Viaducts to the east and west should be cleaned and painted. Particular attention should be given to the steel structure. All riveted connections appear unsound. A thorough investigation of this condition should be undertaken.

Interior

The interior areas have been recently painted in part only. Other areas of the interior require cleaning, repair and repainting. Excessive noise and vibration are experienced when trains pass over the terminal waiting rooms. Waiting-room area ceilings are exposed steel frame, and there is no acoustical treatment provided anywhere in the terminal.

Utilities

Existing utilities such as heating, ventilation, plumbing and lighting are inadequate and outmoded. Baggage elevators need reconditioning. The low-level platforms on the second floor are very poorly illuminated; however, lighting for the center high-speed platform is good. There is no central air conditioning system provided in the terminal. Only a few offices have window air conditioners. The public address system presently in operation is inadequate.

9.4 FORECAST ACTIVITY LEVELS

9.4.1 PROJECTED DESIGN DAY PATRONAGE

The 1990 peak-design-day load for Wilmington Station is expected to be 5,700 HSR patrons and 1,700 commuters, for a combined maximum daily loading of 7,400 passengers. Peak-hour patronage is forecast at 900 HSR and 700 commuter passengers, for a total loading of 1,600.

A high level of HSR is expected at Wilmington since HSR will give Wilmington residents excellent access to Philadelphia, Baltimore and Washington, D.C. The terminal is favorably located with respect to major activities in Wilmington. The terminal is competitive with respect to intercity bus or air service. Extensive redevelopment will result in new activities close to the terminal.

If the upper limit of projected HSR use is to be attained, however, major improvements will be necessary to the terminal, the general terminal area and intermodal connections. Such improvements either have been recommended in previous studies or have been developed in the course of the current study.

9.4.2 PROJECTED MODE OF ACCESS

It is anticipated that the automobile will remain the major mode of access to Wilmington Station. Park-and-ride is projected to account for 30 to 50 percent of arrivals, and kiss-and-ride for 20 to 35 percent. The 1990 projections indicate a possible 15 percent of all arrivals by bus. It was considered unlikely that a rapid transit system would be built in Wilmington by 1990. However, if such a system were built, it could significantly affect future mode of access.

Due to the relative closeness of the terminal to the Wilmington business district and the proposals for redevelopment in that area, pedestrian traffic to and from the terminal could increase considerably.

Percentages of daily passenger arrivals were projected by mode as follows:

	Percentage		
	Low	High	Median
Park-and-ride	30	50	40
Park-and-ride passenger	10	20	15
Kiss-and-ride	20	35	25
Rail transit	0	0	0
Bus	10	15	10
Taxi and limousine	5	10	5
Walk	5	15	5

9.4.3 PARKING REQUIREMENTS

The 1990 parking demand for HSR patrons is expected to range from 1,700 to 2,800 spaces, with a median value of 2,300 spaces.

9.5 PLANS AND PROPOSALS

9.5.1 STREET AND TRAFFIC IMPROVEMENTS

Implementation of the Wilmington Boulevard Project, a limited-access connector between I-95 and the CBD, would furnish direct expressway access to Wilmington Station. A draft planning report on this project was released by the State Department of Highways and Transportation in 1974. Completion of the expressway is anticipated by 1980. The highway would be built immediately north of Front Street in the vicinity of the terminal, with access ramps to and from Front Street. Plans include provision of right-of-way north of the boulevard for rail or exclusive bus transit.

9.5.2 TERMINAL IMPROVEMENTS

In conjunction with the Wilmington Boulevard Project, the City of Wilmington has developed concept plans for a multimodal transportation center in the vicinity of Wilmington Station, incorporating the terminal at its present site as an integral part of the center. Plans include modernization of Wilmington Station; construction of a new bus depot and a possible rapid transit station, with a pedestrian connection to the railroad terminal; and, construction of a parking facility for rail, transit and bus patrons. These plans were furnished to the consultants as input for the present study.

9.5.3 FUTURE LAND USE

It is anticipated that, by 1990, the entire character of the area surrounding Wilmington Station will have undergone a dramatic change. The Wilmington Boulevard Project will not only improve access from I-95 to the terminal and the CBD, but also, through extensive landscaping, should improve the aesthetic quality of the area north of the terminal. The vacant deteriorated structures, on the north side of Front Street, will be demolished and replaced by a new bus depot and possible transit station.

The Market Square Neighborhood Development Project, extending four blocks north of Wilmington Station and several blocks east and west, calls for virtually a total change of the terminal environment. In addition to the new bus depot, new retail businesses and high and medium-density housing, expansion of the new campus of the Delaware Technical and Community College and cultural facilities have been proposed for this area. It should be noted that the activities of the Community College are already having a positive influence on this section of the city. When construction begins on Wilmington Boulevard, it is anticipated that other developers will announce plans for projects in this area. The Customs House Square project, three blocks north of the Wilmington Station, should have a major favorable impact on the overall area.

These developments would have a significant impact on terminal use, bringing intensive activities into the immediate area. If accompanied by improvements in public transportation and revitalization of the terminal itself, an increase in rail patronage can be expected. A large hotel, office and retail complex, north of the terminal, would encourage additional development, raise the value of surrounding property and enhance the environment.

9.5.4 TRANSIT IMPROVEMENTS

As noted above, plans for the Wilmington Boulevard Project include provision of right-of-way along the north side for either light rail transit or bus. A possible rail transit terminal is proposed between King and French Streets, with a pedestrian connection to Wilmington Station.

The Delaware Department of Highways and Transportation and DART in the "Short-Range Transit Improvement Program for the Greater Wilmington Area" (March 1973), have made recommendations for extensive improvements to the metropolitan bus system. Proposals include express service to the CBD from suburban park-and-ride locations, exclusive bus lanes, new routes and expanded service in the CBD and elsewhere in New Castle County, as well as service to the adjoining out-of-state counties. If adopted, these recommendations will provide greatly improved bus access to the terminal from many areas in the region. Of particular importance to HSR patrons would be express bus service from suburban park-and-ride facilities.

9.6 RECOMMENDED 1990 ACCESS/EGRESS AND PARKING PLANS

The 1990 concept plan for Wilmington Station includes major reconstruction of the terminal building, discussed in Section 9.7, together with modifications in street operations, provision for intermodal transfer, improved pedestrian access and construction of a new parking garage south of the terminal, with a covered pedestrian walkway to the terminal. The concept plan is shown in Figure 9-7.

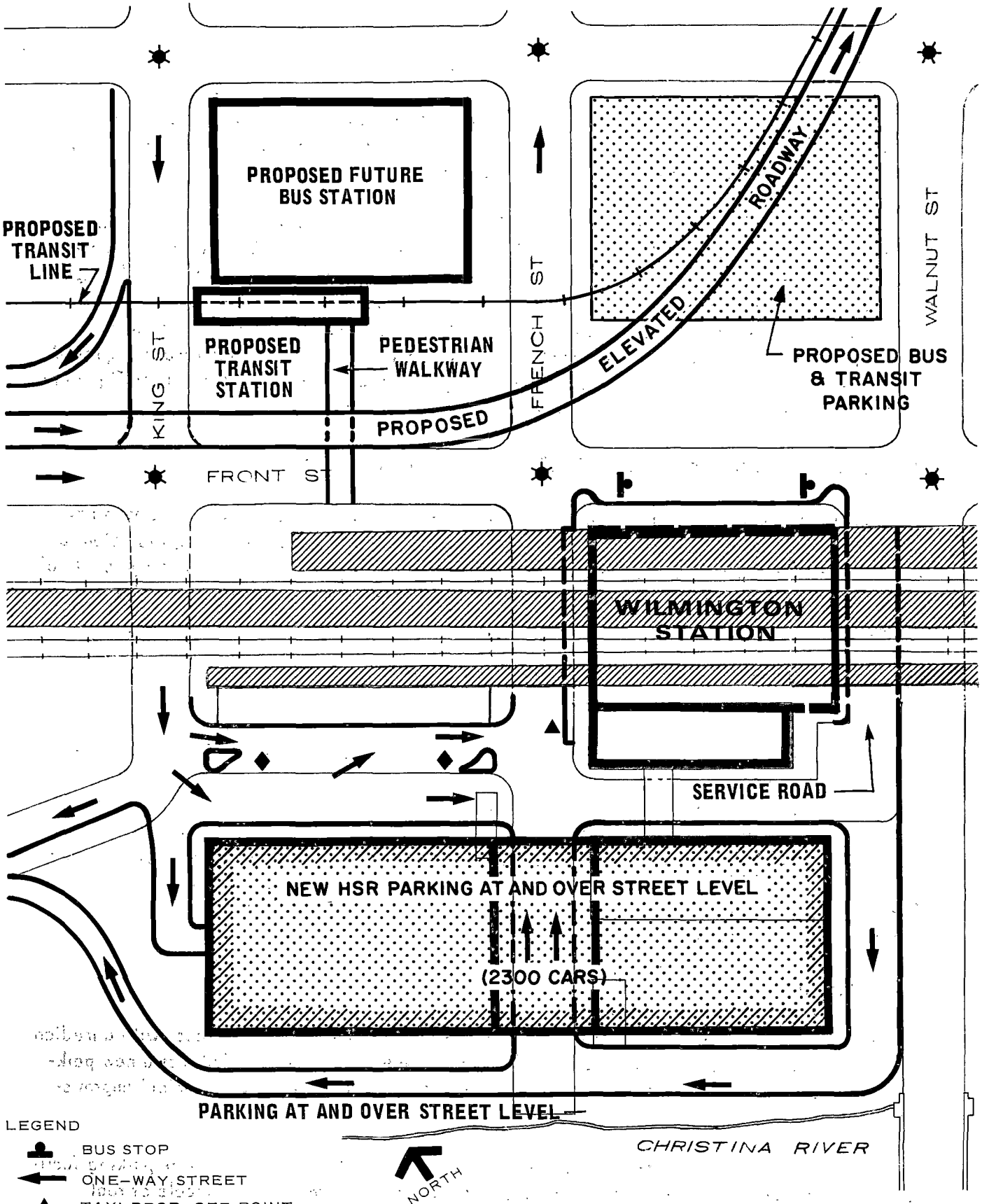
9.6.1 STREET AND TRAFFIC IMPROVEMENTS

In addition to the changes resulting from the proposed Wilmington Boulevard project, the 1990 concept envisages other modifications in the operation of local streets. First, French Street should be one-way northbound, towards the CBD, to facilitate the movement of traffic leaving the terminal and to reduce vehicular conflicts on Front Street between French Street and Market Street. Second, access to the terminal from the alley between the terminal building and Walnut Street should be restricted to inbound service vehicles only. Third, access to the terminal parking and drop-off areas should be via King Street with egress onto Front Street and a connection to Market Street. Finally, the traffic lane on Front Street, adjacent to the terminal, should be reserved for buses to improve bus-to-rail transfer.

9.6.2 PARKING

The 1990 parking demand for HSR patrons is forecast at 1,700 to 2,800 spaces, with a median of 2,300 spaces. To accommodate demand of this magnitude, it is recommended that a new parking structure be built, and that this structure be an integral part of the overall terminal improvement program.

The Penn Central Transportation Company lacks adjoining properties to provide parking facilities adequate for future patronage requirements. It is recommended that two parcels of real estate, south and southwest of the terminal, be acquired to provide the area necessary for the parking garage complex and all access facilities.



1990 CONCEPT
WILMINGTON STATION
WILMINGTON, DE

FIGURE 9-7

The property immediately south of the terminal, between Walnut and French Streets, is the site of an existing five-story structure and small one-story garage. Both buildings are vacant and would be demolished.

The property southwest of this parcel, between French and King Streets and extending from the railroad right-of-way to the Christina River, would also be acquired. This property is the site of a small, two-story masonry structure. It is presently vacant and would also be demolished.

A multi-level parking facility is proposed, with a covered pedestrian walkway to the terminal. The parking garage complex would be well illuminated and under surveillance by attendants at all times. The facility would be for the specific use of rail patrons.

Motorists would have access to the parking garage from King Street. Egress would be via French Street northbound or a new southbound roadway west of the complex.

9.6.3 INTERMODAL TRANSFER

The 1990 concept envisages that the existing short-term parking south of the terminal, between King and French Streets, would be eliminated to provide for adequate traffic circulation and a new kiss-and-ride drop-off and pick-up area. An additional kiss-and-ride and short-term parking area could be provided in the proposed parking facility.

The taxi stand would remain at its present location adjacent to the terminal on French Street.

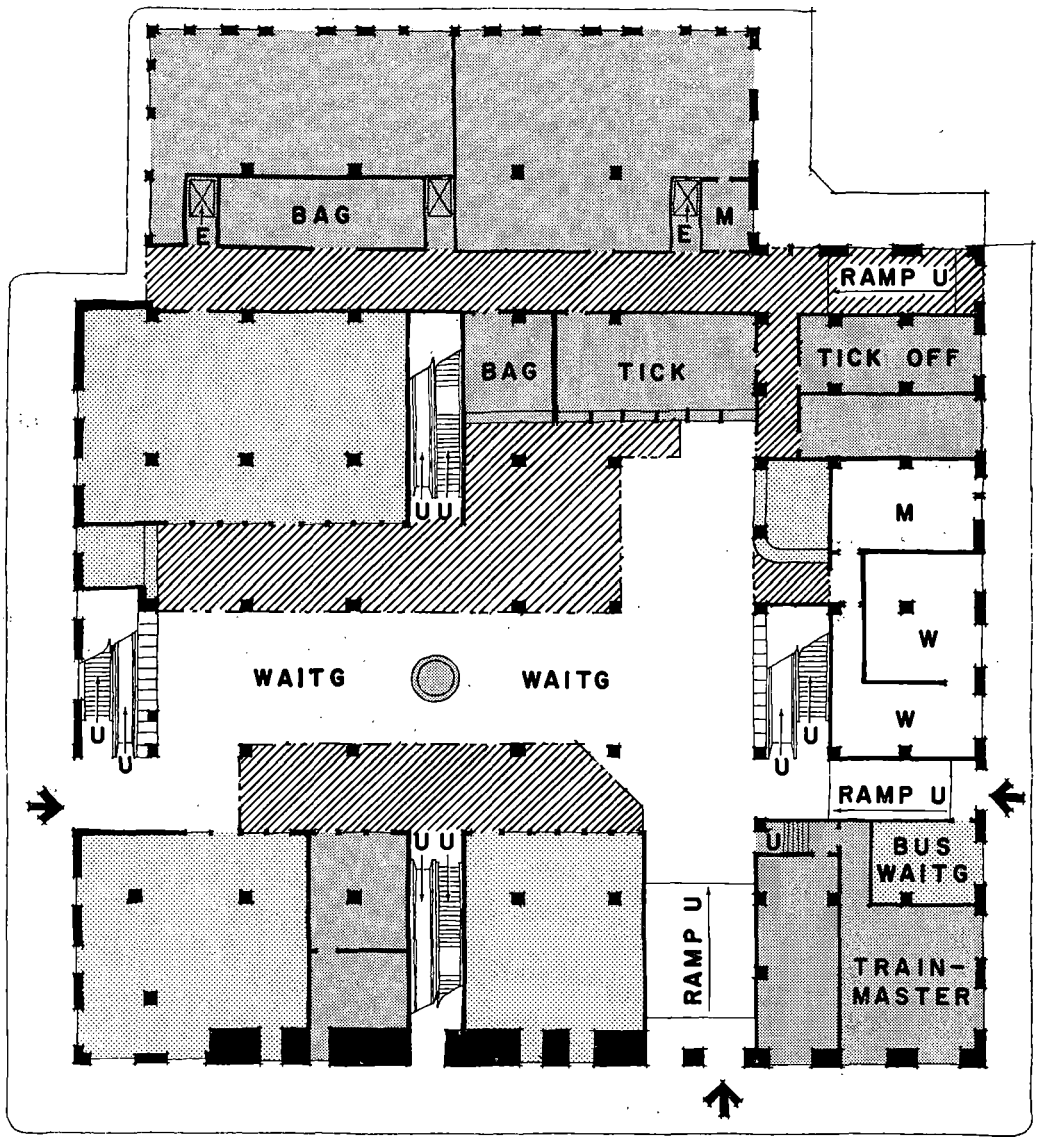
A special local-bus loading and unloading area would be located outside the terminal entrance on Front Street.

The concept plan would improve pedestrian access, particularly from the areas north of Front Street toward the CBD. Not only would a pedestrian bridge connect the terminal with a possible transit and intercity bus complex, but increased emphasis by the City on pedestrian movement and safety in the downtown area would encourage use of malls and walkways as a means of access to the terminal. Immediately in front of the terminal, pedestrian crosswalks are proposed at the intersection of French and Front Streets. These measures and the reduced traffic on Front Street, which will result from the construction of Wilmington Boulevard, should afford good pedestrian access to the terminal.

9.7 RECOMMENDED 1990 PASSENGER TERMINAL PLANS

Proposed main floor, second floor, and platform plans are shown in Figures 9-8, 9-9, and 9-10, respectively.

During early phases of the present study, the relocation of Wilmington Station was considered, due to its physical condition and the lack of sufficient property owned by the Penn Central Transportation Company to accommodate future parking requirements.



SCALE IN FEET

0 25 50

MAIN FLOOR PLAN

NORTH

LEGEND

CONCESSION

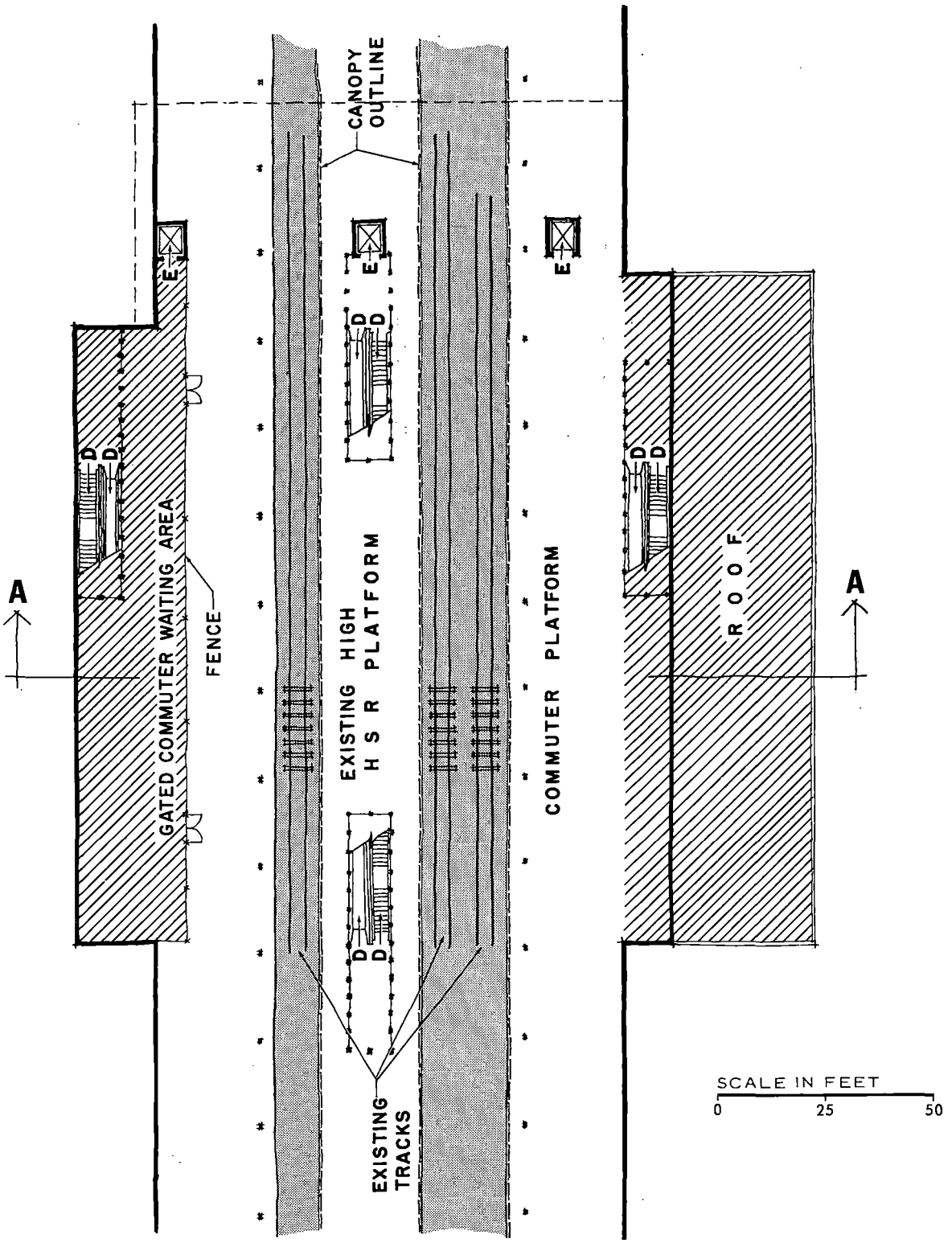
RAILROAD FUNCTION

INCREASED CIRCULATION

1990 CONCEPT
WILMINGTON STATION
WILMINGTON, DE

FIGURE 9-8

DC/STV



SECOND FLOOR PLAN

NORTH

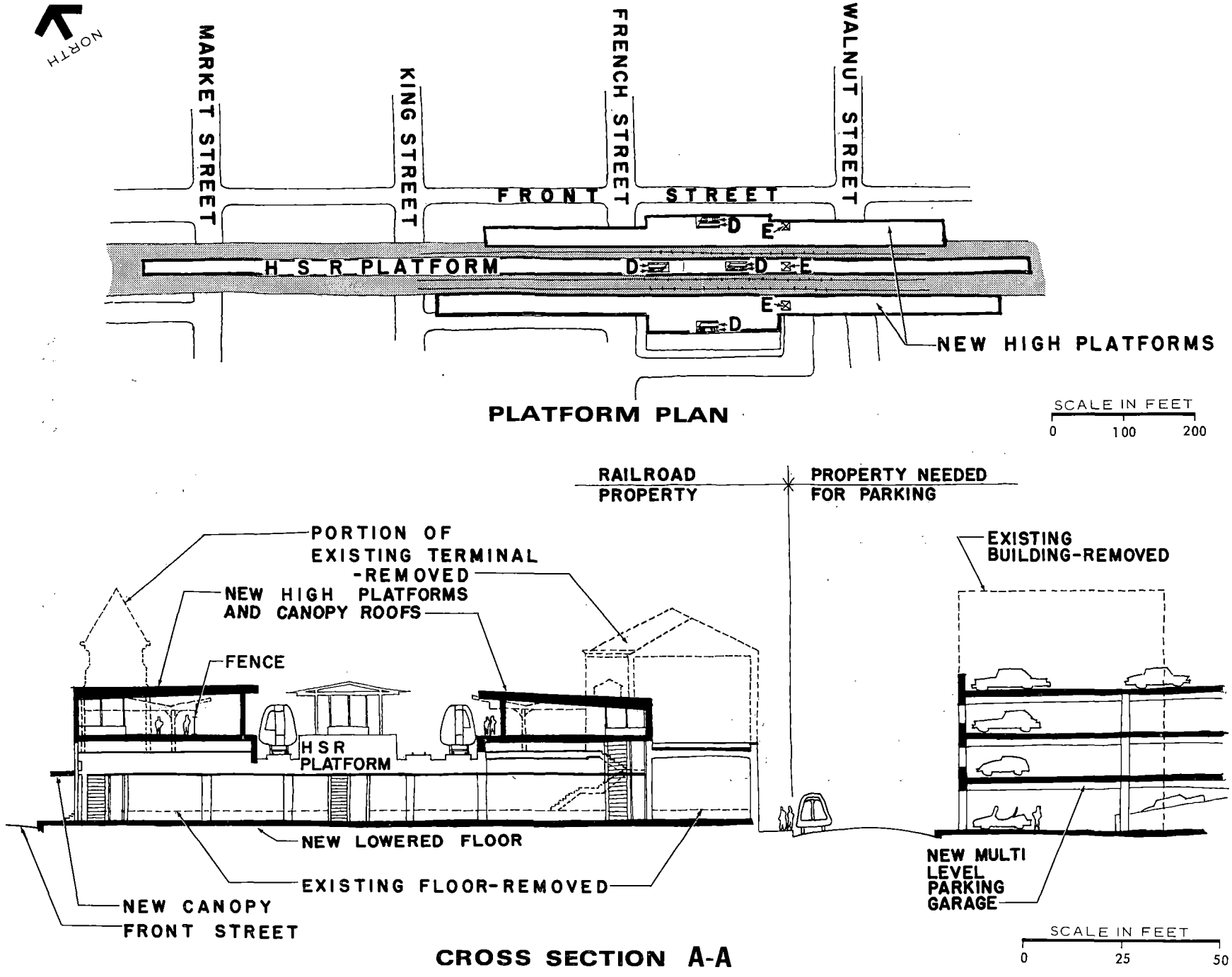
LEGEND

RAILROAD FUNCTION

INCREASED CIRCULATION

1990 CONCEPT
WILMINGTON STATION
WILMINGTON, DE

FIGURE 9-9



DC/STV

1990 CONCEPT
WILMINGTON STATION
WILMINGTON, DE

FIGURE 9-10

Based on the strategic location of the existing terminal, in relation to major improvements projected in the area by the City of Wilmington and State of Delaware, it was eventually concluded that the present site would best serve the interests of future passengers and the general public.

The existing structure, however, is deteriorated and present facilities and services are inadequate to meet the requirements of HSR and commuter service projected for 1990. Accordingly, major reconstruction of the terminal building on its present site is recommended.

Space on the first floor level of the existing structure is under utilized. The recommended plan provides for full use of this floor. The second and third floors of the existing building are little used, currently, and will be of no future use. Demolition of these floors is proposed.

The recommended plan includes construction of new high-level eastbound and westbound platforms, and lengthening the platforms sufficiently to accommodate 14-car high-speed passenger trains.

Other recommended improvements include remodeling the remaining terminal structure by covering exterior brick walls with a metal curtain wall, installing new canopied primary entrances, lowering the main floor to Front Street sidewalk level and installing ramps to secondary entrances, and constructing new stairways and escalators for all passenger platforms. Passenger processing and service facilities would be expanded. All utilities and services would be replaced with systems adequate to handle increased usage.

9.7.1 PASSENGER ACCESS AND EGRESS

Passengers arriving at the terminal would enter via the existing entrance on Front Street, another existing entrance situated on French Street or a new entrance from the parking facility south of the terminal. An existing entrance at the corner of Front and French Streets will be closed, together with the existing secondary entrance on the south side of the terminal. In addition to these entrances, there would also be two new service entrances for the use of railway personnel, and a concession service entrance. These entrances would not be used by passengers.

The entrances on Front Street would be at sidewalk level. The entrances to the terminal from French Street, and from the south side of the terminal, will ramp upward to meet the main floor of the terminal. Other secondary entrances will also ramp to the main terminal floor, thus eliminating steps into the building.

All entrances to the terminal would be protected from weather by projected canopies, well illuminated and identifiable to the public. Existing sidewalks and curbs would be removed where damaged, and reconstructed to satisfy the new terminal configuration.

Passengers arriving at the new parking garage complex, after having parked their vehicles, would have access to the terminal at ground floor level, and would be protected from inclement weather by an interconnecting roof between the parking garage and terminal structure.

Passengers arriving at the terminal by intercity bus would have a drop-off and pick-up point on Front Street, near the Front Street entrance into the terminal. Passengers arriving by taxi would have a drop-off and pick-up point near the French Street entrance into the terminal. Passengers being transported by private auto (kiss-and-ride) would be discharged at a designated area north of the parking garage complex, and would enter the terminal at the French Street entrance.

9.7.2 PASSENGER PROCESSING

Functional Flow

Upon entering the terminal, passengers would purchase HSR, Amtrak or commuter tickets on the main floor, east of the waiting room area.

Passengers using the high-speed rail service would proceed to train departure locations via escalators and stairs to the high-level center passenger platform, which is serviced by tracks No. 2 and No. 3. Commuter passengers would proceed to the eastbound platform, serviced by track No. 1, or to the westbound platform, serviced by track No. 3. The existing elevator serving the HSR center passenger platform and the existing elevator serving the eastbound commuter-passenger platform would be reconditioned, refurbished and made available for the use of physically handicapped passengers and the handling of baggage. The existing elevator to the westbound commuter platform, including the shaft and operating equipment, would be removed. Platform openings, floor openings and pit openings would be closed off. A new elevator, including shaft, operating devices and equipment, would be installed on the reconstructed westbound commuter platform. This new elevator would serve the physically handicapped passengers and the handling of baggage. Elevator load capacity would be 2500 pounds.

Information

An information booth would be located in the center of the waiting room. An electronic train schedule board would be displayed above the information booth, with satellite schedule boards located near the main entrances and passenger service corridor on the east side of the terminal. A new public address and paging system would be installed, with sufficient speakers, to afford clear announcements throughout the terminal and platform areas.

Ticket Purchase

The ticketing area would be located in the southeast corner of the waiting room. Eight ticket windows would be available for sale of tickets to HSR, Amtrak and commuter passengers. One of the eight windows would be reserved for physically handicapped passengers, and served by ticketing personnel on demand. Baggage of handicapped passengers would also be checked in and claimed at this window.

Baggage Handling

The baggage counter would be adjacent to the ticket area. Baggage would be checked in, claimed and temporarily stored at this location until transferred to a baggage storage room in the passenger service corridor. Baggage would be transported to the HSR center platform and/or commuter platforms by the three baggage-passenger elevators in the corridor. These elevators would also carry the physically handicapped passengers to the HSR and commuter platforms. Porter service would also be available for handling baggage at curbside and all call zones in the multi-level parking garage.

Waiting Area

The waiting room would be enlarged and remodeled to serve as the circulation hub and access area to the ticketing and baggage handling facilities, rest rooms, concessions and general operation offices. Floors would be carpeted and cluster-type seating would be available near stairs and escalators leading to the upper-level platforms.

9.7.3 PUBLIC SERVICES

Rest Rooms

Men's and women's toilet and rest room facilities, including provisions for a first aid station, would be located on the south end of the waiting room. Railroad employees would be discouraged from using these facilities.

Storage Lockers

Provisions would be made for the installation of 50 storage lockers at various convenient points throughout the terminal.

Telephones

Sufficient telephones would be located throughout the terminal.

Rentals and Accommodations

A booth would be located near the ticketing area and would provide auto rental services. An accommodations booth would be provided for making hotel and motel reservations and for making connections to other modes of transportation. Traveler's aid service would also be available.

Postal Facilities

There would be mail deposit boxes within the terminal for both local and out-of-town mailing. Postage-stamp vending machines would also be made available.

9.7.4 CONCESSIONS

Provisions would be made for a luxury-type cocktail-waiting lounge, a restaurant and kitchen, news stand, shoe shine stand and various minor shops in the terminal building.

9.7.5 RAIL PASSENGER OPERATIONS FACILITIES

Passenger Services Office

A suite of offices, consisting of a waiting room, an office for the Passenger Service Manager, and desk space for his secretary, would be located across the corridor from the ticket sales area. The Train Master's office would be located in the northwest corner of the terminal. These spaces would be renovated and air-conditioned with carpeted floor, paneled and plastered wall surfaces, suspended acoustic-tile ceilings and flush-fluorescent lighting fixtures.

Ticket Office

A ticket office would be located across from the ticket counter, in the southeast corner of the terminal, and would house the supervisor's office, cashier's office with safe, storage room for tickets, supplies and equipment, and an employee's lounge with rest rooms. These areas would be air conditioned and finished with vinyl-asbestos floor tile, plastered wall surfaces, suspended acoustic-tile ceilings and flush-fluorescent lighting fixtures.

Security

A new security office would be constructed within part of an existing communication center. Closed-circuit TV cameras would scan platform levels, stairs and escalators and terminal entrances. TV screens would be monitored in the security office at all times of terminal operation.

9.7.6 RECOMMENDED BUILDING AND SITE IMPROVEMENTS

Exterior

The exterior surfaces of all stone masonry and abutment walls at the terminal would be thoroughly cleaned. A metal-curtain wall covering would be installed over all exterior brick surfaces. New doors and windows would be provided throughout the facility. Platform and track areas which constitute the roof of the terminal would be waterproofed.

The overpass bridges to the east and west of the terminal would be thoroughly cleaned, made structurally sound and reinforced where necessary. After completion of this rework, the steelwork would be painted with protective coatings. The underside of these bridges would be well illuminated. New lighting and traffic control signals would be installed.

The entire second and third floors on the south side of the terminal and the entire second floor on the north side of the terminal, including the clock tower, would be removed down to the existing platform levels. The existing canopy roofs and supports at the eastbound and westbound existing platforms would also be removed.

Following removal of the second and third floor of the terminal and platform canopies of the eastbound and westbound platforms, new high-level platforms would be installed corresponding in elevation to the center high-level passenger platform. Following the installation of these platforms, new canopy roofs, side and end walls would be erected to protect passengers during inclement weather. These platforms would be well illuminated and serviced by the terminal public-address system.

The existing center high-level passenger platform, serving HSR traffic, would be extended at both the east and west ends, to a total length of 1,200 feet. This is necessary to accommodate the use of train lengths up to 14 passenger cars. The canopy roof over the center platform would also be extended the full length of the platform and properly supported and illuminated.

9.7.7 INTERIOR

That portion of the existing first floor, which is elevated above street level, would be removed and the area excavated for a new first floor essentially flush with the sidewalk at the Front Street entrance. About half of the present floor is at street level.

Existing interior partitions would be removed and interior spaces rearranged in accordance with the recommended first-floor plan. Existing windows and doorways, not to be used, would be closed off and finished with suitable building materials. Interior floors of the waiting and ticketing areas would be carpeted. Hard-wearing resilient floor coverings would be installed in other floor areas. Wet areas would be ceramic-tiled. All wall surfaces would be hard-wearing panels which could be easily cleaned. Main-floor ceilings would be finished in suspended acoustical tile.

New escalators and stairs would be installed to service all three passenger platforms. Two escalators and two stairs would service the center HSR platform. One escalator and stairway each would service the eastbound and westbound platforms for commuter service. Access to these stairs and escalators would be controlled by security gates, which would admit passengers to the upper platforms only at the arrival of the train. These gates would be electronically operated and under surveillance by authorized railroad personnel.

9.7.8 UTILITIES

The existing steam piping for the heating system, within the terminal, would be completely removed to the point of entrance into the building and new steam mains installed. The present boiler providing steam to the terminal is situated in another structure to the east of the terminal

building. Steam from this boiler is brought underground to the terminal. The boiler is in good condition and would be reused. This also includes its accompanying controls and accessories. The entire area of the main floor of the terminal would receive summer/winter air conditioning, and would be steam heated by means of coils in the ductwork. Heat would be distributed throughout the terminal by overhead ceiling diffusers.

The existing plumbing system, including hot and cold-water supply and drainage, would be removed due to its deteriorated condition. It would be replaced with new piping, fixtures and all accessory items to service the new terminal arrangement. New sanitary drainage and storm water drainage would be installed, replacing the existing deteriorated system. The existing electrical service to the terminal is not adequate to supply the proper power demand needed for the proposed facility. It will therefore be necessary to increase the size of incoming services and the distribution equipment throughout the entire facility.

Provisions will be made for emergency lighting for the terminal, upper platforms and the parking garage complex. This emergency power source would also provide emergency service for all three elevators.

9.8 CAPITAL COSTS

Unit costs based on current prices have been developed for major reconstruction and construction items. These unit prices and the illustrated concept sketch plans form the basis for the following estimate of construction costs:

Reconstruction of terminal	$ 914,000
Platforms and canopies	921,000
Escalators, stairs and elevators	306,000
HVAC, plumbing and lighting	932,000
CCTV surveillance and electronic information systems	170,000
Sitework including paving, curbs and sidewalks	18,000
Temporary terminal and access to platforms	200,000
New roadways around parking structure	150,000
Subtotal terminal and site work	$3,611,000
Contingency – 30%	1,083,000
Total terminal cost	$4,694,000

Extension of HSR center high-level platform requires track adjustments. Cost for track-work, relocation of signals and communication lines, and catenary support and wiring adjustments are not included in this estimate.

Parking-facility construction cost of $7,590,000 was calculated at a rate of $3,300 per car space for a rounded-off approximate median of 2,300 parking spaces required for HSR patrons.

An estimated $2,000,000 would be required for land acquisition for parking structures. The estimated amount would include the cost of purchasing the property, demolition of on-site buildings and complete site clearance.

9.9 SCHEDULING AND PHASING OF CONSTRUCTION

Terminal reconstruction and site improvements would be undertaken during a 30-month period.

The following schedule is a recommended procedure for phasing the work involved at this terminal:

(1) Provide temporary ticketing and waiting areas, including baggage handling, railway operation offices, and public rest room conveniences. These facilities would be housed in a temporary frame-type structure, situated on property southwest of the existing terminal.

(2) Complete renovation of the terminal, including demolition and restructuring, should now be executed; this also includes provision for temporary access/egress to the HSR center platform and eastbound and westbound commuter platforms.

(3) Demolition of existing five-story building, connecting bridge to the existing terminal, and all minor structures, south and southwest of the existing terminal.

(4) Erect new parking-garage complex, complete with roadwork, drainage, lighting and general paving work around terminal.

(5) Relocate terminal facilities/equipment, etc., into new terminal; and, remove temporary terminal structure.

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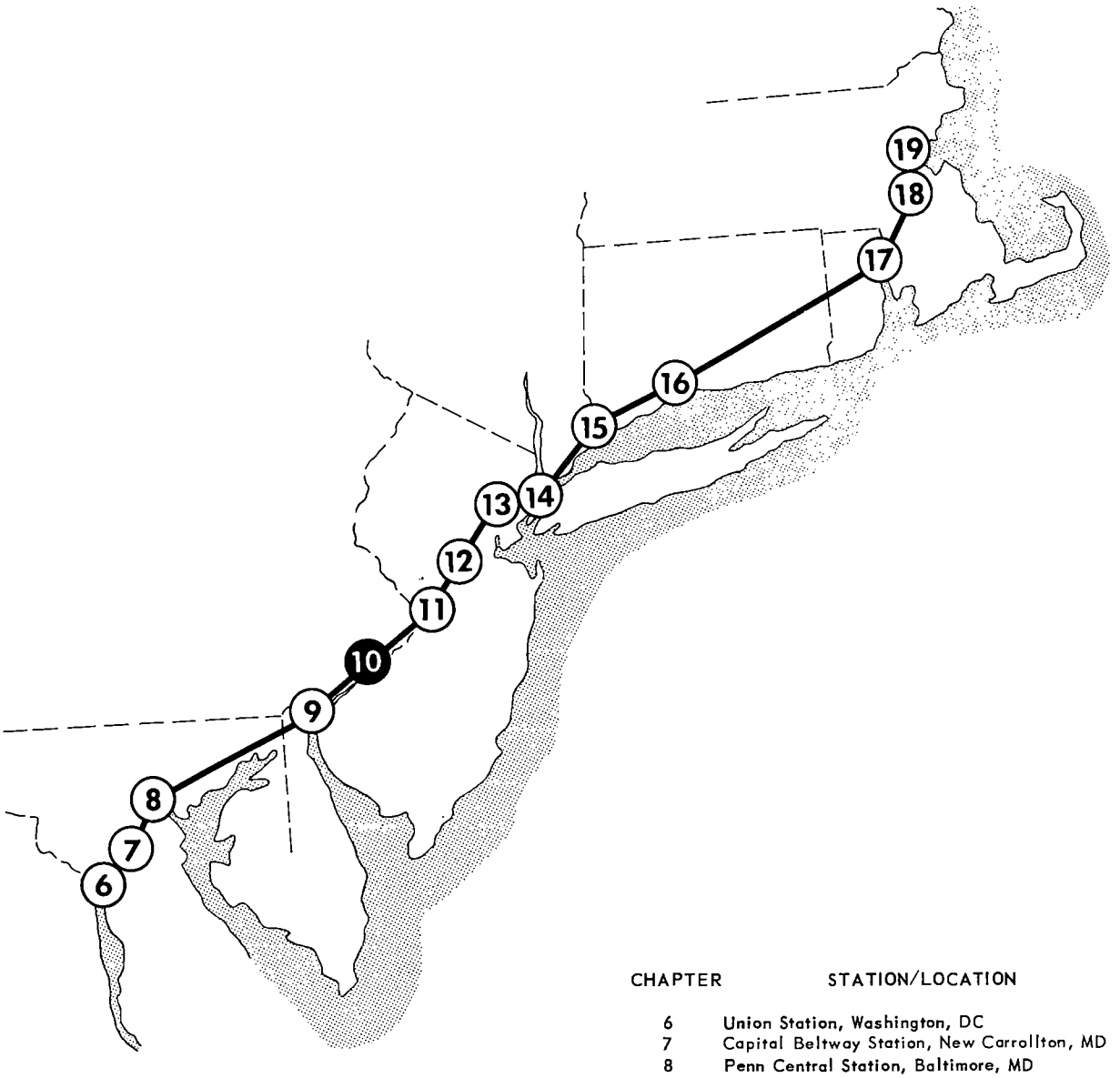
STATION LOCATIONS ALONG NORTHEAST CORRIDOR



CHAPTER	STATION/LOCATION
6	Union Station, Washington, DC
7	Capital Beltway Station, New Carrollton, MD
8	Penn Central Station, Baltimore, MD
9	Wilmington Station, Wilmington, DE
10	Penn Central Station, 30th Street, Phila., PA
11	Trenton Station, Trenton, NJ
12	Metropark Station, Iselin, NJ
13	Penn Central Station, Newark, NJ
14	Pennsylvania Station, New York, NY
15	Stamford Station, Stamford, CT
16	New Haven Station, New Haven, CT
17	Union Station, Providence, RI
18	Route 128 Station, Dedham, MA
19	South Station, Boston, MA

10.0 PENN CENTRAL STATION, 30TH STREET, PHILADELPHIA, PENNSYLVANIA

10.1 STATISTICAL FRAMEWORK

10.1.1 OWNERSHIP AND USERS

The 30th Street Station is owned by the Penn Central Transportation Company and is used by Amtrak and eight commuter lines. Amtrak and Penn Central long-distance trains utilize the lower level and Penn Central commuter lines utilize the upper level.

10.1.2 PROPERTIES AND FACILITIES

The terminal was constructed around 1934 and is an excellent example of Corinthian architecture. The structure consists of four levels. The main floor is at street level. Tracks and the platforms for the Metroliner, Amtrak and Penn Central through trains are located one level below the main floor. There are 10 tracks; 2 are used by the Metroliner and 8 are used by Amtrak and Penn Central. Commuter facilities are located on the intermediate upper level and all commuter tracks are located one level above. The levels are connected by stairways, escalators and elevators. A parking facility is immediately north of the terminal.

10.1.3 CURRENT ACTIVITY LEVELS

Commuter trains dominate the usage of the terminal. Penn Central, in conjunction with the Southeastern Pennsylvania Transportation Authority (SEPTA), operates six commuter lines. These lines and the number of trains serving each line on an average weekday are:

Chestnut Hill	72
Levittown (and Trenton)	41
Manayunk	36
Media-West Chester	77
Paoli-Bryn Mawr	127
Wilmington	54

Amtrak operates 76 trains into the 30th Street Station on an average weekday; 30 of these trains are Metroliners. Morning peak-hour-demand occurs between 8:00 a.m. and 9:00 a.m. when 53 trains arrive or depart. Evening peak-hour-demand occurs between 5:00 p.m. and 6:00 p.m. with 42 trains arriving or departing.

1974 peak-day patronage (one way) totaled 14,900; 9,500 of these were commuters and 5,400 were Amtrak patrons.

According to a 1967 study, commuter rail and rapid transit constituted the primary mode of access to the 30th Street Station, accounting for 38 percent of all arrivals. Buses accounted for 19 percent of the arrivals and taxis for 16 percent. Approximately 22 percent of all arrivals were via automobile, including park-and-ride and kiss-and-ride. Walking accounted for five percent of all arrivals.

Although rapid transit and commuter rail is a major access mode, both systems tend to be overcrowded. In addition, the rapid rail system is generally unattractive.

10.2 TERMINAL VICINITY INFRASTRUCTURE

10.2.1 LOCATION CONSIDERATIONS

Terminal location is shown in Figure 10-1, indicating the transportation network and activity centers in the general city setting. Activity centers and proposed activities are listed in Table 10-1.

Location with Respect to Regional Highway System

Access from the 30th Street Station to the Philadelphia regional highway network is only fair. The terminal is adjacent to the Schuylkill Expressway (I-76), the major expressway route in the city. North of the terminal, I-76 generally follows the river for about 18 miles to Valley Forge, Pennsylvania where it intersects the Pennsylvania Turnpike, the major east-west highway in southern Pennsylvania.

Southeast of the terminal, I-76 crosses the Delaware River via the Walt Whitman bridge and intersects I-676 just south of Camden, New Jersey. Three miles further southeast I-76, intersects I-295 and then the New Jersey Turnpike.

I-76 and I-676 create an incomplete expressway loop around central Philadelphia. I-76 forms the western and southern boundaries of the loop with the terminal located near the northwest corner of the loop. I-676 in New Jersey, forms the eastern boundary and the Benjamin Franklin Bridge, over the Delaware River, Vine Street and another segment of I-676 complete the loop, meeting I-76 north of the terminal.

The Schuylkill Expressway provides access to major activities in the south and west areas of Philadelphia including the Veteran's Stadium, the Spectrum, the U.S. Naval Hospital, the U.S. Navy Yard, the Philadelphia Food Center, the Philadelphia International Airport, John F. Kennedy Stadium and industrial complexes to the southwest. Other significant highways include U.S. Route 30 and U.S. Route 1. U.S. Route 1 crosses the Schuylkill River approximately five miles north of the terminal. Portions of I-76 and Vine Street are designated as U.S. Route 30; they link I-76 and I-676 with the terminal. State Route 3, connecting Philadelphia and West Chester, passes in the immediate vicinity of the 30th Street Station.

The terminal is located in an area of heavy traffic congestion. In addition, increased traffic volumes on many of the major highways and expressways in the area are resulting in more congestion and decreased average speeds. It is estimated that the projected 1985 vehicular traffic from

New Jersey will exceed the practical capacity of the I-76/I-676 Delaware River bridges.

Relationship to Other Inter-Regional Transportation Facilities

The bus terminals for Greyhound and Capital Trailways are more conveniently located, with respect to the central business district (CBD), than the 30th Street Station. Two other commuter rail terminals, the Reading Railroad Terminal and Penn Central Suburban Station, are also more conveniently located with respect to the CBD. Both serve commuters exclusively. All four of the terminals are within three blocks of City Hall. Although these rail and bus terminals are beyond reasonable walking distance from the 30th Street Station, they are only a short cab ride from the terminal. In addition, rapid rail and bus transit lines connect the 30th Street Station with these other terminals. There is a direct rail connection between the 30th Street Station and the Penn Suburban Station. Philadelphia International Airport is approximately 6.5 miles south of the CBD. There is a direct-express bus service between the 30th Street Station and the airport.

Existing Transit Service

Philadelphia is served by an extensive local public-transportation system. Service within the metropolitan area is comprehensive and consists of more than 250 miles of commuter rail lines, more than 80 miles of rail rapid-transit lines (subways and elevated), more than 150 miles of street car lines, approximately 50 miles of high-speed, grade-separated trolley lines and 2,800 miles of bus lines. All are operated by SEPTA. Except for a single corridor, the New Jersey sector of the SMSA is devoid of high-speed transit service.

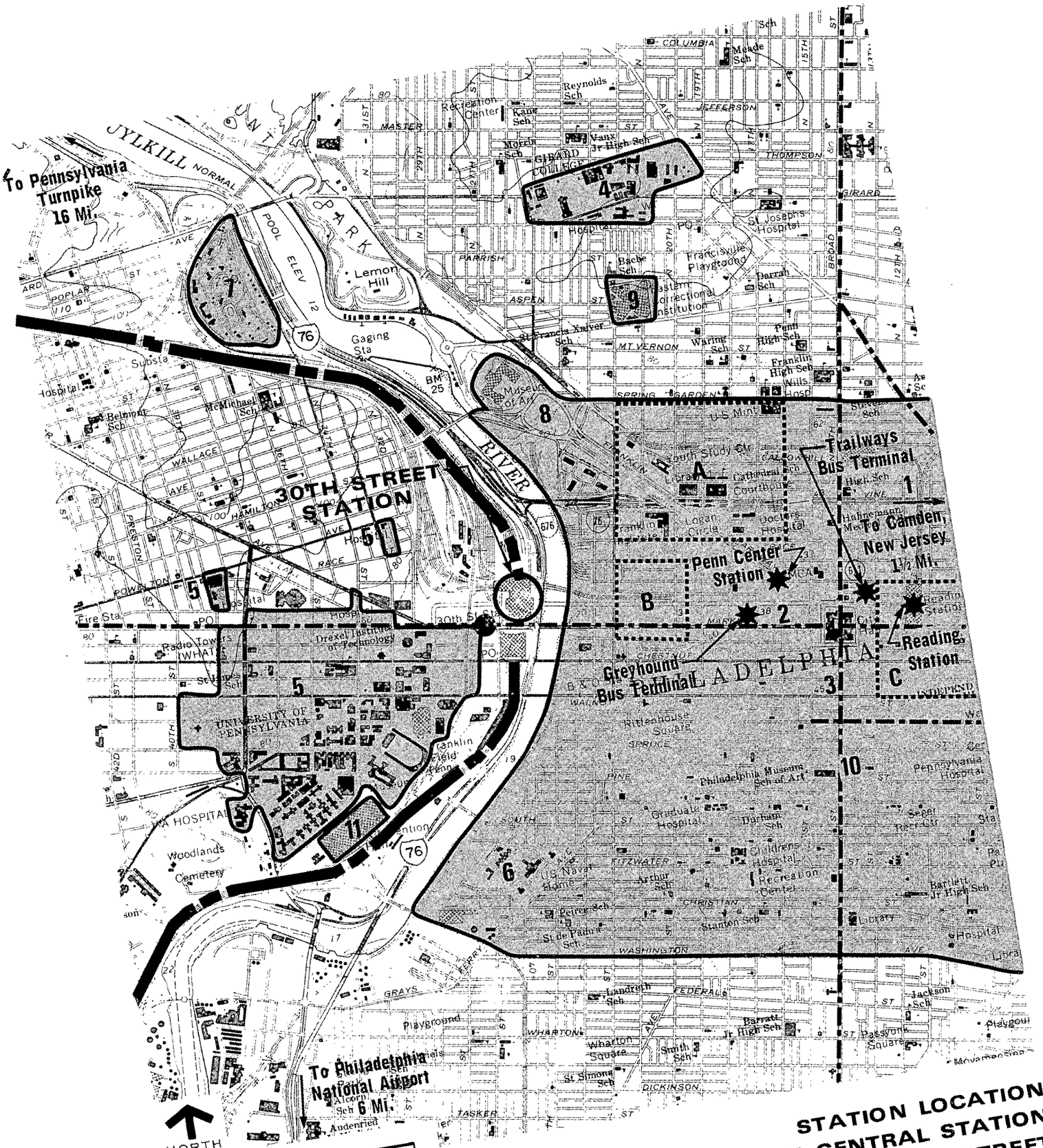
The connections at the terminal are generally good, and headways are convenient, However, the surface systems encounter traffic congestion, and access to the rapid transit and underground trolley systems is inconvenient and unattractive.

Rapid transit service to the 30th Street Station is provided by the Market-Frankford line. This line runs from the northeast section of the city (Frankford) south to Market Street, west to City Hall and the 30th Street Station and on to the western suburb of Upper Darby. It connects with the Broad Street line under City Hall. The Broad Street line is the main north-south line. It has recently been extended to Pattison Avenue and serves the Philadelphia Naval Base, the U.S. Naval Hospital, Veteran's Stadium and the John F. Kennedy Stadium.

Headways on the Market-Frankford line, at the 30th Street Station, are three minutes during peak hours and eight to ten minutes in off-peak hours.

Five street-car routes, 10, 11, 13, 34 and 36, furnish service to the 30th Street Station. Headways are 10 minutes or less during peak hours and between 10 to 25 minutes during off-peak hours.

Access to the 30th Street Station, from rail rapid-transit lines and underground street-car lines, is via a series of damp and dirty underground passages and stairways. There are two long and steep stairways which are particularly a problem for patrons, with luggage, or physically handicapped patrons. Passengers can exit the stations and walk at surface level. However, this alternative is not popular in inclement weather or after dark.



STATION LOCATION
PENN CENTRAL STATION
30TH STREET
PHILADELPHIA, PA

FIGURE 10-1

DC/STV

TABLE 10-1

ACTIVITY CENTERS, CITY SETTING

EXISTING ACTIVITIES

1	Chinatown
2	Penn Center, with nearby City Hall
3	Theatre/hotel district
4	Girard College
5	Educational/Medical Complex – including University of Pennsylvania, University of Pennsylvania Hospital, Drexel University, Franklin Field, University Science Center, Philadelphia General Hospital and Veterans Hospital
6	U.S. Naval Home
7	Philadelphia Zoo
8	Philadelphia Museum of Art
9	Eastern Correctional Institution
10	Central Business District – core of government, financial and office activities
11	Convention Hall

PROPOSED ACTIVITIES

A	Franklin Towne
B	West Market Area
C	Market Street East – includes 8.6 million square-feet of new office space and 2.7 million square-feet of commercial space

Many of the transit vehicles and subway stations, are in poor physical condition. In addition, the psychological effects of walking alone through dark winding corridors, with many areas hidden from view, prevent many passengers from using local public transportation.

Bus service to the terminal is via routes 31, 45 and D1. Headways are 10 minutes or less during peak hours and 10 to 20 minutes during off-peak hours. An airport express bus also stops at the terminal and operates on 30- minute headways.

Relationship to Activity Centers

Philadelphia's population is more than 1.9 million people; however, the greater metropolitan area has more than 4.8 million people. The CBD has undergone considerable reconstruction and current plans call for a huge increase in office and retail activity between 1974 and 1985.

The 30th Street Station is located across the Schuylkill River, west of the CBD. City Hall is the center of the CBD and is located at Penn Square, approximately 15 blocks from the terminal.

The CBD focuses on Penn Center at Penn Square, and includes the core of the city government, major financial institutions and business offices. This area also includes the theatre and hotel districts, multi-story apartment structures, large department stores, restaurants and entertainment facilities. Several new office towers are being erected in the West Market Street area, between the 30th Street Station and City Hall.

Among the major cultural centers in the city are the Pennsylvania Academy of Fine Arts, the Philadelphia Museum of Art, the Philadelphia Academy of Music, the Curtis Institute of Music, the Franklin Institute, the Rodin Museum and the University Museum. Several of these facilities are located in the general terminal area, north and east of the terminal and northwest of the CBD.

Philadelphia has many centers of higher education, including the University of Pennsylvania, Drexel Institute, Temple University, the Philadelphia Museum College of Art and the Moore Institute. The University of Pennsylvania and Drexel Institute occupy much of the area just southwest of the terminal.

Other colleges located near the fringe areas of the city include LaSalle College, St Joseph's College, Villanova University, Pennsylvania State University Extension campuses, Haverford College, Swarthmore College, Bryn Mawr College, Beaver College and the Philadelphia College of Textiles and Sciences.

Several major medical complexes are located fairly close to the 30th Street Station. Presbyterian Hospital is approximately eight blocks west of the terminal. The University of Pennsylvania Hospital, Philadelphia General Hospital and the U.S. Veteran's Administration Hospital are located to the south and southwest of the terminal. Other medical complexes, in the CBD area, include Jefferson Hospital, the new Children's Hospital, the Hahnemann Hospital, the Temple University Hospital and the U.S. Naval Hospital.

Major sports events are held at the new Veteran's Stadium, the Spectrum, the John F. Kennedy Stadium and the University of Pennsylvania's Franklin Field, which is less than six blocks southwest of the terminal.

Conventions and civic engagements are held at Convention Hall and the recently constructed Civic Center. Both are located adjacent to the University of Pennsylvania campus and are also within close proximity to the terminal.

Independence Mall and Independence Hall, the focus of several points of historical interest, and the Society Hill restoration area, are approximately 20 blocks east of the terminal, beyond the major concentration of office and retail activities.

The Philadelphia Inquirer newspaper complex, Temple University's Campus and Hospital, The Franklin Institute, the Philadelphia Art Museum, a huge apartment complex (Parktower Place), Hahnemann Hospital and Wills Eye Hospital are located to the north and northeast of the terminal. The Schuylkill Expressway provides access north to Fairmount Park, the Philadelphia Zoo and Valley Forge Park.

Although the 30th Street Station is close to most major activity centers in the CBD, access from the terminal to these activities is not always convenient. The terminal is separated from the CBD by the Schuylkill River, traffic circulation is generally poor and congestion is a major problem.

10.2.2 LAND USE

Existing Characteristics, Terminal Area

Figure 10-2 shows the immediate terminal environs and local circulation system.

The U.S. Post Office is located on the block immediately south of the terminal. Immediately west of the terminal is the Philadelphia Evening Bulletin (newspaper) building. Both facilities generate heavy traffic. To the southwest is another major business facility.

The Powelton Railroad Yard and a parking lot for railroad patrons are directly north of the terminal. The Schuylkill River is east of the terminal.

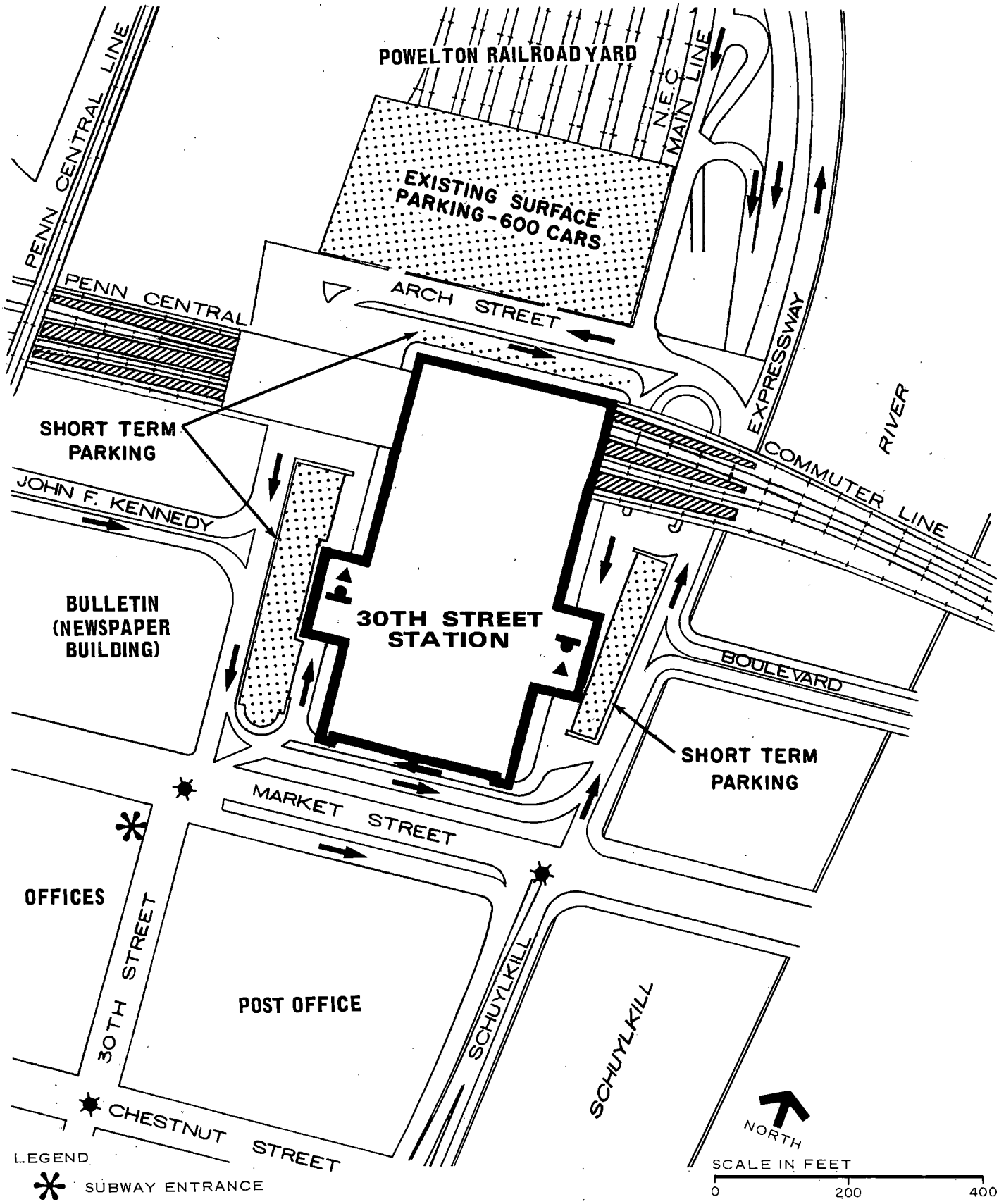
Planning Factors, General Terminal Area

Activity centers and other planning factors in the general terminal area are shown in Figure 10-3 and listed in Table 10-2.

Two major projects are currently underway in the fringe area of the CBD, east of the terminal and across the Schuylkill River. These projects are Franklin Towne and Market Street West.

The Franklin Towne project, immediately north of the CBD, involves the reconstruction and restoration of many existing structures and the development of housing and small commercial shopping districts, with an overall theme of an historic town within the city. Franklin Towne is expected to eventually have a population of 25,000.

The Market Street West project includes additional facilities for Drexel University and the University of Pennsylvania, as well as office towers.



EXISTING STATION ENVIRONS
PENN CENTRAL STATION
30TH STREET
PHILADELPHIA, PA

FIGURE 10-2

The area southwest of the terminal, on the west side of the Schuylkill River, is dominated by the campus of the University of Pennsylvania. Major medical facilities and the large convention center are located further southwest.

The areas north and west of the terminal consist of a mixture of uses with considerable residential development. These areas are characterized by high poverty and high unemployment.

10.3 EXISTING PASSENGER HANDLING FACILITIES

10.3.1 PASSENGER ACCESS AND EGRESS

Passengers arrive at the terminal by bus, taxi, commuter train and automobile. The main entrance to the terminal is located on the west side of the structure (toward 30th and Market Streets). See photo 1. A secondary entrance is located on the east side. See photo 2. There are entrances on the north and south sides of the terminal, but these are seldom used. The main and secondary entrances are protected by extremely high covered porticos. See photo 3.

Automobile Access

The terminal is located at 30th and Market Streets. Major highway access to the terminal is provided by the Schuylkill Expressway (I-76).

Market Street, south of the terminal, is a major access route to the CBD. J. F. Kennedy Boulevard, which crosses the Schuylkill River directly east of the terminal, is also a major access route in and out of the CBD. Both routes channel traffic from the CBD to the Schuylkill Expressway. In 1968, Market Street carried almost 19,000 vehicles per day in the immediate vicinity of the terminal, while J. F. Kennedy Boulevard carried 17,500 vehicles per day over the Schuylkill River.

On and off-ramps to the Schuylkill Expressway are located on Arch Street, northeast of the terminal. An on-ramp is also located off Market Street, southeast of the terminal.

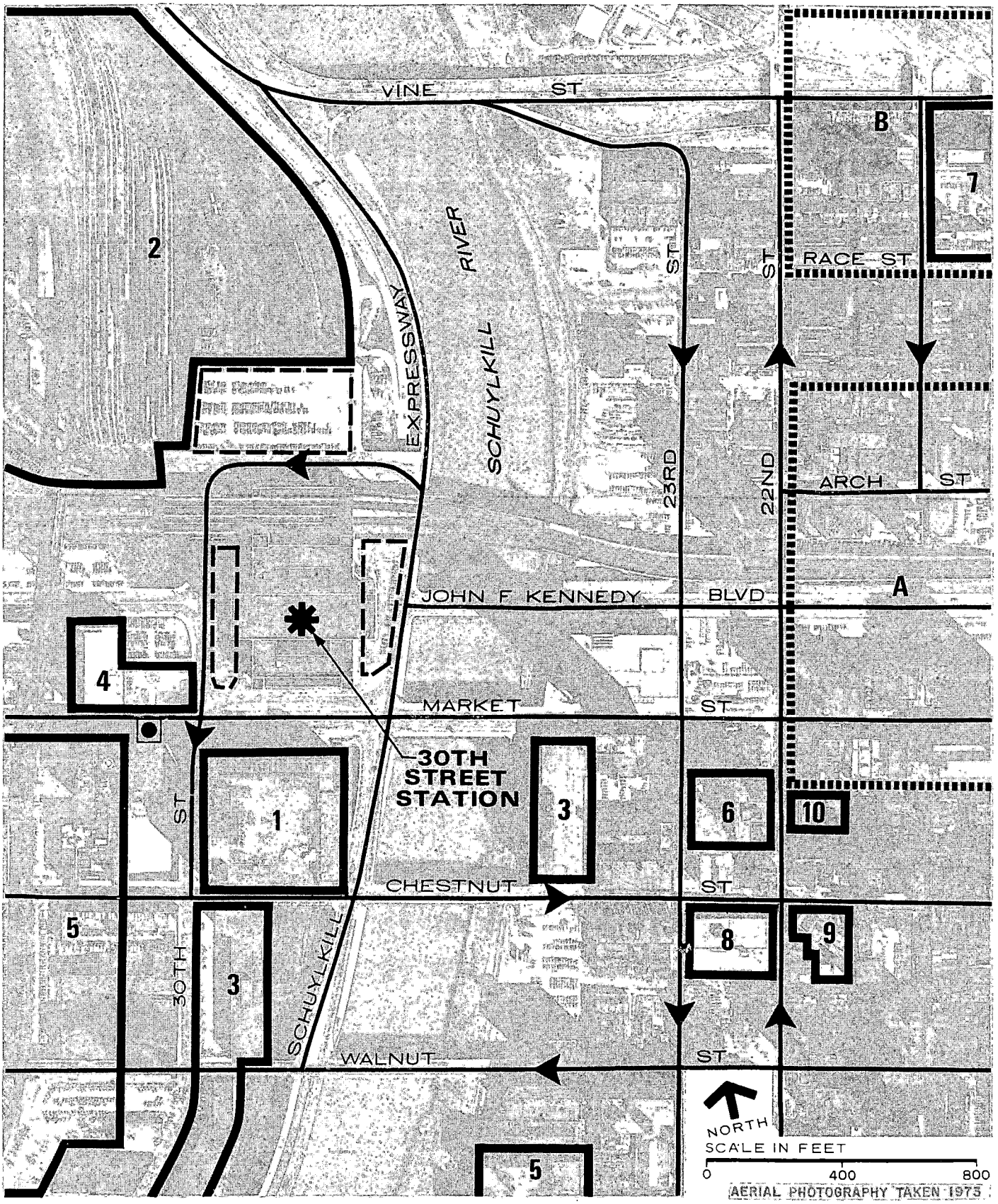
Despite the city's extensive public transportation system, the automobile is the dominant mode of travel in Philadelphia. Major congestion problems occur in the terminal area during peak hours, particularly on the bridge approaches to the expressway.

Other Connections

Taxi and kiss-and-ride areas are located adjacent to the terminal on the east and west sides of the building. Pick-up and drop-off areas for rental cars are also available on the east side of the terminal.

10.3.2 PARKING

The parking situation, in the vicinity of the 30th Street Station, is poor. Within walking distance from the terminal, there is only one major facility for long-term parking. This facility, immediately north of the terminal, has a capacity of approximately 600 cars.



LEGEND

- TRANSIT STATION
- PARKING
- BUS ROUTE
- 0 EXISTING ACTIVITY CENTER (SEE TABLE 10-2)
- A PROPOSED ACTIVITY CENTER (SEE TABLE 10-2)

PLANNING FACTORS
PENN CENTRAL STATION
30TH STREET
PHILADELPHIA, PA
FIGURE 10-3

TABLE 10-2

ACTIVITY CENTERS, GENERAL STATION AREA

EXISTING ACTIVITIES

1	U.S. Post Office
2	Powelton Railroad Yard
3	Warehousing activities
4	Philadelphia Evening Bulletin – newspaper building
5	University of Pennsylvania and Drexel University
6	Sydney Hillman Medical Center Apartments; Auto Club of Philadelphia
7	Franklin Institute
8	Albert M. Greenfield School
9	Medical Center
10	College of Physicians of Philadelphia

PROPOSED ACTIVITIES

A	West Market Area
B	Franklin Towne

Approximately 200 additional spaces are available in the general terminal area. The demand for parking in the area far exceeds the supply and by 9:00 or 10:00 a.m. all available spaces are usually taken.

On-street parking is not permitted in the area adjacent to the terminal. However, there are 168 short-term metered spaces on the east and west sides of the terminal.

10.3.3 PASSENGER PROCESSING

For Existing Main and Mezzanine Floor Plans, see Figure 10-4; for Existing Platform Plan see Figure 10-5.

Functional Flow

Passengers enter the terminal primarily from the main entrance (west side) and the secondary entrance on the east side. Passengers then proceed to a large ticket counter where they can obtain tickets for Amtrak, Penn Central through trains and the Metroliner. Commuters take an ascending concourse, or stairs and escalators, to the intermediate upper level where they purchase tickets for the various commuter lines. After passengers purchase tickets on the main floor, they can wait for trains in the main floor waiting area or in two waiting rooms on the east side of the terminal. Access to the passenger platforms for Amtrak, Penn Central through trains and the Metroliner, one level below, is via stairways or escalators. Handicapped passengers are assisted into any of five elevators that are available in the terminal (used for transporting baggage and freight), and taken down to train platform level. There are no provisions for assisting handicapped passengers to the upper level for commuter trains.

Ticket Purchase

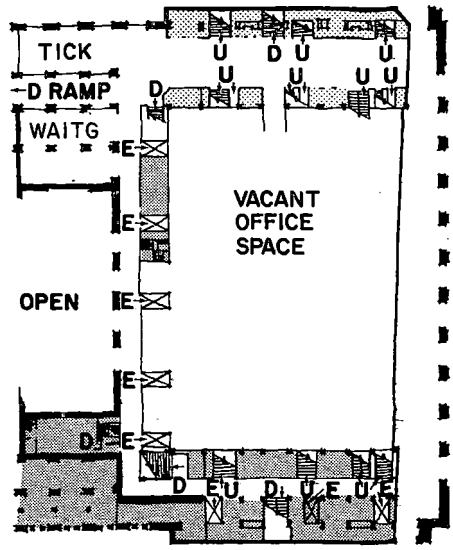
Tickets for Amtrak, Penn Central through trains and the Metroliner are purchased at the ticket counter on the east end of the main floor. See photo 4. There are 16 service windows. Commuter ticket offices are located on the intermediate upper level.

Baggage Handling

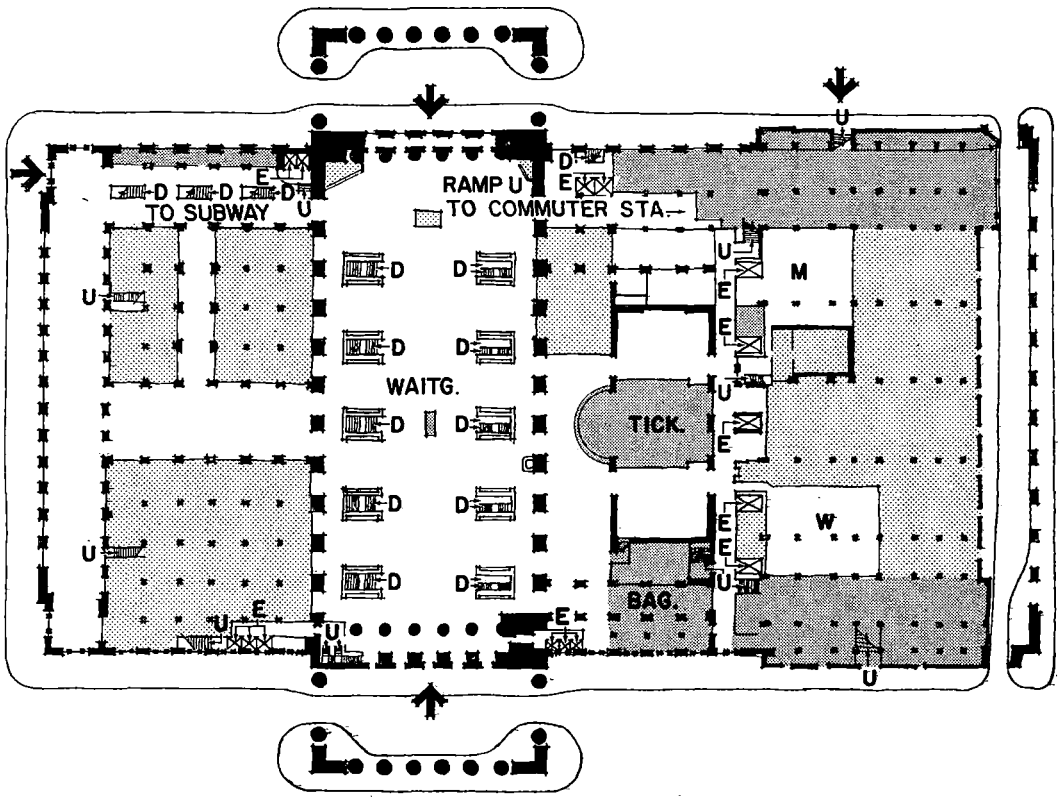
Passengers may have their baggage picked up at curbside by porters and checked in at the baggage counter. From there, elevators transport baggage to the platform level below. Passengers may also carry their baggage by hand, have it checked independently and have it carried by porter or carry it themselves to the trains.

Waiting Areas

There is a large waiting area with a cathedral-type ceiling on the main floor. See photo 5. Seating is provided for approximately 250 persons. There is access from the waiting area to the concession areas and related public services. Many areas within the terminal are not fully utilized at present. There are two smaller, but seldom used waiting rooms to the east of the main waiting room, with seating for 216 persons. See photo 6.



MEZZANINE FLOOR PLAN



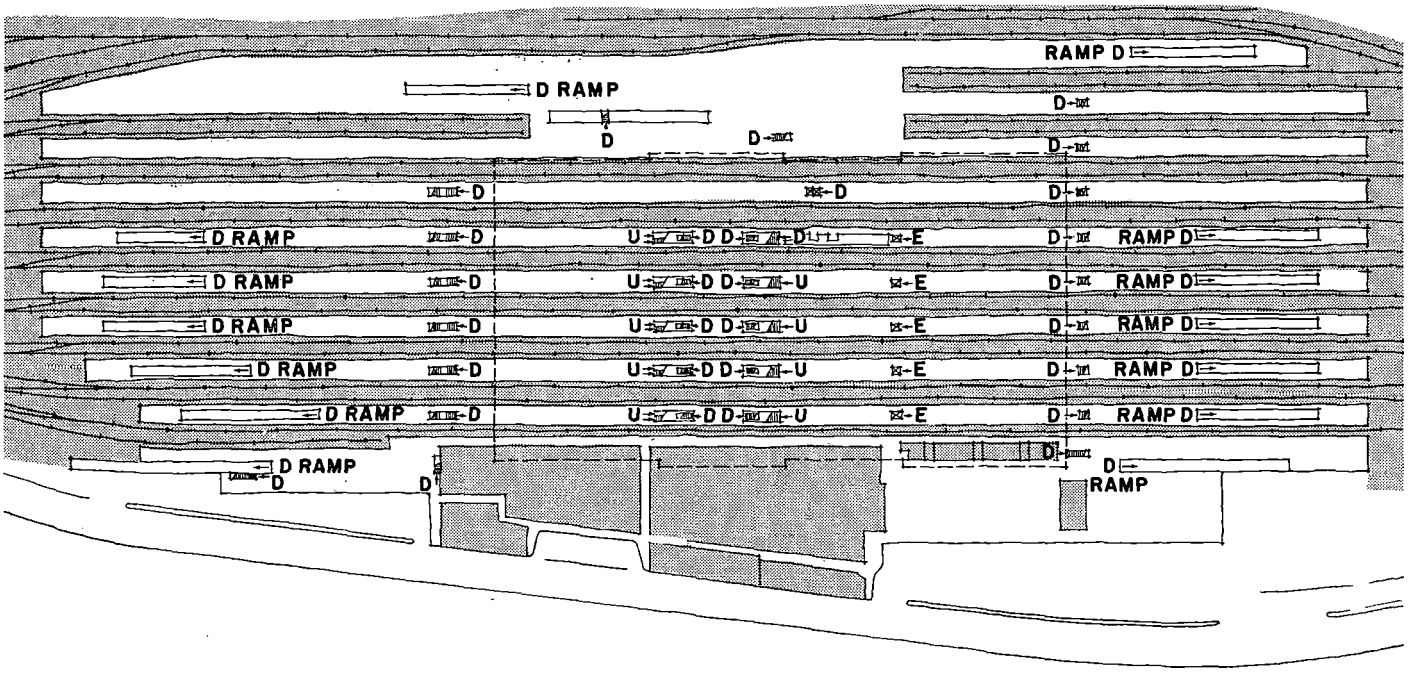
SCALE IN FEET
0 50 100

MAIN FLOOR PLAN

NORTH

LEGEND
CONCESSION
RAILROAD FUNCTION

EXISTING PENN CENTRAL STATION
30TH STREET
PHILADELPHIA, PA
FIGURE 10-4



SCALE IN FEET

0 100 200

PLATFORM PLAN

NORTH

LEGEND

RAILROAD FUNCTION

EXISTING PENN CENTRAL STATION
30TH STREET
PHILADELPHIA, PA

FIGURE 10-5

Concourse

The concourse leads from the main waiting room to the intermediate upper level and serves commuters. It has ticket offices, a waiting room and concessions. Stairs and escalators provide access and egress to the commuter platforms located one level above.

10.3.4 PUBLIC SERVICES

Rest Rooms

There are several men's and women's rest rooms within the terminal. Some of the facilities within these rooms are not needed at present and have been closed off.

Storage Lockers

There are adequate storage lockers for current needs.

Telephones

Public telephones are located on the main floor and the intermediate upper level and are in heavy demand.

Rentals and Accommodations

Auto rental services are provided by three auto rental firms. Hotel accommodations can also be secured through these agencies, or on the telephone.

U.S. Mail

Mail service is excellent because the post office is across Market Street from the terminal. There is no substation within the terminal.

Information

An information booth is located in the middle of the main floor waiting room. See photo 7. Train arrivals are posted on electronically-operated train schedule boards. A public address system is also used for announcements of train arrivals; however, the accoustics in the waiting room are extremely poor, and the sound is often inaudible.

10.3.5 CONCESSIONS

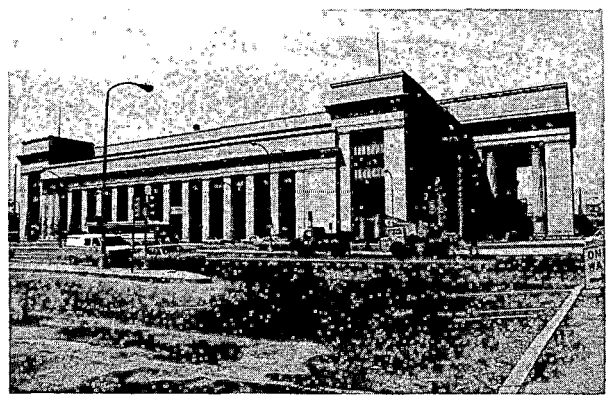
News Stand

A news stand is located on the main floor of the waiting room. It carries in-town and out-of-town newspapers and current magazines. See photo 8.

PENN CENTRAL STATION – 30TH STREET, PHILADELPHIA, PA

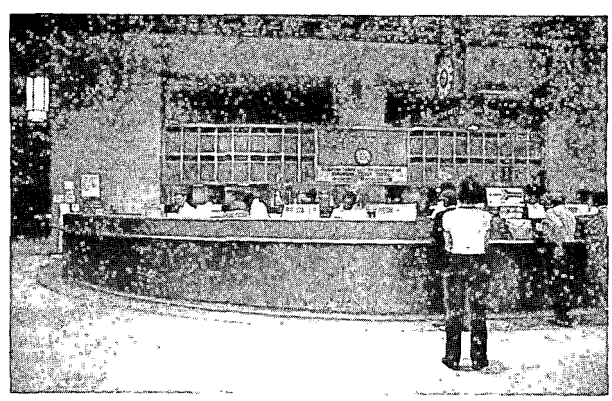
EXISTING FACILITY

1. Main Entrance on West Side of Terminal



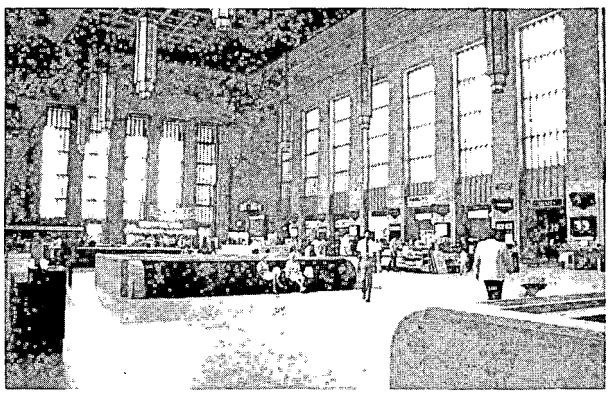
2. Secondary Entrance on East Side of Terminal

3. Main Entrance Protected by High Portico



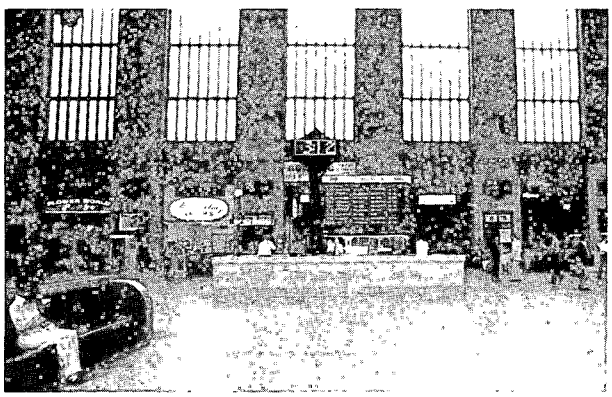
4. Ticketing Area

EXISTING FACILITY (Cont'd)

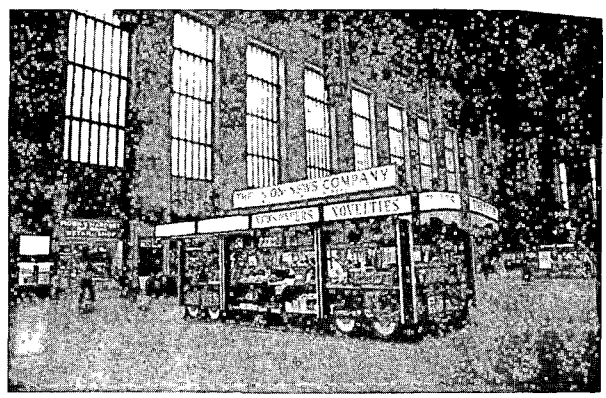


5. Main Waiting Room

6. Secondary Waiting Room Adjacent to Ticket Area



7. Information Booth on Terminal Main Floor



8. News Stand on Terminal Main Floor

Additional Concessions

The terminal also houses a restaurant and cocktail lounge, drug store and lunch counter, several gift and novelty shops, independent snack bars, candy and bakery shops, barber shop and shoe shine stand, beauty shop and various small specialty shops. A banking facility, provided by the Philadelphia Saving Fund Society, is located on the main floor. There are also a few vending machines.

10.3.6 RAIL PASSENGER OPERATIONS FACILITIES

The Station Master's office and the Passenger Services office are located in the northwest corner of the terminal off the main floor. Ticket offices are located adjacent to the ticket counters on the main floor and intermediate upper level. Space is also available for ticket and cash storage. A lounge, rest rooms and locker room are available for all terminal employees. Other Penn Central supervisory and general office personnel occupy offices on the upper levels.

Surveillance is provided by Penn Central security guards and appears to be very effective.

10.3.7 FACILITY CONDITIONS

Structural Integrity

The structural integrity is good.

Utilities

Steam for heating is purchased from the Philadelphia Electric Co.; gas service is obtained from the Philadelphia Gas Works.

Water, electrical and sewage service facilities are reported to be adequate.

10.4 FORECAST ACTIVITY LEVELS

10.4.1 PROJECTED DESIGN DAY PATRONAGE

The 1990 peak design day is expected to be 22,000 HSR patrons and 20,500 commuters for a total loading of 42,500. This is approximately three times the present loading at the terminal.

With continued redevelopment of downtown Philadelphia, a high level of HSR use can be expected. However, reaching the higher level of the projection is largely dependent on whether improvements are made to the local public transportation system.

Peak hour patronage is expected to reach 3,300 HSR and 6,800 commuter passengers for a total loading of 10,000.

10.4.2 PROJECTED MODE OF ACCESS

Percentages of daily passenger arrivals were projected to 1990, by mode, in the following table. Rail transit and bus combined are expected to account for approximately 50 percent of all arrivals.

	Percentage		
	Low	High	Median
Park-and-ride	5	10	8
Park-and-ride passenger	2	5	4
Kiss-and-ride	5	10	8
Rail transit	20	40	30
Bus	15	25	20
Taxi and limousine	15	25	20
Walk	5	10	10

10.4.3 PARKING REQUIREMENTS

Estimated parking requirements for HSR patrons, based on a 1990 design-day patronage of 22,000, range from 1,100 to 2,200 spaces.

10.5 PLANS AND PROPOSALS

10.5.1 TERMINAL IMPROVEMENTS

There are no current or proposed plans for improvements to this terminal.

10.5.2 FUTURE LAND USE PLANS

The intensive land use in the immediate terminal area is not likely to change in the forseeable future. The only major change would be the expansion of the proposed parking facility over the railroad yards. Additional changes, however, can be expected in nearby areas. Redevelopment of the office/business area, on the east side of the river, will likely continue and expand towards the terminal and the other side of the business district. Market Street East, located about four blocks east of City Hall, will probably have 8.6 million square feet of new office space and 2.7 million square feet of commercial space. Additional facilities for the University of Pennsylvania and Drexel Institute will probably also be constructed.

10.5.3 STREET AND TRAFFIC IMPROVEMENTS

It is planned that I-95 (Delaware Avenue in Philadelphia), will follow the Delaware River through the city. At the nearest point, I-95 will be two miles from the terminal on the other side of the CBD, with access from the proposed Vine Street extension.

10.5.4 TRANSIT IMPROVEMENTS

Substantial transit improvements have been proposed which will have direct impacts on the 30th Street Station. The proposed Center City Commuter Rail Connection (CCCRC) will link the 30th Street, Reading and Penn Central terminals and greatly increase the capacity of commuter rail lines. A rapid transit line has also been proposed to link the Suburban Station, 30th Street Station and the Philadelphia International Airport.

Under the CCCRC, longer commuter trains would reach the CBD much sooner than they do today. The connection would permit joint-use of the Penn Central and Reading railroads' commuter facilities. Construction of a rail tunnel between the Penn Central and Reading terminals would permit trains originating on one line to terminate on another. This will also permit two or more peak-hour runs with each train, thereby greatly expanding commuter rail service to Philadelphia. Since the 30th Street Station is a stop on the Penn Central line, it would be served by this improved connection. Under this project, an estimated 55,000 additional peak-hour trips would be made to the CBD, while automobile trips would be reduced by an estimated 24,000 (two way) per day, by the next decade. This would reduce the number of automobiles entering downtown Philadelphia by 1.5 million per year.

The proposed rail line to the airport would relieve much of the traffic between the CBD and the airport, as well as between Convention Hall (Civic Center) and the CBD. The 30th Street Station would also be a stop on this line. Non-stop service would be provided between the 30th Street Station and the airport. Additional terminals could be built to service this corridor at a later date. The line is expected to serve 10 percent of all air travelers, 28 percent of all air travelers destined for the CBD, and as many as 20 percent of all air travelers originating from or destined for areas served by Philadelphia's commuter rail system.

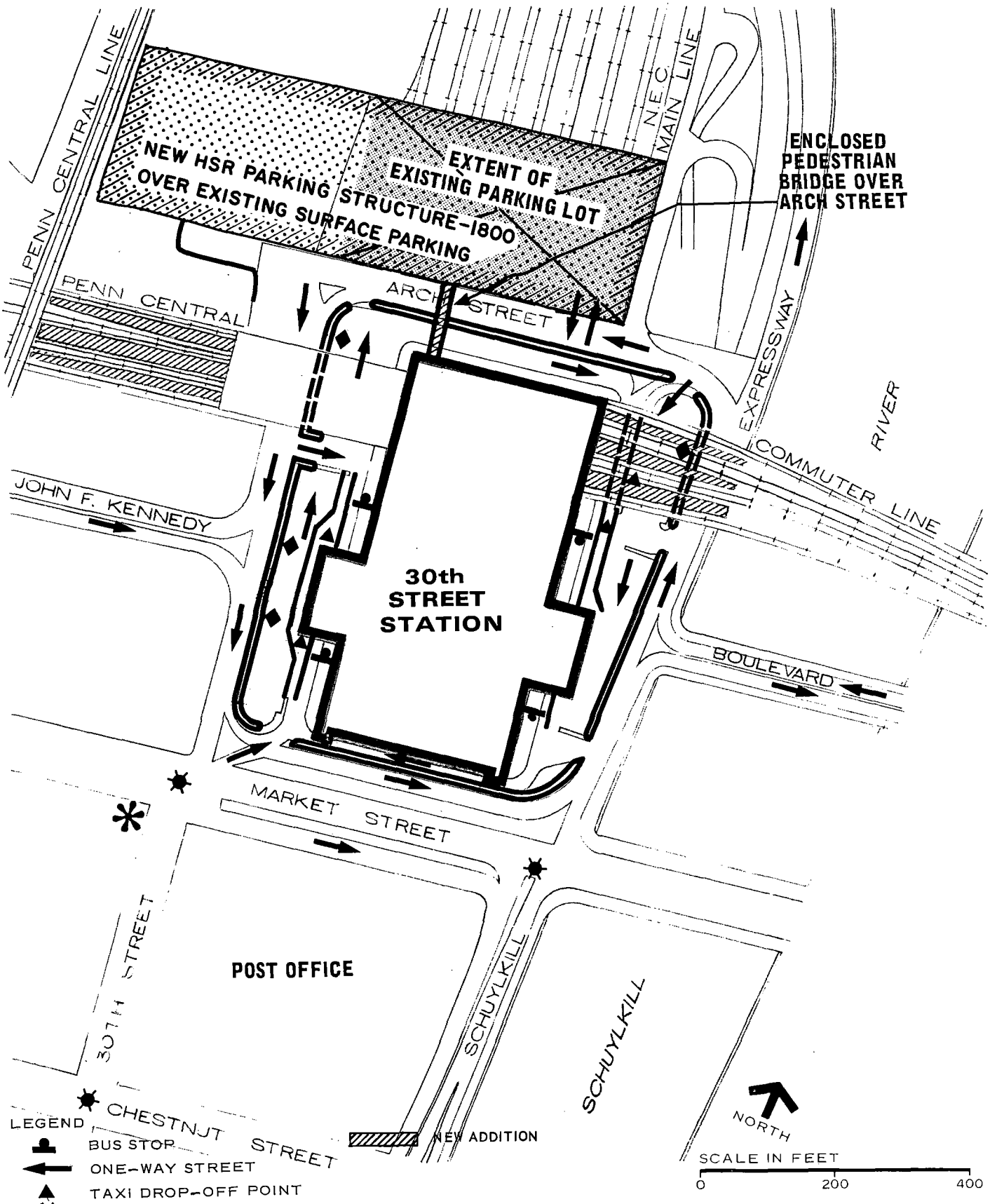
10.6 RECOMMENDED 1990 ACCESS/EGRESS AND PARKING PLANS

The recommended 1990 access/egress and parking plans for the 30th Street Station, Philadelphia, feature measures to improve circulation and reduce traffic congestion in the immediate terminal area. These include designation of certain streets as one way; construction of pedestrian islands; provision for special bus and taxi lanes; and, reduction of metered parking.

The main focus is on improved public-transportation service to the terminal as well as rehabilitation and/or reconstruction of all connections to local public transit systems at the terminal. These efforts are directed toward a reduction in automobile use and parking demand.

Provisions have been made for construction of a parking garage with an enclosed pedestrian overpass linking it to the terminal.

The general concept plan is shown in Figure 10-6.



1990 CONCEPT·
PENN CENTRAL STATION
30TH STREET
PHILADELPHIA, PA

FIGURE 10-6

10.6.1 STREET AND TRAFFIC IMPROVEMENTS

Improvements to the public transit and commuter rail systems, combined with the provision of outlying parking areas, will reduce some of the load on major arterials, but congestion is expected to remain a problem in the CBD and the terminal area. A comprehensive traffic circulation study is needed in order to develop detailed recommendations for relieving this congestion.

Essentially, circulation patterns in the immediate terminal area would remain the same. All traffic would move in a clockwise direction around the terminal. In addition, Arch Street, north of the terminal, would be one-way westbound and 30th Street, immediately west of the terminal, would be one-way southbound.

The major changes would be the reduction of metered parking and changes in access points to simplify the flow of traffic around the terminal.

10.6.2 PARKING

It is recommended that a new multi-level parking garage be constructed adjacent to and west of the existing parking facility, on the north side of Arch Street. Upon completion of the new garage, additional parking could be constructed over the existing garage.

An enclosed pedestrian overpass would be constructed over Arch Street to connect the new parking facility with the terminal. Ultimately, the whole parking complex could be linked to permit through movement of cars.

Since traffic congestion and air and noise pollution are already major problems in the area, the expansion of parking facilities will require approval from the city as well as the Environmental Protection Agency. Although provisions are being made for increased parking at the 30th Street Station, every effort should be made to reduce the potential parking demand through improved public transit service facilities and connections.

10.6.3 INTERMODAL TRANSFER

The two major transit projects will have a beneficial impact on HSR service at the 30th Street Station by providing better connections to the terminal. However, the major need in Philadelphia is the upgrading of all existing public transit systems. No other single policy is likely to result in more improved accessibility to the terminal or provide a stronger inducement to utilize HSR service.

The Environment Assessment by UMTA, on the Center City Commuter Rail Connection, has already observed that, "... a grave imbalance in the Philadelphia regional transportation system will be caused by increasing the already heavy reliance upon the automobile without due consideration to public transit". Furthermore, the Pennsylvania Department of Environmental Resources recommends that: "Transit expansion and improvement should be used to encourage motorists to use public transit ... and that ... auto disincentives should be used to further transit utilization."

Accordingly, the 1990 concept recommends a general upgrading of all connections to local public transportation systems at the 30th Street Station. This should include rehabilitation and/

or reconstruction of waiting areas, passageways, loading areas and drop-off zones for public transit. A moving sidewalk should be installed in the underground passageway leading to the 30th Street and local public-transportation stations. General physical improvements should be made to the passageways, and security should be increased. New escalators should be installed, and transit stations should be modernized.

A high level of HSR patronage has been projected for the 30th Street Station. However, without the recommended improvements to the public transit system, this increased terminal use would have a negative impact on existing transit and highway facilities, causing them to become overloaded. As a result, if transit improvements are not implemented, HSR patronage will probably not reach the higher level of projected use.

New facilities would also be provided to reduce congestion and improve circulation in the terminal environs. These include sidewalks, pedestrian islands, local bus lanes and bus stops, taxi lanes, short-term metered kiss-and-ride areas and controlled crosswalks on adjacent streets.

10.7 RECOMMENDED 1990 PASSENGER TERMINAL PLANS

The recommended 1990 terminal plans do not require any changes in the existing terminal structure, platform spacing or trackage. Interior and exterior surfaces will require cleaning and refurbishing. In addition, to accommodate HSR patrons and meet 1990 peak demands, new passenger facilities will be constructed and/or existing facilities expanded. These include a new terminal entrance at the end of the pedestrian overpass over the parking garage; expanded ticket and information facilities; separate waiting area for HSR passengers; improved public-address system; and, renovated space for new concessions.

The proposed terminal plans are shown in Figure 10-7.

10.7.1 PASSENGER ACCESS AND EGRESS

Arriving passengers would continue to use the main entrance (west entrance) as well as the secondary main entrance (east entrance). The two smaller entrances would also be retained.

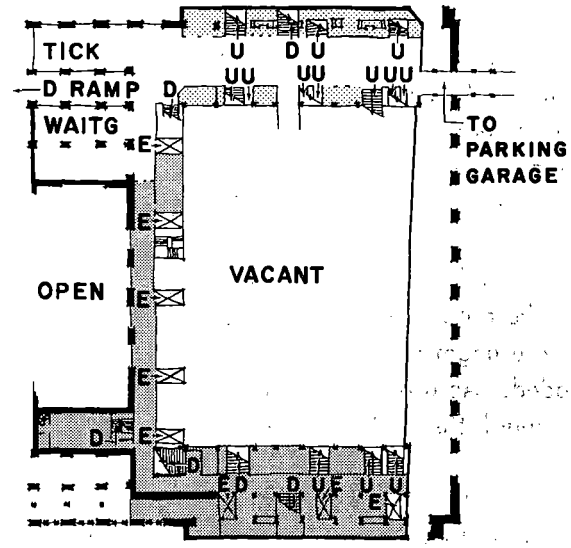
An entrance would be constructed at the end of the enclosed pedestrian overpass which would connect the terminal to the proposed multi-level parking complex to the north. The passageway would be constructed over Arch Street and abut the terminal structure (north facade) at the upper level of the main floor. HSR passengers would go down to the main floor via a ramp; commuters would proceed up to the commuter platforms.

10.7.2 PASSENGER PROCESSING

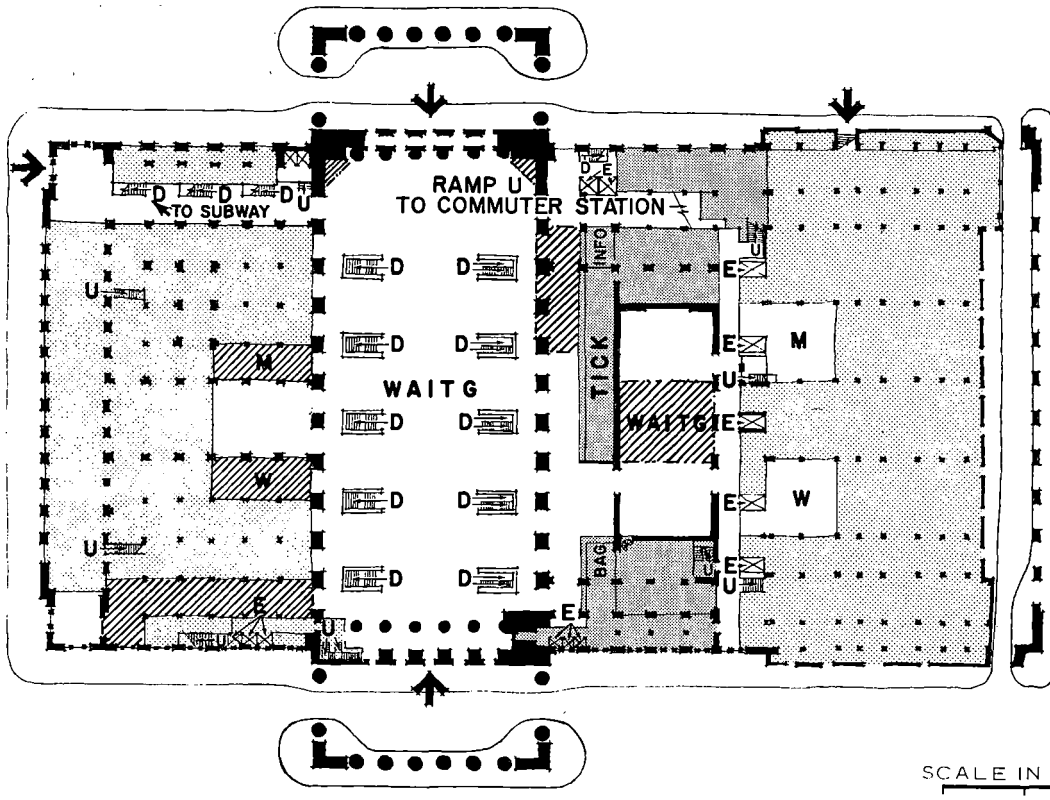
Functional Flow

Passengers would arrive at the terminal via the following transportation modes:

(1) Private auto and auto drop-off.



MEZZANINE FLOOR PLAN



SCALE IN FEET
0 50 100

NORTH

MAIN FLOOR PLAN

LEGEND

RAILROAD FUNCTION

CONCESSION

INCREASED CIRCULATION

1990 CONCEPT
PENN CENTRAL STATION
30TH STREET
PHILADELPHIA, PA

FIGURE 10-7

(2) Commuter and subway trains.

(3) Taxi.

(4) Limousine.

(5) Proposed transit line from Philadelphia International Airport.

(6) City and suburban bus system.

(7) Proposed rapid-transit rail service from New Jersey.

Upon entering the terminal, HSR passengers would proceed to the ticket area or to the information booth for travel arrangements. They would then proceed to the baggage counter where baggage check-in and claim services would be available. A new waiting lounge, for HSR passengers, would be located adjacent to the ticket area. Passengers would descend to the HSR platforms (lower level) via stairs, escalators or elevators to board trains.

Information

An information center would be located near the HSR ticket area. Electronic train-scheduling boards would be installed to list all train arrivals and departures. Satellite scheduling boards would be installed throughout the terminal, for passengers who are not in the ticketing area. A new public address and paging system would be installed with sufficient speakers to afford clear announcements throughout the terminal and platform areas.

Ticket Purchase

Adequate ticket facilities would be provided for HSR passengers. The present main-floor ticket area would be expanded and would also include office space and facilities for railway employees. Ticket sales operations would be organized according to type of tickets sold. Service would be prompt and all passage would be computerized to assure seating in all railway cars. Commuter ticket service, on the intermediate upper level, would be improved through the use of magnetic card passage for monthly-ticket passengers. Monthly tickets could be purchased any weekday and would be good for a 30-day period. This would alleviate the present long waiting lines at commuter ticket windows on the first day of each month.

Baggage Handling

Current baggage handling procedures would be retained. Baggage could be picked up at curbside by attendants, checked in and transported to platforms, or passengers could check their baggage in and carry it onto the trains themselves.

The baggage area would be revamped and would include storage facilities for hold-over or future claim. Acoustic walls would be installed in the baggage area, and the ceiling, over the baggage area, ticket counter and information area, would be lowered to approximately 10 feet in height. Adequate illumination would be provided.

Waiting Area

The existing waiting area on the main floor would remain the same except that the bench-type seating would be removed and replaced with cluster-type seating. Acoustic panels would be installed in the waiting area. An additional waiting area would be provided for HSR passengers adjacent to the expanded ticket area. This area would have lounge-type seating, piped-in music, a cocktail lounge and snack bar. A satellite schedule board would also be installed here.

10.7.3 PUBLIC SERVICES

Rest Rooms

Additional rest room facilities would be provided west of the main waiting room.

Telephones

Sufficient telephones would be located throughout the terminal.

Postal Facility

Facilities for mailing letters and parcels and purchasing stamps and money orders would be provided.

Rentals and Accommodations

Auto rental services would continue to be provided by the auto rental agencies. An accommodations booth would be provided for making hotel and motel reservations and for making connections to other modes of transportation. Traveler's aid service would also be available.

Storage Lockers

Additional coin-operated storage lockers would be provided west of the main waiting room.

10.7.4 CONCESSIONS

Areas which are presently closed off would be renovated for the expansion of concessions. The following concessions should be added:

(1) Quality restaurant.

(2) Food, bakery and candy concessions.

(3) Cocktail lounge.

(4) Beauty and barber shops.

(5) Drug stores, coffee shops, etc.

10.7.5 RAIL PASSENGER OPERATIONS FACILITIES

All operational facilities and offices for the HSR system would be located east of the main waiting room. The space previously occupied by the Station Master and his staff would be used for concession expansion.

Security

Additional security guards would be stationed at the terminal. A closed-circuit TV surveillance system would also be provided.

10.7.6 UTILITIES

Heating, Ventilation and Air Conditioning

The existing heating and ventilation systems would be renovated and refurbished as required. Air conditioning would be installed in all passenger areas.

Plumbing and Fire Protection

The existing plumbing and sewage system would be refurbished as required. New plumbing fixtures would be installed.

The fire protection system would be upgraded to conform to National Fire Protection standards.

Electrical

New lighting and wiring would be installed. Fluorescent lighting fixtures would be used. New switch gear, panel boards and other necessary electrical equipment would be provided. New lighting and wiring would also be installed at all train platforms, parking areas and sidewalks.

10.7.7 CONSTRUCTION CONSIDERATIONS

Exterior

Exterior stone masonry surfaces and metal work would be thoroughly cleaned, caulked and preserved. All underside surfaces of steelwork, at the overpasses to the east and west of the terminal, would be cleaned and painted. New lighting would be installed at these overpasses.

Interior

Interior surfaces, on the main floor, would be thoroughly cleaned and restored to original condition. All ferrous metal and wood surfaces would be refurbished and painted.

10.8 CAPITAL COSTS

Unit costs based on current prices have been developed for major renovation and construction items. These unit prices and the illustrated concept sketch plans form the basis for the following estimate of construction costs.

Renovation of terminal structure	$2,100,000
Rehabilitation of existing escalators	100,000
HVAC, plumbing and lighting	3,025,000
CCTV surveillance and electronic information systems	340,000
Enclosed pedestrian bridge from terminal to parking structure	260,000
Subtotal terminal work	$5,825,000
Contingency – 20%	1,165,000
Total terminal cost	$6,990,000

Cost of $5,940,000 for constructing a parking structure on railroad air-rights property was calculated at a rate of $3,300 per car space for an approximate median of 1,800 parking spaces required for HSR patrons.

10.9 SCHEDULING AND PHASING OF CONSTRUCTION

Terminal reconstruction and site improvements would be undertaken during a 20-month period.

The following schedule is a recommended procedure for phasing the work involved at this terminal:

(1) Establish temporary ticketing and baggage handling area, at the west side of the main waiting room.

(2) Clean all interior surfaces to original state, and execute all interior renovation work, including heating, ventilation and air conditioning.

(3) Up date all required plumbing and drainage services, including electric service, equipment and lighting.

(4) Relocate operational facilities/equipment, etc., to new designated areas, and remove temporary ticketing facility,

(5) Clean down exterior masonry, metals, and make structure weathertight. Clean up all steel overpasses and repaint.

(6) Construct new parking garage and enclosed pedestrian bridge connecting garage and terminal.

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Personal interviews and communications

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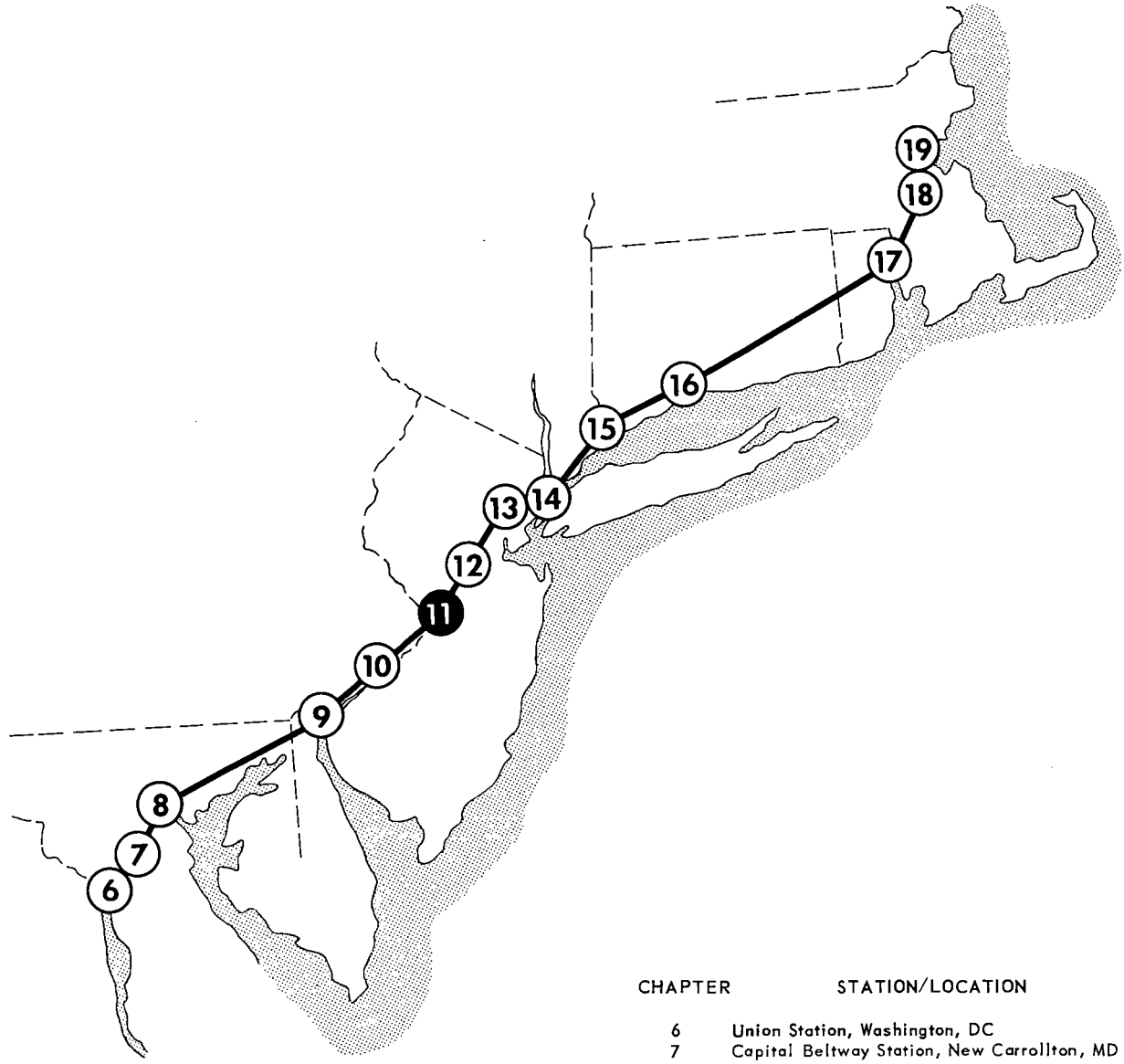
TRENTON STATION
TRENTON, NJ

STATION LOCATIONS ALONG NORTHEAST CORRIDOR



CHAPTER	STATION/LOCATION
6	Union Station, Washington, DC
7	Capital Beltway Station, New Carrollton, MD
8	Penn Central Station, Baltimore, MD
9	Wilmington Station, Wilmington, DE
10	Penn Central Station, 30th Street, Phila., PA
11	Trenton Station, Trenton, NJ
12	Metropark Station, Iselin, NJ
13	Penn Central Station, Newark, NJ
14	Pennsylvania Station, New York, NY
15	Stamford Station, Stamford, CT
16	New Haven Station, New Haven, CT
17	Union Station, Providence, RI
18	Route 128 Station, Dedham, MA
19	South Station, Boston, MA

11.0 TRENTON STATION, TRENTON, NEW JERSEY

11.1 STATISTICAL FRAMEWORK

11.1.1 OWNERSHIP AND USERS

Trenton Station is owned by the state of New Jersey and used by Amtrak and Penn Central. The terminal serves residents of Trenton and Mercer Countys, New Jersey, as well as residents of nearby parts of Pennsylvania, particularly Bucks County.

11.1.2 PROPERTIES AND FACILITIES

Trenton Station is located along Fairview Avenue. The main terminal building, a one-story steel-framed structure with full basement, houses a large waiting room, men's and women's rest-room facilities and a restaurant with kitchen. Tracks are depressed below street grade. An elevated connecting concourse leads from the terminal out over the Assunpink Creek and adjacent tracks, and houses ticket and information area, baggage handling facilities, a small waiting area, and several concessions. A long corridor connected to the south end of the concourse extends over the remaining tracks to an entrance way and mail room at Walnut Avenue.

Stairs, escalators and baggage elevators lead down from the concourse to two high-level platforms. Platform canopies and enclosed shelters provide protection during inclement weather.

The terminal, which covers an area of approximately 12,000 square feet, was completely rebuilt in 1971.

11.1.3 CURRENT ACTIVITY LEVELS

By train, Trenton is only 30 minutes from Philadelphia, and an hour from New York City. This permits Trenton area residents to commute to both places for work.

On an average week day, 106 trains serve Trenton Station; 54 of these are Amtrak trains, including eight Metroliners, and 52 are Penn Central commuter trains. Service is provided by through trains from Washington to New York and Boston as well as local trains between Trenton and Philadelphia and Trenton and New York City.

Peak-hour demand occurs between 7 a.m. and 8 a.m. and between 5 p.m. and 6 p.m. when 10 trains arrive or depart.

1974 peak-day patronage (one way) totaled 3,900; 1,500 of these were commuters and 2,400 were Amtrak patrons.

The primary mode of access to the terminal is the automobile. According to "The Trenton Station Improvement Study", 1966, (pre-Metroliner) 55 percent of all passengers were park-and-ride patrons. An additional 25 percent arrived via kiss-and-ride. Bus service accounted for 10 percent of all arrivals, and the remaining 10 percent were equally divided between taxi service and walking.

Although these findings are now somewhat outdated, recent field observations indicate that most passengers still arrive at the Trenton Station via automobile--via either park-and-ride or kiss-and-ride.

A significant finding of the 1966 study was that almost one-third of the average daily patronage (926 out of 3,225) at Trenton Station originated in adjacent parts of Pennsylvania. The city of Trenton accounted for 1,149 daily arrivals and the remainder of Mercer County, New Jersey, accounted for the rest of the arrivals.

11.2 TERMINAL VICINITY INFRASTRUCTURE

11.2.1 LOCATION CONSIDERATIONS

Terminal location is shown in Figure 11-1, indicating the transportation network and activity centers in the general city setting. Activity centers and proposed activities are listed in Table 11-1.

Location With Respect to Regional Highway System

Trenton Station is favorably located with respect to the major highway network serving the greater Trenton urban area. However, there are some congestion and access problems on local routes between the terminal and the major regional arterials.

The two major Trenton-area expressways are the Trenton Freeway (U.S. Route 1) and the John Fitch Expressway. U.S. Route 1 passes through Trenton from the northeast to the southwest and then crosses the Delaware River into Pennsylvania. Downtown Philadelphia is less than 30 miles from Trenton via U.S. Route 1.

The John Fitch Expressway (State Route 29) follows the Delaware River moving northwest to southeast. The two expressways intersect approximately three-fourths of a mile from the terminal. Access to the Trenton Freeway is approximately one and a half blocks from the terminal.

I-95 and I-295 (under construction) form a partial beltway around the Trenton urbanized area. U.S. Route 1 intersects I-95 approximately 10 miles southwest of the terminal. Eventually it will intersect with I-295 approximately seven miles northeast of the terminal.

Relationship to Other Inter-Regional Transportation Facilities

There are presently no intercity bus terminals in Trenton, although several lines previously shared a facility. However, Greyhound and Trailways buses, as well as local buses, stop on streets adjacent to the terminal. Greyhound tickets are sold in a hotel across the street from the terminal. Passengers wait for most intercity buses on the sidewalk in front of the hotel.

In addition to Greyhound and Trailways, several other intercity bus lines operate to and from Trenton. Suburban Transit Corporation operates between New York City, Princeton and Trenton

and central New Jersey. Service between Trenton and Philadelphia is provided by the Trenton-Philadelphia Coach Company, which is operated by the Southeastern Pennsylvania Transportation Authority (SEPTA). Transport of New Jersey provides intercity bus service to areas in New Jersey. Blue Bus Lines and Starr Transit Company provide minor bus service.

The Mercer County Airport is approximately eight miles from the central business district (CBD) by expressway or five miles via expressway and State Route 579. The airport is near the intersection of I-95 and New Jersey Routes 29 and 579. There are good highway connections between the airport and the terminal but there is no transit or limousine service between the two facilities. The Mercer County Airport provides limited commercial-air service to the Trenton metropolitan area. TWA flies from the airport to Chicago, but most flights are Allegheny-Airlines commuter flights.

Existing Transit Service

Local bus service to the terminal is only fair. The terminal is served by six Mercer County Metro bus routes. Five of these routes, G, P, R, V and T, stop on the far side of the intersection in front of the terminal on the north leg of Fairview Avenue. The sixth route, S, stops two blocks from the terminal on East State Street.

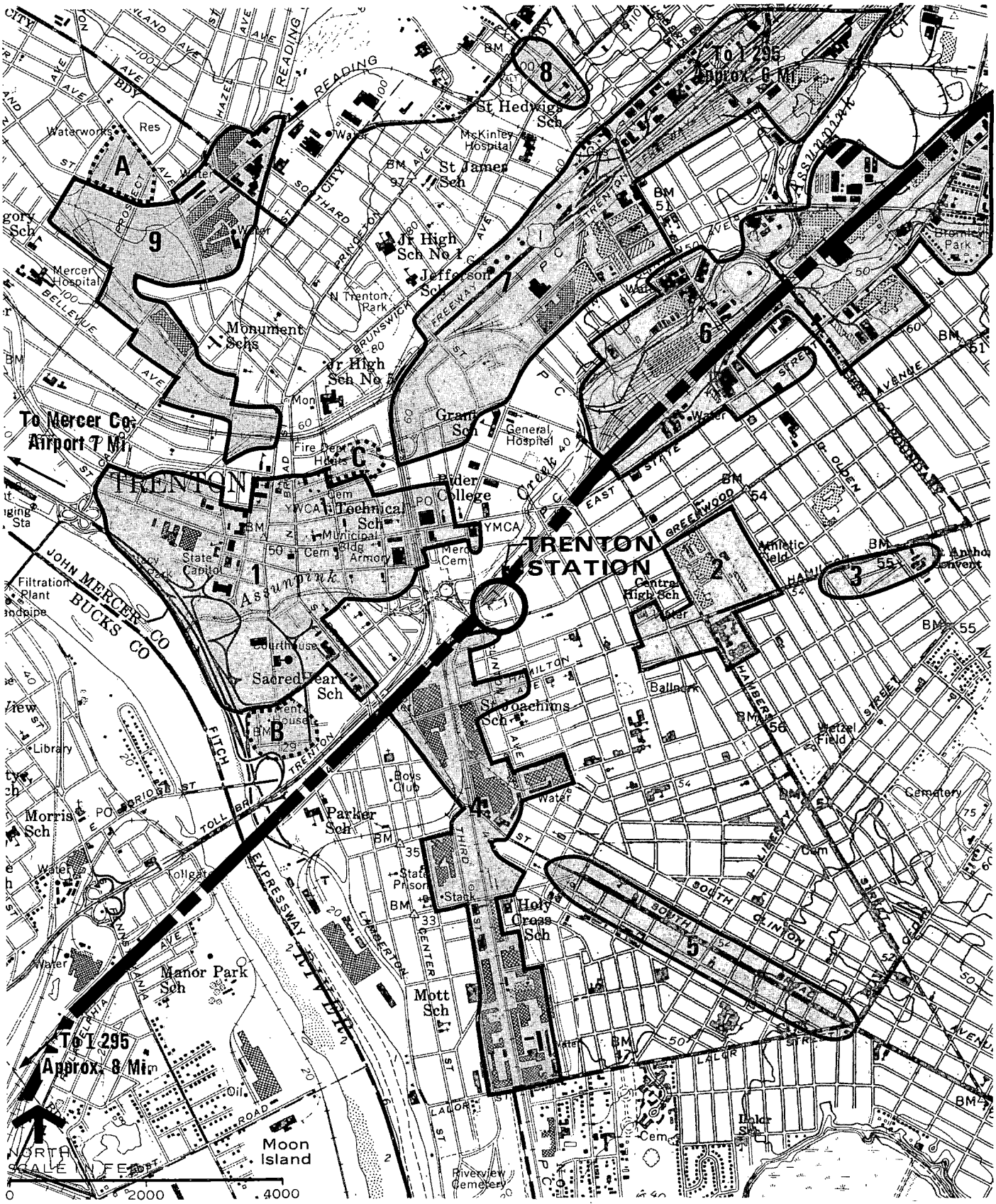
Bus headways range from 20 minutes to one hour during peak hours and from 30 minutes to one hour during off-peak hours. Night service (after 7 p.m.) is provided at one hour headways. The current level of bus service is not particularly attractive to train passengers.

Mercer County Metro is not permitted to operate into nearby Bucks County, Pennsylvania, due to state laws and ICC regulations. This restricts local bus service in the greater terminal area, and forces Bucks County residents to drive to Trenton Station.

Relationship to Activity Centers

Trenton Station is approximately one-half mile from the core of the CBD and about one mile southeast of the State house. The focus of the CBD is State Street. Adjacent to State Street, a complex of state office facilities extends from Market Street to Calhoun Street. Due to its location next to the CBD, the state office complex has encouraged the growth of service, retail and entertainment facilities. This government-business-retail complex is not only a focus for shoppers and workers but a cultural center as well. The recent construction of a pedestrian retail mall on State Street, Trenton Commons, has strengthened the growth potential of the central city.

In addition, Trenton is also an industrial city and extensive industrial facilities surround the CBD. However, many of these industrial facilities are now vacant. For example, the former Roebling works, which is less than 4,000 feet south of the terminal, contains over 400,000 square feet of vacant industrial space. There are more than 500,000 square feet of vacant industrial space north and east of the terminal. The city currently is evaluating these and other industrial areas to determine their best future use.



LEGEND

0 EXISTING ACTIVITY CENTER (SEE TABLE 11–1)

HIGH SPEED RAIL

A PROPOSED ACTIVITY CENTER (SEE TABLE 11–1)

STATION LOCATION
TRENTON STATION
TRENTON, NJ

FIGURE 11–1

TABLE 11-1

ACTIVITY CENTERS, CITY SETTING

EXISTING ACTIVITIES

1 Central Business District – includes state and federal office building complex, city government offices, financial and retail areas

2 Institutional, industrial, commercial area – includes Central High School, St. Francis Hospital, Circle F Industries and retail business

3 Neighborhood commercial center

4 Industrial area – includes several vacant industrial structures and sites, the State Prison, neighborhood commercial, and the Mercer County Administration Building

5 Neighborhood commercial center

6 Industrial area – includes Delaval Turbine Inc., and neighborhood commercial areas

7 Industrial area – including vacant industrial sites

8 Neighborhood commercial center

9 Industrial area – includes Hill Refrigeration

PROPOSED ACTIVITIES

A Pennington Avenue – neighborhood commercial area

B Kingsbury Renewal Area – neighborhood commercial area

C Battle Monument/Perry Street Renewal Area – neighborhood commercial area

Several large industrial facilities are still in operation near the CBD. Circle F Industries, with 1,500 employees, is approximately one-half mile southeast of the terminal. Delaval Turbine Inc., with over 2,000 employees, is northwest of the terminal, just across the Trenton-Hamilton Township Line along Clinton Avenue. Hill Refrigeration, with 1,200 employees, is north of the CBD.

Central High School, with 3,000 students and St. Francis Hospital are located in the vicinity of Circle F Industries.

The population distribution in Trenton is most dense (30-35 housing units per acre) along the U.S. Route 1 corridor on the eastern and southeastern edges of the CBD. South of the terminal, the population density is the same. Radiating from this core, the density decreases to 20-30 units per acre for about 70 percent of the city area, and then drops off. The City Planning staff has recommended that future high-density housing projects be located in close proximity to neighborhood commercial centers and the CBD. After the CBD, the closest commercial center to Trenton Station lies along Hamilton Avenue.

In 1960, Trenton's population was 114,000. Between 1960 and 1970, the population declined by almost 10,000 people. During the same period,however, the population of Mercer County increased from 266,000 to 304,000.

11.2.2 LAND USE

Existing Characteristics, Terminal Area

Figure 11-2 shows the immediate terminal environs and local circulation system.

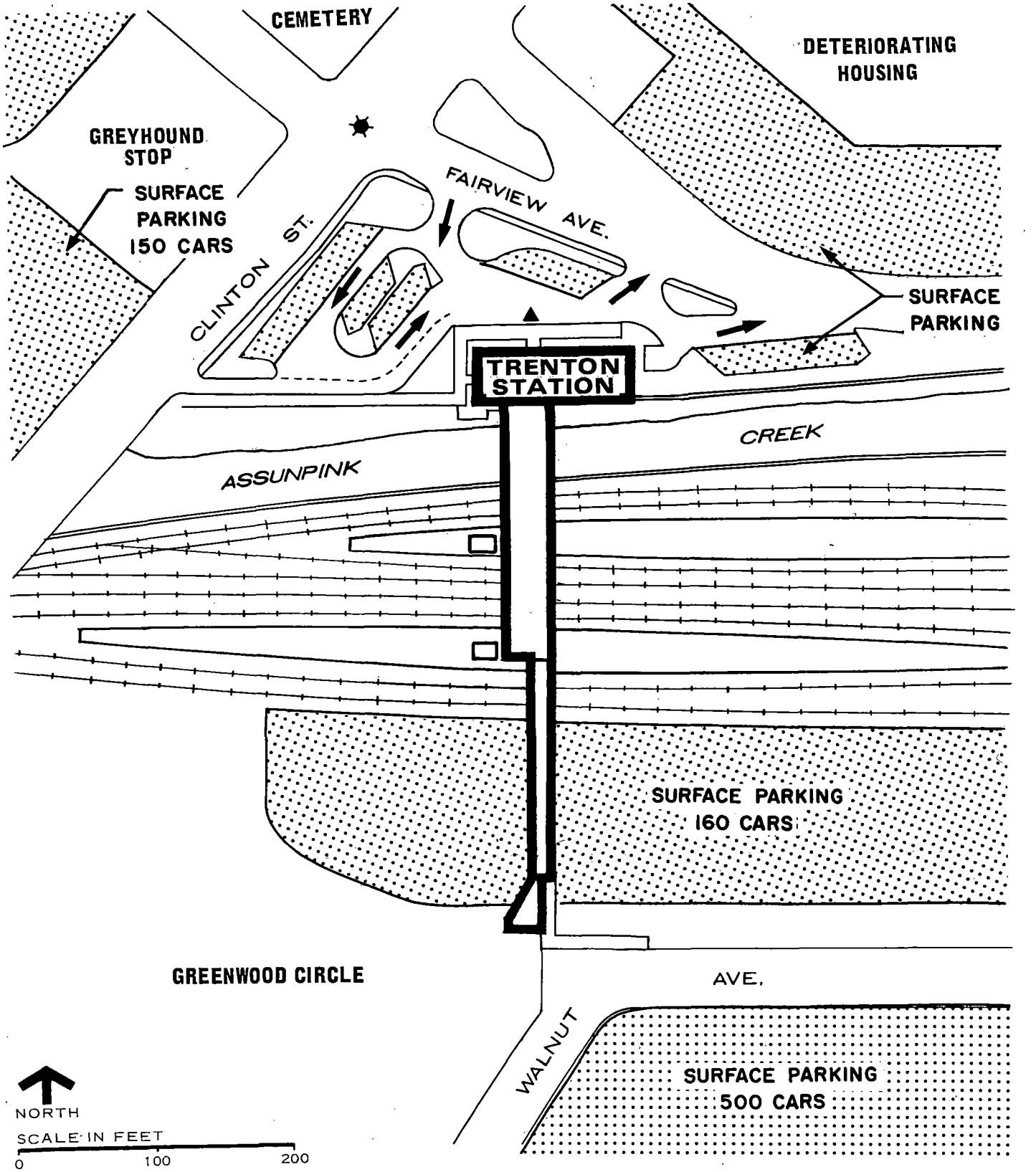
The predominant land use in the immediate terminal area is open-lot parking. The area immediately west of the terminal across South Clinton Avenue, is devoted to parking with a hotel on the corner of Clinton and Fairview Avenues. Across Fairview Avenue and northwest of the terminal is a cemetery. The area immediately north of the terminal consists largely of open-lot parking and generally deteriorating housing.

South of the tracks, along Walnut Avenue, is a large concentration of parking lot facilities surrounded by deteriorating housing. Immediately to the southwest is Greenwood Circle, a major traffic intersection on the main access route to the parking areas off Greenwood Avenue and Walnut Street.

Consequently, the immediate terminal environs are not attractive. The extensive use of the terminal, with the resultant heavy traffic and parking demand, is a major factor contributing to the present condition of the area.

Planning Factors, General Terminal Area

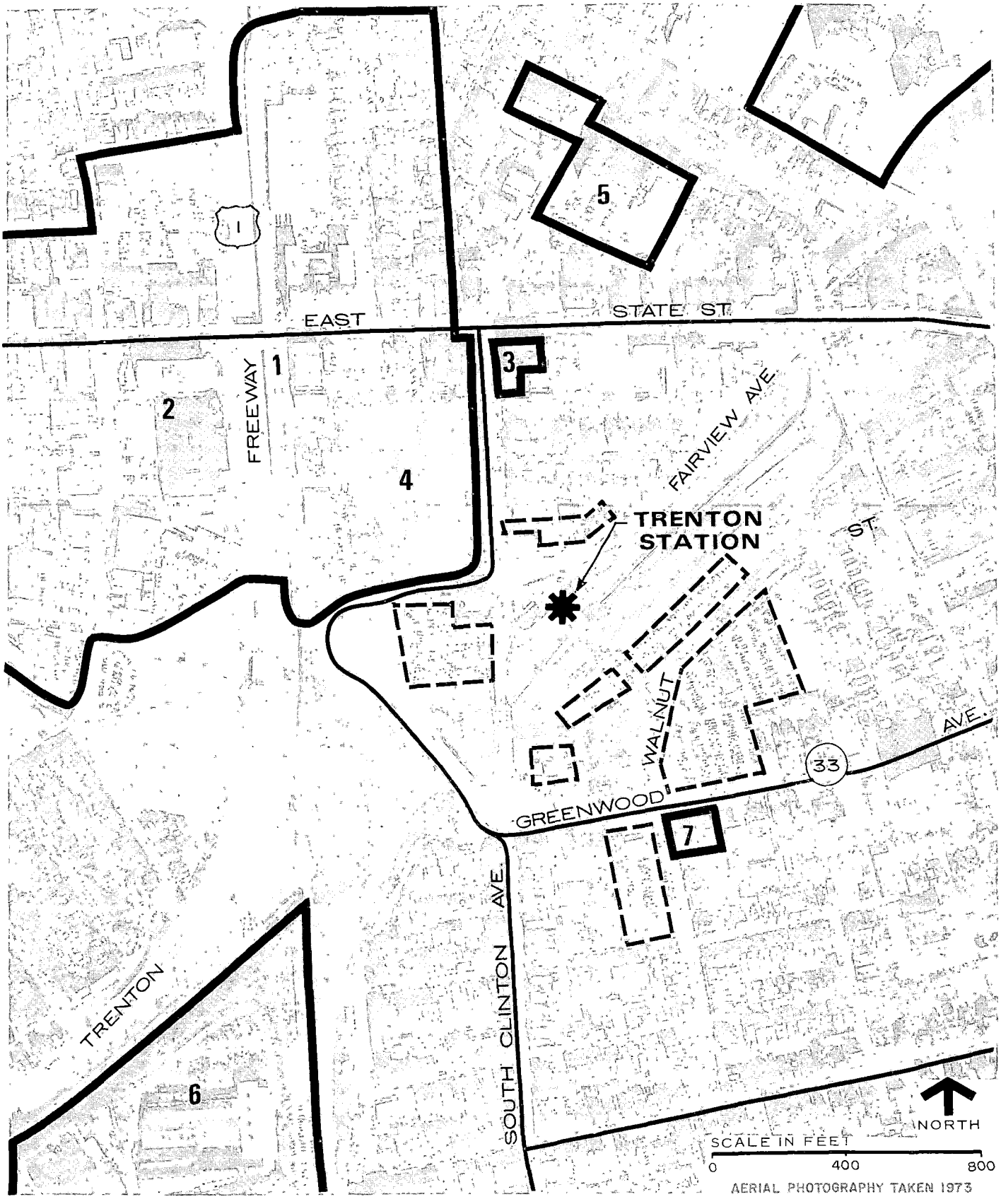
Activity centers and other planning factors, in the general terminal area, are shown in Figure 11-3 and listed in Table 11-2.



TOTAL PARKING - 1000 CARS

EXISTING STATION ENVIRONS
TRENTON STATION
TRENTON, NJ

FIGURE 11-2



LEGEND

PARKING

BUS ROUTE

0 EXISTING ACTIVITY CENTER (SEE TABLE 11-2)

A PROPOSED ACTIVITY CENTER (SEE TABLE 11-2)

PLANNING FACTORS
TRENTON STATION
TRENTON, NJ

FIGURE 11-3

TABLE 11-2

ACTIVITY CENTERS, GENERAL TERMINAL AREA

EXISTING ACTIVITIES

1 Central Business District

2 City Hall

3 YMCA

4 Cemetery

5 Rider College

6 Industrial area

7 Housing for elderly

8 High-density residential

The terminal is located on the southeast fringe of the CBD. City Hall, the Armory, the Post Office and the YMCA are all within one-half mile northwest of the terminal.

The majority of the general terminal area, however, is devoted to residential use. The overwhelming demand for parking, largely attributable to the terminal, has contributed substantially to the deterioration of the area and reduced the amenities for area residents. Housing conditions north and west of the terminal, where automobiles are frequently parked on every available spot of open ground, are among the poorest in the city. The majority of these houses are estimated to be "too dilapidated for code enforcement programs or superficial repairs". The housing along East State Street, east of the tracks, is also in this category. Both areas qualify for Federal Urban Renewal programs. According to the 1970 census, the neighborhoods immediately surrounding the terminal are characterized by very high rates of transiency, unemployment and poverty; often over one-fourth of the families or households have incomes below the poverty level.

11.3 EXISTING PASSENGER HANDLING FACILITIES

11.3.1 PASSENGER ACCESS AND EGRESS

The primary access to the terminal is via a small plaza from Fairview Ave. See photo 1. The plaza contains approximately 30 spaces for short-term parking (30 minutes). Passengers can be dropped off or picked up by private auto, taxi or bus, directly in front of the main entrance

(north side) or at a canopied walkway on the west side of the terminal. See photo 2. This walkway leads to a west side entrance to the main waiting room.

A canopy extends along the north and west side of the terminal over the walkways and continues perpendicular to the west side for approximately 200 feet. See photo 3. Passengers gain access to the terminal via the Walnut Lane entrance which leads directly to the corridor. See photo 4. This entrance is canopied to the sidewalk on Walnut Lane. A stairway also leads passengers from the parking area, just south of the railroad tracks, to the concourse level. This stairway is not canopied. See photo 5.

Automobile Access

The terminal is bordered by Clinton Avenue, Walnut Avenue Extension and Fairview Avenue. In the immediate terminal area, Greenwood Avenue, which provides access to the Walnut Street Extension, carries the heaviest volume of traffic. Traffic is also heavy on South Clinton Avenue, but relatively light on Fairview Avenue. However, only Clinton Avenue provides any substantial route continuity in the terminal area.

A major problem, related to automobile access to the terminal, is that connections between the regional arterial roads and the feeder system are inadequate. Furthermore, the arterial system experiences congestion and delays during peak-travel periods, particularly within the CBD. This congestion has been somewhat relieved, due to the redistribution of traffic as a result of the pedestrian mall on State Street and the establishment of one-way streets. The future widening of Market Street should also help improve traffic flow.

The present bridge over the tracks, on Clinton Avenue, is in poor condition, but plans have been formulated to improve the structure.

The terminal is located about 1-1/2 blocks east of the Trenton Expressway (U.S. Route 1). Most traffic to Trenton Station arrives via U.S. Route 1. An interchange is located at Market Street, about two blocks from the terminal. However, access from the expressway is circuitous, even for this short distance.

Greenwood Circle, a traffic circle located approximately 400 feet from the terminal, is a non-signalized intersection which experiences the most accidents in Trenton. This traffic circle is severely congested during peak hours. It carries traffic from U.S. Route 1 to the parking areas south of the terminal.

Other Connections

The area in front of the terminal is used for taxis, kiss-and-ride and short-term parking. However, this area is not large enough to handle all of the vehicular traffic, and it is often congested, particularly during peak hours.

The taxi stand in front of the terminal has a capacity for approximately eight taxis. Rent-a-car service is provided by Hertz and Avis, both of which have service desks within the terminal building.

The kiss-and-ride and short-term parking facilities, at the front of the terminal, are inadequate to meet current demands.

11.3.2 PARKING

Although considerable parking is available, in the general vicinity of Trenton Station, the supply is inadequate to meet the overwhelming demand by terminal patrons and other users. Automobiles are double- or triple-parked on the lots as well as on the street and in areas where parking is prohibited.

There are approximately 1,000 parking spaces within a 1,200-foot walking distance of the terminal. Parking is distributed among several large lots. The lot across Clinton Avenue, from the main terminal building, has a capacity of approximately 150 cars. The parking area south of the tracks and north of Walnut Street can accommodate approximately 160 cars. The large parking lot on the south side of Walnut Street has a capacity of approximately 500 cars.

The daily parking rates are extremely low, ranging from $0.90 to $1.10 per day. These low rates encourage the park-and-ride mode of access to the terminal.

Short-term metered parking is provided within the terminal area and on North Clinton Avenue. During the afternoon peak hour, even these areas are nearly filled to capacity.

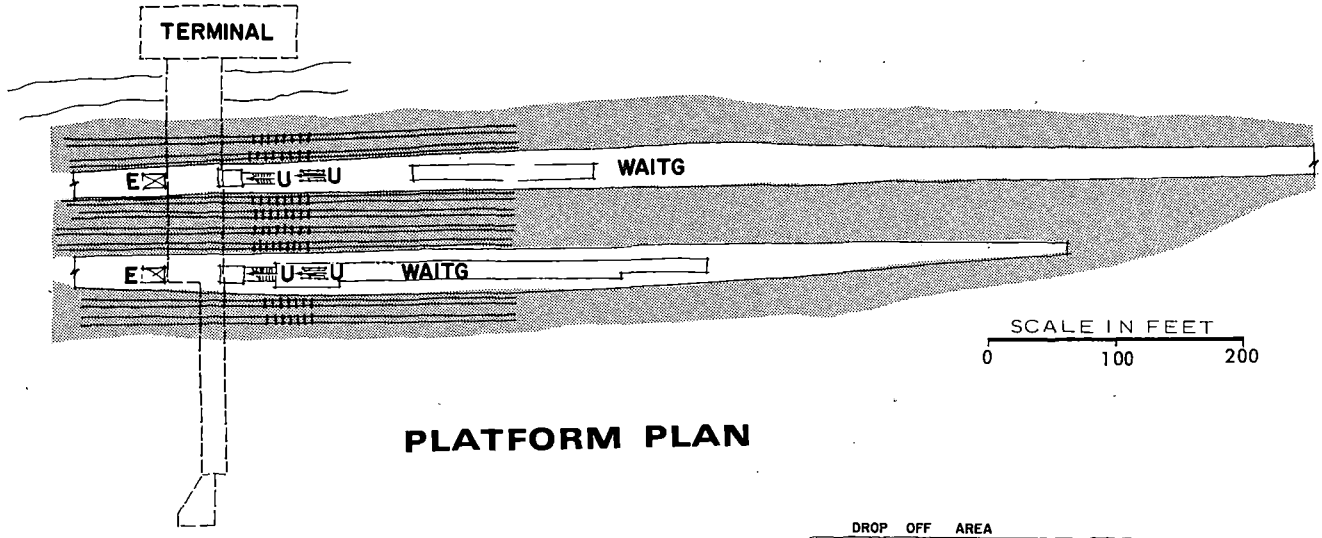
Although current parking rates are low and access/egress from the various parking areas is relatively easy, the heavy dependence upon automobiles both for trips to the terminal and the CBD has adversely impacted the surrounding neighborhoods.

11.3.3 PASSENGER PROCESSING

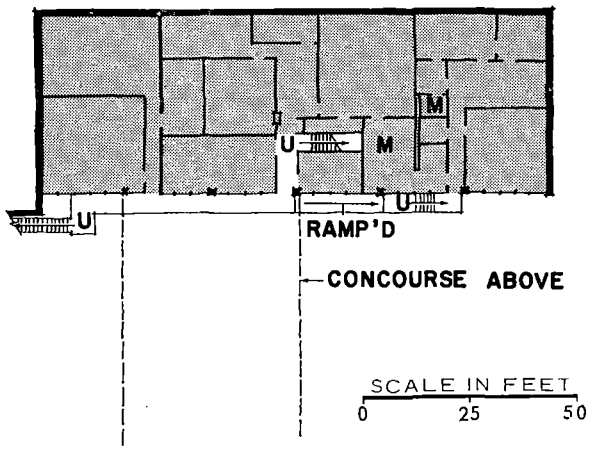
For Existing Main and Basement Floor and Platform Plans, see Figure 11-4.

Functional Flow

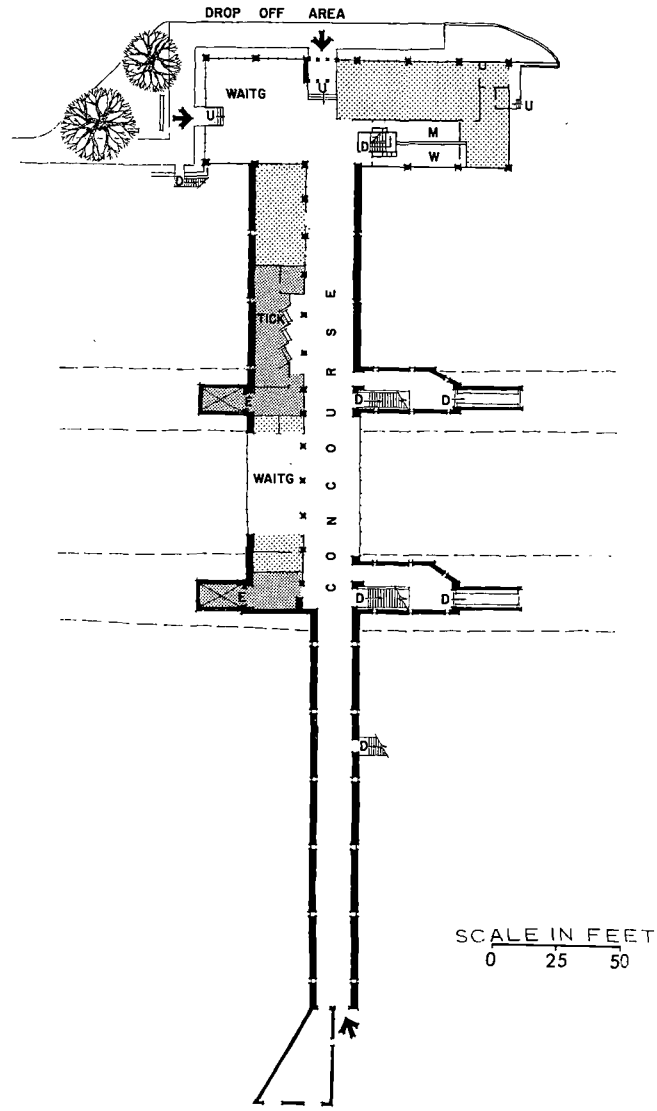
Passengers enter the main lobby of the terminal from street level either through a triple door on the north side or double door on the west side. Each entrance/exit has a vestibule with two steps up to the main lobby and waiting area. See photos 6 and 7. Passengers may also enter the concourse and terminal by way of the Walnut Lane entrance and stairway from the back parking lot. See photo 4. Passengers pass through a main waiting area to the concourse area (or from the corridor to the concourse area). Three ticket windows and an information area are located here. See photo 8. Baggage is also checked through the ticket windows and stored in the ticket room area. The baggage is eventually processed via elevators to the train platforms. These elevators also provide service for handicapped passengers to and from the train platforms. After leaving



PLATFORM PLAN



BASEMENT FLOOR PLAN



MAIN FLOOR PLAN

NORTH

LEGEND

CONCESSION

RAILROAD FUNCTION

EXISTING TRENTON STATION
TRENTON, N J

FIGURE 11-4

the ticket window area, passengers can move to the concourse waiting area, which has clusters of bench-type seating, or take stairways down to the two high-level platforms. See photos 9 and 10. There are also waiting rooms on the train platforms.

11.3.4 PUBLIC SERVICES

Men's and women's rest rooms are located off the main passenger waiting room. Storage lockers, pay telephones, and two car rental booths are located in the concourse area. See photo 11.

11.3.5 CONCESSIONS

Concessions located in the concourse area include a news stand, vending machines, a bank, and a shoe shine stand. There is a restaurant with full kitchen facilities to the left of the front entrance. See photo 12.

11.3.6 RAIL PASSENGER OPERATIONS FACILITIES

Offices of the Manager of Passenger Services, ticketing personnel, and the Station Master are located in the concourse area. Employees lounge, rest rooms, security police room, mechanical equipment room, R.R. communications and telephone PX rooms are located in the basement, under the main passenger waiting room. The basement is accessible via a stairway at the beginning of the concourse.

11.3.7 FACILITY CONDITIONS

Structural Integrity

The facility appears in excellent condition. Doors have glass panels with anodized-aluminum framing supplemented by pre-finished wall panels. Interior floors are concrete slab covered with epoxy terrazzo. The waiting area is well lighted. The terminal has a suspended acoustic-tile ceiling, with recessed lighting.

Utilities

Heating, ventilation, water supply and sewage service are reported adequate for present day patronage.

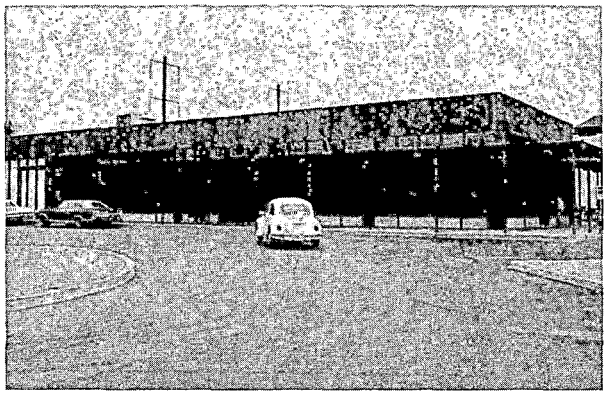
11.4 FORECAST ACTIVITY LEVELS

11.4.1 PROJECTED DESIGN DAY PATRONAGE

The 1990 peak design day is expected to be a maximum of 6,500 HSR patrons and 2,900 commuters for a total loading of 9,400. This is approximately two-and-one-half times the present average daily ridership.

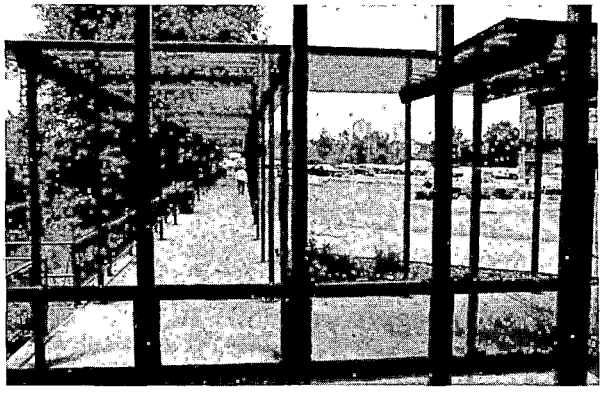
TRENTON STATION – TRENTON, NJ

EXISTING FACILITY

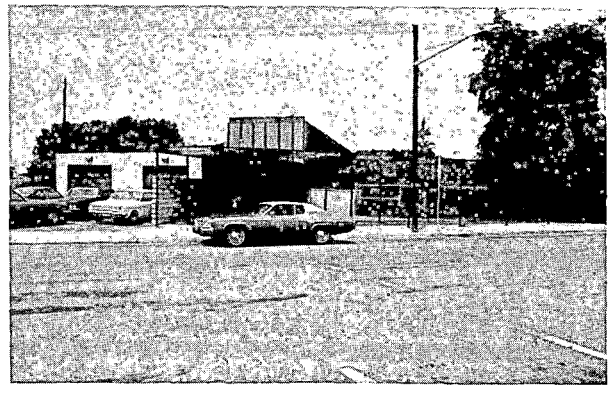


1. Terminal Main Entrance from Fairview

2. Taxi and Auto Drop-Off Zone on West Side of the Terminal



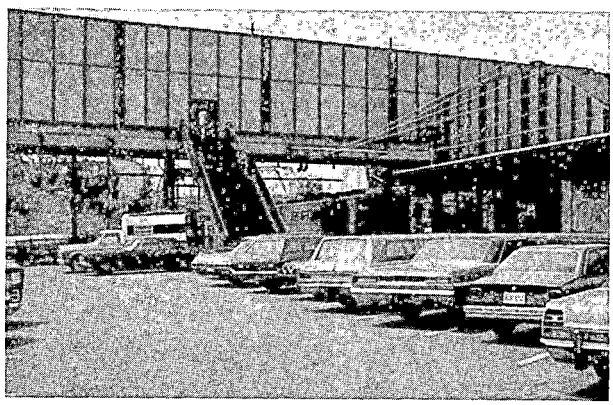
3. Canopied Walkway on West Side of Terminal



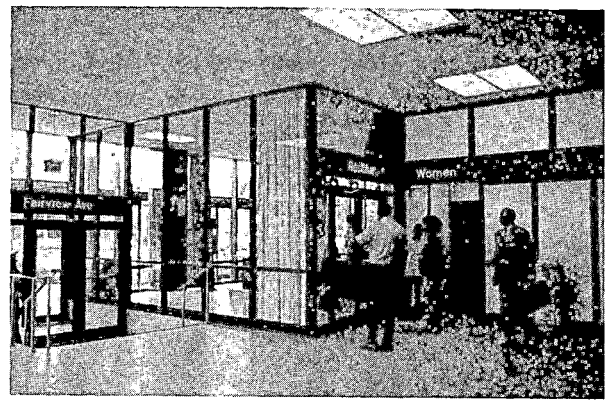
4. Walnut Street Entrance to Corridor and Terminal

TRENTON STATION – TRENTON, NJ

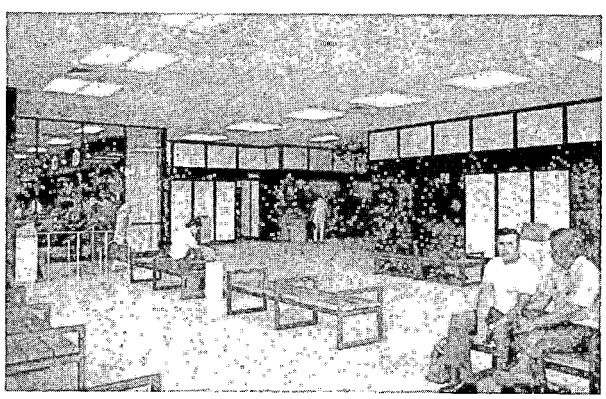
EXISTING FACILITY (Cont'd)



5. Stairway to Terminal Concourse from Parking Lot South of Tracks



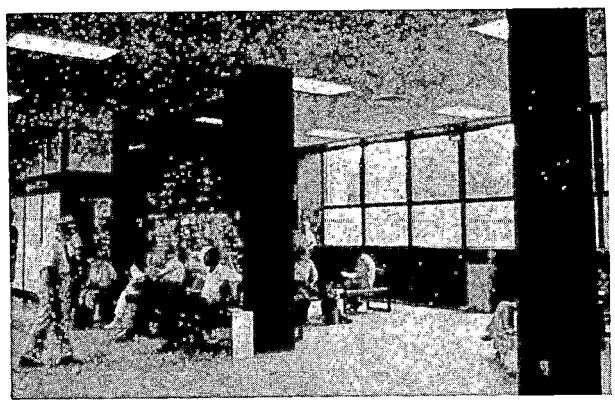
6. Main Entrance to Lobby, Waiting Room and Concourse



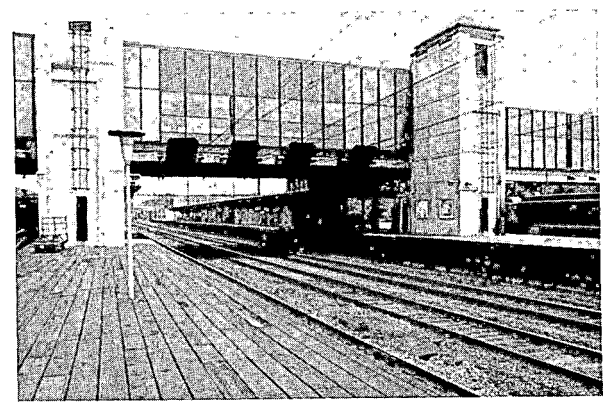
7. Main Waiting Room

8. Ticketing and Information Area

EXISTING FACILITY (Cont'd)

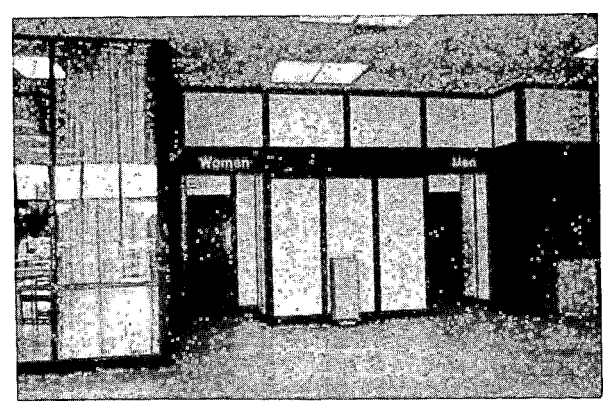


9. Concourse Waiting and Concession Area



10. Train Platforms

11. Storage Lockers, Telephones and Other Public Services



12. Entrance to Terminal Restaurant

It is expected that HSR use will tend towards the upper limit of the projection, due partly to growth of the greater Trenton area and the diversion of commuters to HSR. However, the attainment of the maximum HSR level is dependent on the ability of the local transportation system to absorb the additional load. Transit, highway and parking improvements will be necessary to achieve the maximum projected patronage. Passenger's selection of access mode to the terminal will largely depend upon what improvements are made to accommodate each mode.

Peak-hour patronage is expected to reach 1,000 HSR and 900 commuters for a total loading of 1,900.

11.4.2 PROJECTED MODE OF ACCESS

The primary mode of access to Trenton Station will probably continue to be the automobile. Even with limited transit-service improvements, it is estimated that approximately 45 percent of arriving passengers would require parking spaces and approximately 20 percent would arrive via kiss-and-ride. Increased access via bus would depend on improvements to the existing bus system. Percentages of 1990 daily passenger arrivals are projected by mode in the following table:

	Percentage		
	Low	High	Median
Park-and-ride	40	55	45
Park-and-ride passenger	10	20	15
Kiss-and-ride	15	25	20
Rail transit	0	0	0
Bus	5	15	10
Taxi and limousine	5	10	5
Walk	5	10	5

11.4.3 PARKING REQUIREMENTS

Future parking demand at Trenton Station is expected to be high. An estimated 2,600 to 3,600 spaces will be required by 1990 for HSR patrons alone. Due partly to the lack of alternative access modes, this demand will be higher than at any other terminal along the proposed HSR line.

11.5 PLANS AND PROPOSALS

11.5.1 TERMINAL IMPROVEMENTS

There are no current or proposed plans for improvements to this terminal.

A 1968 study included recommendations for terminal modernization, additional parking and improved access and circulation in the terminal area.

The 1968 study proposed construction of two multi-level parking garages with a capacity for about 1,500 cars. The study did not consider for the future needs of HSR service. A 1,000-space garage was proposed in approximately the same location as that proposed in the 1990 concept plan. The second garage was proposed nearby, also off the Walnut Avenue Extension. The study also concluded that Trenton Station was a less than ideal center for intercity bus service.

11.5.2 FUTURE LAND USE PLANS

The projected increased use of the terminal, accompanied by increased automobile traffic, will have an adverse impact on the already deteriorating residential areas which surround the terminal. Although no specific renewal plan exists for this area, renewal is highly desirable.

The City has designated the area bounded by State Street, Clinton Avenue and Greenwood Avenue to Monmouth Street, to be included in the "Safe and Clean Neighborhood Program". This program calls for additional police and trash collection services in this area as well as in several other neighborhoods throughout the city.

11.5.3 STREET AND TRAFFIC IMPROVEMENTS

The 1968 study proposed a new roadway bridge over the tracks, east of the terminal, linking Fairview Avenue and the Walnut Avenue Extension.

11.5.4 TRANSIT IMPROVEMENTS

There are no current or proposed transit improvements.

11.6 RECOMMENDED 1990 ACCESS/EGRESS AND PARKING PLANS

Since the automobile will continue to be the primary access mode to Trenton Station, improvements to the local street system will be required to meet additional traffic generated by the proposed increased use of the terminal.

Provisions have been made for a multi-level parking garage southeast of the terminal. This facility would have a direct connection to the concourse south of the tracks. The street level would house facilities for short-term parking, kiss-and-ride and bus and taxi service. Provisions for intercity bus service have also been included.

In addition, the 1990 plans call for improved public transit service to Trenton Station.

The general concept plan is shown in Figure 11-5.

11.6.1 STREET AND TRAFFIC IMPROVEMENTS

The additional traffic generated by the projected increased use of the terminal will add to the congestion at Greenwood Circle, and on the local roads leading from U.S. Route 1 to the terminal. Improvements to the local street system will be required to handle the additional traffic load placed upon it.

The future widening of Market Street, plus the recently established one-way streets, will relieve congestion in the nearby CBD. But if parking at the terminal is to be significantly expanded, a traffic study of the terminal area should be undertaken.

In addition, the Clinton Avenue bridge should be rehabilitated.

11.6.2 PARKING

To meet 1990 demands, it is proposed that a multi-level parking garage be constructed southeast of the tracks, on a lot currently used for at-grade parking. The garage would have a capacity for 2,900 cars. The proposed facility would have access to Walnut Avenue and would be directly connected to the existing concourse south of the tracks, via stairs and elevator.

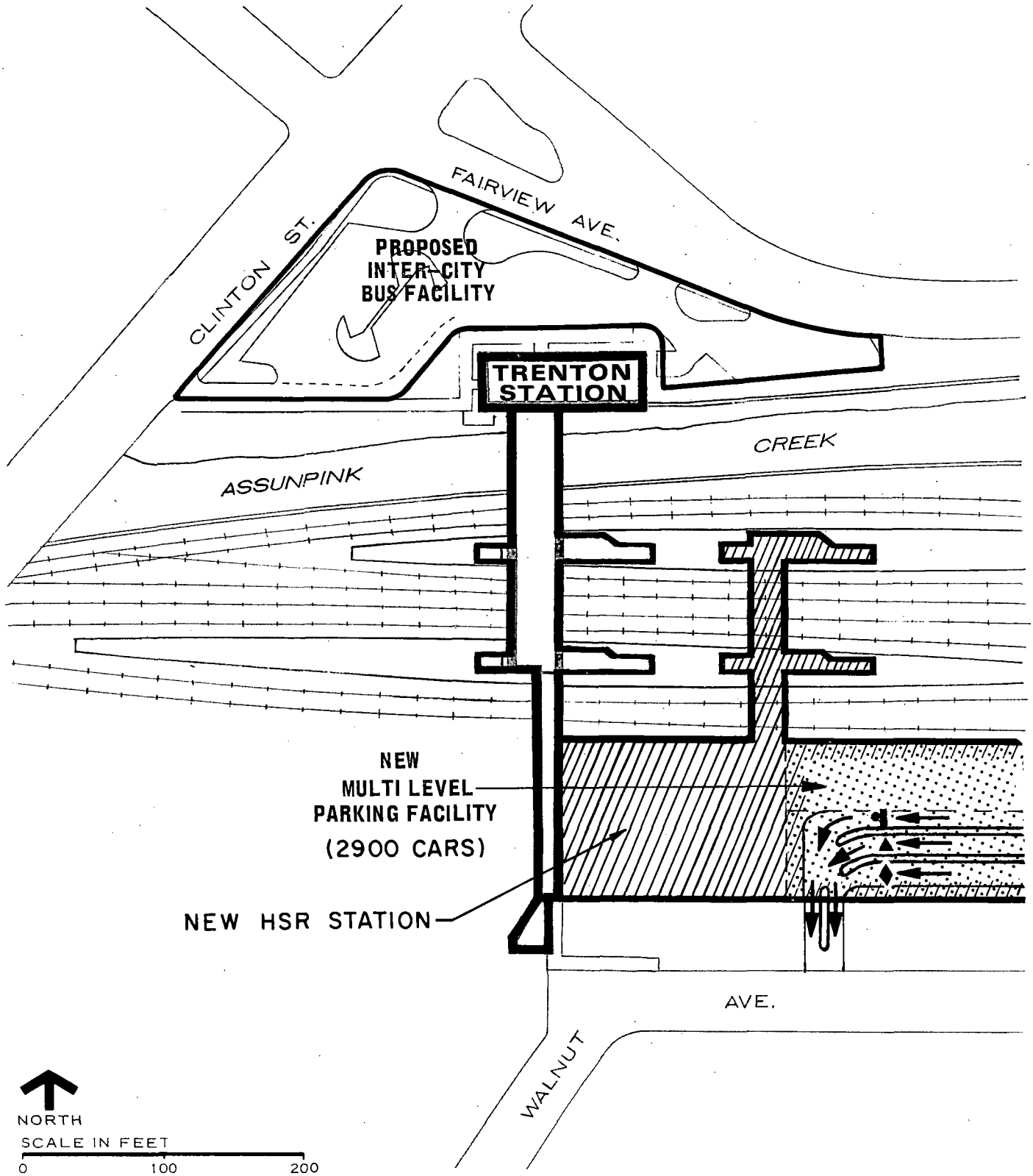
11.6.3 INTERMODAL TRANSFER

Since the existing local bus system does not serve a particularly large segment of terminal patrons, extensive route and scheduling improvements are necessary. Such improvements may be costly and difficult to finance. Therefore, many terminal passengers will probably continue to use the automobile to reach the terminal.

Congestion and parking demand at the terminal and in the CBD could be somewhat reduced through the provision of outlying parking areas with feeder buses to the terminal. A specific study would be necessary to identify possible locations for these parking areas and the necessary level of connecting transit service to the terminal and the CBD. A coordinated public transit system, which would provide access to the terminal from Bucks County, as well as from Mercer County, is also desirable.

The 1990 concept provides for local bus service for terminal patrons within the proposed new parking garage. Terminal patrons would then have convenient all-weather access from local bus service to the rail terminal.

The existing inadequate facilities for short-term parking, kiss-and-ride and taxi service, would be replaced. New facilities would be located at street-level of the parking garage and would include bus, taxi and kiss-and-ride bays as well as short-term parking.



1990 CONCEPT
TRENTON STATION
TRENTON, NJ
FIGURE 11-5

DC/STV

The existing short-term parking and drop-off area, in front of the terminal, should be considered for an intercity bus facility. Bus-ticket and waiting facilities would be located within the existing rail terminal. This would provide Trenton with a reasonably centrally-located intercity bus depot and would facilitate intermodal transfer. An alternative possibility would be to also incorporate intercity bus service within the proposed parking facility.

Prior to any radical changes at the terminal, discussions should be held with the City Planning Department to develop a land-use plan for the surrounding area which would be compatible with the improvement and expanded use of the terminal.

11.7 RECOMMENDED 1990 PASSENGER TERMINAL PLANS

The recommended 1990 terminal plans do not require changes in location, trackage or platform spacing. To meet 1990 peak demands, a new terminal is recommended to be constructed within the new parking structure on the South side of the tracks with its entrance at street level from Walnut Street. The present terminal would have the ticket area removed and serve as an access corridor to the new terminal from the Fairview Avenue plaza and serve as the commuter concourse. From the new terminal a new HSR concourse would be constructed on the east end with elevators, stairs and escalators to both the east and westbound platforms. New facilities would include: a waiting area; expanded passenger facilities; reconstruction of part of the platforms, additional platform canopies; provisions for gated passage to the HSR platform; and, additional concessions and/or relocation of existing concessions.

The proposed terminal plans are shown in Figure 11-6.

11.7.1 PASSENGER ACCESS AND EGRESS

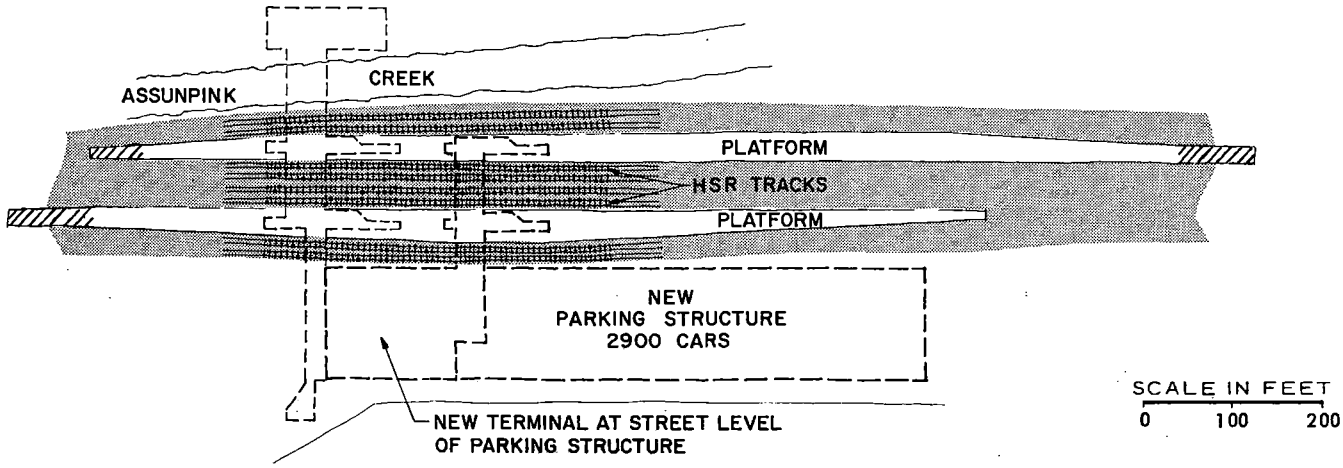
Main pedestrian access to the terminal would be from the Fairview Avenue plaza. There would be entrances to the existing terminal building from the plaza, one from the northside and one from the westside. Both would be canopied and would lead directly to the north lobby. Another entrance to the terminal would be from the new multi-level parking garage, southeast of the existing terminal. This entrance would lead directly to the pedestrian concourse above the tracks into the new terminal ticket area and waiting room.

A canopied walk would extend along the north and west walls of the existing terminal building, and to afford protection from the weather. Both entrances would have vestibules with steps up to the main floor of the terminal. The Walnut Avenue entrance would be canopied to curbside.

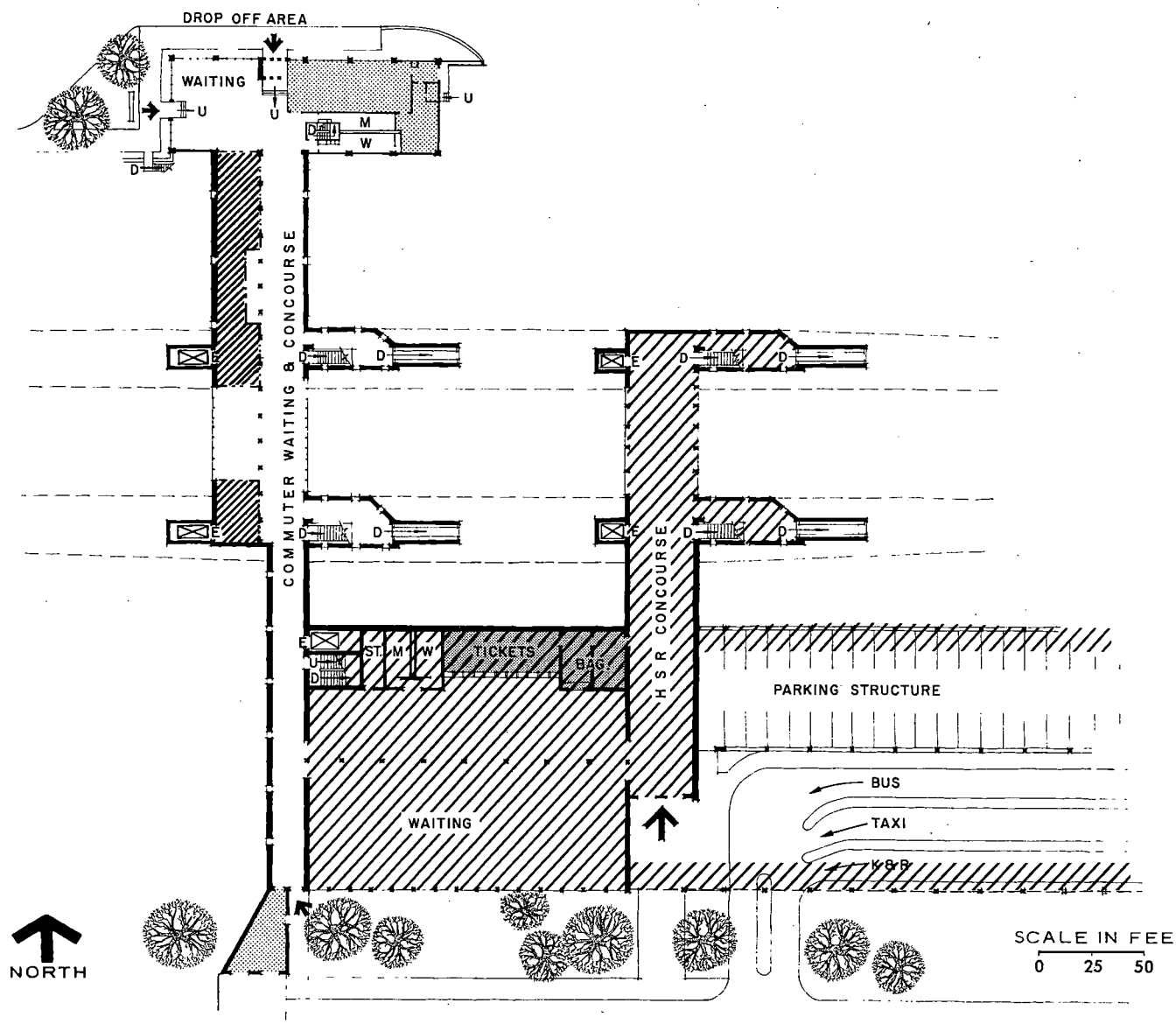
11.7.2 PASSENGER PROCESSING

Functional Flow

Passengers, arriving by bus, taxi, limousine or auto drop-off would enter the terminal from the drop-off zones, east of the terminal, and proceed to the passenger concourse or to the information, ticket purchasing and baggage check-in areas located here. After purchasing tickets and/or checking in baggage, passengers would proceed to the new waiting room to wait for trains.



PLATFORM PLAN



MAIN FLOOR PLAN

LEGEND

- RAILROAD FUNCTION
- CONCESSION
- NEW ADDITION
- INCREASED CIRCULATION

DC/STV

1990 CONCEPT
TRENTON STATION
TRENTON, N.J.
FIGURE 11-6

Passengers arriving by private auto would have access to the multi-level parking garage via an entrance on Walnut Avenue. Passengers would proceed from the third floor of the garage to the south commuter concourse (access to the third story of the garage is via stairs and elevator) and on to the ticket and waiting areas in the new terminal. Access to train platforms would be via stairs, escalators and elevators from the concourses. Access to HSR and commuter trains would be permitted only through gated entrances, prior to train arrivals.

Information

An information booth would be located in the center of the new waiting area. An electronic train information board would be displayed above the information booth, with satellite schedule boards located in other passenger areas (north lobby, restaurant, main waiting room and both concourses). A public address system, which would be heard in all passenger areas would augment other information sources.

Waiting Area

The main waiting room would be located in the new terminal. A train schedule board would be located in the waiting area. Stairs and escalators leading to the HSR platforms below, would be located off the new concourse to the east of the new terminal. Pre-ticketed train passengers could also wait in the concourse.

Ticket Purchase

Ticket windows would be located in the new terminal and would dispense all types of tickets. A special window would be reserved for the physically handicapped patrons and would be served by ticketing personnel on demand. Physically handicapped passengers could also check in or claim baggage at this special ticket window.

Baggage Handling

The baggage counter would be adjacent to the ticket area. Baggage would be checked in, claimed and temporarily stored at this location. Baggage would be transported to the HSR platform via baggage-passenger elevators. These elevators would also carry physically-handicapped passengers to the HSR platforms. Porter service would be available outside at drop-off zones, at the ticket counter, and at call zones in the multi-level parking garage.

Platforms

The existing high-level commuter platform would remain intact except for the waiting shelter which would be demolished. The wooden portions of the existing platforms would be demolished. These portions of the platforms would be reconstructed and lengthened to their fullest extent without changing the track configuration. Canopies would be built over the new platform additions and wherever the platforms were not previously canopied. Windbreaks and infrared heating devices would be installed on both platforms.

11.7.3 PUBLIC SERVICES

Rest Rooms

New men's and women's rest rooms would be provided in the new terminal. Rest rooms in the existing North building will be maintained.

Storage Lockers

Storage lockers would be located in convenient areas throughout the terminal.

Telephones

Pay telephones would be provided throughout the terminal facility. Courtesy telephones for motel-hotel and rent-a-car reservations would also be available in the concourse.

Ground Transportation

Taxi service would be available at the north and south entrances to the terminal. Courtesy telephones for taxi service would be located in the lobbies. Bus service would be available at the parking complex on Walnut Avenue, at the south end of the terminal.

Traveler's Aid and Accommodations

A traveler's aid counter, first aid station and auxiliary post office would be provided.

11.7.4 CONCESSIONS

Existing concessions would remain. Consideration would be given to renovating the restaurant to include a cocktail lounge. Additional concession space would be available at the existing information, ticket and baggage areas. This space could be converted to a snack bar, barber shop or other concession.

11.7.5 RAIL PASSENGER OPERATIONS FACILITIES

Ticket and Passenger Services Offices

The terminal manager's office and Passenger Services office would be located in the new terminal. This area would also include a cashier's office with storage space for tickets and cash. All other rail passenger operations facilities including storage areas, mechanical equipment rooms, employee's lounge and rest room and security police would be located in the full basement below the north lobby and restaurant.

11.7.6 UTILITIES

Existing heating, ventilation, air conditioning, electrical service, water, gas and sewer systems would remain intact. New utility services would be installed for the new terminal and concourse.

11.7.6 EXTERIOR BUILDING RENOVATIONS

The east concourse addition would be similar to the existing; matching materials and finishes would be used for both interior and exterior surfaces.

11.8 CAPITAL COSTS

Unit costs based on current prices have been developed for major construction items. These unit prices and the illustrated concept sketch plans form the basis for the following estimate of construction costs.

Terminal work, including new additions, utilities and site work	$2,250,000
Platforms and canopies	269,000
Escalators, stairs and elevators	334,000
CCTV surveillance and electronic information systems	170,000
Subtotal terminal and site work	$3,023,000
Contingency – 20%	605,000
Total terminal cost	$3,628,000

Cost for track or catenary wiring adjustments are not included in this estimate.

Parking structure construction cost of $9,570,000 was calculated at the rate of $3,300 per car space for an approximate median of 2,900 parking spaces required for HSR patrons.

11.9 SCHEDULING AND PHASING OF CONSTRUCTION

Terminal reconstruction and site improvements would be undertaken during an 18-month period. The following schedule is a recommended procedure for phasing the work involved at this terminal:

(1) Construct new multi-level parking garage, new terminal and new HSR concourse.

(2) Reconstruct sections of HSR wood platforms which presently exist, by replacement with concrete platforms and canopy roofs, and extend same to a length of 1200 feet. Remove waiting rooms on all lower level platforms.

(3) Remove existing ticket and baggage areas, seating, etc.

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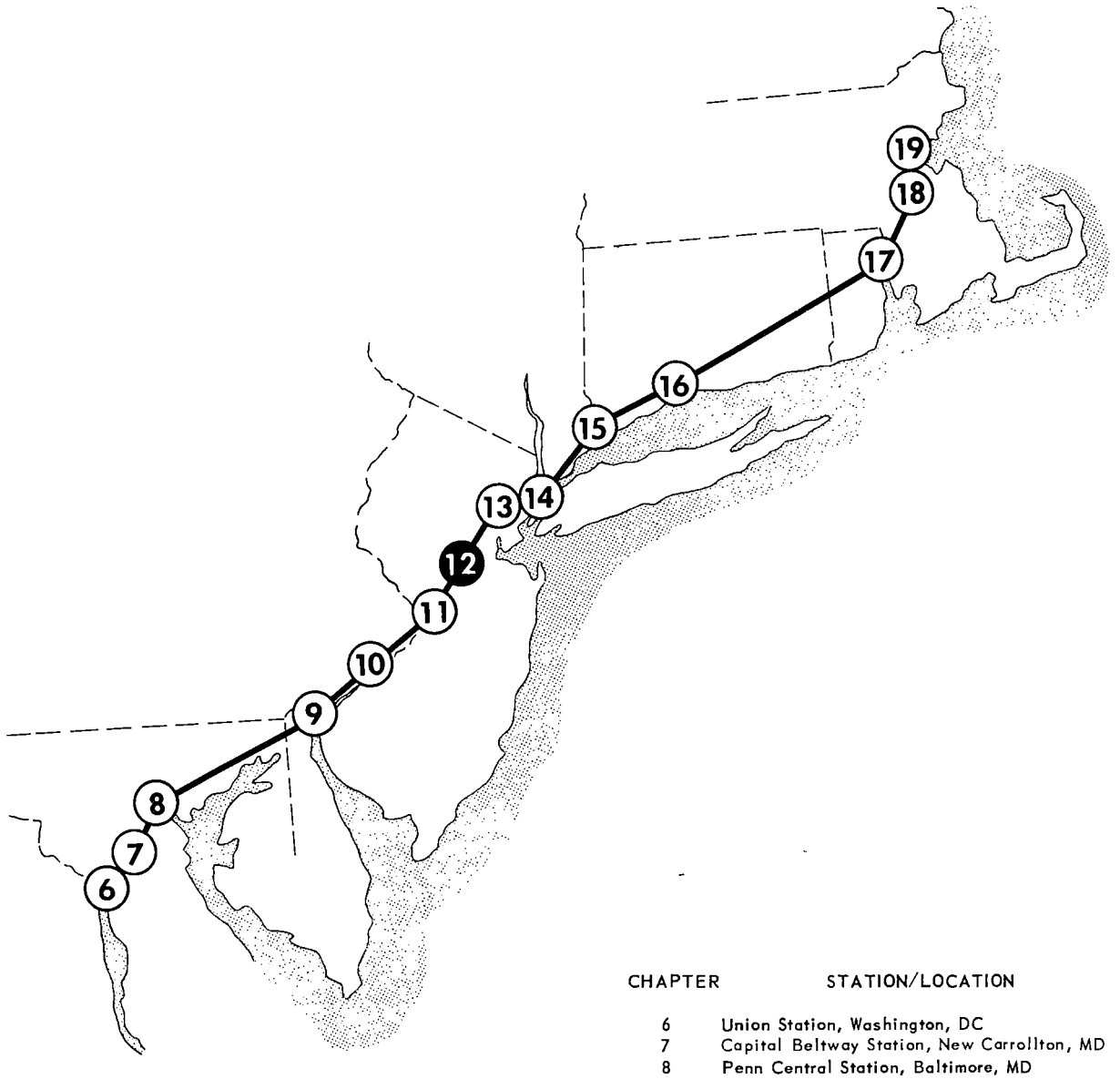
STATION LOCATIONS ALONG NORTHEAST CORRIDOR



CHAPTER	STATION/LOCATION
6	Union Station, Washington, DC
7	Capital Beltway Station, New Carrollton, MD
8	Penn Central Station, Baltimore, MD
9	Wilmington Station, Wilmington, DE
10	Penn Central Station, 30th Street, Phila., PA
11	Trenton Station, Trenton, NJ
12	Metropark Station, Iselin, NJ
13	Penn Central Station, Newark, NJ
14	Pennsylvania Station, New York, NY
15	Stamford Station, Stamford, CT
16	New Haven Station, New Haven, CT
17	Union Station, Providence, RI
18	Route 128 Station, Dedham, MA
19	South Station, Boston, MA

12.0 METROPARK STATION, ISELIN, NEW JERSEY

12.1 STATISTICAL FRAMEWORK

12.1.1 OWNERSHIP AND USERS

Both Metropark Station and the adjacent parking lot are owned by the State of New Jersey. The State is, however, making an effort to assign responsibility for the parking lot to Woodbridge Township. The terminal is presently used by both the Penn Central and Amtrak.

12.1.2 PROPERTIES AND FACILITIES

Facilities include a terminal building with passenger processing facilities at street level; an 822-car-capacity parking lot; and, two high-level platforms. An underground tunnel and a stairway provide access to the platforms. The terminal, platforms and tunnel were constructed in 1971.

12.1.3 CURRENT ACTIVITY LEVELS

Approximately 1,800 commuters and 150 Amtrak riders (one-way) use the Metropark Station daily. Penn Central operates 33 southbound and 31 northbound commuter trains daily, and provides service to Newark, New York and Philadelphia. Amtrak operates nine southbound and seven northbound trains daily through the terminal. Of these 16 trains, 10 are Metroliners. By using high-speed rail transportation, the commuting time to New York City could be reduced to 25 minutes, but the present Metroliner schedule does not permit daily commuting. There is, however, a daily nonstop Metroliner to Philadelphia that is available to commuters. From Metropark to Philadelphia, a distance of 65 miles, the running time is 50 minutes.

12.2 TERMINAL VICINITY INFRASTRUCTURE

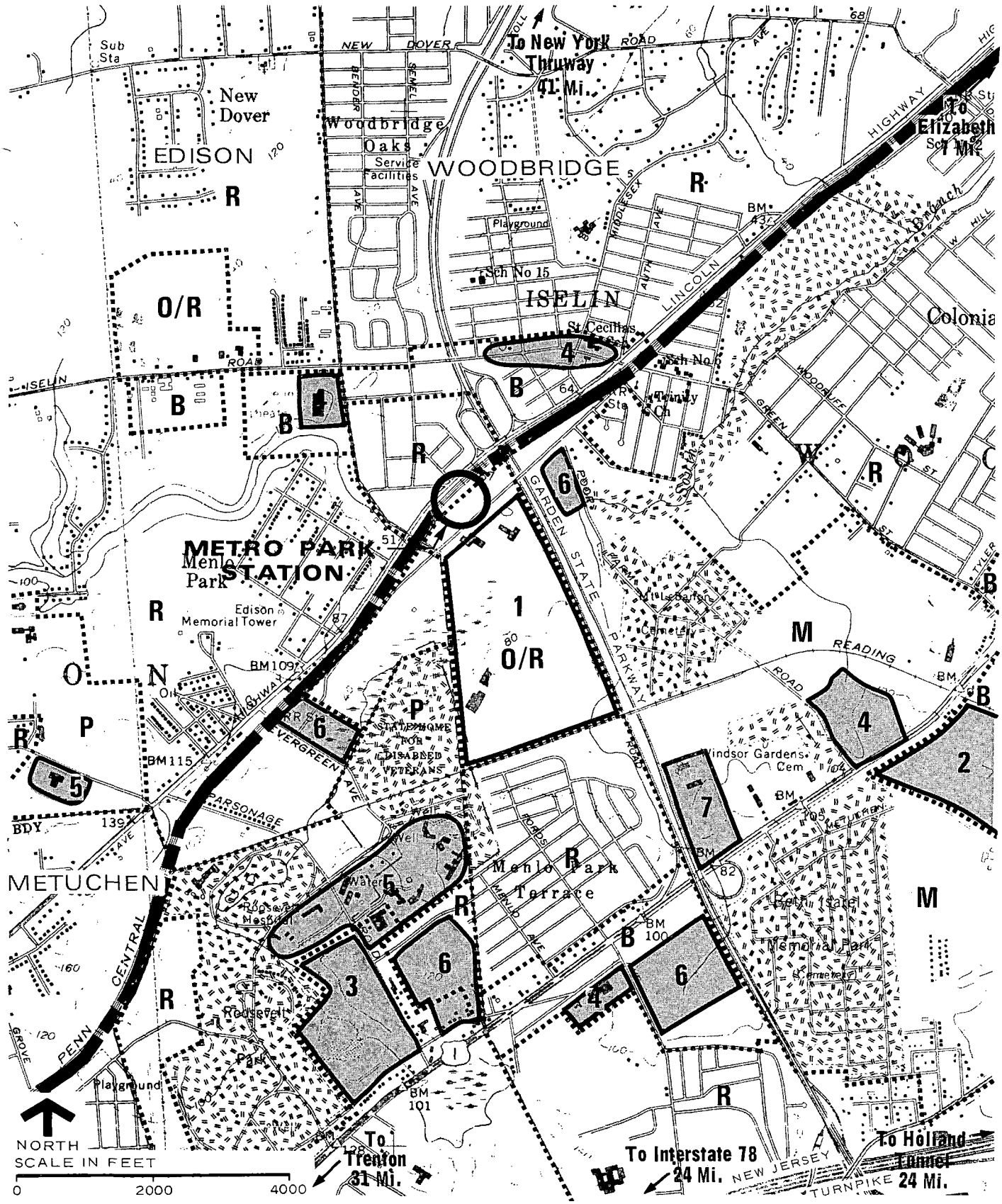
12.2.1 LOCATION CONSIDERATIONS

The terminal location and its environs are shown in Figure 12-1, which also indicates the existing transportation network, activity centers and area zoning. Activity centers and zoning limitations are listed in Table 12-1.

Location with Respect to Regional Highway System

The Metropark Station is well situated with respect to the regional highway system. It is located adjacent to the Garden State Parkway (Route 444) and the Lincoln Highway (Route 27), and is two miles north of the intersection of the New Jersey Turnpike (I-95) and the Garden State Parkway. The New Jersey Turnpike links Newark and New York City, on the north, with Trenton and Philadelphia to the south. The Garden State Parkway, which has an exit near Metropark, connects Newark and northern New Jersey with the New Jersey shore area.

Several other major highway intersections are within three miles of the terminal. These include I-287, which provides access to Staten Island and Pennsylvania; U.S. Route 1, linking New York City and Philadelphia; and, U.S. Route 9, which connects New York City with the New Jersey shore.



STATION LOCATION
METRO PARK STATION
ISELIN, NJ

FIGURE 12-1

TABLE 12-1

ACTIVITY CENTERS, CITY SETTING

EXISTING ACTIVITIES

1	Englehard Minerals and Chemicals, Eastern Airlines, Siemens, Prudential Insurance Company
2	Woodbridge Center Shopping Mall (123 stores and offices)
3	Menlo Park Shopping Center (approximately 60 stores and offices)
4	Other Commercial Centers
5	Hospitals (J.F. Kennedy Memorial Hospital, Roosevelt Hospital, New Jersey State Home for Disabled Veterans)
6	Apartment Complexes
7	Ronson

PROPOSED ACTIVITIES (Zoning)

R	Residential
B	Business
M	Light Industrial
O/R	Office Research or Restricted Industry
P	Public/Institutional

This regional system makes the terminal easily accessible from a considerable area in northeastern New Jersey. However, during peak periods all of these highways carry heavy traffic loads, and serious congestion occurs on some segments.

Existing Highway Access

Lincoln Highway (Route 27), which is adjacent to the terminal on the north, and the Garden State Parkway (Route 444), with a full interchange to the north, provide major highway access to the terminal. Both Wood Avenue South and the Middlesex-Essex Turnpike border the terminal and are major arterial streets.

Both Garden State Parkway and the Lincoln Highway are severely congested during peak periods. At the present time, to reach the terminal from the Parkway or Route 27, vehicles must pass through a narrow Penn Central railroad underpass on Wood Avenue South. As this intersection is the scene of traffic congestion during rush hours, it severely limits the capacity of traffic entering or leaving the Metropark Station and the nearby office complexes. Despite staggered working hours for these offices during peak hours, traffic is congested to the point that police are required to control traffic at the intersections of Wood Avenue South with the Middlesex-Essex Turnpike and Route 27.

At Wood Avenue South and the Parkway, the lack of left-turning lanes on Route 27 is a major cause of the severe congestion which occurs on this four-lane highway. In addition, the intersection of Wood Avenue South and the Middlesex-Essex Turnpike is inadequate. This combination of heavy volumes of traffic with inadequate highways and intersections results in poor overall access to the terminal during peak hours.

Traffic problems are already so serious, in the general vicinity of the terminal, that a very real potential exists for air pollution problems. The completion of the Prudential Insurance Company facilities, scheduled for July 1975, will add to the present difficulties by generating additional automobile travel.

Woodbridge Township has been withholding permits for additional development in the area, and recently denied an application for the construction of a proposed four-story office structure near the terminal. The Siemens Corporation is presently under orders from the Environmental Protection Agency to develop a plan to reduce the amount of automobile traffic generated by the corporation's facilities. In view of EPA's concern about automobile traffic, some form of limited transit service can be expected to eventually develop in the area.

Relationship to Other Inter-regional Transportation Facilities

Intermodal and regional connections are virtually nonexistent at the Metropark Station. Newark International Airport, 18 miles away, is accessible only by auto via the New Jersey Turnpike. The nearest bus terminals (Greyhound and Continental Trailways) are in Newark, 20 miles away. Intercity buses run on the adjacent Garden State Parkway, but do not provide connections to Iselin. The Woodbridge Station, which is on the New York and Long Branch Railroad's Jersey Coast Line, is three miles away and is accessible only by taxi.

Existing Bus and Transit Service

Metropark was designed as a park-and-ride terminal, and the availability of other modes of access is currently minimal.

Several taxicab companies, from surrounding towns, provide service to and from the terminal. Taxis pick up and discharge passengers at a loading zone in front of the terminal. Cab fares are high, with a 2-1/2-mile ride costing approximately $4.00. Demand for this service is low. As few passengers arrive or leave the terminal by cab, the taxi stand is often used by short-term parkers.

The narrow Wood Avenue South underpass and the heavy congestion prevent buses from operating into the Metropark Station. Transport of New Jersey, however, has two routes on the Lincoln Highway. Route 134 is operated seven days a week from New Brunswick to Newark. Headways are irregular, averaging about 30 minutes and, in the vicinity of the terminal, only peak hour and Sunday service is provided along Lincoln Highway.

Route 135 operates from New Brunswick to New York City. Service is provided along the Lincoln Highway seven days a week, with headways averaging 20 minutes during the peak hours. Buses stop at the intersection of Wood Avenue South and the Lincoln Highway, nearly a quarter of a mile from the terminal.

No rental cars are available at the Metropark Station and only the apartment complex, at Gill Lane, and the Englehard offices are within walking distance.

12.2.1 RELATIONSHIP TO ACTIVITY CENTERS

The Metropark Station at Iselin is located near the township line of Woodbridge and Edison Townships in Middlesex County, New Jersey. In 1970, Middlesex County had a population of 584,000 of which Woodbridge Township accounted for 99,000 and Edison Township for 67,000 people. The Middlesex County Planning Department projects a population of 838,000 by 1980, and 1,400,000 by the year 2000 for this county, in the highly urbanized area of northeastern New Jersey.

Located on the high-speed rail line, Metropark is 15 miles southwest of Newark and 25 miles from Pennsylvania Station, New York City. Downtown Newark is approximately 16 miles from the terminal via the Garden State Parkway, and the Holland and Lincoln Tunnels, approximately 26 and 29 miles respectively, can be reached by way of the Garden State Parkway and the New Jersey Turnpike.

The only major local-traffic generators, near the terminal, are Woodbridge Center, the Menlo Park shopping center and the complex of offices in the immediate vicinity. Although there are scattered commercial and light industrial facilities in the general area, most of the land has already been developed for residential use (see Figure 12-1).

Woodbridge Center, a large shopping complex comprised of 123 stores that serve much of Middlesex County and the surrounding area, is located slightly over one mile from the terminal. A 30-acre site adjacent to Woodbridge Center is owned by Woodbridge Township and is the proposed site for a future Town Hall. In addition, more office development can be expected in and around Woodbridge Center.

12.2.2 LAND USE

Existing Characteristics of the Terminal Area

The immediate terminal area, parking provisions, and the circulation system are shown in Figure 12-2.

The suburban setting of Metropark is quite attractive and safety does not appear to be a serious problem. There are few sidewalks in the general area, and minimal provisions have been made for pedestrian access. The exterior of the terminal and the parking lot are both well lighted, and security appears to be good.

The existing land use around the Metropark Station is predominantly residential in character with some very large commercial complexes, notably the two shopping centers previously mentioned.

The area north of the tracks and across the Lincoln Highway is predominantly residential. To the northeast, there is an older suburban middle-and upper-income residential area with a limited amount of commercial development along Iselin-Oak Tree Road. There is also a stable residential area with generally well maintained medium-income homes. One new office structure, Berg Enterprises, is located on Lincoln Highway opposite the terminal, but there is no direct pedestrian access from this area to Metropark. The area to the northwest of the terminal, in Edison Township, is also predominantly residential.

The area south of the railroad tracks and east of Garden State Parkway is largely a single-family residential development with some apartment buildings near the terminal.

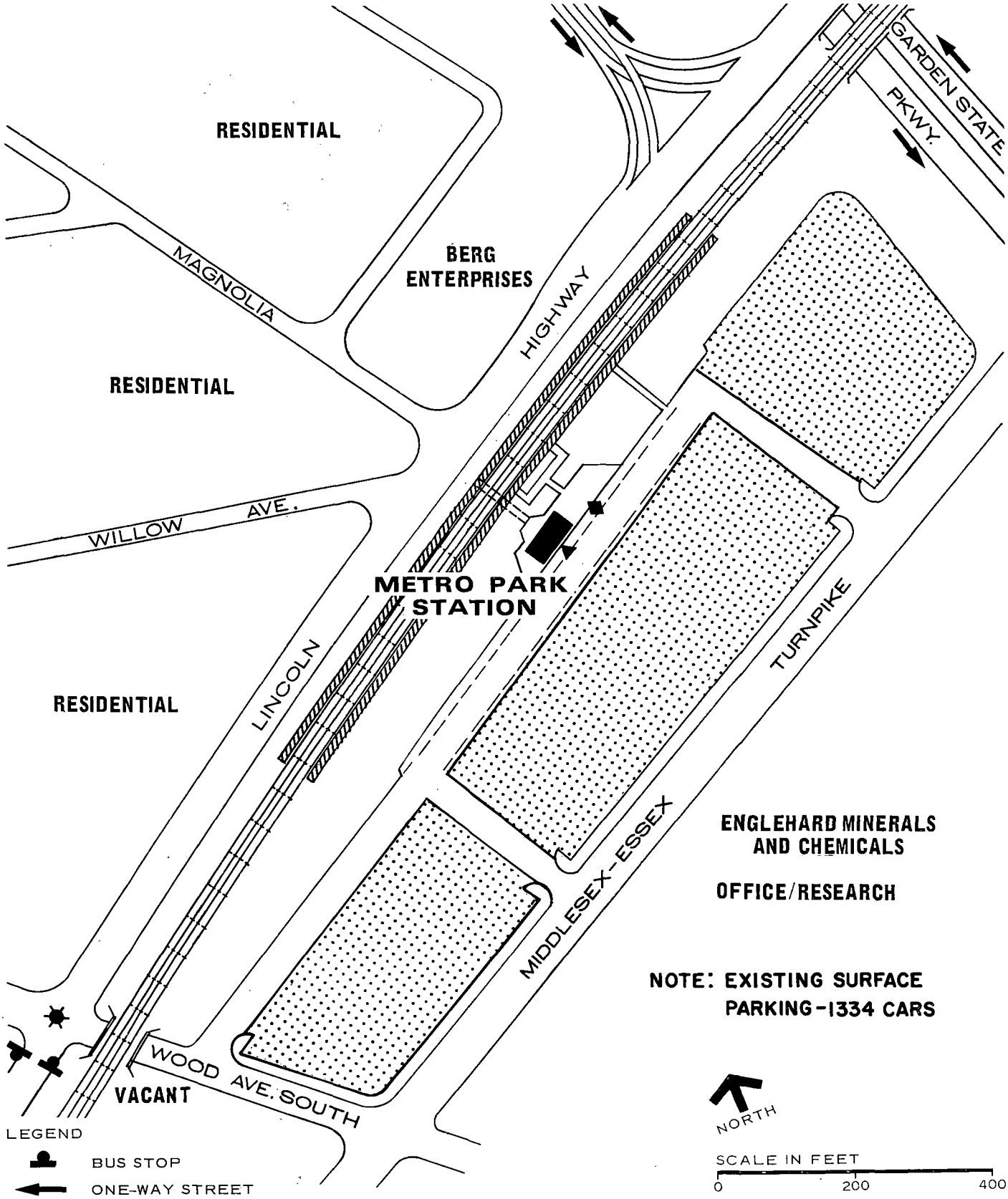
The recently expanded research facilities of Englehard Minerals and Chemicals are south of the terminal, across the Middlesex-Essex Turnpike. To the southwest of Metropark, there are large areas of open land, some of which are currently available for industrial research or office use (Figure 12-3). A portion of this vacant property is owned by the New Jersey Home for Disabled Veterans, and another section is currently used as a park. The remainder of the southwestern area is a mixture of residential and commercial land use and includes large apartment complexes and the Menlo Park Shopping Center, a major commercial enterprise.

The vacant area, adjacent to the terminal on the west, is currently being converted to a parking lot to serve terminal patrons.

Planning Factors, General Terminal Area

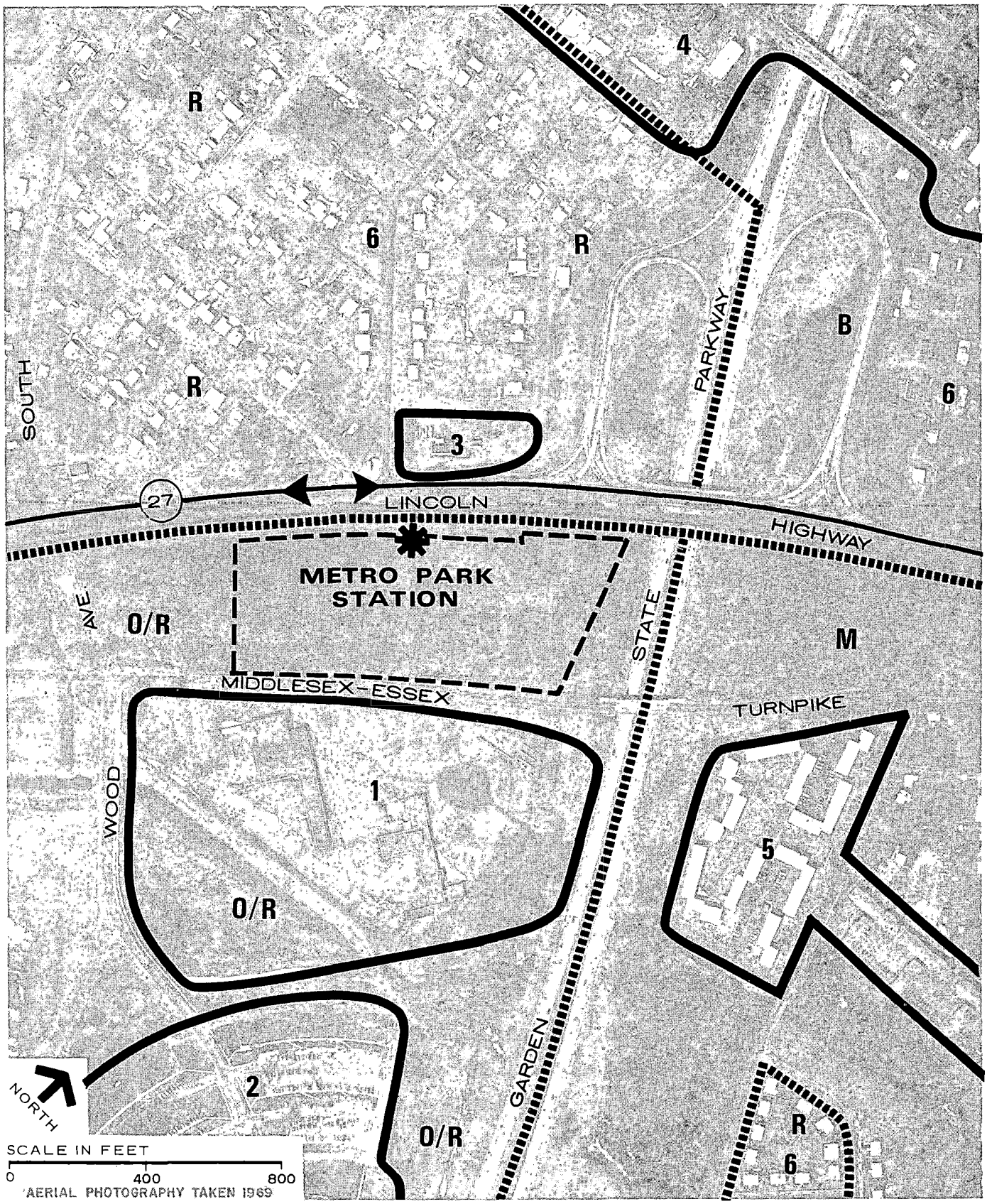
Both existing and proposed activity centers are shown in Figure 12-3 and listed in Table 12-2.

The land use characteristics of the general terminal area are those of a medium-density suburban area. North of the tracks, the predominant land use is single-family residential, with the small Iselin business district located to the northeast. A single office building, for Berg Enterprises, has been built along the Lincoln Highway.



EXISTING STATION ENVIRONS
METRO PARK STATION
ISELIN, NJ

FIGURE 12-2



LEGEND/ZONING

PARKING

BUS ROUTE

EXISTING ACTIVITY CENTER (SEE TABLE 12-2)

ZONING AREA (SEE TABLE 12-2)

PLANNING FACTORS
METRO PARK STATION
ISELIN, NJ

FIGURE 12-3

TABLE 12-2

ACTIVITY CENTERS, GENERAL TERMINAL AREA

EXISTING ACTIVITIES

1	Englehard Minerals and Chemicals
2	Eastern Airlines
3	Berg Enterprises
4	Iselin Business District
5	Apartment Complex
6	Single Family Residential

PROPOSED ACTIVITIES (Zoning)

R	Residential
B	Business
M	Light Industrial
O/R	Office Research or Restricted Industry

In recent years, a complex of offices has developed just south of the Metropark Station (see Figure 12-2). This complex includes a recent expansion of the Englehard Minerals and Chemicals facility, an Eastern Airlines reservation center, Siemens Corporation and facilities for the Prudential Insurance Company which are presently under construction.

The presence of high-speed rail service at Metropark does not appear to have been a major factor in the recent growth of this office development. Rather, the number of converging transportation facilities in the Metropark area, together with the limited land available for major office construction, appear as the significant factors in the development of this complex.

The Garden State Parkway interchange lies immediately northeast of the terminal. The remaining areas are occupied by apartments and, to the southwest, some vacant land.

The terminal is approximately four miles from the large industrial complexes, which are located along the Raritan River and the Arthur Kill.

The present zoning of the two townships is, perhaps, the best indicator of future land-use development trends. The zoning is shown in Figures 12-1 and 12-2.

In Woodbridge Township, most of the area north and east of the terminal is zoned for a variety of single-family residential uses, including a large subdivision with estate zoning (one-acre minimum lots) northeast of Iselin. South of the terminal, there is a large area zoned for office/research use. In the same vicinity, east of the Garden State Parkway, much of the area is zoned for light industrial use, but a considerable amount of this area is already occupied by cemeteries. Woodbridge Center and its environs are zoned as a special shopping-center district.

Secondary traffic generators, along U.S. Route 1, are the Ronson plant, Klein's Department Store and the technical training school.

12.3 EXISTING PASSENGER HANDLING FACILITIES

12.3.1 PASSENGER ACCESS AND EGRESS

From Middlesex Avenue, the entrance to the terminal is through a large parking lot which is being expanded to accommodate 1,334 vehicles. There are two entrances into the terminal waiting room from sidewalk level on the south side of this lot; from the east side there is only one entrance; and, on the north side there is one entrance/exit. See photos 1 and 2. All entrances and the walking areas surrounding the terminal are protected by a roof overhang.

Stairways to platforms are covered by canopies which afford a limited amount of protection from inclement weather. During the winter months, passengers are exposed to an accumulation of snow on the steps. See photo 3.

There are few sidewalks in the general area. Pedestrian access is poor.

Automobile Access

There is no direct public transit to the terminal, and it is not within convenient walking

distance for most users. Therefore, the current mode of access is totally dominated by the automobile. Buses, taxis and walking are all insignificant modes of access.

Nearly all terminal patrons, other than park-and-ride drivers, are either car passengers or arrive and leave via kiss-and-ride. Drop-off points for kiss-and-ride passengers are located on both sides of the access road in front of the terminal. Severe congestion occurs here because the traffic is two-way and, in spite of signs indicating a three-minute parking limit, long-term parkers use the drop-off areas.

12.3.2 PARKING

A serious parking problem exists at the Metropark Station. The only parking available is the free lot directly in front of the terminal. This lot has a designated capacity of 822 cars but, due to extensive illegal parking, as many as 1,100 cars have actually been counted. Cars park illegally in the aisles, on service roads, and in drop-off areas as well as on the Middlesex-Essex Turnpike. This situation has developed because parking is free and parking regulations are not enforced. See photo 4.

The State of New Jersey is presently expanding the parking lot westward to Wood Avenue South. This addition, plus realignment of spaces in the present lot, will result in the lot having 1,334 parking spaces.

12.3.3 PASSENGER PROCESSING

The existing Main Floor and Platform Plans for Metropark Station are shown in Figure 12-4.

Functional Flow

Upon entering the terminal from any entrance, passengers proceed to the ticket counter, purchase their tickets, and then may sit in the waiting room or proceed, by means of stairways, to either the eastbound or westbound upper passenger platforms to await their train. See photos 5 and 6.

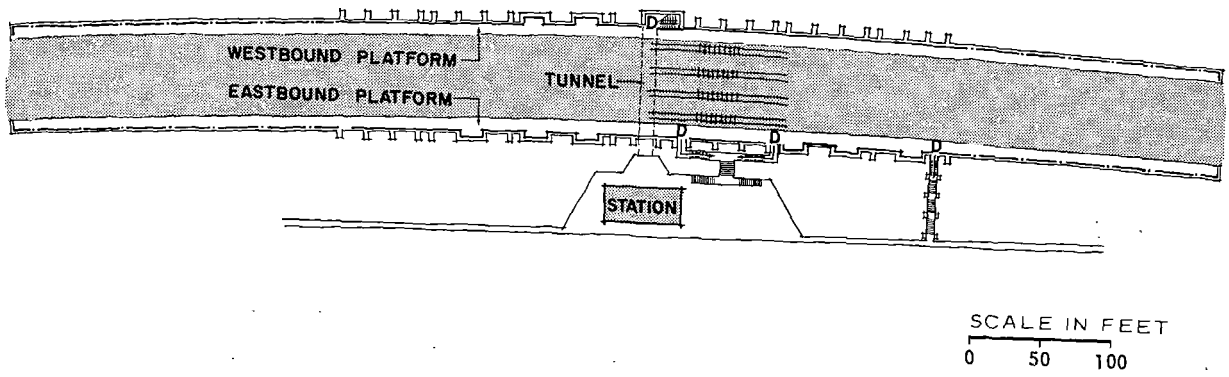
Information

As there is no electronic train scheduling board within the terminal, train arrivals and departures are noted on a chalkboard in the waiting room. This information can also be obtained at a ticket window. There is no public address system in the terminal or on the upper-level passenger platforms.

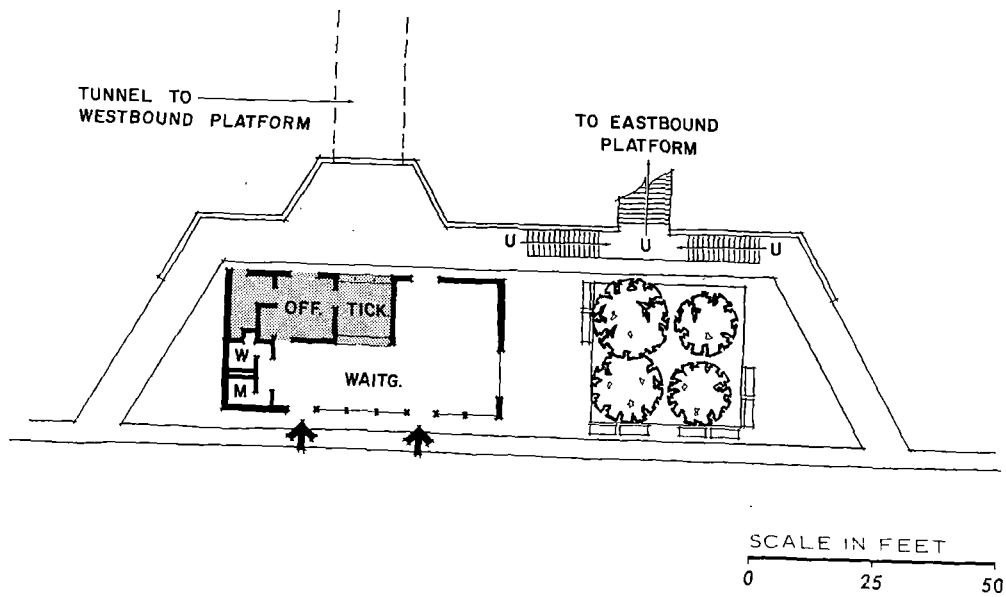
Ticket Purchase

Passengers may procure tickets at a counter within a short distance from the front entrance. The ticket office facility, which is interconnected to the terminal manager's office, has two windows to serve all passengers. Ticket holders proceed to the waiting room or wait on the upper platform levels. See photo 7.

The eastbound platform level is reached via a canopied stairway. Westbound passengers must pass through a tunnel, under the tracks, to reach a stairway leading to the upper-level



PLATFORM PLAN



MAIN FLOOR PLAN

NORTH

LEGEND

RAILROAD FUNCTION

DC/STV

EXISTING METROPARK STATION
ISELIN, N J
FIGURE 12-4

passenger platform. See photo 8. There are no provisions for the transfer of handicapped passengers to either of the two upper-level platforms.

Baggage Check

Baggage for holdover is checked at the manager's office. There is no porter service at this terminal. All baggage must be carried to the upper platforms by the passengers.

Waiting Areas

Facilities in the waiting room are presently adequate for passenger comfort. Seating for 24 passengers is provided within the terminal. See photo 6. Adjacent to the terminal building, on the north side, there is a small landscaped and paved courtyard where passengers may sit if weather conditions are favorable. No seating is provided on either of the upper level passenger platforms. See photo 7.

Tunnel

An underground tunnel, connecting the terminal to the westbound passenger platform, extends under the present track roadbed. This tunnel is well-lighted and adequately ventilated. See photo 8.

12.3.4 PUBLIC SERVICES

Rest Rooms

Two very small toilet rooms, one for men and one for women, are located at the south end of the terminal building. These are the only toilet facilities on the premises.

Lockers

No storage lockers are provided.

Telephones

Public telephones are located in the terminal, outside the terminal, at the tunnel level and on each upper-level passenger platform.

Rentals and Accommodations

No provisions are made for car rental or taxi service except by telephone.

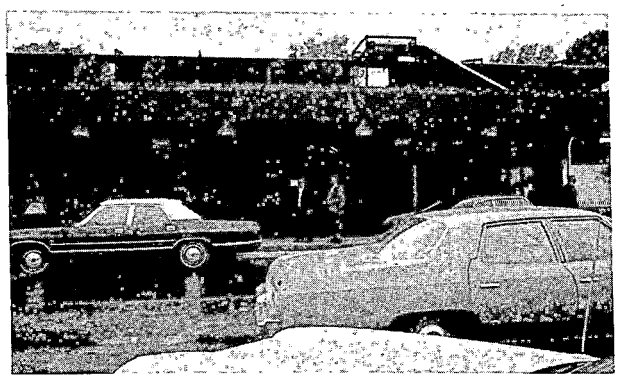
12.3.5 CONCESSIONS

Vending Machines

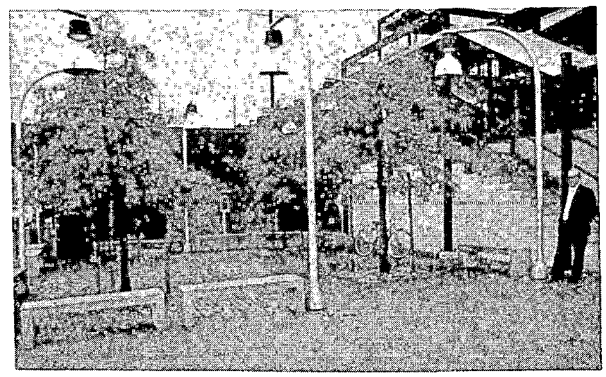
Snack-type foods are available from a very limited number of vending machines. No other concessions are available at this terminal.

METROPARK STATION – ISELIN, NJ

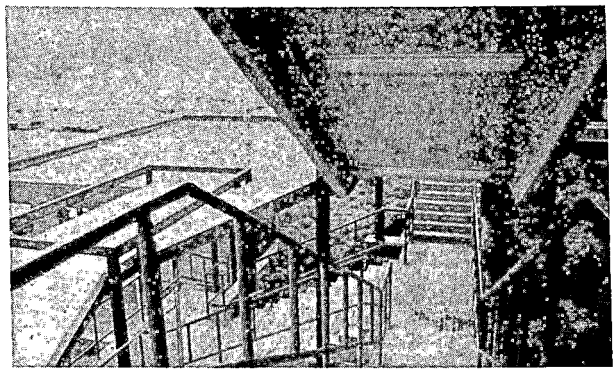
EXISTING FACILITY



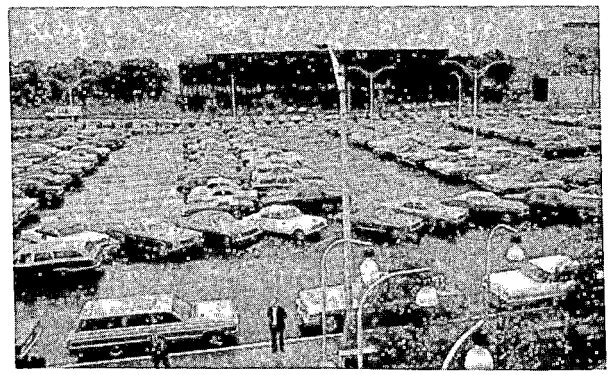
1. Front of Terminal and Main Entrances



2. Landscaped Courtyard and East Entrance

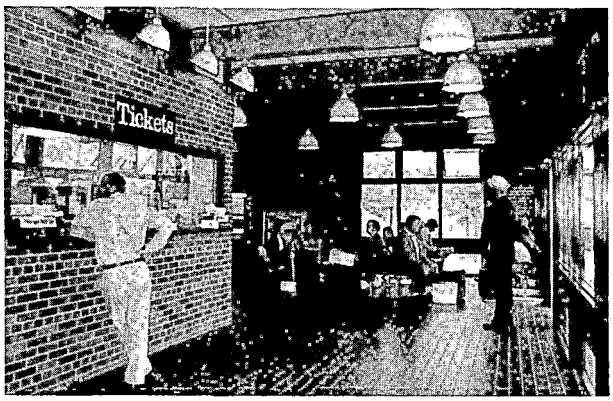


3. Canopied Stairways to Eastbound Platforms



4. Parking Lot Across from Front of Terminal

EXISTING FACILITY (Cont'd)



5. Ticketing Area of Terminal

6. Main Waiting Area

7. East and Westbound Passenger Platforms

8. Tunnel Leading to Stairs to Westbound Platform

12.3.6 RAIL PASSENGER OPERATIONS FACILITIES

The operational facilities at the terminal are minimal. Two ticket windows service both commuter and Amtrak passengers. The ticketing area is interconnected with a very small office for the terminal manager, a janitor's room, and two small toilet facilities which are used by both employees and passengers.

There is no security surveillance in the terminal, in the area of the underground tunnel, the passage stairs to the upper-level platforms or on the passenger platforms. If the need arises, the Woodbridge Township Police must be contacted by telephone.

12.3.7 FACILITY CONDITION

Structural Integrity

The structure, tunnel, stairs and platforms are in good condition.

Exterior

The structure, tunnel, platforms, stairways and paving are in very good condition and require no repair.

Interior

The interior of the terminal is well maintained and in excellent condition.

Utilities

Existing utilities serving the terminal are adequate for current usage. Air conditioning is provided only in the ticket office and the manager's office. Expansion of this terminal will necessitate increasing the size and capacity of all service utilities.

Outside lighting conditions, in the parking area and around the terminal, are excellent. Lighting facilities, within the tunnel and on the stairways and platforms, are also adequate.

12.4 FORECAST ACTIVITY LEVELS

12.4.1 PROJECTED DESIGN DAY PATRONAGE

For 1990, the passenger demand for HSR is expected to be 2,100 persons per day, with a peak-hour-demand of 300. In addition, the commuter use of the terminal is anticipated to be 2,500 persons, with a peak-hour-demand of 800 commuters. Based on these projections, the total peak-daily-load would be 4,600 people and the peak-hour-demand would be 1,100. The 1974 peak-day-demand was 1,850.

The central location of Metropark in the urbanized area of northeastern New Jersey, when combined with the population forecast for Middlesex County, tends to support a high projection of HSR use. This will be particularly true if the Amtrak schedule permits daily commuting to New

York City. However, achieving the higher level of projected HSR ridership will definitely require prior solutions to the already serious local-traffic congestion and parking problems.

12.4.2 PROJECTED MODE OF ACCESS

It is also anticipated that the projected mode of access will be dominated by the automobile, with 50 to 80 percent of arrivals being by park-and-ride and 15 to 25 percent by kiss-and-ride. An adequate local bus system could, however, reduce these percentages.

Percentages of daily passenger arrivals have been projected by mode as follows:

	Percentage		
	Low	High	Median
Park-and-ride	50	70	60
Park-and-ride passenger	5	10	10
Kiss-and-ride	15	25	20
Rail transit	0	0	0
Bus	1	5	3
Taxi and limousine	1	5	2
Walk	5	15	5

12.4.3 PARKING REQUIREMENTS

Based on the 1990 peak-day patronage projection of 2,100 HSR passengers, parking requirements for these patrons are estimated to be 1,300 spaces. In addition, increased commuter patronage will generate further parking requirements.

12.5 PLANS AND PROPOSALS

12.5.1 TERMINAL IMPROVEMENTS

No terminal improvements are presently under construction or in the planning stage.

12.5.2 FUTURE LAND USE PLANS

Woodbridge Township is now approaching total development. Apart from a limited number of offices near the terminal and Woodbridge Center, it appears that no major activity centers will be developed in the future.

Some additional office development can ultimately be expected south of the railroad line and close to the terminal. A site of approximately 100 acres, adjacent to the terminal in Edison Township, is presently being farmed or is in woodland. It can reasonably be expected that this area will eventually be converted to some intensive land use. Additional apartment development can also be expected to occur within the general terminal area.

12.5.3 STREET AND TRAFFIC IMPROVEMENTS

Increased patronage of the terminal will have a serious impact on the already congested local highway facilities, and extensive highway access improvements will be needed. The proposals contained in the State of New Jersey's "Transit Development Program 1974-1979" would alleviate much of the congestion in the Metropark area.

The State has developed plans for additional access ramps to the Garden State Parkway. During Stage 1, which is presently awaiting an Environmental Impact Statement, Wood Avenue South would be extended and entrance and exit ramps, to the southbound lane of the Parkway, would be constructed. An exit ramp, from the northbound lanes of the Parkway to the Middlesex-Essex Turnpike, would also be built. Stage 2, a long-range plan, calls for the extension of Wood Avenue South across the Parkway on a bridge. Ramps would be built to connect to the northbound lanes of the Parkway. When implemented, these proposals will greatly improve access from Garden State Parkway to the terminal.

A more immediate need is the replacement of the Wood Avenue South underpass, which is presently the major bottleneck in the terminal area. The New Jersey Department of Transportation has scheduled construction for 1975 which will eliminate this particular problem.

Other highway improvements, proposed in the area, are the widening of the Garden State Parkway and Route 27, and the extension of Wood Avenue South to Gills Lane.

12.5.4 TRANSIT IMPROVEMENTS

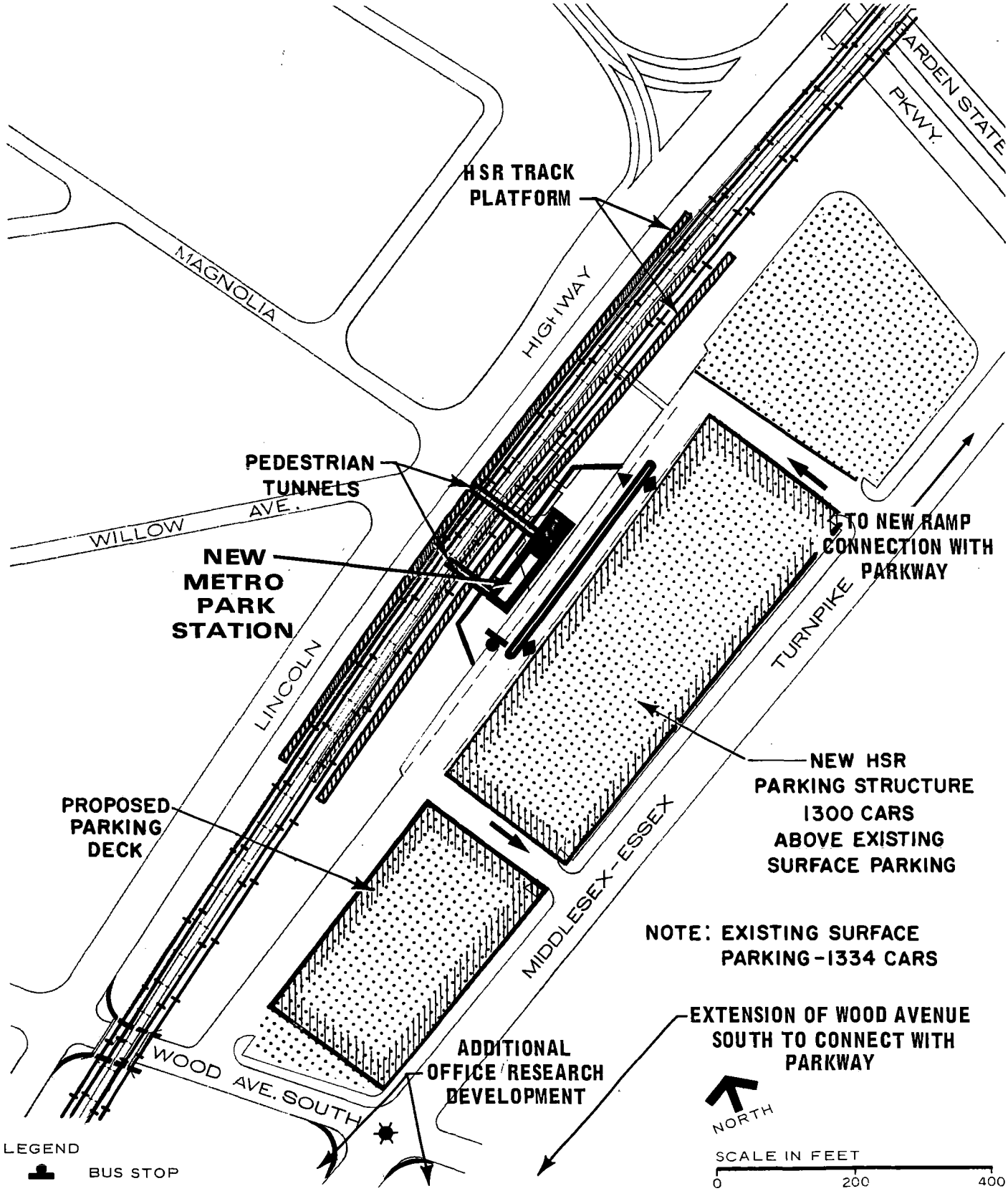
At the present time, there is no direct local-bus service to the terminal at Metropark. A proposal was once made to link the terminal and Woodbridge Center by some form of rapid transit, via the Port Reaching Railroad right-of-way, but the demand does not justify the creation of such a connection.

12.6 RECOMMENDED 1990 ACCESS/EGRESS AND PARKING PLANS

The 1990 Concept Plan for the Metropark Station includes highway and intersection improvements in the vicinity of the terminal. The recommended one-way circulation system in the parking lot, when combined with designated lanes for buses, taxis and kiss-and-ride passengers, will greatly reduce the conflicts between pedestrian and vehicular traffic. Figure 12-5 depicts the proposed concept for 1990.

12.6.1 STREET AND TRAFFIC IMPROVEMENTS

Additional traffic improvements will be required at the intersection of Wood Avenue South



1990 CONCEPT
METRO PARK STATION
ISELIN, NJ
FIGURE 12-5

and the Middlesex-Essex Turnpike. To eliminate the need for police control of traffic at this intersection, the southwesterly approach should be widened and a traffic signal installed. Revision of the traffic controls, at the intersection of Wood Avenue South and the Middlesex-Essex Turnpike, should also be undertaken.

The highway and traffic improvements, mentioned above, and in Section 12.5.3, should adequately accommodate the increased traffic generated by the Metropark Station.

12.6.2 PARKING

It is estimated that 1,000 to 1,700 parking spaces will be needed by 1990 to meet the requirements of HSR patrons. Even when the current expansion of the parking lot is completed, it will provide insufficient space for 1990 demand.

Some further improvement could be accomplished by altering the circulation system of the present parking lot. A one-way traffic circulation system should be put into effect, and parking regulations should be vigorously enforced. The Township of Woodbridge should assume responsibility for the lot, as this would include policing by the local law enforcement agency.

The size of the parking lot, however, is more than adequate for a parking structure which would accommodate the projected demand. When the expanded lot reaches capacity, a parking deck should be constructed over a portion of the site. Air pollution problems already exist in the area and a multilevel parking garage would be subject to approval by the Environmental Protection Agency. Therefore, to reduce the potential parking demand, it is particularly important to encourage the establishment of transit service to the terminal.

12.6.3 INTERMODAL TRANSFER

In order to determine the actual potential patronage for any future local-transit service, a survey should be undertaken at the parking facility to determine the origin of present commuter and Metroliner patrons.

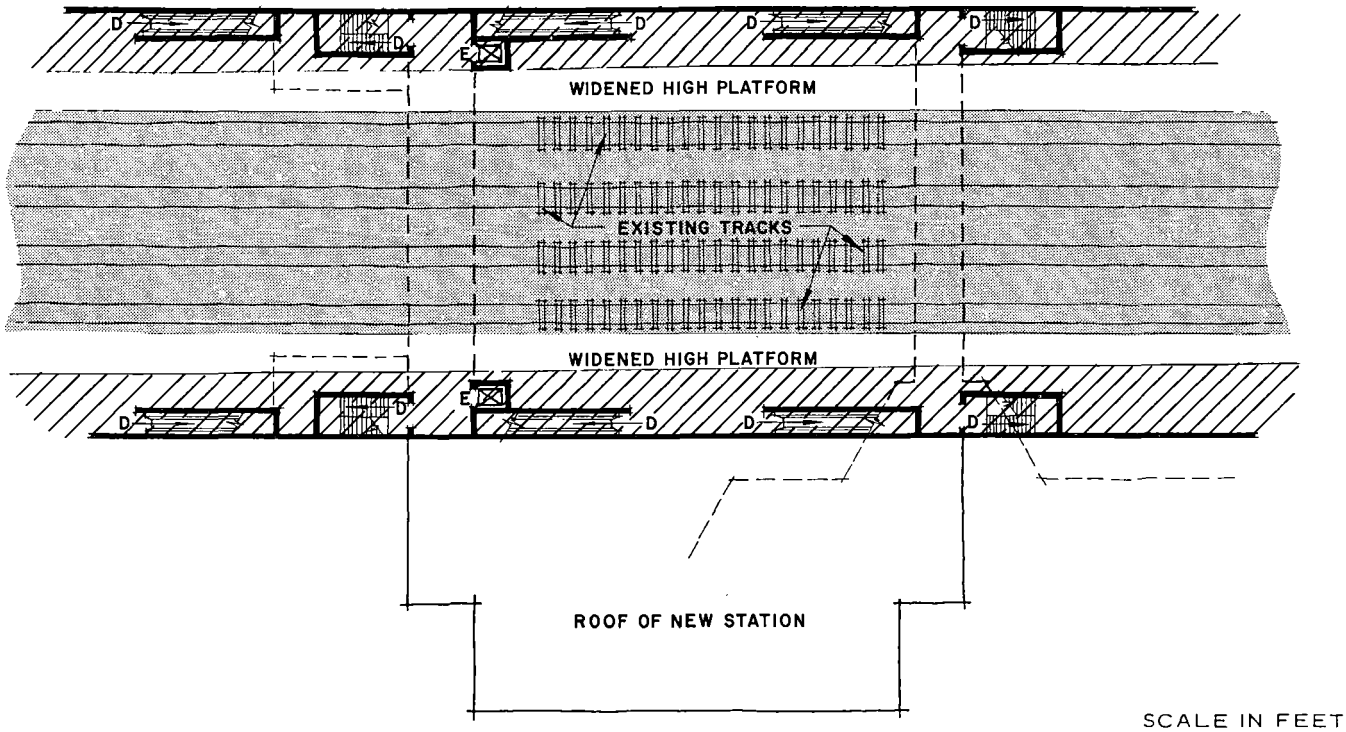
Direct bus service into the terminal should be provided by either Transport of New Jersey and/or a new local-feeder system. Due to the limited demand for taxi service, a single lane on the terminal access driveway would serve both public transit and taxis. To facilitate the transfer of passengers, this designated lane would be directly in front of the terminal entrance, with a special kiss-and-ride lane adjacent to the bus/taxi lane.

12.7 RECOMMENDED 1990 PASSENGER TERMINAL PLANS

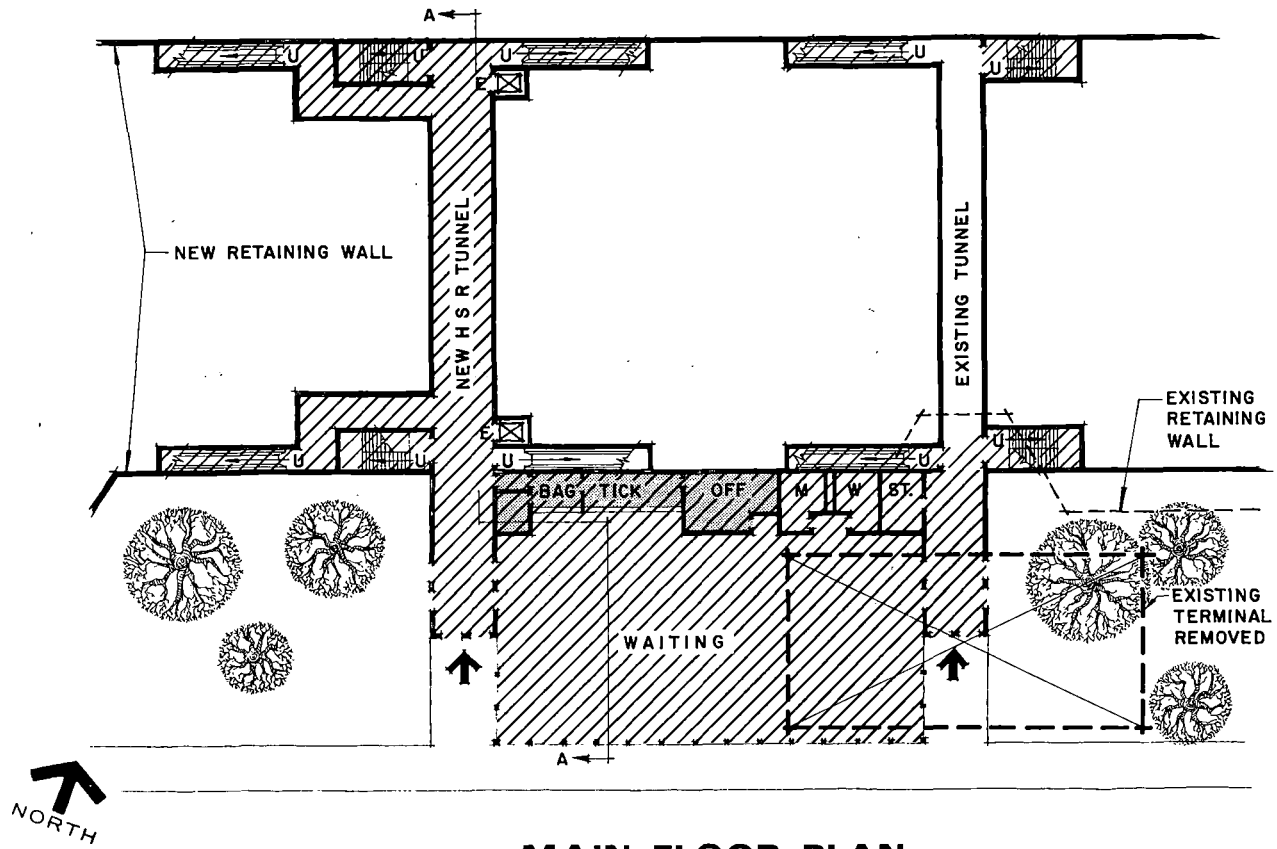
The proposed terminal plans, to meet 1990 demands, are shown in Figures 12-6 and 12-7.

Three primary changes in existing terminal facilities will influence the proposed reconstruction program at the Metropark terminal. They are as follows:

(1) Widen the existing high level platforms and lengthen to 1200 feet to accommodate both commuter and HSR service both eastbound and westbound.



PLATFORM PLAN



MAIN FLOOR PLAN

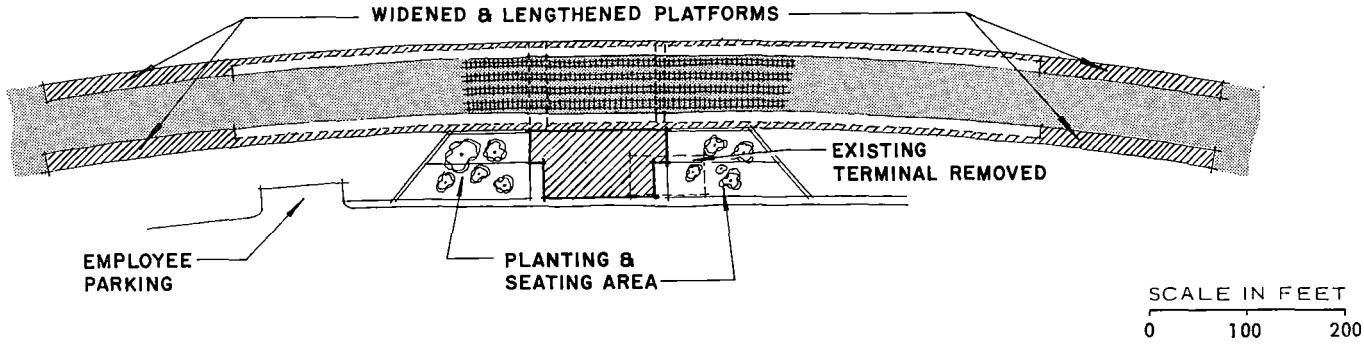
LEGEND

RAILROAD FUNCTION

NEW ADDITION

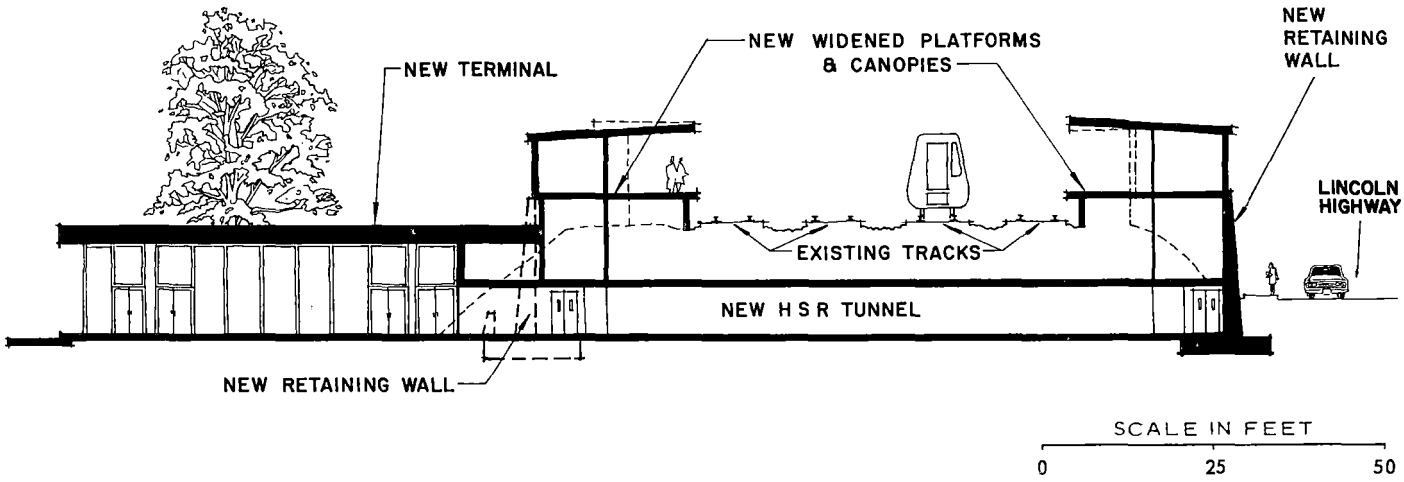
1990 CONCEPT
METROPARK STATION
ISELIN, N J

FIGURE 12-6



NORTH

PLATFORM PLAN



CROSS SECTION A-A

LEGEND

RAILROAD FUNCTION

NEW ADDITION

DC/STV

1990 CONCEPT
METROPARK STATION
ISELIN, NJ
FIGURE 12-7

(2) Construction of a new tunnel under the track beds, with access to the westbound and eastbound passenger platforms would include stairways, escalators and elevators. New escalators and elevators would be constructed from the existing tunnel to the existing westbound platform. The existing stairway to the westbound platform would remain. Identical facilities would be provided from the existing tunnel to the eastbound platform. The elevators, in addition to facilitating baggage handling, would assist handicapped passengers in reaching both passenger platforms from the tunnels. The new tunnel would serve HSR passengers only, with the existing tunnel serving commuters only.

(3) Construction of a new and larger terminal building. The present terminal space is inadequate for the intended future use, and demolition of the existing terminal building would be required. Also, the construction of a new tunnel, the addition of compacted earth fill and a new retaining wall, between the widened eastbound platform and the existing terminal building, would require that the terminal building be relocated on the site.

The preceding changes, when implemented by the restructuring program, will adequately provide excellent terminal facilities that will satisfy projected patronage requirements.

12.7.1 PASSENGER ACCESS AND EGRESS

Passengers arriving at this terminal would have access to four main entrances; two each on the southeast corner and southwest corner of the terminal. These entrances would lead directly through a vestibule-type corridor into the terminal waiting room where tickets could be purchased and baggage checked. In lieu of entering the tunnel, passengers could wait in the enclosed entrance corridor area. If weather conditions were favorable, they could also wait in two landscaped courtyards adjacent to the terminal, on the east and the west.

Passenger access to the various passenger platforms would be by way of an existing tunnel and the construction of a new second tunnel. The existing tunnel would lead passengers to the existing westbound passenger platform and a new eastbound platform that will service commuter passengers. The new tunnel would provide passenger access to the new center high-level platform that will service only the HSR tracks and the eastbound commuter train platform. Access from the tunnels to these platforms would be obtained by way of elevators, escalators and stairways. For security purposes, all access entrances from the tunnels would be gated. The three elevators, in the new terminal configuration, would provide transportation to the train platforms for handicapped passengers and baggage.

Passengers arriving at this terminal by automobile would have the use of an extensive street-level parking area. Should future expansion require additional parking space, provisions have been made for adding upper-level parking over a portion of the street-level lot.

Passengers arriving by bus or taxi would arrive at a convenient drop-off area in front of the terminal building. A canopy, extending from the terminal to curbside, would protect patrons from inclement weather.

When the location of this terminal is considered with respect to the distance of travel from surrounding residential areas, pedestrian traffic is not anticipated to be a serious problem.

12.7.2 PASSENGER PROCESSING

Functional Flow

The new terminal would be situated at sidewalk level to afford ease of access. Passengers would enter enclosed vestibule-type corridors via any one of the four entrances. They would then enter the waiting room and proceed directly to the ticketing area to procure passage for either commuter or high-speed rail service.

Information

Passengers requiring travel information would be assisted at the ticket counters which would be arranged to include this service. Train arrivals and departures would be posted on an electric scheduling board within the terminal. Also, a public address system would be audible within the terminal, tunnels, upper level passenger platforms and all exterior areas of the terminal. Paging service and announcements, regarding train arrivals and departures, would also be provided.

Waiting Areas

Passengers could wait for train arrivals and/or departures in the terminal waiting room, where seating would be provided. Seating would also be available in two outside-landscaped courtyards, located on the east and west sides of the terminal building. Park benches would be provided for seating in each courtyard. There would be no provision for seating in the terminal corridors or tunnels. Seating would not be provided on the upper-level passenger platforms because a minimal waiting period of approximately three minutes is anticipated.

Ticket Purchase

The ticket counter would be conveniently located so that queuing would not interfere with other activities. Provision would be made for four ticket windows, one of which would also serve as an information center.

Baggage Handling

Baggage would be checked at a counter adjacent to the ticket area. It would be transferred to the baggage room section for hold-over and delivery to the upper-level passenger platforms by porters (using the elevators). If desired, baggage could be reclaimed for personal transport by the passenger.

Platforms

All passenger platforms would be secured by gating at street level, in the tunnel areas. Platforms would only be accessible to passengers immediately prior to train arrivals. To protect passengers from inclement weather, all platforms would be fully canopied, including side and end wall enclosures.

Stairways, Escalators and Elevators

New stairways, escalators and elevators would be installed to facilitate the movement of passengers, including the physically handicapped. Stairways and escalators, leading from grade level to the upper-level platforms, would be fully enclosed, heated, and adequately lighted.

12.7.3 PUBLIC SERVICES

Rest Rooms

The men's and women's toilets and rest rooms would be located off the terminal waiting room for the exclusive use of passengers. Terminal employees would not use these facilities.

Lockers

Approximately 50 public lockers for the short-term storage of baggage and personal belongings would be available in the waiting room area.

Telephones

Wall-mounted telephones would be available in the terminal waiting room, terminal corridors and within the area of the two landscaped courtyards.

12.7.4 CONCESSIONS

Vending machines are the type of concession recommended for this terminal. These would be located in the corridors, near the terminal waiting room, and would dispense hot and cold beverages, food and various sundry items.

12.7.5 RAIL PASSENGER OPERATIONS FACILITIES

Passenger Services Office

The Station Manager's office would be located next to the ticketing area. Space within the confines of this office would be allocated for ticket and cash storage. On the west side of the terminal, a janitorial and maintenance supply room would be located adjacent to the baggage room and near the exits into the corridor. The electrical service and equipment room would be located at the east end of the terminal and would exit into the corridor at that end of the terminal.

Security at the terminal would be provided by a closed-circuit TV monitoring system, operated from the Station Manager's office. Surveillance of the corridors, tunnels and upper-level platforms would be maintained.

12.7.6 UTILITIES

Heating, Ventilating and Air Conditioning

Heating and air conditioning demands for the new terminal building, corridors, tunnels and enclosed passageways would necessitate the installation of a roof-top heating and cooling system, which would require an increased electric power supply.

Electrical Service

The present electric power service to the site would be insufficient. The capacity of electrical service and distribution would need to be increased due to the addition of four escalators, three elevators and electric heating and air conditioning in the recommended new terminal configuration.

Water

Present water service to the site is adequate for future terminal uses. New rest room facilities would require new hot and cold water piping in the terminal building, including a hot-water heating unit for domestic purposes.

Sanitary Sewer

The present sanitary sewage-disposal system is adequate to accommodate the projected demand. As added rest room facilities would require new piping in the terminal building, a new sanitary system would be provided and connected to the existing sanitary disposal system.

12.8 CAPITAL COSTS

Unit costs based on current prices have been developed for major construction items. These unit prices and the illustrated concept sketch plans form the basis for the following estimate of construction costs:

New terminal structure, including HVAC, plumbing and lighting work	$1,828,000
Platforms and canopies	1,100,000
Escalators, stairs and elevators	613,000
CCTV surveillance and electronic information systems	170,000
Sitework including paving, curbs and sidewalks	11,000
Interim terminal structure	57,000
Subtotal terminal and site work	$3,779,000
Contingency – 20%	756,000
Total terminal cost	$4,535,000

Construction of the HSR high-level platform requires major track and catenary system adjustments. Costs for relocating tracks, signals, and catenary support structures and wiring, are not included in this estimate.

Parking structure construction cost of $4,290,000 was calculated at a rate of $3,300 per car space, for an approximate median of 1,300 parking spaces required for HSR patrons.

12.9 SCHEDULING AND PHASING OF CONSTRUCTION

Terminal reconstruction and site improvements would be undertaken during a 20-month period. The following schedule is a recommended procedure for phasing the work involved at this terminal:

(1) Construct a temporary, frame-type structure to serve railway operations and passengers, during the construction of a new enlarged terminal. Provide temporary public services, i.e. plumbing, water, electricity, heating and sewage.

(2) Demolish and remove existing terminal.

(3) Eastbound track (nearest the center of the road beds) should be removed, and provisions made for foundations for a new high-level HSR passenger platform.

(4) Construct a new tunnel, including vertical shafts for stairs, escalators and elevators, which are to provide access to the new HSR passenger platform and a new eastbound commuter platform.

(5) Construct new vertical shafts in the existing tunnel for elevator and escalators to westbound commuter platform, and escalators and stairs to a new eastbound commuter platform.

(6) Build new concrete retaining wall, south of the tracks. Remove existing eastbound platform and exterior stairways leading to the platform from grade. Place compacted earth fill in area behind retaining wall to support platform structure.

(7) Construct new eastbound commuter platform and canopy roof. Also construct new HSR passenger platform and canopy roof in center area between eastbound and westbound platforms. New eastbound track and electrification for same should be installed at this time.

(8) Install elevators, escalators and all new stairs in tunnel areas.

(9) New terminal building should be constructed, including exterior paving, landscaped courtyards and general landscape work at the retaining wall.

(10) Relocate all equipment and furnishings from temporary terminal building. Demolish and remove temporary terminal from site.

(11) Construct parking garage facility on site. This phase of the work should be undertaken at the start of the initial work in order not to extend the required time of completion.

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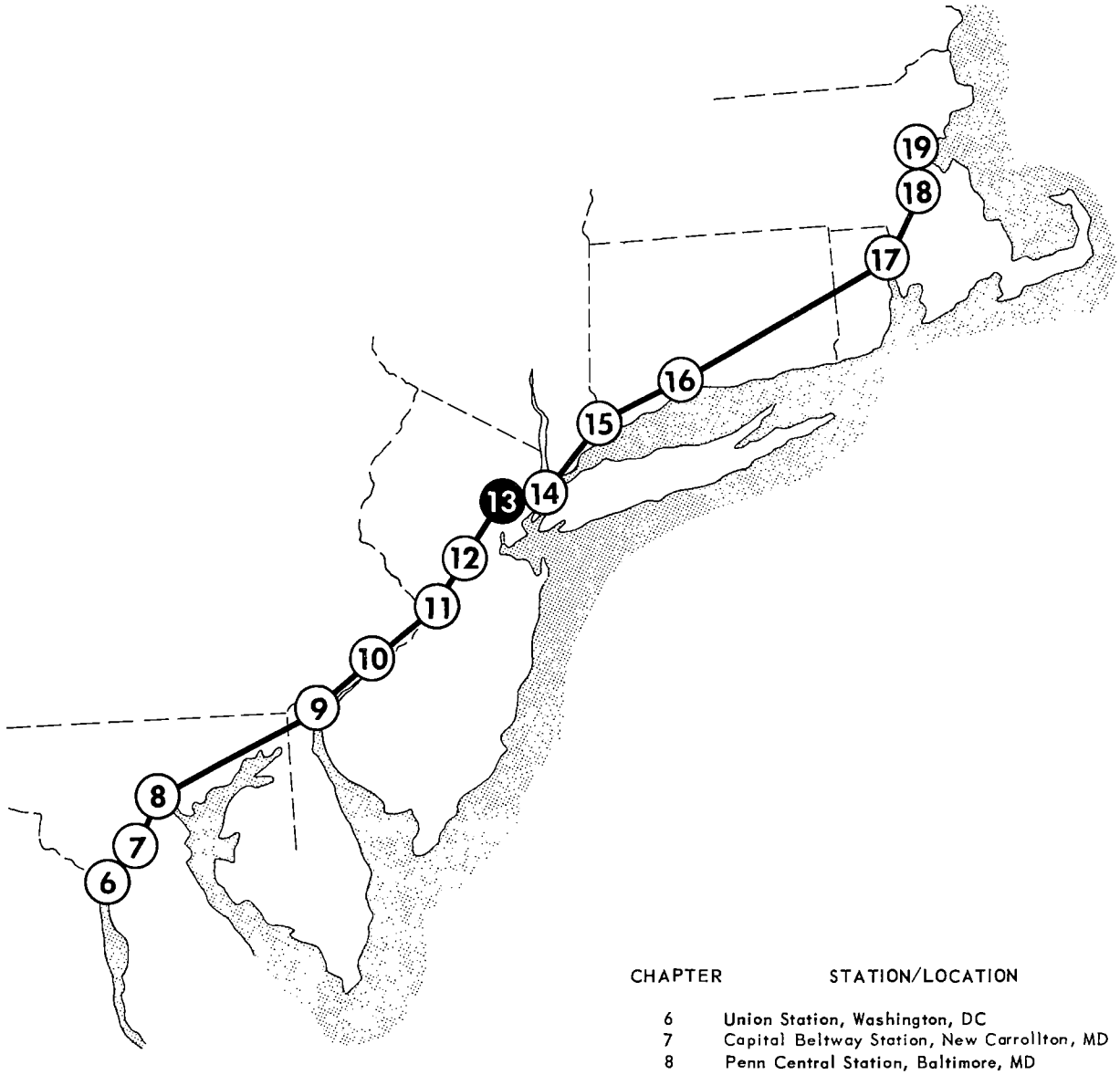
Personal interview

Richard E. Lapinski
Director
Department of Planning and Development
Woodbridge, New Jersey

STATION LOCATIONS ALONG NORTHEAST CORRIDOR



CHAPTER	STATION/LOCATION
6	Union Station, Washington, DC
7	Capital Beltway Station, New Carrollton, MD
8	Penn Central Station, Baltimore, MD
9	Wilmington Station, Wilmington, DE
10	Penn Central Station, 30th Street, Phila., PA
11	Trenton Station, Trenton, NJ
12	Metropark Station, Iselin, NJ
13	Penn Central Station, Newark, NJ
14	Pennsylvania Station, New York, NY
15	Stamford Station, Stamford, CT
16	New Haven Station, New Haven, CT
17	Union Station, Providence, RI
18	Route 128 Station, Dedham, MA
19	South Station, Boston, MA

13.0 PENN CENTRAL STATION, NEWARK, NEW JERSEY

13.1 STATISTICAL FRAMEWORK

13.1.1 OWNERSHIP AND USERS

Penn Central Station in Newark is owned by the Penn Central Transportation Company. The terminal is used by Amtrak, the Penn Central, the Central Railroad of New Jersey, the Reading Company and the Port Authority Trans-Hudson Corporation (PATH).

13.1.2 PROPERTIES AND FACILITIES

Facilities include a terminal building, with a 100,000-square-foot passenger processing area at sidewalk level, and six platforms; five on the first level above the main floor, and a sixth on the second level. First-level platforms serve Amtrak, commuter and eastbound PATH rapid-transit trains. The second-level platform serves westbound PATH trains. Railroad operating facilities, utilities, and a Newark City Subway station are located in the basement of the terminal building.

The terminal was constructed in 1937.

13.1.3 CURRENT ACTIVITY LEVELS

Newark is 15 minutes by train from Pennsylvania Station, New York City. In 1974, 260 Amtrak and commuter trains used the terminal on an average weekday.

The Penn Central operated 87 daily commuter trains through Newark between New York and Philadelphia. Penn Central and CNJ jointly operated 53 commuter trains between Newark and Bay Head Junction using the Penn Central main line and the New York and Long Branch Railroad. The Penn Central's 38 trains on this line continue into New York City.

The Central Railroad of New Jersey operated 51 commuter trains on its main line between Newark and Phillipsburg. The Reading Company operated four commuter trains between Newark and Philadelphia. Finally, Amtrak operated 65 trains into Newark daily on its Boston to Washington, D.C. route. The highest morning peak-hour-demand, at the terminal, occurred between 8 a.m. and 9 a.m. when 28 trains arrived or departed. The evening peak-hour-demand occurred between 5 p.m. and 6 p.m. when 25 trains used the terminal.

Newark is also the western terminal for PATH rapid transit service. This line operates on its own tracks from Penn Central Station in Newark to Jersey City, Hoboken, and the World Trade Center on 33rd Street in New York City. Service is provided 24 hours a day, seven days a week. Peak-hour headways range from 3 to 6 minutes. Approximately 300 PATH trains enter and leave Newark on a weekday.

One-way patronage, originating or terminating in Newark on a peak day in 1974, included 1,600 Amtrak passengers and 12,000 commuters, exclusive of PATH riders.

The primary modes of arrival at the terminal were walking, transit (either bus or subway) and park-and-ride. Many patrons took the bus to the CBD and then walked to the terminal. Taxis received considerable use.

13.2 TERMINAL VICINITY INFRASTRUCTURE

13.2.1 LOCATION CONSIDERATIONS

The terminal location is shown in Figure 13-1, together with the transportation network and activity centers in the Newark area. Activity centers are listed in Table 13-1.

Location with Respect to Regional Highway System

Penn Central Station is reasonably near the major highways serving greater Newark area, but there is no direct expressway connection to the terminal.

The major highways in the Newark area are the Garden State Parkway to the west and the New Jersey Turnpike (I-95) to the east. I-280, presently incompleted, will link these two highways; this east-west interstate facility is approximately one mile north of Penn Central Station. I-78, under construction, will furnish a southerly east-west link in the vicnity of Newark International Airport. There are no limited access highways through the heart of the city.

The only existing major north-south route through Newark is State Route 21, McCarter Highway, which passes within one block of Penn Central Station. This highway carries a heavy volume of automobile and truck traffic. There is no north-south expressway through the city connecting I-78 and I-280. At one time a midtown connector was proposed, but this project is not presently under consideration by the state.

I-280 furnishes access to Newark from suburban towns to the west. The New Jersey Turnpike, two miles east of Penn Central Station, links New York City and Philadelphia. I-78, two miles south of the terminal, will eventually provide access to New York City and Jersey City.

Relationship With Other Inter-Regional Transportation Facilities

Penn Central Station has excellent interface with connecting regional modes of travel and, in effect, already serves as the focus for a multimodal transportation system.

Greyhound Lines operates interstate bus service from a station in the terminal building. Other interstate bus lines, including Trailways, leave from the Public Service Bus Terminal on Raymond Boulevard, approximately one-half mile from Penn Central Station and accessible by a short subway, cab, or bus ride.

The recently improved Newark International Airport is located just over two miles from Penn Central Station. The airport is accessible from New York City via bus, and from Newark Station via taxi or bus. There are proposals for extending PATH service directly from Penn Central Station to the airport which would greatly improve its accessibility from both New York City and Newark.

The Erie Lackawanna Railway passenger terminal near Orange Street serves the Morristown and Montclair branches of that road. Passengers wishing to make connections between the two railroad terminals, over one mile apart, must walk to Broad Street, near State Street, for bus service.

Existing Rapid Transit/Bus Service

Penn Central Station offers excellent connections to the Newark subway and local bus systems. The Newark City Subway has a station on the lower level of the terminal, and is accessible by stairway from the main floor. However, subway directional signs are small in size and lacking in number, and personal safety is perceived as poor due to inadequate lighting and long corridors. Within the subway station, there is a wall-mounted timetable but no route map.

The area served by the subway is quite limited. The single line extends from Penn Central Station under Raymond Boulevard, with the second stop only two and one-half blocks away, at Broad Street and Raymond Boulevard within the CBD. From Broad Street, the subway continues to the vicinity of the Newark College of Engineering and Rutgers University. It then swings northward to a terminal on Franklin Avenue.

The subway is operated by Transport of New Jersey for the City of Newark. During rush hours, a reduced fare of $0.10 is offered for service between Broad Street and the terminal. The reduced fare plan has significantly increased ridership on the subway. The fare during off-peak hours and on other parts of the subway is $0.40. The line furnishes local service and connections to suburban buses at 11 stations. In addition, park-and-ride lots with a combined capacity of 1,080 parking spaces have been built near several outer stations. Subway service is provided seven days a week with peak-hour headways of two minutes.

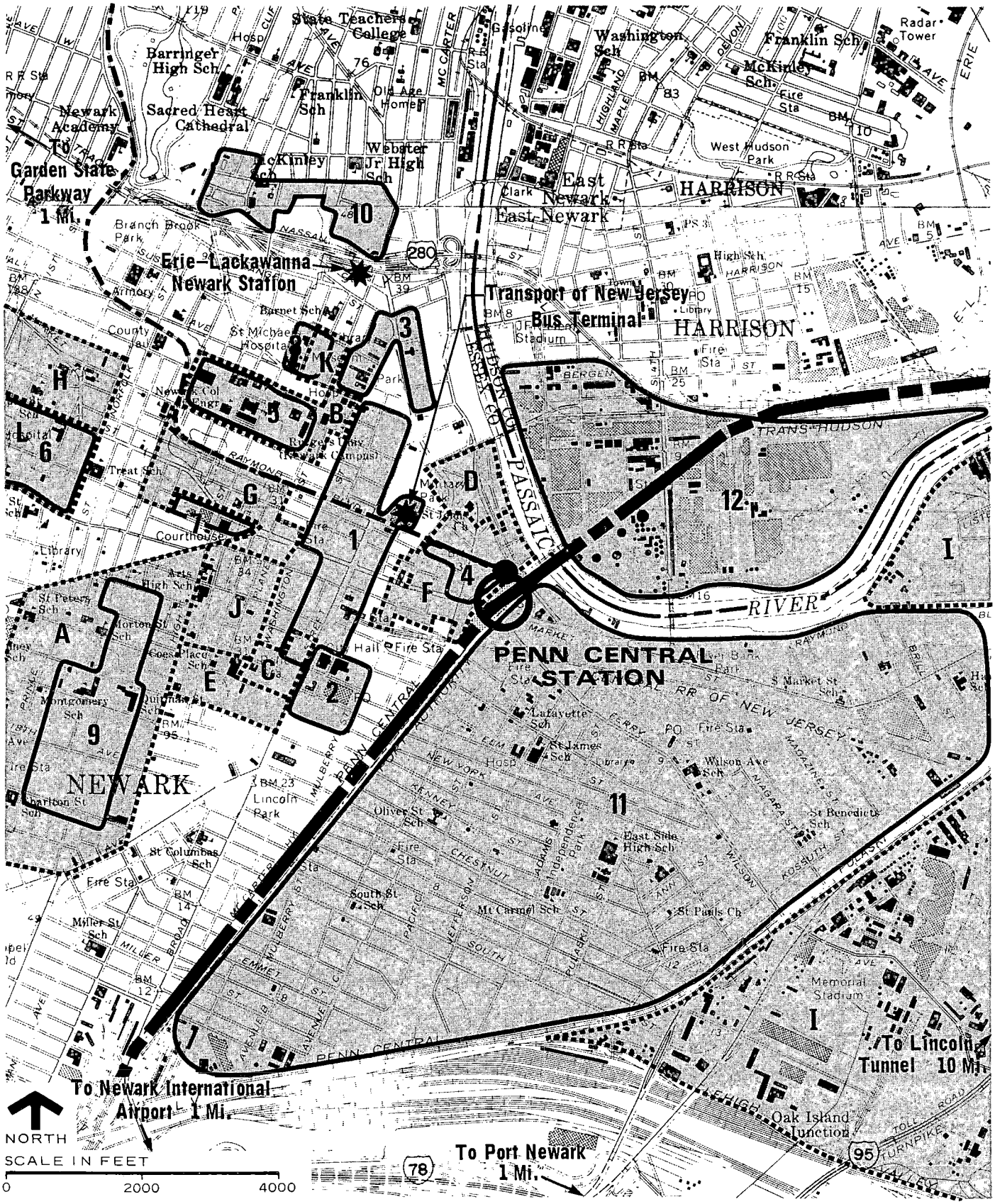
There is an extensive bus service within the city and throughout northern New Jersey. The bus system is operated by Transport of New Jersey, the largest privately-owned regional bus system in the country.

The major city bus stop is only two blocks from Penn Central Station. There is also a bus depot within the terminal itself.

Local bus service from the terminal is provided by Transport of New Jersey (TNJ) and 12 independent bus companies. TNJ operates 28 routes to the terminal. These routes serve most of the City of Newark and surrounding communities. Headways during rush hours are generally less than ten minutes. Off-peak and evening service is provided on 21 routes. Saturday service is offered on 18 routes and Sunday service on 17 routes.

The independent bus companies operate eight routes into Penn Station. These routes serve Elizabeth, Irvington, South Orange, Springfield, Roseville, Livingston and Caldwell.

The bus depot is located at the north end of Penn Central Station on Raymond Boulevard. Four bus loading lanes are provided, with capacity for 24 buses. These facilities are used by Transport of New Jersey, De Camp Bus Lines and Mountain Coaches. Buses enter the special bus lanes eastbound from Raymond Boulevard and then cross Raymond Plaza West.



STATION LOCATION
PENN CENTRAL STATION
NEWARK, NJ

FIGURE 13–1

TABLE 13-1

ACTIVITY CENTERS, CITY SETTING

EXISTING ACTIVITIES

1 Central Business District – including major retail uses (Bamberger's, Hahne and Company) and major offices (Prudential Plaza, Fidelity Union Trust, Public Service Building)

2 Civic Center – including City Hall, U.S. Post Office and new high-rise Federal building

3 Office Complex – including Mutual Benefit Life Insurance Company, New Jersey Blue Cross and Blue Shield

4 Newark Plaza – includes State Offices, Gateway I and Gateway II

5 Newark College of Engineering, Rutgers University, Newark Campus

6 New Jersey College of Medicine and Dentistry

7 County Courts, Hall of Records

8 St. Michael's Medical Center

9 Predominantly housing projects – including Scudder Homes, Stella Wright Homes, High Park Gardens

10 Branch Brook – Broad Street. Completed renewal project (housing)

11 Ironbound District – moderate medium income residential area – scattered industry, warehouses

12 Industrial Area – includes Otis Elevator Company, Public Service Gas and Electric Company, Hartz Mountain Products

RENEWAL PROJECTS IN PROGRESS

A	Old Third Ward	G	Essex Heights
B	Newark College Expansion	H	Fairmount
C	Hill Street	I	Industrial River
D	Education Center	J	St. Benedict's
E	South Broad	K	St. Michael's
F	Newark Plaza	L	Medical Center

The bus lanes themselves are adequate, but the area presents a dismal appearance. Bus schedules are posted at each of the bus lanes. However, bus route maps are lacking. A free bus-information phone is available in the waiting room in Penn Central Station.

The bus stop on Raymond Plaza East is used by the independent bus companies. No information of any kind is posted.

The Market Street bus stop is utilized by the independents and TNJ through buses.

Relationship to Activity Centers

Penn Central Station is excellently located with respect to major activity centers in Newark. The terminal is within a few blocks of the Newark CBD with its major department stores and office buildings. Adjacent to the CBD is a growing complex of educational and medical facilities, together with a number of renewal projects in service or under construction.

Newark is the largest city in New Jersey, with a 1970 population of 382,417. The Newark Standard Metropolitan Statistical Area includes communities in Essex, Morris and Union Counties and had a total population of over 1.8 million in 1970. By 1980, the population of the Newark SMSA is projected to reach 2.3 million; approximately 400,000 people are expected to reside in the City.

The focus of Newark's CBD is Broad Street, within three blocks of Penn Central Station. The Prudential Insurance Company and Mutual Benefit Life have headquarters within or adjacent to the CBD. Mutual Benefit Life recently announced plans for a new $9-million computer center on Broad Street.

Other major offices include a new high-rise building for New Jersey Blue Cross and Blue Shield, the Fidelity Union Trust Building, and the Public Service Building. Public Service operates Transport of New Jersey and the Public Service Electricity and Gas Company.

Adjacent to the CBD are the Newark Campus of Rutgers University, the Newark College of Engineering, Essex County College and Essex County Technical Careers Center. New quarters for Seton Hall Law School, now housed in temporary facilities, are under construction near Penn Central Station.

The city's major civic offices, including a new high-rise Federal building, are located south of the CBD.

There is a large industrial park approximately two miles from the terminal. This park will be a major traffic generator. Existing tenants include the Ideal Toy Company, with approximately 1,000 employees and plans to expand to 3,000, an air freight company and a metals extrusions plant. A second toy company is planning to locate in the area.

The Port Authority of New York and New Jersey has acquired approximately 100 acres by

lease from the Penn Central Transportation Company Railroad and plans to erect facilities totalling two million square feet, primarily for manufacturing, in the vicinity of Dorenuis Avenue and Front Street.

The Port Authority operates Port Newark and the adjoining Elizabeth port. This 1789-acre complex now handles over half the cargo entering the Port of New York. Almost 11,000 people are employed at the seaport.

Within the City of Newark, a total of 15 renewal projects are completed or in progress. The major purpose of these projects is to provide more adequate housing and ancillary facilities for the people of Newark, and to renew the area adjacent to the CBD. Following is a brief description of the 13 projects shown in Figure 13-1.

Note: Letters and numbers are shown in Figure 13-1.

10 Branch Brook – Broad Street. Completed project. Structures include three 22-story buildings of moderate income housings (Colorado Apartments with 1,240 living units) and ancillary community facilities.

A Old Third Ward. Project in progress. This large residential renewal and rehabilitation area will include neighborhood commercial facilities, schools and recreation.

B Newark College Expansion. Project in progress. The center will contain the new centralized Newark Campus of Rutgers University, Rutgers Law School and the expanded campus of the Newark College of Engineering. The projected total enrollment is 25,000.

C Hill Street. Project in progress. Residential and commercial developments will include a high-rise, middle-income apartment building with 429 living units.

D Educational Center. Project in progress. Facilities for the mentally and physically handicapped are completed. Six hundred moderate-income housing units are planned.

E South Broad. Project in progress. The residential and commercial renewal and renovation project will include the new "Star Ledger" plant.

F Newark Plaza. Project in progress. This 50-acre project is adjacent to Penn Central Station. Phase I, Gateway I, is completed and includes a 30-story office tower, a 10-story motel, a three-level parking garage and stores. Gateway II, an 18-story office building, is also completed. The area also contains the State offices, the "Newark News" expansion, and Seton Hall Law School presently under construction.

G Essex Heights. Project in progress. The project includes the new campus of the Essex County Community College and a Skills and Trade Center. Other buildings planned include retail and office structures.

H Fairmount. Project in progress. This area is being developed as a new residential neighborhood of low and moderate-income housing.

I Industrial River. Project in progress. Scheduled for this 1,528.5-acre site are 1,000 acres of industrial development and supporting commercial facilities, as well as major additions and improvements to transportation and utility networks.

J St. Benedict's. Project in progress. The area is being rehabilitated as a service and light industry complex related to the adjacent CBD. In addition, the project includes housing and supporting facilities, the expansion of Arts High School, the New Jersey Bell Telephone Company Building and several other enterprises.

K St. Michael's. Construction of a new addition to St. Michael's Medical Center is completed.

L Medical Center. Project in progress. The New Jersey College of Medicine and Dentistry is constructing its campus on this site. Buildings will include a teaching hospital, dental school, science building, library, auditorium and administrative offices. The first phase of the project is a $180-million complex. The College of Medicine and Dentistry is closely related to nearby hospitals – particulary Martland Medical Center.

13.2.2 LAND USE

Existing Characteristics of the Terminal Area

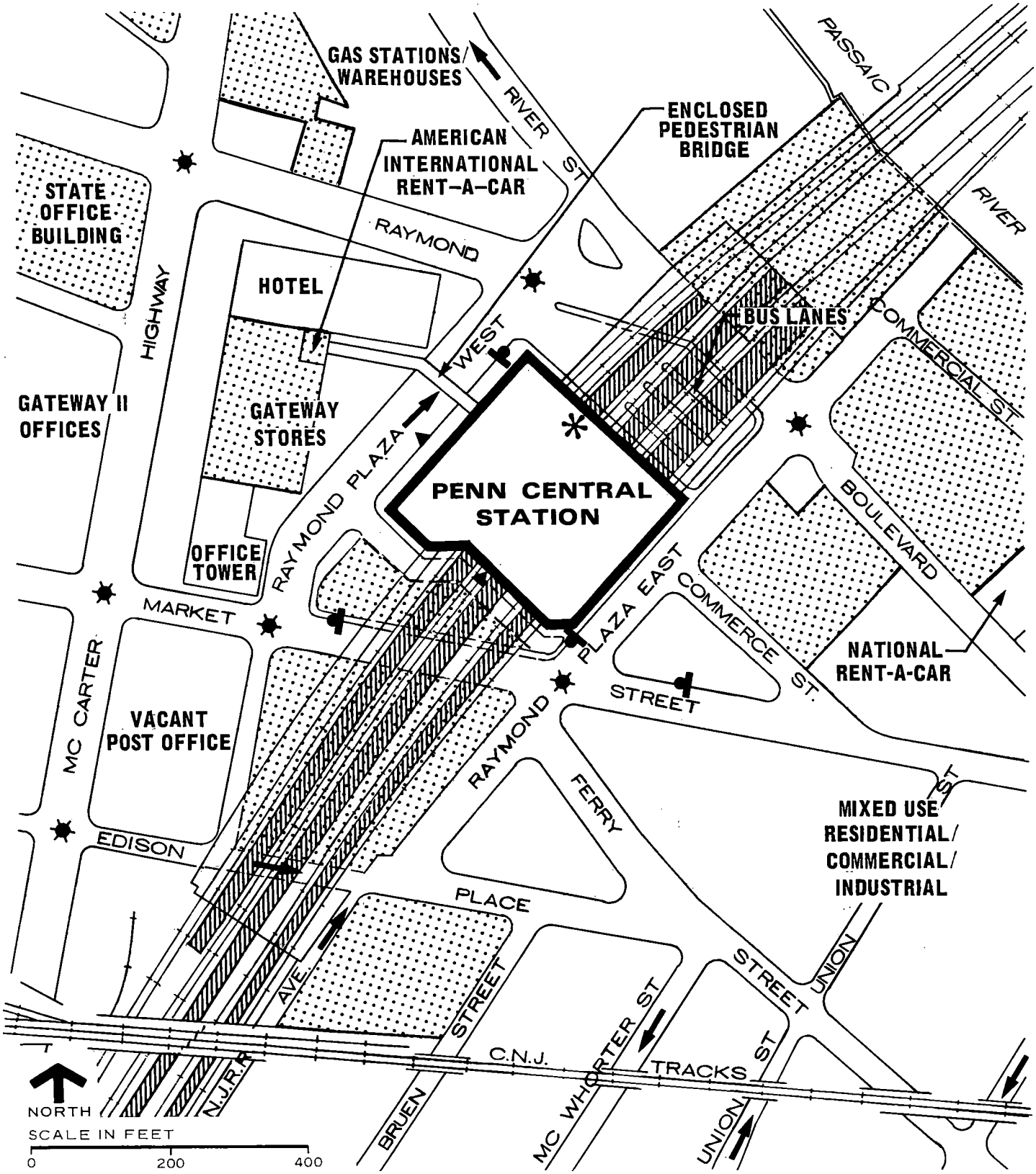
Figure 13-2 shows the immediate terminal area and local circulation system.

The main entrance to Penn Central Station faces westward towards the CBD. The recently completed Gateway I Plaza, directly opposite the terminal, with a small paved plaza and abstract sculpture, provides an attractive setting.

Gateway I includes a 261-room hotel, stores, indoor parking, and a new 26-story office tower. These facilities are linked to Penn Central Station by a pedestrian overpass across Raymond Plaza West. Still further west, the Western Electric Company occupies a new 18-story office building. A planned pedestrian bridge over McCarter Highway, linking Gateway I and the Western Electric Building, has been approved by the city.

New street lights have been installed outside the terminal and along adjacent Market Street and Raymond Boulevard, and the streets themselves have been improved. Other land uses, on the west side of the terminal, include parking lots, and storage and warehouse facilities. A number of buildings are vacant.

The area, immediately east of the terminal, is in a mixture of land uses. Open-lot parking is the dominant use within a block of the terminal, particularly between Raymond Boulevard and the Passaic River.



NOTE: TOTAL PARKING - 2292 CARS

EXISTING STATION ENVIRONS
PENN CENTRAL STATION
NEWARK, NJ

FIGURE 13-2

Most structures in the area are old, low-rise buildings. They are a mixture of miscellaneous commercial uses, private residences, warehouses and small industrial operations. Along Raymond Boulevard there are a number of used-car lots and automobile-related businesses. The age and condition of structures and the types of land uses make the setting unattractive.

Newark is perceived by many, who do not live in the city, as presenting a high safety hazard. In fact, only a small proportion of street crime in Newark occurs in the downtown area or the adjacent Penn Central Station area. These areas are actually relatively secure.

Safety within the immediate vicinity of the terminal now seems to be perceived as fair. However, the short walk from the CBD to the terminal, in the evening, appears less secure.

Planning Factors, General Terminal Area

Activity centers and other planning factors in the general area of the terminal are shown in Figure I 3-3. Activity centers are listed in Table 13-2.

Penn Central Station and the elevated railroad lines separate the CBD and the surrounding renewal areas from that part of the City known as the Ironbound District. This district, so called because it is bounded by railroads, is a middle-income working class neighborhood. Residents are primarily of Spanish and Portuguese descent. The area is regarded as stable, predominantly residential and industrial in character.

With two major renewal projects in progress, the area west of the main terminal entrance is presently in a state of change. Most older buildings have been torn down and there are large open areas, some of them currently used for parking.

When the nearby renewal projects are complete, there will be major additional concentrations of new offices, and a possible coliseum, within walking distance of the terminal.

The Newark Plaza project will eventually result in renewal of almost the entire area between Penn Central Station and the Newark CBD. Most new structures will be in some form of commercial use. The only older structure remaining in the entire 50-acre area will be the State Office Building.

Northeast of Newark Plaza, the Educational Center project is in progress. This project is comprised of facilities for the handicapped and moderate-income housing. Several facilities providing a variety of social services have already been constructed.

In addition to structures built as part of the two renewal projects, the Public Service Electric and Gas Company may erect new facilities in the general area. Public Service presently occupies a large building at the corner of Raymond Boulevard and Park Place. The company has been studying the possibility of erecting a new office building which would represent a very substantial addition to downtown Newark. The new building would probably be built behind the present Public Service Building.

East of the terminal in the Ironbound District, most structures are old, and there is no rebuilding activity presently taking place.

Across the Passaic River in Harrison there is a concentration of industrial facilities, including Otis Elevator Company, Hartz Mountain Products, a Public Service gas plant and a pipe fitting and valves plant.

13.3 EXISTING PASSENGER HANDLING FACILITIES

13.3.1 PASSENGER ACCESS AND EGRESS

Penn Central Station is bounded by Raymond Plaza West on the northwest side, Raymond Boulevard on the northeast, Raymond Plaza East on the southeast, and Market Street on the south. See Figure 13-2.

The main entrance, on Raymond Plaza West, leads to the main waiting room and ticket counters. See photo 1. There are three additional entrances on the northwest side, including the high-level pedestrian bridge from Gateway I.

There are three entrances from Raymond Boulevard and the bus depot/loading zone; one entrance from Raymond Plaza East, and three from Market Street, All entrances are protected by canopies. Patrons arriving by subway ascend to the main terminal floor via a stairway to the north concourse.

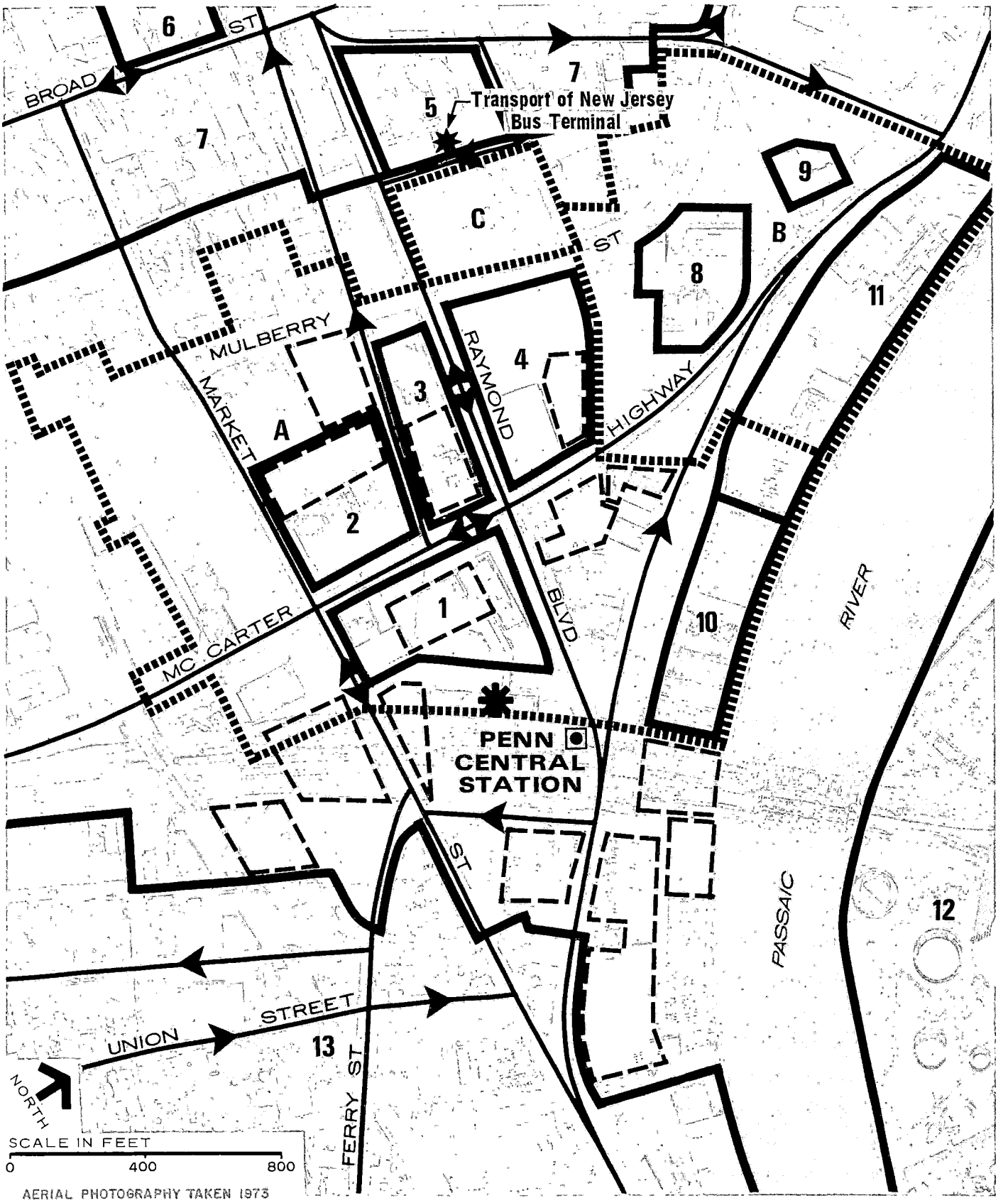
Due to the extensive commuter use of the terminal, there are extremely-heavy pedestrian volumes in the vicinity at peak hours. The heavy pedestrian volumes conflict with the heavy traffic volumes on nearby arterials.

Most pedestrians use the entrances on Plaza West and East for access to the terminal. Use of entrances, on the north and south sides of the terminal, is usually limited to those arriving by bus and taxi, respectively.

The primary pedestrian flow to the terminal is along Raymond Boulevard and Market Street to the main entrance on Raymond Plaza West. In excess of 5,000 people walk along these streets to the terminal each morning and evening. Another 5,000 pedestrian trips are made each morning and evening along other streets leading to the terminal. Raymond Boulevard is the major pedestrian route between the CBD and the terminal. Sidewalks along Raymond Boulevard are wide to accommodate the pedestrian volume. All major intersections in the terminal area have pedestrian signals.

Existing Highway Access

There is good arterial highway access to the terminal but there are some peak-hour congestion problems. Two arterial highways, Raymond Boulevard and Market Street, flank the terminal. These heavily-traveled streets connect the Newark CBD with U.S. Routes 1 and 9, and the New Jersey Turnpike. McCarter Highway, one block northwest of the terminal, is a six-lane facility



LEGEND

PARKING

BUS ROUTE

0 EXISTING ACTIVITY CENTER (SEE TABLE 13–2)

A PROPOSED ACTIVITY CENTER (SEE TABLE 13–2)

PLANNING FACTORS
PENN CENTRAL STATION
NEWARK, NJ

FIGURE 13–3

TABLE 13-2

ACTIVITY CENTERS, GENERAL TERMINAL AREA

EXISTING ACTIVITIES

1	Gateway I – Hotel, parking, stores, offices
2	Gateway II – Western Electric
3	State Offices
4	Seton Hall School of Law (under construction)
5	Public Services Building and Bus Terminal
6	Prudential Plaza; Fidelity Union Trust Company
7	Central Business District – offices, stores, entertainment
8	St. John's Church; Tura Devine Pavilion
9	Alhambra Pavilion
10	Public Service Electric and Gas Company – storage, warehouse, generating facilities
11	Warehouses, industrial
12	Industrial – Otis Elevator, Public Service Electric and Gas Company
13	Ironbound – Mixed land uses; residential, commercial, industrial and warehouses

PROJECTED ACTIVITIES

A	Newark Plaza Renewal Area – future planned uses include offices, other commercial parking and a possible coliseum
B	Educational Center – future planned uses include housing
C	Possible future site for new Public Service building

and the main east-west highway in Newark. Broad Street, the main street in the CBD, is one-half mile away. All these arterials carry very heavy traffic volumes.

Raymond Plaza West operates one-way northbound in front of the main terminal entrance. The wide intersection of Raymond Plaza West and Raymond Boulevard, across which there is heavy morning and evening pedestrian traffic, is hazardous, but the volume of auto traffic is comparatively low. Most other streets around the terminal serve local circulation needs. Except for Raymond Boulevard and Market Street, the streets east of the terminal are not in particularly good condition. The street system in this area is complex. Some streets are little used.

The three underpasses, beneath the tracks on Edison Place, Market Street, and Raymond Boulevard, present a somewhat run-down appearance.

Other Connections

There are two taxi stands at the terminal. One is located at the main entrance on Raymond Plaza West and has a capacity for 10 cabs. The second cab stand is located off-street, at the southern end of the terminal, and has a capacity for 15 cabs. The taxi rates are $0.60 for the first one-sixth mile, $0.10 for each additional one-sixth mile, and $0.10 per minute of waiting time.

Cabs are readily available at the terminal and the present cab facilities can be considered good. However, the taxi area under the tracks at the south end of the terminal needs rehabilitation.

Two rental car agencies have facilities near the terminal. American International Rent-a-Car is located across the street at Gateway One. National Car rental operates from a lot, on Raymond Boulevard, east of the terminal.

Kiss-and-ride is not a major mode of access. Generally, Raymond Plaza West is used for kiss-and-ride drop-offs and pick-ups.

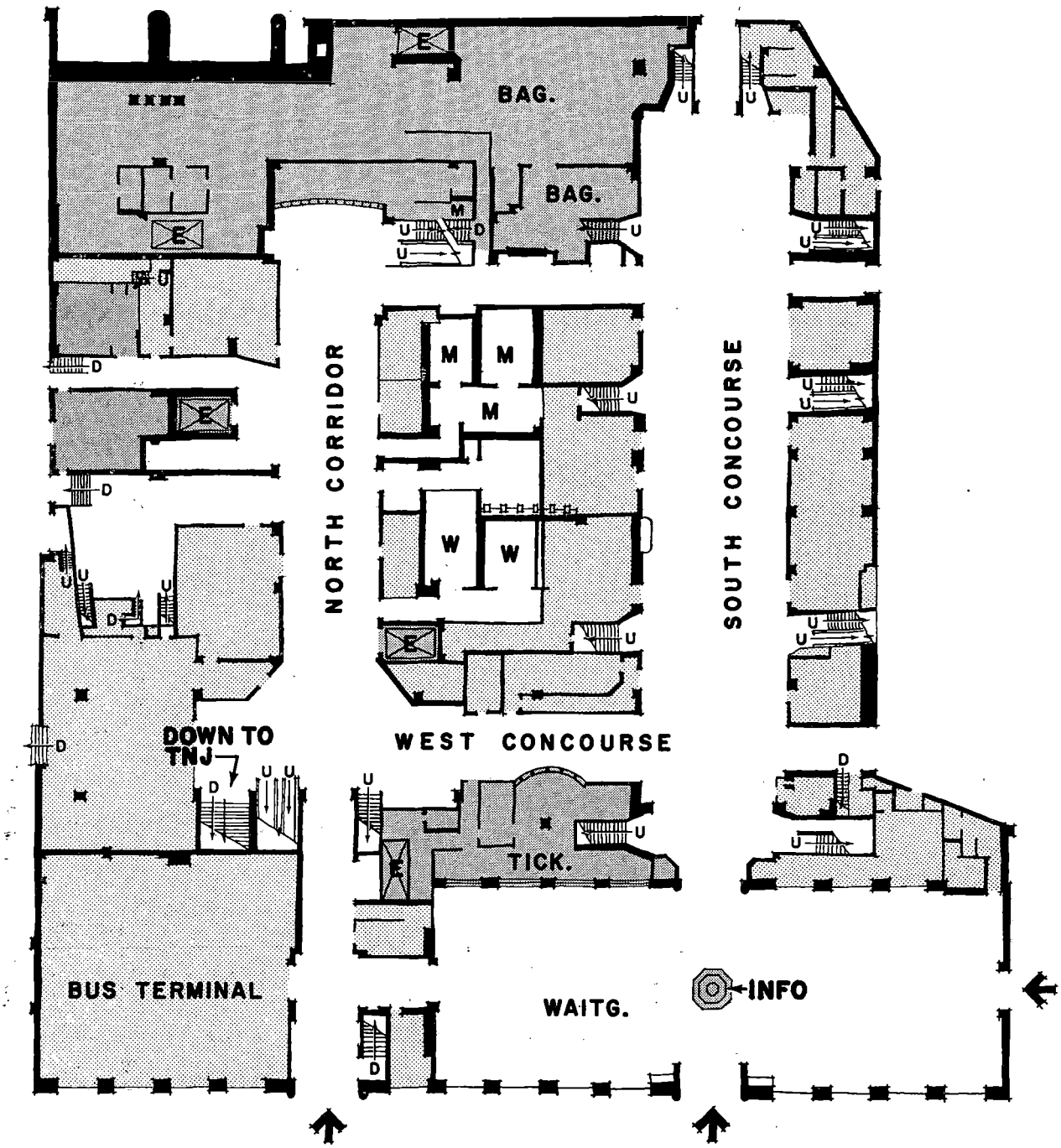
13.3.2 PARKING

There is an adequate supply of parking within the general area of the terminal, available for station users and others. There are two parking garages in the area, and a large area devoted to open-lot parking, together with parking under the elevated railroad tracks. See photo 2.

Within a 1,200-foot walking distance from the terminal, there are 2,292 parking spaces. The parking rates, at the three parking lots directly under the tracks, range from $1.09 to $2.61 per day. Lots east of the terminal have lower rates. Lots west of the terminal generally have higher rates, due to their proximity to the downtown area and Gateway Plaza. Curb parking is restricted in the vicinity of the terminal.

13.3.3 PASSENGER PROCESSING

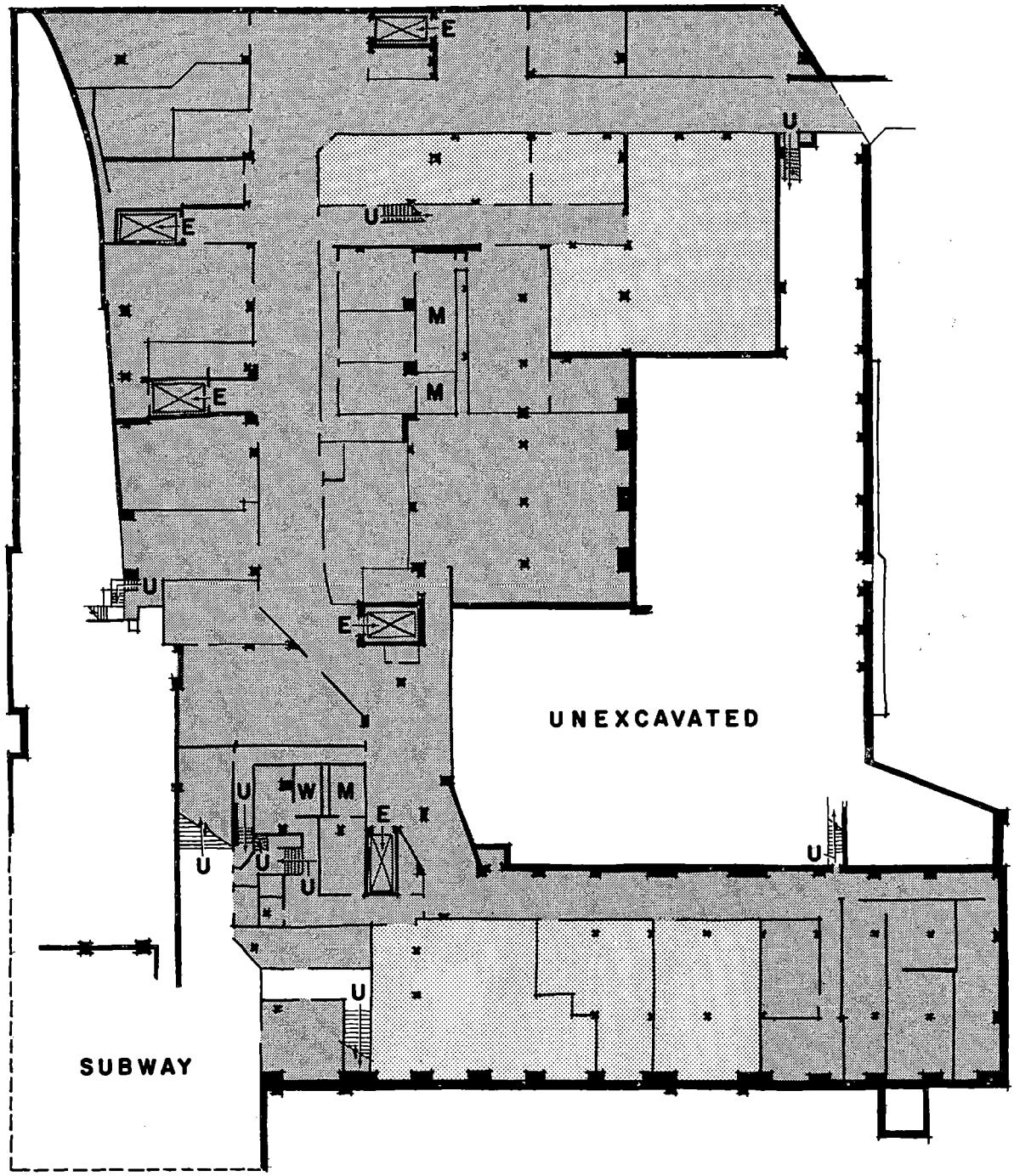
For existing Main Floor Plan, see Figure 13-4; for Existing Basement Floor Plan, see Figure 13-5; and, for Existing Lower and Upper Platform Plans, see Figure 13-6.



MAIN FLOOR PLAN

EXISTING
PENN CENTRAL STATION
NEWARK, N J

FIGURE 13-4



SCALE IN FEET
0 25 50

NORTH

BASEMENT FLOOR PLAN

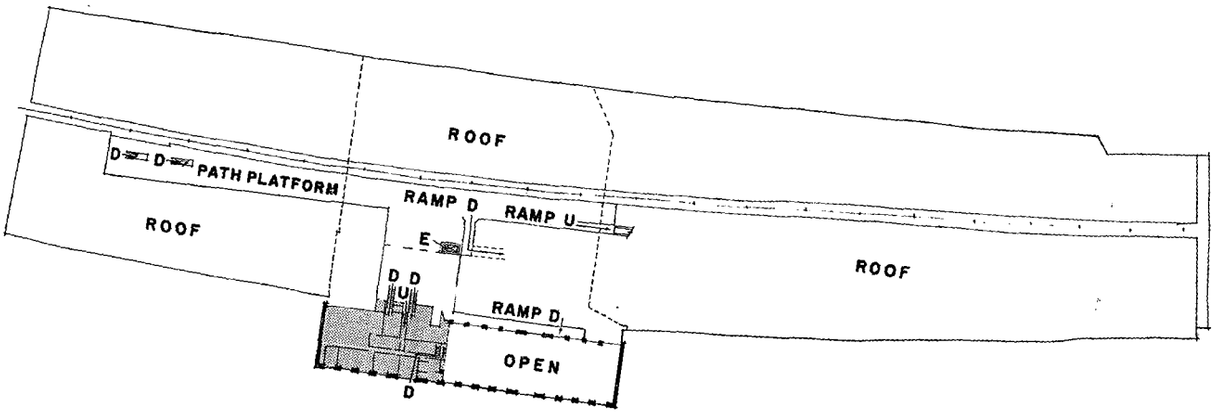
LEGEND

RAILROAD FUNCTION

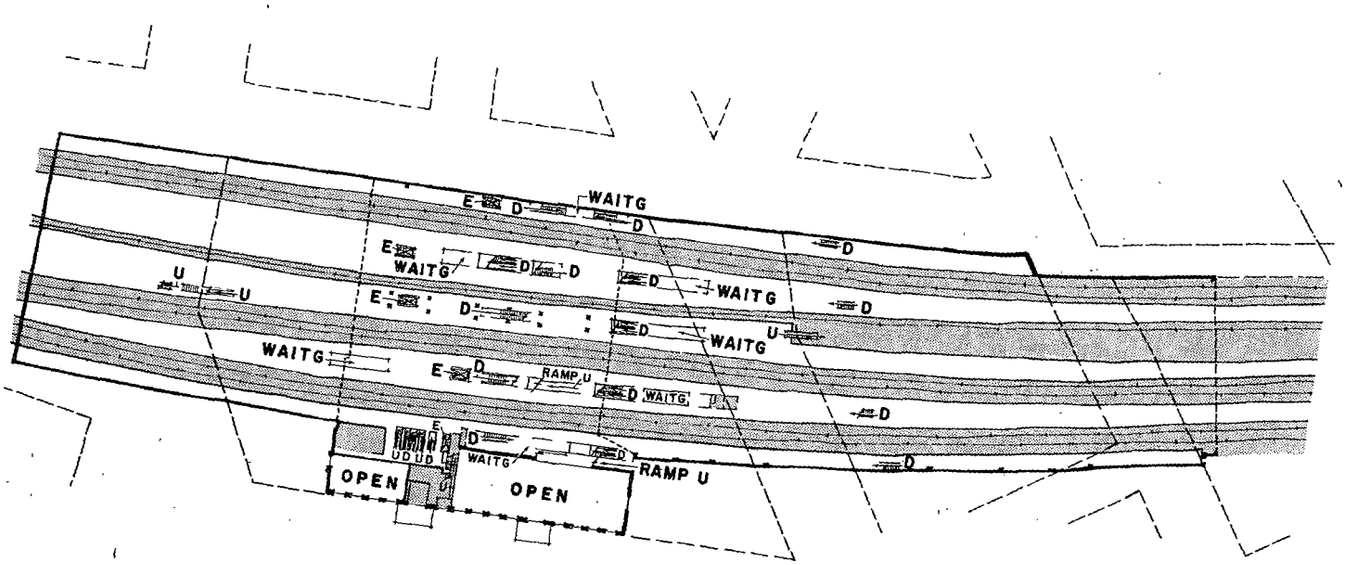
CONCESSION

EXISTING PENN CENTRAL STATION
NEWARK, N J

FIGURE 13-5



PATH PLATFORM PLAN



PLATFORM PLAN

SCALE IN FEET
0 50 100

NORTH

LEGEND

RAILROAD FUNCTION

DC/STV

EXISTING PENN CENTRAL STATION
NEWARK, N J

FIGURE 13-6

Functional Flow

Passengers using the main entrance from Raymond Plaza West and the south entrance from Market Street enter a large waiting room and walk through the waiting room to the ticket counters See photos 1 and 3.

Passengers entering via the enclosed pedestrian bridge (photo 4) descend a stairway to the north concourse area which provides access to the first floor of the terminal, the city subway at basement level, interstate bus terminal within the confines of the railroad terminal, Railway Express Agency, rest rooms and various concessions. The fourth entrance from Raymond Plaza West, used primarily by bus passengers, leads directly into the bus terminal. Entrances from other streets lead to the north or south concourse.

After purchasing tickets, passengers may wait for train arrivals in the main waiting room, or proceed through the south concourse to stairs and escalators leading to the first or second track levels. See photo 5.

There are elevators to the train platforms, at each level, for handicapped passengers and for the transfer of baggage. There are enclosed waiting rooms on the first platform level. The second platform level is canopied for protection against the weather.

Information

A central information booth is situated in the middle of the main floor of the terminal waiting room. Porter service is arranged for at this booth. See photo 3.

Ticket Purchase

Passengers, upon entering the waiting room, can proceed directly to the ticket windows. See photo 6. All types of tickets (for train travel) are available at the ticket counter.

Baggage Handling

The handling of baggage is arranged for with a porter at the information booth. Baggage can be held over in the baggage room, at the east end of the terminal, or transferred to upper platforms via elevator, escalators or stairs. Baggage claims can be made at the baggage counter.

Waiting Area

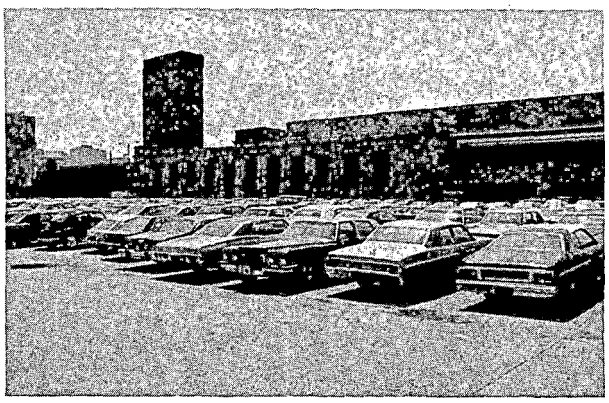
The waiting room on the main floor has back to back benches in the central areas, and single benches around the perimeter of the room. See photo 7. Seating is provided for approximately 200 persons.

Upper level platforms also have five enclosed waiting rooms, which provide passenger seating space for approximately 250 persons.

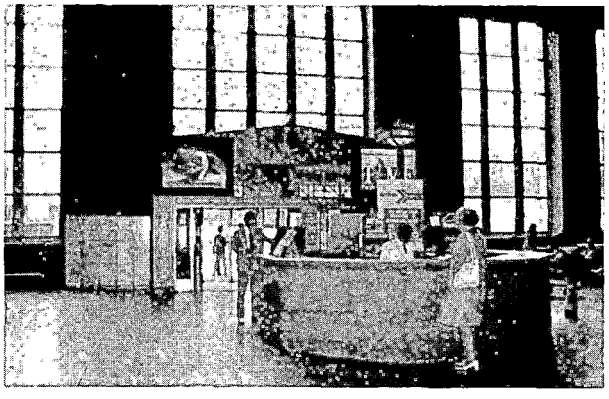
PENN CENTRAL STATION – NEWARK, NJ

EXISTING FACILITY

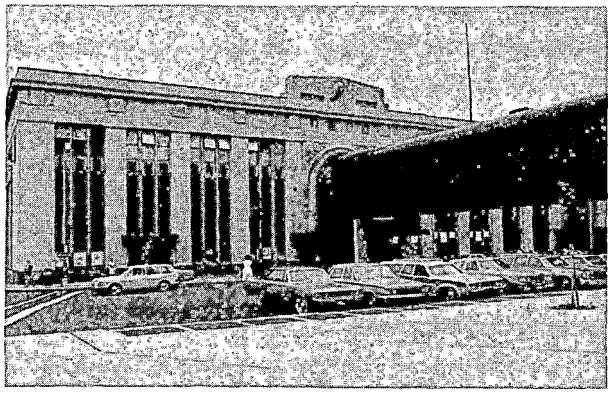
1. Front Entrance to Terminal from Raymond Plaza-West



2. Open-Lot Parking Area Behind Terminal



3. Interior View of Main Entrance and Information Booth



4. Enclosed Pedestrian Bridge to Terminal

EXISTING FACILITY (Cont'd)

5. Train Platform Area

6. Ticket Windows and Entrance to Concourse Area

7. Main Waiting Room

13.3.4 PUBLIC SERVICES

Rest Rooms

There are men's and women's rest rooms off the south concourse on the main floor.

Telephones, Storage Lockers, and Miscellaneous Services

Storage lockers, coin-operated telephones, two car-rental courtesy telephones, and a Western Union office are located on the main floor.

13.3.5 CONCESSIONS

Concessions include several news stands, a restaurant, two snack bars, bank, shoe shine stand, coffee shop and various variety-type concessions. Most are located in the concourse area. One news stand is located on the first platform level.

13.3.6 RAIL PASSENGER OPERATIONS FACILITIES

Offices for the Manager of Passenger Services and ticketing personnel are located on the main floor, adjacent to the waiting room. The Station Master's office is located on the first platform level.

Employees lounge, rest rooms, security police room, railroad equipment and communications rooms are located in the basement.

13.3.7 FACILITY CONDITIONS

Structural Integrity

The building of the Newark terminal was completed in 1937. The building is steel structured and consists of limestone and marble. The structure is sound and the building is architecturally impressive.

Interior and Exterior

The present station is adequate for today's patronage; however, it is in a state of disrepair. Some major passenger facilities, such as escalators and public toilet rooms, are shut down or unusable. The lighting level is poor. Acoustics leave much to be desired. Both interiors and exteriors are in need of painting, and require a thorough cleaning by steam or other approved means.

Utilities

The heating and ventilation system is barely adequate. The terminal power house is located southwest of the terminal. The original boilers are no longer operational. The Penn Central Transportation Company leases packaged-type steam boilers, located outside the power house on flatbed trailers. The steam lines are connected to the main steam lines in the power house for service to the terminal.

The terminal is not air conditioned, with the exception of several railroad operation offices and concession spaces which are supplied with window-type air conditioning units.

Electrical, water supply and sewage services are adequate for present-day patronage.

13.4 FORECAST ACTIVITY LEVELS

13.4.1 PROJECTED DESIGN DAY PATRONAGE

The 1990 peak-design-day loading is expected to be 5,400 HSR patrons and 22,200 commuters not including PATH service. The 1990 peak-hour-load (high projection) is forecast at 800 HSR and 10,200 commuter passengers (one way).

The location of Newark close to, and easily accessible from New York, the intensive renewal efforts now taking place in the City, the future concentration of high-intensity land uses in the vicinity of the terminal, and the extensive transportation facilities of the city, all support a high projection for the use of the HSR system, provided that the City is successful in continuing to overcome its past image as an insecure community.

13.4.2 PROJECTED MODE OF ACCESS

Little change is anticipated in the total percentage of park-and-ride and transit use through 1990. Park-and-ride is expected to account for 20 to 35 percent of arrivals, and rail and bus transit combined, for 30 to 50 percent. Rapid transit will increase its share of ridership if the subway is extended to Irvington.

Percentages of daily passenger arrivals were forecast by mode, as follows:

	Percentage		
	Low	High	Median
Park-and-ride	20	35	25
Park-and-ride passenger	5	15	10
Kiss-and-ride	10	20	15
Rail transit	15	25	20
Bus	15	25	20
Taxi and limousine	5	10	5
Walk	5	10	5

13.4.3 PARKING REQUIREMENTS

It is estimated that 1,400 parking spaces will be required for HSR passengers by 1990.

13.5 PLANS AND PROPOSALS

13.5.1 TERMINAL IMPROVEMENTS

No terminal improvement projects are under construction or in design.

The Port Authority of New York and New Jersey has proposed the complete rehabilitation of Penn Station, Newark. Major structural repairs as well as modernization of the terminal would be undertaken. The Authority would lease the terminal from the Penn Central. No action has been taken on this proposal.

13.5.2 FUTURE LAND USE PLANS

When the Newark Plaza renewal project is complete, the area west of the terminal will be attractive, with a complex of new offices, hotels and possible sports facilities between the terminal and the Newark CBD.

The specific uses for the remainder of the project site are presently undecided. A feasibility study is now in progress on a sports complex and new office uses. While a number of studies have been completed on the future use of the site, present high interest rates have slowed construction. Other uses suggested include a second hotel or motel in the area.

The current (1974) feasibility study, for a coliseum, will consider other additional land uses, including motel, office and parking use and a possible bus terminal. The coliseum itself would be used for indoor sports, such as basketball and hockey, as well as special shows and conventions.

Tentative proposals for the sports arena call for a 15,000- to 20,000- seat facility. Good transit and rail access are considered vital to the success of the proposed facility. Railroad service to New York City and central New Jersey, including the refurbishing of Penn Central Station, is considered a key feasibility factor. If the sports complex is built, the earliest opening date is likely to be late 1977 to 1978.

13.5.3 STREET AND TRAFFIC IMPROVEMENTS

Vehicular traffic on Mc Carter Highway conflicts with the heavy pedestrian traffic between the terminal and the CBD. Widening and depression of McCarter Highway (Route 21), in the vicinity of the terminal, has been proposed. The highway has undergone some improvement as part of the Newark Plaza renewal project.

The State Master Plan for Transportation envisions ultimately upgrading McCarter Highway to freeway status between I-78 and I-280. This improvement would be particularly important for crosstown travel in view of the decision to abandon the proposed midtown connector. Depending

on what plan is ultimately adopted for the improvement of McCarter Highway, highway access to Penn Central Station could be considerably improved by 1990.

13.5.4 TRANSIT IMPROVEMENTS

Several major transit improvements have been included in the State Transit Development Program for 1974-1979. The largest project is the proposed extension of the PATH rapid-transit system from Penn Central Station, Newark, to Plainfield, New Jersey. At McClellan Street in Newark, a "people mover" would connect PATH with the Newark International Airport. This project has been delayed due to a lack of funding.

Major modernization and expansion is proposed for the Newark City Subway. The modernization program calls for the replacement of the existing PCC cars with light rail vehicles, track improvements, new fare collection equipment, improved security and marketing and terminal improvements. An extension of the subway is proposed, from Penn Central Station in Newark to the Irvington Bus Terminal, just west of the Garden State Parkway. The extension would leave the existing subway, at the Washington Street Station, and continue westward under Springfield Avenue to Irvington.

A long range plan also calls for the extension of the subway eastward to the Ironbound District of Newark and Port Newark.

A shuttle bus system has recently been proposed for downtown Newark. The route, using mini buses, would connect Penn Central Station, the Central Business District, the Erie Lackawanna Railway Station, and several college and housing complexes. Such a bus service would benefit HSR patrons.

13.6 RECOMMENDED 1990 ACCESS/EGRESS AND PARKING PLANS

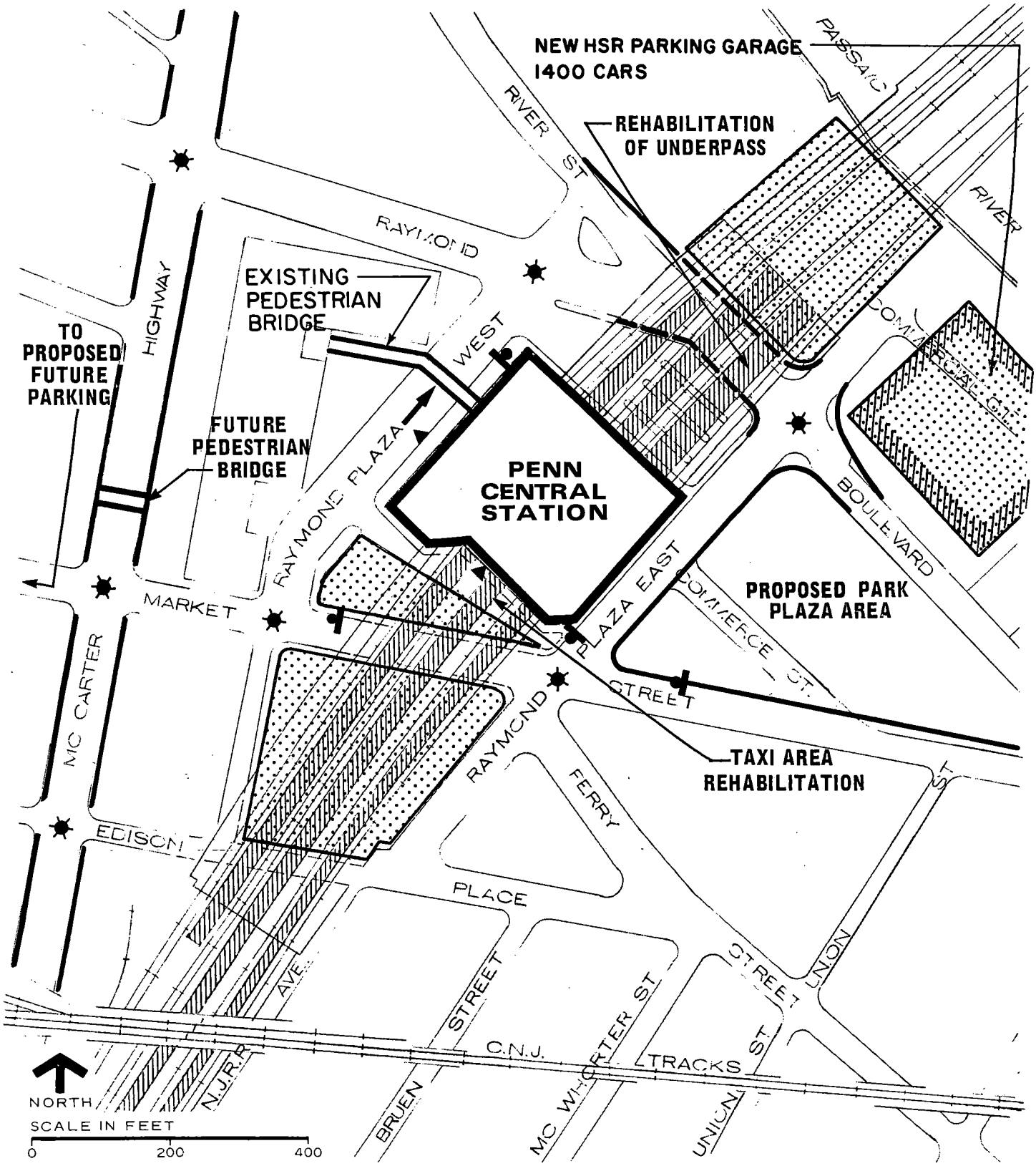
The 1990 plan for Penn Central Station, Newark, includes intersection improvements to minimize vehicular-pedestrian conflict in the vicnity of the terminal, parking improvements, rehabilitation of underpasses, and renovation of public transportation facilities in and adjacent to the terminal. The 1990 concept plan is shown in Figure 13-7. Terminal improvements are discussed in Section 13.7.

13.6.1 STREET AND TRAFFIC IMPROVEMENTS

The projected increased usage of the terminal will have some impact on the existing transportation system. Both Raymond Boulevard and Market Street are already heavily traveled.

Intersectional improvements are desirable in the immediate terminal vicinity, particularly at the intersection of Raymond Plaza East and Raymond Boulevard. As outlined in the Newark TOPICS study, recommended improvements at this location include left turn lanes and new pavement markings on Raymond Boulevard. This would reduce delays for through traffic on Raymond Boulevard.

General rehabilitation of the three underpasses beneath the railroad, namely Edison Place, Market Street and Raymond Boulevard, is recommended.



1990 CONCEPT
PENN CENTRAL STATION
NEWARK, NJ

FIGURE 13-7

There are presently no plans for any redevelopment of the area east of the terminal. However, the present street pattern contributes to inefficient land use, a less attractive environment, and a less efficient highway network than is possible. Closing of a few of the minor streets, notably Commercial Street, and consolidation of some of the parcels would facilitate the creation of a more attractive and efficient land use and street system.

13.6.2 PARKING

It is estimated that 1,400 parking spaces will be required exclusively for HSR patrons. While there is adequate parking in the area now, the projected increased HSR and commuter use of the terminal, combined with redevelopment of the general area and intensification of future land use, could result in increased parking demand. Furthermore, redevelopment will reduce some of the present supply.

If the proposed coliseum is built within the Newark Plaza Renewal Project, it will require adequate parking. As the coliseum would most likely be used mainly in the evenings and on weekends, some multi-purpose use of such parking may be possible, with commuter and HSR use during the daytime.

If such an arrangement does not prove feasible and a parking structure is required for HSR patrons, a suitable site exists east of the tracks between Raymond Boulevard and the Passaic River. The area is presently used for open-lot parking.

The 1990 concept includes a possible park/plaza area, east of the terminal, on two lots currently devoted to open-lot parking and public open space.

13.6.3 INTERMODAL TRANSFER

In addition to implementation of the proposed PATH extension and expansion of the Newark City Subway system, rehabilitation of existing bus and subway facilities in the terminal is recommended.

The subway station should be modernized. Access to the subway station, from the terminal main floor, should be improved. New directional signs, together with route maps showing areas and institutions served, should be installed.

A general cleanup and rehabilitation of the existing bus terminal, at the north end of the terminal, should be undertaken. Access between the bus terminal and the rail terminal should be improved, and new directional signs and route maps should be installed showing areas and institutions served.

The existing taxi facilities are adequate; however, a general cleanup of the taxi loading area under the tracks should be undertaken.

13.7 RECOMMENDED 1990 PASSENGER TERMINAL PLANS

The proposed plans for the terminal main floor and platforms, for Penn Central Station, Newark, are shown in Figures 13-8 and 13-9.

The 1990 configuration assumes that existing terminal location, trackage and general platform spacing will remain unchanged. Interior areas will require renovation and remodeling to satisfy projected 1990 patronage requirements.

The entire main floor should be renovated. A north, south and west concourse should be maintained of adequate widths to accommodate peak-hour traffic, concessions and rail passenger facilities. This will require reconstruction of all passenger facilities and concession areas with contemporary building materials and furnishings.

The major upgrading project would be to install an adequate heating, ventilation and air conditioning system in the terminal, both at the main street level and the waiting rooms on the platforms. The existing heating and ventilation system would be utilized as much as is economically feasible in conjunction with a new air conditioning system.

13.7.1 PASSENGER ACCESS AND EGRESS

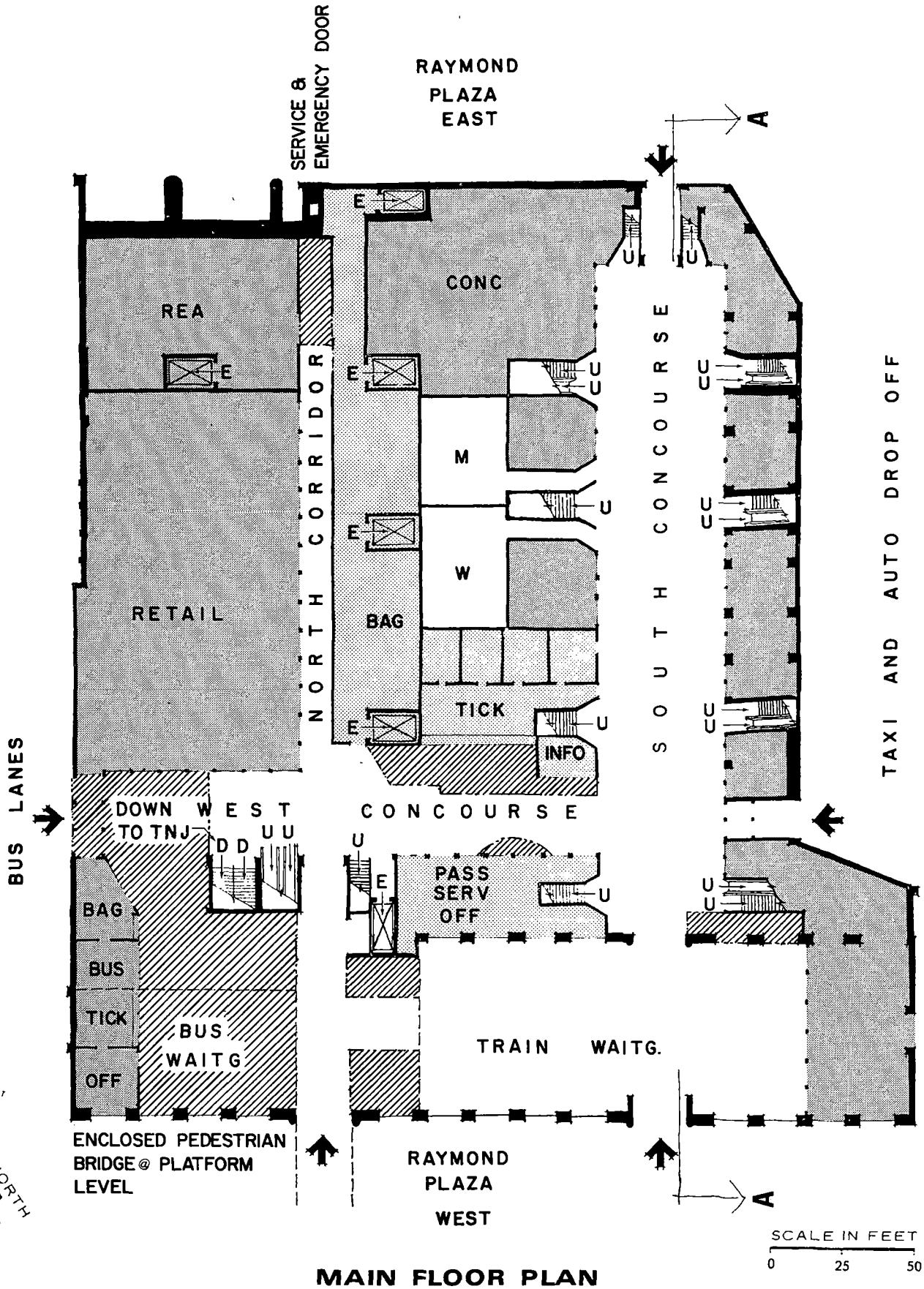
Main access to the terminal will be from Raymond Plaza West, at street level, directly to the passenger waiting room. There would be two additional entrances from Raymond Plaza West; one leading to the north concourse, the second via an enclosed pedestrian bridge at track level with stairs down to the main terminal floor. There would also be access from this plaza to the interstate bus line terminal and ticket office in the northwest corner of the terminal on the main floor.

Additional access to the terminal would be furnished by an entrance on the north side, which serves interstate and local bus passengers, two entrances on the east side, one on the south side, and an entrance to a restaurant at the southwest corner of the terminal.

13.7.2 PASSENGER PROCESSING

Functional Flow

Passengers would enter the terminal, chiefly from Raymond Plaza West, walk through the waiting room and into the south concourse which leads to the west concourse, where the ticket counters would be located. Baggage would be checked with porter service at curbside, at the ticket counters or directly at the baggage counter in the north corridor. Passengers would wait for trains in the waiting room on the west side of terminal, which would have cluster seating arrangements and adequate lighting. When passengers were notified of arriving trains, they would then proceed through the south concourse to escalators and/or stairs up to the respective platforms. All platforms would be protected from the elements by canopies. Physically-handicapped passengers would proceed to ticket counters for the purchase of tickets, return to the waiting room area until train arrival announcements were made and then proceed via



MAIN FLOOR PLAN

LEGEND

CONCESSION

RAILROAD FUNCTION

INCREASED CIRCULATION

1990 CONCEPT
PENN CENTRAL STATION
NEWARK, N J
FIGURE 13-8

DC/STV

CROSS SECTION A-A

1990 CONCEPT
PENN CENTRAL STATION
NEWARK, N J

FIGURE 13-9

elevators to upper platforms to board their trains. Passengers would be protected from through high-speed trains by gating on the main terminal floor. No passengers would be admitted to the level platform until just before train arrival. Marked danger zones would be painted on outside edges of the high-speed platform.

Information

A passenger information center would be located next to the ticket purchase counter at the corner of the west and south concourse, in close proximity to the passenger waiting room. Train information, arrivals and departures, would be posted on electronic schedule boards located in convenient areas of the passenger terminal. A public address and paging system, audible in all passenger areas of the terminal and platforms, would be installed.

Ticket Purchase

Passengers would procure tickets for high-speed travel or commuter service at ticket counters in the west concourse. Clearly-visible lighted signs would direct passengers to the ticket purchase counters from all entrances of the terminal.

Baggage Handling

Baggage could be checked with porter service at curbside before entering the terminal, or at the baggage counter in the north corridor of the terminal. Baggage would then be conveyed to the respective platforms by elevators.

Waiting Area

The main passenger waiting area would be on the west side of the terminal building at street level. The waiting room would have cluster seating, be well-illuminated and decorated with contemporary appointments, suggesting a quiet and relaxed atmosphere. Similar, but smaller, waiting rooms could be furnished on the platforms, except platforms where high-speed nonstop trains will pass.

Escalators

New escalators should be installed to lead passengers to each platform. If existing escalators are used, they should be repaired and modernized to established standards.

13.7.3 PUBLIC SERVICES

Rest Rooms

Men's and women's rest rooms would be located conveniently off the south concourse in close proximity to the main waiting room.

Telephones

An adequate number of public coin-operated telephones would be located in the main waiting areas, the north corridor and the west and south concourses.

Baggage Check Lockers

An adequate number of coin-operated baggage check lockers (approximately 100) would be provided along the concourses and waiting room, but out of the way of major pedestrian traffic.

Travel Aid and Accommodation

Provisions would be made for a traveler's aid booth.

Postal Facilities

Letter drop boxes would be provided at convenient locations within the terminal.

13.7.4 CONCESSIONS

Retail concessions, compatible with the requirements of passenger traffic, would be located in the concourses of the terminal. Included would be two car rental booths, conveniently situated in the terminal.

13.7.5 RAIL PASSENGER OPERATIONS FACILITIES

Passenger operational office facilities would be located along the west concourse and north corridor adjacent to or in close proximity to the ticket purchase and baggage check-in areas.

Security surveillance for the terminal would be maintained by TV monitoring devices manned at a central office, along with adequate security personnel throughout the terminal. Provisions would be made for a first aid station.

13.7.6 UTILITIES

Old boilers, pumps and other auxiliary power plant equipment and piping would be removed from the existing power plant building. Two new 350-HP hot water boilers (oil-fired), new supply and return lines, between terminal and power plant, and necessary auxiliary equipment would be installed.

New HVAC air-handling units would be installed in the first-floor terminal area. HVAC units would have heating, preheat and chilled water coils. The new HVAC system would be isolated from the existing system; however, the existing heating system would tie into the new boiler lines.

Electrical Service

Existing electrical service, equipment, motors, etc., should be thoroughly checked out. If found inadequate to function on an economical basis, this equipment should be removed and replaced with acceptable equipment that will handle increased demands.

Lighting

Adequate recessed lighting should be installed throughout the terminal, both for the safety and comfort of passengers and to provide and accentuate directional signs and signals.

Sanitary Sewer

Relocation and updating of rest room facilities would require interior modifications to the sanitary sewer system.

13.7.7 EXTERIOR BUILDING RENOVATIONS

Exterior Masonry

All exposed masonry surfaces would be cleaned by sandblasting, steam cleaning or other appropriate methods. Joints would be pointed and restored as required.

Entrances

All main passenger entrances to the building would have treadle-operated doors with sidelights and transoms. The existing masonry openings would be utilized and existing entrance canopies would be renovated.

Landscaping

Terminal landscaping and street furniture would include planter boxes for trees and shrubs along Raymond Plaza East and Raymond Plaza West, in the vicinity of the terminal. Roadway and accent lighting standards and fixtures, outdoor seating, information booths, and textured sidewalk and crosswalk surfaces would also be proposed.

13.8 CAPITAL COSTS

Unit costs based on current prices have been developed for major renovation and construction items. These unit prices and the illustrated concept sketch plans form the basis for the following estimate of construction costs:

Renovation of terminal structure	$2,500,000
Renovation of escalators, stairs and elevators	120,000
HVAC, plumbing and lighting	3,228,000
CCTV surveillance and electronic information systems	170,000
Subtotal terminal and site work	$6,018,000
Contingency – 25%	1,505,000
Total terminal cost	$7,523,000

Of an estimated 1,400 parking spaces required for HSR patrons, 500 are assumed to be accommodated in public parking facilities near the terminal. Land would be purchased and a parking structure constructed to accommodate the remaining 900 cars. Costs would be as follows:

Parking structure	$2,970,000
Land acquisition for parking structure	$ 300,000

Parking-structure construction cost was calculated at a rate of $3,300 per car space. Land acquisition cost, based on the acquisition of a parcel of land, with a ground floor capacity of 150 car spaces, was calculated at a rate of $2,000 per car space.

13.9 SCHEDULING AND PHASING OF CONSTRUCTION

Terminal reconstruction and site improvements would be undertaken during a 16-month period. The following schedule is a recommended procedure for phasing the work involved at this terminal:

(1) Clean up all interior areas of the main floor, upper platforms, and basement. All marble and masonry surfaces should also be thoroughly cleaned.

(2) Remove all partitions and accessory items which are necessary, to allow all new work for ticketing, baggage, railway offices, public areas, concessions, etc., to be constructed.

(3) Steam clean and make weather tight all exterior masonry surfaces of the structure. This should include the cleaning of all metal work.

(4) The repair and rehabilitation of all elevators and escalators should be made at this time.

(5) Install new steam boilers and all accessory equipment and piping, to completely update the heating system for the terminal. This should also include all ventilation and plumbing work.

(6) The entire electrical system which services power equipment and lighting within the terminal, should be thoroughly examined, and all malfunctioning, outmoded and defective equipment replaced. The electric service should be adequately sized to provide power for new lighting and air conditioning.

(7) Install new air conditioning throughout the public and railway offices, on the main floor of the terminal.

(8) Acoustic-tile ceilings, with recessed lighting, should be installed at this time.

(9) Parking lot facility: on a site to be acquired. Should be constructed at an early part of this phasing, in order to be completed at this time.

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Personal interviews and communications

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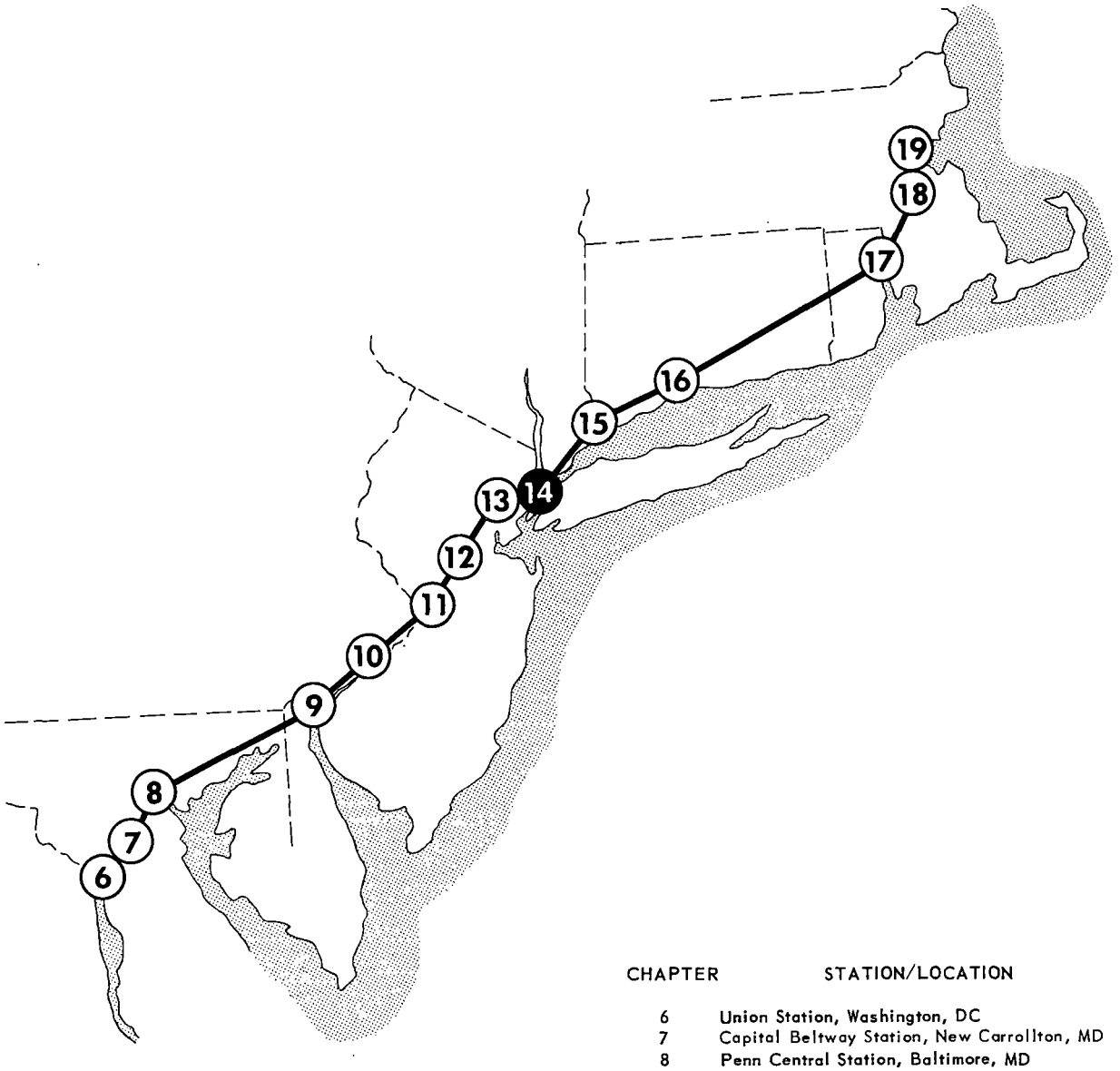
STATION LOCATIONS ALONG NORTHEAST CORRIDOR



CHAPTER	STATION/LOCATION
6	Union Station, Washington, DC
7	Capital Beltway Station, New Carrollton, MD
8	Penn Central Station, Baltimore, MD
9	Wilmington Station, Wilmington, DE
10	Penn Central Station, 30th Street, Phila., PA
11	Trenton Station, Trenton, NJ
12	Metropark Station, Iselin, NJ
13	Penn Central Station, Newark, NJ
14	Pennsylvania Station, New York, NY
15	Stamford Station, Stamford, CT
16	New Haven Station, New Haven, CT
17	Union Station, Providence, RI
18	Route 128 Station, Dedham, MA
19	South Station, Boston, MA

14.0 PENNSYLVANIA STATION, NEW YORK CITY, NEW YORK

14.1 STATISTICAL FRAMEWORK

14.1.1 OWNERSHIP AND USERS

Pennsylvania Station is owned by the Penn Central Transportation Company and used by Amtrak and five Penn Central commuter lines. The Long Island Rail Road also has its terminal underneath Pennsylvania Station.

14.1.2 PROPERTIES AND FACILITIES

The main terminal covers approximately 1,000,000 square feet and consists of four levels:

(1) "C" level, or mezzanine, located at street level.

(2) "B" level, the main passenger level, located one level below the street.

(3) "A" level, concourse, two levels below the street.

(4) Platform level, below "A" level.

There are 11 high-rise platforms and 21 tracks. Stairways, escalators and elevators connect the various levels.

The terminal complex was extensively renovated and completed in 1970.

14.1.3 CURRENT ACTIVITY LEVELS

The Penn Central operates 108 commuter trains daily between New York and Philadelphia. Twenty-eight Amtrak trains arrive and depart from Pennsylvania Station on the New York – Boston route, and 81 on the New York – Washington route. The Long Island Rail Road operates 304 commuter trains on various branch lines throughout Long Island to and from Pennsylvania Station. Morning peak-hour-demand occurs between 8 a.m. and 9 a.m. when there are 42 trains arriving and departing. Evening peak-hour-demand occurs between 5 p.m. and 6 p.m. with 41 trains arriving and departing. 1974 peak-day patronage (one-way) totaled 104,600; 95,000 of these were commuters and 9,600 were Amtrak patrons.

Approximately 50 percent of the rail passengers use the subway system or commuter rail system for access to Pennsylvania Station. Buses, walking and taxis account for the next largest percentage of arrivals. Park-and-ride and kiss-and-ride are minor access modes.

Specific data on the existing modal split at Pennsylvania Station, obtained in a May 1974 survey, will be available in the near future.

14.2 TERMINAL VICINITY INFRASTRUCTURE

14.2.1 LOCATION CONSIDERATIONS

Terminal location is shown in Figure 14-1, indicating the transportation network and activity centers in the general city setting. Activity centers and proposed activities are listed in Table 14-1.

Location With Respect to Regional Highway System

Two major expressways flank the east and west sides of Manhattan. On the west is the West Side Highway/Henry Hudson Parkway (State Route 9A), which is presently closed for rehabilitation. On the east is East River Drive/Franklin D. Roosevelt Drive. No major expressway crosses Manhattan, except I-95 at the northern tip.

Three major highways provide access to Manhattan on the west – the George Washington Bridge, the Lincoln Tunnel and the Holland Tunnel. A greater number of tunnels and bridges cross the East River on the east side; the major ones are the Queensboro Bridge, the Queens Midtown Tunnel, the Williamsburg, Manhattan and Brooklyn Bridges and the Brooklyn-Battery Tunnel.

The terminal's west-side location is more favorable with respect to west side travel and New Jersey, than it is to east side travel and portions of New York City, such as the Bronx, Queens and Brooklyn.

Access from the terminal to New Jersey is via the Lincoln Tunnel. The tunnel has entrance and exit ramps at West 33rd and West 31st Streets. However, both of these streets are one-way westbound away from the terminal, and a circuitous route, via West 30th Street, must be used to reach the terminal.

Relationship to Other Inter-Regional Transportation Facilities

Greyhound, Continental Trailways and suburban bus lines operate out of the Port Authority bus terminal, eight blocks from Pennsyvlania Station at 41st Street and 8th Avenue. The bus terminal has direct access to the Lincoln Tunnel and can be easily reached by bus, cab or subway in a few minutes.

Pennsylvania Station is considerably more convenient for travelers to Manhattan than the three regional airports – La Guardia, J.F. Kennedy International and Newark International. The airports can be reached by taxi or airport bus in 30 minutes from midtown Manhattan. However, in rush-hour traffic the trip can take up to one hour. Direct limousine service is available from Pennsylvania Station to the airports.

The other major New York City rail terminal, Grand Central Station, can be reached from Pennsylvania Station by subway, bus or taxi in about 15 to 20 minutes. Grand Central serves the Hudson, Harlem and New Haven divisions of the Penn Central Transportation Company. The Long Island Rail Road's terminal is underneath Pennsylvania Station. Transfers between the Long Island Rail Road and other lines at the terminal are easy and convenient.

Existing Transit Service

The city's extensive subway service is operated by the Metropolitan Transportation Authority. The subway lines operate 24 hours a day to all boroughs except Richmond. The fare is $0.35 and Pennsylvania Station is easily accessible from four lines. The northern terminal for the PATH tubes is located at nearby Greeley Square. This line, operated by the Port Authority of New York and New Jersey, provides service to Hoboken, Jersey City and Newark. Frequent service is provided around the clock for a fare of $0.30.

Two subway lines, the 7th Avenue IRT and the 8th Avenue IND, are directly connected to Pennsylvania Station by underground passageways. Also within walking distance are the 6th Avenue IND and the Broadway BMT subways. These can be reached by walking at street level or by a tunnel which runs from Pennsylvania Station, underneath the Statler Hilton Hotel and Gimbel Bros. to Greeley Square at 32nd Street and Broadway, and Herald Square at 34th Street and Broadway. Although this tunnel is in very poor condition, it is used extensively.

The Metropolitan Transportation Authority has several major subway projects under construction. The 63rd Street Tunnel, under the East River, will provide increased access to Pennsylvania Station from Queens. The second Avenue Subway will afford direct access from Pennsylvania Station to the upper east side of Manhattan.

The Metropolitan Transportation Authority operates seven local bus routes within walking distance of the terminal. Route M4 and M10 directly serve the terminal and provide north-south service on both sides of Manhattan. Route M16 provides crosstown service along 34th Street and also serves the Port Authority bus terminal. All bus routes operate seven days a week with headways of two to five minutes during weekday rush hours. Twenty-four hour service is provided on the M7 and M16 routes. The bus fare is $0.35.

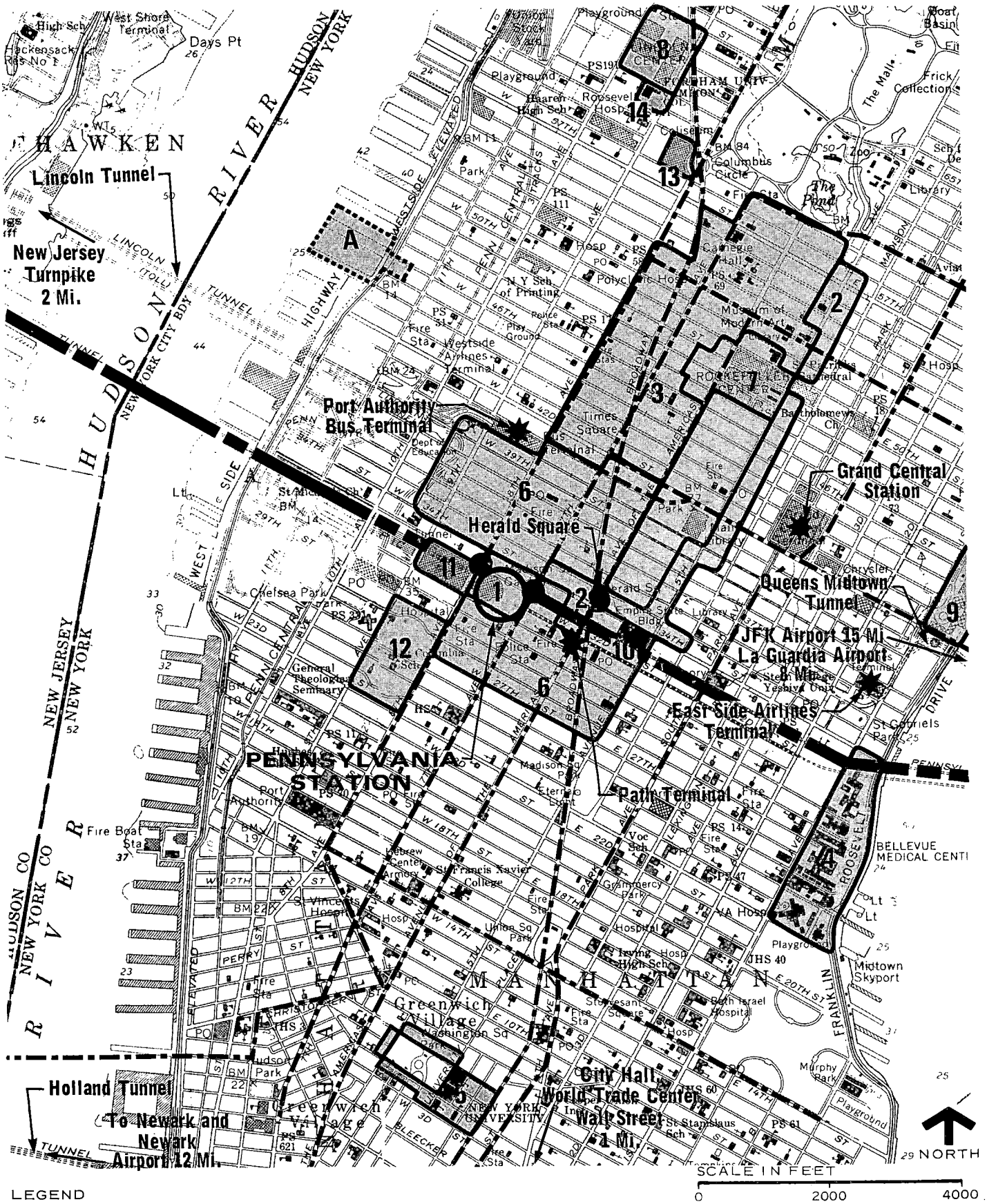
Three bus stops near the terminal, on Eighth and Seventh Avenues and West 32nd Street, afford convenient access to uptown, downtown and crosstown buses. There is a northbound bus stop near the corner of Eighth Avenue and West 31st Street, and a southbound bus stop is on Seventh Avenue in front of One Penn Plaza. Both of these stops are utilized by the M10 bus which goes from the World Trade Center to 159th Street and furnishes service on the west side of Manhattan. There is also a bus stop on 32nd Street for the M4 bus which goes from Pennsylvania Station to the Cloisters at the northern end of Manhattan and provides service on the east side.

Relationship to Activity Centers

New York City, national center of business and financial activities, is located almost exactly midway along the proposed HSR line from Washington, D.C. to Boston, Mass.

Pennsylvania Station is located in midtown Manhattan within reasonably close proximity to other major New York transportation terminals, including the Port Authority bus terminal, Grand Central Station and the complex of New York subway lines which converge under nearby Herald Square.

The Pennsylvania Station is located within New York City's garment manufacturing district



LEGEND

- EXISTING ACTIVITY CENTER (SEE TABLE 14–1)
- PROPOSED ACTIVITY CENTER (SEE TABLE 14–1)
- TRANSIT LINE AND STATION
- HIGH SPEED RAIL

STATION LOCATION
PENNSYLVANIA STATION
NEW YORK, NY
FIGURE 14–1

TABLE 14-1

ACTIVITY CENTERS, CITY SETTING

EXISTING ACTIVITIES

1	Madison Square Garden, Penn Plaza, Pennsylvania Station
2	Major stores and Fifth Avenue shopping district
3	Broadway theaters, hotels and entertainment district
4	N.Y. University–Bellevue Medical Center
5	Higher Education Facilities, including Washigton Square Campus of NYU (enrollment 31,000)
6	Garment district
7	Rockefeller Center
8	Lincoln Center
9	United Nations Headquarters
10	Empire State Building
11	General Post Office
12	Penn Station South Urban Renewal Area
13	Coliseum
14	Fordham University

PROPOSED ACTIVITIES

A	New York Convention and Exhibition Center

and close to the major retail center, around 34th Street, Herald and Greeley Square and 5th Avenue. Several very large department stores, including R.H. Macy, & Co., Gimbel Bros. and E.J. Korvette are just one block from the terminal.

Pennsylvania Station is a short subway, bus or taxi ride from the Broadway theatre and hotel district, Rockefeller Center and the complex of midtown offices along the Avenue of the Americas, 5th Avenue and Park Avenue. City Hall and other governmental buildings, the World Trade Center, Wall Street and the downtown financial district are approximately three miles south of the terminal. The proposed New York Convention Center would be within a mile of the terminal.

14.2.2 LAND USE

Existing Characteristics of the Terminal Area

Figure 14-2 shows the immediate terminal environs and local circulation system.

The new Madison Square Garden entertainment complex and One Penn Plaza, a large high-rise office building are located directly on top of Pennsylvania Station. Two Penn Plaza, another new high-rise office structure, is across 33rd Street from the terminal.

The new Madison Square Garden facilities, which opened in 1968, include the Arena, with a capacity of 20,000, and the Felt Forum, with a capacity of 4,600. Both are used for various sports, entertainment and other events. The New York Rangers hockey team and the New York Knicks basketball team both play at Madison Square Garden. The facilities are used from four to seven nights each week of the year.

Two Penn Plaza, opened in 1968, is occupied by approximately 6000 people during the day. One Penn Plaza has a present occupancy of 2000 people; eventually it will be occupied by 4,500 people. Underground passageways link both structures with Pennsylvania Station.

The main New York General Post Office occupies an entire block immediately west of Pennsylvania Station. Postal Service activities also occupy other nearby buildings. The Statler Hilton Hotel is directly east of Pennsylvania Station.

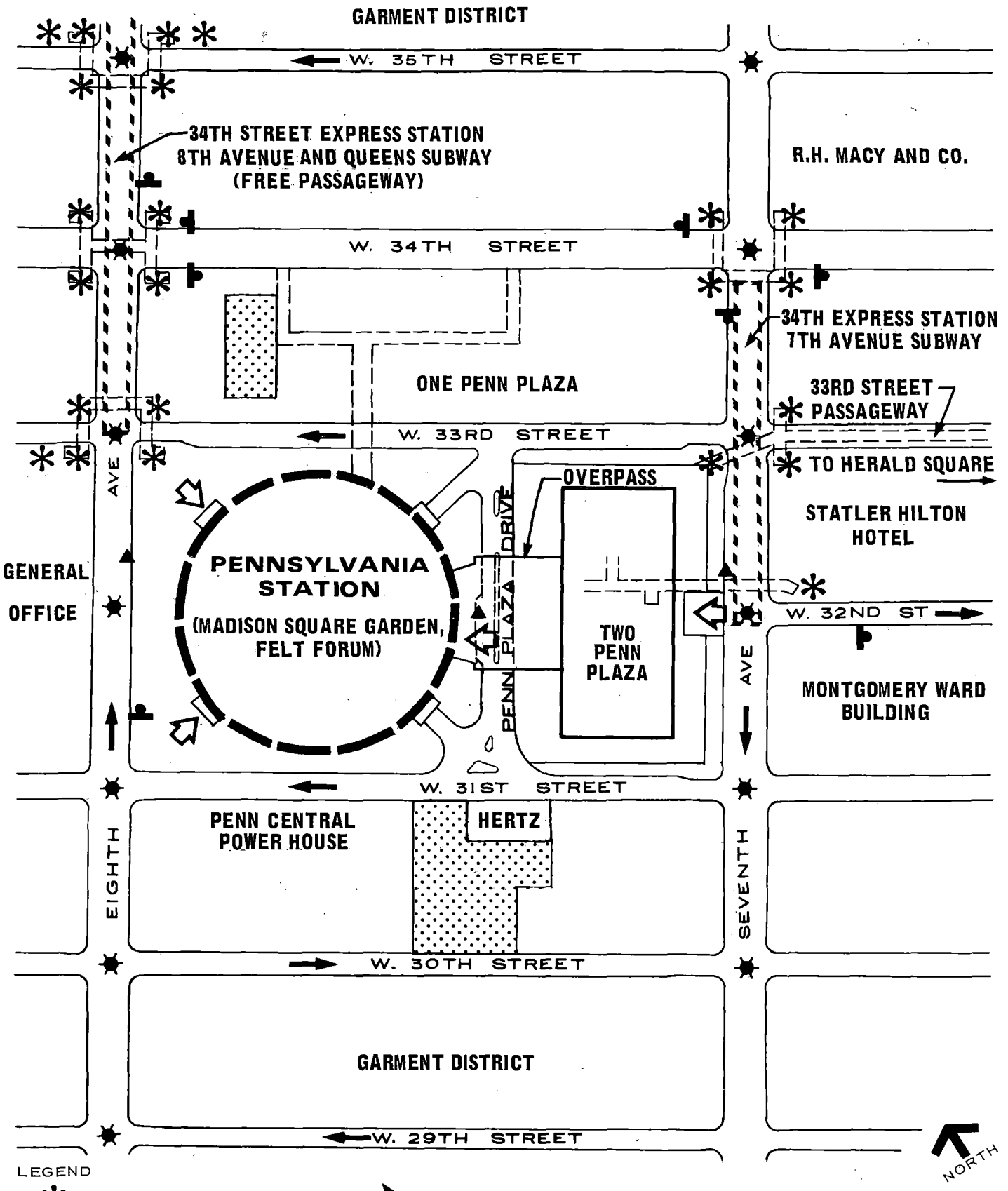
The area immediately south of the terminal is composed of a mixture of land uses and is generally deteriorated, particularly along 8th Avenue.

Public safety, in the general terminal area, is considered only fair. The crowds provide some measure of safety, but during the night hours, some areas are very unsafe. Security is particularly a problem in the underground passageways.

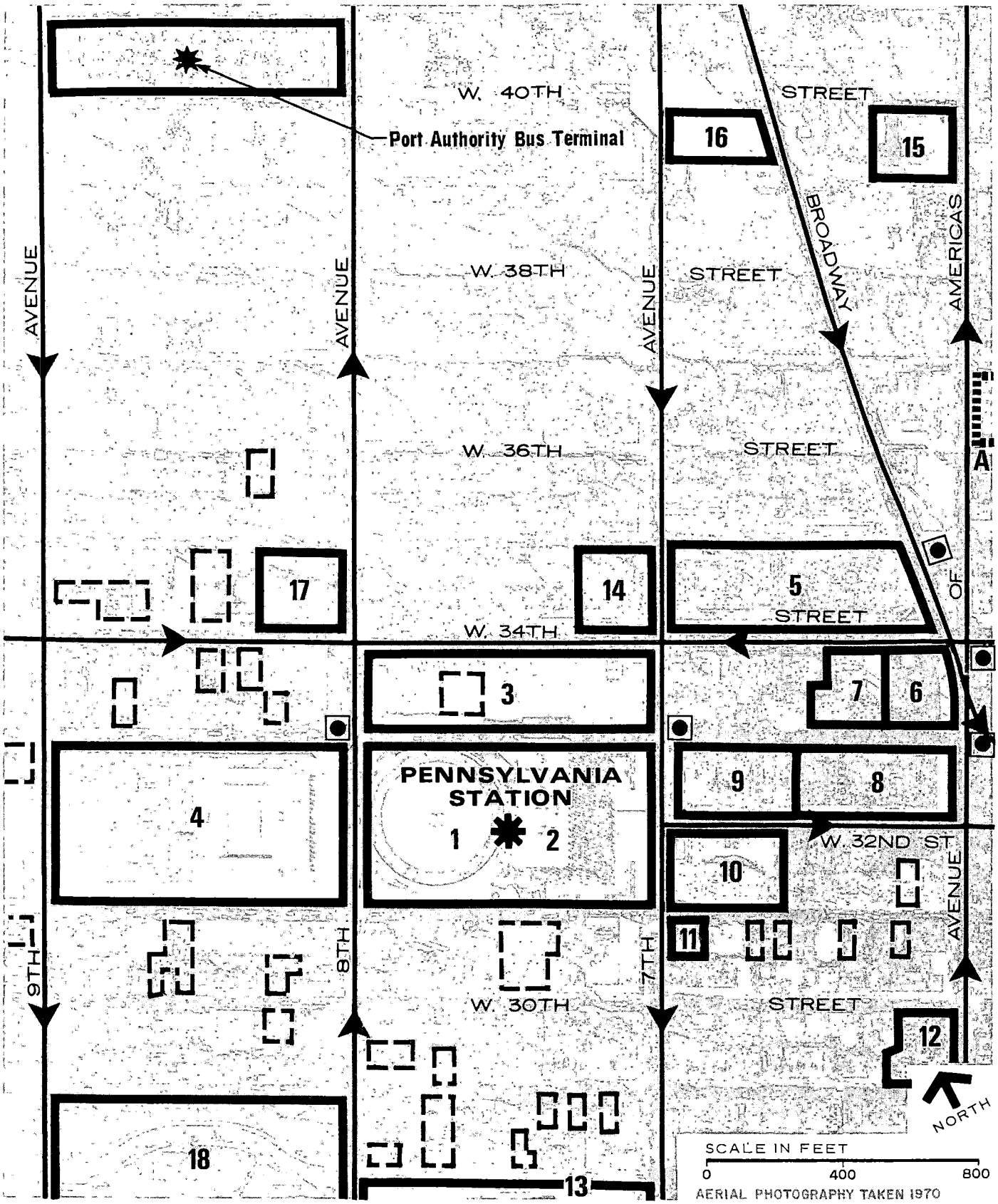
Planning Factors, General Terminal Area

Activity centers and other planning factors in the general terminal area are shown in Figure 14-3 and listed in Table 14-2.

The general area around Pennsylvania Station is considerably deteriorated. Apart from One



EXISTING STATION ENVIRONS
PENNSYLVANIA STATION
NEW YORK, NY
FIGURE 14-2



LEGEND

- TRANSIT STATION
- PARKING
- BUS ROUTE
- 0 EXISTING ACTIVITY CENTER (SEE TABLE 14–2)
- A PROPOSED ACTIVITY CENTER (SEE TABLE 14–2)

PLANNING FACTORS
PENNSYLVANIA STATION
NEW YORK, NY

FIGURE 14–3

TABLE 14-2

ACTIVITY CENTERS, GENERAL TERMINAL AREA

EXISTING ACTIVITIES

1	Pennsylvania Station, Madison Square Garden, Felt Forum
2	Two Penn Plaza
3	One Penn Plaza, (Amtrak, Penn Central, Long Island R.R.)
4	General Post Office
5	R.H. Macy & Co.
6.	E.J. Korvette
7	F. W. Woolworth
8	Gimbel Bros.
9	Statler Hilton Hotel
10	Montgomery Ward Building
11	Southgate Tower and Mall (remodeled apartments and shopping mall)
12	Avis/Parking
13	Fashion Institute of Technology (expansion in progress)
14	Nelson Tower (garment industry -offices)
15	Spring Mills and Milliken Buildings (garment industry)
16	555 Seventh Avenue (recent office - Garment industry building)
17	French and Polyclinic Health Center
18	Penn Station South (housing project)

PROPOSED ACTIVITIES

A	Proposed 28-story office building

Penn Plaza and the Madison Square Garden complex on top of the terminal, the area has undergone relatively little change in recent years. There are some recently constructed high-rise office buildings in the area.

Most other buildings in the area are older medium and high-rise structures, generally with retail activities on the ground floor and either offices or garment industry activities above.

Garment industry activities dominate the area between 28th and 42nd streets and between 5th and 8th Avenues. The northwest portion of this area is dominated by the manufacturing of women's and children's clothes and showrooms. The northeast portion is devoted to the distribution of accessory goods. The southeast section is largely showrooms, distribution and buying, particularly men's and boys' wear. The southwest portion is devoted primarily to the fur and hat industries.

All segments of the garment industry are undergoing severe economic strain, and the area is likely to undergo change. The most stable segment is the manufacturing area, immediately north and east of Pennsylvania Station. The most unstable segment is the fur and hat area, south and east of the terminal.

Although the northwest segment is undergoing some gradual changes which will likely continue, the overall character of the area will probably remain the same between now and the end of the century. This is due to the city's policy of keeping the garment industry in this area.

The area north of 34th Street and east of 6th Avenue (accessory goods) is very vulnerable to change. A considerable amount of land assemblance is taking place, and there are conflicting city policies over the future of this area. The city would like to preserve the garment industry here, but the area is under utilized. As a result, construction of new high-rise office buildings along 5th and 6th Avenues will probably continue to spread southward.

Although the buildings in the southeast segment are likely to change, the overall use of the area will remain the same. The area will probably rebuild itself, based on natural market trends and city policies which promote rebuilding. There are a significant number of old hotels in this area which are very vulnerable to change; these will most likely be replaced by commercial and office buildings.

The southwest segment (the fur district) will likely undergo radical change. Present uses will probably be replaced by a mixture of commercial, office and residential uses, with commercial and office uses focused along the avenues and residential uses in mid-block.

The core of the garment district is the retail area around Macy's, Gimbel's and Korvette's. The city's present policy is to strengthen this retail focus and future major retail activities are likely in this area.

14.3 EXISTING PASSENGER HANDLING FACILITIES

14.3.1 PASSENGER ACCESS AND EGRESS

The terminal is bounded by spacious sidewalks on four sides. Pedestrian and vehicular

approach is mainly from the 7th Avenue (east) side of the terminal for people without baggage, especially commuter passengers. See photo 1. This is a large, canopied surface entrance which leads to a wide stairway and two escalators (located on each side of the stairway). These furnish access to the "B" level concourse under the office building; the concourse leads to the main passenger lobby.

Another main entrance to the terminal is via the taxi driveway (Penn Plaza Drive) from 33rd or 31st Street. This is also a major point for automobile drop-off and pick-up, and is used by most interstate train passengers with luggage. See photos 2 and 3. There are also two other main entrances that lead directly to the "B" level. These are located at the northwest and southwest corners of the terminal along 8th Avenue. Although these entrances have wide stairways and escalators, they are not used very much, since most of the pedestrian traffic utilizes the 7th Avenue and the taxi driveway entrances.

There are a number of secondary approaches to the terminal via concourses and stairways from the street level.

Automobile Access

Highway travel to and from the terminal encounters the usual problems associated with heavy Manhattan traffic, including severe congestion during peak hours. The terminal is flanked by two major north-south arterials, 7th and 8th Avenues. A major east-west arterial, 34th Street, is a block north of the terminal.

The terminal is bounded by West 31st Street on the south and by West 33rd Street on the north. Penn Plaza Drive connects West 31st and West 33rd Streets and provides direct access to the terminal.

Both West 31st and West 33rd Streets are one-way westbound. West 32nd Street, which begins at 7th Avenue, is one-way eastbound. Seventh Avenue is one-way southbound, and 8th Avenue is one-way northbound.

Other Connections

The main taxi stands are located on Penn Plaza Drive and 7th Avenue. The 7th Avenue stand can accommodate approximately 15 cabs. Consequently, double parking of cabs is common and poses a traffic problem.

Penn Plaza Drive, which passes underneath a pedestrian concourse between Two Penn Plaza and Madison Square Garden, can accommodate approximately 15 cabs. An additional 10 cabs can be accommodated on 33rd Street.

A cab stand is also located on 8th Avenue; it has capacity for approximately six cabs.

There are 11,787 licensed cabs in New York City, and taxis are readily available at all the existing pick-up points around the terminal. Present rates are $0.60 for the first one-fifth mile, $0.10 for each additional one-fifth mile, and $0.10 for each 72 seconds of waiting time. The Taxi

and Limousine Commission recently granted a fare increase. New rates will be $0.65 for the first one-sixth mile and $0.10 for each 60 seconds of waiting time.

Pedestrians have access to the terminal both at street level and via a series of underground passageways. The 33rd Street passageway, linking Pennsylvania Station and Herald Square, is a major pedestrian route. Underground passageways also link One Penn Plaza and the terminal, and a free pedestrian passageway exists under the 8th Avenue subway station. Most passageways are deteriorated, with inadequate lighting and policing.

Due partly to the concentration of major retail stores near the terminal, the area around Pennsylvania Station has a greater amount of pedestrian movement than any area of the city. The volumes of people and traffic combined with the shuttling of garment industry goods around the area, result in major pedestrian-movement problems. Sidewalks around One Penn Plaza and Pennsylvania Station were widened to accommodate the high pedestrian volumes.

There are no rental car agencies at Pennsylvania Station. However, the major agencies have direct lines in the terminal, and Hertz has facilities on West 31st Street across from the terminal.

14.3.2 PARKING

The overall parking situation around the terminal is poor. There is a large number of off-street spaces available, but terminal patrons must compete with the many other demands for parking in the area and in addition, parking rates are high.

Within a 1200-foot walking distance from Pennsylvania Station, there are 4,156 parking spaces in 30 lots. Most of the lots have less than 100 spaces, with rates averaging around $3.00 a day.

There are two large parking facilities adjacent to Pennsylvania Station but none are actually in the terminal. An underground garage, below One Penn Plaza, has a capacity of 399 cars and is directly connected with Pennsylvania Station via an underground passageway. A surface parking garage with 1,500 spaces is located just south of the terminal between 31st and 30th Streets. Both of these garages charge more than $4.50 for a ten-hour day.

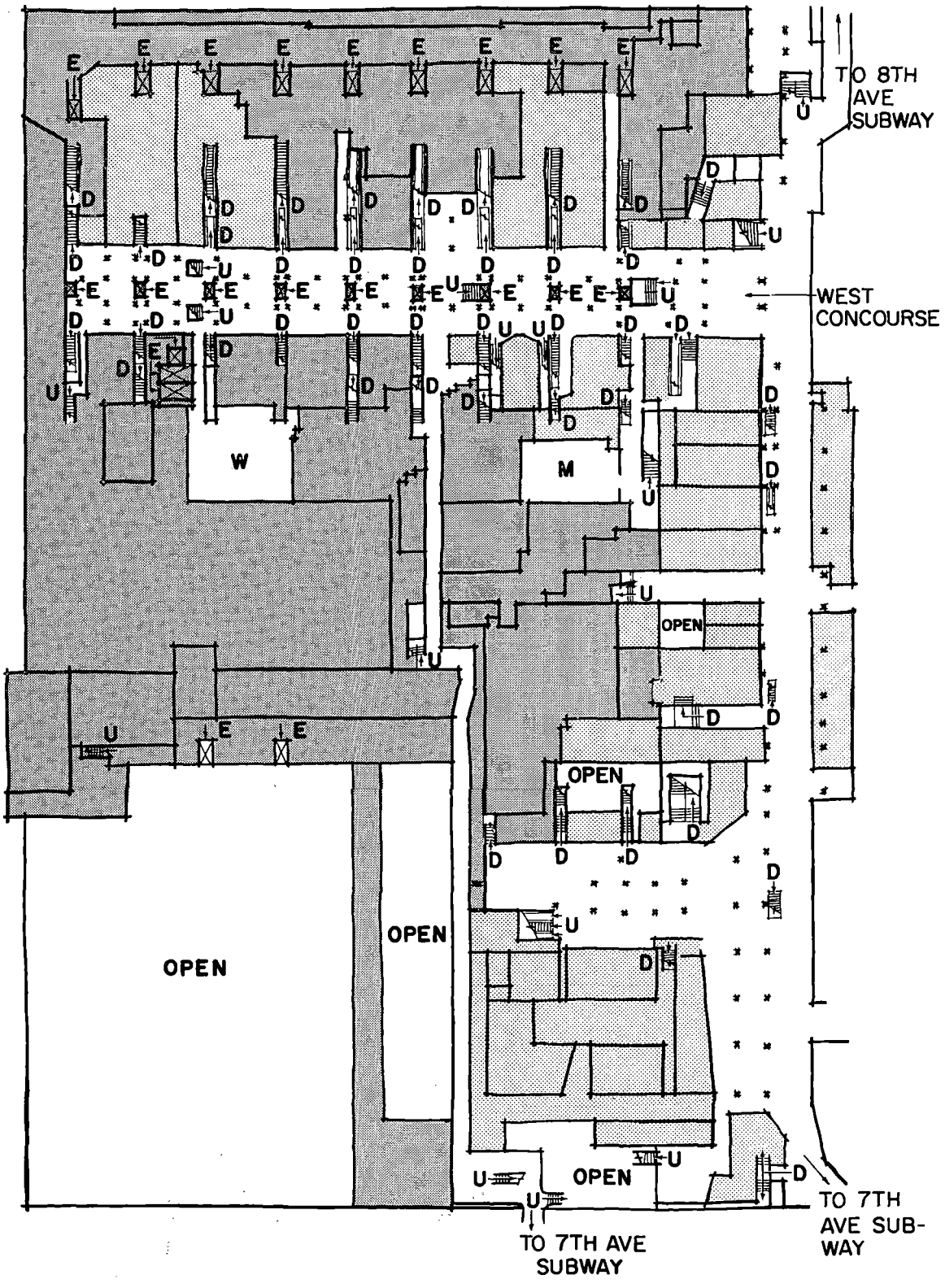
Curb parking is restricted in the immediate vicinity of the terminal.

14.3.3 PASSENGER PROCESSING

For Existing Floor Plans and Platform Plan, see Figures 14-4 through 14-7.

Functional Flow

Incoming or outgoing passenger traffic moves in an east-west direction. Most of the outgoing passengers arrive at the terminal by taxi, at the 7th Avenue or the taxi driveway entrances See photos 1 and 2. Porter service is available at the taxi driveway entrance. Passengers immediately descend stairs to the "B" level lobby and ticket windows. See photo 4. Passengers entering at 7th Avenue descend via stairs or escalator to the concourse which also leads to the main terminal lobby and ticket windows. See photo 5. After purchasing tickets, passengers can



PLAN - LOWER LEVEL "A"

LEGEND

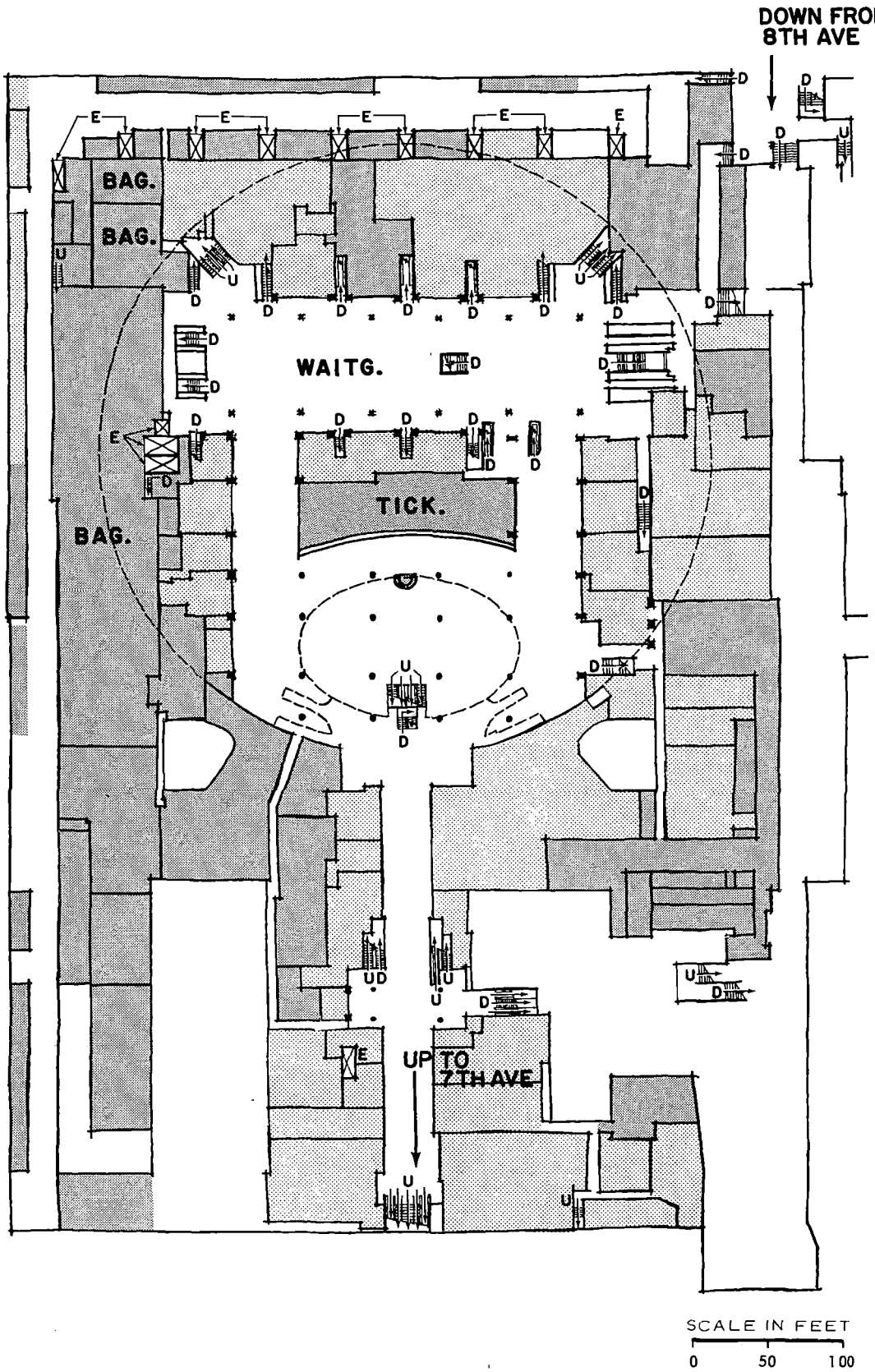
RAILROAD FUNCTION

CONCESSION

EXISTING PENNSYLVANIA STATION
NEW YORK, N Y

DC/STV

FIGURE 14-4



PLAN - MAIN LEVEL "B"

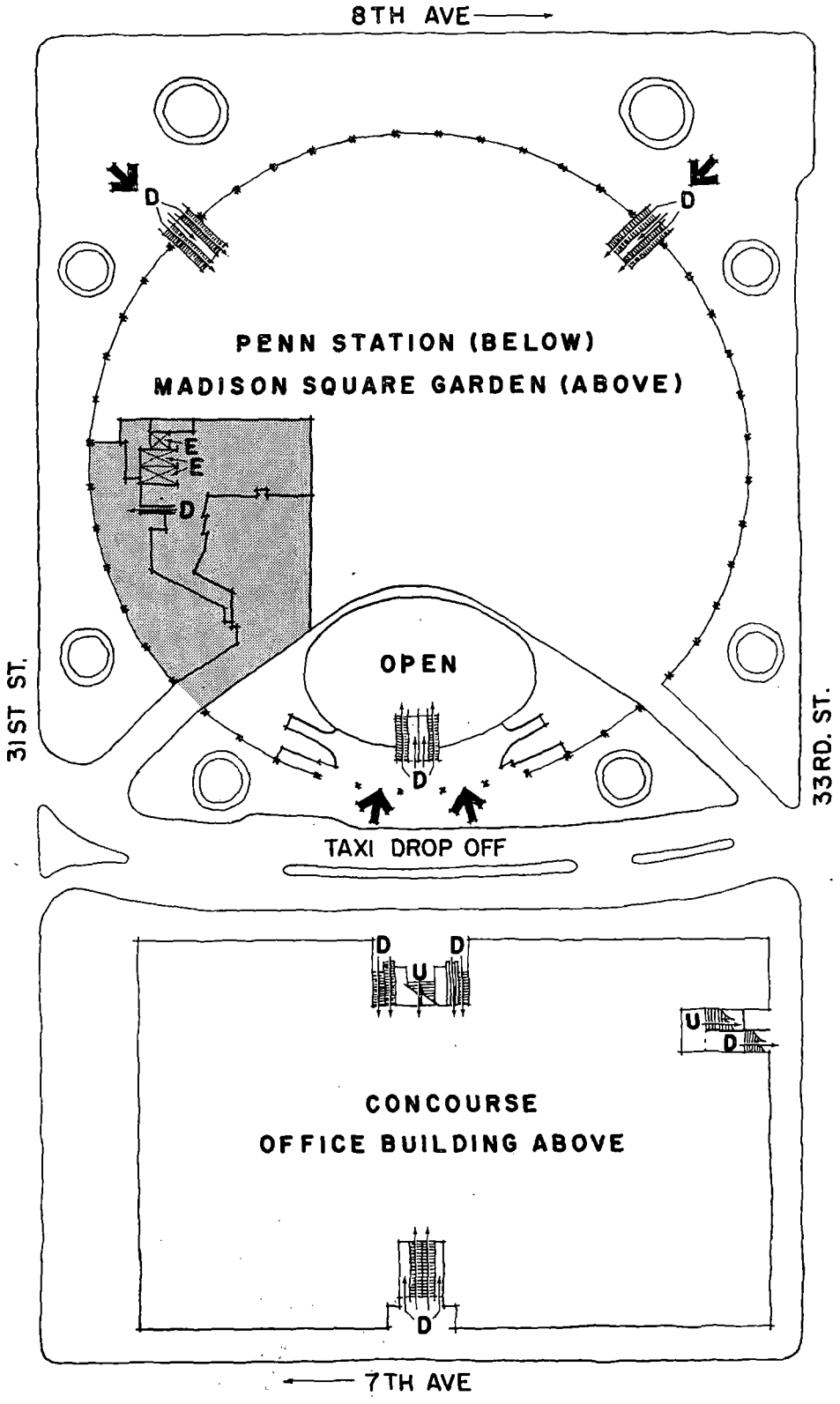
LEGEND

CONCESSION

RAILROAD FUNCTION

EXISTING PENNSYLVANIA STATION
NEW YORK, N Y

FIGURE 14-5



NORTH

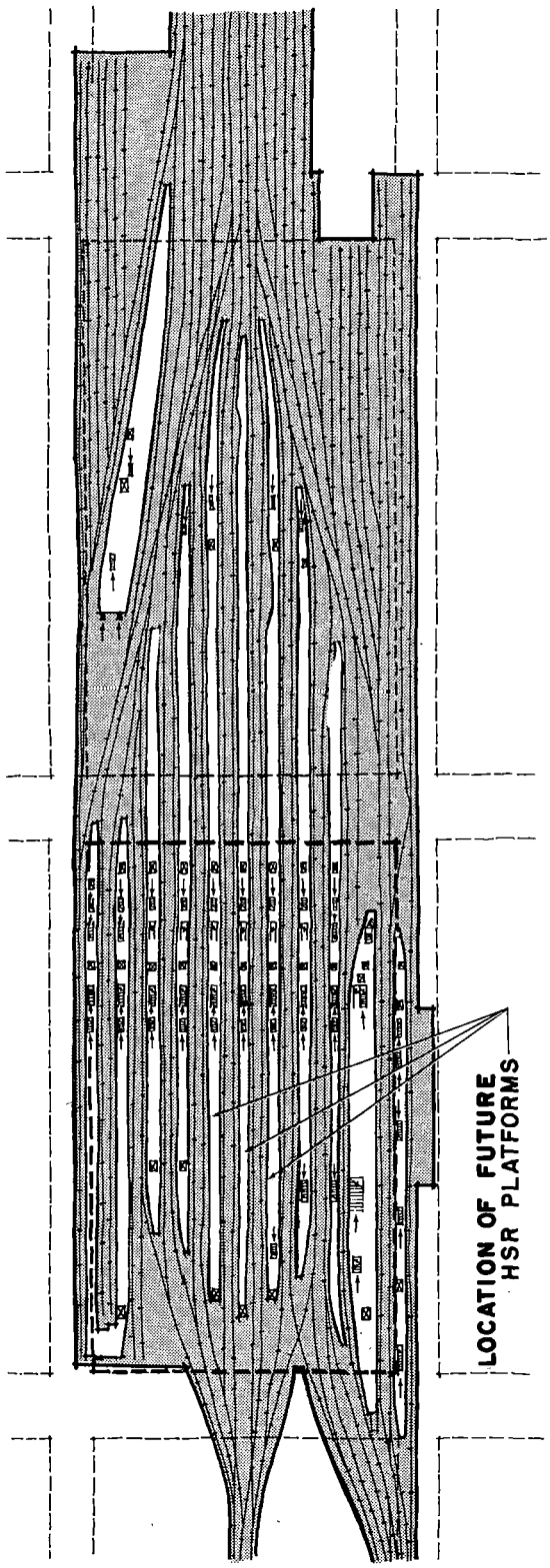
SCALE IN FEET
0 50 100

PLAN - STREET LEVEL "C"

LEGEND

RAILROAD FUNCTION

EXISTING PENNSYLVANIA STATION
NEW YORK, N Y



SCALE IN FEET
0 100 200

⊠ = ELEVATOR
← = ALL ARROWS (⟶) ON THIS PLAN INDICATE "UP"

NORTH

PLATFORM PLAN

LEGEND

RAILROAD FUNCTION

EXISTING PENNSYLVANIA STATION
NEW YORK, NY
FIGURE 14-7

then proceed to the main waiting area behind the ticket windows. Seating in this area is inadequate, since Amtrak, Metroliner and commuter passengers all wait here for trains. There is a small waiting lounge on the "A" level for Amtrak passengers; however, it has not been well publicized, and in addition, it accommodates only a very limited number of passengers. There is no seating near the ticket windows. Consequently this main waiting area is always congested.

In addition to the Penn Central commuters, there is also a large flow of pedestrian traffic from the Long Island commuter trains. See photo 6. However, this has little effect on Amtrak and Penn Central pedestrian traffic since the Long Island passengers do not use the main waiting room area. The Long Island passenger traffic also circumvents the main terminal traffic by using the "B" level concourse to and from 7th Avenue and other entrances including several to the city subway system.

Access to the 8th Avenue Subway (independent system) and the 7th Avenue Subway, which run under 8th and 7th Avenues, respectively, is from the "A" level.

Physically handicapped passengers enter at "C" level and proceed to the main terminal floor via service elevators. See photo 7. They also utilize elevators to and from train platform levels.

Waiting Area

The main waiting room is located behind the ticket offices. See photo 8. It is very long and rectangular, with back-to-back benches located in the middle of the room. There are four rows of benches on each side of an information booth, with seating for approximately 250 persons.

Information

One information booth is located in front of the ticket windows on the main terminal floor; another is in the center of the main waiting room. See photos 9 and 10. Both have an electronic train schedule board which lists long distance and local trains. A passenger paging system is also available at the information booths.

Ticket Purchase

There are a total of 24 windows for Amtrak ticket sales; about 20 windows are in use at all times. See photo 10. Five of these windows are restricted to Metroliner sales. Penn Central has four ticket windows for commuter service.

Baggage Handling

A baggage check-in counter is located at the south end of the "B" level floor. See photo 11. Porter service is available at several locations and can be paged from the information booths.

14.3.4 PUBLIC SERVICES

Rest Rooms

Men's and women's rest rooms are in a central location on the "B" level.

Telephones

There are public telephones at various locations on the "A" and "B" levels as well as a telephone center on the "B" level, with directories for other cities. In addition, there is a telephone counter with operator service to provide information and assistance in making long distance calls.

Postal, Baggage Service, and Miscellaneous Services

A lost and found department is incorporated with the baggage check-in counter. Passenger accommodations for postal services, storage lockers, and courtesy telephones for rent-a-car, hotel reservations, traveler's aid, and information for intermodal trip connections are also located on the "B" level.

14.3.5 CONCESSIONS

There are numerous concessions on the "A" and "B" levels including news stands, vending machines, snack bars, restaurants, cocktail lounges, drug stores, flower, toy and clothing stores, gift shops, barber shop and a shoe repair shop. See photo 9.

14.3.6 RAIL PASSENGER OPERATIONS FACILITIES

Passenger services' offices are located at peripheral areas on the "B" level. Ticket clerks and cashiers' offices are also located on the "B" level. Operating rail personnel and terminal maintenance and engineering facilities are located mainly on the "A" level, with limited space on the "B" level. Employees' lounge, toilet facilities, restaurants, YMCA, and lockers are on the "A" level. Various equipment rooms and railroad storage areas are located on both the "A" and "B" levels. Security police are stationed throughout the terminal. Cashiers' offices, equipment rooms, auxiliary room and closets are always locked.

14.3.7 FACILITY CONDITIONS

Exterior

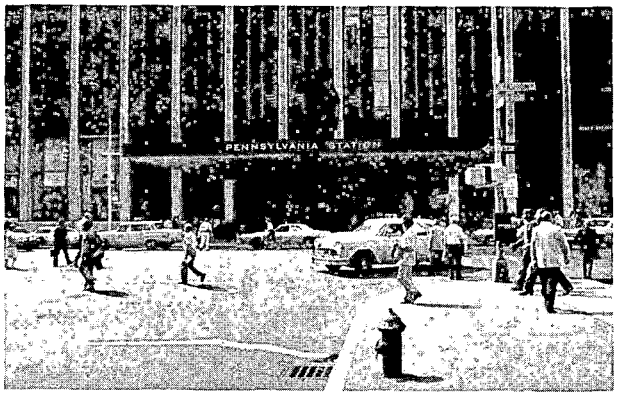
The exterior is of contemporary architectural design. The terminal is not visible from the outside, since the One Penn Plaza office and Madison Square Garden building complex are located above street level. All approaches are adequately protected against the weather. The structural integrity is good.

Interior

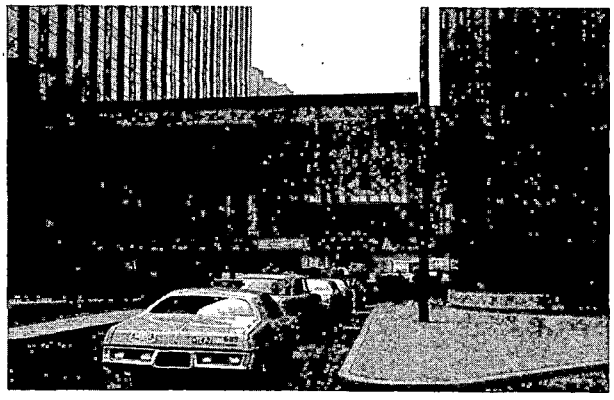
The interior is clean and well-maintained with modern, contemporary furnishings. Platforms are not affected by the weather since they are three levels below street grade. See photo 12.

PENNSYLVANIA STATION – NEW YORK CITY, NEW YORK

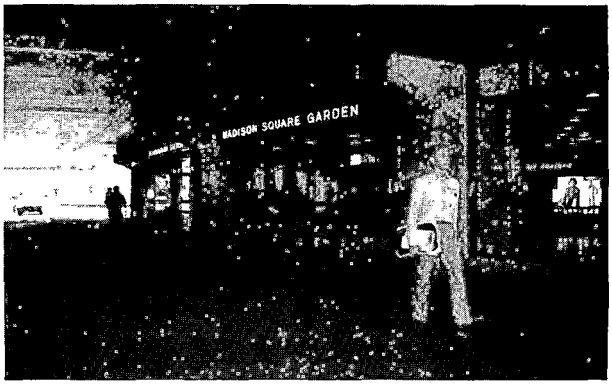
EXISTING FACILITY



1. Canopied Terminal Entrance from 7th Avenue



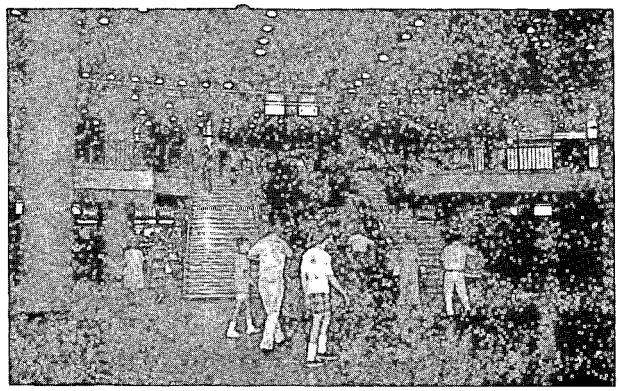
2. Vehicular Access Via Taxi Driveway



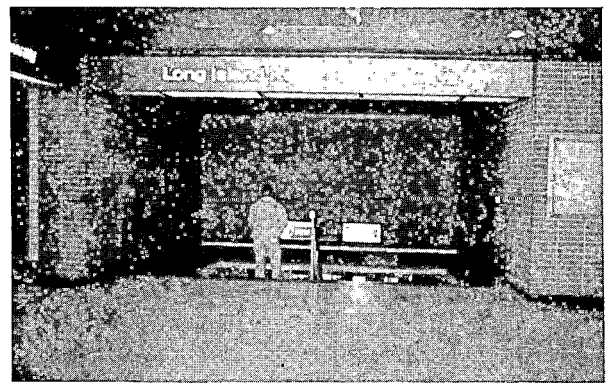
3. Entrance to "C" Level Lobby from Taxi Driveway

4. Main Lobby on "B" Level

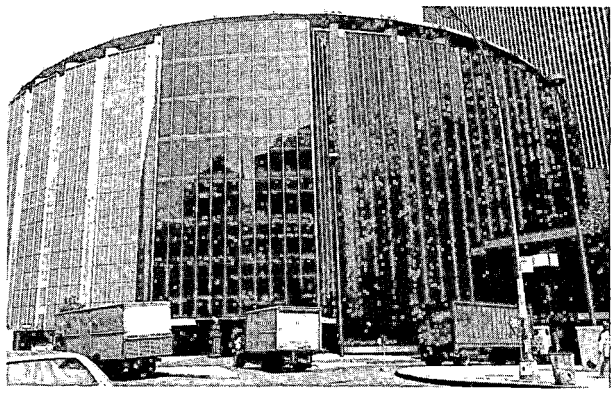
EXISTING FACILITY (Cont'd)



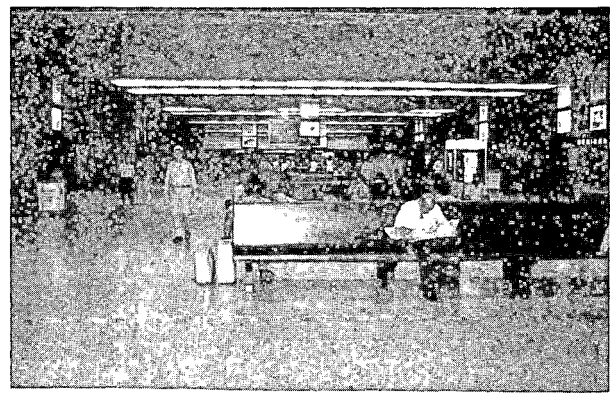
5. Mezzanine Concourse and Stairs to "B" Level Lobby



6. Stairway to Long Island Commuter Trains

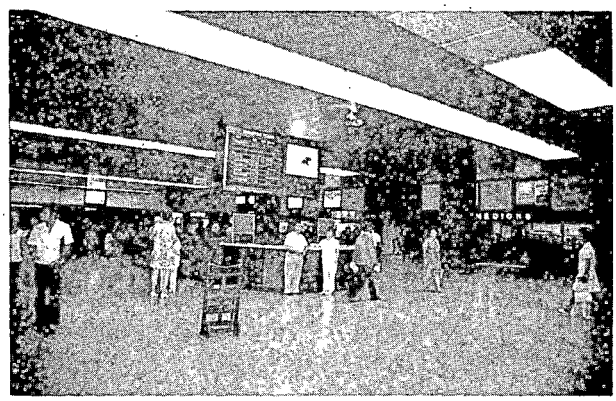


7. Entrance to "C" Level for Physically Handicapped Patrons



8. Main Waiting Room

EXISTING FACILITY (Cont'd)



9. Information Booth and Concessions in Waiting Room Area

10. Information Booth and Ticketing Area in Main Lobby

11. Baggage Check-in Counter on "B" Level

12. Train Platforms Level

14.4 FORECAST ACTIVITY LEVELS

14.4.1 PROJECTED DESIGN DAY PATRONAGE

The 1990 peak-design day is expected to be 125,500 commuters and 37,100 HSR patrons (one way) for a total of 162,000. Maximum HSR use of the terminal would depend on the development of improved connections with other transportation modes, including improved rapid transit, rail and pedestrian connections.

Present and proposed transit and railroad projects should greatly increase the accessibility of Pennsylvania Station for potential HSR users, and also provide direct links between the HSR service and the three major New York area airports. Improved access to Pennsylvania Station should support the projected high level of HSR use in New York City.

Peak-hour patronage is expected to reach 5,600 HSR and 48,600 commuter passengers for a total loading of 54,200.

14.4.2 PROJECTED MODE OF ACCESS

The present modes of access are not expected to change greatly by 1990. The subway system is still expected to account for approximately 50 percent of the arrivals, with nearly all the remaining arrivals being by bus, taxi or walking. Automobile access is expected to be very small.

Percentages of daily passenger arrivals, projected for 1990 by mode, are as follows:

	Percentage		
	Low	High	Median
Park-and-ride	1	5	2
Park-and-ride passenger	.5	2	1
Kiss-and-ride	1	5	2
Rail transit	40	50	50
Bus	10	20	20
Taxi and limousine	5	15	15
Walk	5	10	10

14.4.3 PARKING REQUIREMENTS

It is estimated that between 400 and 1,900 parking spaces, with a median value of 700 spaces, will be required for HSR passengers by 1990. Keeping the demand at the lower figure will largely depend upon improvements in rapid transit service and pedestrian circulation, and improved taxi and bus service to the terminal.

14.5 PLANS AND PROPOSALS

14.5.1 TERMINAL IMPROVEMENTS

The following projects are proposed that will affect this terminal. A high-speed rail passenger service from Rego Park, Queens, to Kennedy International Airport is under design. Also rail connections and station improvements, to permit operation of the Erie Lackawanna trains into New York City, have had preliminary design criteria developed.

14.5.2 FUTURE LAND USE PLANS

Redevelopment of a number of sites around the terminal for more intensive use can reasonably be expected by 1990.

The General Post Office building, west of the terminal, is presently being considered for reuse. It appears unlikely that the Central Post Office functions will remain at this site until the end of the century. Although the building will probably not be torn down, the site could be partially converted into high-rise office, residential, or even hotel use – possibly on top of the existing building.

Eventual redevelopment of the site, immediately north of the Statler Hilton Hotel, also is likely. This area is presently occupied by low-rise buildings, particularly eating and drinking establishments.

Redevelopment of some of the areas on 8th Avenue, south of the terminal, may also occur. These areas are presently a mixture of retail, business and residential uses, and are deteriorated. The future use of the General Post Office building could be a major stimulant in the redevelopment of these areas.

In summary, the general terminal area exhibits considerable signs of deterioration. However, it is likely to be an increasingly important focus in the city and therefore will probably undergo considerable redevelopment.

14.5.3 STREET AND TRAFFIC IMPROVEMENTS

The area between 28th and 42nd Streets and between 5th and 8th Avenues is presently the subject of a technical study for the Urban Mass Transportation Administration (UMTA), known as the Herald Square Improvement Project. The UMTA study will recommend a staged improvements program for pedestrian circulation underground, pedestrian and vehicular circulation above ground and for goods handling in the overall area.

Although no major street changes are likely within the immediate vicinity of Pennsylvania Station, some major changes may occur nearby. Improved traffic flow and traffic controls are

needed throughout the general area, especially at the complex intersections at Greeley and Herald Squares.

The intersection of Broadway, Sixth Avenue, and 34th Street, a block from the terminal, is currently one of the worst traffic spots in the entire city. The City Planning Department is examining alternatives to simplify this complex intersection and make it a two-phase instead of three-phase intersection.

The City Planning Department is also exploring the possibility of closing portions of Broadway to vehicular traffic, particularly between 32nd and 35th Streets; redirecting the flow of traffic on Broadway and 6th Avenue; and closing of sections of 33rd Street to traffic and converting it to a pedestrian facility.

Also under consideration are various alternatives for extensive improvements to and expansion of the West 33rd Street passageway's pedestrian capacity. Rehabilitation of the passageway would permit safer and easier pedestrian travel to the Herald Square area subways. At a minimum, the passageway would be cleaned up, and improved lighting and signing would be installed. Additional passageways are also being considered by the City Planning Department. One would be located under the basement of the Statler Hilton Hotel, connecting West 32nd and West 33rd Streets. Eventually, with redevelopment of the site, north of the Hilton, a passageway would also be located on the east side of Seventh Avenue, connecting West 33rd and West 34th Streets. To improve the above ground circulation, the Planning Department has also recommended the widening of selected sidewalks and pedestrian crosswalks in the general terminal area.

14.5.4 TRANSIT IMPROVEMENTS

Several subway lines have been proposed to furnish service to areas of Queens and the Bronx which are not currently served by rapid transit. Construction of these lines would be an indirect benefit to the HSR system and further encourage patronage of HSR for inter-regional trips.

The Interagency Task Force has proposed direct Erie Lackawanna service to Pennsylvania Station. The Morris and Essex Division, which would be re-electrified, and the Greenwood Lake/Montclair Line would meet the Penn Central main line at Kearny, New Jersey. A possible connection, at Secaucus, would provide Erie Lackawanna main line passengers direct service to Pennsylvania Station. The Pascack Valley and Bergen County Lines would also meet the Erie main line at Secaucus. This would eliminate the present transfer, at Hoboken, to PATH for midtown-bound commuters.

The Port Authority of New York and New Jersey has proposed a direct rail link between Pennsylvania Station and Kennedy International Airport in Queens, using the Long Island Rail Road. This link would greatly reduce travel time between midtown Manhattan and the airport.

The State of New York has recently proposed a west side rail line which would permit trains from Albany and other upstate areas to make direct connections with Amtrak's Washington service. These trains presently use Grand Central Station which has no connection to the south.

14.6 RECOMMENDED 1990 ACCESS/EGRESS AND PARKING PLANS

The recommended 1990 access/egress and parking plans, for Pennsylvania Station, New York City, include recommendations for strict parking regulations and other traffic controls to improve traffic flow in the general terminal area; improved information and directional signing for bus and subway routes as well as taxi stands; rehabilitation of subway stations and entrances to improve access to the terminal; rehabilitation of underground passageways to improve pedestrian access and increase safety; and, improvement of pedestrian circulation in and around the terminal to meet 1990 patronage requirements, The general concept plan is shown in Figure 14-8.

14.6.1 STREET AND TRAFFIC IMPROVEMENTS

In addition to the plans currently being studied to improve traffic flow around the terminal, parking regulations should be more vigorously enforced, particularly at bus stops and in no-parking zones. Double parking of cabs and delivery vehicles should be strictly controlled.

Vehicular turns, especially cab turns, from the west side of 7th Avenue into West 32nd Street are hazardous. Such turning movements should be more closely controlled. Measures to encourage additional use of the Penn Plaza Drive taxi stand would help to reduce traffic problems on 7th Avenue.

14.6.2 PARKING

Due to the present traffic situation, air pollution problems, and the high cost of a suitable site, no parking facilities are recommended at Pennsylvania Station. Instead, HSR patrons should be encouraged to use alternative modes of access to the terminal. The private market should be relied on to meet any parking demand which actually results from HSR service.

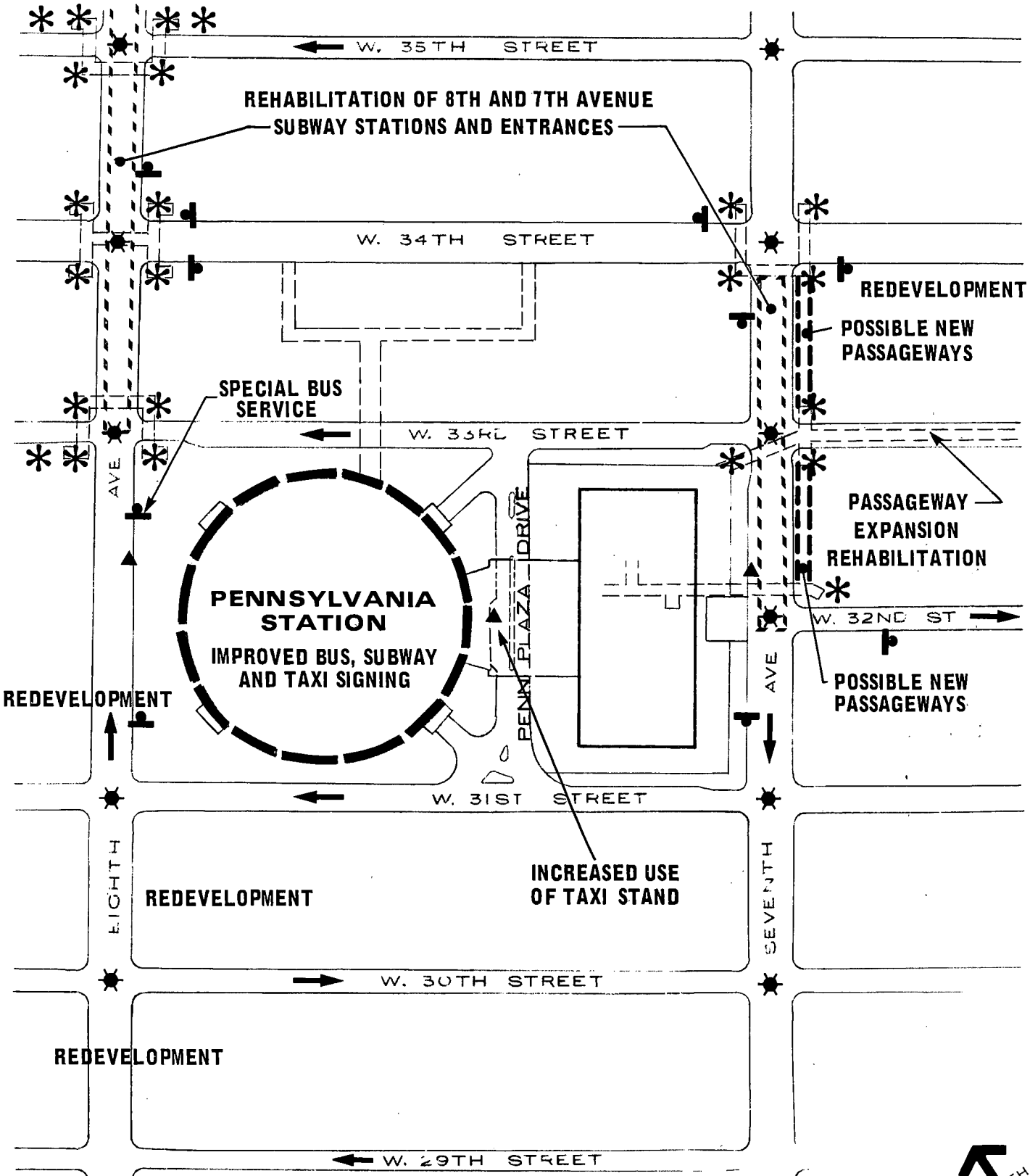
14.6.3 INTERMODAL TRANSFER

Although the existing level of rapid transit service to Pennsylvania Station is good, the subway stations are generally in poor condition. The 7th and 8th Avenue subway stations, and the PATH station and subway stations in the Herald Square area should be modernized. All connecting passages should be rehabilitated.

Additional and larger directional and information signs, for subway and bus routes, should be placed inside and around Pennsylvania Station. Signs should also be placed in the terminal to indicate that the main taxi stand is on Penn Plaza Drive. This should help reduce traffic congestion on 7th Avenue caused by double parking of cabs.

Improved pedestrian circulation around the terminal, both above and below ground, is greatly needed. Sidewalk obstructions should be removed and subway entrances should be relocated within buildings. All underground passageways should have improved signing and increased policing. The West 33rd Street passageway, from Pennsylvania Station to Herald Square, should be totally rehabilitated.

The 1990 concept also includes plans for a new bus stop on 7th Avenue, just south of the



1990 CONCEPT
PENNSYLVANIA STATION
NEW YORK, NY

FIGURE 14-8

terminal entrance. This would reduce the need to cross 33rd Street to get to the present bus stop. Provisions have also been made for special bus service between the terminal and the proposed New York Convention Center, including a bus stop on 8th Avenue.

14.7 RECOMMENDED 1990 PASSENGER TERMINAL PLANS

The existing terminal facility covers an area of approximately 1,000,000 square feet. Since it is impossible to increase this area either vertically or horizontally, improvements to the terminal are necessary to satisfy 1990 patronage requirements. Separation of HSR traffic from commuter traffic was considered the most important factor in improving pedestrian circulation to accommodate 1990 peak loads. Since commuters would account for approximately 70 percent of all passenger traffic during peak hours, all commuter activities would be located on the "A" level.

Proposed terminal plans include widening of the center concourse ("A" level); extension of the Long Island concourse ("A" level) to form an east concourse with direct access to the three HSR platforms; widening of the east-west concourse ("B" level); provision for additional ticket facilities for HSR patrons; expansion of the main waiting area ("B" level) including increased seating capacity; widening of entrances to corridors leading to subways; additional stairways and escalators; and, expansion of passenger facilities. The proposed terminal plans are shown in Figures 14-9 and 14-10.

14.7.1 PASSENGER ACCESS AND EGRESS

Access to the terminal would be essentially the same as it is at the present time:

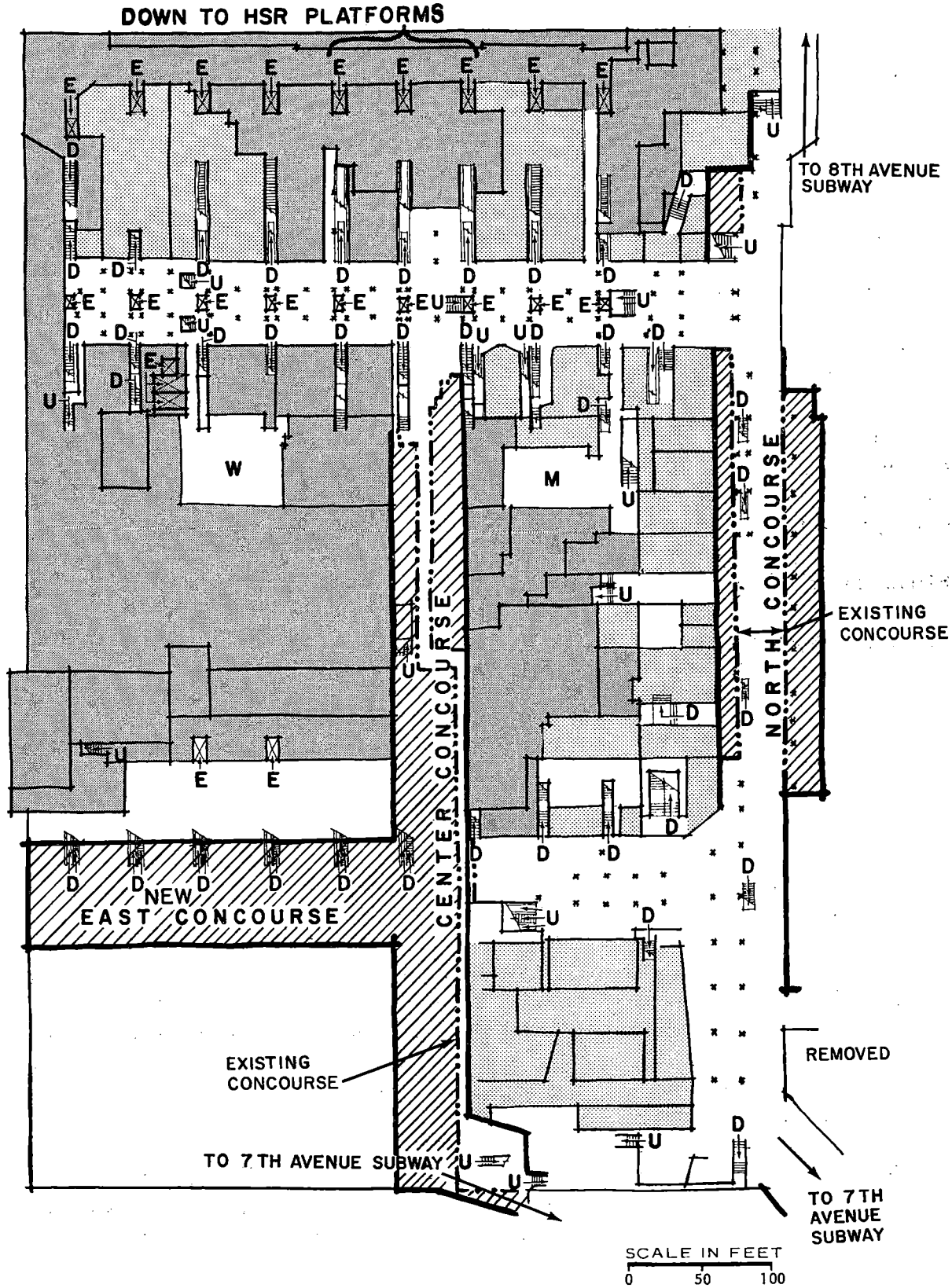
(1) Via 7th Avenue entrance to stairs and escalators to the "B" level concourse.

(2) Via north-south taxi driveway to the mezzaine lobby on the "C" level.

(3) Via entrances at the northwest and southwest corners along 8th Avenue.

To accommodate the projected 1990 patronage, additional doorways and stairways would be provided from the mezzanine lobby ("C" level) to the "B" level. The east-west pedestrian concourse, leading from 7th Avenue to the ticket lobby, would be widened to at least the combined width of the north and south corridor and preferably an 84-foot width. Additional stairs and/or escalators would be installed. The vestibule at the bottom of the 7th Avenue stairwell would be removed to avoid excess queuing in this area. A permanent red-cap station would be located off the taxi driveway.

On the "A" level, the north concourse would be widened from 32 to 48 feet; the center concourse would be widened from 12 to 32 feet. The existing Long Island concourse would be extended south, continuing 65 feet in width for the full length of the terminal, to form an east concourse. Space in the newly extended concourse would be used as a waiting area for commuter passengers. New stairways and/or escalators would be installed from the east end of platforms No. 1 through No. 6 to the new east concourse.



PLAN - LOWER LEVEL "A"

LEGEND

CONCESSION

RAILROAD FUNCTION

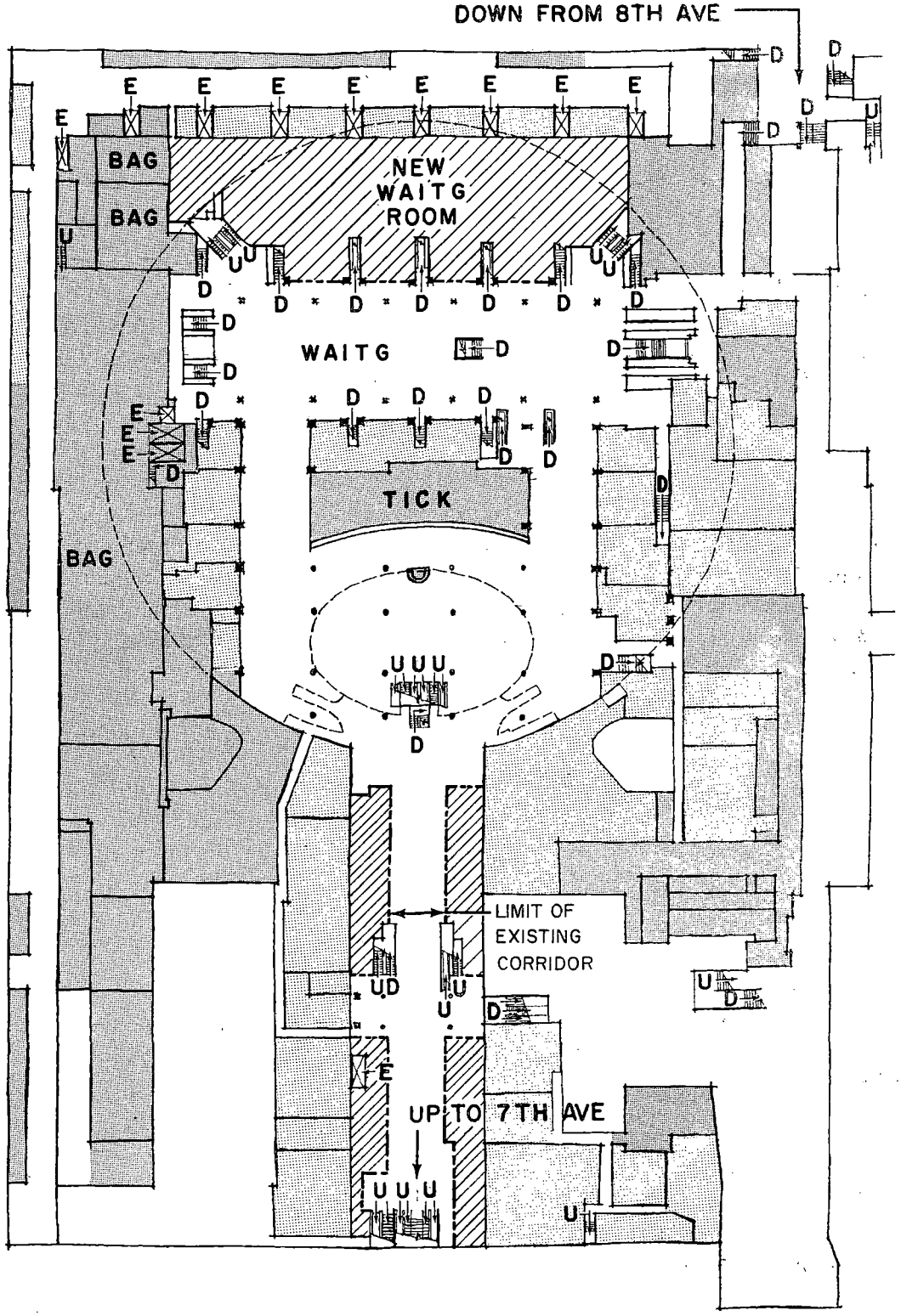
NEW ADDITION

INCREASED CIRCULATION

1990 CONCEPT
PENNSYLVANIA STATION
NEW YORK, N Y

FIGURE 14-9

DC/STV



NORTH

PLAN - MAIN LEVEL "B"

LEGEND

CONCESSION

RAILROAD FUNCTION

INCREASED CIRCULATION

1990 CONCEPT
PENNSYLVANIA STATION
NEW YORK, N Y

FIGURE 14-10

To further alleviate passenger congestion on "A" level, the entrances to the corridor leading to the 8th Avenue (independent) subway (northwest corner) and the two entrances to the corridors leading to the 7th Avenue subway (east and northeast corners) would be widened.

14.7.2 PASSENGER PROCESSING

Functional Flow

The majority of HSR passengers would arrive at the taxi driveway. From there they would enter the mezzanine lobby and proceed down to the "B" level and the ticket lobby.

Baggage would be checked in at the taxi driveway, the mezzanine lobby or the ticket lobby, with red cap service; or at the baggage counter on the south side of the "B" level, near the ticket counters. Baggage would then be conveyed to the passengers as they boarded the trains. Handicapped passengers would utilize elevators to the ticket purchasing area, waiting area and the trains.

After purchasing tickets, passengers would proceed to the adjacent waiting room. The waiting area would have a cluster of seating around each of the train access gates, so that passengers could select seating in the immediate area where they will descend stairs and escalators to the platforms for boarding.

Areas for commuter ticket purchase, waiting and access to commuter train platforms would be confined to the "A" level. Commuter traffic would flow directly from street grade to the "A" level via stairs and escalators to avoid interference with HSR passengers.

Information

An information booth would be located in the ticket lobby on the "B" level. The information booth would include an electronic train schedule board for departing and arriving Amtrak and Metroliner trains, train schedule brochures, a public address system, paging system and red-cap call station.

Ticket Purchase

Adequate ticket facilities would be provided to serve HSR passengers on the "B" level. Commuter tickets would be purchased only on the "A" level. New commuter ticket facilities would be provided there.

Baggage Handling

Baggage would be checked in with red cap service at any of the several points between the main entrances to the terminal and the ticket lobby. Passengers could also check in their own baggage at the baggage counter on the "B" level. Baggage would be conveyed by dolly-type carts and elevators to desired points of delivery.

Waiting Area

The main waiting area, would be adjacent to the ticket area. The waiting room would be increased to twice its present size, to approximately 39,000 square feet in area. Adequate seating to accommodate peak-hour demands would be provided in cluster-type seating arrangements. Electronic train schedule boards would also be provided at convenient locations in the waiting areas.

14.7.3 PUBLIC SERVICES

Rest Rooms

Men's and women's rest room facilities would be located on the "B" level, convenient to the main waiting room. Rest room facilities would also be provided for commuter passengers in the new east concourse on the "A" level.

Telephones

Telephone booths would be located at various points throughout the terminal area. A telephone center with operator service would aid passengers with long-distance calls and provide information and phone directories for other major cities.

Storage Lockers

An adequate number of coin-operated storage lockers would be located in the ticket and waiting areas on the "A" and "B" levels. The lockers would be out of the way of the main pedestrian traffic routes, but in close proximity to the waiting rooms and ticket lobbies.

Postal Facilities

A fully-functional post office facility would be provided on the "B" level.

14.7.4 CONCESSIONS

Due to the need for additional waiting areas for both HSR and commuter passengers, as well as the need for widening the concourses and the addition of new concourses on the "A" and "B" levels, a number of the concessions would have to be relocated. However, there is plenty of space available for relocating these concessions.

14.7.5 RAIL PASSENGER OPERATIONS FACILITIES

Operational facilities and offices for rail personnel would be located on the "B" level behind ticket counters and in peripheral areas. Most of the rail personnel facilities would be located on the "A" level. Some rail operational facilities may have to be relocated to new areas, including some outside of the terminal limits.

Security

Security and surveillance would be maintained with the aid of a full-time security force and a TV monitoring system. The monitoring system would be operated from the operational facilities office. Twenty-four hour security would be provided.

14.7.6 UTILITIES

Additional heating, ventilation, air conditioning, electrical service and lighting would be provided on both "A" and "B" levels, as required.

14.8 CAPITAL COSTS

Unit costs based on current prices have been developed for major renovation and construction items. These unit prices and the illustrated concept sketch plans form the basis for the following estimate of construction costs:

Terminal work, including renovation and new additions	$ 7,400,000
Escalators, stairs and elevators for HSR facilities only	375,000
HVAC, plumbing and lighting	4,250,000
CCTV surveillance and electronic information systems	340,000
Subtotal terminal work	$12,365,000
Contingency – 20%	2,473,000
Total terminal cost	$14,838,000

Costs of adjustments to catenary systems, which may be required due to proposed construction within the terminal area, are not included in this estimate.

14.9 SCHEDULING AND PHASING OF CONSTRUCTION

Terminal reconstruction and site improvements would be undertaken during a 24-month period. The following schedule is a recommended procedure for phasing the work involved at this terminal:

(1) Work involved on the "B" level should include the construction of additional stairways from the Mezzanine Lobby, and the widening of the east-west concourse and additional stairs and escalators installed. This would include all required demolition, re-structuring, and refinishing of these areas.

(2) Removal of the vestibule at the bottom of the 7th Avenue stairwell should be done at this time, and the area refinished.

(3) At this time, particular emphasis is placed upon the protection of the public by suitable barricades. Obstructions which could impede pedestrian traffic flow or present a hazardous condition, for the patrons using this area of the terminal, should be removed.

(4) Relocation and/or removal of certain concession space will become necessary due to space required for passenger use on the "B" level, including the expansion of waiting room space on this floor.

(5) On the "A" level, reconstruct the north corridor to make it wider; the center corridor should also be widened.

(6) Extend the L.I. concourse southward for the full length of terminal (new waiting space for commuter passengers).

(7) Construct new stairs and escalators from the new concourse area ("A" level) to platforms No. 1 through No. 6.

(8) Widen the 8th Avenue approach and two approaches to 7th Avenue.

(9) Provide suitable shoring, bracing, structural reinforcement, as required, and protection for passenger and the public safety.

(10) Install additional HVAC, including all required plumbing and drainage to accommodate the work being implemented.

(11) Install new acoustic-tile ceilings and recessed lighting; paint and/or refurbish areas on the "A" and "B" levels.

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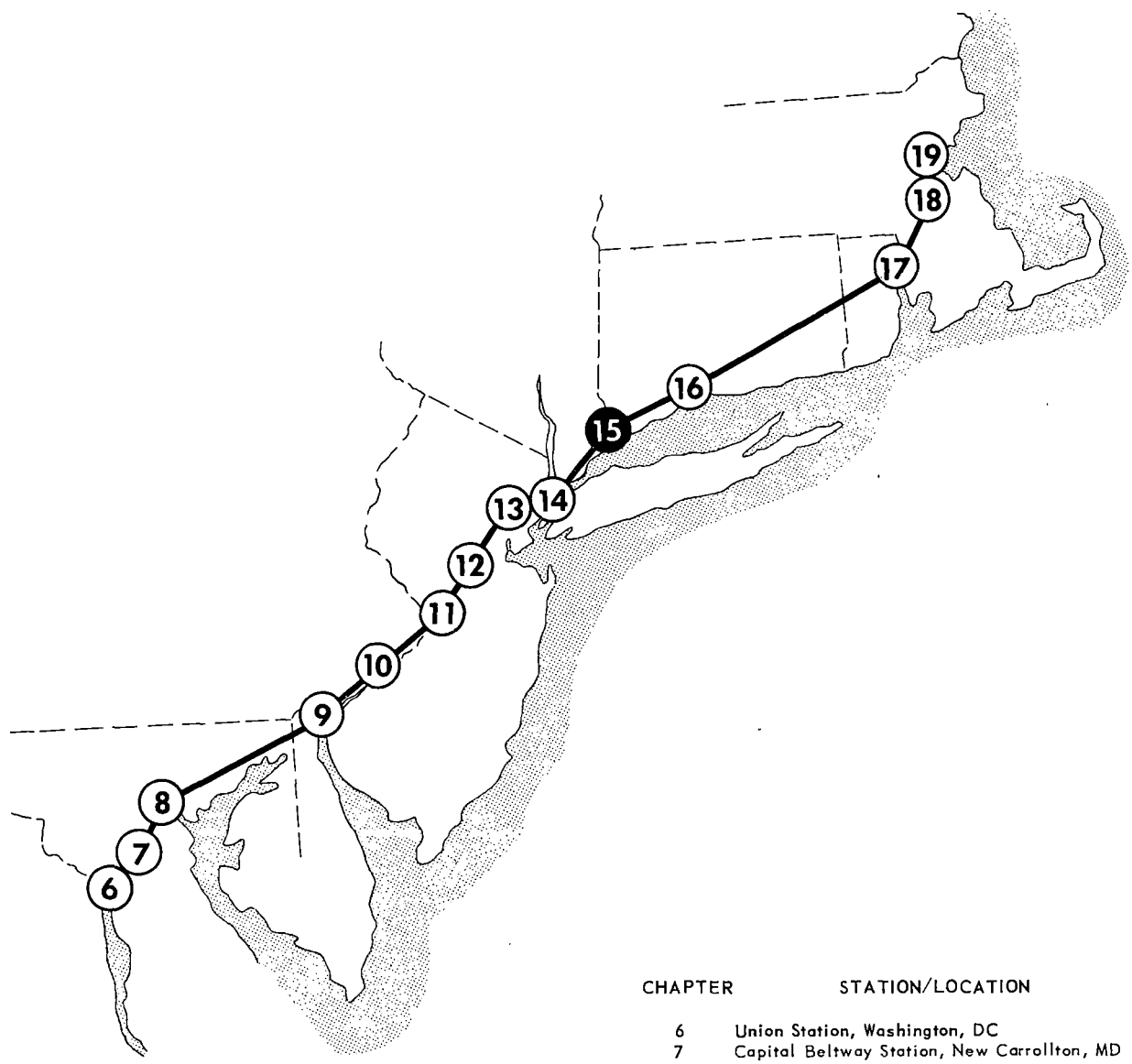
Personal interview

Mr. Greg Matviak
Chief of Facilities Planning and Design
Division of Transportation and Regional Planning
New York City Planning Department

STATION LOCATIONS ALONG NORTHEAST CORRIDOR



CHAPTER	STATION/LOCATION
6	Union Station, Washington, DC
7	Capital Beltway Station, New Carrollton, MD
8	Penn Central Station, Baltimore, MD
9	Wilmington Station, Wilmington, DE
10	Penn Central Station, 30th Street, Phila., PA
11	Trenton Station, Trenton, NJ
12	Metropark Station, Iselin, NJ
13	Penn Central Station, Newark, NJ
14	Pennsylvania Station, New York, NY
15	Stamford Station, Stamford, CT
16	New Haven Station, New Haven, CT
17	Union Station, Providence, RI
18	Route 128 Station, Dedham, MA
19	South Station, Boston, MA

15.0 STAMFORD STATION, STAMFORD, CONNECTICUT

15.1 STATISTICAL FRAMEWORK

15.1.1 OWNERSHIP AND USERS

The Stamford Station terminal building is owned by a private developer, Transportation Plaza Associates. The State of Connecticut, through a 60-year lease and option to purchase with the trustees of the Penn Central Transportation Company, controls tracks, platforms and air rights within the rail right-of-way, from the main line tracks to a plane 47 feet above the rail. Transportation Plaza Associates owns air rights above this plane and, as of late 1974, was negotiating the lowering of air rights by sublease to 23 feet above the rail.

Stamford Station is used by Amtrak and the Penn Central. Commuter service is furnished by the Penn Central under contract to the Metropolitan Transportation Authority and Connecticut Transportation Authority.

15.1.2 PROPERTIES AND FACILITIES

Stamford Station is a one and one-half-story brick building located on the north (westbound) side of the four-track main line. Ancillary to the terminal are two canopied high-level platforms, connected by stairways to a pedestrian underpass. A mirror image of the train terminal, located across the tracks and along the eastbound (south) platform, is used by Greyhound, Trailways and The Connecticut Bus Company as a bus depot. Paved areas, adjacent to both buildings and platforms, are used for parking space and for vehicular access roadways.

The brick buildings were constructed in 1895. The pedestrian underpass and stairways are of more recent construction. High-level platforms and canopies were constructed during 1972-1973.

15.1.3 CURRENT ACTIVITY LEVELS

Most trains using the Stamford Station are commuter trains operating into Grand Central Station in New York City. In 1974, the Penn Central operated 46 through trains between New York and New Haven via Stamford, and an additional 75 commuter trains between New York and Stamford. Connections are provided in Stamford for New Canaan passengers. The Penn Central operates 35 trains daily between New Canaan and Stamford. Approximately 2,200 commuter trips originated or terminated in Stamford on a peak day in 1974.

Amtrak operated 16 trains daily between Boston and New York via Stamford. In addition, there were two Metroliner trips between New Haven and Washington, D.C. Approximately 100 Amtrak patrons departed from or arrived at Stamford Station on a peak day in 1974.

The morning peak-hour at Stamford Station is between 7 a.m. and 8 a.m. with 13 trains using the terminal. The evening peak-hour occurs between 8 p.m. and 9 p.m. when 11 trains use the terminal.

The automobile dominates modes of access to the terminal. Approximately 75 percent of all trips, to and from the terminal, are park-and-ride or kiss-and-ride. Remaining trips are made by bus, taxi or on foot.

15.2 STATION VICINITY INFRASTRUCTURE

15.2.1 LOCATION CONSIDERATIONS

Figure 15-1 shows Stamford Station in relation to the regional transportation network and existing and proposed activity centers, which are also listed in Table 15-1.

Location With Respect to Regional Highway System

The Stamford Station is in a favorable location with respect to the major regional highways serving the area. Two east-west freeways, the Merritt Parkway and the Connecticut Turnpike, pass through Stamford and serve automobile traffic between southwestern Connecticut and New York City. The terminal at Stamford is located adjacent to Exit 7 of the Connecticut Turnpike. The Merritt Parkway is approximately four miles north of the terminal. Washington Boulevard, a major north-south arterial in Stamford, links the two freeways.

Traffic on most of the Connecticut Turnpike and Merritt Parkway is expected to exceed capacity by 1980.

Relationship to Other Inter-Regional Transportation Facilities

Intercity bus service is readily accessible from Stamford Station since Greyhound and Trailways' buses use the depot south of the terminal. Greyhound operates 12 trips daily to Providence, Boston, New York and Vermont. Trailways operates four trips daily to Boston and New York.

Stamford has relatively poor access to regional air transportation facilities. Most Stamford area residents use the J.F. Kennedy International and La Guardia Airports, requiring at least a 45-minute drive. Limousine service is available. Westchester County Airport, offering limited commercial-air service, is about 12 miles from Stamford in White Plains, New York.

Existing Bus Service

Bus service in Stamford is furnished by the Connecticut Company and the Connecticut Department of Transportation. Buses on six of the nine local routes stop at the bus depot south of Stamford Station. Buses operate on headways ranging from less than 30 minutes to one hour. No night or Sunday service is furnished, All routes pass through Atlantic Square, a main transfer point in the Stamford CBD.

Additional bus service is furnished from Atlantic Square to Port Chester, New York, by Valley Transportation, and to the Bronx, New York, by West Fordham.

Relationship to Activity Centers

Stamford is located in the heart of a generally affluent area of southwestern Connecticut. Commuting from the area to New York City is extensive. In addition, recent years have seen the spread of office and research facilities throughout southwestern Connecticut.

Some 30,000 people commute daily to work in Stamford. This total includes over 5,000 people

who commute from New York State. On the other hand, almost 15,000 people commute daily from the Stamford area (including Greenwich, New Canaan and Darien) into New York State, mainly to New York City.

The population of the city is only 109,000 (1970), but Stamford is the regional center for an area three times that population size. The Stamford area was designated as one of the "metropolitan communities" in the Tri-State area by the Regional Plan Association of New York in its "Second Regional Plan", with downtown Stamford as its center. Downtown Stamford is also proposed in the Southwestern Connecticut Regional Plan as a major business, commercial and cultural center for that part of Connecticut from the New York state line to Westport, Connecticut. This area had a population of 334,000 in 1970, and projections indicate a population of 405,000 by 1990.

The 1970 "Basic Policies for the Master Plan" estimated that the city of Stamford itself could accommodate 170,000 people on the basis of its Master Plan and 1970 Zoning Map. Currently, the Stamford Planning Board projects a city population of almost 117,000 by 1980 and nearly 122,000 by 1985. This represents a substantial decline in previous levels of growth. Growth between 1970 and 1980 is projected to be 7.4 percent, compared to 17 percent between 1960 and 1970.

In 1973, the city of Stamford contained the corporate headquarters of 21 companies with a total employment of almost 7,000, excluding manufacturing. The three largest facilities, each with around 1,000 employees, are Pitney Bowes, General Telephone and Electronics and Olin Corporation. Bloomingdale's and Lord and Taylor, two of New York's biggest department stores, have large branch stores in Stamford.

The terminal is located a few blocks south of the Stamford central business district which is a regional retail hub. Parts of the business district exhibit characteristics of blight and deterioration, but an extensive renewal program is helping rejuvenate much of the area. This renewal area contains most of the individual major centers of activity, including major office and commercial facilities, in downtown Stamford.

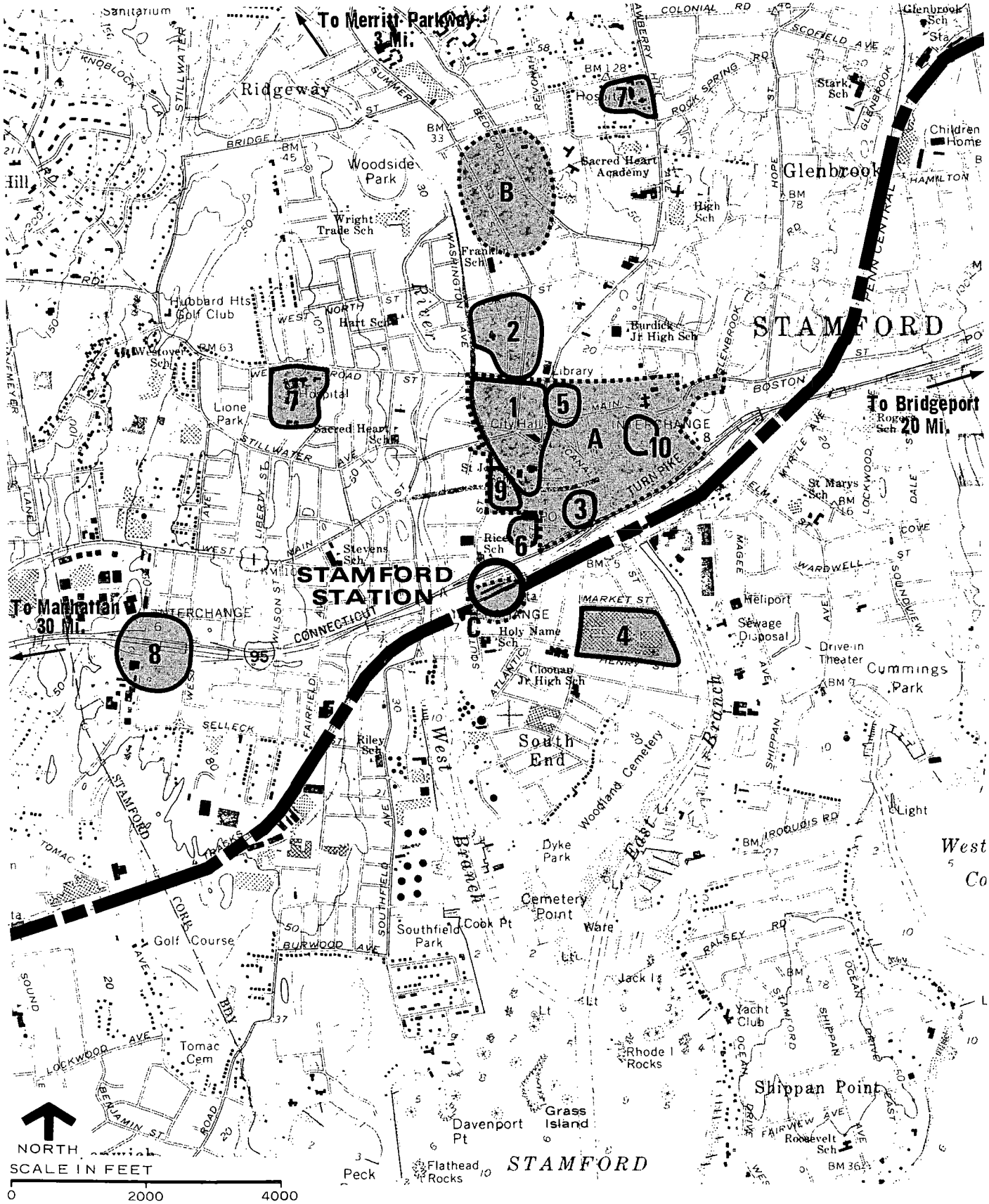
The Municipal Building and the Post Office are two blocks from the terminal on Washington Boulevard. Several of the stores, along this section of Washington Boulevard, are presently vacant.

Interstate 95 (the Connecticut Turnpike) and the paralleling railroad tracks separate the Stamford CBD from the area of the city known as the South End. The South End is an older area of the city, and is comprised of a mixture of residential and industrial land uses. The Pitney Bowes Corporation has its headquarters and extensive facilities in the area. Residences are largely those of low to moderate-income families and, in the general area of the terminal, many of the homes in the South End exhibit characteristics of deterioration.

15.2.2 LAND USE

Characteristics of the Immediate Terminal Area

The terminal area and local circulation system are shown in Figure 15-2.



STATION LOCATION
STAMFORD STATION
STAMFORD, CT

FIGURE 15–1

TABLE 15-1

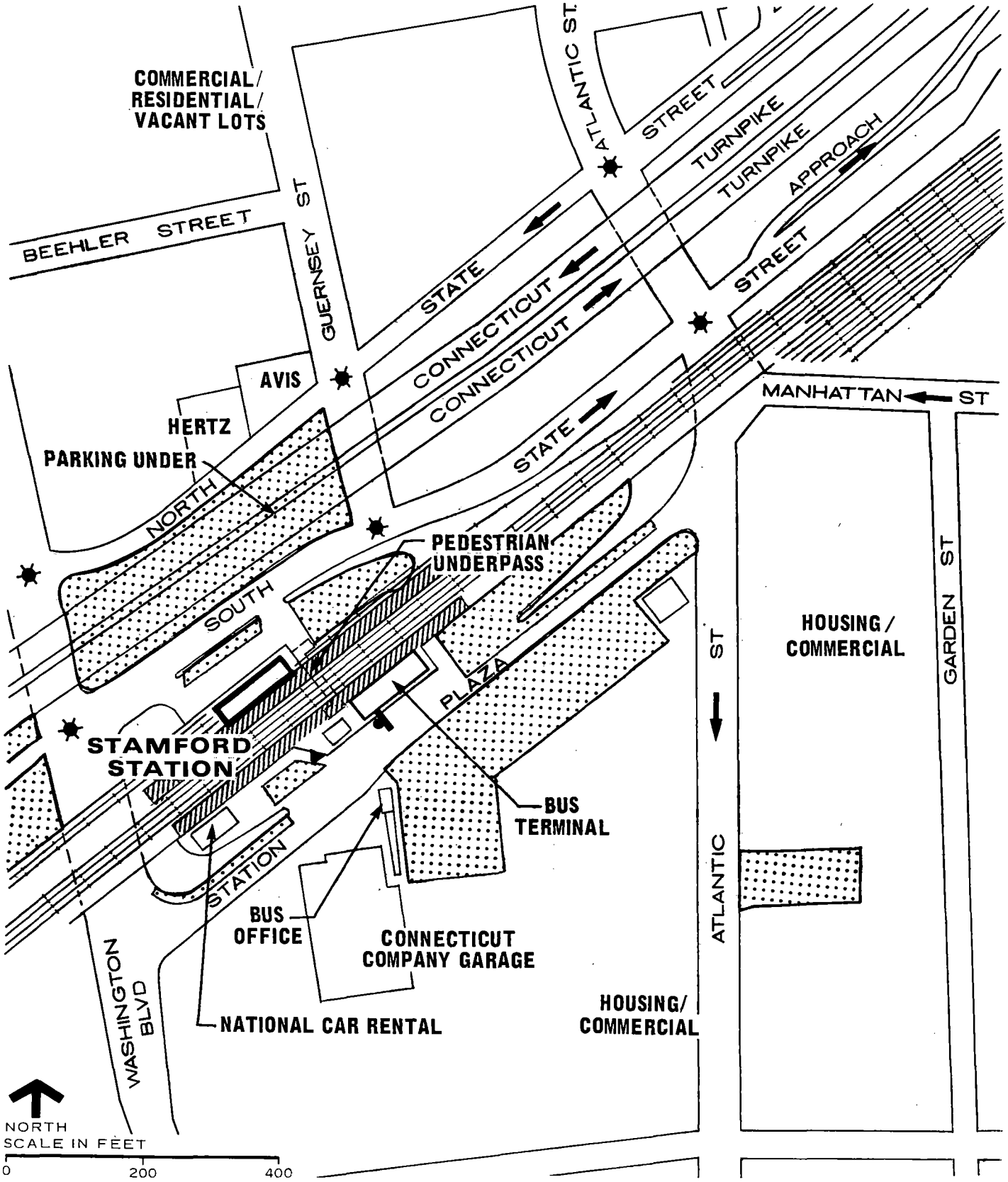
ACTIVITY CENTERS, CITY SETTING

EXISTING ACTIVITIES

1	Stamford central business district (present major retail area, including Bloomingdale's)
2	Office concentration – including Reinhold Publications and Georgia Pacific
3	G.T. and E. Headquarters
4	Pitney Bowes Headquarters
5	Landmark Tower and Landmark Square
6	Municipal Building, Post Office
7	Hospitals
8	Howard Johnson's Lodge, Holiday Inn (both under construction)
9	St. John's Towers
10.	New Hope Towers

PROPOSED ACTIVITIES

A	Southeast Quadrant Urban Renewal Area
B	Proposed major retail commercial development (general vicinity)
C	Transportation Plaza



NOTE: TOTAL SURFACE PARKING - 834 CARS

EXISTING STATION ENVIRONS
STAMFORD STATION
STAMFORD, CT

FIGURE 15-2

The immediate terminal area is generally in mixed land uses with older structures, many of which are in a state of disrepair. Street lighting is generally poor, and petty vandalism and minor street crime appears to be a problem in the area.

Immediately south of the terminal, there is a Pitney Bowes training facility on Washington Boulevard, several automobile-related businesses, the bus garage, a gas station and small stores and residences.

North of the terminal, beyond North State Street, lies a relatively new, but now vacant, office structure, which formerly served as the American headquarters for Imperial Chemical Industries. Rice Elementary School, at the corner of Washington Boulevard and North State Street, is now little used. The remaining area along North State Street is occupied by the Hertz and Avis rental car companies, some older structures and the new GTE headquarters.

The Stamford Community Renewal Program report of 1969 provides information on the population, characteristics and physical conditions of the general areas north and south of the terminal and railroad tracks. Planning factors in the terminal area are shown in Figure 15-3. Activity centers and proposed activities are listed in Table 15-3.

North of the tracks, the CBD serves a multiple role in the City of Stamford; as a neighborhood commercial center, as the commercial hub of the Stamford S.M.S.A. and as a future sub-center of the New York Metropolitan District. The area is the second most densely populated part of the city and has a great many substandard structures. Excluding the urban renewal area, 30 percent of the residential structures and 25 percent of the non-residential structures were substandard in 1969. One of several factors characterizing housing in the area is the relatively advanced age of the structures. The area has some of the worst environmental blight in the city, due to land crowding, land use conflicts, street frontage on major arterials and proximity to the railroad and Turnpike.

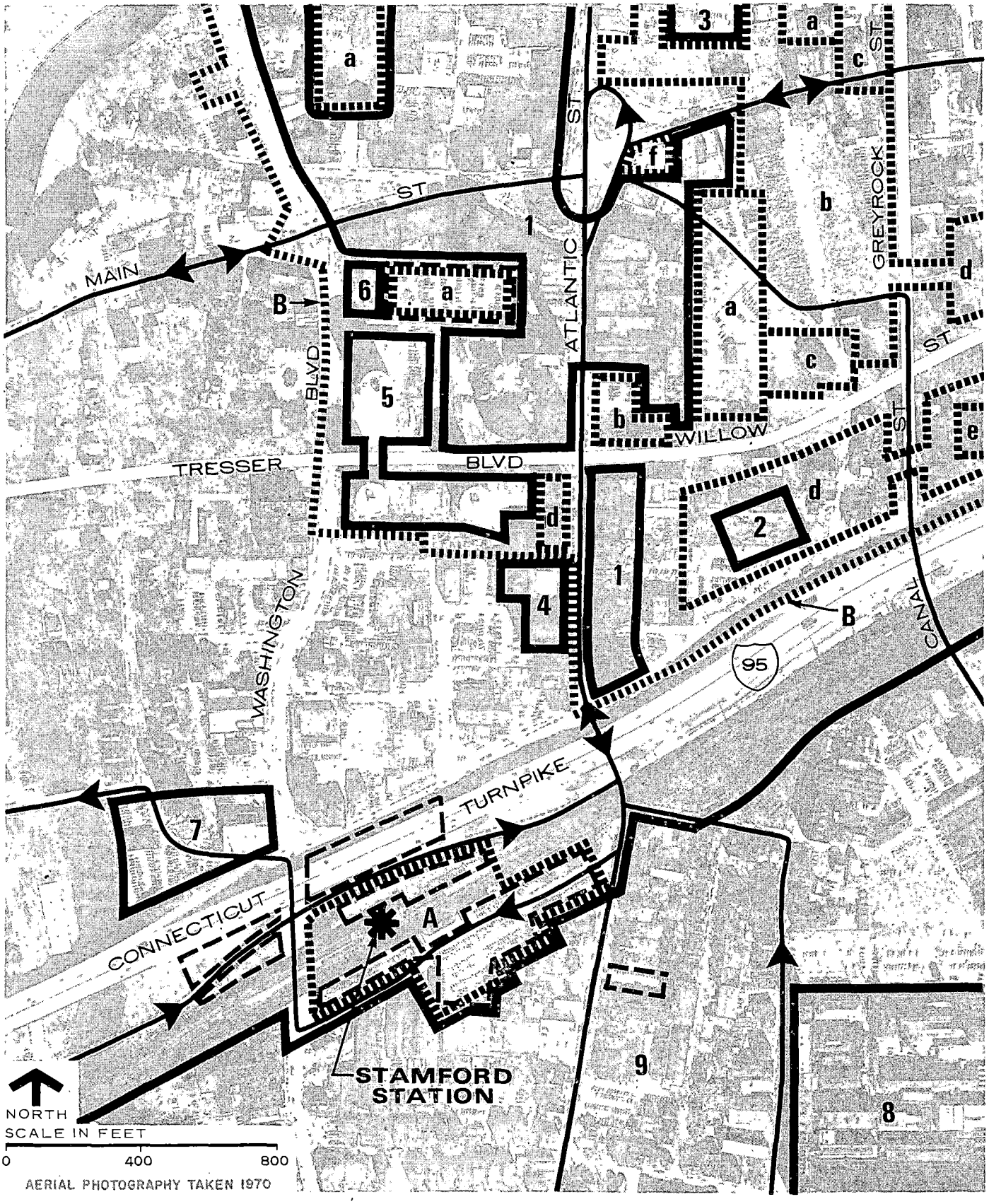
The area south of the tracks (the Waterside South End area), has historically been Stamford's major industrial area, with the major, industrial land user being the Pitney Bowes Corporation. This area is heavily blighted and contains a large amount of substandard housing, one-fifth of the city's total.

The general area, south of the terminal, has been zoned for industrial use since 1926, but more than half of it is used for residential purposes. There appears to be no trend toward increased industrial use.

A large urban-renewal project is currently transforming much of the area northeast of the terminal. Most of the project is shown in Figure 15-3. Known as the Southeast Quadrant Urban-Renewal Project, the site covers 130 acres. New utilities, roads, housing, offices, commercial facilities and a parking garage have already been constructed on the site.

Major buildings, within the renewal project, include Landmark Tower and the GTE corporate headquarters. Landmark Tower is a 21-story office building. Construction is now in progress on the several low-rise buildings which will occupy the plaza around the tower.

The new $40-million GTE building provides space for over 1,000 employees. Ultimately,



LEGEND

PARKING

BUS ROUTE

EXISTING ACTIVITY CENTER (SEE TABLE 15–2)

PROPOSED ACTIVITY CENTER (SEE TABLE 15–2)

PLANNING FACTORS
STAMFORD STATION
STAMFORD, CT
FIGURE 15–3

TABLE 15-2

ACTIVITY CENTERS, GENERAL TERMINAL AREA

EXISTING ACTIVITIES

1 Present Retail Business Area and area to remain which is part of present renewal project

2 General Telephone and Electronics Headquarters

3 Landmark Tower (21-story office building)

4 Post Office and Stamford Municipal Building

5 St. John's Towers

6 New YMCA building

7 Imperial Chemical Industries (vacant office tower, laboratories, parking)

8 Pitney Bowes Company

9 South End – Mixed land uses, largely residential and industrial

PROPOSED ACTIVITIES

A Transportation Plaza – Intermodal Transportation center including new railroad terminal, twin office towers, multi-level parking garage

B Southeast Quadrant Urban Renewal Area

a) Parking Garages

b) Retail Commercial and Plaza area

c) Department Stores

d) Raised Platform area

e) Hotel – Motel

f) High-rise offices

two additional facilities, equivalent in size to the GTE headquarters building are envisioned for the area.

Additional completed buildings, within the renewal project, include two housing complexes and a parking garage. Two additional garages are planned. The three garages will have a capacity of 5,000 cars. The two completed housing projects provide 552 units of low and moderate-income housing.

Other planned facilities, within the renewal project, include 10 acres of office space, 200 housing units, a 350-unit hotel, with convention facilities, and a regional shopping-center complex, with two department stores. Plans for the hotel were recently finalized and construction is to begin on the site indicated in Figure 15-3.

15.3 EXISTING PASSENGER HANDLING FACILITIES

15.3.1 PASSENGER ACCESS AND EGRESS

Passengers arrive at Stamford Station by bus, taxi, limousine, auto and to a lesser degree, on foot. See photo 1. Roadway access to the train terminal is via West Station Drive, and to the bus depot via East Station Drive. These roadways connect parking areas, adjacent to the terminal and bus depot, to Washington Boulevard and Atlantic Street. See photo 2.

Passengers alight at curbside, and enter the buildings at sidewalk grade. A small canopy protects the train terminal entrance; none exists at the bus depot entrance. A large canopy protects the eastbound taxi stand, underpass approach and platform stairs; another large canopy similarly aids passengers approaching the westbound underpass and platform stairs. Short sections of canopies provide overhead protection for the train platforms.

Stairs and pedestrian ramps rise approximately four feet from the pavement to each platform. See photo 3. A long flight of stairs connects the west end of the eastbound platform to the South Street underpass sidewalk.

Existing Highway Access

The terminal has excellent access to the Connecticut Turnpike (I-95) which provides an east-west link through Stamford to Westchester County, New York, and New Haven, Connecticut.

Directly north of the terminal lies South State Street, a three-lane eastbound one-way street. Beyond State Street is the elevated structure of the Connecticut Turnpike, with parking underneath between Washington Boulevard and Atlantic Avenue. Still farther north is North State Street which is one-way westbound.

The on-ramps for the Connecticut Turnpike are located within a block of the terminal, at Washington Boulevard and Atlantic Street. Both Washington Boulevard and Atlantic Street, which flank the terminal, are major arterial streets. The off-ramps for the Turnpike are at Atlantic Street and Greenwich Avenue, also within one block of the terminal.

Extensive improvements are in progress to the arterial system in downtown Stamford. Willow Street – Tresser Boulevard is the main east-west road through downtown, while Atlantic Street

and Washington Boulevard are the main north-south arterials linking the downtown area and the terminal. Congestion appears to be a problem on these latter two streets at peak periods.

Other Connections

There are two taxi companies in Stamford. The major one, Stamford Taxi, Inc., operates from a facility next to the bus depot. Twenty cabs are operated from the station; these cabs are readily available. The second cab company, West End Taxi, operates two cabs.

Kiss-and-ride is an important mode of access to the terminal and drop-offs and pick-ups occur in a haphazard fashion around the terminal and on Station Plaza Drive, south of the tracks.

Rail passengers have their choice of three car rental agencies near the terminal. Hertz and Avis are located on North State Street across from the train terminal. National Car Rental is housed in a trailer near the bus depot. All three agencies have cars readily available.

15.3.2 PARKING

Because of an overwhelming demand for commuter parking, and the present physical constraints of the site, parking availability is inadequate for the present demand.

Within a 1,200-foot walking distance of Stamford Station, there are 834 parking spaces available for rail passengers. Of this total, 726 spaces are in lots and 108 are on-street spaces. All spaces are metered with 12-hour limits. The parking rate is 6 hours for $0.25. All six of the lots are operated by the Stamford Parking Authority. Long-term on-street parking is permitted on North and South State streets, South Street and Guernsey Street. Railroad employees have a private lot next to the railroad terminal.

The present parking situation around the terminal can be described as extremely tight. The available parking areas at the terminal are shown in Figure 15-3. Lots are filled early in the morning, and late parkers find spaces in the adjacent CBD.

15.3.3 PASSENGER PROCESSING

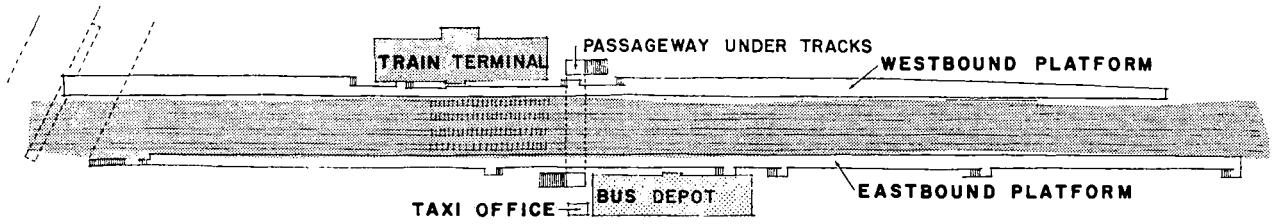
For Existing Main Floor, Bus Station and Platform Plans, See Figure 15-4.

Functional Flow

Preticketed passengers bypass the terminal and ascend short flights of stairs or ramps up to either of the high-level platforms.

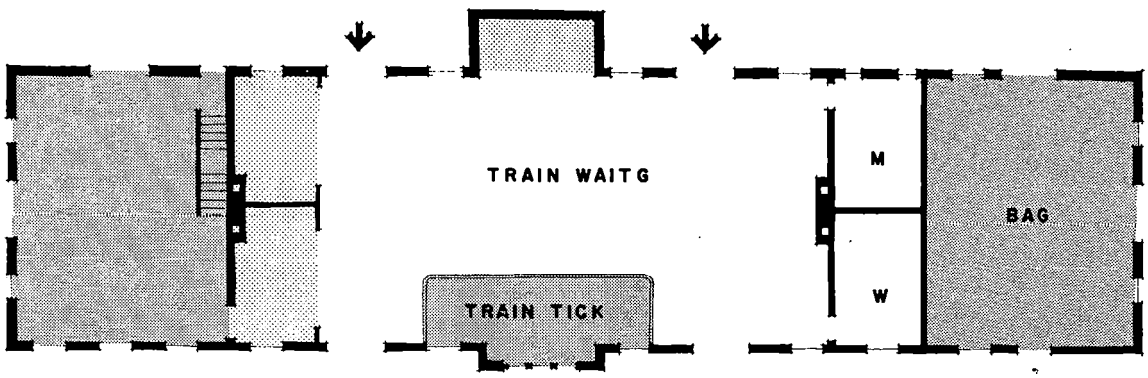
Passengers who arrive at the eastbound side of the tracks and wish to purchase tickets must descend a flight of stairs to a pedestrian tunnel; cross under four tracks; and, ascend a flight of stairs to a sidewalk adjacent to the terminal. See photo 4.

On entering the terminal from West Station Drive, passengers walk through the waiting room to the ticket counters and purchase tickets. See photo 5. To check baggage, passengers must leave the waiting room and enter the baggage room by a separate entrance. See photo 6. Pre-trip arrangements having been completed, passengers may wait in the waiting room, or proceed to the platform. The westbound platform is reached by passing from the terminal through one set

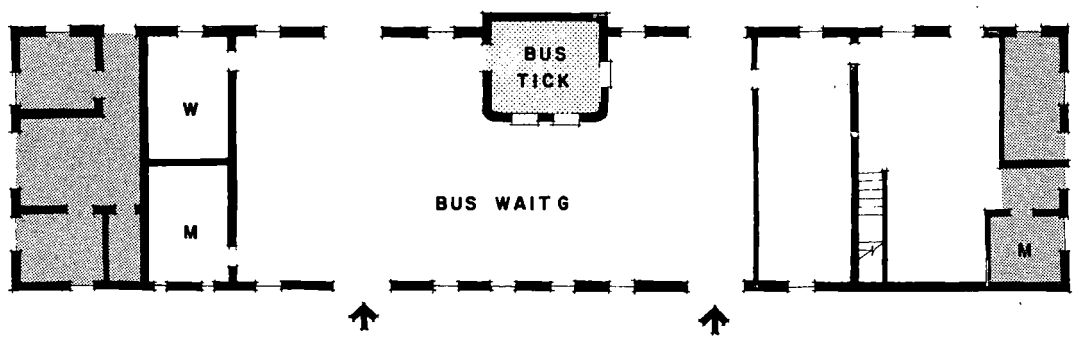


SCALE IN FEET
0 50 100

PLATFORM PLAN



TRAIN TERMINAL MAIN FLOOR PLAN



SCALE IN FEET
0 15 30

BUS DEPOT MAIN FLOOR PLAN

NORTH

LEGEND

CONCESSION

RAILROAD FUNCTION

EXISTING STAMFORD STATION
STAMFORD, CT
FIGURE 15-4

of double leaf doors to track side, and ascending a short flight of stairs. To return to the eastbound platform, passengers must step outdoors, walk on the sidewalk to the underpass canopied stairs, retrace the walk under the tracks, and ascend to grade and the platform.

The physically handicapped may ascend to the platforms by means of exterior ramps which are accessible from each respective roadway.

Information

Train information is given orally at the ticket windows, by hand or by typewritten messages posted on a wall, near the ticket windows, or by announcement over the public address system.

Ticket Purchase

Tickets are purchased at two of the three windows in use, during operating hours. All types of tickets are sold. See photo 5.

Baggage Handling

Baggage is checked and claimed in the terminal baggage room and hand carried to trains by way of ramps, stairs and the underpass. See photo 6.

Waiting Area

The waiting room is a small shabby space with bench seating for approximately 36 people. See photo 5.

15.3.4 PUBLIC SERVICES

Rest Rooms

Men's and women's rest rooms are located off the main waiting room.

Telephones

Telephones are available in the terminal and bus depot.

Accommodations

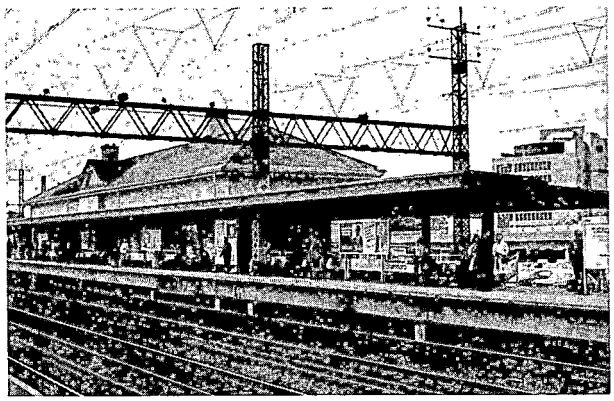
Several car rental firms maintain office and car storage space near the terminal. A taxi dispatch office, with canopied queuing lane, is sited along the eastbound platform. Intercity buses, local buses and limousines stop near the bus depot.

15.3.5 CONCESSIONS

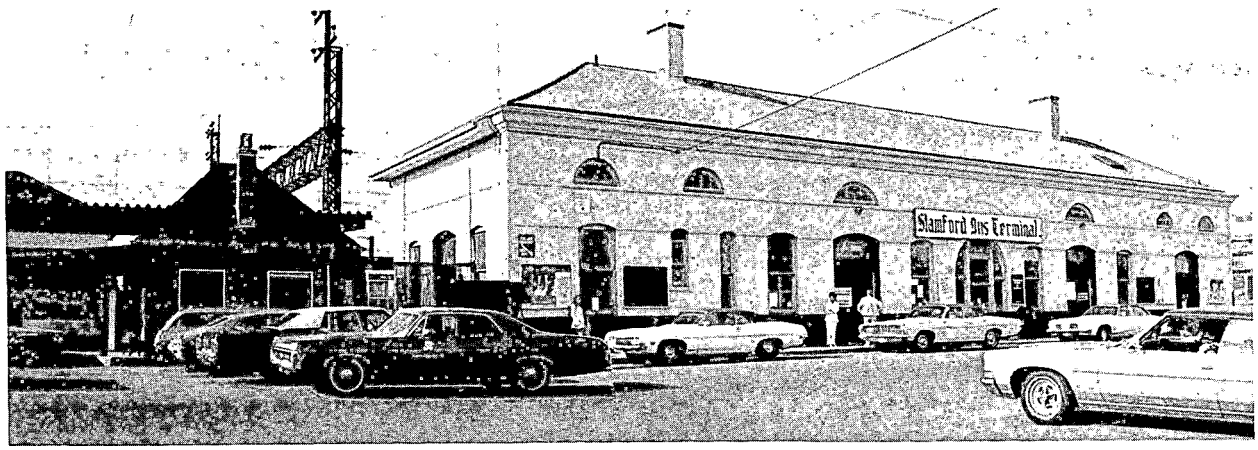
A branch bank, snack bar, news stand and shoe shine stand are located in the terminal building. Vending machines (cigarettes and candy) are located in the bus depot.

STAMFORD STATION – STAMFORD, CT

EXISTING FACILITY



1. Train Terminal and Passenger Platform

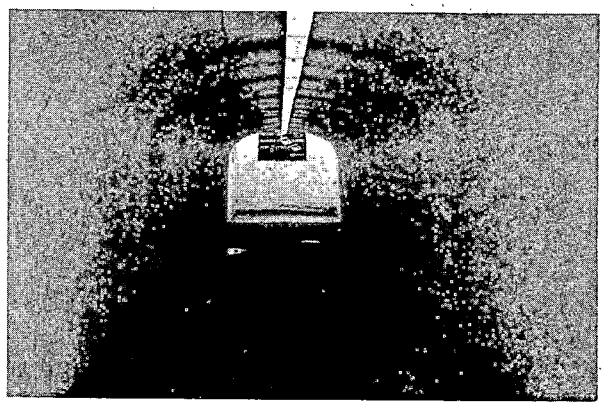


2. Bus Depot, Taxi Office and Parking Area

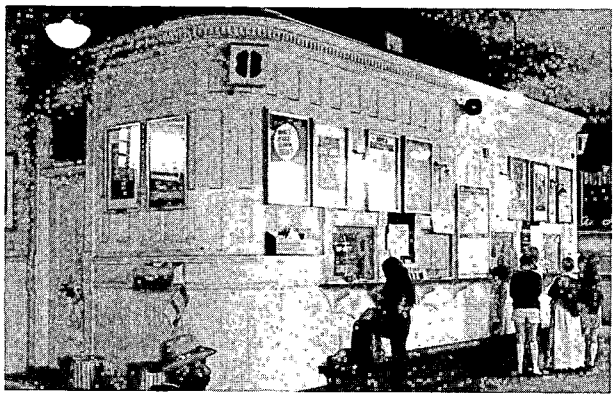
STAMFORD STATION – STAMFORD, CT

EXISTING FACILITY (Cont'd)

3. Canopied Stairways to Platforms



4. Pedestrian Tunnel to Terminal from Eastbound Platform



5. Ticket Office and Waiting Room

6. Baggage Room Area

15.3.6 RAIL PASSENGER OPERATIONS FACILITIES

An Amtrak representative occupies a desk in the ticket selling area. The Station Master's office is located in the bus depot.

The Penn Central Metropolitan-Region police department maintains office space in the bus depot.

15.3.7 FACILITY CONDITION

Structural Integrity

From observations made the building shells appear to be sound.

Exterior

The painted exterior brick surfaces are shabby and unattractive. A portion of the walls, under the eaves, has been resurfaced with plywood sheeting, exhibiting a mismatched appearance. The pitched roofs are surfaced with tar-paper shingles.

All wood work, particularly windows and doors, are in need of reconditioning. Glazing needs replacement. Steel-wire security screening has been installed over some openings. Several doors have been barricaded or locked shut.

Concrete platforms and steel canopies are of recent construction and are in good condition.

Interior

Interior surfaces, such as terrazzo flooring, wooden wainscoting, wooden strip ceilings and glazed tiling, are in need of refurbishing.

Surfaces within the terminal are in need of reconditioning. See photo 4.

Interior washroom surfaces are dirty and deteriorated. Furnishings are vandalized. The odors are unbearable.

Basement walls are made of rubble masonry. The concrete floor is cracked.

Utilities

The terminal is heated by an oil-fired steam boiler and radiator system. The boiler is located in the basement of the terminal building. Ventilation is provided by opening doors and windows.

Water, electric and sewage disposal services are reported to be adequate.

15.4 FORECAST ACTIVITY LEVELS

15.4.1 PROJECTED DESIGN DAY PATRONAGE

The projected 1990 design day patronage at Stamford Station is 1,200 HSR passengers and 3,200 commuters. Peak-hour-load is forecast at 200 HSR patrons and 1,400 commuters.

15.4.2 PROJECTED MODE OF ACCESS

The automobile is expected to remain the dominant mode of access to Stamford Station. Park-and-ride and kiss-and-ride are expected to account for 50 to 70 percent of all arrivals.

Low, high and median projections by mode are as follows:

	Percentage		
	Low	High	Median
Park-and-ride	50	70	60
Park-and-ride passenger	5	15	10
Kiss-and-ride	10	25	15
Rail transit	0	0	0
Bus	5	10	7
Taxi and limousine	1	5	3
Walk	5	15	5

15.4.3 PARKING REQUIREMENTS

It is anticipated that 600 to 800 parking spaces will be required for HSR patrons by 1990.

15.5 PLANS AND PROPOSALS

15.5.1 TERMINAL IMPROVEMENTS

Currently no terminal modification projects are in progress.

The terminal and depot facilities are owned by Transportation Plaza Associates, a private group with plans to develop the terminal environs into a business and transportation center. The center would include among other features, multi-storied buildings, a new railway terminal integrated into an office structure, and facilities to accommodate multi-modal transport (taxis, limousines, buses and a possible people-mover facility).

As proposed, the complex would include one million square feet of office space and a thousand-car-capacity parking garage.

15.5.2 FUTURE LAND USE

Renewal or rehabilitation of the areas immediately surrounding the terminal is desirable. The 1969 Stamford Community Renewal Report suggested that the areas, both north and south of the terminal, were prime targets for the elimination of residential and non-residential blight. The present renewal project will have a beneficial impact on the terminals, but more needs to be done in the immediate terminal surroundings.

For the area north of the terminal not in the renewal project, the 1970 "Basic Policies for the Master Plan" recommends uses to reinforce the renewal project. These include high-density residential development and office and other commercial uses, as well as some light industrial uses.

The "Basic Policies for the Master Plan" document also recommends urban renewal treatment for the South End. The area is envisioned as one of combined land uses, but with the existing scattered warehouse and industrial facilities consolidated, and with new residential development.

15.5.3 TRANSIT IMPROVEMENTS

The Connecticut Transportation Master Plan calls for increased bus service, new equipment and bus shelters in the City of Stamford. This is part of a continuing program for increased bus service in the area. In addition, the City of Stamford is presently considering a "people mover" from the terminal into the CBD. Feeder service, using mini-buses, would be provided to the "people mover". The proposal, however, is only in the conceptual stage, and there are no definite plans for the facility.

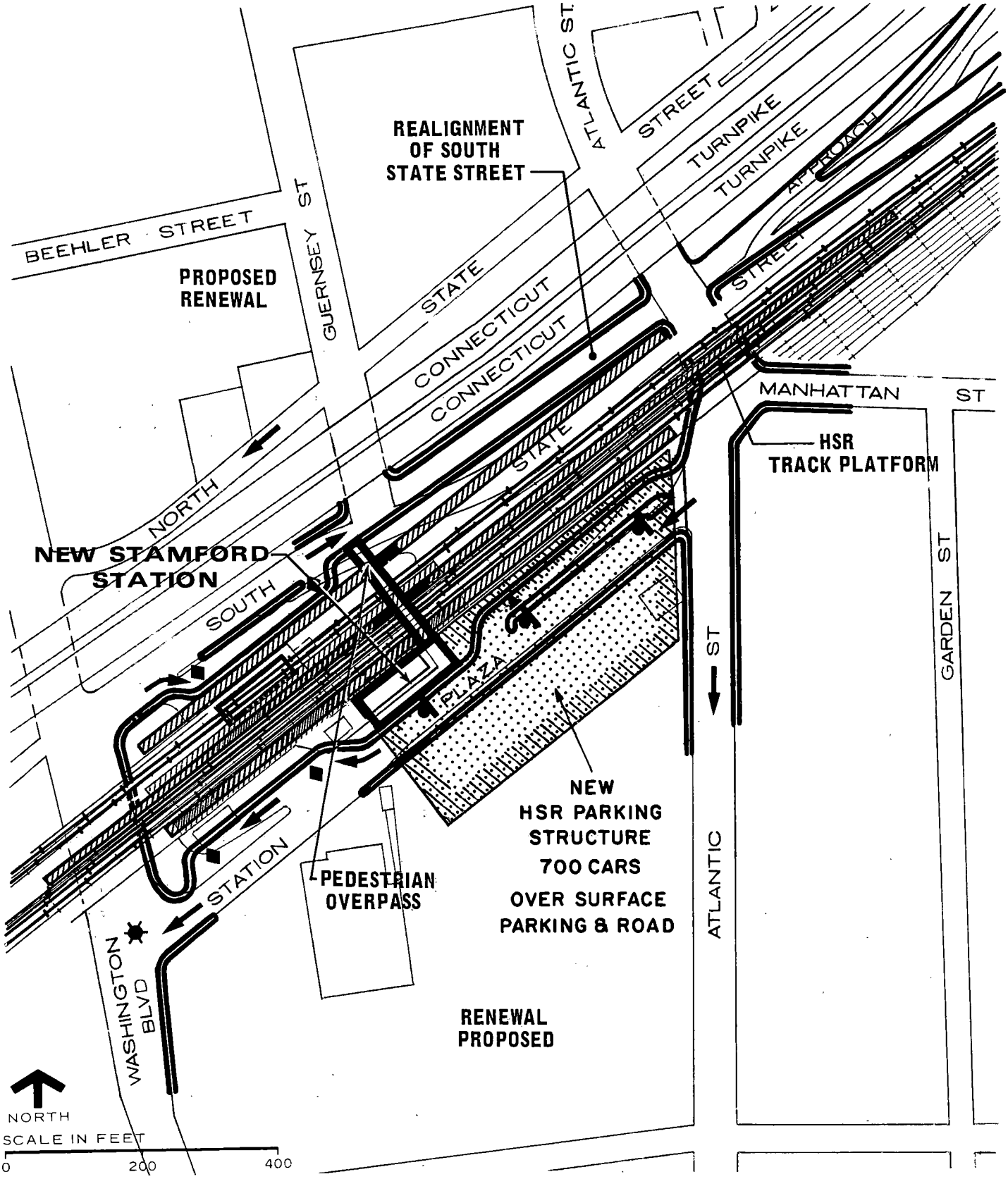
15.6 RECOMMENDED 1990 ACCESS/EGRESS AND PARKING PLANS

The recommended plan for street improvements, parking accommodations, intermodal transfer, and street modifications related to terminal improvements is shown in Figure 15-5. The recommended 1990 terminal plan is discussed in Section 15.7.

15.6.1 STREET AND TRAFFIC IMPROVEMENTS

The present arterial improvements in progress, in downtown Stamford, will improve the general accessibility of the terminal. In the immediate terminal area, it is recommended that Station Plaza Drive be made one-way westbound and a traffic signal provided at Station Plaza Drive and Washington Boulevard.

It appears that if a new terminal is built on the present site to accommodate HSR, then it will be necessary to expand the track and platform area northward. This will affect the present alignment of South State Street, which also must then be shifted slightly northward. Realignment of South State Street could pose a problem, in that it could also affect the present east-bound access road to the Connecticut Turnpike. A detailed survey would be necessary to determine how seriously the present eastbound on-ramp to the Turnpike would be affected by any expansion of the tracks northward.



1990 CONCEPT
STAMFORD STATION
STAMFORD, CT

FIGURE 15-5

15.6.2 PARKING IMPROVEMENTS

The demand for parking by HSR patrons is expected to be 600 to 800 spaces. The 1990 concept envisages an eventual parking structure south of the tracks.

15.6.3 INTERMODAL TRANSFER

Improved bus service to the terminal and improved bus loading and unloading facilities, at the terminal, should be provided. The 1990 concept includes an exclusive bus lane, within the possible parking structure, south of the tracks and east of the terminal.

Bus service to the terminal should be increased. Service should be offered later in the evening, since the evening peak-hour train arrivals are between 8 p.m. and 9 p.m.

The 1990 concept includes allowance for an exclusive taxi and limousine lane next to the proposed bus lane. Future kiss-and-ride areas are proposed both north and south of the tracks and west of the terminal building.

15.7 RECOMMENDED 1990 PASSENGER TERMINAL PLANS

The proposed terminal plans are shown in Figures 15-6 and 15-7.

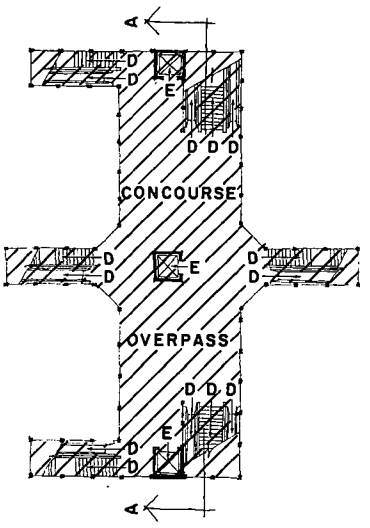
Existing facilities at the Stamford terminal are inadequate to meet the projected 1990 passenger requirements.

The proposed track plan for the 1990 terminal configuration assumes a four-track system at the site. According to this plan, the center pair of tracks, along with a centrally-located passenger platform, will be used for improved HSR service. The outer two tracks, each with its own passenger platform, will provide for commuter service.

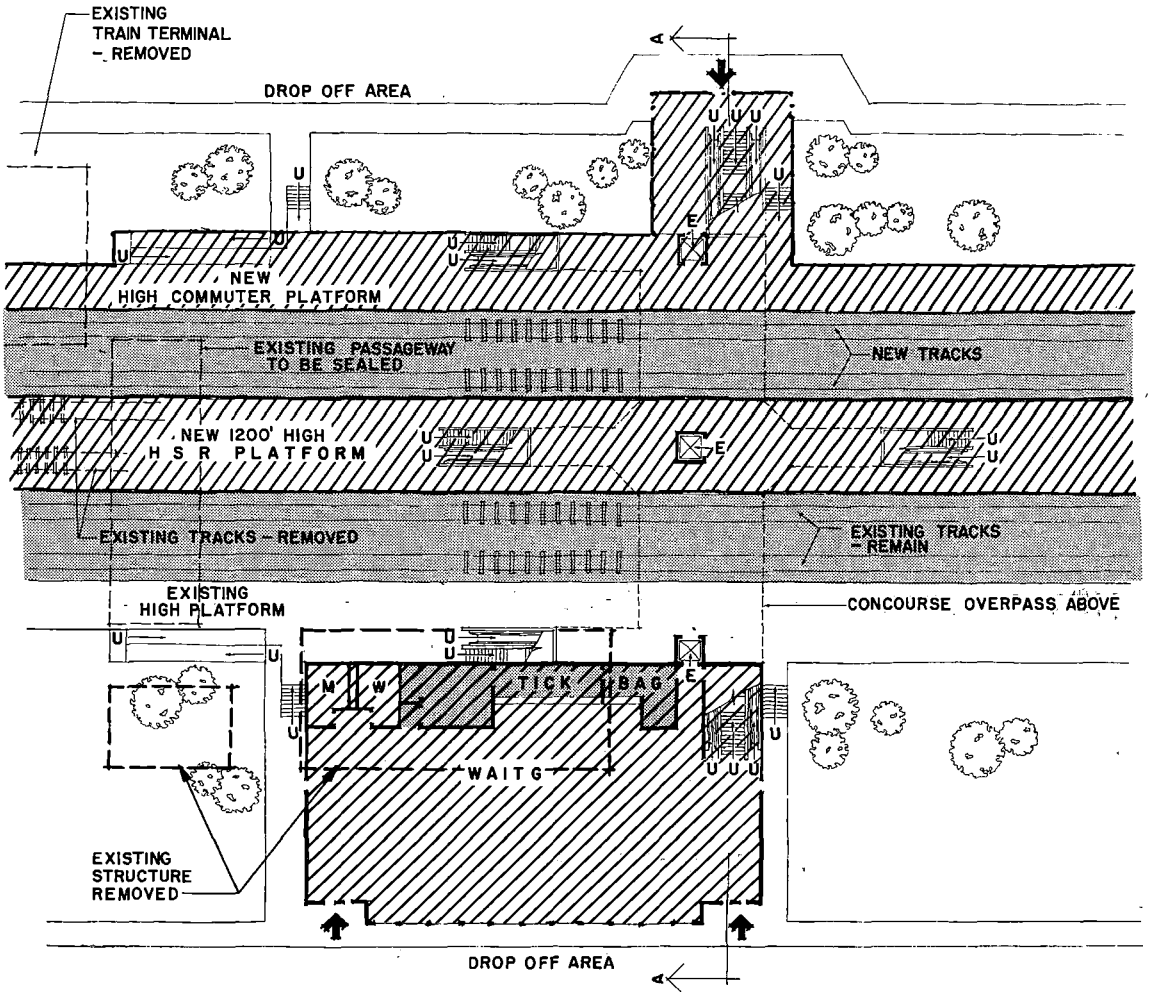
It will be necessary to rearrange the existing track system within the terminal area. The track system crosses a bridge at Atlantic Street, east of the terminal, and at South Street, west of the terminal. Inasmuch as the South Street bridge appears to be wide enough to accommodate four tracks and a platform, the two eastbound tracks of the existing system would be retained at their present locations; the two westbound tracks would be expanded northward to accommodate the new center passenger-platform arrangement. This decision would necessitate the removal of the existing railroad terminal building.

A review of the bus depot building, with respect to improved HSR requirements, indicates that the building is grossly undersized, and unsuitable for enlargement because of its age, structural characteristics and state of dilapidation. It is therefore recommended that the bus depot building be removed and a new integrated train-passenger terminal facility and parking structure be constructed to assure adequate service. Land availability and topography indicate that the new terminal facility and parking structure should be located on the eastbound (south) side of the tracks. Maximum use would be made of the limited favorable area available along the westbound (north) side, for development of a shelter building and vehicle circulation areas.

The ground floor of the terminal structure would be dedicated to passenger handling functions and would incorporate auto drop-off and pick-up zones, a taxi stand, and bus-berthing areas.



OVERPASS PLAN



NORTH

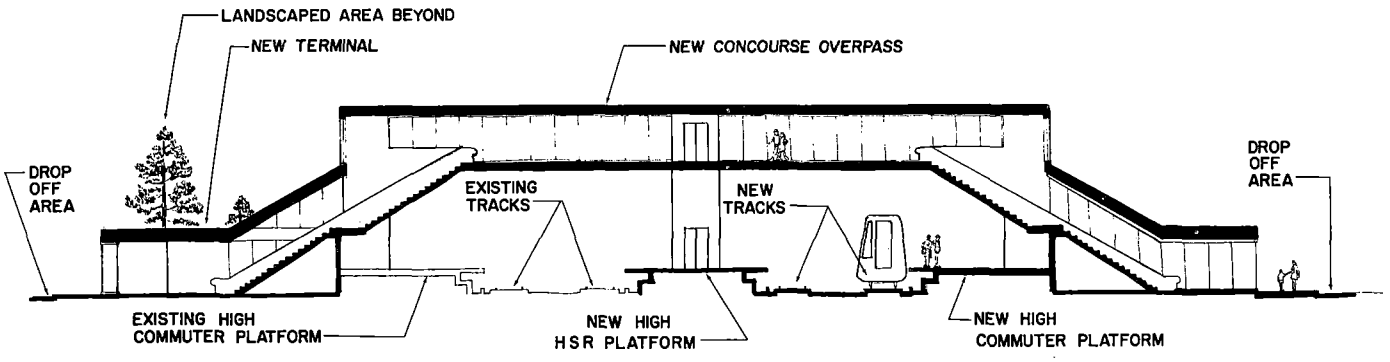
MAIN FLOOR PLAN

SCALE IN FEET
0 25 50

LEGEND
RAILROAD FUNCTION
NEW CONSTRUCTION

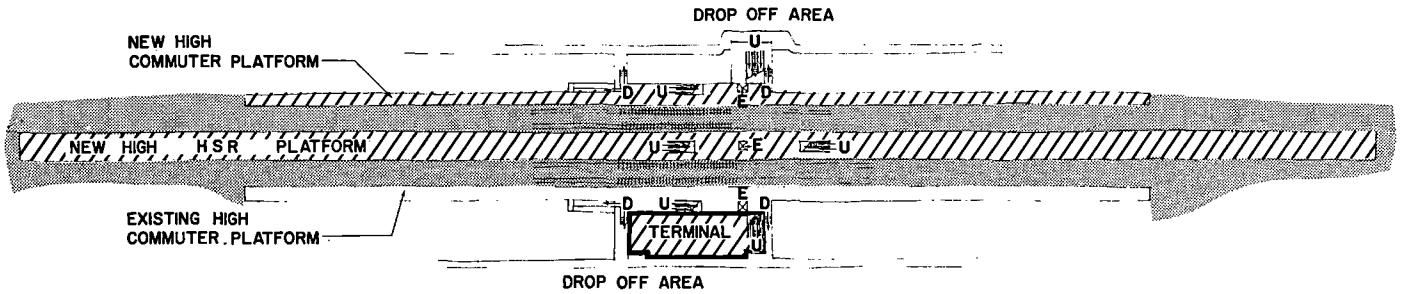
1990 CONCEPT
STAMFORD STATION
STAMFORD, CT

FIGURE 15-6



SCALE IN FEET
0 25 50

CROSS SECTION A-A



SCALE IN FEET
0 50 100

PLATFORM PLAN

NORTH

LEGEND

RAILROAD FUNCTION

NEW ADDITION

1990 CONCEPT
STAMFORD STATION
STAMFORD, CT
FIGURE 15-7

The scope of work would include the following:

(1) Relocate State Street slightly to the north of its present location.

(2) Reconstruct Atlantic Street bridge and retaining wall along State Street.

(3) Demolish existing terminal facilities, including two brick buildings with basements.

(4) Demolish one existing high-level platform.

(5) Seal existing underpass.

(6) Rearrange and reconstruct trackage.

(7) Construct a high-level center platform, 1200 feet in length, for improved HSR service; construct a canopy over the platform of the same length.

(8) Construct a new high-level commuter platform, sited between the Atlantic and South Street bridges; construct a canopy over the platform of the same length.

(9) Construct an integrated terminal facility consisting of a ground level building, a high-level concourse overpass and a ground-level shelter building. The terminal building would contain ticket sale counters and offices, baggage handling facilities, Passenger Services office, waiting room, rest rooms and spaces for minor concessions.

(10) Construct a multi-deck parking structure on the east side of the facility with direct access to the terminal building. The ground floor of the parking structure would be reserved for terminal access functions, including taxi stand, bus-berthing areas and auto drop-off and pick-up zones.

(11) Construct parking and auto drop-off and pick-up zones west of the terminal facility, including curbing, pavements, retaining walls, drainage and landscaping.

The plan illustrated in Figure 15-6, constitutes a prototypical terminal design developed to accommodate the projected needs of the future HSR system.

This design establishes HSR terminal functional, space and circulation requirements which would need to be incorporated into any multiple use project intended for construction at this location.

15.7.1 PASSENGER ACCESS AND EGRESS

Most patrons will be arriving by car, while others may arrive by bus, taxi or limousine.

The main terminal building and adjoining parking structure would be situated along the eastbound side of the tracks. Immediately adjacent to the main building entrances would be short-term parking zones for local buses, taxis, limousines and private autos (drop-off and pick-up patrons). Similar short-term parking facilities would also be located along the westbound side of the tracks adjacent to the shelter building. Long-term parking facilities would be located

adjacent to the terminal facility above the bus, and taxi access roadways.

Passengers would enter the terminal at sidewalk grade through two main entranceways, with automatically-actuated doors in recessed shelter vestibules of the terminal building. Entrance doorways to the shelter would be located beneath canopies and would also be automatically operated. Thresholds would be at sidewalk grade.

Pre-ticketed and/or commuter passengers could bypass the main terminal building and ascend directly to the commuter platforms, via canopied stairs or ramps that connect with the sidewalks.

15.7.2 PASSENGER PROCESSING

Functional Flow

Upon entering the terminal building, passengers would walk to the ticket sales area to purchase tickets, obtain information and check baggage. Passengers would then proceed to the main waiting area for seating or walk to stairs or escalators leading to an enclosed concourse overpass where additional seating would be available. From the concourse, HSR passengers would be admitted to the center high-level passenger platform under gated control. Stairs, escalators and elevators would lead from the concourse to all platforms.

Special features built into the terminal facility would permit physically handicapped HSR patrons to follow a similar route unassisted. These include:

(1) Depressed curbs and sidewalks at selected locations.

(2) Automatically-opening entrance doorways.

(3) A special ticket counter, serviced on demand, for purchasing tickets and checking and transferring baggage.

(4) Passenger-baggage elevators, serving on demand, to transport physically handicapped patrons between floor levels.

Passengers would have access to the terminal facility from the westbound side of the tracks by entering the shelter, ascending to the overpass concourse via stairs, escalators or elevator and descending similarly to a point within the main terminal building.

Information

An electronic information board would be displayed in the main waiting room. TV monitors would be located at the concourse overpass and in the shelter building. Information and assistance would also be provided at the ticket windows. A public address system would be used to augment other information sources.

Waiting Area

The main waiting room, with ticket and rail service offices, rest rooms and utility quarters would function as the passenger activity center. Seating would be clustered in the carpeted

waiting area. Clear window walls would permit viewing of passenger activities in the terminal environs and aid surveillance for security and safety purposes.

Additional seating would be located in the concourse overpass; train and passenger activities would also be viewed from here. A few seats would be provided on the commuter platforms.

Ticket Purchase

Ticket windows would be readily visible from the main entrance doorways. All types of tickets would be dispensed. A special window would be reserved for physically handicapped passengers, and served by ticketing personnel on demand. Handicapped passengers' baggage would also be checked in and claimed at this window. From there, baggage would be transferred to the adjoining baggage storage room.

Baggage Handling

Facilities for checking and claiming HSR baggage would be located near the ticket counters. There would be provisions for baggage sorting and short-term storage. Baggage would be transported to the HSR platform by way of passenger-baggage elevators.

Concourse Overpass

The concourse overpass would be situated at a height to clear catenary wiring. It would connect the east and westbound side of tracks and provide grade-separated access from the terminal and shelter buildings to all platforms, including the center HSR platform. The concourse would be wide enough for waiting and holding areas at controlled access points to the HSR platform.

The concourse would be a fully enclosed and climate-controlled structure, with tinted fenestration and domed skylights, to provide a feeling of openness, security and views of terminal activity. Clustered seating and other passenger amenities would be provided.

Platforms

One of the two existing low-level platforms would be relocated, and a new 1200-foot-long HSR center platform, would be constructed. The platforms would have full-length canopies, windbreaks, infrared heating devices at selected locations, lighting systems and platform snow-melting systems.

Escalators, stairways and elevators would connect passenger platforms to the concourse overpass.

15.7.3 PUBLIC SERVICES

Rest Rooms

Modern rest room facilities would be located in the main waiting room and in the concourse overpass.

Lockers

Public lockers, for short-term baggage storage, would be located in the main waiting room and concourse overpass.

Telephones

Telephones would be located in the main waiting room, concourse overpass, shelter and on commuter passenger platforms.

Ground Transportation

Local bus schedules would be on display, and taxi call phones would be located in the main waiting room and in the shelter. Other local transportation information may be obtained at the ticket windows.

15.7.4 CONCESSIONS

There would be limited areas of space for vending machines in the main waiting room and in the concourse overpass.

15.7.5 RAIL PASSENGER OPERATIONS FACILITIES

Ticket and Passenger Services Offices

A supervisor's office would be partitioned off in the area behind the ticket sales counter. This office would handle all passenger services at the terminal. An adjacent room would contain a safe and storage space for tickets, supplies and equipment.

Desk space would be provided for roving-railroad security personnel. There would be direct telephone lines to police and first-aid emergency stations. A closed-circuit TV surveillance system would be monitored in the ticket office during hours of terminal operations. Areas under surveillance would include the entrance ways, ground floor of the parking structure, concourse overpass and the HSR platform.

15.7.6 UTILITIES

Heating, Ventilating and Air Conditioning

Heating and air conditioning would be provided for all rail passenger processing areas, including the main terminal building, shelter building and concourse overpass.

Electrical Service

Adequate electrical service and distribution would be provided to accommodate all air conditioning, elevators, escalators, snow-melting devices and lighting loads.

Water and Sanitary Sewer

Existing water service and sanitary sewage-disposal system would be utilized for terminal requirements.

15.7.7 CONSTRUCTION CONSIDERATIONS

Structural System and Exterior Surfaces

The passenger processing building and the shelter would consist of steel and concrete post-and-beam construction. The buildings would be approximately one and one-half stories high, slab on grade, with no basements and flat built-up roofs as required.

Exterior surfaces would consist of masonry and anodized-aluminum window walls and entrance systems, with polycarbonate glazing for safety and vandal resistance.

Doors would be automatically-actuated pairs, with sidelights and transoms.

The concourse overpass would consist of steel framing with fixed aluminum sash and polycarbonate window walls. The roof and floor would be properly insulated.

Interior Surfaces

Plans for interior surfaces are as follows:

(1) The waiting room and shelter would have quarry tile and carpeted floors, face brick and glass window walls, suspended acoustic-tile ceilings and flush-fluorescent light fixtures.

(2) The offices would have carpeted floors, paneled and plastered wall surfaces, suspended acoustic-tile ceilings and flush-fluorescent lighting fixtures.

(3) Men's and women's rest rooms would have ceramic tile floors and walls, wall hung fixtures, ceiling-hung toilet compartments, electric hand dryers, suspended plaster ceilings, high-level lighting and adequate ventilation.

(4) The concourse overpass would have carpeted flooring, tinted polycarbonate glazing and anodized-aluminum window walls, suspended acoustic-tile ceiling and flush-fluorescent lighting fixtures.

Landscaping

Terminal landscaping would include plantings and trees along access drives; accent and roadway lighting standards and fixtures; outdoor seating and information kiosks; and, textured sidewalk and crosswalk surfaces.

15.8 CAPITAL COSTS

Current unit prices have been developed for major construction items. These unit prices and the illustrated concept sketch plans form the basis for estimated construction costs as follows:

New terminal structure	$ 765,000
Platforms and canopies	1,125,000
Escalators, stairs and elevators	1,032,000
HVAC, plumbing and lighting	125,000
CCTV surveillance and electronic information systems	115,000
Sitework including paving, curbs and sidewalks	144,000
Realignment of South State Street	37,000
Subtotal terminal and site work	$3,343,000
Contingency – 20%	669,000
Total terminal cost	$4,012,000

Construction of the new HSR high-level platform requires relocation of two of the existing four through tracks. Costs for trackwork, relocation of signals and communication lines, and adjustments to catenary support structures and wiring are not included in this estimate.

Parking facility construction cost was calculated at a rate of $3,300 per car space, for an approximate median of 700 parking spaces required for HSR patrons, as follows:

Parking structure	$2,310,000
Land acquisition for parking structure	$ 290,000

The indicated land acquisition cost was calculated at the rate of $2,000 per ground floor car space for a six-level parking facility.

15.9 SCHEDULING AND PHASING OF CONSTRUCTION

The dilapidated and marginal existing terminal building makes early implementation of recommended improvements highly desirable. All terminal and site improvements would be undertaken during a two-year implementation period. Construction of the parking structure and intermodal transfer facilities would be phased within this time frame.

Construction of a new HSR platform necessitates demolition of the existing terminal located on the westbound (north) side of tracks and relocation of the two westbound tracks to the north. Train movements in the terminal area would be temporarily accommodated on the two remaining eastbound tracks. The existing bus depot, located on the eastbound (south) side of tracks, would function as the train terminal as well as a bus depot during this construction phase.

On completion of the platform on the north side, a temporary structure would be placed there for interim passenger processing. The bus depot would then be razed and the main terminal and all ancillary facilities, including the parking structure, would be constructed on the south side. The existing pedestrian underpass can remain in use during the entire construction project.

15.10 SPECIAL CONSIDERATIONS

Relocation of the two westbound tracks to the north, required for the construction of the high-level center HSR platform, infringes in part on parking space and terminal property owned by Transportation Plaza Associates. Extension to the north of the Atlantic Street railroad viaduct and reconstruction of a section of embankment retaining wall, along South State Street, would also be required.

The recommended development plans for the terminal assume that plans of private developers are in a very preliminary planning stage, with no formal commitment to proceed with detailed design and construction in the near future. Therefore, no specific consideration was given to incorporating their plans in this analysis.

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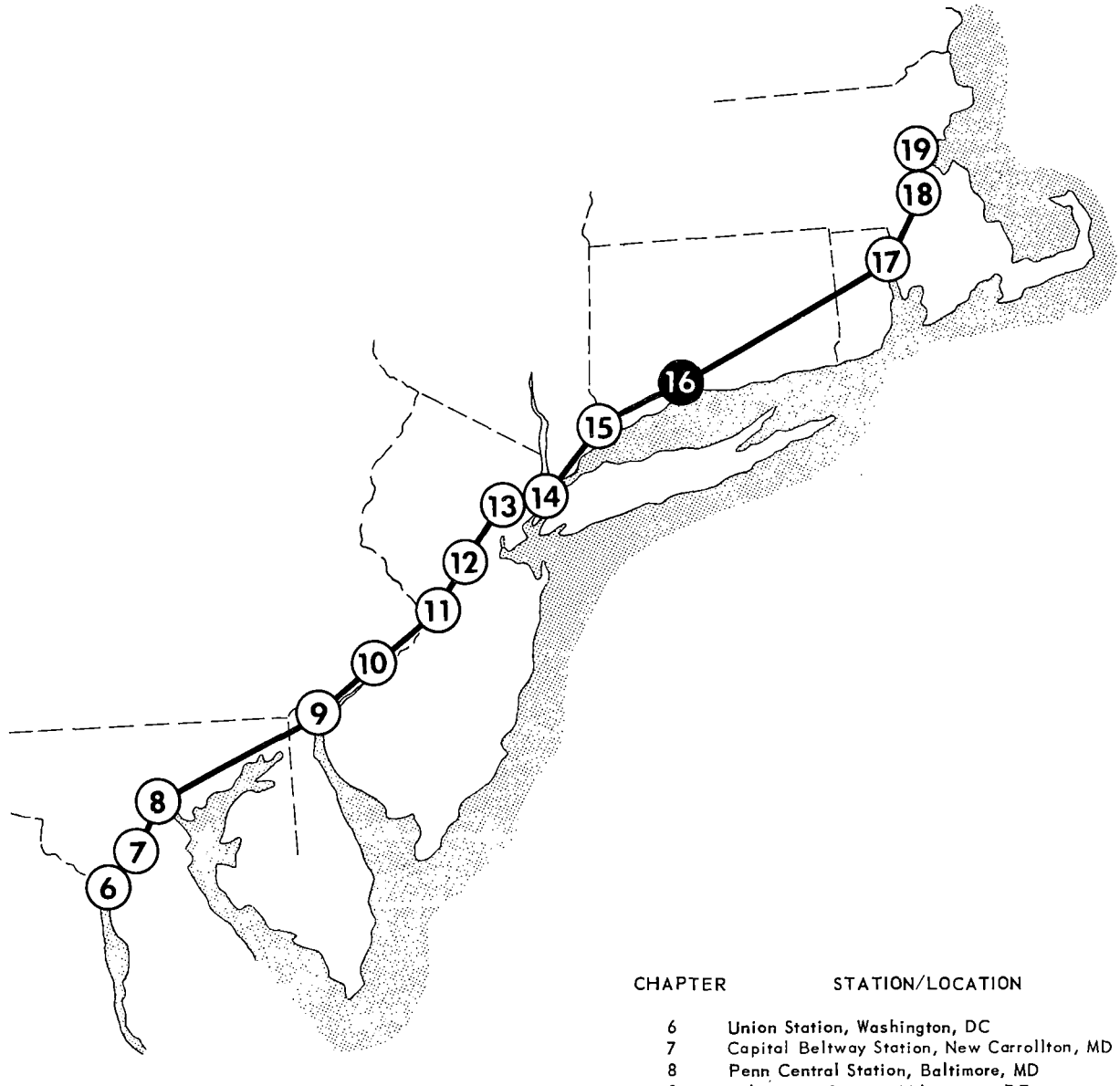
Personal interview

Jon A. Smith
Stamford City Planning and Zoning Director

STATION LOCATIONS ALONG NORTHEAST CORRIDOR



CHAPTER	STATION/LOCATION
6	Union Station, Washington, DC
7	Capital Beltway Station, New Carrollton, MD
8	Penn Central Station, Baltimore, MD
9	Wilmington Station, Wilmington, DE
10	Penn Central Station, 30th Street, Phila., PA
11	Trenton Station, Trenton, NJ
12	Metropark Station, Iselin, NJ
13	Penn Central Station, Newark, NJ
14	Pennsylvania Station, New York, NY
15	Stamford Station, Stamford, CT
16	New Haven Station, New Haven, CT
17	Union Station, Providence, RI
18	Route 128 Station, Dedham, MA
19	South Station, Boston, MA

16.0 NEW HAVEN STATION, NEW HAVEN, CONNECTICUT

16.1 STATISTICAL FRAMEWORK

16.1.1 OWNERSHIP AND USERS

Union Station, New Haven, is controlled by virtue of a lease agreement, by the State of Connecticut, and used by Amtrak and the Penn Central. The main terminal building was sold by the Penn Central Transportation Company to the State and the City of New Haven, and has been closed since August, 1973. Present passenger processing facilities are temporary.

Penn Central service between New Haven and New York is operated under the direction of the Connecticut Transportation Authority (CTA) and the New York Metropolitan Transportation Authority (MTA).

16.1.2 PROPERTIES AND FACILITIES

The unused terminal building, constructed in 1920, is a four-story brick and masonry structure approximately 300' x 90' in size.

Present passenger processing facilities are directly north of the terminal building and include a small concrete-block and glass ticket office; a waiting area located in a subway underpass beneath the railroad tracks; two high-level commuter platforms; and, three low-level platforms. Commuter platforms were constructed in 1971-1972.

A separate concrete structure, located at trackside and adjacent to the old terminal, is being remodeled to serve as the Passenger Services office.

16.1.3 CURRENT ACTIVITY LEVELS

New Haven is presently approximately three hours by train from Boston, and is the northerly terminus of the electrified main line to Washington, D.C. It is also the eastern terminus of commuter service to New York City, and the southern terminus of commuter lines to Hartford and Springfield. In addition, New Haven is the junction point where Amtrak trains from the inland route join Amtrak trains from the shoreline route east.

Union Station has the highest daily patronage of any station between New York City and Boston, with about 1,300 passengers (one-way) departing daily. Approximately 600 of these are Amtrak passengers and 700 use commuter trains.

There are presently 121 scheduled trains arriving and departing at Union Station daily. This includes 50 Amtrak trains, 24 Penn Central commuter trains to New York City, and 23 commuter trains operating between New Haven and Springfield. The Amtrak trains using the terminal are:

Direction	Number of Trains
New Haven to Boston (shoreline route)	1
Boston to New Haven (shoreline route)	1
New Haven to Boston (inland route)	10*
Boston to New Haven (inland route)	10*
New Haven to New York	14
New York to New Haven	14

* Includes one daily trip to Montreal.

The earliest departure at Union Station is at 4:03 a.m. and the last train arrives at 2:25 a.m.

According to a 1968 (pre-Metroliner) study conducted by the Connecticut Highway Department, the predominant mode of access to the terminal was the automobile. Park-and-ride patrons accounted for 61 percent of the arrivals, with another 11.5 percent being park-and-ride passengers. Kiss-and-ride patrons (21 percent) accounted for most other arrivals. Buses accounted for 4.5 percent of arrivals and pedestrian access 2 percent.

In a report recently prepared for the city on the proposed transportation center, park-and-ride patronage was estimated at 55 percent for commuter service and 25 percent for the present Amtrak service.

16.2 TERMINAL VICINITY INFRASTRUCTURE

16.2.1 LOCATION CONSIDERATIONS

Terminal location is shown in Figure 16-1, indicating the transportation network and activity centers in the general city setting. Activity centers and proposed activities are listed in Table 16-1.

Location With Respect to Regional Highway System

Union Station is favorably located with respect to the major highways which serve the greater New Haven area, and which link New Haven to other major cities in the state.

The two major expressways in the city are I-95 and I-91. I-95 (the Connecticut Turnpike) channels east-west traffic and generally follows the shoreline. It links New Haven with Bridgeport, 18 miles to the southwest, and with New London, 47 miles to the east. I-91 links New Haven with Hartford, 41 miles to the north. The two highways intersect less than a mile from Union Station.

State Route 34 is a major arterial within the city as well as a major state route. It provides a partial connection between I-95 and Union Station, serving as an expressway within that segment. State Route 34 links New Haven with the Wilbur Cross Parkway, seven miles to the northwest, and to I-84, another 24 miles to the northwest. U.S. Route 1 is another major east-west route which passes through New Haven.

This highway system links New Haven with most of the other urban areas within the state. Under average driving conditions, therefore, New Haven is within a 30 to 45-minute drive from the majority of the state's population. Union Station, then, located near the major arterial intersections in the city, is conveniently accessible from a large heavily-populated area.

Relationship to Other Inter-Regional Transportation Facilities

Interstate and intercity bus service is provided by Continental Trailways and Greyhound. The Greyhound terminal is only four blocks away from Union Station; the Trailways terminal is approximately one mile from the terminal, on the other side of the CBD. Transit service to the bus terminals is relatively poor. A taxi-ride from Union Station to the terminals would take five and ten minutes, respectively. The Greyhound and Trailways service areas include Providence, Springfield, Worcester and Boston.

Six additional intercity bus companies provide service from New Haven to other cities. Most of these use the Trailways or Greyhound terminals. Beeke Transit Company, which travels between New Haven and Clinton, terminates at Union Station.

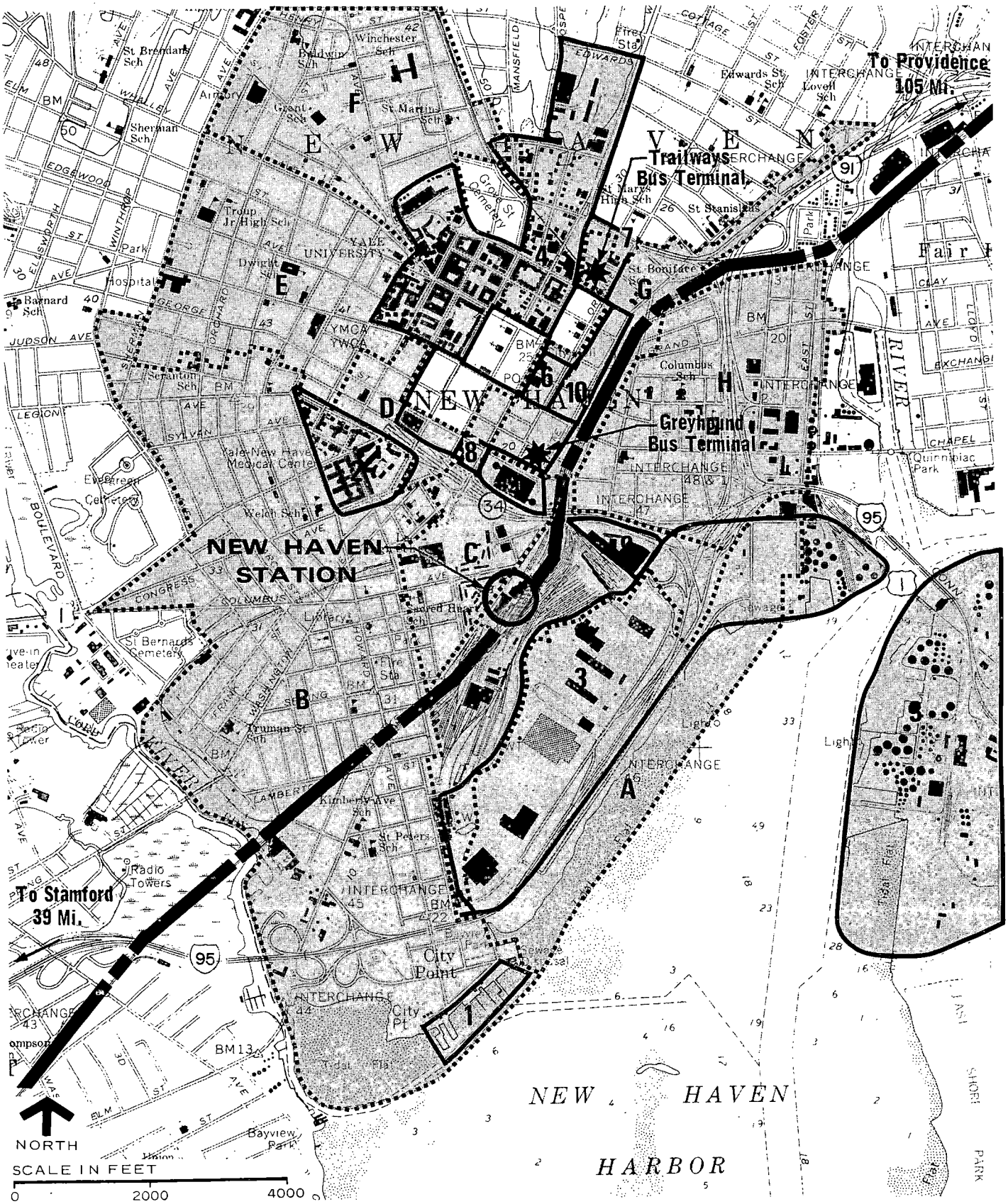
The Tweed-New Haven Airport is approximately five miles from Union Station. The airport is used only for short-range commercial flights and general aviation; however, even though commercial air service is limited, it is in direct competition with HSR for service to other major cities in the Northeast Corridor.

The Allegheny and Pilgrim airlines serve the Tweed-New Haven airport and provide direct service to Hartford/Springfield (Bradley Field); New London, Connecticut; New York City; Philadelphia; Washington, D.C.; Toronto, Ontario; and Erie, Pennsylvania.

Tweed Airport is located at the southeastern boundary of the city, east of the New Haven Harbor. It is a 15-minute taxi ride from Union Station. Bus route G connects the airport with the CBD with 20-minute headways in the morning and afternoon, 60-minute headways in the evening, and 30-minute headways on Saturdays. There is also a special early morning and early afternoon bus to the airport.

More extensive air service is available at Bradley Airport, north of Hartford, and the New York area airports provide New Haven residents with air service to major U.S. cities.

Connecticut Limousine Service furnishes New Haven air passengers with limousine service to Kennedy and La Guardia Airports in New York. Central Connecticut Limousine Service provides similar service to Bradley Airport. The two companies share a limousine stand at the Park Plaza Hotel in the center of the CBD. Limousine service is provided hourly to New York airports



LEGEND

0 EXISTING ACTIVITY CENTER (SEE TABLE 16–1)

A PROPOSED ACTIVITY CENTER (SEE TABLE 16–1)

HIGH SPEED RAIL

STATION LOCATION
NEW HAVEN STATION
NEW HAVEN, CT

FIGURE 16–1

TABLE 16-1

ACTIVITY CENTERS, CITY SETTING

EXISTING ACTIVITIES

1 Marina Activity

2 Medical Facilities

3 Industrial Areas

4 Yale University

5 New Haven Veterans Memorial Coliseum

6 Government Center

7 Art Center

8 Knights of Columbus Tower (offices)

9 Central Post Office

10 Central Business District – including Chapel Square Mall, Sheraton Park Plaza Hotel, Macy's, Malley's and offices and other commercial development

PROPOSED ACTIVITIES (Redevelopment Projects)

A Long Wharf

B Hill

C Church Street

D Oak Street

E Dwight

F Dixwell

G State Street

H Wooster Square

and every two hours to Bradley Airport. Limousine schedules and service hours are consistent with the airline schedules. This service has been vigorously promoted, although its performance level is affected by such factors as traffic congestion. At the present time, it is a major competitor for providing regional travel service and, thus, attracts some potential railroad patronage.

Existing Transit Service

Most city and suburban bus service in the New Haven area is furnished by the Connecticut Company and subsidized by the Connecticut Department of Transportation. Service is fairly extensive within New Haven, with some limited coverage of adjacent cities. For the most part, the routes are laid out in a radial pattern along major arterials. The focus of the system is the "Green" in the heart of New Haven. The CBD and Yale University are centered around the "Green," and major bus stops are located along Church Street in this area.

The Connecticut Company operates 14 major bus routes. Three of these routes (U, J and Z) operate past, or in the vicinity of Union Station. These routes connect areas south of the city to areas north and east of New Haven. Route J originates at Savin Rock in West Haven, and Route U originates further south in Milford. Both stop directly in front of Union Station, to and from the CBD and areas north of the city. Route J runs on 15-minute headways during peak hours but does not operate after 6:45 p.m. Saturday service and limited Sunday service is provided. Route U operates at a lower level of service, with peak-hour headways of 30 to 60 minutes. Off-peak, evening (up to 10:30 p.m.) and Saturday headways are as much as 70 minutes.

Route Z, known as the City Point Route, also connects the Savin Rock area with Union Station and the CBD. From the CBD, Route Z extends to West Hills at the western city limits. On southbound runs, Route Z stops at Union Station, but on the northbound runs it stops two blocks west of the terminal. Headways range from 20 minutes during peak hours to up to 45 minutes on Saturdays.

Route A, which is operated by the Orange Street Bus Company, also provides frequent and direct service between downtown and Union Station. Its headways are 10 minutes during peak hours, 12 minutes during the day and 30 minutes in the evening. Frequent Saturday service is provided, but there is no service on Sunday.

Since most bus routes are oriented to and from the CBD, passengers from nearly all areas east of the CBD and Union Station must transfer in the CBD to get to the terminal. The single exception is the Beebe Transit route which operates from Union Station to Guilford, Madison and Clinton.

Existing transit service, in the New Haven area, is considered fair and, although most people must transfer in the CBD to reach Union Station, circulation between the CBD and the terminal is good. However, the existing bus service is not used extensively by terminal patrons.

Relationship to Activity Centers

New Haven is located in the south central part of Connecticut, approximately 41 miles south of Hartford, the state capital, and 18 miles east of Bridgeport, the state's largest city. Via rail,

New Haven is 113 miles from Providence, Rhode Island and 39 miles from Stamford, Connecticut. Via Interstate highway, the distance is slightly shorter to Providence and slightly longer to Stamford.

New Haven is a center for educational, commercial, industrial and cultural activities. Although the city is expected to remain the business center of the region, the actual population of New Haven is declining as people move out to the suburbs.

The New Haven urbanized area (as defined by the Department of Transportation for the 1974 "National Transportation Study") had a population of 348,000 in 1970. Between 1960 and 1970, significant increases in population occurred in several towns adjacent to New Haven; the populations of Hamden, East Haven and West Haven increased by 17 percent during this period.

The CBD is the dominant employment center for the city and also attracts a large number of employees from adjacent cities, including Branford, East Haven, Hamden, North Haven, Orange, West Haven and Woodbridge.

Union Station is located just south of the CBD and close to most major activities. However, the CBD, Yale University and most offices are located just beyond reasonable walking distance from the terminal.

The downtown area is now, and is expected to continue to be, the major single generator of jobs and taxes in the city.

Yale University, the city's largest employer, occupies a large amount of centrally located land next to the main retail and business centers. Other major concerns, within the central city area, include the Southern New England Telephone Company, the Yale New Haven Hospital, Government Center, the New Haven Veterans Memorial Coliseum, the Chapel Square Mall and the Arts Center. Offices and corporate development are increasing in the area and HSR service could have a positive effect in stimulating additional centralized corporate development.

Thus, Union Station is strategically located with respect to the major regional activity centers. These appear stable or growing, and their convenience with respect to potential HSR service should have a positive impact on potential HSR patronage.

Within the last decade several major redevelopment projects have begun in New Haven and there has been a large increase in construction activity including new retail, office, residential and recreational facilities. The city has been a leader among major U.S. cities in terms of per capita public redevelopment expenditures, with a total of over $200 million in new construction already completed.

Specifically, there are eight major public redevelopment projects within the core of the city which have just been completed or are currently under construction. The areas involved are shown on Figure 16-1 and listed in Table 16-1.

Three major redevelopment and renewal projects encompass the CBD and surrounding areas. The Church Street project extends from Union Avenue, alongside Union Station, north towards the CBD and west into a residential area. The project includes: commercial development of the CBD, including high-density, high-value retail, hotel and office facilities, with off-street parking integrated into the design; high-density residential use with related institutional uses and ancillary commercial facilities; and, a medical center and related commercial facilities with off-street parking. Much of the Church Street project has now been completed.

The Oak Street Redevelopment Area is adjacent to and immediately west of the Church Street project. This project includes multi-family high-rise apartment buildings, a multi-story office building, some commercial/industrial development and institutional facilities, including expansion of an existing hospital and construction of the Connecticut Mental Health Center.

The State Street Project is located to the north and east of the Church Street Project. The two combined will result in the eventual renewal of nearly all of New Haven's CBD. The objectives of the State Street Project are: to strengthen the retail area by providing land for new retail development and by rehabilitating existing buildings; to stimulate development and expansion of office facilities; to provide land for the development of an Arts Center; and, to remove blighting industrial uses from the downtown. Under this project, more than 100 acres of downtown New Haven are being revitalized.

The Long Wharf Redevelopment Area lies east of Union Station and the railroad yards and extends west from there, to the waterfront. I-95 traverses the entire length of the project. The I-95/I-91 interchange is located at the northern end of the project area. Currently, approximately 50 percent of the project is completed. The Long Wharf project includes industrial facilities; an area devoted to the processing, warehousing and distribution of food products; transportation facilities, including a heliport, Navy Pier, shipping terminal and warehousing; recreation facilities including the development of park land and harbor-oriented recreational uses, such as a Marina; and, general business facilities.

North of the Long Wharf Project area and east of the CBD is the Wooster Square Redevelopment and Renewal Area. Under this project, the area around I-91 is being redeveloped almost exclusively for industrial use. The area west of I-91 up to the CBD and the State Street Project will be largely residential use with commercial development predominating near the CBD, between Union and Olive Streets. Some properties along Water Street would be made available for wholesale, distribution and services uses as well as incidental retail uses supporting the nearby CBD.

The Dixwell, Dwight and Hill Renewal and Redevelopment Areas, are located west of the CBD, and are primarily residential projects.

16.2.2 LAND USE

Existing Characteristics, Terminal Area

Figure 16-2 shows the immediate terminal environs and local circulation system.

The recently-constructed Church Street South housing project, for low and moderate income dwellers, is located directly across Union Avenue from the terminal. The low-rise development consists of 300 low-income units with a small service/commercial area and a park strip. Two medium and high-rise developments, for the elderly, are adjoining the Robert Wolfe Elderly Housing and the Jewish Community Council Elderly Housing.

Columbus Avenue (temporarily closed) passes through the middle of this residential complex, connecting Church Street South and Union Avenue. Some areas north of Columbus Avenue are presently vacant, but are planned for additional housing or open space use.

The low-income housing project is clean and attractive from the outside, but vandalism and a general lack of upkeep have led to some deterioration among the units. Although there are no statistics to indicate that there is a particularly high crime rate around the housing project, some railroad patrons feel that the area is not particularly safe because crime is often associated with low income areas.

The actual and perceived safety of the general area should be greatly increased when construction of the new police headquarters, located one block from the terminal on Union Avenue, is completed. The presence of police activity as well as the increased use of Union Avenue, due to more constant flow of people in and out of the terminal, should have a beneficial impact on people's perception of safety.

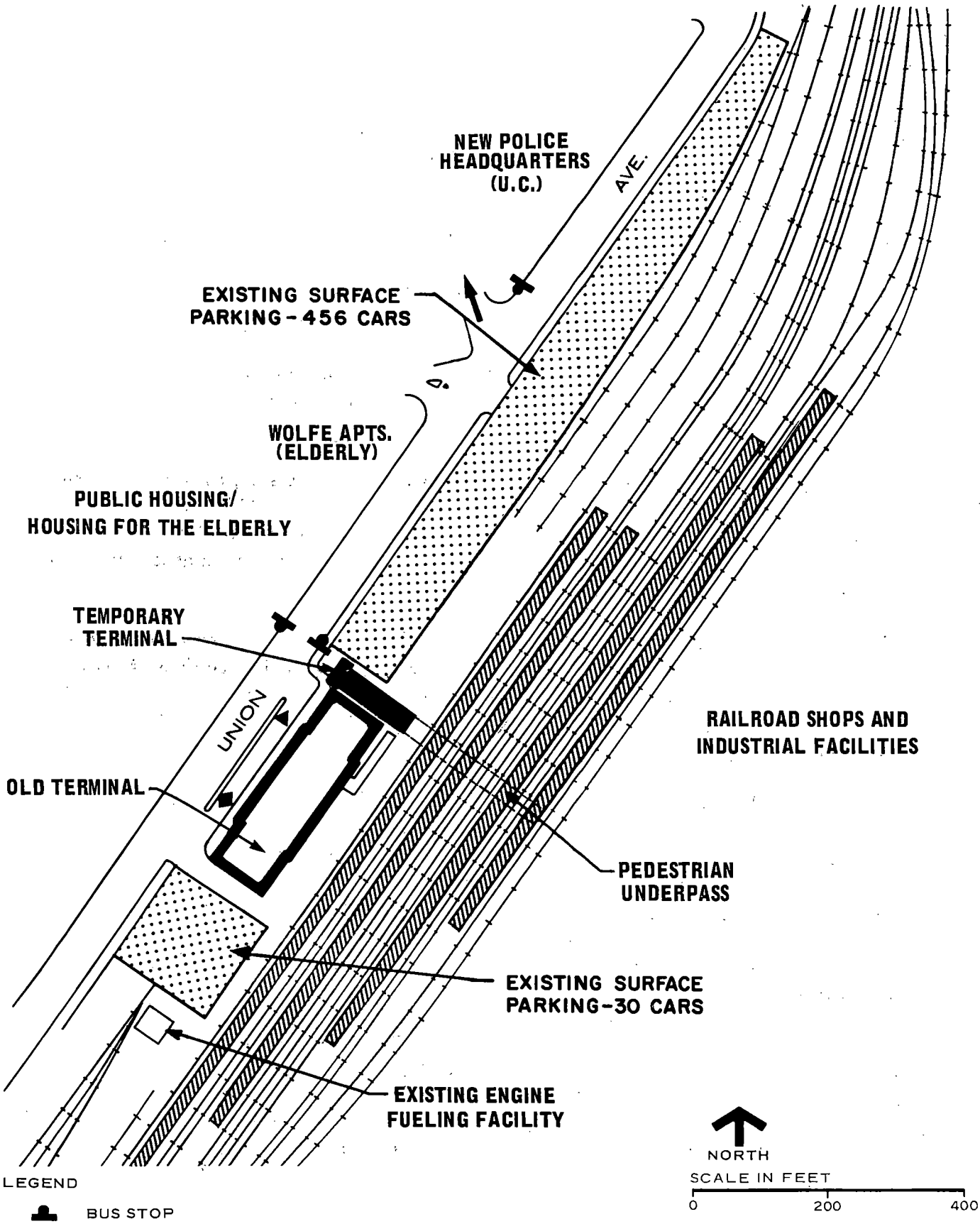
The area immediately east of the terminal and tracks is devoted to railroad and industrial uses. It is accessible from the terminal only by the Oak Street Connector and an old bridge, spanning the tracks, which is located on Water Street north of the terminal.

Planning Factors, General Terminal Area

Activity centers and other planning factors in the terminal area are shown in Figure 16-3 and listed in Table 16-2.

Union Station is located a few blocks south of the CBD. The area to the west and north of the terminal consists predominantly of residential and intensive commercial uses. The area to the east of the terminal is primarily industrial, and there is no direct access from there to the terminal. The area west of the tracks is the most important in relation to the terminal. This entire area has been undergoing major redevelopment as part of the Oak Street, Church Street and State Street projects.

A definite distinction exists between the areas to the north and south of the Oak Street Connector (State Route 34). The area north of Route 34 is devoted primarily to intensive land



EXISTING STATION ENVIRONS
NEW HAVEN STATION
NEW HAVEN, CT
FIGURE 16-2

uses and is part of the CBD. In recent years, major new retail, office and other business facilities have been built in this area, particularly along Church Street. The new Chapel Square Mall, the Sheraton Park Plaza Hotel, Macy's, Malley's and several parking garages are the focus of a rejuvenated retail/commercial area in the CBD. Other major new structures include several bank buildings, the high-rise Knights of Columbus office tower and the newly-completed New Haven Veterans Memorial Coliseum, with an adjacent parking structure.

The area south of the Oak Street Connector is primarily residential, with the large Yale-New Haven Medical Center located about four blocks northeast of Union Station. Most of this area is being renewed or rehabilitated for residential use, as part of the Church Street Redevelopment and Renewal Project. In recent years, a new high school, low income housing and housing for the elderly have been built in the area.

Further west lies the extensive Hill Renewal and Redevelopment Area. This is presently an area of mixed residential uses. Certain segments around Columbus and Congress Avenues are very run down and exhibit characteristics of a blighted area.

There is a limited amount of commercial and industrial activity in the area, south of the Oak Street Connector, including some renovated restaurants and a small commercial/industrial district south of the terminal, around Union Avenue and Liberty Street. The Knights of Columbus Printing Press is located north of the terminal, at the corner of South Orange and Water Streets.

In summary, there are several major types of land uses in the general vicinity of the terminal. The immediate environs are residential, but there are nearby areas of retail, office, medical and entertainment facilities. Much of the general terminal area is undergoing renewal, and due to the amount of recent construction, structural conditions are generally good. Streets, street lighting and sidewalks are generally adequate. However, some residential areas near the terminal remain blighted, although the redevelopment projects may improve these conditions.

16.3 EXISTING PASSENGER HANDLING FACILITIES

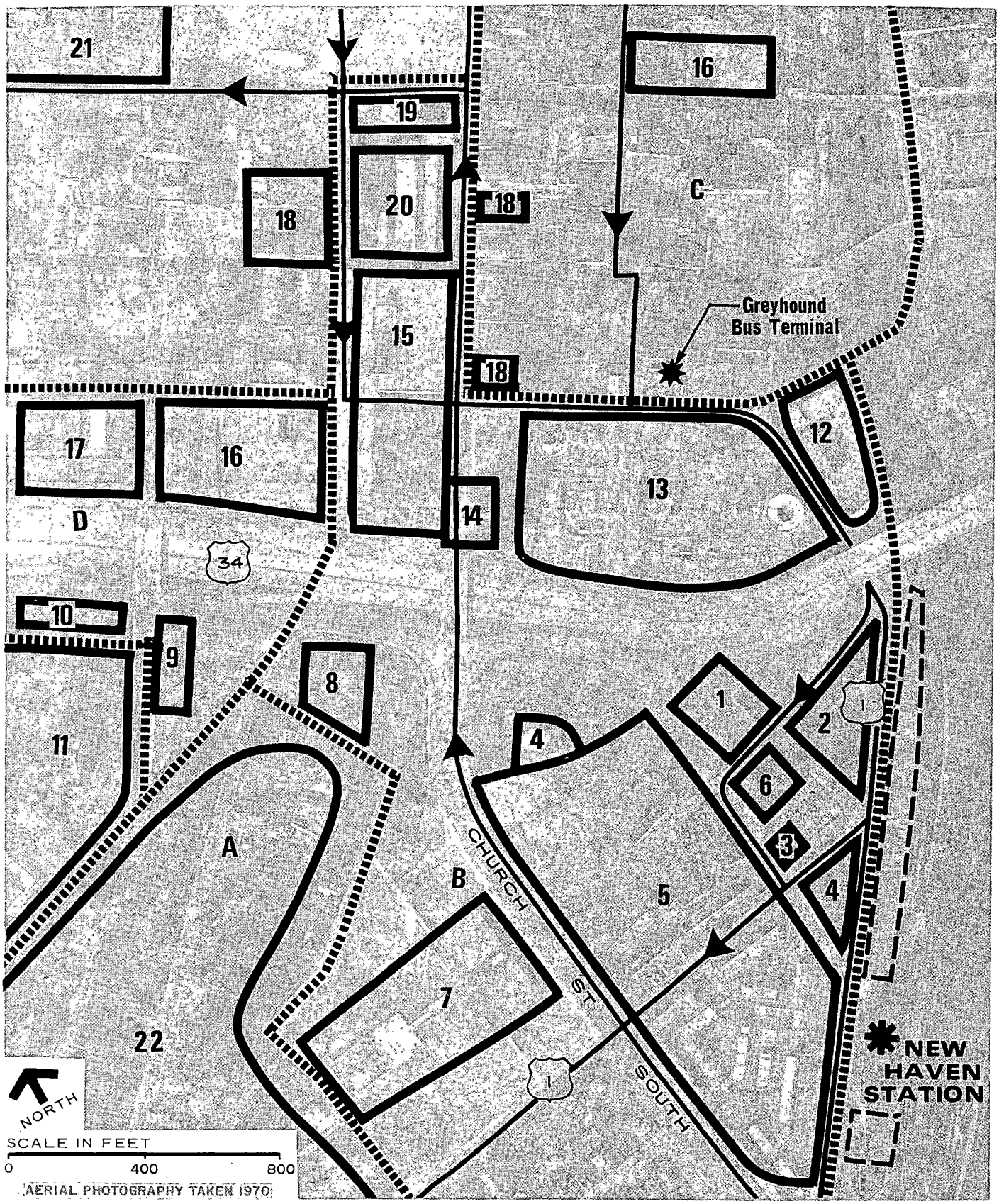
16.3.1 PASSENGER ACCESS AND EGRESS

Arrivals at and departures from the terminal are made by bus, taxi, auto and by foot.

Automobile Access

Union Avenue furnishes direct access to the terminal. It has recently been repaved. The nearby CBD can be reached from Union Avenue via Church Street South, a partially divided arterial.

A major arterial highway (Route 34) separates the terminal area from the CBD. Route 34, which is an expressway in this area, is only three blocks from Union Station. Terminal patrons have good access to the on and off-ramps.



LEGEND

PARKING

BUS ROUTE

0 EXISTING ACTIVITY CENTER (SEE TABLE 16–2)

A PROPOSED ACTIVITY CENTER (SEE TABLE 16–2)

PLANNING FACTORS
NEW HAVEN STATION
NEW HAVEN, CT

FIGURE 16–3

TABLE 16-2

ACTIVITY CENTERS, GENERAL TERMINAL AREA

EXISTING ACTIVITIES

1 Knights of Columbus Printing Plant

2 New Police Headquarters (nearing completion)

3 Restaurant

4 Housing Project for the Elderly (Jewish Community Council and Robert Wolfe Elderly Housing)

5 Low Income Housing Project (Church Street South Housing)

6 Old Railroad Office Building

7 Richard C. Lee High School

8 Doctor's Building

9 College Plaza

10 Rockefeller Laboratory

11 Yale New Haven Medical Center

12 Community Service Building

13 Veteran's Memorial Coliseum (includes large parking structure)

14 Knights of Columbus Tower (offices)

15 Macy's; Malley's (department stores)

16 Commercial facilities

17 Southern New England Telephone Company

18 Major banks

19 Chapel Square Mall (stores, offices)

20 Sheraton Park Plaza Hotel

21 Yale University

22 Medium and moderate income residential area

PROPOSED ACTIVITIES (Redevelopment Projects)

A Hill Project Area

B Church Street Project Area

C State Street Project Area

D Oak Street Project Area

State Route 34 forms the southern boundary of the CBD and office complexes, and as a result, the terminal area is effectively separated from most of the CBD traffic. Congestion problems occur only during peak morning and evening hours.

Most trips to the CBD are presently made by automobile, and for the most part, the present highway system and street network is adequate. Traffic volumes, within the CBD area, appear to be adequately served by the one-way street system and the interconnected signal system.

Major congestion problems occur during the peak-travel periods, particularly where the highways meet the local streets. Two such problem areas are in the general vicinity of Union Station; the intersections of the North and South Frontage Roads with College Street.

Other Connections

Taxis are available in an off-street lane outside the terminal. The taxi stand can accommodate more than a dozen vehicles. Currently in the New Haven area, there are 109 cabs operated by the Yellow Cab Company and three by the Branford Cab Company. On an average weekday, however, there may be no more than 70 cabs in operation and almost none at night or on weekends. The majority of the cabs were purchased second-hand from New York's Yellow Cab Company and are in need of replacement. Taxi rates are relatively low—$0.50 for the first one-sixth mile and $0.10 for each additional one-sixth mile.

There are no facilities for kiss-and-ride patrons. Passengers are dropped off and picked up on Union Avenue and in the off-street lane, which conflicts with the taxi service. There are no car rental facilities at the terminal.

Pedestrian access is hindered due to the distance of the terminal from major activities and the nature of the walk through the redevelopment area. Safety in the immediate area is only moderate. Traffic congestion and parking demand could be reduced if pedestrian access to the CBD and safety of the terminal environs were improved.

16.3.2 PARKING

The present parking supply is inadequate for the demand. Within a 1,200-foot walking distance from the terminal, there are only 486 public parking spaces available to terminal patrons. All spaces are furnished by Penn Central; 456 spaces are located on a lot directly north of the terminal, and 30 spaces are located directly south of the terminal. Parking rates are relatively low compared to other cities along the Northeast Corridor; the daily rate is $1.00 and the monthly rate is $15.

In addition to the public parking facilities, Penn Central also provides 25 spaces for employees one block west of the terminal. Apparently, however, this is inadequate for the employee demand. It has been reported that about 150 of the cars, which park in the public lots, belong to railroad employees. In addition, as many as 50 people park their cars at this location and then transfer to buses, which are bound for area race tracks. Thus, over 40 percent of the spaces now potentially available to commuters and Amtrak patrons are being used to satisfy competing parking demands.

The Coliseum parking garage is located approximately one-third of a mile from the terminal. The Coliseum garage has a capacity of 2,400 spaces with a monthly rate of $18.00. The facility has the potential to help meet the parking demand, but it has three disadvantages: it is beyond convenient walking distance from the terminal; rail patron use could conflict with other uses; and, the parking rate is higher than at the terminal.

In addition to these long-term parking facilities, curb space is available along Union Avenue for short-term parking. Most spaces are limited to two hours, but there are some spaces which have no time limit.

16.3.3 PASSENGER PROCESSING

For Existing Tunnel Plan, see Figure 16-4; for Existing Main and Second Floor Plan, see Figure 16-5.

Functional Flow

Entrance to the present terminal is via one set of double doorways from a canopied drop-off area along Union Avenue. The doorways are at sidewalk grade. See photo 1.

The interior spaces of the terminal are arranged in line according to the following sequence:

(1) An entrance doorway.

(2) A short vestibule which terminates in four steps leading downward to a gangway.

(3) A gangway with a floor sloping downward to the subway (underpass) room. The gangway is equipped with seating.

(4) Stairwells connecting the underpass to the track platforms above.

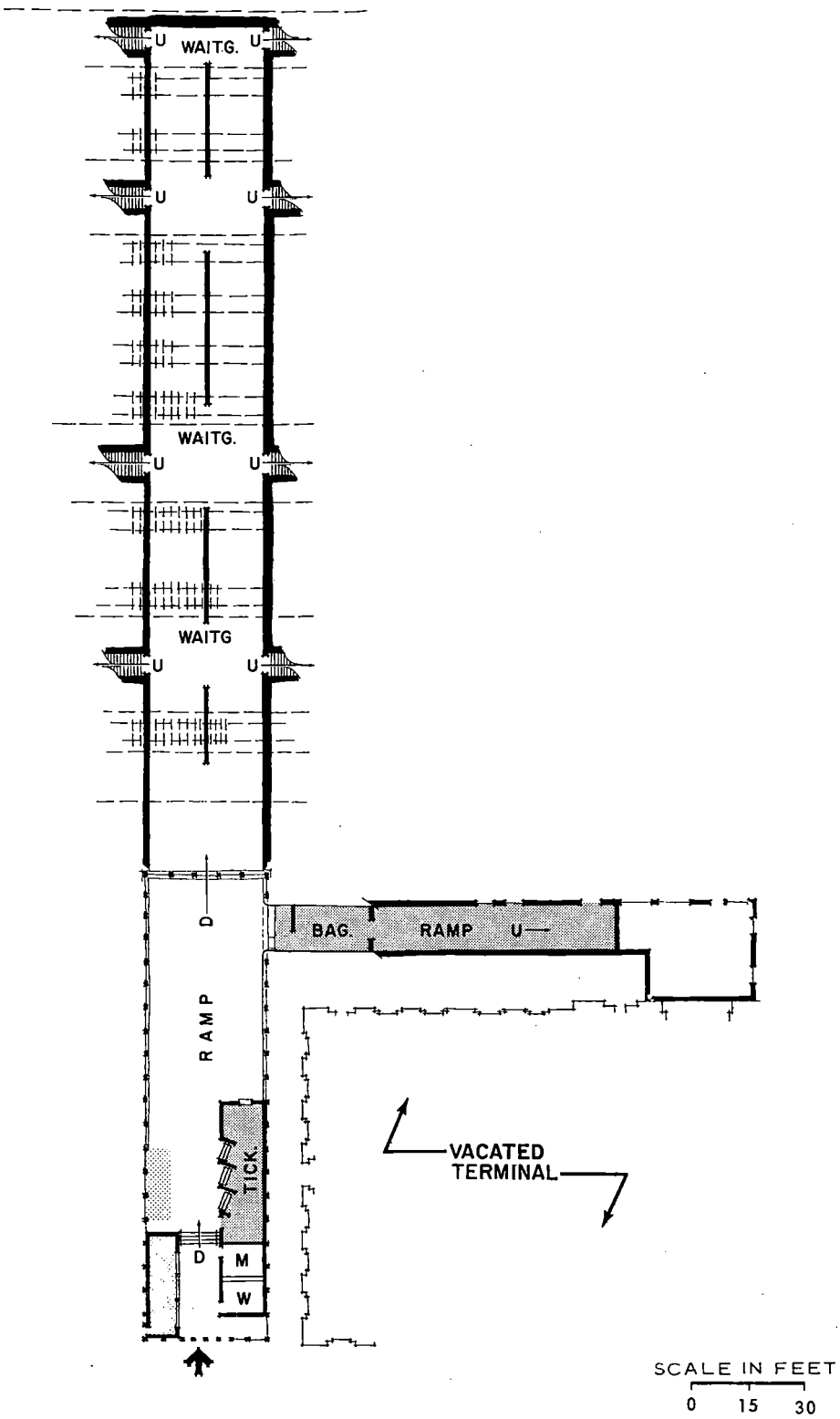
Passengers enter the vestibule at sidewalk grade, step down to the gangway, purchase tickets at a counter and continue on to the baggage check window or proceed to the underpass area for seating. See photo 2. Stairwells adjoining the underpass lead to modern high-level and obsolete low-level passenger platforms.

Information

Train information is provided at ticket windows, at the baggage counter, posted on two blackboards or announced over the public address system.

Ticket Purchase

Tickets are purchased at three window counters which face the sloping floor gangway. At this point, passengers queuing for ticket purchases interfere with traffic flow to and from the platforms.



TICKET OFFICE AND UNDERPASS FLOOR PLAN

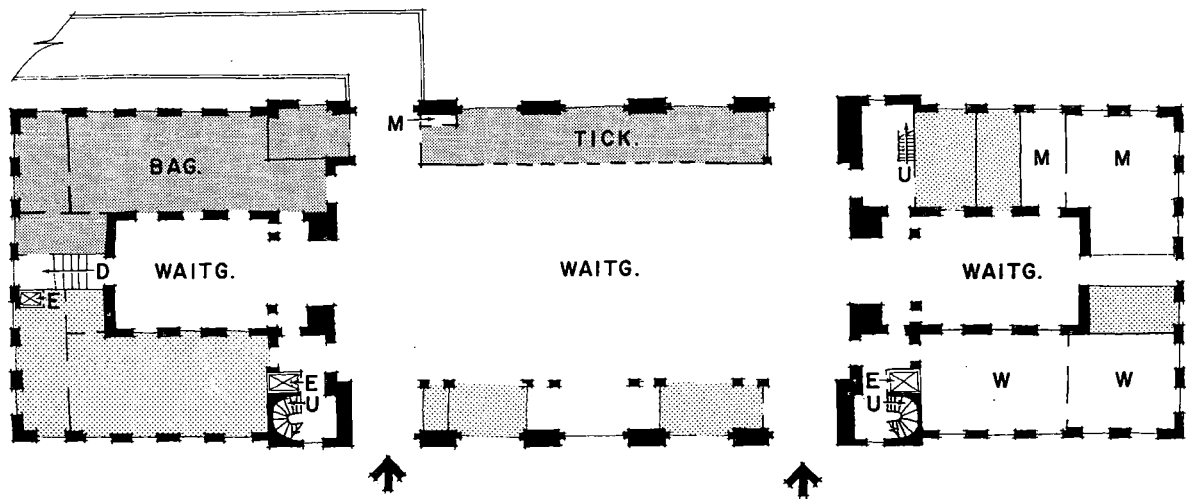
LEGEND

RAILROAD FUNCTION

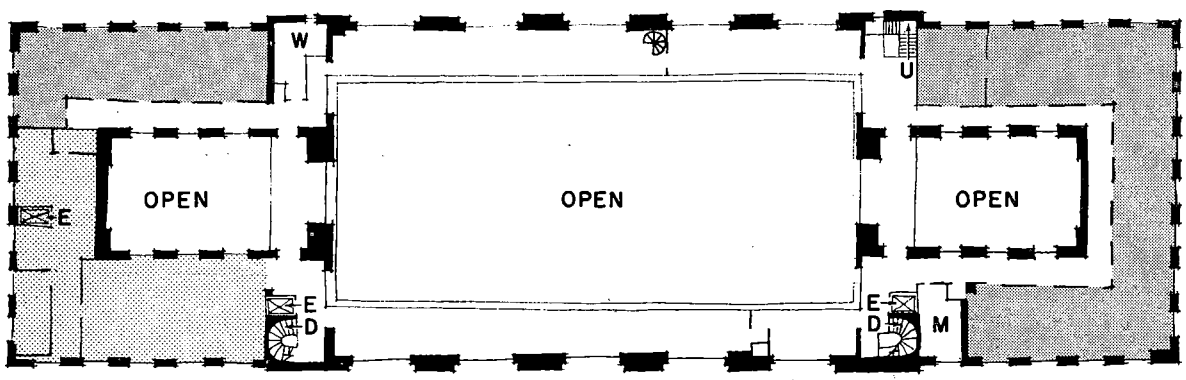
CONCESSION

EXISTING NEW HAVEN STATION
NEW HAVEN, CT

FIGURE 16-4



VACATED TERMINAL
FIRST FLOOR PLAN



SCALE IN FEET
0 25 50

VACATED TERMINAL
SECOND FLOOR PLAN

NORTH

LEGEND

RAILROAD FUNCTION

CONCESSION

EXISTING NEW HAVEN STATION
NEW HAVEN, CT

FIGURE 16-5

Baggage

Baggage handling is cramped in one small room adjoining the gangway. Baggage is transported from this room to the platforms by way of an outdoor route over at-grade track crossings. Physically handicapped passengers are assisted to and from the platforms via the baggage route.

Waiting Room

Seating is provided in the subway room (under the tracks) which serves as the general waiting room. See photo 3. Some additional seating is located on the platforms.

16.3.4 PUBLIC SERVICES

Men's and women's rest rooms are located in the vestibule. Pay telephones are distributed through the public areas and a car rental phone is available in the gangway.

16.3.5 CONCESSIONS

A stand-up snack bar and vending machines for soft drinks, confections, coffee and newspapers are located in the gangway.

16.3.6 RAIL PASSENGER OPERATION FACILITIES

Amtrak's general supervisor of services and a passenger service representative have an office several blocks from the terminal. The services offices will be moved to quarters adjacent to the existing terminal. Security is provided by roving Penn Central personnel.

16.3.7 FACILITY CONDITIONS

Exterior

Exterior surfaces appear serviceable. Low-level platforms are in need of reconditioning. High-level commuter platforms and canopies of concrete and steel construction appear in good condition. See photo 4.

Interior

The structure appears sound from surface observations. Surface finishes such as vinyl-coated wall paneling, fiberboard ceilings, asphalt tile flooring, and surface-mounted heat and light fixtures appear to have been vandalized. Ticket office carpeting is worn and soiled.

Utilities

Heating is provided by electrical units. The ticket and baggage rooms are air conditioned by individual units.

Ventilation is achieved generally by opening windows.

Water, electrical and sewage disposal services are reported to be adequate for current needs.

16.3.8 ORIGINAL TERMINAL CONDITION AND STATUS

The original terminal building is presently unused; lower-story windows have been boarded over and the building is locked. See photo 5.

Passenger Processing

Passengers entered the terminal at sidewalk grade through two sets of front doors from Union Avenue, and through doorways on either end of the building. All doorways were originally protected by canopies. Passengers then passed through a vestibule and a main waiting room to the ticket windows. Baggage was checked at counter facilities nearby. Seating was available in two rooms adjoining the main interior terminal space. The path to the trains followed a system of exterior ramps, which led to an underpass and stairways to the various platforms. The original stairways, the underpass and parts of the ramp system are now elements of current operating facilities.

There were two passenger elevators; at present, both are non-functioning and need to be replaced. Lockers, pay telephones, a traveler's aid station and rest rooms were located on the main floor. Dining facilities consisted of a lunch counter as well as a restaurant with kitchen facilities. Various concessions were located on the main floor.

Facility Conditions

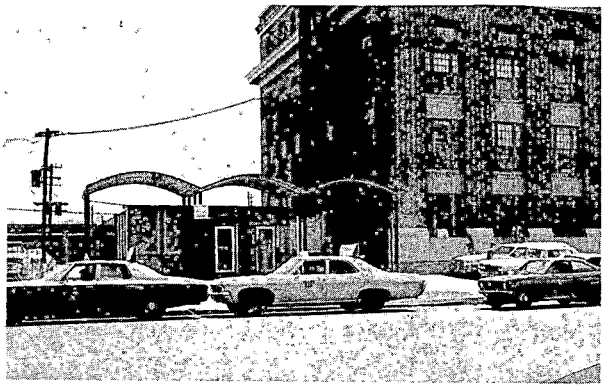
The exterior surfaces of the building have accumulated grime over the years and are in need of cleaning and some repair.

The interior surfaces, exposed to an uncontrolled climate because the building has been unused, are coated with grime and are deteriorating. See photo 6. Vandalism has taken a toll of removable fixtures. Extensive temporary modifications, installed during World War II, could be removed.

Observations of the interior and exterior surfaces reveal no apparent weaknesses in the building structure. The basement air is saturated with diesel oil fumes which caused various problems in the later days of the building's use. It is reported that the fumes and oil contamination interfered with dining room operations. Observations indicate that a film of oil lies on top of the ground water table in the basement area. Oil sludge is brought into the basement on rising waters when the sump pumps fail. It is deposited on the walls of the pumping room, at the highwater marks; it is also thickly deposited on sump well surfaces. It is believed that years of engine fueling, accidental spillages and perhaps leaking subterranean fuel lines, in the vicinity, have led to contamination of the soil in the terminal area.

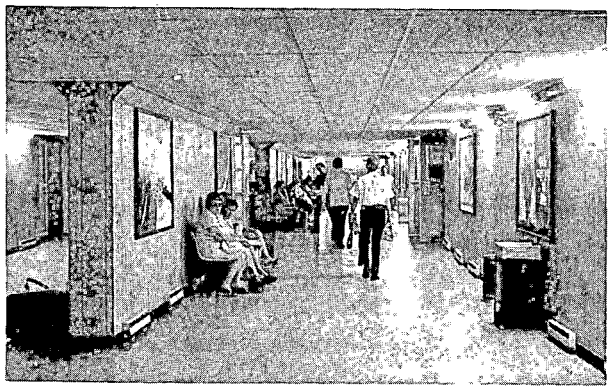
UNION STATION – NEW HAVEN, CONNECTICUT

EXISTING FACILITY

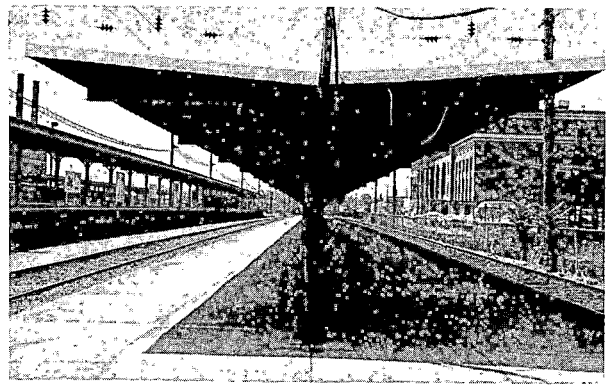


1. Canopy Entrance to Existing Terminal

2. Ticket Office in Entrance Corridor



3. Subway Waiting Room

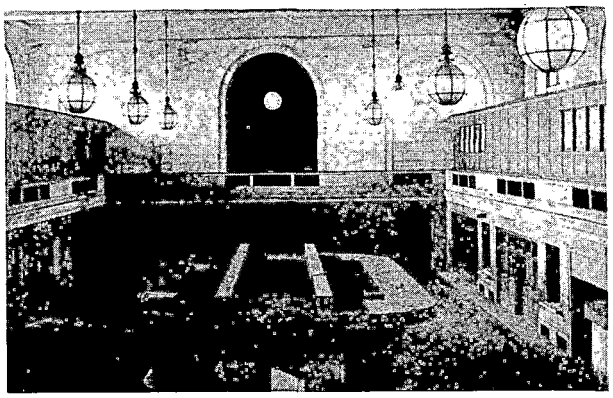


4. Amtrak Intercity Train Platform

NEW HAVEN STATION – NEW HAVEN, CONNECTICUT

EXISTING FACILITY (Cont'd)

5. Union Station Presently Not in Use



6. Terminal Waiting Room Not in Use

Steam heat was ducted to the terminal building from a separate boiler plant. Fresh air was drawn through intakes above roof top level, drafted through steam-heated radiators in the basement and distributed throughout the building by a system of ducts. Moisture was added to the air, within the system, to keep humidity levels at desirable limits. This is said to have created a shirt-sleeve climate within the building in the winter. The radiator elements of this system show signs of leakage and may have to be replaced.

Air conditioning was provided by individual units located in various offices and working areas.

The supply of potable water, gas and electricity was reported to be adequate when the building was in use.

It is reported that much of the piping associated with plumbing is corroded and in need of replacement.

16.4 FORECAST ACTIVITY LEVELS

16.4.1 PROJECTED DESIGN DAY PATRONAGE

The 1990 peak design day is expected to be 5,200 HSR patrons and 1,100 commuters (one way). Thus, the total one-way daily loading at the terminal would be a maximum of 6,300, almost five times greater than present terminal use.

HSR use is expected to be towards the upper limit of the projection for several reasons: the frequency and schedule of the service will permit rapid and easy commuting to New York City; HSR will be in a good competitive position with respect to air and bus service; and, the continued population growth of the greater New Haven area and increased concentration of office activities are expected to support a high level of HSR use.

Peak-hour patronage is expected to reach 800 HSR and 500 commuter passengers for a total loading of 1,300.

16.4.2 PROJECTED MODE OF ACCESS

Percentages of daily passenger arrivals were projected for 1990, by mode, as shown below. The primary mode of access to the terminal will continue to be the automobile.

	Percentage		
	Low	High	Median
Park-and-ride	40	65	50
Park-and-ride passenger	10	15	15
Kiss-and-ride	15	25	20
Rail transit	0	0	0
Bus	10	20	7
Taxi and limousine	1	5	3
Walk	5	15	5

Bus service is expected to account for 10 to 20 percent, with the higher figure dependent on improved service and construction of the multimodal transportation center. Improved pedestrian access could increase the percentage of walkers.

16.4.3 PARKING REQUIREMENTS

Future parking demand at the terminal is expected to be high. It is estimated that approximately 2600 spaces would be required for HSR passengers, based on a 1990 design patronage of 5,200.

16.5 PLANS AND PROPOSALS

16.5.1 TERMINAL IMPROVEMENTS

The present facilities will have to be replaced in order to handle the projected 1990 terminal patronage.

A consultant to the city recently completed a feasibility study for a proposed New Haven Transportation Center. The study recommended a new multimodal transportation center at Union Station, involving rehabilitation of the old terminal as well as a new parking garage and commercial facilities, including a bank and restaurant. The transportation center at Union Station was originally recommended in 1971 following an evaluation of 11 alternative sites throughout the CBD and adjacent area.

Under this plan, the New Haven Transportation Center would include rail facilities as well as bays for local and intercity buses, taxi and limousine bays, a parking garage and kiss-and-ride facilities. It has been estimated that the total project would cost $8 to $11 million; $4.9 million would be utilized for the construction of a new parking garage for all uses, with capacity for 1,475 spaces. Since the major cost of the project would be the parking garage, the consultant recommended that the New Haven Parking Authority fund the cost of the garage, and that the remainder of the project be funded by the Urban Mass Transportation Administration, Connecticut Department of Transportation, the city of New Haven and Amtrak.

The primary objective of the transportation center concept is to integrate and enhance the modal interchange for vehicles and pedestrians. Other long-range objectives include encouraging the utilization of all forms of public transportation and promoting economic development in the area.

At the present time, a small building at the top of the baggage ramp is being renovated for use by Amtrak supervisory and passenger services representatives.

16.5.2 FUTURE LAND USE PLANS

After the completion of the present redevelopment projects, future land use changes in the immediate terminal area appear unlikely. Most of the presently vacant land in the area is committed for additional housing and open space use as part of the Church Street project. Limited commercial facilities will exist in the project area, with additional specialized commercial facilities located in the renovated and expanded terminal facility primarily to serve patrons of the proposed transportation center.

The major land use change in the area would be the rehabilitation of Union Station to serve as a multimodal transportation center, with construction of adjacent parking facilities.

16.5.3 STREET AND TRAFFIC IMPROVEMENTS

Union Avenue, Church Street South and Columbus Avenue (temporarily closed) are the major access streets to the terminal. With the anticipated substantial increased use of Union Station, these streets will be required to handle significantly more traffic than at present. By 1990, increased auto traffic is likely to generate congestion both at the terminal and between the terminal and the CBD.

This congestion should be eventually eliminated, however, through TOPICS programs and various operational improvements. The recent widening and rechannelization of Church Street South has already resulted in improved access to the terminal. Future plans call for computerizing the signal system.

16.5.4 TRANSIT IMPROVEMENTS

No rapid transit system is currently being planned for New Haven and such a system appears unlikely by 1990.

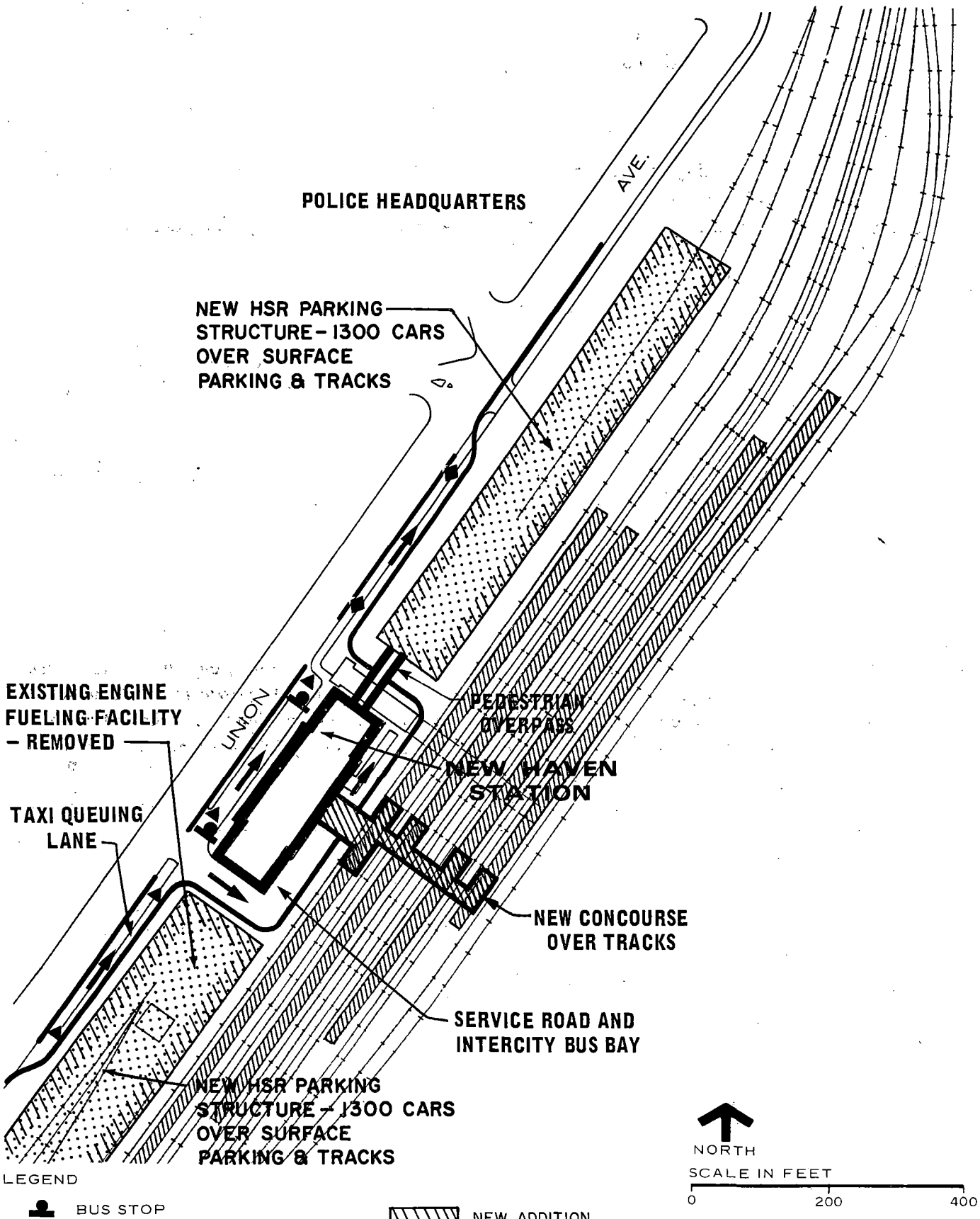
16.6 RECOMMENDED 1990 ACCESS/EGRESS AND PARKING PLANS

The 1990 concept plan for Union Station, New Haven, includes street improvements to relieve congestion around the terminal, modifications in parking control, provisions for new parking structures, and mode interchange facilities as well as renovation of the old terminal building for HSR service, including the addition of a mezzanine and a connecting walkway to a concourse over the platforms. There would also be an overhead walkway connecting the parking area with the mezzanine. The existing underpass terminal facilities would be removed. The general concept plan is shown in Figure 16-4. Terminal improvements are discussed in Section 16.7. The proposed concept plan is similar to the preliminary proposal, prepared by the combined staffs of the New Haven City Plan Department and the Department of Traffic and Parking, for a "New Haven Transportation Terminal."

16.6.1 STREET AND TRAFFIC IMPROVEMENTS

On-street parking in the vicinity of Union Station, primarily along Union Avenue, should be eliminated to increase the traffic-carrying capacity and to compliment the circulation to and from the proposed parking facility.

Union Avenue should be rechannelized to accommodate efficient through and turning movements into the terminal facilities. Restriping, as proposed in the TOPICS report, should be undertaken, where necessary, due to the elimination of on-street parking.



1990 CONCEPT
NEW HAVEN STATION
NEW HAVEN, CT

FIGURE 16-6

The implementation of TOPICS recommendations, at the intersections of North Frontage Road with College Street, should relieve congestion in the general terminal area.

16.6.2 PARKING

A 1,475-space parking garage has been proposed as part of the transportation center. Since this will be a long structure, it should include space for HSR patrons at the south end, with an overhead walkway connection to Union Station. Moving walkways in the parking garage are also desirable.

Although this garage would provide 1,000 spaces over the present supply, it would still be inadequate to meet HSR requirements as well as the needs of commuter patrons and terminal employees. As HSR patronage increases, a second parking facility, south of the terminal, may be necessary. An eventual pedestrian link over the service road, from the second parking facility to the terminal, should also be considered.

The construction of such a large amount of new parking to accommodate the projected HSR demand is likely to require approval from the Environmental Protection Agency, and such approval is far from certain. Thus, alternative strategies should also be employed to accommodate the needs of HSR patrons, such as use of Coliseum parking on a shared basis.

16.6.3 INTERMODAL TRANSFER

To reduce the traffic impact on the existing street and highway system, and thus also reduce related air and noise pollution, strong encouragement should be given to providing improved local bus service to Union Station. This would also reduce the high parking demand. Substantial improvement in the existing level of bus service, including new routes, schedules and equipment will be necessary to significantly increase bus usage. Possible multiple use of the Coliseum parking garage, with a shuttle bus connection to Union Station, would also help to reduce parking demand.

If Union Station is developed as a transportation center, improved routes and schedules can certainly be expected, and new facilities for expanded bus service will be necessary. Accordingly, the 1990 concept provides for an off-street, local-bus loading and unloading lane directly opposite the main terminal entrance.

Due to the longer expected dwell times of intercity buses, special provisions have been made for intercity bus service east of the rehabilitated terminal building.

An off-street queuing lane for taxis, south of the terminal building, is also included in the 1990 concept. Actual taxi loading and unloading and limousine service have been combined with the local bus service in front of the terminal. These plans have been developed on the basis of the space available and the expected demand for local bus service.

Special provisions have been made for facilities to accommodate kiss-and-ride patrons. Increased use of kiss-and-ride can be expected if insufficient parking is provided at the terminal.

Accordingly, an exclusive kiss-and-ride drop-off and pick-up lane has been included in the 1990 concept. This area would be located north of the terminal and adjacent to the proposed parking facility. The taxi queuing lane could also be designated for kiss-and-ride use if demand warrants and if such use does not seriously conflict with taxi-service needs.

Improved pedestrian access is recommended along Union Avenue and through the public housing project on the west side of Union Avenue.

16.7 RECOMMENDED 1990 PASSENGER TERMINAL PLANS

The proposed terminal plans are shown in Figures 16-7 and 16-8.

Projections for 1990 indicate a need for a large terminal building in New Haven. The ground floor of the original terminal building occupies a gross terminal area nearly equal to requirements indicated by the projections. Since the structure appears to be sound and can meet future requirements of the HSR system, it is recommended that the former passenger facilities be renovated for use as a rail terminal and, that the present underpass passenger terminal be removed.

Restoration of the original building for further use would require modification of interior spaces and the addition of external structures, as required, for future passenger-processing operations. Work which may be required to rehabilitate floor areas, not essential to passenger operations and processing, but which could be made available to commercial concerns or other agencies, is not included here.

16.7.1 PASSENGER ACCESS AND EGRESS

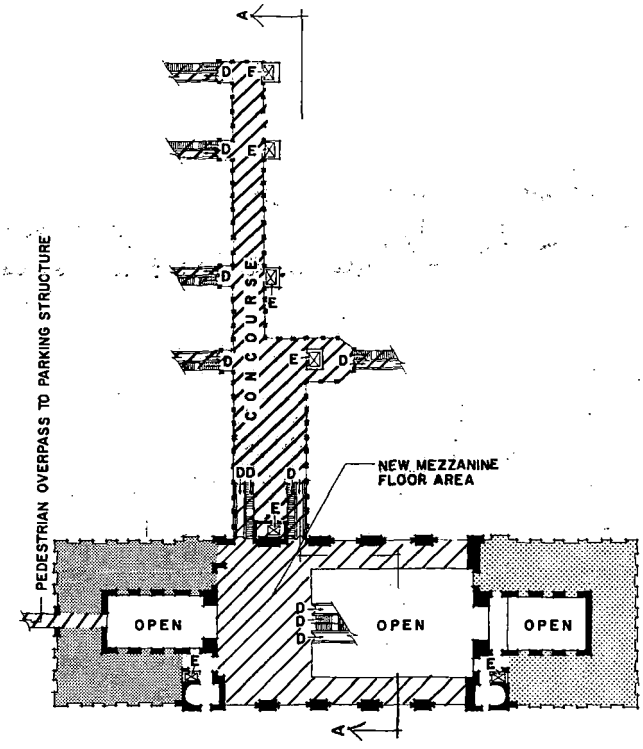
Passengers arriving by automobile would park in the new multilevel parking structure, located adjacent to the terminal on an existing railroad parking lot, and walk to the terminal via a new overhead connecting walkway. The enclosed walkway would be at second-story level and connected to the new mezzanine level.

Passengers being dropped off would alight from the right side of the automobile onto a safety island, which would be parallel to Union Avenue. They would walk to the terminal at Union Avenue sidewalk grade. Taxis, limousines and local buses would also discharge passengers along Union Avenue, onto a sidewalk adjoining the terminal.

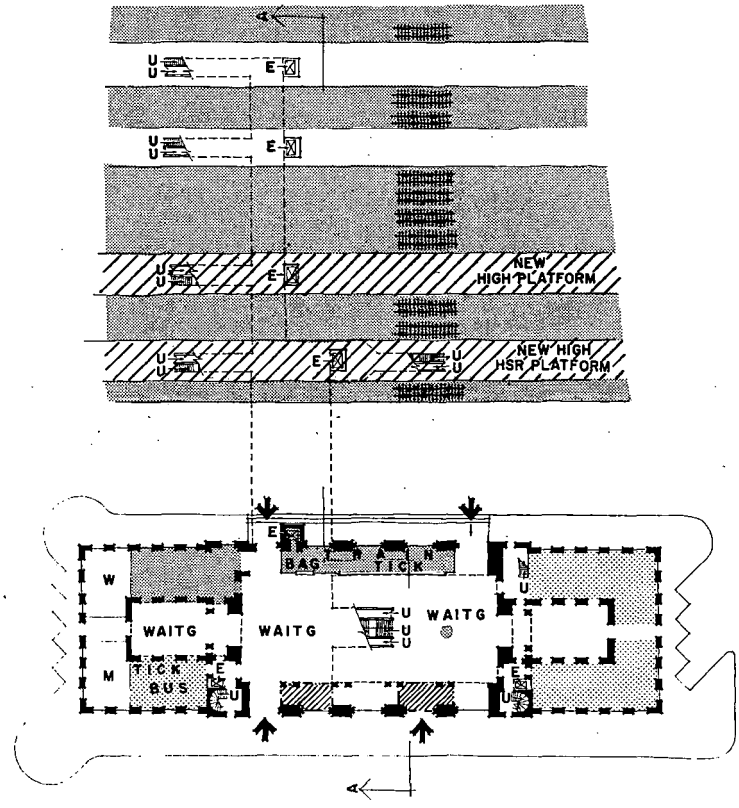
Long distance buses would discharge passengers at the bus berthing area, located at track side.

Curbs and sidewalk pavements would be depressed in the island pavement surrounding the terminal at selected points, to afford unassisted access for physically handicapped patrons.

Passengers would enter the terminal building at sidewalk grade through four main automatically-actuated, multiple doorways, two each from Union Avenue and from trackside. Two other doorways would provide additional exit capacity at each end of the building.



SECOND FLOOR PLAN



NORTH

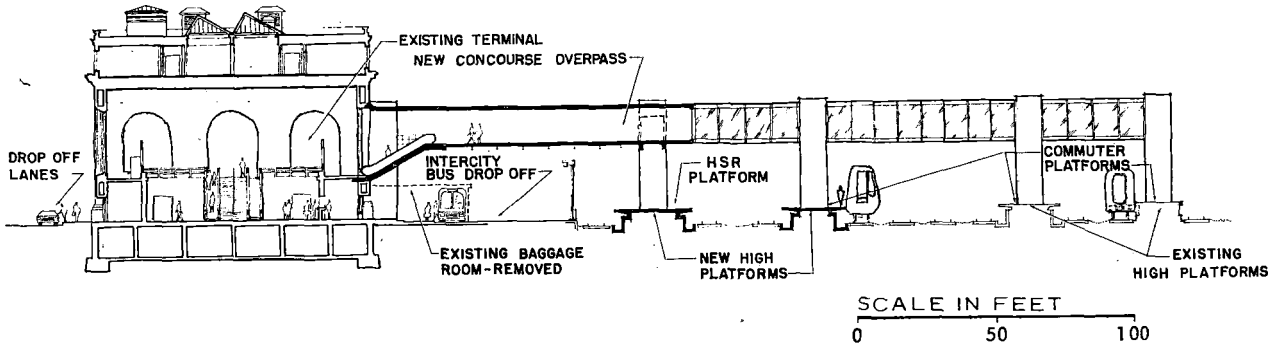
SCALE IN FEET
0 50 100

FIRST FLOOR PLAN

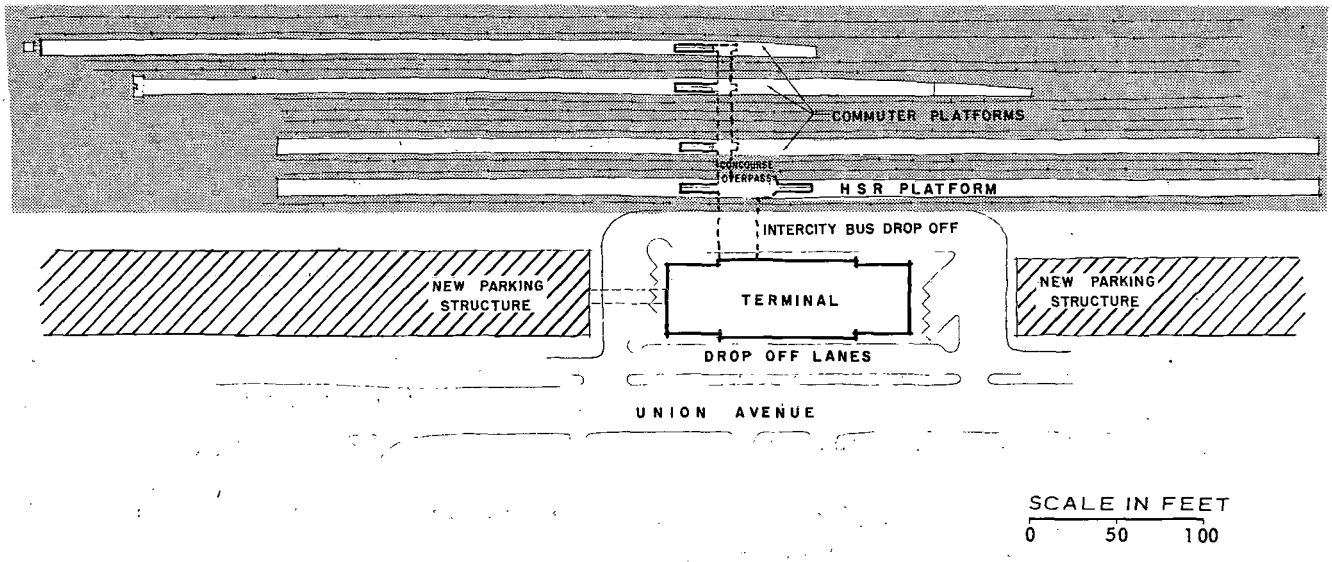
LEGEND

- CONCESSION
- RAILROAD FUNCTION
- INCREASED CIRCULATION
- NEW ADDITION

1990 CONCEPT
NEW HAVEN STATION
NEW HAVEN, CT



CROSS SECTION A-A



PLATFORM PLAN

NORTH

LEGEND

RAILROAD FUNCTION

NEW ADDITION

DC/STV

1990 CONCEPT
NEW HAVEN STATION
NEW HAVEN, CT

FIGURE 16-8

16.7.2 PASSENGER PROCESSING

Functional Flow

Passengers entering the terminal at sidewalk grade would walk into the central area and then proceed to ticket counters where all types of tickets would be sold. Baggage would be checked at a counter nearby. Passengers would then proceed to seating in the central area or continue on to the upper concourse level where additional seating would be available. Stairs and escalators would connect the main terminal floor to the mezzanine and the upper concourse.

Passengers, who parked their automobiles in the multilevel garage complex, would proceed to the terminal through an elevated walkway which leads to the mezzanine. From there, they would descend to the terminal floor by way of stairs, escalators or an elevator and purchase tickets and/or check baggage. Baggage handling assistance would be available, on call, via telephones located in the parking decks. Commuting passengers would have unrestricted access to commuter passenger platforms via an enclosed walkway which would extend from the upper concourse to the commuter-passenger platforms. Passengers would be admitted to HSR long-distance trains from the upper concourse under gated control.

All platforms would be served by stairways, escalators and elevators. Handicapped passengers would follow the same route as other passengers, but would utilize baggage elevators to transfer between floor levels.

Information

An information booth, with an overhead train information board, would be located in the main waiting room. TV screens, located in the main waiting room, mezzanine and upper concourse, would monitor train arrival and departure times. Train information telephones, connected to this booth, would be located in the parking garage, mezzanine and upper concourse.

Waiting Room

The main interior space of the existing terminal would be refurnished and restored as the terminal activity center. Floor, wall and ceiling surfaces would be refinished, new furnishings installed and an information booth added.

Additional seating would be provided on the mezzanine and upper concourse level, at locations affording interesting views of train movement.

All waiting areas would be properly illuminated, heated, air conditioned and ventilated.

Ticket Purchase

The ticket sales area would be retained within the main waiting room, along the trackside wall. This area would be remodeled and equipped with modern ticketing facilities. Separate windows would be designed for HSR service, other long distance service and commuter ticket sales. Physically handicapped patrons would be accommodated at a special window.

Baggage Handling

Baggage check-in and claim counters would be continuous with the ticket counter. Baggage storage space would be provided at the main terminal level. Baggage would be transported from the terminal to long-distance platforms by combination passenger-baggage elevators.

Mezzanine

The mezzanine floor, with its connecting walkway, stairs, escalators and elevator stop, would connect the upper concourse and garage with the main waiting room. The mezzanine floor would afford patrons a view of the main terminal floor below, and would also connect to the second-floor gallery concession areas.

Concourse

The concourse would be approximately 50 feet wide and would extend over the long-distance bus stop and the HSR train platform to the long-distance train platforms. It would serve as a circulation space, a waiting area at the train access gates and as an observation deck. Glass walls would afford views of bus and train activity below. Clusters of seats would be arranged about the room, and telephones would be available for last minute arrangements. Low-profile TV units would monitor train data. Orderly long-distance, passenger train boarding would be initiated from the concourse. At the far end, the concourse would narrow to a passageway connection to commuter train platforms.

The concourse and passageway would be heated, air conditioned and ventilated. Stairways, escalators and elevators would connect the overpass structure to the platforms below.

Platforms

The platform located farthest from the terminal would be removed. The two existing middle platforms, with canopies, are of new high-level design and would be retained with minor modifications for continued commuter use.

The two existing low-level passenger platforms, nearest the terminal, would be replaced by two new high-level platforms, each 1200 feet long, to serve HSR and other long-distance passenger trains. Canopies would be installed the full length of the passenger platforms. Platform-level windbreaks, with infrared heating devices, would be provided at selected points on each platform. The full length of the platforms would be illuminated.

16.7.3 PUBLIC SERVICES

Rest Rooms

Men's and women's rest rooms would be relocated to the east end of the terminal ground floor, nearest to the parking facility. Other passenger functions would also be located here.

Lounge

Space would be available on the second floor, at the east end of the terminal, for a rail-passenger lounge. Access would be from the mezzaine and from the parking structure walkway. Small men's and women's toilet areas would be included within the lounge.

Lockers

Public lockers for short-term baggage storage would be provided in the main waiting room and on the upper concourse.

Ground Transportation

Ground transportation facilities would be located immediately inside the main entrance from Union Avenue. These facilities could be manned jointly, individually or alternatively. Direct telephone lines would connect to the various services which would include connections to other modes of travel, such as local and intercity buses, airport connections and car rental, limousine and taxi information.

Travel Aid and Accommodations

Travel-aid and accommodations' facilities would be located immediately inside the main entrance from Union Avenue, adjacent to the ground transportation area. Services would include general travel assistance, first aid, and directories of hotels, churches and local, state, and federal offices.

Bus Ticket Office

A bus ticket office would be located at the east end ground floor. The ticket office would be accessible from Union Avenue, from the vestibule leading to the parking structure and from the main waiting room.

16.7.4 CONCESSIONS

Main floor and mezzanine concessions and commercial services would include a news stand, restaurant, cocktail lounge, snack counter, barber and shoe shine service, gift and tourist shop and vending machines. Additional floor area would be available, as shown, for commercial or railroad operations or for basement utilities and storage.

	Approximate Square Feet
Basement Floor	27,000
Ground Floor	4,000
Second Floor	6,000
Third Floor	9,000
Fourth Floor	27,000

16.7.5 RAIL PASSENGER OPERATIONS FACILITIES

Passenger Service Office

A suite of offices consisting of a waiting room, an office for the Passenger Service Manager, and desk space for a secretary, would be situated on the second floor at the east end of the terminal. This area is in close proximity to the passenger lounge, and would be directly accessible from the mezzanine and from the parking structure walkway. The space would be renovated to include carpeted floors, paneled and plastered wall surfaces, suspended acoustic-tile ceilings and flush-fluorescent lighting fixtures.

Ticket Offices

Ticket offices would be located at the east end of the ground floor near the ticket sales area. The suite of offices would consist of a supervisor's office, cashier's office with safe, general clerk area, storage room for tickets, supplies and equipment and an employee's lounge with rest rooms. These areas would be air conditioned and finished with vinyl-asbestos floor tile, plastered wall surfaces, suspended acoustic-tile ceilings and flush-fluorescent lighting fixtures.

Security

A new security office would be constructed within the suite of ticket offices. A closed-circuit TV surveillance system would be monitored in the security office during periods of terminal operations.

16.7.6 UTILITIES

Heating, Ventilating and Air Conditioning

Additional studies are recommended to evaluate the existing central heating system with respect to future serviceability and possible incorporation into a unified heating, ventilating and air conditioning system. However, planned renovations propose augmenting the existing system, as required, and combining heating and air conditioning by installation of rooftop or exterior-located package units.

Electrical Service

Additional studies are also recommended to evaluate the capacity and serviceability of the existing power plant, with respect to future needs. It is anticipated, however, that additional capacity would be required for air conditioning, new elevators and escalators, and increased lighting loads.

Water

Existing water services appear to be adequate.

Sanitary Sewer

Relocation and updating of rest room facilities would require interior modifications to the sanitary sewer and renewal of the plumbing system.

16.7.7 EXTERIOR BUILDING RENOVATIONS

The terminal exterior would be improved as follows:

Engine Fueling Facility

Due to the high degree of contamination and diesel fuel-oil odors within the terminal building, the existing engine fueling facilities located immediately west of the building would have to be relocated. Fuel oil contaminants would have to be removed from the terminal basement and from the surrounding ground, and the building deodorized.

Exterior Masonry

All exposed masonry surfaces would be cleaned. Joints would be pointed and restored as required.

Roofs

New roofing would be installed and all drainage and waterproofing systems would be repaired.

Windows

Wood frames and sash on the main floor would be replaced with new bronze anodized-aluminum windows in the same proportions and divisions as the existing openings. All main floor sash would be fixed.

Upper story sash should be replaced with the resultant costs passed on to future tenants. New spandrel panels could be provided with integral grills for self-contained, future air conditioning and heating units, as tenant needs require.

Entrances

All main passenger entrances to the building would have treadle-operated pairs of doors with sidelights and transoms. These would utilize the existing masonry openings. All entrances would have new canopies, of contemporary design, extending to the roadways.

Landscaping

Terminal landscaping would include planter boxes for trees and shrubs along Union Avenue, and all around the terminal, outdoor seating and information kiosks, and textured sidewalk and crosswalk surfaces. Roadway and accent lighting standards and fixtures are also proposed.

16.8 CAPITAL COSTS

Unit costs based on current prices have been developed for major renovation and construction items. These unit prices and the illustrated concept sketch plans form the basis for the following estimate of construction costs:

Terminal work, including renovation and new additions	$1,418,000
Platforms and canopies	1,656,000
Escalators, stairs and elevators	1,340,000
HVAC, plumbing and lighting	827,000
CCTV surveillance and electronic information systems	170,000
Sitework including paving, curbs and sidewalks	267,000
Enclosed pedestrian bridge to parking structure	60,000
Subtotal terminal and site work	$5,738,000
Contingency – 30%	1,721,000
Total terminal cost	$7,459,000

Costs for any trackwork or catenary system adjustments which may be required, due to work associated with terminal renovation, are not included in this estimate.

Parking-facility construction cost, estimated to amount to $8,580,000, was calculated at a rate of $3,300 per car space, for an approximate median of 2,600 spaces required for HSR patrons.

16.9 SCHEDULING AND PHASING OF CONSTRUCTION

An estimated 18-month construction period would be required for new construction and complete renovation of the former terminal structure which is presently vacant. The existing underpass terminal would remain in service during the new construction period.

Availability of unused platforms and the large number of tracks in the terminal area would allow staging of the work within a relatively safe trackside construction environment with only minor impedence to train movements.

16.10 SPECIAL CONSIDERATIONS

Restoration of the original terminal building for HSR use is feasible and constitutes an efficient use of available resources. The basic building shell can accommodate anticipated future HSR and other intermodal processing needs. Unneeded floor areas can be made available to other agencies or as commercial income property. Exterior areas lend themselves for intermodal transfer facility development, including long and short-term parking requirements.

Due to environmental contamination, the existing engine fueling facilities would have to be relocated away from the western end of the terminal building.

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Personal interviews and communications

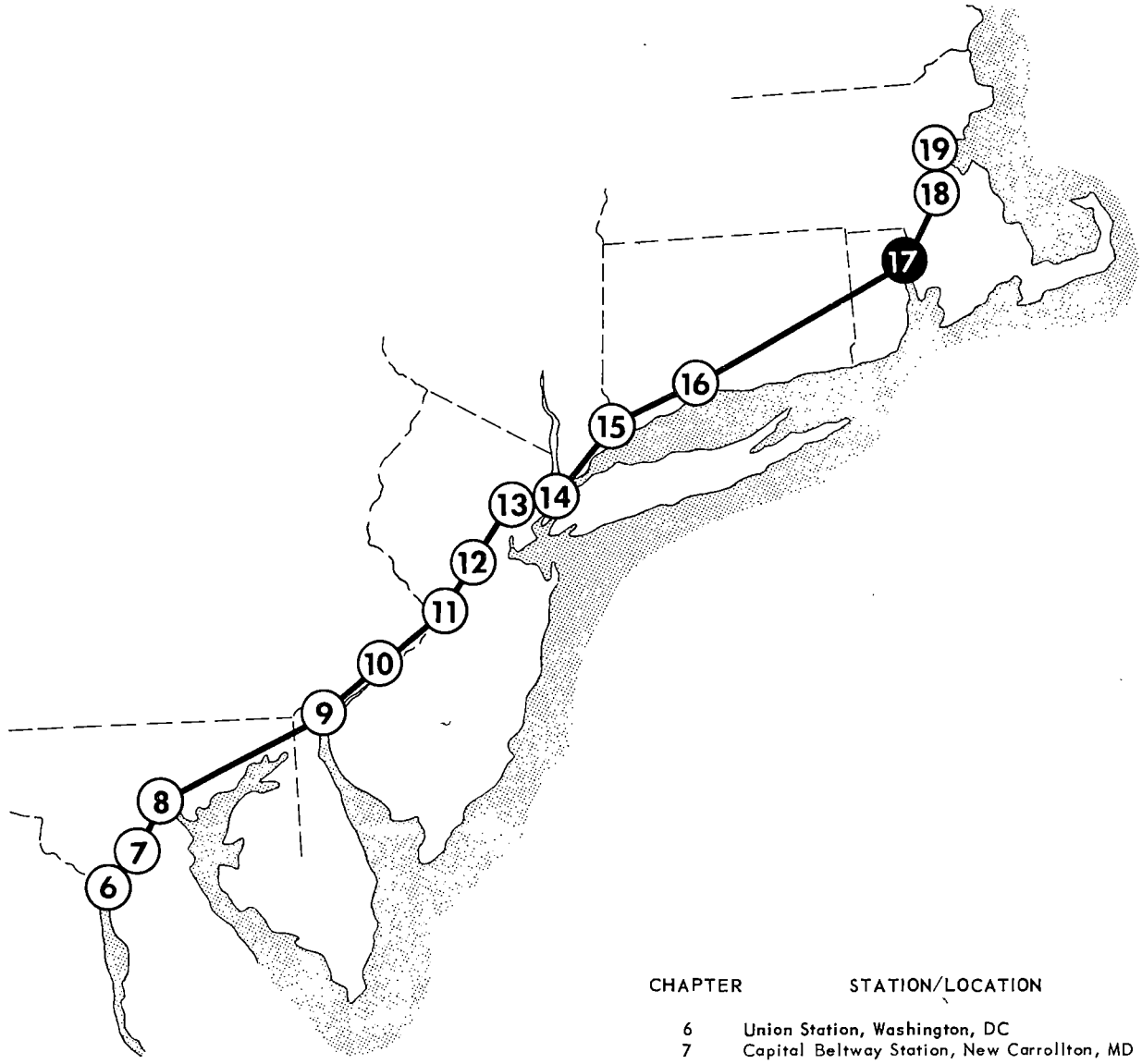
John Cavallero, Jr., Director, Department of Traffic and Parking
New Haven, Connecticut

Leonard Liss, Traffic Project Engineer, Department of Traffic and Parking

Bill Donahue, Director, New Haven Redevelopment Agency

John McGuerty, Director, City Planning Department

STATION LOCATIONS ALONG NORTHEAST CORRIDOR



CHAPTER	STATION/LOCATION
6	Union Station, Washington, DC
7	Capital Beltway Station, New Carrollton, MD
8	Penn Central Station, Baltimore, MD
9	Wilmington Station, Wilmington, DE
10	Penn Central Station, 30th Street, Phila., PA
11	Trenton Station, Trenton, NJ
12	Metropark Station, Iselin, NJ
13	Penn Central Station, Newark, NJ
14	Pennsylvania Station, New York, NY
15	Stamford Station, Stamford, CT
16	New Haven Station, New Haven, CT
17	Union Station, Providence, RI
18	Route 128 Station, Dedham, MA
19	South Station, Boston, MA

17.0 UNION STATION, PROVIDENCE, RHODE ISLAND

17.1 STATISTICAL FRAMEWORK

17.1.1 OWNERSHIP AND USERS

Union Station, Providence, Rhode Island, is owned by the Penn Central Transportation Company, with claims by the Providence and Worcester Railroad Company. The terminal is used by the Penn Central and Amtrak.

17.1.2 PROPERTIES AND FACILITIES

Operating facilities include the terminal building with a street-level passenger processing area of 21,000 square feet; two pedestrian underpasses each 18 feet wide, of which one is presently in use; three low-level center platforms of varying lengths; and, stairways leading from underpasses up to platforms. Three ancillary buildings, a former office building and a former restaurant, both vacant, and a former baggage building presently used by the Railway Express Agency, provide approximately 48,000 square feet of additional available area.

The terminal complex was constructed in 1898.

17.1.3 CURRENT ACTIVITY LEVELS

Union Station, Providence, is 44 miles by rail from Boston's South Station. The Penn Central operates 16 commuter trains to and from Boston over the Providence Line for the Massachusetts Bay Transportation Authority. One-way patronage into Boston was 1,800 on an average weekday in 1974; 200 of these commuters originated in Providence. The Penn Central also operates a commuter train between Westerly and Boston via Providence.

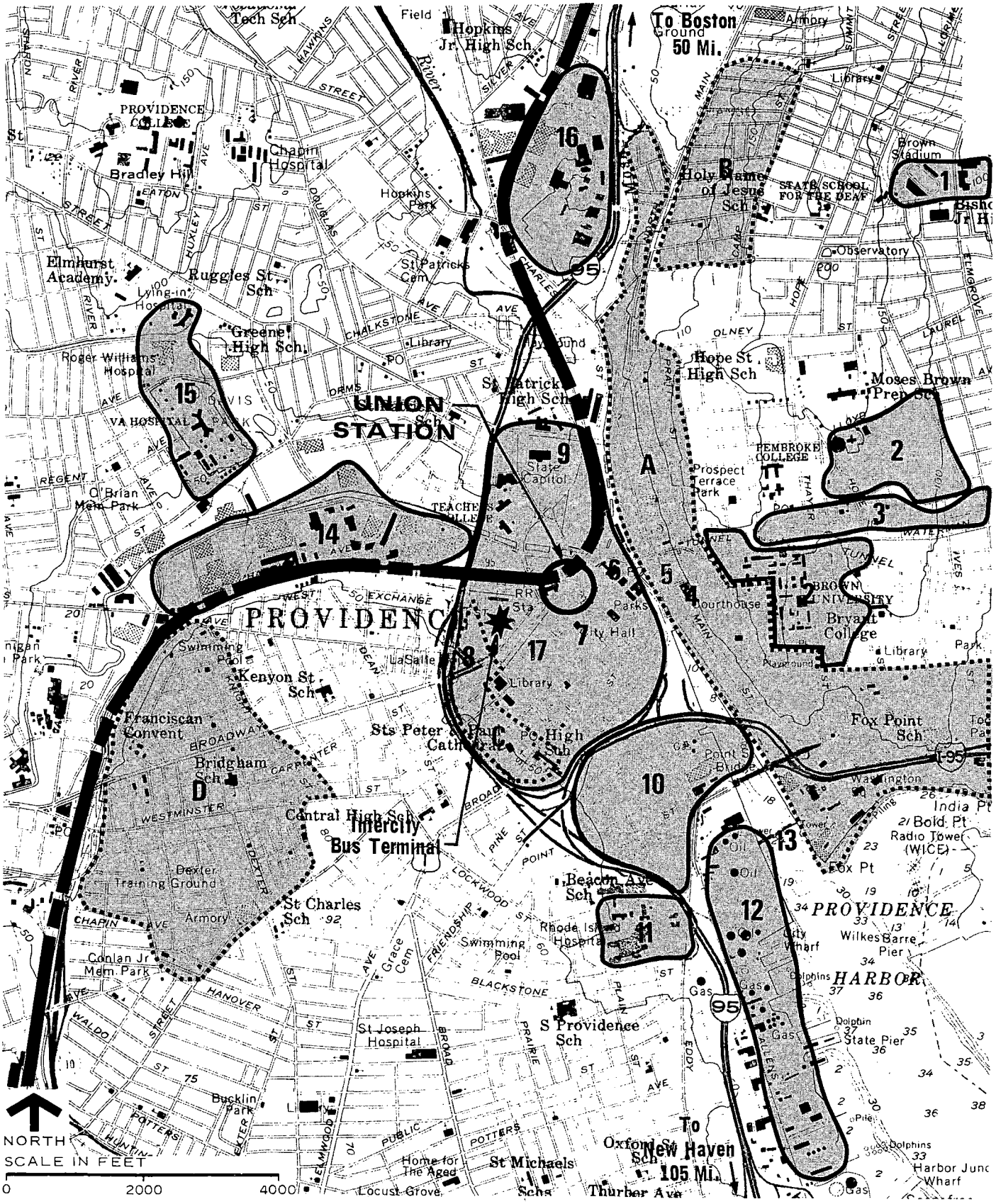
Amtrak operates 22 trains to and from Boston daily through Union Station, Providence. On a peak day in 1974, 350 Amtrak passengers originated in Providence, for a total Amtrak and commuter one-way patronage of 550.

Of the 40 trains using the Providence terminal daily, six trains use the terminal during the morning peak period, between 8 and 9 o'clock, and seven trains during the evening peak period, form 5 to 6 o'clock. The first train arrives from Boston at 5:54 a.m.; the last train departs for Boston at 11:28 p.m.

17.2 TERMINAL VICINITY INFRASTRUCTURE

17.2.1 LOCATION CONSIDERATIONS

The terminal location is shown in Figure 17-1, indicating the existing transportation network and major activity centers in the Providence area.



STATION LOCATION
UNION STATION
PROVIDENCE, RI

FIGURE 17-1

TABLE 17-1

ACTIVITY CENTERS, CITY SETTING

EXISTING ACTIVITIES

1	Brown Stadium
2	Brown University
3	Medical Office concentration
4	County Courthouse
5	Rhode Island School of Design
6	Financial concentration – including Hospital Trust Tower and Turks Head Building
7	Westminster Mall – retail concentration
8	Providence Civic Center Arena (sports, entertainment, etc.)
9	State Capitol
10	Light Industrial concentration
11	Rhode Island Hospital
12	Waterfront Industrial Area
13	Hurricane Barrier System
14	Industrial concentration (medium and heavy industry)
15	Hospitals
16	West River Industrial Park
17	Central Business District – including offices, financial and commercial institutions, government and education buildings, and retail, in the entire area outlined

PROPOSED ACTIVITIES (Redevelopment Areas)

A	East Side
B	Mount Hope
C	Weybosset Hill
D	West Broadway

Location with Respect to Regional Highway System

Union Station is readily accessible from the major highways serving the greater Providence area.

Interstate Routes I-95 and I-195 partly bound the CBD and interchange just south of the central area. I-95 runs diagonally through the entire state, connecting the southwestern area of Rhode Island with Providence, Pawtucket and Central Falls. From Providence, I-95 continues northeasterly through Massachusetts to the Boston area. I-195 links Providence with East Providence and Fall River.

Connector roads to I-95 are a few blocks west of the terminal. Regional highway access to the terminal will improve even further with the construction of the Civic Center Interchange, linking improved U.S. Route 6 to I-95 just west of the terminal.

Many other principal arterials radiate from Providence to the western portions of the state of Rhode Island, with the CBD as the pivotal point.

Local Bus Service

Local bus service is operated by the Rhode Island Public Transit Authority. Routes radiate from the Providence CBD to the urbanized areas around Providence.

Several major bus stops are located near the terminal, and many bus routes provide easy access from much of the Providence urbanized area. Nine routes serving the western areas terminate in front of the terminal. Six routes, serving the northern areas, end at Francis Street below the terminal. Eleven routes, serving the eastern areas, terminate at Exchange Place and Francis Street. Bus shelters and benches are furnished. Buses operate on 5 to 10-minute headways during the peak hours, and 10 to 20-minute headways during off-peak hours.

Other bus routes terminate in the nearby CBD area, south of the terminal and at the intercity bus terminal, west of the terminal.

Relationship to Other Inter-Regional Transportation Facilities

Due partly to the relative compactness of the Providence CBD, intermodal exchange capabilities between trains and intercity buses are good. Providence's new intercity bus terminal is less than two blocks west of the rail terminal. Bonanza and Greyhound Bus Lines, which operate out of the Bonanza Bus Terminal, serve several major cities and towns in Rhode Island, central and southeastern Massachusetts.

Theordore F. Green Airport, the state's principal airport, is about seven miles (15 minutes by taxi) from the Providence CBD, in the city of Warwick. The airport provides local and regional air-carrier services. Approximately half of the current flights from T. F. Green Airport are to cities along the Northeast Corridor.

Relationship to Activity Centers

Union Station is excellently located, with respect to major origin and destination centers, within the city and the Providence urbanized area. The terminal is on the fringe of a compact CBD. The State Capitol, Brown University and other major activity centers are only a few minutes away by bus or taxi. Activity centers are listed in Table 17-1.

The terminal is situated on the northeastern boundary of the CBD area. Providence is the dominant industrial and commercial center, and the financial and governmental headquarters for the state. Historically, it has served and continues to serve as the location of major stores and specialty shops in the region. The population of the urbanized area of Providence-Pawtucket-Warwick was 729,000 in 1970, the second largest urbanized area in New England.

Within the terminal area are a variety of major activity centers. In addition to the intensely developed CBD, local, county and state governmental facilities, Brown University and the Rhode Island School of Design, there are distinct concentrations of other activities. These include hospitals and medical offices, a regional commercial area, light and heavy industry and a large residential area which is being restored and preserved as a major historical area.

Along the waterfront, there is a concentrated industrial area.

Despite its compact and well-defined central area, Providence is currently experiencing a decline in retail activity, due largely to competition from suburban shopping malls. While efforts have been made to revitalize the CBD's retail activity, notably by the construction of a downtown mall, most recent construction consists of large financial and office complexes.

Four major public redevelopment projects are currently under way; three are adjacent to the CBD and include major residential development. All projects are in the final stages of construction with some portions already completed.

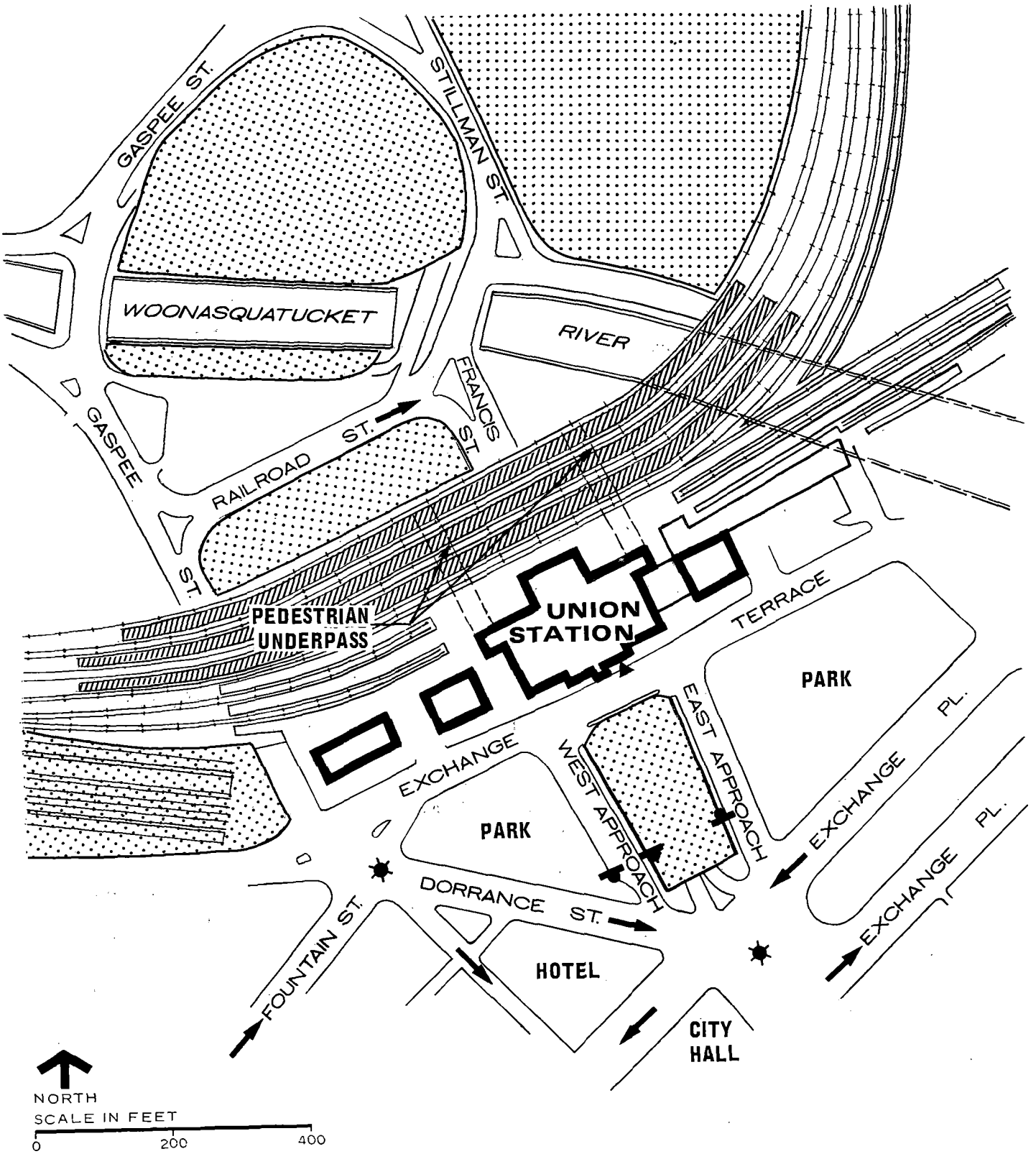
The Weybosset Hill Project, within the CBD, primarily includes apartments and commercial buildings, with some institutional developments. The East Side Renewal Project contains extensive residential and industrial development with some concentrated commercial and institutional uses. The Mount Hope Project is basically a general residential development. Finally, the West Broadway Project includes multiple-family residential uses, and commercial, industrial, public and institutional development.

17.2.2 LAND USE

Characteristics of Immediate Terminal Area

The immediate terminal area is shown in Figure 17-2.

The terminal complex faces Exchange Terrace. Platforms, the main terminal building, Exchange Terrace, and a parking deck to the south are on a viaduct over Francis Street, a north-south roadway linking the Providence CBD with the street system to the north. Two small parks



NOTE: TOTAL SURFACE PARKING-2900 CARS

LEGEND

- BUS STOP
- ONE-WAY STREET
- TAXI DROP-OFF POINT
- SIGNALIZED INTERSECTION
- PARKING

EXISTING STATION ENVIRONS
UNION STATION
PROVIDENCE, RI

FIGURE 17-2

flank the parking deck. The immediate setting is attractive, with well-kept open spaces. The condition of most surrounding streets and sidewalks is good; landscaped areas along Exchange Terrace are well maintained.

To the south is the core of the CBD. Nearby buildings include the Providence City Hall, the major downtown hotel, new high-rise buildings and the Federal court and office buildings.

To the north, large open spaces and parking areas separate the terminal from the State Capitol. Parking areas are unkempt.

Major intersections and wide streets, south of the terminal, pose a hazard for pedestrians. Wide streets must be crossed to reach the local bus terminus on Exchange Place and the Bonanza intercity bus terminal on West Exchange Street. These intersections, together with open space and parking areas both south and north of the terminal, tend to isolate the area and could pose a security hazard during the evening hours. Lighting, particularly along Exchange Terrace in front of the terminal, appears to be inadequate.

Planning Factors, General Terminal Area

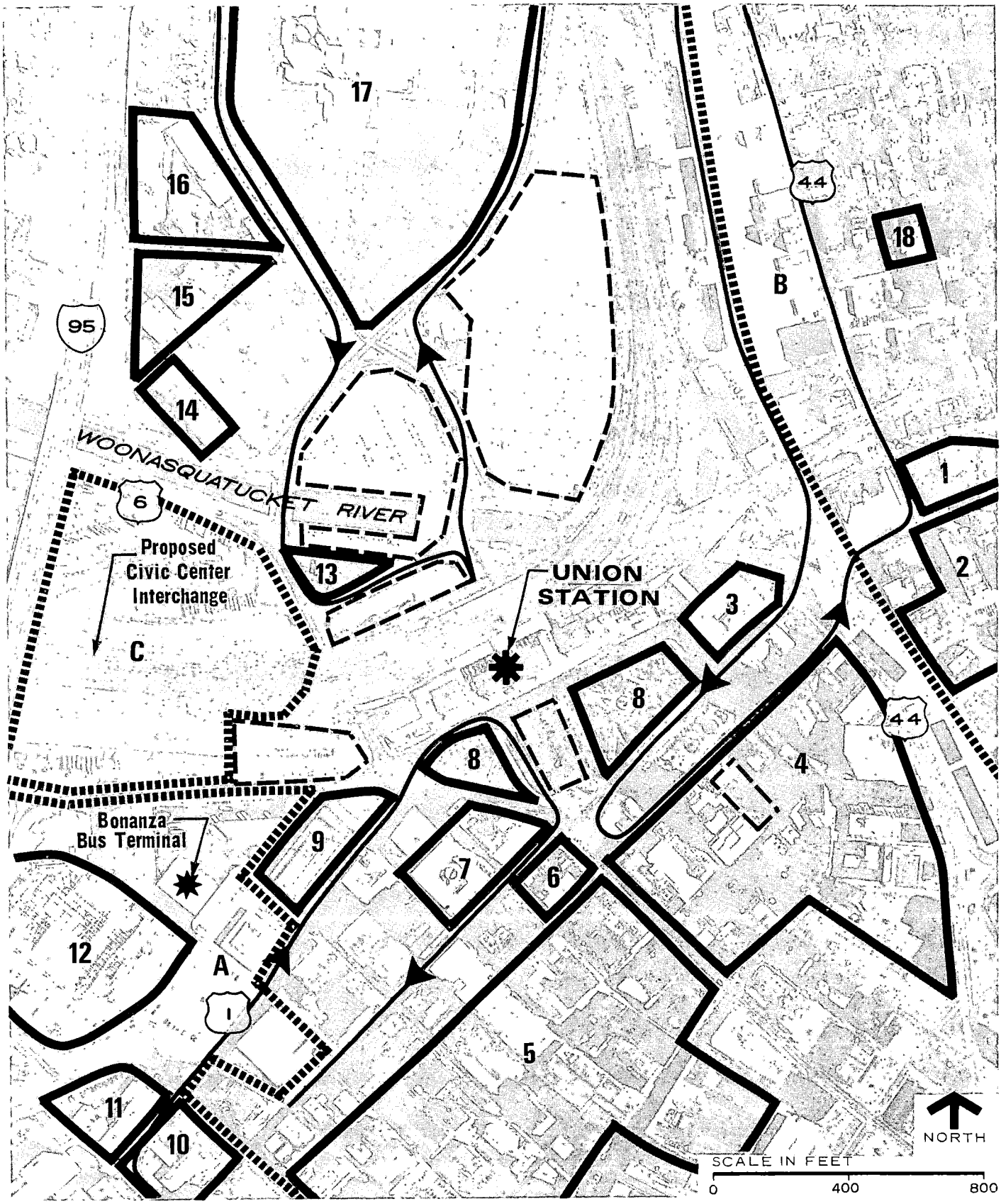
The boundaries of the Providence central area are distinctly defined by the river on the east, interstate highways on the west and south, and the State Capitol on the north. As a result, the CBD area has developed without the sprawl characteristic of other large cities. The elevated rail line interrupts the dense flow of development, however. The State Capitol is the only significant activity north of the tracks.

Major areas and structures within the CBD and the general terminal area are shown in Figure 17-3 and listed in Table 17-2. The automobile dominates land uses. The streets and parking lots account for 41 percent of the land area in the center city. The high precentage devoted to streets and parking areas, particularly the latter, has a somewhat blighting influence on the center city.

Other major land uses in the central city area include governmental buildings, Brown University, the Rhode Island School of Design, and a large, densely developed area of retail, commercial, financial and business structures. The major retail development surrounds Westminster Mall. Just to the east of this retail core, in Turks Head Square, is the center of office activity: two major high-rise office buildings were recently constructed in the area.

There is one public redevelopment project within the general area of Union Station – the Weybosset Hill Project, encompassing the western portion of the CBD. This project, in its final stages of construction, includes downtown apartment dwellings, commercial establishments, institutional facilities and public buildings.

There has been little private redevelopment in the CBD in the past few years. The only projects of any significant scale have been the Hospital Trust Bank Tower and the new tower built by the Hartford Company. Private redevelopment has, for the most part, been limited to rehabilitation of some small buildings in the CBD. Recently, however, a community group, supported



LEGEND

PARKING

BUS ROUTE

0 EXISTING ACTIVITY CENTER (SEE TABLE 17-2)

A PROPOSED ACTIVITY CENTER (SEE TABLE 17-2)

PLANNING FACTORS
UNION STATION
PROVIDENCE, RI

FIGURE 17-3

TABLE 17-2

ACTIVITY CENTERS, GENERAL TERMINAL AREA

EXISTING ACTIVITIES

1	First Baptist Church in America (major tourist attraction)
2	Rhode Island School of Design
3	Post Office Annex
4	Financial Concentration – including Hospital Trust Tower and Turks Head Building
5	Westminster Mall – retail concentration
6	City Hall
7	Biltmore Hotel
8	Open Space – Park area
9	Providence Journal and Evening Bulletin Building
10	Telephone Company
11	Public Safety Building (police and fire departments)
12	Providence Civic Center Arena (new sports, entertainment, etc., complex)
13	Communications Building
14	Rhode Island University Extension Division
15	Family Court Building
16	Veterans Memorial Auditorium
17	State Capitol

PROPOSED ACTIVITIES

A	Weybosset Hill Redevelopment Area
B	East Side Redevelopment Area
C	Proposed Civic Center Interchange

by the Chamber of Commerce and a group at the Rhode Island School of Design, has attempted to generate new interest in private redevelopment.

17.3 EXISTING PASSENGER HANDLING FACILITIES

17.3.1 PASSENGER ACCESS AND EGRESS

The main entrance to Union Station, Providence, is at Exchange Terrace. See photo 1. There are secondary entrances at either end of the terminal building offering access from Exchange Terrace to the south, and from pedestrian underpasses to the north. Only one of these pedestrianways is presently in use. An entrance at Francis Street, beneath the viaduct, allows detraining passengers to bypass the terminal and board local buses at stops located at curbside.

Existing Highway Access

While the terminal is favorably located with respect to the major city and regional highway system, there are some potential access problems in the immediate terminal vicinity.

The connector roads to and from I-95 are located a few blocks west of the terminal. Accessibility will be greatly improved in the near future with the construction of the Civic Center Interchange.

Other major and minor arterials in the terminal area link the CBD and outlying residential areas. This radial street pattern creates large and complex intersections in the CBD. Two such intersections exist in the vicinity of Union Station – one to the west on Dorrance Street, and one to the south on Francis Street. Such intersections create traffic control and operational problems, and are dangerously large for pedestrians to cross.

Generally, there is presently little traffic congestion in the Providence CBD. The street system is adequate to handle existing traffic volumes.

Even though there are large volumes of traffic on nearby streets, Exchange Terrace is not heavily traveled. This reflects the present one-way circulation system and Union Station's specific location. There are some indications, however, that there may be a need to replan the existing circulation system in the area, to more evenly distribute traffic on all streets. For example, double to triple parking occurs in front of the Biltmore Hotel on Dorrance Street much of the day.

Other Connections

More than 100 independent cab companies operate 273 cabs in the state of Rhode Island. Most of these cabs (217) are operated in the Providence-Pawtucket-Warwick urbanized area. A taxi stand is located directly in front of Union Station. Cabs are readily available at the nearby Biltmore Hotel, the Bonanza Bus Terminal, and throughout the CBD.

There are no rental car agencies housed within the railroad terminal, but two agencies, Avis and Economy, are located only one block away on Dorrance Street. Their main service is to the Biltmore Hotel, but because the hotel is so close to the terminal, rental cars are readily available for rail patrons.

17.3.2 PARKING

A total of over 2,900 parking spaces are available in the vicinity of the Providence Terminal.

Short-term spaces are available on both sides of Exchange Terrace and Exchange Place.

Railroad employees park in an off-street area in front of the terminal and in spaces adjacent to other buildings in the terminal complex. Some cars are also parked below the terminal.

Long-term spaces are available in lots north of the terminal. Use of these lots requires more than a five-minute walk and the use of the pedestrian tunnel under the Francis Street viaduct.

Parking rates in the area range to $2.75 per day.

17.3.3 PASSENGER PROCESSING

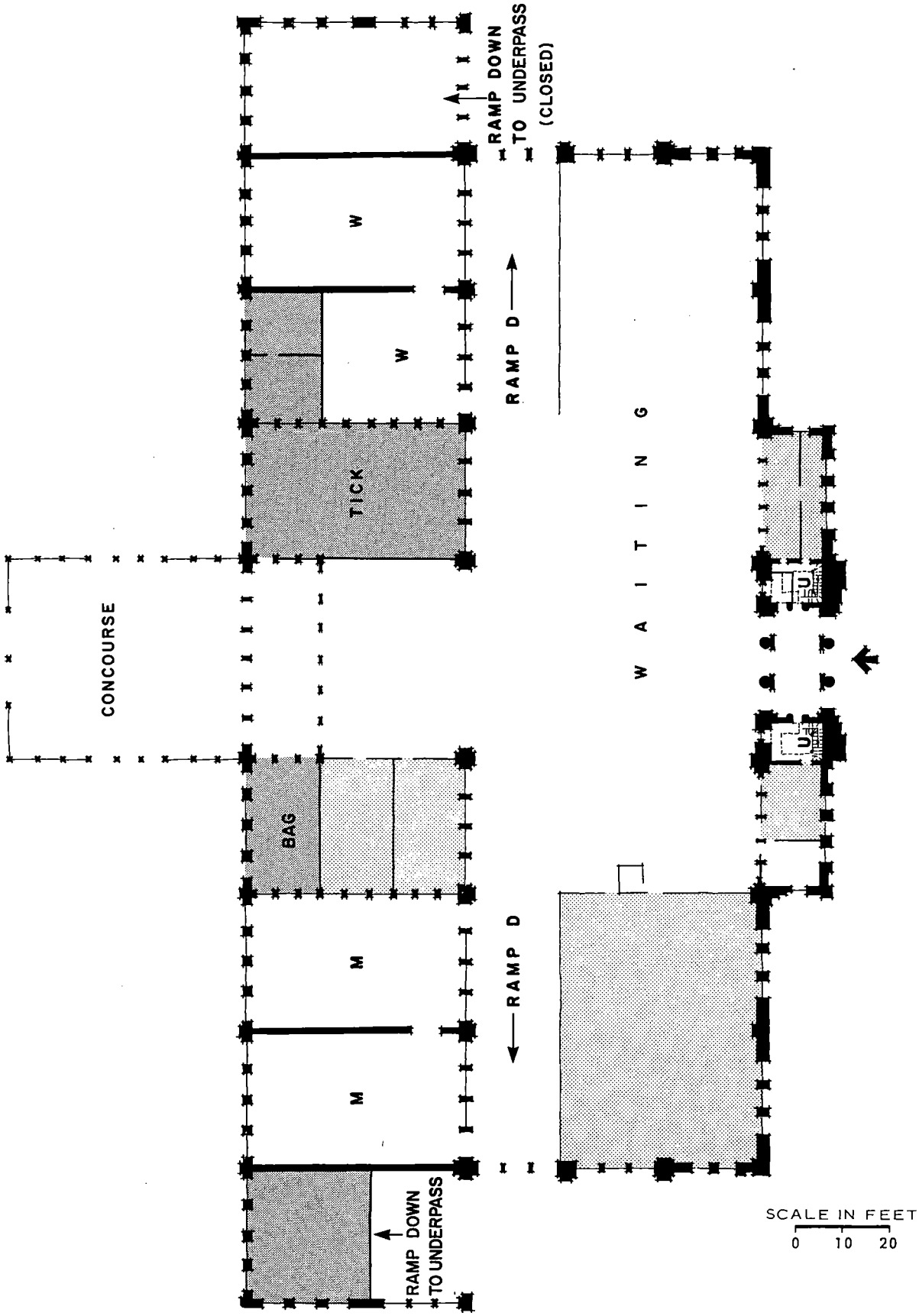
For Existing Main Floor Plan, see Figure 17-4.

Functional Flow

Exchange Terrace sidewalks slope along with the street and up to the main doorways, located directly over Francis Street. Entrance into the building is at sidewalk grade. On entering, passengers walk through a vestibule and a portion of the waiting room to the ticket counters where tickets may be purchased. Baggage may be checked at a counter in a nearby room. Passengers proceed to seating in a wing of the waiting room or go to platform locations.

To reach track No. 4, passengers walk through a concourse at a slight slope and onto the trackside low-level platform. To reach other platforms, passengers descend from the waiting room, along a gently sloping ramp, to a pedestrian underpass situated under a wing of the terminal building. Passengers may also step outdoors from the concourse, walk at trackside to a stairwell enclosure nearby, and descend stairways to the underpass. The walk from the concourse to the stairwell is uncovered. Stairways lead from the underpass up to platforms Nos. 1, 2, 3 and 5. A long stairway connects a bus stop, on Francis Street, to the underpass.

The physically handicapped passengers are transported to platform locations by way of a baggage route which consists of unsheltered, at-grade, timber track crossings.



FIRST FLOOR PLAN

LEGEND

CONCESSION

RAILROAD FUNCTION

EXISTING UNION STATION
PROVIDENCE, RI

FIGURE 17-4

Information

An information stand, with train information blackboard, centered in the main waiting room, is unmanned. Train information is obtained at the ticket windows or from the public address system (reported as being nearly inoperative).

Ticket Purchase

The ticket counters are readily visible on entering the waiting room from the main doors. All types of tickets are sold at seven windows. See photo 2.

Baggage Handling

Baggage is checked in and claimed at a counter which is a short distance away from the ticket area. Baggage is passed through a "Dutch" door into a room and stored. Transport to the platforms is by means of buggies, towed by a vehicle, over unsheltered, at-grade, timber track crossings. See photo 3.

Waiting Area

The main waiting space, within the terminal, is dark and gloomy. See photo 4. Pew-type benches, regimented in rows, provide seating for about 200 persons. A closed-in concourse area, which adjoins the waiting room and extends to track No. 4, has no seating facility. Train movements are clearly visible from the concourse.

17.3.4 PUBLIC SERVICES

Rest Rooms

Ladies' and men's rest rooms adjoin the waiting room.

Telephones

Six telephone booths are located in the waiting room.

Baggage Check Lockers

217 baggage check lockers are arranged about the waiting room.

Postal Facilities

One mail box is located at this facility.

17.3.5 CONCESSIONS

The terminal restaurant is no longer in service. See photo 4.

Vending machines sell newspapers and soft drinks.

17.3.6 RAIL PASSENGER OPERATIONS FACILITIES

An Amtrak service representative occupies a desk in the ticket office. The Station Master and security offices are accessible from trackside. The ticket clerk and cashiers' quarters are located adjacent to the ticket-selling area.

The terminal is included within the Penn Central regional security patrol. Amtrak provides a security person on a part-time basis. Terminal personnel report security services to be inadequate.

17.3.7 FACILITY CONDITION

Structural Integrity

Observations made of the exterior and interior surfaces of the terminal building reveal some cracking of joints and brick masonry.

The steel frame viaduct at Francis Street, which supports various elements of the terminal system including trackage, was built in the early 1900's. A part of this steel frame, which is exposed to water seepage from above, was observed to be deeply corroded.

There is evidence of surface water seepage throughout the length of the pedestrian underpass. This underpass is built beneath the steel frame which supports the track structure.

It is recommended that the condition of the viaduct steel structure be more extensively examined.

Exterior

Masonry surfaces of the terminal building are in need of repair. Downspouts, gutters, and roof waterproofing materials are in need of total renewal.

Degradable materials such as wooden windows and doors are in need of replacement. Paint applied to the exterior brick surfaces, years ago, is deteriorating.

Interior

The interior wall surfaces of the terminal main spaces are covered with various types of coverings which, due to roof leaks and misuse, are pulling away from the walls. All surfaces (wall, ceiling and floor) in the main waiting room and in other rooms are in need of repair and reconditioning.

The concourse area appears to be a structure added onto the main building at a later date. It is a large, enclosed unheated area adjoining the main waiting room. The floors are made of

scored concrete. Wall surfaces are glass and composition board paneling set within a wooden framework. The roof is made of corrugated sheet metal. The ceiling, of fiberboard tile, is stained by leakage. Painted interior and exterior surfaces have deteriorated. The general temporary appearance warrants demolition and reconstruction of the concourse.

The pedestrian underpass has a floor of timber. The walls and ceiling are made of wall paneling materials. Surface water leaks into the underpass and is rotting the floor. Metal pans are installed on the ceiling to divert dripping water away from the passengers. See photo 5.

Stairways are made of timber. Stairwell walls and enclosures are made of a variety of materials including metal, wood, glass and composition-board sheet paneling. All surfaces are in need of reconditioning. The platforms are made of timber and concrete, which is extensively patched with asphalt. The steel framework and timber roofing of the canopies are in need of reconditioning. See photo 6.

Utilities

Heating is provided by a low-pressure steam boiler located in the basement of the old restaurant building. Heating in the terminal is reported to be inadequate. Steam heat to the interior downspouts has been shut off; the resultant freeze and thaw has damaged downspouts. Water leakage is destroying interior plaster sufaces.

Ventilation is provided by windows and small circulating fans. An individual air conditioning unit serves the ticket office.

Electrical, water and sanitary sewage disposal services are reported to be adequate at current usage levels.

17.4 FORECAST ACTIVITY LEVELS

17.4.1 PROJECTED DESIGN DAY PATRONAGE

Peak day patronage in 1990 is expected to include 5,100 HSR passengers and 6,300 commuters, for a total loading (one way) of 11,400. Peak hour patronage is forecast at 700 HSR passengers and 3,300 commuters for a total of 4,000 patrons.

The high level of HSR use is anticipated as a result of the stategic location of the terminal with respect to the CBD and State Capitol complex, as well as new and expanded governmental, financial and office activities in central Providence. HSR service is expected to divert a significant percentage of inter-regional traffic from highway to rail.

17.4.2 PROJECTED MODE OF ACCESS

Future access is expected to continue to be heavily auto-oriented, with only 10 to 20 percent of arrivals by bus. Low, high and median projections by mode are as follows:

	Percentage		
	Low	High	Median
Park-and-ride	30	50	40
Park-and-ride passenger	10	15	12
Kiss-and-ride	15	25	20
Bus transit	10	20	15
Taxi and limousine	1	5	3
Walk	5	15	10

17.4.3 PARKING REQUIREMENTS

Estimated parking requirements for HSR passengers, based on a 1990 design-day patronage of 5,100, range from 1,500 to 2,600 spaces, with a median value of 2,000 spaces.

17.5 PLANS AND PROPOSALS

17.5.1 COMMUTER SERVICE IMPROVEMENTS

Current plans of the Rhode Island Department of Transportation include development of a commuter service between Davisville (Wickford Junction) and the Providence CBD. An entirely new service, between Bristol and Providence, is also planned. Both systems are to be operational by 1980. Thus, by 1980, there will be four commuter lines serving Union Station.

The Davisville commuter rail route, proposed in the "Rhode Island Transportation Plan" for 1990, will provide future rail access to the air terminal area from the Providence CBD. Discussion is also included in the 1990 Plan for a possible heliport in the CBD to serve the airport. Apparently, a significant market exists for a direct connection to the airport from the CBD, and this could affect the potential rail patronage at Union Station.

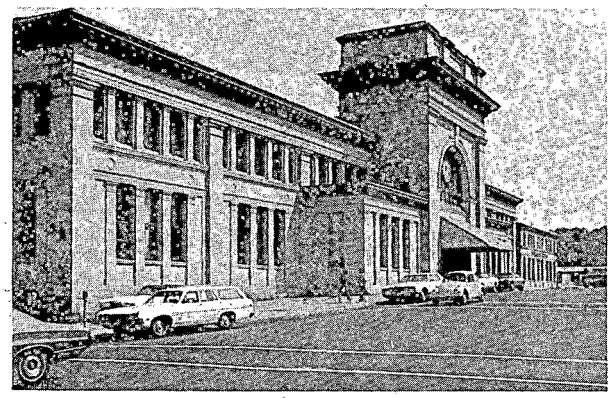
17.5.2 TERMINAL IMPROVEMENTS

Conversion of Union Station to a multi-modal transportation center has been proposed in two State Studies and a study by the Rhode Island School of Design.

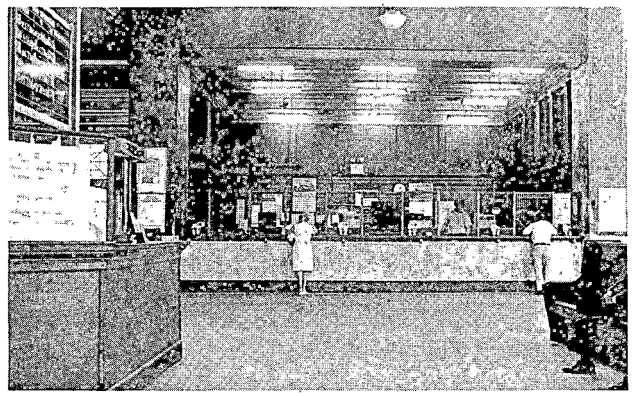
"Interface: Providence", a comprehensive study by the Rhode Island School of Design, proposed converting the existing terminal and adjacent buildings into a multi-level terminal to accommodate high speed and commuter rail service, interstate and local buses, and a personal rapid-transit (PRT) system.

PROVIDENCE UNION STATION – PROVIDENCE, RI

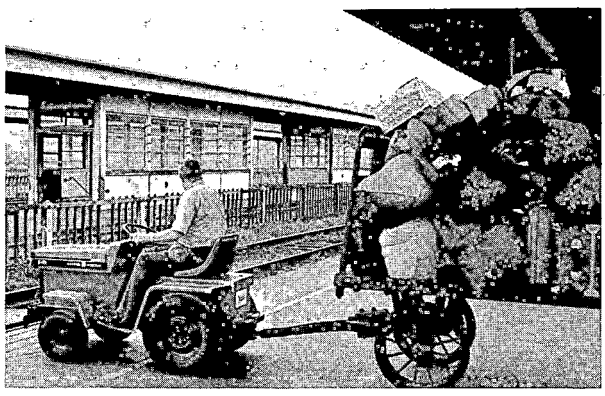
EXISTING FACILITY



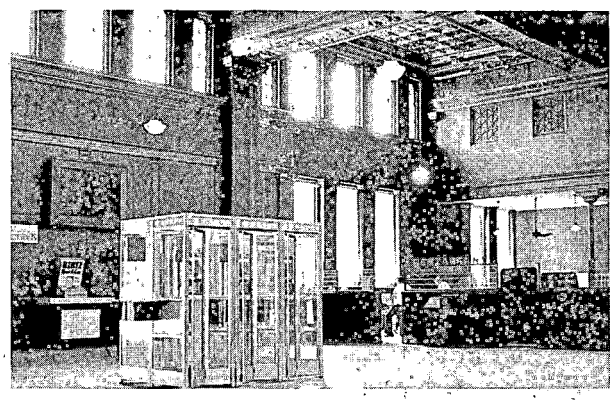
1. Main Entrance from Exchange Terrace



2. Information Stand and Ticket Counter

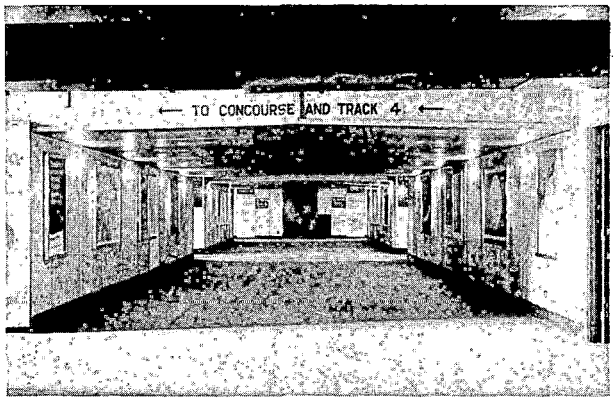


3. Baggage Routing

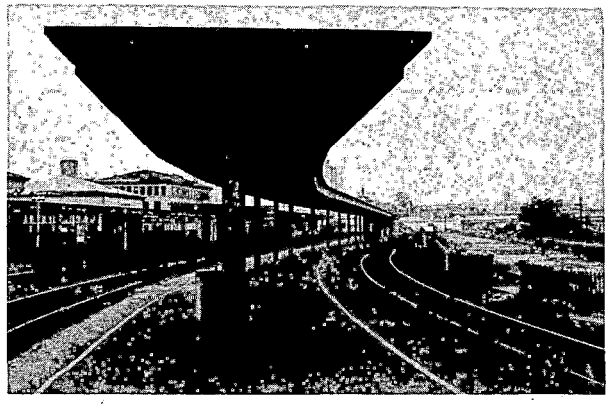


4. Waiting Room and Concession Space

EXISTING FACILITY (Cont'd)



5. Pedestrian Underpass



6. Train Platforms

The transportation center concept was also proposed in the public transportation plan included in the State Guide Plan for 1990. The latest State proposal does not, however, include a PRT system. The development cost for a transportation center was estimated at more than $ 34 million, to be funded by the State. Incorporation of a heliport was suggested but not included as part of estimated costs. Cost estimates did not include funding of HSR improvements or interconnections with the intercity bus terminals.

Rhode Island State agencies are contemplating use of a portion of Union Station as a visitor center for the national 1976 Bicentennial observance.

An intermodal complex, at the terminal site, would be compatible with adjacent land uses, for several reasons. Many of the major activity centers are accessible by foot from the terminal, and the increased influx of people in the area could be absorbed without intrusion into residential areas. Hotels, restaurants and other services are within a few blocks of the terminal; many of the traveler's needs could easily be accommodated within a limited area.

17.5.3 FUTURE LAND USE

Major changes in land use, in the immediate terminal area, will result from construction of the Civic Center Interchange. Most of the land northwest of the terminal is committed to this interchange; the present street system, north of the terminal, will be significantly affected. Future circulation in this area is discussed below and in Section 17.6, in connection with the recommended 1990 Concept Plan.

Remaining areas north of the terminal are expected to continue to be used as open spaces and for parking. More intensive use of parking areas could take place.

No major land-use changes are anticipated south of the terminal, other than construction of a recommended parking facility southwest of the terminal. However, HSR service, together with the present trend toward construction of new financial and other office buildings in the CBD, could be mutually reinforcing. Introduction of HSR could stimulate new office development, and this development, in turn, would increase HSR ridership.

17.5.4 STREET AND TRAFFIC IMPROVEMENTS

Major changes in traffic circulation will occur in the area of Union Station as a result of the construction of the Civic Center Interchange. Among these will be the operation of Francis Street, under the terminal, as one-way northbound. North of the terminal, a one-way system will be instituted along Stillman and Gaspee Streets.

17.5.5 TRANSIT IMPROVEMENTS

A personalized rapid-transit system for Providence was proposed in a study by the Rhode Island School of Design. However, PRT is not among the recommendations in the latest state transportation plan and implementation appears unlikely. Future local transit will probably continue to be by bus. The Rhode Island Public Transit Authority is expanding bus service on a state-wide basis. Improvements to the existing transit system by 1990 will include five express bus routes, along interstate routes and principal arterials leading to the Providence CBD. Such improvements in the public transportation system are expected to absorb any of the transit requirements presented by the HSR patrons in 1990.

17.6 RECOMMENDED 1990 ACCESS/EGRESS AND PARKING PLANS

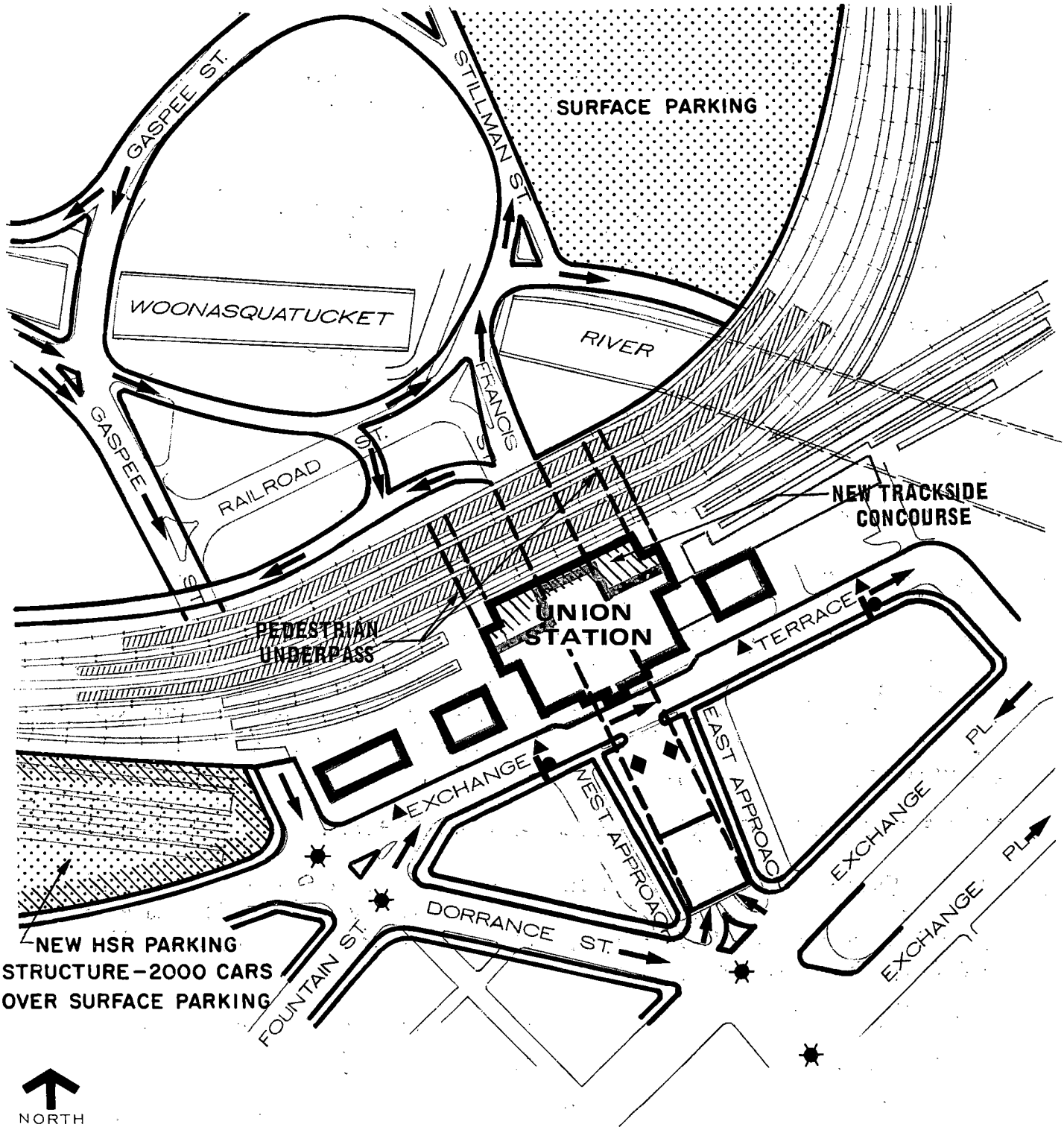
The 1990 plan for Union Station, Providence, includes modifications in circulation and parking south of the terminal, intersection improvements, a recommended parking facility, and new or relocated bus stops, taxi and limousine bays, and kiss-and-ride loading/unloading zones. The 1990 concept plan is shown in Figure 17-5.

Terminal improvements, including major renovation and a new concourse, are discussed in Section 17.7.

17.6.1 STREET AND TRAFFIC IMPROVEMENTS

Traffic circulation, north of the terminal, will be radically modified following completion of the Civic Center Interchange.

To complement this scheme and improve circulation around the terminal, it is recommended that Exchange Terrace operate one-way eastbound, with no on-street parking allowed. The elimination of on-street parking is also recommended in areas directly below Union Station as well as between the terminal buildings.



1990 CONCEPT
UNION STATION
PROVIDENCE, RI
FIGURE 17-5

The closure of the East Approach and West Approach are also recommended to improve traffic circulation in the terminal area. Realignment of the Dorrance Street – Exchange Terrace and Francis Street – Exchange Place intersections are recommended to improve pedestrian access from the terminal to the Bonanza bus terminal and the City Hall areas, as well as to accommodate the new circulation scheme.

Taxi and limousine bays would be provided on the north side of Exchange Terrace. To separate kiss-and-ride access from other modes, a portion of the existing parking deck would be designated as a short-term parking and kiss-and-ride area. Short-term parking would not be allowed during morning and evening peak hours. Through-auto traffic is not expected to use Exchange Terrace, so there should be little conflict between vehicles and pedestrians.

Sidewalks in the Francis Street tunnel should be reconstructed and improved lighting installed, in conjunction with improvement or reconstruction of the tunnel. This would improve pedestrian access, particularly to the parking areas north of the tracks.

17.6.2 PARKING IMPROVEMENTS

It is estimated that 2,000 parking spaces will be required for HSR patrons by 1990. It is recommended that a parking facility, to accommodate a portion of these spaces, be constructed south of the tracks, west of Gaspee Street. A facility in this location would be easily accessible from the Civic Center Interchange to the north, and would be conveniently located with respect to the terminal. The proposed modification of the adjacent intersection, together with signalization, would be required to protect pedestrians.

If required to accommodate parking patrons, an additional parking facility could be constructed on the site of the existing parking lot, north of the terminal, with access to the terminal by the existing street system.

17.6.3 INTERMODAL TRANSFER

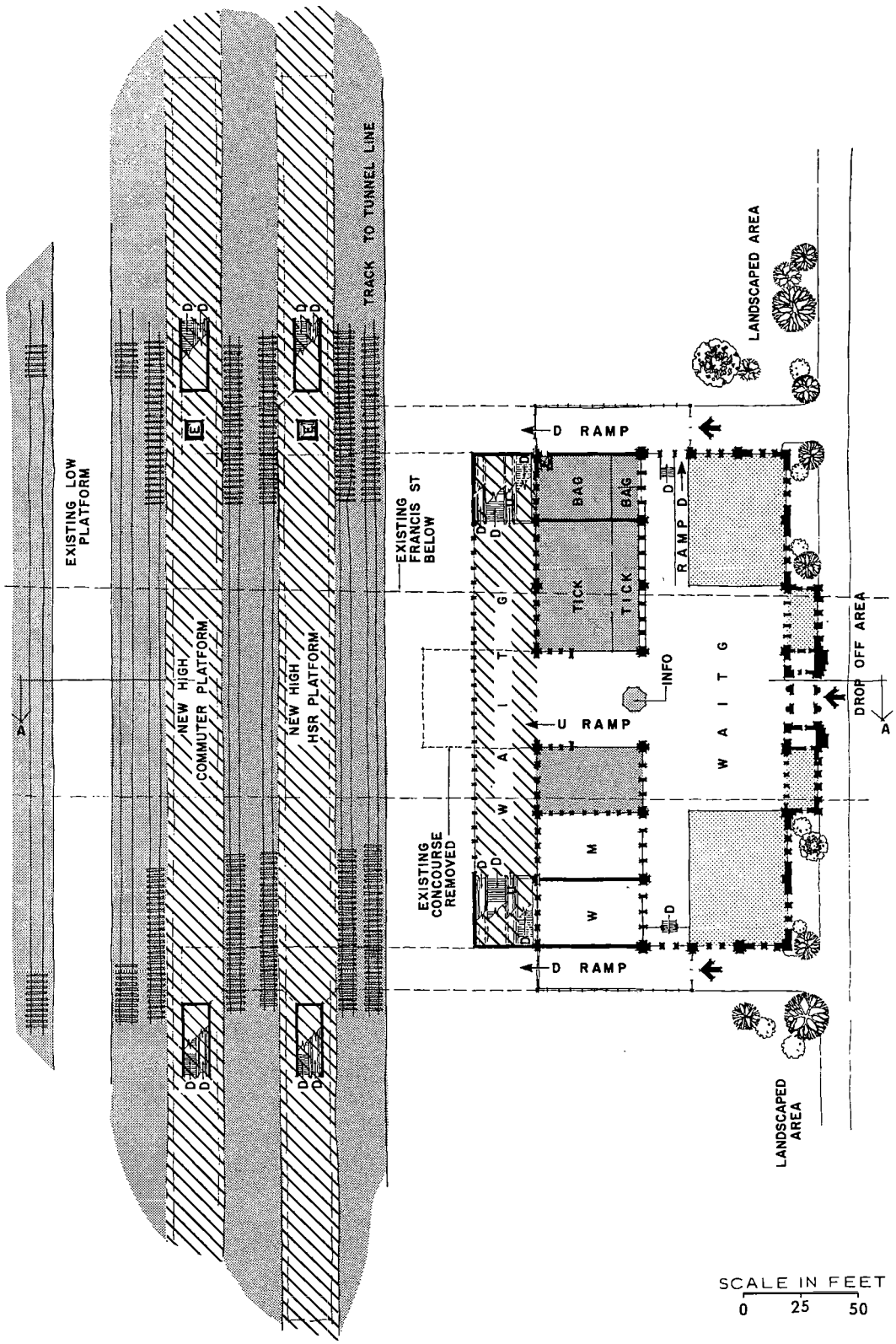
The changes in the traffic circulation system will necessitate changes in existing bus stops. The closure of the West Approach will necessitate the relocation of existing bus bays. Bus bays are proposed on the south side of Exchange Terrace to accommodate all bus routes. A bus loading area is also proposed on the east side of Francis Street below Union Station.

17.7 RECOMMENDED 1990 PASSENGER TERMINAL PLANS

The proposed terminal plans are shown in Figures 17-6 and 17-7.

Recommendations include repair and renovation of the terminal exterior; rearrangement and remodeling of the interior; construction of a new trackside concourse and new high-level platforms; and renovation of both pedestrian underpasses, together with installation of escalators, elevators and new stairways.

Low-level platforms, with the exception of the platform adjacent to the existing concourse, would be replaced by two high-level center platforms. The platform nearest the terminal would serve HSR trains. The platform farthest away would serve commuter trains.



MAIN FLOOR PLAN

LEGEND

RAILROAD FUNCTION

CONCESSION

NEW ADDITION

1990 CONCEPT
UNION STATION
PROVIDENCE, R I

FIGURE 17-6

CROSS SECTION A-A

1990 CONCEPT
UNION STATION
PROVIDENCE, R I

FIGURE 17-7

While recommendations in this report cover only the main terminal building, the four buildings in the station complex have architectural unity. Their classical mass balances that of the State Capitol complex, to the north and the City Hall and other major CBD buildings to the south. It is recommended that all buildings be retained, landscaped, and that effort be made to restore vacant buildings to productive use.

The 1990 terminal plan also does not include work on the Francis Street viaduct. A number of conditions were observed during the present study, indicating the need for further investigation of this structure, which supports important terminal elements including tracks, platforms and pedestrian underpasses. It is assumed that this structure will be intensively examined and reconditioned or completely rebuilt, if warranted. It is also assumed that any work on the viaduct will include waterproofing to eliminate seepage.

17.7.1 PASSENGER ACCESS AND EGRESS

The 1990 concept envisages retaining the main entrance to the terminal on Exchange Terrace, and furnishing new glass-enclosed walkways east and west of the terminal building with direct access to pedestrian underpasses. Commuters, who have less frequent need of ticketing services, would be expected to bypass the terminal building and use the new walkways for direct access to commuter service platforms. The main entrance and passenger processing area, in the terminal building, would be used primarily by HSR patrons.

Passengers would arrive at the Exchange Terrace entrances on foot, by taxi or private car drop-off. Taxi unloading and loading bays would be on the north side of Exchange Terrace. Bus stops and kiss-and-ride loading zones would be on the south side of Exchange Terrace. Park-and-ride patrons would park in the existing garage, south of the terminal building, or the recommended new facility west of Gaspee Street.

Passengers would enter at sidewalk grade. Doors at the main entrance and enclosed walkways would open automatically.

Additional terminal doorways, primarily for emergency use, would be located at the east and west ends of the main terminal building. On the east end, a ramp would connect the terminal and the adjacent pedestrian walkway. Steps to ground level would be furnished at the west emergency door.

The existing one-story structure, between the main terminal and the former restaurant building, west of the terminal would be demolished. This structure, formerly used for the handling of mail, packages and newspapers is located on a spur track (stub end) and is presently used for general storage. It is in poor condition.

Steps leading from tracks to sidewalk grade, on either side of the terminal building, would be removed, and the area would be waterproofed, paved and landscaped.

Additional access and egress points, from Francis Street to the pedestrian underpasses, would be retained. New stairways would be constructed. Passengers could arrive on foot or by bus. There is not sufficient area for an auto drop-off zone under the viaduct. Passengers arriving, via the Francis Street stairways, would proceed directly to platforms or enter the main terminal building through the trackside concourse.

17.7.2 PASSENGER PROCESSING

Functional Flow

An information booth, Passenger Services office and ticket sales counter would be in immediate view to passengers entering the main terminal building from Exchange Terrace. Patrons would proceed to the ticket counter for ticket purchase, to the baggage counter to deposit luggage, and then to seating, either within the waiting room or in the trackside concourse area.

The reconstructed concourse would function as a trackside waiting and observation area, with direct access to the pedestrian underpasses via stairs and/or escalators. From the concourse, passengers would descend stairs or escalators to the north or south underpass, walk through the underpass, and ascend stairs or escalators to train platforms. Access to HSR platforms would be controlled at underpass level.

The handicapped passengers would descend to the enclosed walkway, east of the terminal, via a gently sloping ramp, proceed through the pedestrian underpass and ascend to platform level by elevator.

Departing passengers would either use the enclosed walkways, to exit directly to Exchange Terrace, or return to the terminal if baggage is to be claimed. The baggage claim counter would be located near the east-end terminal entrance.

Information

An electronic arrival and departure board would be located at the information booth. TV monitors would be located within the seating areas of the concourse, the main terminal waiting room and other selected areas.

Waiting Area

Seating would be arranged in clusters, allowing for comfortable circulation and, where an opportunity exists, for a pleasant view of scenery or terminal activity.

Ticket Purchase

Existing ramps, within the waiting room, which lead to east and west doors would be replaced by stairs and the floor brought to level grade. This would be necessary in order to develop more usable space as a queuing area for ticket sales, baggage transactions and for access to the rest rooms. A portion of the east end ramp would be retained as an accommodation for handicapped travelers.

Ticketing offices and counters would be remodeled and expanded. Ticket sale areas would be made secure, and separated from office areas. Separate ticket windows would be designated for HSR and commuter trains. A special window, for the physically handicapped, would be serviced on demand.

Baggage Handling

Baggage check and claim counters would be near the ticket selling area, with adjoining space for baggage handling and storage. An elevator would be installed at the rear of the baggage storage room. Baggage would be transported to and from the platforms via the subway underpass.

Concourse

The existing concourse would be removed. A new glass-wall concourse would be constructed. This concourse would serve as an additional waiting room and observation area, affording a broad view of the landscape, passenger and train activities and the view beyond. The concourse would be carpeted and acoustically treated, clustered seating would be furnished, telephones would be available, and TV monitors would provide train information.

Pedestrian Underpasses

Both pedestrian underpasses would be reconstructed and improved to meet anticipated use. New stairways, escalators and elevators would be installed, linking underpasses with the terminal building and with high-level platforms. New stairways to Francis Street would be constructed.

Platforms

Tracks are on a curved alignment in the terminal area. Since speed restrictions are slightly less on tracks on the outside of the curve, it is recommended that HSR service be operated on tracks nearest the terminal. A 1,200-foot-long high-level platform would be built on the location of existing platform No. 2. Tracks would be realigned to permit a minimum 18-foot platform width. Reconstruction of platform No. 2 for HSR service would also afford an option for HSR operation over the Providence and Worcester Railroad tunnel line.

Platform No. 3 would be reconstructed as an 850-foot-long high-level platform serving commuter trains. Both high-level platforms would have full-length canopies. Windbreaks and shelters, with lighting and infrared heating, would be installed on both platforms.

Platform No. 1 would remain at concourse level, but removed from service. The platform area would be resurfaced and waterproofed. This area would be retained as open space and reserved for future transportation use, including a possible PRT system.

17.7.3 PUBLIC SERVICES

Rest Rooms

Men's and women's rest room facilities would be located in the northwest corner of the terminal building. Access to these rooms would be provided from the main terminal waiting room by removing an existing ramp and raising the floor to level grade. Modern rest-room standards would govern new construction.

Lockers

Public lockers for short-term baggage storage would be distributed throughout the main waiting room and concourse.

Ground Transportation

An area for securing ground transportation would be conveniently located immediately inside the main entrance. This facility would be manned jointly or individually by various carriers. Direct telephone lines would be furnished. Services would include connections to local and intercity buses, airport connections, car rental, and limousines or taxis.

Travel Aid and Accommodations

Located immediately inside the main entrance and opposite the ground transportation booth would be a traveler's aid kiosk. Services would include general travel assistance, first aid, and listings of hotels, churches, local, state and federal offices.

17.7.4 CONCESSIONS

Space would be provided for the development of concessions and commercial services. Additional floor area, available for utilities and commercial or railroad operations, includes:

	Approximate Square Feet
Office building (four floors)	26,000
Restaurant (two floors, excluding basement)	11,000
Baggage building (two floors – presently occupied by REA)	11,000

These structures could be renovated, with costs allocated to tenants.

17.7.5 RAIL PASSENGER OPERATIONS FACILITIES

Passenger Service Office

Offices would be furnished for a passenger service representative (including a waiting room) and for a Manager of Passenger Services and secretary. The available space would be completely renovated, partitioned and air conditioned; floors would be carpeted. Wall and ceiling surfaces would be refurbished and acoustically treated. Flush fluorescent-lighting fixtures would be added.

Ticket Offices

The present space, used for ticket sales, would be enlarged to provide room for a suite of offices behind the ticket counter, but partitioned off from it. This suite would house a supervisor's office, a cashier's office with safe, a sales clerk area and a storage room for tickets, supplies and equipment. These areas would be air conditioned and finished with vinyl-asbestos floor tile, plastered wall surfaces, suspended acoustical-tile ceilings and flush-fluorescent lighting fixtures.

Security

Security office space would be provided in a room adjacent to the concourse. Closed-circuit TV cameras would scan platform levels, stairs and escalators, passageways, subway underpasses and terminal entrances. TV screens would be monitored in the security office at all hours of terminal operations.

17.7.6 UTILITIES

Heating, Ventilating and Air Conditioning

All interior passenger and operations areas would be completely air conditioned and ventilated as required. Supplemental heating devices would be installed to achieve desired comfort levels. Treated areas would include all offices, the waiting room, the concourse area, concession space and rest rooms.

Electrical Service

Electrical service and distribution is adequate for present use; however, additional capacity is required for air conditioning, escalators, elevators and increased lighting loads.

Water

Municipal water service is adequate for present and future terminal uses. New toilet facilities and relocated drinking fountains will require new piping within the building.

Sanitary Sewer

Relocation and updating of rest room facilities will require interior modifications to the sanitary sewer system.

17.7.7 EXTERIOR BUILDING RENOVATIONS

The terminal exterior would be improved as follows:

Roofs

The terminal roof surface would be completely renewed; new gutters and downspouts would be installed. The lower portion of the terminal roof, along trackside, would be removed and completely reconstructed to match the new concourse roof construction.

Exterior Masonry

All exposed masonry surfaces would be cleaned by sandblasting, steam cleaning or other appropriate methods. Joints would be pointed and restored as required.

Windows

Wood frames and sash would be replaced with new bronze anodized-aluminum windows. Proportions and divisions would match the existing openings. All sash would be repaired.

Entrances

All passenger entrances to the building would have treadle-operated pairs of doors with sidelights and transoms. The existing masonry openings would be utilized.

A new canopy extending from the main terminal building to Exchange Terrace, would protect passengers using the main entrance.

Landscaping

Terminal landscaping and street furniture would include planter boxes for trees and shrubs along Exchange Terrace and along the entrance sidewalks at the east and west ends of the terminal, outdoor seating and information booths, and textured sidewalk and crosswalk surfaces. Roadway and accent lighting standards and fixtures would be provided.

17.8 CAPITAL COSTS

Unit costs based on current prices have been developed for major renovation and construction items. These unit prices and the illustrated concept sketch plans form the basis for the following estimate of construction costs:

Terminal work, including renovation and new additions	$ 697,000
Platforms and canopies	1,225,000
Escalators, stairs and elevators	1,130,000
HVAC, plumbing and lighting	358,000
CCTV surveillance and electronic information systems	170,000
Sitework including paving, curbs and sidewalks	30,000
Subtotal terminal and site work	$3,610,000
Contingency – 30%	1,083,000
Total terminal cost	$4,693,000

Construction of a new 1200-foot-long high-level platform requires major track adjustments. Costs for trackwork, relocation of any signals and communication lines and construction of electric railroad catenary are not included in this estimate. The cost of renovation or reconstruction of the Francis Street railroad viaduct is also excluded.

Parking facility construction cost of $6,600,000 was calculated at a rate of $3,300 per car space for an approximate median of 2,000 parking spaces required for HSR patrons.

17.9 SCHEDULING AND PHASING OF CONSTRUCTION

An estimated 18-month construction period would be required for renovation and new construction of terminal facilities. Construction of the parking structure could be phased within this time frame.

High priority should be assigned to early implementation of recommended improvements due to water leakage to the terminal and underpass interiors, the unsecure ticket sales area and the general state of dilapidation.

Interior renovation would be phased so as to effect minimal interference with normal passenger processing. The east underpass, presently closed, would be renovated and reopened for passenger use. Subsequently, the west underpass would be reconstructed.

Relatively unimpeded service would be maintained on existing platforms during construction of the high-level HSR platform. Subsequently, successive platforms would be reconstructed to high-level standards as required.

17.10 SPECIAL CONSIDERATIONS

A thorough analysis of the Francis Street railroad viaduct will be conducted under Task 11 of the NEC-HSR improvements project. Estimates of rehabilitation cost will be included thereunder.

Reconstruction of Platform No. 2 for HSR service affords an option for HSR operation over the Providence and Worcester Railroad east-side tunnel line. This report further recommends reconstruction of Platform No. 3 for commuter service. Increased levels of commuter patronage would warrant reconstruction of Platform No. 4 to high-level standards as well.

The recommended development plans for the terminal assume that two State studies and the study by the Rhode Island School of Design are in a very preliminary planning stage, with no formal commitment to proceed with detailed design and construction in the near future. Therefore, no specific consideration was given to incorporating their plans in this analysis.

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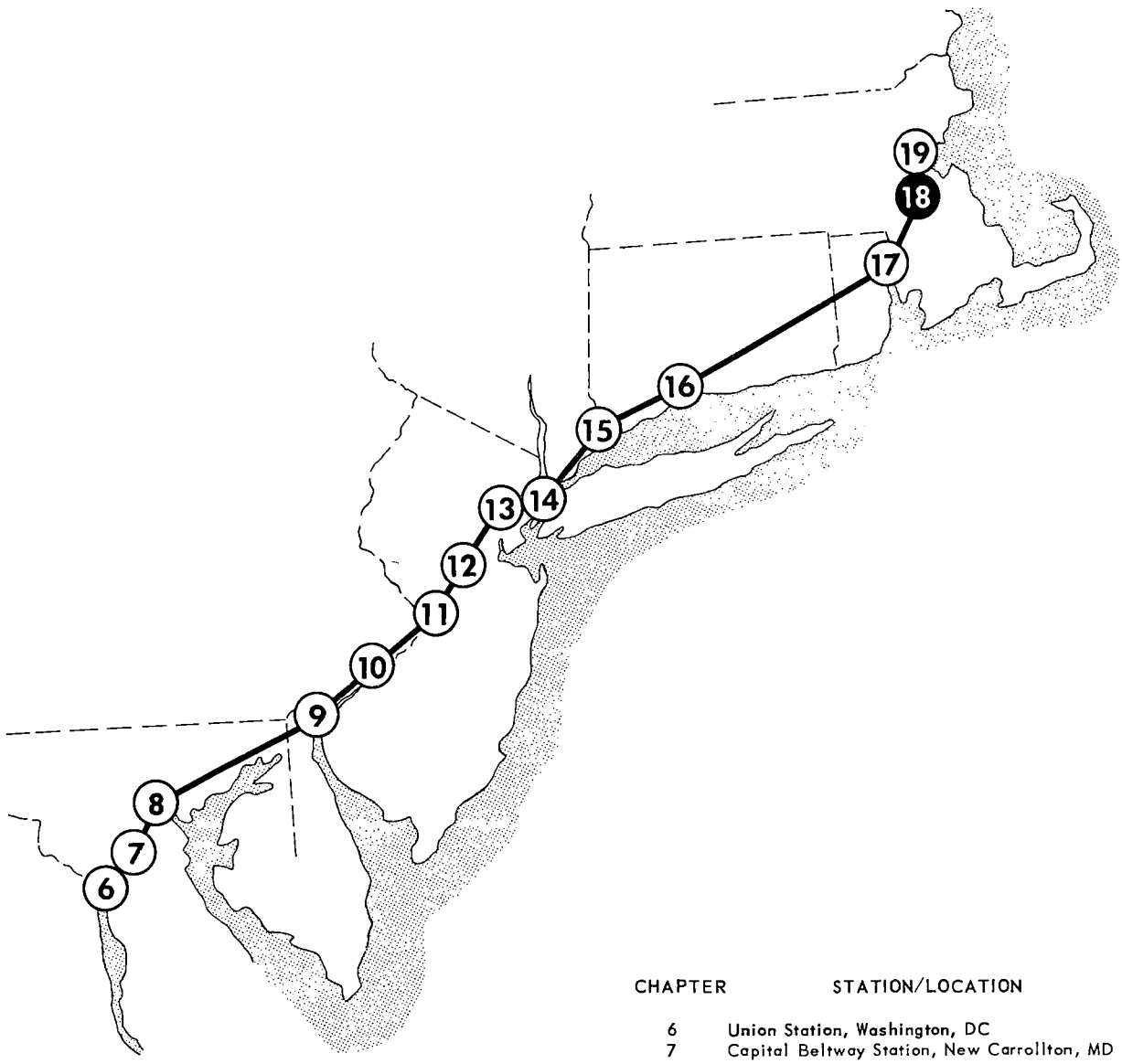
Personal interviews and communications

Francis Frederick and Bruno Mollo, City Planning and Urban Development
Providence, Rhode Island

Hugh Kiley, Station Master - Union Station
Providence, Rhode Island

STATION LOCATIONS ALONG NORTHEAST CORRIDOR



CHAPTER	STATION/LOCATION
6	Union Station, Washington, DC
7	Capital Beltway Station, New Carrollton, MD
8	Penn Central Station, Baltimore, MD
9	Wilmington Station, Wilmington, DE
10	Penn Central Station, 30th Street, Phila., PA
11	Trenton Station, Trenton, NJ
12	Metropark Station, Iselin, NJ
13	Penn Central Station, Newark, NJ
14	Pennsylvania Station, New York, NY
15	Stamford Station, Stamford, CT
16	New Haven Station, New Haven, CT
17	Union Station, Providence, RI
18	Route 128 Station, Dedham, MA
19	South Station, Boston, MA

18.0 ROUTE 128 STATION, DEDHAM, MASSACHUSETTS

18.1 STATISTICAL FRAMEWORK

18.1.1 OWNERSHIP AND USERS

The Route 128 station and parking lot are owned by the Massachusetts Bay Transportation Authority. The terminal is used by Amtrak and three commuter lines.

18.1.2 PROPERTIES AND FACILITIES

The Route 128 Station is located in Dedham Township, Massachusetts. Facilities include a single-story, brick terminal building, a brick shelter building, two low-level canopied platforms, a sheltered pedestrian walkway over the tracks, canopied stairs connecting platforms to the overpass and adjacent parking and passenger drop-off and pick-up areas. The terminal, shelter and overpass were constructed in 1965.

18.1.3 CURRENT ACTIVITY LEVELS

The Route 128 Station is presently served by 24 commuter trains daily. The terminal is a primary loading point for the Providence Commuter Line en route to Boston. More than 400 one-way commuters depart from this terminal daily, with the majority destined for Boston. The commuter lines which stop at the Route 128 Station are as follows:

Commuter Line	No. Trains Per Day
Providence	16
Westerly	2
Stoughton	6
Total	24

In addition, the terminal is served by 22 Amtrak trains, both to and from Boston. One-way patronage on Amtrak trains is about 150 persons per day. Thus, 46 trains serve the Route 128 Station daily, with a combined one-way patronage of about 550 people.

More than two-thirds of the persons utilizing the Route 128 Station are commuters. Morning peak-hour-demand occurs between 7:30 a.m. and 8:30 a.m. when eight trains arrive or depart. Seven trains arrive or depart during the evening peak period, between 5:50 and 6:30 p.m. The first train arriving at the Route 128 Station is at 5:18 a.m.; the last train arrives at midnight.

Since the Route 128 Station is a suburban terminal, most patrons arrive by automobile. No taxicab companies or local and intercity bus companies serve the terminal. However, since intercity buses do run along Route 128, in both directions, it would be relatively easy to make stops at the terminal.

18.2 TERMINAL VICINITY INFRASTRUCTURE

18.2.1 LOCATION CONSIDERATIONS

The terminal location is shown in Figure 18-1, indicating the transportation network and activity centers in the general city setting. Activity centers are listed in Table 18-1.

Location With Respect to Regional Highway System

The Route 128 Station is located about 12 miles southwest of Boston, at the intersection of Route 128 and I-95. Both highways provide convenient access to the terminal.

Route 128, which runs past the terminal, has been designed to promote efficient movement of traffic around the Boston area. It forms a "radial belt" around the Boston urbanized area with various "spokes" connecting it to downtown Boston.

The Route 128 Station is utilized by residents of Dedham, Westwood, Norwood, and Canton. Residents of Dedham and Westwood have direct access to the terminal via Route 128.

I-95 intersects with Route 128 east of the terminal and provides access to the terminal for residents of Norwood and Canton. However, as shown in Figure 18-1, I-95 terminates at the intersection with Route 128, and there are no plans, at present, to extend I-95 to central Boston.

TABLE 18-1

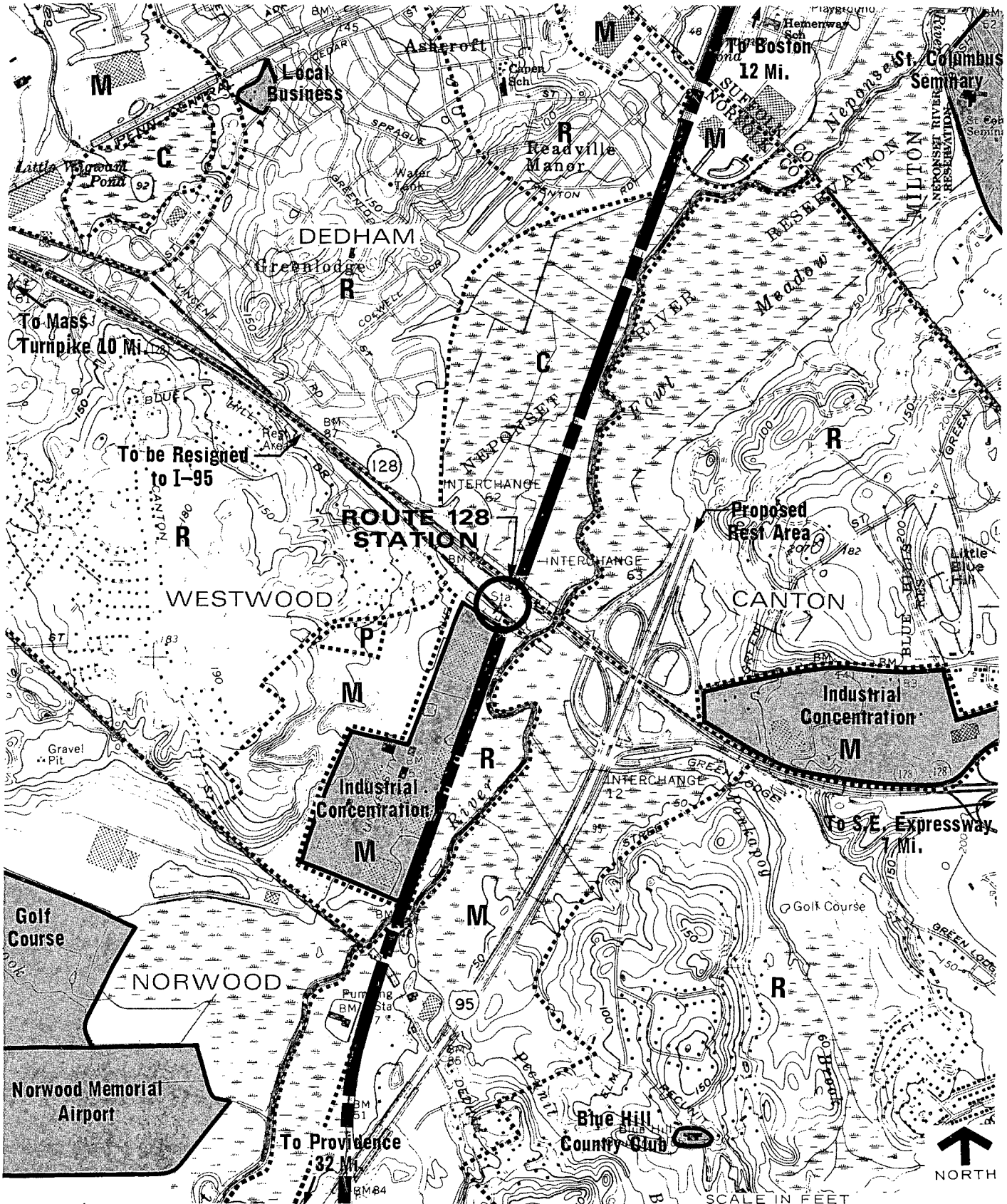
ACTIVITY CENTERS, CITY SETTING

EXISTING ACTIVITIES

Named in Figure 18-1

PROPOSED ACTIVITIES (Zoning)

R	Single Family Residential/General Residential
M	Light Industrial/Limited Industrial
C	Conservation (Flood Plain)
P	Public (Town - owned, unzoned)



LEGEND/ZONING

EXISTING ACTIVITY CENTER

A — ZONING AREA (SEE TABLE 18-1)

HIGH SPEED RAIL

STATION LOCATION
ROUTE 128 STATION
DEDHAM, MA

FIGURE 18-1

If I-95 is not extended into Boston, expressway access from Route 128 to downtown Boston will continue to be somewhat circuitous. The rail system offers a much more direct route. However, there are other commuter railroad terminals in this general area which are even more convenient that the Route 128 Station.

Relationship to Other Inter-Regional Transportation Facilities

There are no intercity bus terminals or commercial air terminals in the general area. Intercity buses use I-95 and Route 128 to and from Boston, but do not make connections at this terminal.

Existing Transit Service

There are no interconnections with any public transit systems at the Route 128 Station, at the present time.

Relationship to Activity Centers

Since the terminal is located in a suburban residential area, there are few significant local activities to attract trips to the area. Consequently, almost all terminal patrons are suburban residents with destinations in Boston.

Existing development around the greater terminal area is very limited. There are a few light industrial concentrations in Westwood, just south of the terminal, and in Canton, to the east of the I-95/Route 128 Interchange. Norwood Memorial Airport, which basically serves private aircraft, is about one mile southwest of the terminal. There is a large golf course next to the airport. There is no significant commercial development in the area, except in Dedham; however, there is some relatively new residential development in Westwood and the southern portion of Canton, as well as older, more dense residential development in the eastern portion of Dedham.

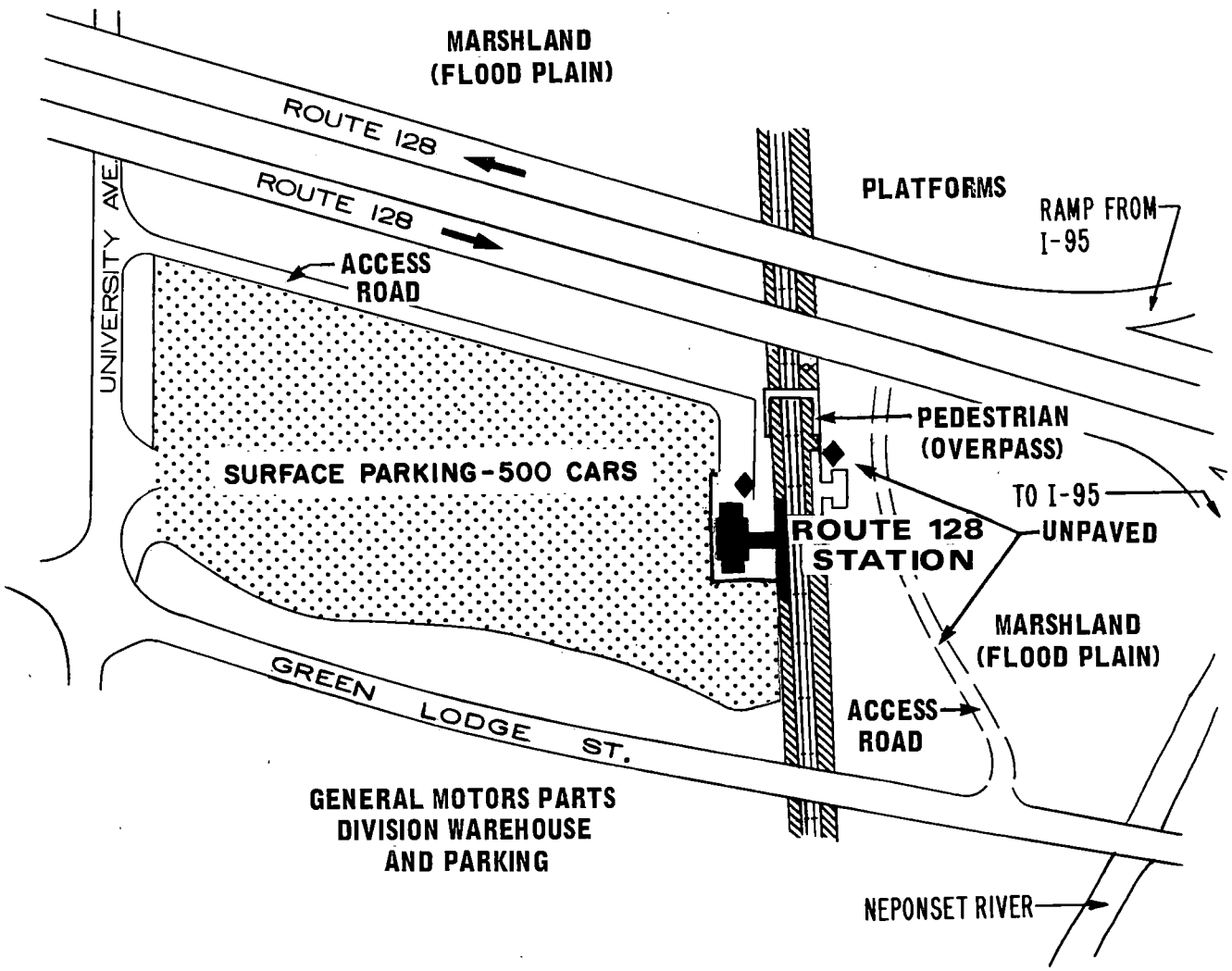
The southwest portion of the area is characterized by some developed residential areas interspersed with wooded areas. Most of the area to the northwest, where Dedham is located, is highly developed with only a few wooded spots and the Neponset River flood-plain area remaining relatively untouched.

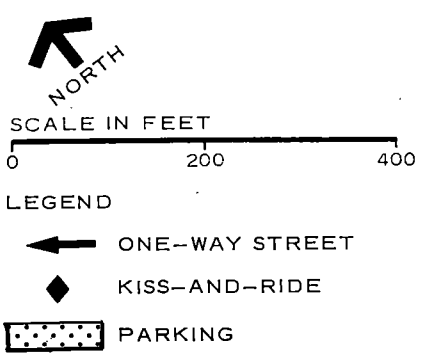
Apart from the terminal itself, the only other significant traffic generator in the immediate area is the General Motors (G.M.) Warehouse, located immediately south of Green Lodge Street, However, working hours for the more than 200 G.M. employees are between 7 a.m. and 3:30 p.m. These hours do not coincide with the peak traffic demand at the Route 128 Station.

18.2.2 LAND USE

Existing Characteristics of the Terminal Area

Figure 18-2 shows the immediate terminal environs and local circulation system.





EXISTING STATION ENVIRONS
ROUTE 128 STATION
DEDHAM, MA

FIGURE 18-2

The general vicinity around Route 128 is a rapidly-growing suburban residential area. Very little activity currently exists in the more immediate terminal area. Land use around the terminal consists of residential, industrial and warehouse activities, and large areas which are either vacant or preserved open space, as part of the Neponset River Reservation. Present zoning is largely single-family residential, limited and light industrial and conservation. The only structures in the area are: the MBTA-owned parking lot adjacent to the station; the General Motors Parts Division Warehouse and parking lot, immediately south of the parking lot; a garden supply/nursery facility, west of this industrial development; and, some relatively new single-family residential developments. While the immediate terminal area is relatively undeveloped, there is potential for some residential growth.

Planning Factors, General Terminal Area

Activity centers and other planning factors in the terminal area are shown in Figure 18-3 and listed in Table 18-2.

Further development of the general terminal area, in the near future, depends on several factors. First, development must follow town-approved zoning laws. Figure 18-3 indicates current zoning according to the individual town zoning ordinances. Permitted uses are essentially limited to single-family residential, light industrial and limited industrial. Second, development may be constrained by certain topographic features of the area. For example, while the area immediately west of the terminal and the existing industrial development is zoned for residential use, clearing and extensive filling would be required for building since the area is in a flood plain and has thick brush cover. The majority of the land, east of the terminal, is also in a flood plain. Although zoned for residential use, it would be expensive to develop the land for this purpose. Furthermore, special restrictions or legislation, such as recent state environmental legislation, limit the type and degree of development in flood-plain areas. Finally, some areas, such as the Neponset River Reservation, north of the terminal are in the flood plain and have been designated as preservation areas.

TABLE 18-2

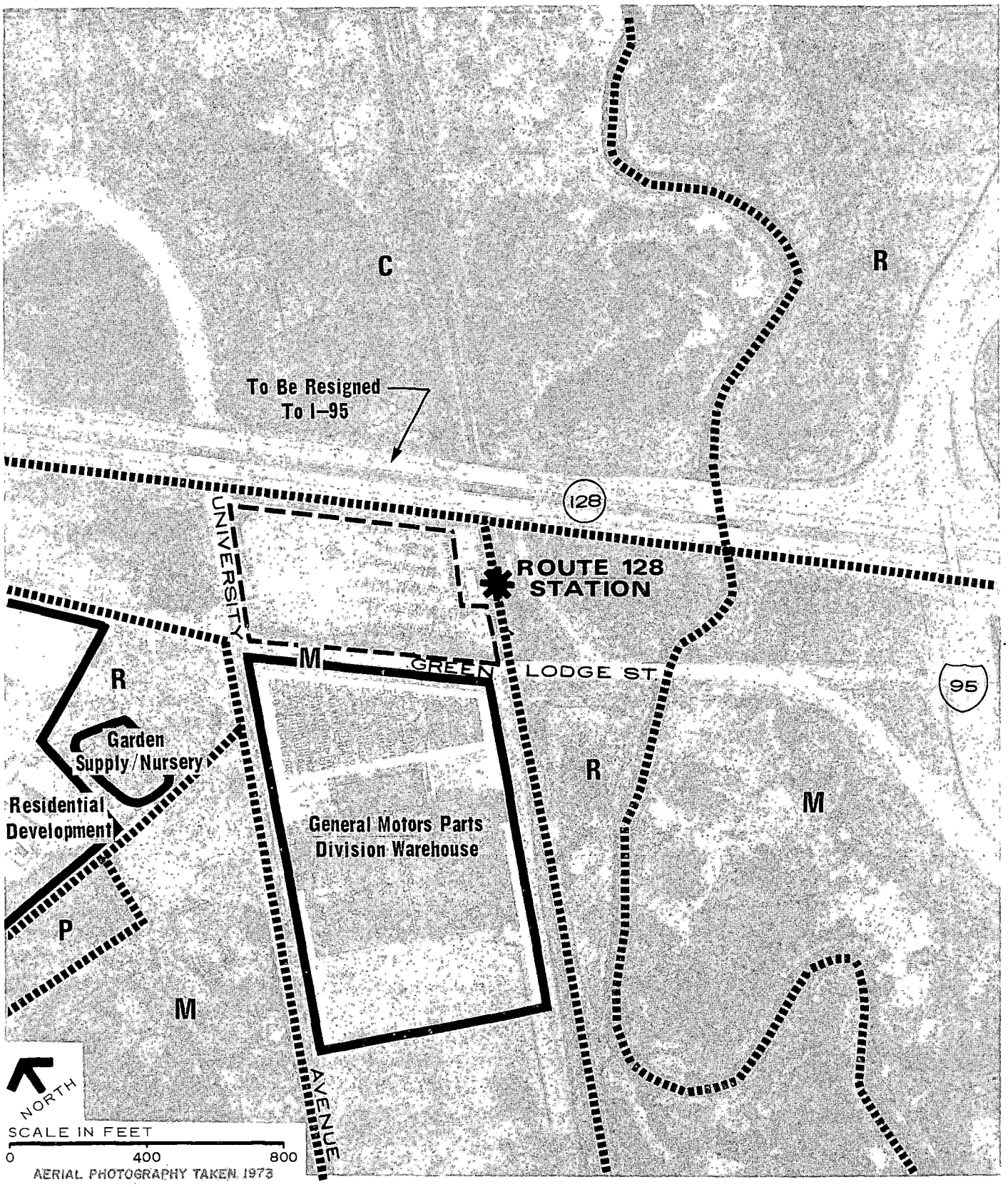
ACTIVITY CENTERS, GENERAL TERMINAL AREA

EXISTING ACTIVITIES

Named in Figure 18-2

PROPOSED ACTIVITIES (ZONING)

R	Single Family Residential/General Residential
M	Light Industry/Limited Industrial
C	Conservation (Flood Plain)
P	Public (Town - owned, unzoned)



LEGEND/ZONING

PARKING

EXISTING ACTIVITY CENTER

ZONING AREA
(SEE TABLE 18–2)

PLANNING FACTORS
ROUTE 128 STATION
DEDHAM, MA

FIGURE 18–3

These factors indicate that intensive development, in the immediate terminal area, is unlikely in the future.

18.3 EXISTING PASSENGER HANDLING FACILITIES

18.3.1 PASSENGER ACCESS AND EGRESS

Automobile Access

Highway access to and from the terminal is good. The terminal is located near the ramps leading to and from Route 128. Both University Avenue and Green Lodge Street, adjacent to the Route 128 Station, act as feeder roads to the terminal. Traffic volumes on both streets are low due to existing low-density-type land uses in the terminal area.

Other Connections

There is a designated "live parking" area directly west of the terminal, with capacity for about 25 cars and a 15-minute time limit. This area is utilized primarily by kiss-and-ride commuters. There is another designated "live parking" area east of the tracks, although it is not paved. This area has a capacity for about 10 cars. The only entrance/exit to this latter area is via the service road off Green Lodge Street.

Pedestrian access to the terminal is poor. The pedestrian overcrossing, at the north end of the terminal, provides access across the tracks. However, the stairs are steep and it is hard to walk on the crosswalk. In addition, there are no sidewalks on the streets adjacent to the parking area and in the vicinity of the terminal.

18.3.2 PARKING

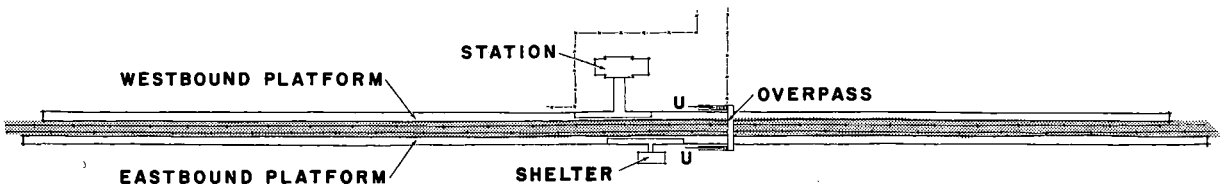
There are 500 long-term parking spaces currently available at the terminal. The parking lot, located to the west of the terminal building, is owned by the MBTA and operated by the Eastern Parking Company. On an average day, approximately 350 vehicles are parked in the lot. However, during the winter months, when more people take the train to Boston instead of driving, the parking lot is usually full. Parking rates are very low, approximately $0.50 for 12 hours or $7.00 per month. Since there are no other parking areas available, all rail patrons use this lot. The lot is attended from 6 a.m. to 6 p.m., and is well lighted at night.

18.3.3 PASSENGER PROCESSING

For Existing Main Floor, Waiting Room and Platform Plan, see Figure 18-4. Most passengers arrive at the terminal by automobile and are dropped off or park adjacent to the building. Entrance doorways are at sidewalk grade. Canopies provide protection at entranceways. See photo 1.

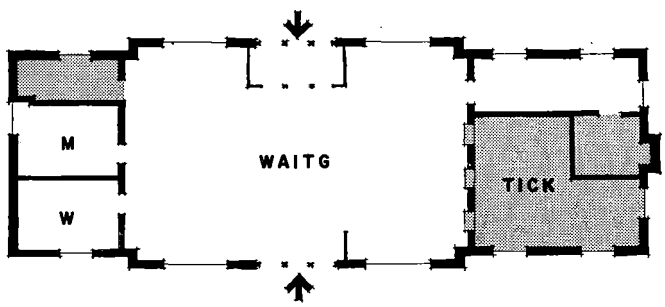
Functional Flow

On entering the terminal, passengers walk into the waiting room, purchase tickets at the counter, and proceed to seating in the waiting room, on the platforms or in the shelter. See photo 2.

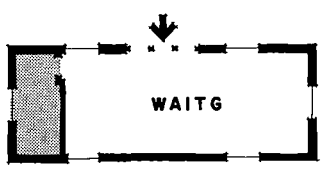


SCALE IN FEET
0 100 200

PLATFORM PLAN



STATION FLOOR PLAN



SCALE IN FEET
0 25 50

SHELTER FLOOR PLAN

NORTH

LEGEND
RAILROAD FUNCTION

EXISTING ROUTE 128 STATION
DEDHAM, MA
FIGURE 18-4

To reach the eastbound shelter and platform from the ticket office, passengers walk approximately 125 feet along the westbound platform, ascend about 22 feet via stairs, walk through a 60-foot-long passageway, descend an equal number of steps to grade, and walk approximately 75 feet to the shelter entrance. Approximately 100 feet of this walkway is unprotected (no canopy). See photo 3.

Physically handicapped passengers may proceed unaided to the terminal and shelter interiors or platform locations. However, they need assistance upon entraining from or detraining to the low-level platforms.

Information

Train information can be obtained at the ticket windows or from the public address system. Hand or typewritten messages are posted on the ticket office wall. Warning bells are located on the platforms, and ring as trains approach the terminal.

Ticket Purchase

Ticket counters are conveniently located in the terminal waiting room. All types of tickets are sold at two of the three windows.

Baggage Handling

No baggage handling services are available.

Waiting Area

The terminal waiting room is a pleasant day-lighted space. Cushioned chairs provide seating for 32 people. The shelter has benches for seating 18 people. Benches are also provided on the platforms.

18.3.4 PUBLIC SERVICES

Men's and women's rest rooms, pay telephones and a taxi call phone are located in the terminal waiting room.

18.3.5 CONCESSIONS

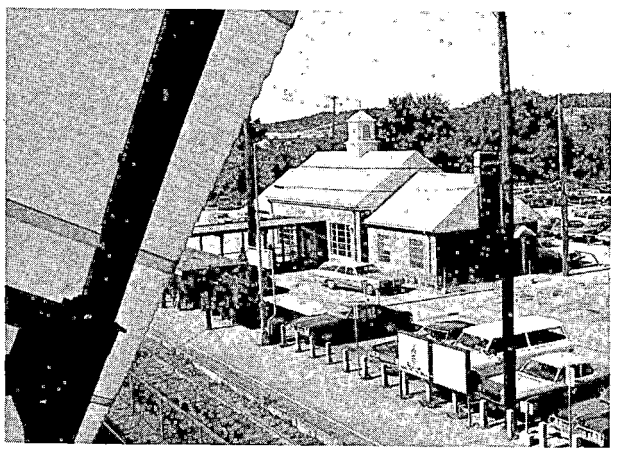
Vending machines for newspapers, snacks and beverages are located in the terminal waiting room.

18.3.6 RAIL PASSENGER OPERATION FACILITIES

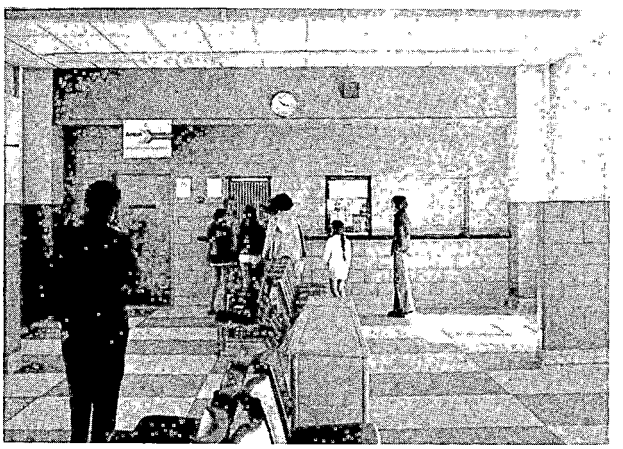
All rail passenger activity is centered at the ticket counter. Roving Penn Central security personnel visit the terminal at scheduled intervals.

ROUTE 128 STATION – DEDHAM, MA

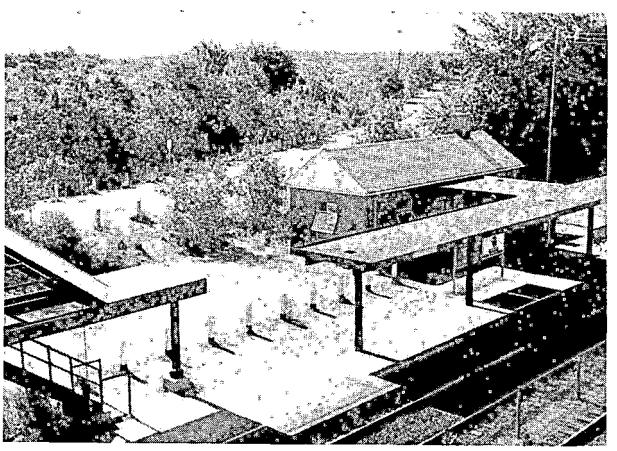
EXISTING FACILITY



1. Terminal Building from Overpass



2. Ticket Counter and Waiting Room



3. Shelter and Train Platform from Overpass

18.3.7 FACILITY CONDITIONS

Structural Integrity

The terminal and shelter buildings, the crosswalk and connecting stairways and supporting members appear in sound condition.

Exterior

Exposed wooden surfaces of the buildings need to be painted.

Canopy wood and steel surfaces are in need of refurbishing.

Platform walking surfaces are weathered and show signs of spalling and patching.

Interior

The area is dirty and painted surfaces are deteriorating. The lighting fixtures in the main waiting room are also deteriorating.

Utilities

Heating is reported to be adequate in the terminal and the shelter. Ventilation is provided by opening windows, supplemented by small circulating fans. The ticket office is in need of air conditioning.

Water, gas and electrical power supply is reported to be adequate. Sewage is disposed of by a septic system.

18.4 FORECAST ACTIVITY LEVELS

18.4.1 PROJECTED DESIGN DAY PATRONAGE

The 1990 peak design day is expected to be 2,000 HSR patrons and 700 commuters. This projection is more than 15 times the present level of Amtrak patronage at the terminal, and almost double the present commuter patronage. Thus, contrary to present patronage patterns, by 1990 approximately 75 percent of the total passengers, at the terminal, will be HSR patrons.

A high level of HSR use is expected due to the residential growth predicted for the HSR service area, as well as the fact that limited parking in Boston will induce some people to use the Route 128 Station for non-commuter type trips.

Peak hour patronage is expected to reach 300 HSR and 400 commuter passengers for a total loading of 700.

18.4.2 PROJECTED MODE OF ACCESS

Percentages of daily passenger arrivals were projected to 1990, by mode, in the following table. The automobile will continue to be the primary mode of access to the terminal.

	Percentage		
	Low	High	Median
Park-and-ride	60	80	70
Park-and-ride passenger	5	10	7
Kiss-and-ride	15	25	20
Rail transit	0	0	0
Bus	0	5	1
Taxi and limousine	0	1	1
Walk	0	5	1

18.4.3 PARKING REQUIREMENTS

Estimated parking requirements for HSR passengers, based on a 1990 design-day patronage of 2,000, range from 1,200 to 1,600 with a median of 1,400 spaces.

18.5 PLANS AND PROPOSALS

18.5.1 TERMINAL IMPROVEMENTS

No current terminal improvements are underway and no plans for future improvements were reported.

18.5.2 FUTURE LAND USE PLANS

Proposals have been made to provide a Bicentennial Information Center and Roadside Rest Area at the Canton Interchange of I-95 and the present Route 128. After the Bicentennial, the rest area would remain as a permanent feature of the area. However, due to present zoning in the terminal area, further intensive development will probably not occur.

18.5.3 STREET AND TRAFFIC IMPROVEMENTS

Rather than continue I-95 into Boston from the Route 128 interchange, it has been proposed that sections of the present expressway system leading to Boston, including parts of Route 128, be redesignated as I-95.

18.5.4 TRANSIT IMPROVEMENTS

In 1969, the MBTA indicated that its Orange Line would be extended to the Route 128 Station area before 1975 to help relieve the projected traffic congestion in the eastern Massachusetts region, which includes the Canton-Norwood area. However, present proposals call for the extension of the Orange Line only through West Roxbury, approximately seven miles from the Route 128 Station.

The "Transit Development Program", calls for improvements to the existing commuter rail system by 1983, for those market areas which are served by railroads and which cannot justify full rapid-transit service. The improvements program includes the Stoughton Line and the Main Lines which presently utilize the Route 128 Station.

In addition, the terminal site has been designated as a transportation center and parking facility in the "Transportation Plan for the Boston Region 1974-83". If this plan is implemented, the Route 128 Station area would become an even more attractive and convenient location for a terminal in the HSR System.

Since specific plans have not been drawn up, the extent of development of the components of the transportation center proposal are unknown at this time. "The Transportation Plan for the Boston Region" does indicate that the MBTA will expand the use of buses in situations where they provide optimum service. Thus, although no buses are currently serving the Route 128 Station, it is reasonable to assume that by 1990, there will be bus routes to the terminal, especially since this site has been designated as a transportation center.

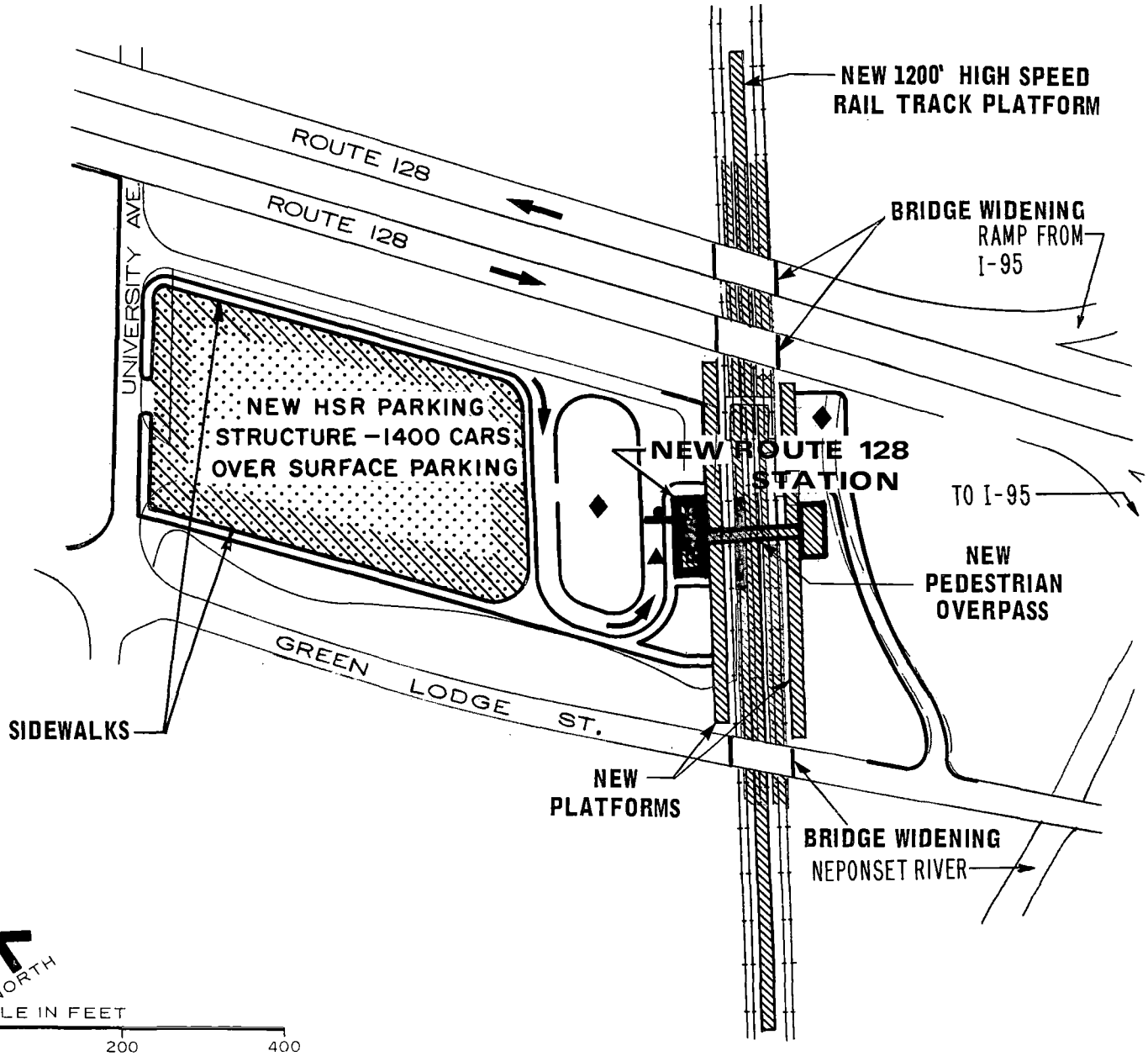
18.6 RECOMMENDED 1990 ACCESS/EGRESS AND PARKING PLANS

The 1990 plan for the Route 128 Station includes street improvements, new parking facilities and mode interchange facilities, as well as demolition of the existing terminal structures and construction of a new integrated terminal complex. The general concept plan is shown in Figure 18-5. Terminal improvements are discussed in Section 18.7.

18.6.1 STREET AND TRAFFIC IMPROVEMENTS

Striping and rechannelization of the arterial highways, University Avenue and Green Lodge Street, are recommended to provide efficient access and egress to and from the terminal area. This would include proper street signing leading to and from I-95.

The present road, leading to the east side of the terminal and the east side kiss-and-ride area, should be paved.



1990 CONCEPT
ROUTE 128 STATION
DEDHAM, MA

FIGURE 18–5

A traffic signal may be required at the intersection of University Avenue and Blue Hill Drive, even before 1990.

Sidewalks should be provided along the southern edge of the existing and proposed parking areas and leading to the terminal entrances.

18.6.2 PARKING

Based on an analysis of the existing zoning and topographical features of the area, it is recommended that additional parking be provided west of University Avenue. The proposed four-acre site has a capacity for 500 cars and is easily accessible. However, this site may not be sufficient to meet the 1990 requirements, and therefore as demand increases, consideration should be given to the eventual construction of a parking structure.

Provision for adequate kiss-and-ride facilities could reduce the projected parking demand. To encourage kiss-and-ride patronage, these facilities should be located as close as possible to the terminal building. Future kiss-and-ride areas have been designated on both sides of the terminal.

18.6.3 INTERMODAL TRANSFER

It is recommended that any further development of the Route 128 Station by the MBTA include provisions for the components of a total intermodal exchange.

Even if the Route 128 Station does not become a transportation center by 1990 (Section 18.5.4), the existing terminal facilities will require reconstruction to meet the long-range requirements for HSR service. In addition to providing sufficient long-term vehicle parking, the intermodal exchange facility should include bus bays, taxi bays and kiss-and-ride areas. See Figure 18-5. Taxi and limousine service could be accommodated through joint use of bus loading and unloading facilities.

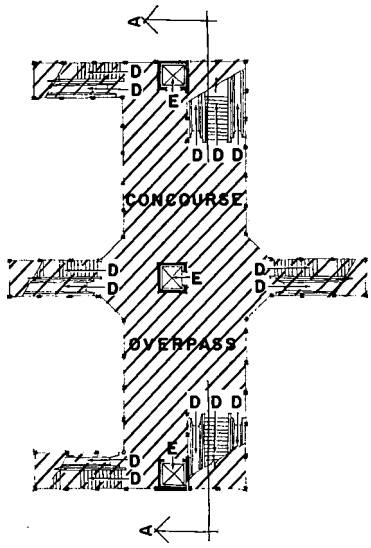
With the introduction of HSR services, it would be much more convenient for area residents to drive to the Route 128 Station and take the HSR for some intermediate-length trips, such as to New York City, than it would be to drive through downtown Boston to Logan International Airport.

Even before improved commuter rail or rapid transit service is introduced at the Route 128 Station, some form of bus service to the terminal would be desirable. Although there are no plans for such service at present, the 1990 concept includes provisions for the circulation, loading and unloading of buses adjacent to the terminal entrance.

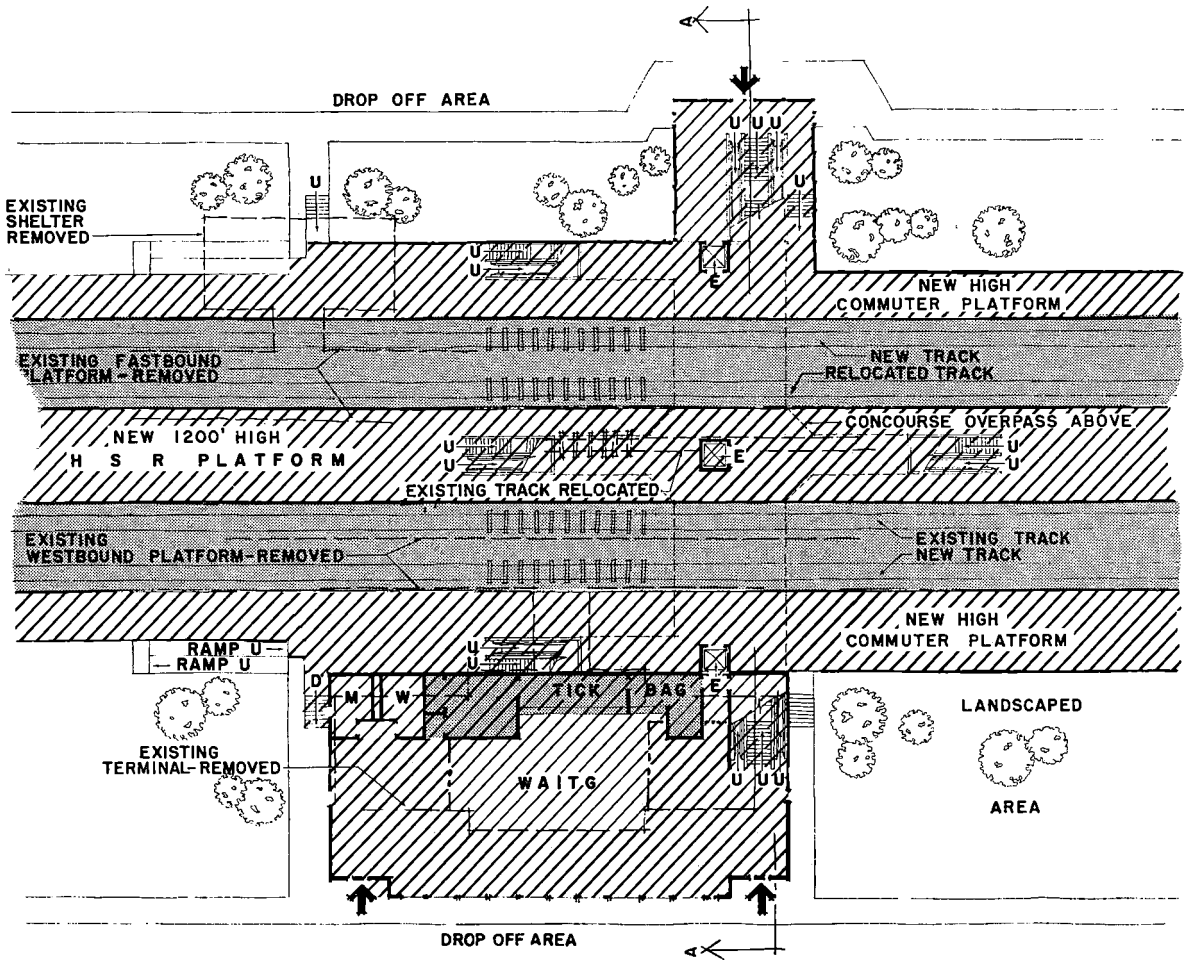
18.7 RECOMMENDED 1990 PASSENGER TERMINAL PLANS

The proposed terminal plans are shown in Figures 18-6 and 18-7.

Existing facilities at the Route 128 station are grossly inadequate to meet the projected 1990 passenger requirements.



OVERPASS PLAN



MAIN FLOOR PLAN

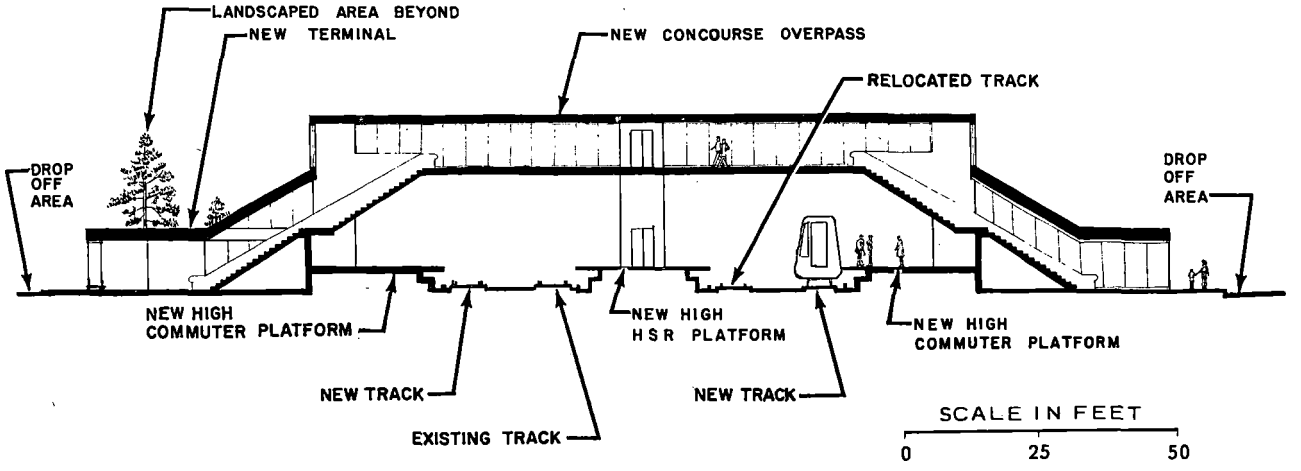
SCALE IN FEET
0 25 50

LEGEND

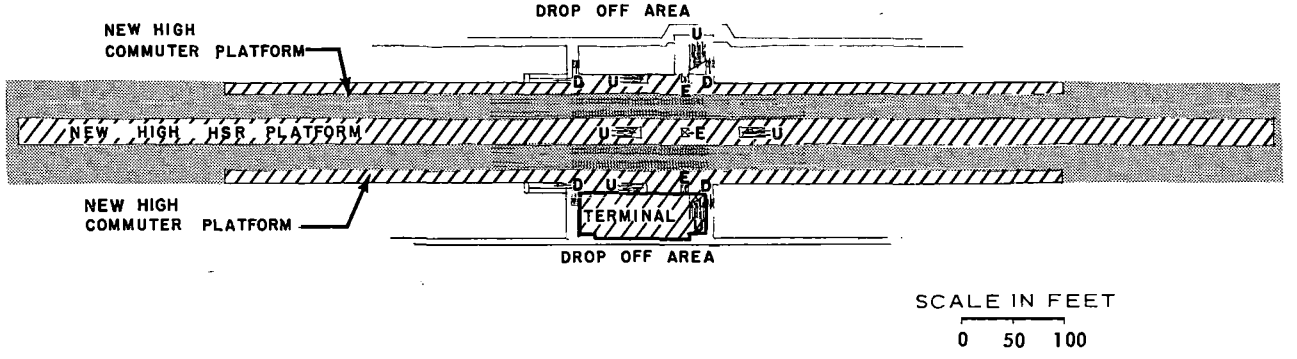
CONCESSION
RAILROAD FUNCTION
NEW CONSTRUCTION
INCREASED CIRCULATION

1990 CONCEPT
ROUTE 128 STATION
DEDHAM, MA

FIGURE 18-6



CROSS SECTION A-A



PLATFORM PLAN

NORTH

LEGEND

RAILROAD FUNCTION NEW CONSTRUCTION

1990 CONCEPT
ROUTE 128 STATION
DEDHAM, MA
FIGURE 18-7

The existing two-track arrangement is also considered inadequate. Planned terminal improvements contemplate rearrangement of the existing tracks and the addition of two more tracks for exclusive use by the HSR system.

The above factors dictate the demolition of the existing facility and the construction of a new integrated terminal complex which includes a new terminal building, high-level concourse overpass and separate HSR and commuter platforms with connecting stairs, escalators, and elevators as well as an improved system of access roadways and parking facilities.

The two existing tracks will be rearranged to allow construction of a 1200-ft-long center, high-level platform (sited between the tracks). The existing low-level platforms and pedestrian overpass (over the existing tracks) will be removed. Two additional roadbeds and railroad tracks and two 850-ft-long, high-level platforms will be constructed along the outer sides of the new tracks. These platforms will serve as the east and westbound platforms for commuter rail service. The small shelter and terminal building will be demolished to allow for construction of the new terminal building.

Two nearby highway overpass bridges would be extended to accommodate the proposed new track configuration.

The plan illustrated in Figure 18-6, constitutes a prototypical terminal design developed to accommodate the projected needs of the future HSR system. This design is adaptable, with modifications to satisfy local conditions, for application at other terminal locations with similar patronage demand.

18.7.1 PASSENGER ACCESS AND EGRESS

Most patrons will be arriving by car, while some passengers may arrive by bus, taxi or limousine.

The main terminal building and adjoining parking area would be situated along the westbound side of tracks. Immediately adjacent to the main building entrances would be short-term parking zones for local buses, taxis, limousines and private autos (drop-off and pick-up patrons). Similar short-term parking facilities would also be located along the eastbound side of the tracks adjacent to the shelter building. Long-term parking facilities would be located in close proximity to the terminal facility.

Passengers would enter the terminal, at sidewalk grade, through two main entranceways with automatically-actuated doors in recessed shelter vestibules of the terminal building. Entrance doorways to the shelter would be located beneath canopies and would also be automatically operated. Thresholds would be at sidewalk grade.

Pre-ticketed and/or commuter passengers could bypass the main terminal building and ascend directly to the commuter platforms, via canopied stairs or ramps that connect with the sidewalks.

18.7.2 PASSENGER PROCESSING

Functional Flow

Upon entering the terminal building, passengers would walk to the ticket sales area to purchase tickets, obtain information and check baggage. Passengers would then proceed to the main waiting area for seating or walk to stairs or escalators leading to an enclosed concourse overpass where additional seating would be available. From the concourse, HSR passengers would be admitted to the center high-level platform under gated control. Stairs and escalators would lead from the concourse to all platforms.

Special features built into the terminal facility would permit physically handicapped HSR patrons to follow a similar route unassisted. These include:

(1) Depressed curbs and sidewalks at selected locations.

(2) Automatically-opening entrance doorways.

(3) A special ticket counter, serviced on demand, for purchasing tickets and checking and transferring baggage.

(4) Passenger-baggage elevators, serving on demand, to transport physically handicapped patrons between floor levels.

Passengers would have access to the terminal facility from the eastbound side of the tracks by entering the shelter, ascending to the overpass concourse via stairs, escalators or elevators, and descending similarly to a point within the main terminal building.

Information

An electronic information board would be displayed in the main waiting room. TV monitors would be located at the concourse overpass and in the shelter building. Information and assistance would also be given at the ticket windows. A public address system would be used to augment other information sources.

Waiting Area

The main waiting room, with ticket and rail service offices, rest rooms and utility quarters would function as the passenger activity center. Clustered seating would be arranged throughout the carpeted waiting area. Clear window walls would permit viewing of passenger activities in the terminal environs and aid surveillance for security and safety purposes.

Ticket Purchase

Ticket windows would be readily visible from the main entrance doorways. All types of tickets would be dispensed. A special window would be reserved for physically handicapped passengers, and served by ticketing personnel on demand. Handicapped passengers' baggage would also be checked in and claimed at this window. From there the baggage would be transferred to the adjoining baggage storage room until it could be transported to the platforms by elevator.

Baggage Handling

Facilities for checking and claiming HSR baggage would be located near the ticket counters. There would be provisions for baggage sorting and short-term storage. Baggage would be transported to the HSR platform by passenger-baggage elevators.

Concourse Overpass

The concourse overpass would be situated at a height to clear catenary wiring. It would connect the east and westbound side of the tracks and provide grade-separated access from the terminal and shelter buildings to all platforms, including the center HSR platform. The concourse would be wide enough for waiting and holding areas at controlled access points to the HSR platform.

The concourse would be a fully enclosed and climate-controlled structure, with tinted fenestration and domed skylights, to provide a feeling of openness, security and views of terminal activity. Clustered seating and other passenger amenities would be provided.

Platforms

The two existing low-level platforms would be replaced by a 1200-foot-long HSR center platform, and two 850-foot-long commuter side platforms. The platforms would have full-length canopies, windbreaks, infrared heating devices at selected locations, lighting systems and snow-melting devices.

Escalators, stairways and elevators would connect platforms to the concourse overpass.

18.7.3 PUBLIC SERVICES

Rest Rooms

Modern rest room facilities would be located in the main waiting room.

Lockers

Public lockers, for short-term baggage storage, would be located in the main waiting room and on the concourse overpass.

Telephones

Telephones would be located in the main waiting room, concourse overpass, shelter and on the commuter platforms.

Ground Transportation

Local bus schedules would be on display, and taxi call phones would be located in the main waiting room and in the shelter. Other local transportation information would be obtained at the ticket windows.

18.7.4 CONCESSIONS

There would be limited areas of space for vending machines in the main waiting room and in the concourse overpass.

18.7.5 RAIL PASSENGER OPERATIONS FACILITIES

Ticket and Passenger Services Offices

A supervisor's office would be partitioned off in the area behind the ticket sales counter. This office would handle all passenger services at the terminal. An adjacent room would contain a safe and storage space for tickets, supplies and equipment.

Desk space would be provided for roving railroad-security personnel. There would be direct telephone lines to police and first-aid emergency stations.

18.7.6 UTILITIES

Heating, Ventilating and Air Conditioning

Heating and air conditioning would be provided for all rail passenger processing areas, including the main terminal building, shelter building and concourse overpass.

Electrical Service

Adequate electrical service and distribution would be provided to accommodate all air conditioning, elevators, escalators and lighting loads.

Water and Sanitary Sewer

Existing water service would be utilized for terminal requirements. Enlarged rest room facilities would require installation of a new sanitary sewage-disposal system.

18.7.7 CONSTRUCTION CONSIDERATIONS

Structural System and Exterior Surfaces

The passenger processing building and the shelter would consist of steel and concrete post-and-beam construction. The buildings would be approximately one and one-half stories high, slab on grade, with no basements and flat built-up roofs.

Exterior surfaces would consist of bearing masonry and anodized-aluminum window walls and entrance systems, with polycarbonate glazing for safety and vandal resistance.

Doors would be automatically-actuated pairs (one leaf in and one leaf out), with sidelights and transoms.

The concourse overpass would consist of steel framing with fixed aluminum sash and polycarbonate window walls. The roof and floor would be properly insulated.

Interior Surfaces

Plans for interior surfaces would be as follows:

(1) The waiting room and shelter would have quarry tile floors, face brick and glass window walls, suspended acoustic-tile ceilings and flush-fluorescent light fixtures.

(2) The offices would have carpeted floors, paneled and plastered wall surfaces, suspended acoustic-tile ceilings and flush-fluorescent lighting fixtures.

(3) Men's and women's rest rooms would have ceramic tile floors and walls, wall hung fixtures, ceiling-hung toilet compartments, electric hand dryers, suspended plaster ceilings, high level lighting and adequate ventilation.

(4) The concourse overpass would have carpeted flooring, tinted polycarbonate glazing and anodized-aluminum window walls, suspended acoustic-tile ceiling and flush-fluorescent lighting fixtures.

Landscaping

Terminal landscaping would include plantings and trees along both access drives; accent and roadway lighting standards and fixtures; outdoor seating and information kiosks; and textured sidewalk and crosswalk surfaces.

18.8 CAPITAL COSTS

Unit costs based on current prices have been developed for major construction items. These unit prices and the illustrated concept sketch plans form the basis for the following estimate of construction costs:

New terminal structure	$ 686,000
Platforms and canopies	1,155,000
Escalators, stairs and elevators	1,020,000
HVAC, plumbing and lighting	115,000
CCTV surveillance and electronic information systems	115,000
Sitework including paving, curbs and sidewalks	103,000
Sewage disposal system	25,000
Subtotal terminal and site work	$3,219,000
Contingency – 20%	644,000
Total terminal cost	$3,863,000

Construction of the new HSR high-level platform, and the objective of providing separate tracks within the terminal area for HSR service and suburban commuter rail service, requires relocation of the two existing tracks and the construction of two additional tracks. Costs for trackwork, relocation of signals or communication lines, and construction of electric railroad catenary are not included in this estimate. Cost of any adjustments to the two highway overpasses in the terminal vicinity are also excluded.

Cost of construction of an additional parking structure constructed on air rights over the existing commuter parking lot was calculated at the rate of $3300 per car space for an approximate median of 1,400 parking spaces required for HSR patrons, as follows:

Parking Structure	$4,620,000

Of the required number of parking spaces, all would be accommodated within the existing terminal property.

18.9 SCHEDULING AND PHASING OF CONSTRUCTION

Terminal and site improvements would be undertaken during an estimated 18-month implementation period. Parking lot expansion and improvements would be phased to maintain interim capacity.

Two new tracks and the two new high-level commuter platforms would be constructed while service is maintained on the existing two-track system. Upon inauguration of service on the new side platforms (new No. 1 and No. 3), and the extension of the existing pedestrian overpass to each platform, the two existing tracks would be relocated, and a new 1200-foot-long HSR high-level platform (new No. 2) would be constructed between them.

A temporary structure for interim passenger processing would be provided, the existing buildings demolished and the main terminal and all ancillary facilities, including parking lot and roadway improvements, would be completed.

18.10 SPECIAL CONSIDERATIONS

Separation of high-speed intercity rail service (HSR) and suburban commuter rail service is desirable. This report therefore recommends construction of two new tracks for commuter service, and rearrangement of the existing trackage to serve the future HSR system.

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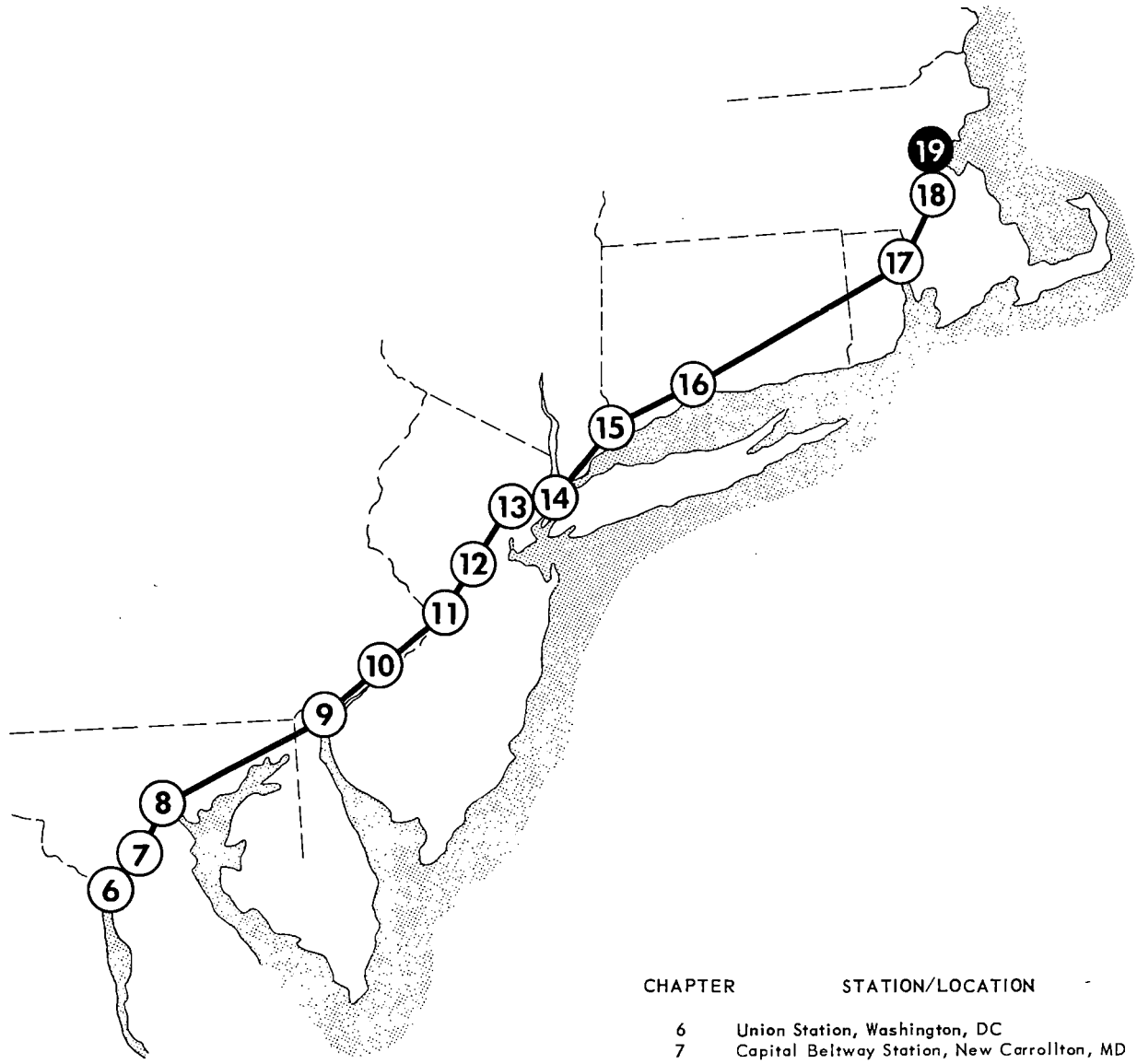
STATION LOCATIONS ALONG NORTHEAST CORRIDOR



CHAPTER	STATION/LOCATION
6	Union Station, Washington, DC
7	Capital Beltway Station, New Carrollton, MD
8	Penn Central Station, Baltimore, MD
9	Wilmington Station, Wilmington, DE
10	Penn Central Station, 30th Street, Phila., PA
11	Trenton Station, Trenton, NJ
12	Metropark Station, Iselin, NJ
13	Penn Central Station, Newark, NJ
14	Pennsylvania Station, New York, NY
15	Stamford Station, Stamford, CT
16	New Haven Station, New Haven, CT
17	Union Station, Providence, RI
18	Route 128 Station, Dedham, MA
19	South Station, Boston, MA

19.0 SOUTH STATION, BOSTON, MASSACHUSETTS

19.1 STATISTICAL FRAMEWORK

19.1.1 OWNERSHIP AND USERS

South Station and adjunct terminal trackage is owned by the Boston Redevelopment Authority (BRA) and used by Amtrak and commuter lines. Trains are operated by the Penn Central Transportation Company for the MBTA, and for Amtrak.

19.1.2 PROPERTIES AND FACILITIES

Boston's South Station is a remnant of a large L-shaped building which was originally constructed in 1898 at the corner of Atlantic Avenue and Summer Street. Today, only the imposing curved facade, facing Dewey Square, and less than half of the Summer Street wing remain. The station headhouse is listed in the National Register of Historic Places.

The five-story structure contains the remains of a concourse, waiting room and passageways on the ground floor. The second, third and fourth floors are sparsely occupied by tenant railroad functions, and the fifth floor is nearly deserted. Of the eight low-level canopied platforms, three are not in use. Tracks serving the platforms have been cut back, increasing the walk from the concourse to trains by 116 feet.

South Station is one of two Boston rail terminals along the HSR Corridor. The other terminal facility, known as Back Bay Station, is not discussed in this report.

19.1.3 CURRENT ACTIVITY LEVELS

Seventy-four Penn Central commuter trains originate or terminate at South Station on an average weekday. The number of trains operated on the various lines are:

Providence (includes Westerly)	18
Worcester	10
Needham	24
Franklin	14
Stoughton	8

Amtrak operates 22 trains over the Providence line to and from South Station. Amtrak also provides one trip daily via the Worcester line.

The morning peak-hour-demand occurs between 8 a.m. and 9 a.m. when 19 trains arrive or depart. Eighteen trains arrive or depart during the evening peak-hour-demand, between 5 p.m. and 6 p.m.

The first train departs from South Station at 5 a.m. The last train arrives at 12:20 a.m.

One-way patronage on a 1974 peak day was 3,800 commuter and 700 Amtrak passengers, for a total loading of 4,500.

There are no data available on current modes of access to South Station. It is assumed, however, that most patrons arrive by rapid transit or bus. In addition, there is a significant volume of pedestrian traffic. The private automobile is a relatively unimportant access mode.

19.2 TERMINAL VICINITY INFRASTRUCTURE

19.2.1 LOCATION CONSIDERATIONS

The terminal location, existing activity centers and proposed activity centers are shown in Figure 19-1 and identified in Table 19-1.

Location with Respect to Regional Highway System

The terminal is in a favorable location with respect to the major highway system serving the greater Boston area. South Station is less than one-half mile from the interchange between the Boston Extension of the Massachusetts Turnpike (I-90) and the Fitzgerald Expressway (I-93). As this is a major intersection in the freeway system, serving the Boston area, highway accessibility from most of the metropolitan area is good.

The terminal, however, is located in the compact, congested and densely developed CBD. In addition to retail activities, this area serves as a State government center, a regional financial and business capital, a residential area, and is a major location for health, educational and research facilities. An extensive public transportation network has been developed to serve the needs generated by this intense degree of activity.

Relationship to Other Interregional Transportation Facilities

The major intercity bus terminals, Continental Trailways and Greyhound, are located about one-half mile west of South Station. Travel time, by taxi from South Station, to either of these bus depots is about 10 minutes. Logan International Airport, northeast of Boston and opposite the Boston Inner Harbor, is approximately 20 minutes by taxi and 15 minutes by subway and bus from South Station. No direct bus or rapid transit connection exists between the intercity bus terminals, the airport and South Station; however, since a transfer is required, the interface between the various interregional modes is only fair. In addition, the street system in downtown Boston is heavily congested, slowing taxi and bus transit.

In the "Transportation Plan for the Boston Region," a special-purpose Third Harbor Tunnel is proposed as an extension of I-90. Access will be a few blocks from South Station, and it will provide a convenient connection between the terminal and the airport for buses, trucks, limousines and emergency vehicles.

The competitive position of South Station, in relation to the bus terminals and airport, is only fair. The bus, rail and air terminals are all relatively close to downtown. The rail and bus terminals are on the fringes of the CBD. Although Logan International Airport is only three miles from downtown Boston, during peak periods there is severe congestion on highways between the airport and downtown.

Existing Bus and Rapid Transit

Rapid transit and bus systems, in the Boston area, are operated by the Massachusetts Bay Transportation Authority. Boston's extensive rapid-transit system consists of a combination of subway and trolley lines. One of the four lines, the Red rapid-transit line, directly serves South Station and provides the terminal with rapid transit access to the CBD as well as to the metropolitan area. The Red Line, which extends from Harvard to Quincy and Ashmont, operates on 10-minute headways most of the day, increasing to 15 minutes at night. Transfers can be made to other rapid transit lines. Bus fares are $0.20; subway fares are $0.25, but during the off-peak periods, this is reduced to $0.10.

South Station is the southern terminus for two bus routes (Routes 2 and 3). Route 2, which connects South Station with North Station, has a peak-hour headway of 30 minutes. Route 3, connecting South Station with Haymarket Square, operates only during peak hours on five-minute headways. Neither route provides night or weekend service.

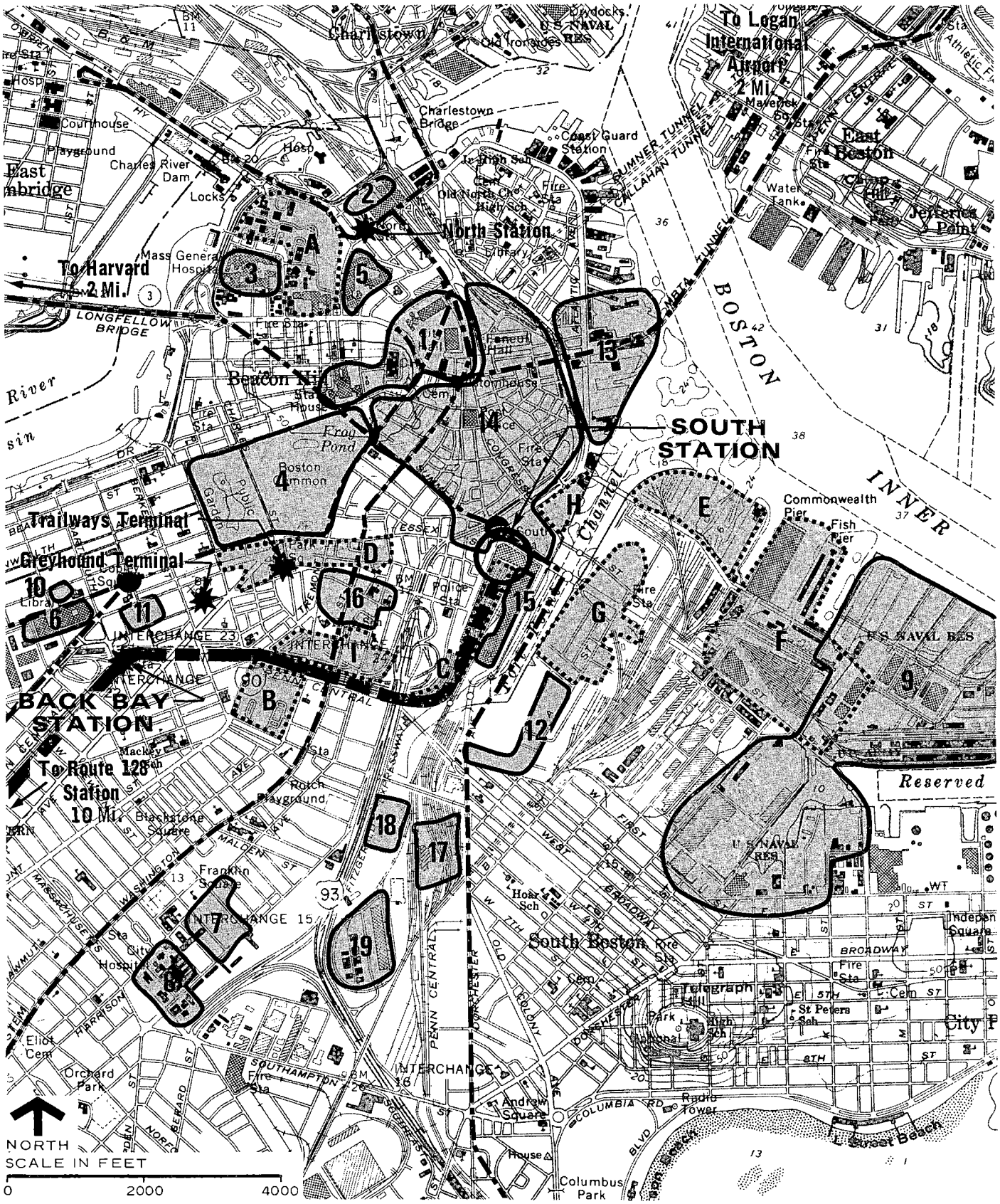
South Station is also the northwestern terminus for Route 7 which connects City Point, in South Boston, with the Boston core. On weekdays, this route operates on 10-minute headways during both peak and off-peak hours. Night and weekend services are furnished with headways of up to 40 minutes.

Route 6 connects the Aquarium with the army installation and also stops at South Station. This service, which operates on 12-minute headways, is available only during the peak hours.

In general, local buses are routed to feed the rapid transit stations throughout the metropolitan area. Excluding feeder service they carry only three percent of the people entering and leaving the downtown area. Traffic operating conditions along the immediate access routes to South Station are generally poor. The problem is largely due to the irregular street pattern which permits few through routings.

Relationship to Activity Centers

Boston's South Station is located on the eastern boundary (Fort Point Channel) of the downtown area. Because it is near the central core of the city, this terminal is directly exposed to the impact of large traffic generators and activity centers. Nearby business, financial, and governmental offices, including City Hall, the State House and the Government Center complex, attract and produce local, long distance and regional trips. There are also nearby entertainment and business activities related to the waterfront, such as the new Aquarium and restaurants. Additional enterprises are continuing to locate in renovated buildings. Other activity centers include higher education institutions and medical complexes which attract a significant number of local and regional trips.



LEGEND

- 0 — EXISTING ACTIVITY CENTER (SEE TABLE 19–1)
- A — PROPOSED ACTIVITY CENTER (SEE TABLE 19–1)
- TRANSIT LINE AND STATION
- HIGH SPEED RAIL

STATION LOCATION
SOUTH STATION
BOSTON, MA
FIGURE 19–1

TABLE 19-1

ACTIVITY CENTERS, CITY SETTING

EXISTING ACTIVITIES

1	Government Center – contains City Hall, State House, Federal offices
2	Boston Garden (sports)
3	Massachusetts General Hospital
4	Boston Common/Public Garden – public recreation and open space
5	State Services Center
6	Public Library
7	Boston University Medical Center
8	City Hospital
9	U.S. Naval Reservation
10	Office/housing/parking complex
11	John Hancock Insurance Company Tower
12	Gillette Company
13	Rehabilitated and new housing – includes planned units, units under construction and completed units
14	Central Business District – includes existing facilities and new office, financial, retail and housing facilities
15	U.S. Postal Service facility
16	Tufts University Medical and Dental School/New England Medical Center
17	MBTA Repair Shop, Maintenance Center and Bus Garage
18	City of Boston Central Maintenance Facility and Parking Garage
19	New Boston Food Market

PROPOSED ACTIVITIES

A	West End Redevelopment – Luxury housing/hotel/housing for the elderly
B	Castle Square Housing Project
C	South Station Urban Renewal Project (under construction or committed)
D	Park Plaza Urban Renewal Project (under construction or committed)
E	Athanas Development – Housing/commercial/hotel (under active study)
F	Port Authority Development (under active study)
G	Town and City Properties – New housing/commercial rehabilitation (under active study)
H	Proposed Hotel Development (under active study)
I	Housing (proposed or in some phase of construction)

Downtown Boston is an extremely compact area. A considerable amount of new high-rise construction has been taking place in this area. South Station is within walking distance of much of this development, but the downtown street system is complex, narrow and highly congested.

Many activity centers, in the central city area, are the result of recent public and private redevelopment projects. Federally assisted urban renewal projects, including those of the Boston Redevelopment Authority (BRA), are for the most part completed or in the final stages of construction. The major public projects which have not been completed include: rehabilitation of the Sanborn Building and construction of the State Service Center and Haymarket Square Motel in Government Center, at the heart of the CBD; South Cove, located just southwest of the terminal; and Waterfront-Faneuil Hall, located north of the terminal, which will include commercial, institutional, residential and recreational construction.

The recent surge of public and private redevelopment in downtown Boston is due to a number of factors. First, with the new Government Center located at one end of the CBD and the major freeway interchange and South Station at the other end, extensive development has been stimulated in the central area. In addition, most banks have built new structures in this area, and this has exerted a stabilizing influence on land use and the general environmental quality. Finally, legislation, which permits lower taxes on new construction, has provided an impetus for redevelopment projects.

In view of the current proposals and plans for public and private redevelopment, it seems reasonable to conclude that the role of major activity centers, in the CBD, will continue to increase. High-speed rail service at South Station would be convenient to this growing concentration of activities.

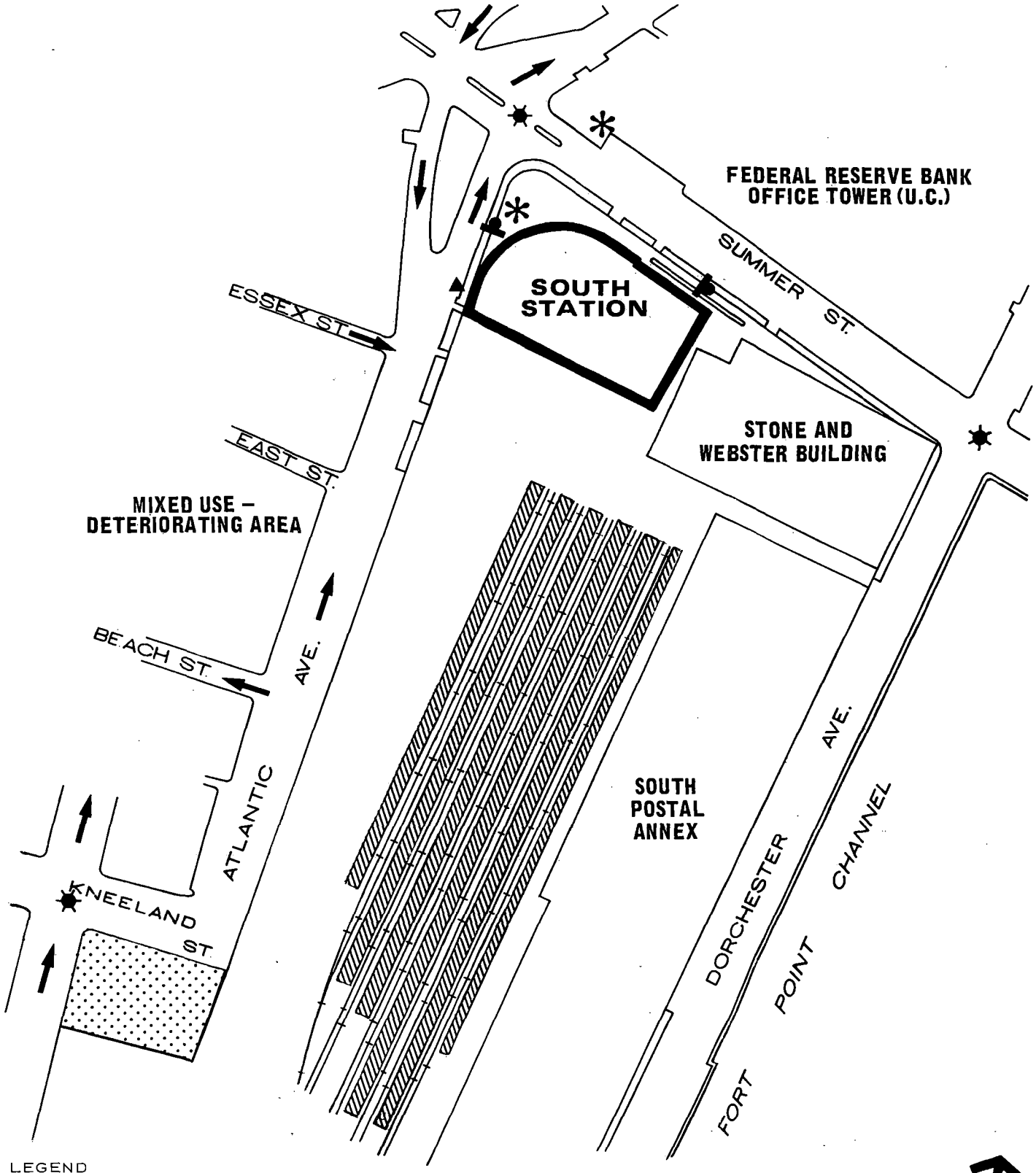
19.2.2 LAND USE

Existing Characteristics of the Terminal Area

Figure 19-2 shows the immediate terminal area and the present circulation system. The neighborhood in the vicinity of South Station is changing rapidly. Within the last two years, several major construction projects have been started on property adjacent to, or across the street from, the terminal. When these projects are completed, Summer Street and Dorchester Avenue will, for the most part, have been completely rehabilitated.

At the other extreme, along Atlantic Avenue, South Street, and Lincoln Street, which run parallel just west of South Station, there is a noticeable amount of deterioration in the older commercial and office structures. Some of these buildings have recently been torn down, but, at the present time, no new construction is contemplated. There are also no plans to renovate any of the remaining structures.

Immediately west of the terminal, the physical quality of Atlantic Avenue is badly deteriorated. There is a sidewalk only on the west side of the street, and both the street and sidewalk need extensive repairs. Street lighting, also provided only on the west side of the street, is inadequate due to the distance between light standards.



EXISTING STATION ENVIRONS
SOUTH STATION
BOSTON, MA

FIGURE 19–2

Planning Factors, General Terminal Area

Directly east of the terminal, the new Stone and Webster building is nearing completion. The daytime population of this building is expected to be approximately 5,500 people. Since no parking will be provided, the majority of these people will use public transportation. Across Summer Street to the north, the Federal Reserve Bank office tower is under construction. Directly behind the South Station tracks there is a new postal complex.

In addition to developments in the immediate vicinity of the terminal, construction of several high-rise buildings in the CBD will generate railroad patronage.

The Fort Point Channel Study indicates that extensive future development will probably take place on the side of Fort Point Channel opposite South Station. The proposed development of this area would have a significant impact on traffic conditions. Because several of the streets leading to this area are adjacent to the terminal, increased congestion would occur in the immediate vicinity of South Station.

Both existing and proposed activity centers are shown in Figure 19-3 and are listed in Table 19-2.

19.3 EXISTING PASSENGER HANDLING FACILITIES

19.3.1 PASSENGER ACCESS AND EGRESS

Two of the original three portals facing Dewey Square still function as sidewalk-level entrances to the terminal.

There is a third entrance from Atlantic Avenue with stairs leading directly into the concourse, and an elevator and stair lobby which serves the upper building floors.

Access stairs, from a subway station, are located near the main entrance.

Automobile Access

While South Station is accessible from the major arterial highway system serving the Boston area, there are some serious circulation problems in the area of the terminal. The irregular and narrow streets, compounded by the one-way street system, make vehicular travel from the CBD to the terminal very difficult, particularly during peak-traffic hours.

Fitzgerald Expressway, running north-south and connecting with I-90, furnishes freeway access to the terminal. On and off ramps are located on Summer Street a block from the terminal, and access roads to I-90 are situated on Kneeland Avenue, three blocks south.

Other major routes, serving South Station, include Atlantic Avenue and Summer Street. Summer Street Bridge, one block east of South Station, is currently part of a major access roadway to the South Boston area and military installations. The resulting high volume of peak-hour traffic causes severe congestion in the vicinity of South Station.

One block from South Station, where Summer Street and the I-93 access road intersect at Dewey Square, there is major traffic congestion and vehicular-pedestrian conflict. The conflict can be attributed to the width of the intersection and the lack of proper traffic-control devices. Traffic congestion also occurs immediately in front of the terminal, particularly during peak hours. At many locations, streets have been operating at capacity for several years. A comparison of cordon counts, taken in 1964 and 1972, indicated a 19-percent increase in passenger cars entering the downtown area. The effect is that peak-period traffic is occupying a wider band of time both morning and evening.

Other Connections

Taxis are readily available at South Station as 1,525 cabs operate within the city. Rates are currently $0.60 for the first one-sixth mile and $0.10 for each additional one-sixth mile. There is an on-street taxi stand on the west side of the terminal. An off-street taxi bay once existed on the north side of the terminal, but has been abandoned. Rental car facilities do not currently exist either inside the terminal or in the immediate vicinity. There is a low demand for kiss-and-ride facilities.

Pedestrian access to South Station is particularly important because the terminal is an extremely large generator of pedestrian volumes. An origin-destination study, within the study area (along Summer Street), indicated that South Station was the destination of about 27 percent of all pedestrian trips during the 4:30 p.m. to 5:30 p.m. peak period. The study also revealed that distances walked in the city of Boston are longer than in most cities in the United States. It was pointed out that railroad and bus users have the longest walks, with up to 55 percent of the trips being over 2,000 feet. This data implies that railroad patrons, using South Station, make a large number of downtown-oriented trips on foot. Even in 1971, pedestrian volumes were large enough that the feasibility of moving sidewalks in this area was considered.

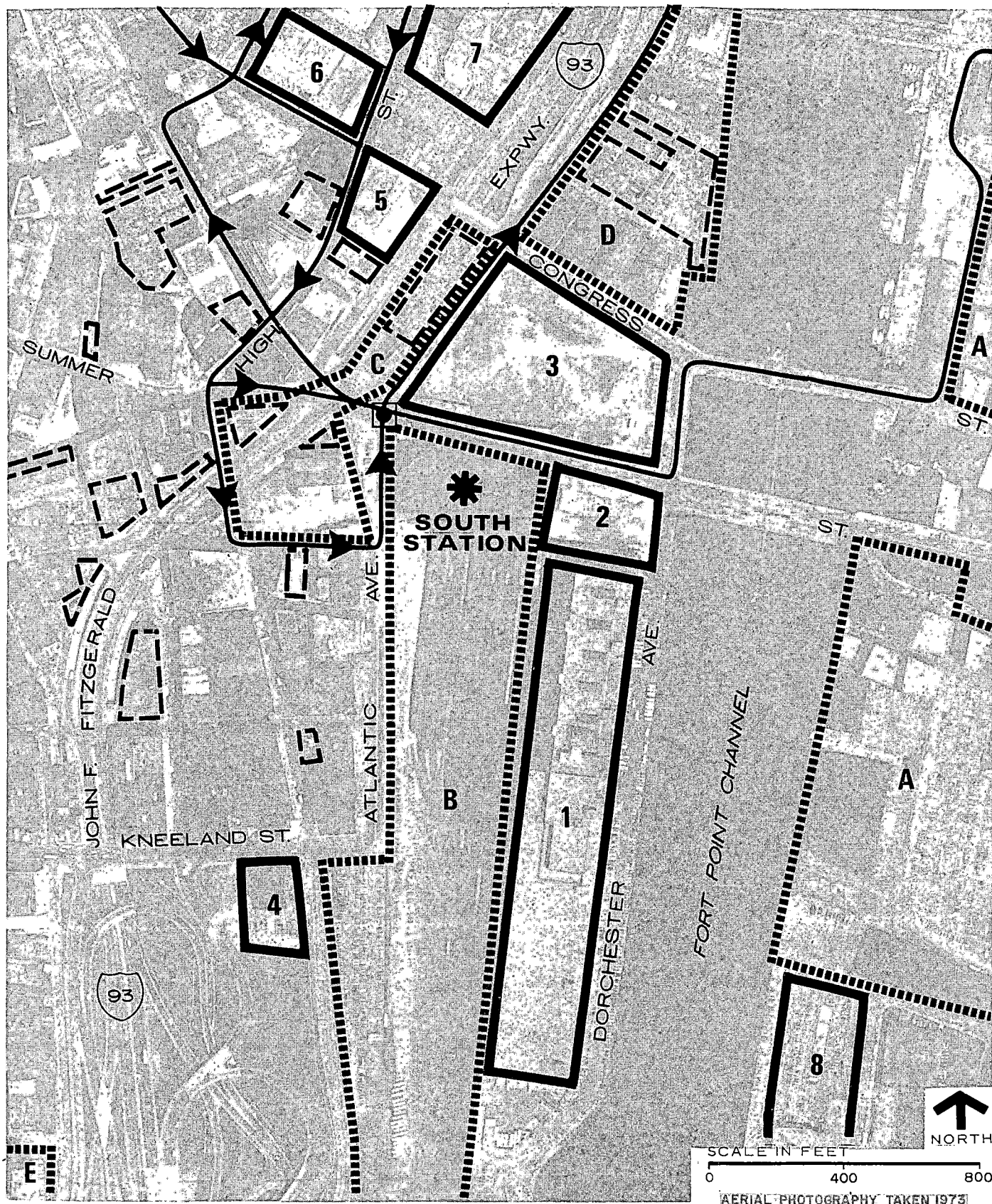
19.3.2 PARKING

The overall parking situation, in the vicinity of South Station, is fair. Due to the high density of the nearby CBD, there are a large number of parking spaces (3,447) within walking distance. None of the spaces, however, are provided as part of the terminal operation. Patrons must compete with many other parking demands in the area. At the present time, a high demand for parking exists as 64 percent of the travel into the CBD is by auto.

Within a 1,200-foot walking distance of the terminal, there are 19 separate parking lots or garages which are potentially available for public parking. This includes two lots operated by the BRA, the owners of South Station. Over half of the lots have capacities of less than 100 cars, and daily parking rates are usually under $3.00.

Curb parking is restricted in the vicinity of the terminal. Time limits are generally one to two hours and, where meters are posted, rates range from $0.10 for 15 minutes to $0.25 for 30 minutes.

In addition to the parking facilities shown in Figure 19-3, there is a parking lot one-quarter mile south of South Station, at Atlantic Avenue and Kneeland Street. This lot, with a capacity



LEGEND

- TRANSIT STATION
- PARKING
- BUS ROUTE
- 0 — EXISTING ACTIVITY CENTER (SEE TABLE 19–2)
- A — PROPOSED ACTIVITY CENTER (SEE TABLE 19–2)

PLANNING FACTORS
SOUTH STATION
BOSTON, MA
FIGURE 19–3

TABLE 19-2

ACTIVITY CENTERS, GENERAL TERMINAL AREA

EXISTING ACTIVITIES

1	U.S. Postal Service Facility
2	Stone and Webster Office Building (construction in progress)
3	Federal Reserve Office Tower (construction in progress)
4	Edison Power Plant
5	Keystone Building
6	New England Telephone Company
7	Greater Boston Chamber of Commerce
8	Gillette Company

PROPOSED ACTIVITIES

A	Town and City Properties – New housing/commercial rehabilitation (under active study)
B	South Station Urban Renewal Project (under construction or committed)
C	Dewey Square Tower (under active study)
D	Sheraton Hotel Development (under active study)
E	Tai Tung Housing (under construction or committed)

for 50 cars, is adjacent to the railroad tracks and is reserved for Penn Central employees.

19.3.3 PASSENGER PROCESSING

For Existing Main Floor plan, see Figure 19-4; for Existing Platform Plan, see Figure 19-5.

Passengers arrive at South Station by rapid transit subway, bus, taxi, auto or on foot. From the entrances at Dewey Square, dimly lit corridors slope slightly upward to the concourse level which also serves as a waiting room. See photo 1. At the Atlantic Avenue entrance, a canopied doorway and a small vestibule are at sidewalk grade, and a short flight of stairs leads to the concourse level. Tickets are purchased at the far end of the concourse and baggage is checked at a nearby kiosk. Canopied walks lead to the outdoor platform locations, with both platforms and walks at concourse grade.

Passenger flow to the trains is controlled by a system of doorways leading to the platform areas. From the Dewey Square portals to the boarding platforms, handicapped passengers can negotiate the route with relative ease. However, they need assistance at the low-level platforms when entraining or detraining.

Information

A train information blackboard, with an illuminated designation sign, is mounted in a space between two ticket windows at the far end of the ticket counters. See photo 2. Information is also broadcast over the public address system.

Ticket Purchase

Ticket windows are readily visible from the concourse. Seven of the 12 windows are operational. One window is reserved for commuter ticket sales, two for Amtrak and the remainder for other rail ticket sales. See photo 2.

Baggage Handling

Baggage is both checked and claimed at a large kiosk near the ticket counters in the concourse. Checked baggage is moved between the platforms and the kiosk by mechanically towed carts.

Waiting Area

Benches are provided in the concourse which presently serves as a waiting room. See photo 3. The space remaining from the original waiting room is used for maintenance shops and as storage areas for terminal machinery and supplies. See photo 4.

19.3.4 PUBLIC SERVICES

Rest and Toilet Rooms

The women's rest rooms are located at concourse level. The men's rest rooms are barricaded and permanently nailed shut.

Telephones

A group of 16 telephone booths is located near the ticket offices.

Baggage Check Lockers

A total of 113 baggage check lockers are distributed throughout the concourse.

Lost and Found

One ticket window, now a part of the Train Master's office, is reserved for lost and found services.

19.3.5 CONCESSIONS

The following concessions, most with short-term leases, are located in the concourse: news stand, snack bar, sandwich stand, cocktail bar, dry cleaning shop, a ticket outlet for sporting events, fresh fruit stand, bakery outlet and an ice cream stand.

19.3.5 RAIL PASSENGER OPERATION FACILITIES

Amtrak representatives have offices on the second floor of the terminal.

The Station Master occupies an office in the ticket sales area.

During daylight hours, a uniformed terminal policeman patrols the public areas of the terminal.

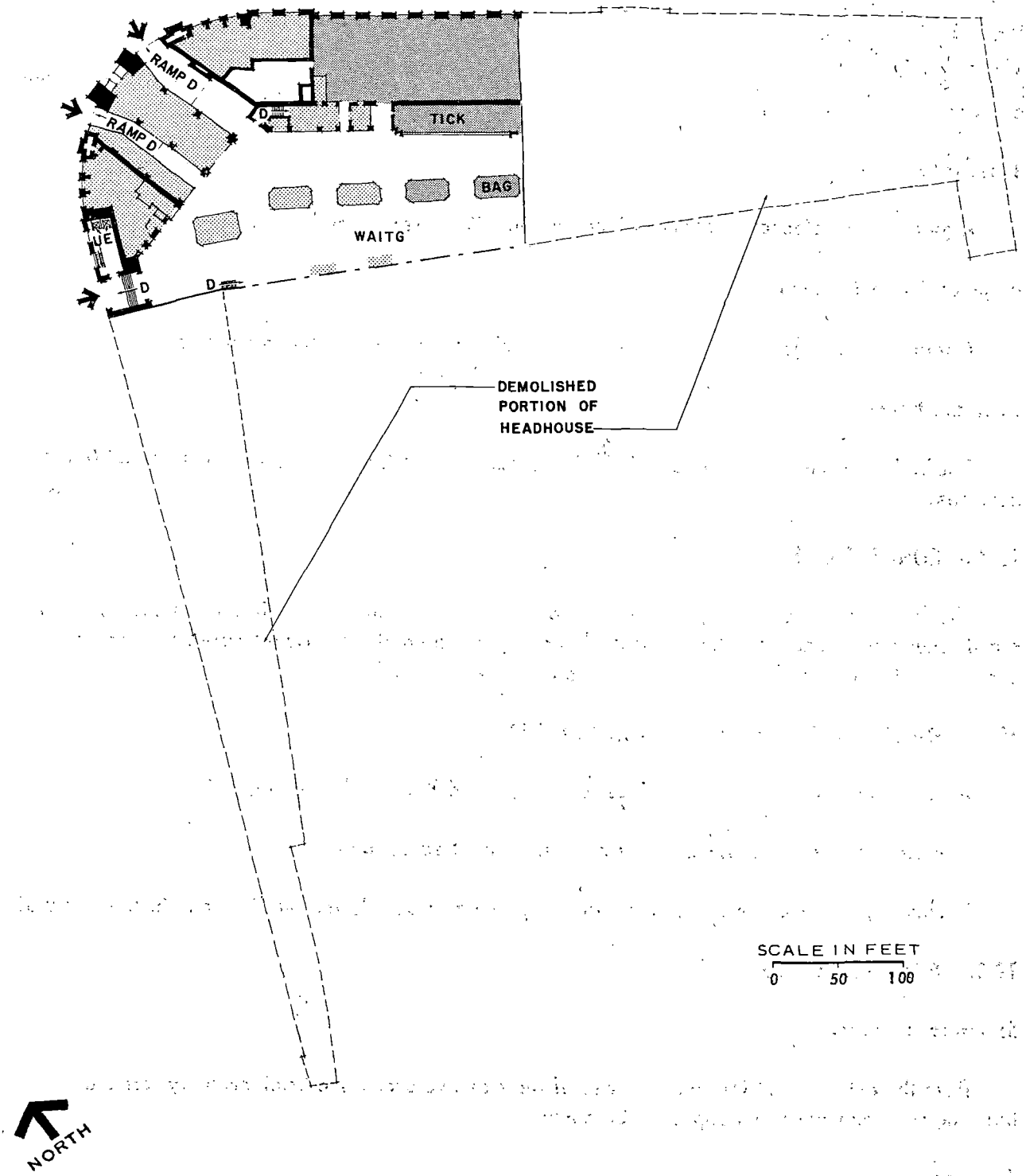
19.3.6 FACILITY CONDITIONS

Structural Integrity

Both the exterior and interior surfaces of the massive stone and brick masonry terminal building were examined and appear to be sound.

Exterior

Exterior masonry surfaces are dirty and coated with grime. The temporary end-closure walls present environmental problems and are ugly. See photo 5.



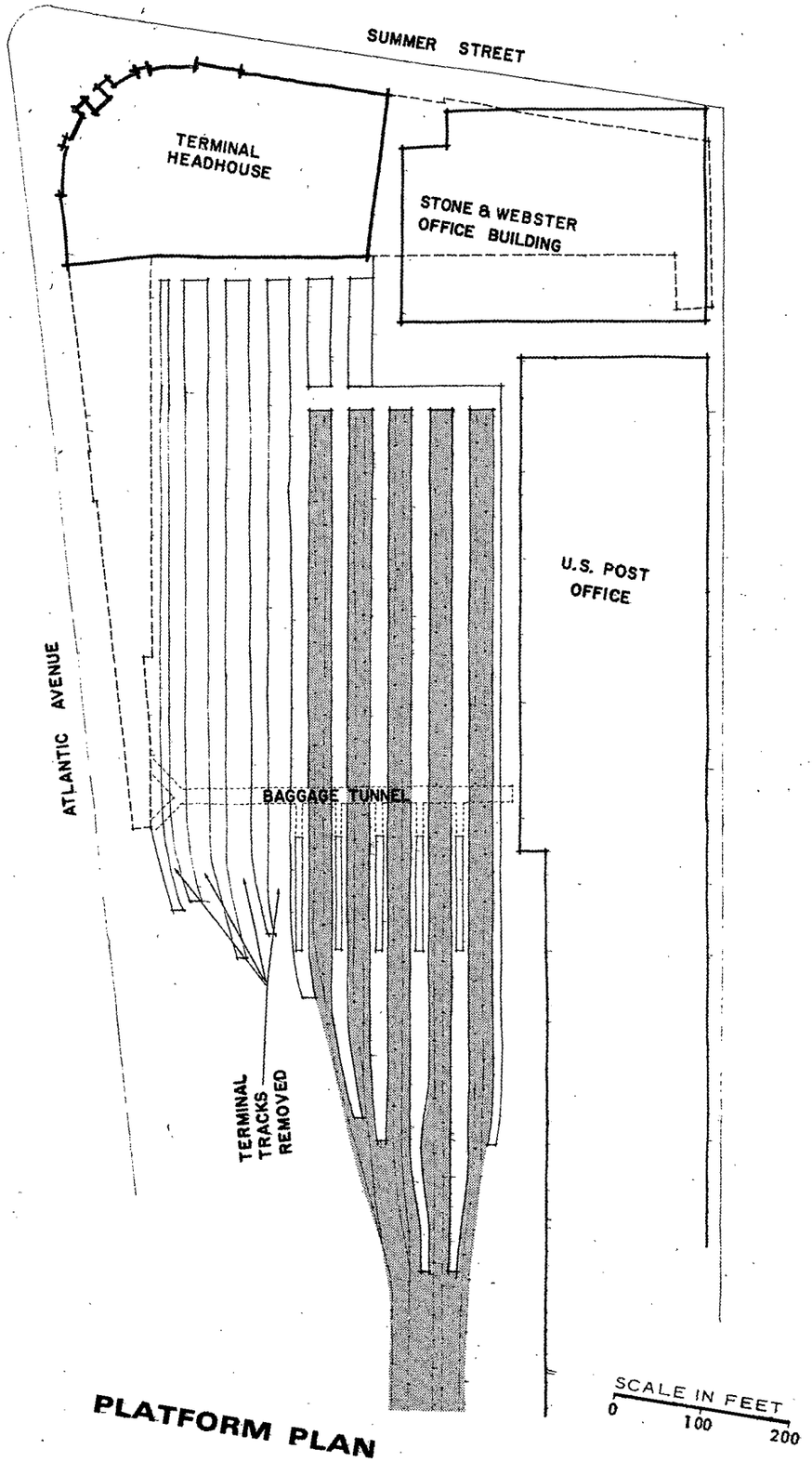
MAIN FLOOR PLAN

LEGEND

CONCESSION

RAILROAD FUNCTION

EXISTING SOUTH STATION
BOSTON, MA



PLATFORM PLAN

DC/STV

EXISTING SOUTH STATION
BOSTON, MA
FIGURE 19-5

Wooden window sash and doors are deteriorating, dirty and losing paint.

The canopy steelwork and roofing are rusting and deteriorating. Platform surfaces are cracked and spalled to a considerable extent, and some areas have been disturbed by frost heave. See photo 6.

Interior

Entrances and interior processing areas are in a general state of dilapidation. Dirt and grime have accumulated on floor, wall and ceiling surfaces. Extensive cleaning, patching, repair and refinishing are required.

The entrance corridors from Dewey Square are substandard. One burned-out corridor wall has been haphazardly boarded up, and the ceiling is damaged, with electrical wiring exposed and hanging loose. The air conditioning from an adjacent tavern exhausts into another corridor.

The concourse, a dark cavern without skylights or window walls, presently serves as the ticketing, waiting and concession area. Several dilapidated wooden concession booths have been abandoned. One former concession area serves as a storage room for Amtrak on-board service supplies.

The grand two-story-high former waiting rooms, already reduced in size due to demolition required for the construction of the Stone and Webster office building, are now used for equipment and supply storage. Although in need of cleaning and refurbishing, the intricately executed cast-plaster ceiling is still in good condition with only a few small areas of plaster work requiring restoration.

Functionally and esthetically, the steel-panel closure wall which was installed as a temporary measure, at the time a portion of the headhouse was demolished, is totally unserviceable.

The men's rest rooms are permanently closed and locked.

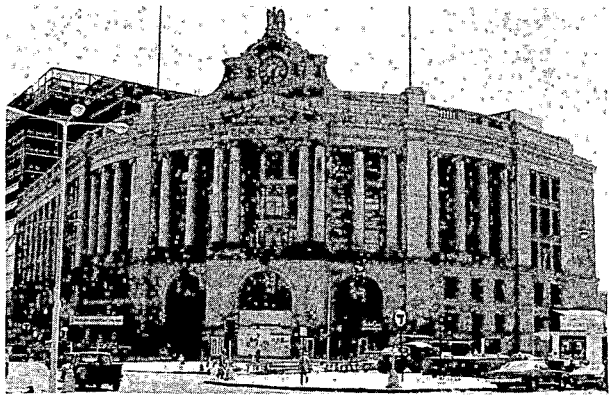
19.4 FORECAST ACTIVITY LEVELS

19.4.1 PROJECTED DESIGN DAY PATRONAGE

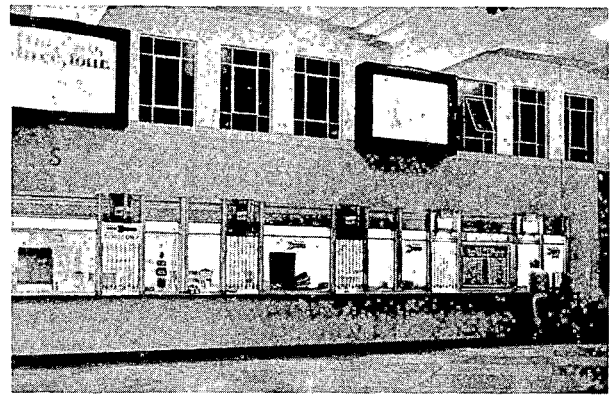
For 1990, Task 1 projections indicate passenger demand for HSR, at South Station, could be as high as 11,200 persons per day, with a peak-hour-demand of 1700. In addition, the projected commuter use of the terminal is anticipated to be 7100 persons per day, with a peak-hour-demand of 4400 commuters. Based on these projections, the total peak-daily-load is expected to exceed 18,000 persons per day and the peak-hour-demand will be approximately 6000 persons. As the current patronage is 4500 persons per day, this represents a four-fold increase. By 1990, HSR is expected to account for 60 percent of the daily terminal patronage, compared with the 20 percent presently handled by Amtrak.

SOUTH STATION – BOSTON, MASSACHUSETTS

EXISTING FACILITY



1. Entrance Facade from Dewey Square



2. Ticket Windows and Information Board

3. Concourse, Waiting and Concession Area

4. Former Waiting Room now used for Storage

EXISTING FACILITY (Cont'd)

5. Adjacent Office Building Showing Temporary Closure Wall in Terminal

6. Existing Terminal Platforms

This high level of HSR use is anticipated as a result of continued growth of activities in the Boston area and the success of the improved HSR service in diverting a large segment of the present New York to Boston air traffic.

19.4.2 PROJECTED MODE OF ACCESS

Projections for the 1990 mode of access are expected to reflect a modal split similar to that which now exists. The extensive Boston transit system is expected to be the major means of access with 30 to 40 percent of arrivals by rapid transit and 10 to 20 percent by bus.

Percentages of daily passenger arrivals have been projected by mode as follows:

	Percentage		
	Low	High	Median
Park-and-ride	3	10	8
Park-and-ride passenger	1	5	4
Kiss-and-ride	5	10	8
Rail Transit	30	40	40
Bus	10	20	20
Taxi and limousine	5	15	10
Walk	5	15	10

19.4.3 PARKING REQUIREMENTS

A design-day patronage of 11,200 persons per day has been forecast for 1990. As a majority of these people are expected to be HSR passengers, approximately 900 parking spaces should adequately fill the needs of the South Station patrons.

19.5 PLANS AND PROPOSALS

19.5.1 TERMINAL IMPROVEMENTS

The Amtrak Design Group has suggested certain interim improvements to the existing terminal, including the construction of an air conditioned office and waiting room for the Manager of Passenger Services.

BRA has preliminary plans to replace existing facilities with a new $30-million South Station Transportation Center. This integrated transportation complex would serve high-speed and commuter rail, rapid transit, and intercity and commuter buses. A parking garage would be erected over a 100 to 125-bus-bay terminal which would serve local, commuter, and intercity buses. Access to the parking facility would be provided from Southeast Expressway and local streets. The plans also include provisions for a drop-off and pick-up area for taxis, kiss-and-ride, and other non-parking patrons, as well as space for pedestrian-related amenities.

BRA anticipates that funding for the project may be available through the Amtrak Improvement Act, recently amended by the U.S. Senate, that authorized the conversion of selected historic railroad terminals into multi-transportation centers. Approximately two-thirds of the present terminal was demolished in accordance with a plan designated as South Station Urban Renewal Area, Massachusetts R-82, which was developed by the terminal owner, the Boston Redevelopment Authority. The latest available schematic plans, dated August 30, 1974, and prepared by T.A.C., indicate that the main portion of the existing headhouse would be retained as the focal point of the redevelopment.

Amtrak has specified that it will require four 1200-foot-long tracks (two platforms) for intercity service, with space for two additional tracks which may be required in the future. Four separate tracks for MBTA commuter service have also been allocated.

BRA has secured several master plan concepts, and an environmental impact statement has been completed. The plans were made available to this study as input data.

19.5.2 FUTURE LAND USE

Considerable future intensification of land use, within the immediate vicinity of South Station, can be expected. In addition to the buildings already under construction, a proposal to construct Dewey Square Tower on a site northwest of the terminal is under active study.

South Station improvements and the introduction of HSR service can both be expected to have a major impact on the immediate vicinity. Further redevelopment or renewal of specific sites and structures can be expected, and the increased activity in the area will, in all probability, have a significant impact on the local transportation system.

19.5.3 STREET AND TRAFFIC IMPROVEMENTS

It has been suggested that a moving walkway be constructed westward from South Station, along Summer Street, to the CBD area, but due to lack of financing, this proposal has been held in abeyance.

Area-wide improvements to the existing transportation system have been proposed in the "Transportation Plan for the Boston Region 1974-1983." This plan contains proposals which would improve the roadways in the South Station area and traffic circulation in the general area. Construction of the Third Harbor Tunnel should also help reduce congestion on the nearby Summer Street Bridge. Furthermore, if the proposed special-purpose Third Harbor Tunnel were eventually made available to general traffic, much of the existing traffic on the I-93 central artery (Fitzgerald Expressway) would be diverted from the vicinity of the CBD area. This alternative, however, is not presently under consideration.

A feasibility study is currently in progress to determine the possibility of depressing the central artery from Congress Street, which is north of the terminal, to the North Station area on the opposite side of the CBD.

19.5.4 TRANSIT IMPROVEMENTS

Both the state and city policy is to encourage people working in the Boston CBD to commute by public transit.

A bus priority access system to South Station is included in the 1974-83 transportation plan. MBTA is currently studying an extensive program of shuttle buses to improve downtown distribution. Simultaneously, alternative methods for improving distribution from the regional line-haul

terminals are under investigation. As part of the central artery study, an examination is also in progress regarding a possible rail connection between North and South Stations.

In addition to these proposals, the Boston subway and trolley system is presently being improved, and extension of the Orange Line into the northern part of the metropolitan area will improve transit accessibility to South Station.

19.6 RECOMMENDED 1990 ACCESS/EGRESS AND PARKING PLANS

The 1990 Concept Plan for the Boston South Station includes street improvements, circulation changes, and intersection improvements to separate pedestrian and vehicular traffic and increase the pedestrian safety factors. The 1990 Concept Plan is shown in Figure 19-6.

Although a major portion of the existing headhouse would be retained, further demolition, construction and rehabilitation would be required. The existing platforms would be demolished and reconstructed to accommodate rearrangement of the tracks. Terminal improvements are discussed in Section 19.7.

19.6.1 STREET AND TRAFFIC IMPROVEMENTS

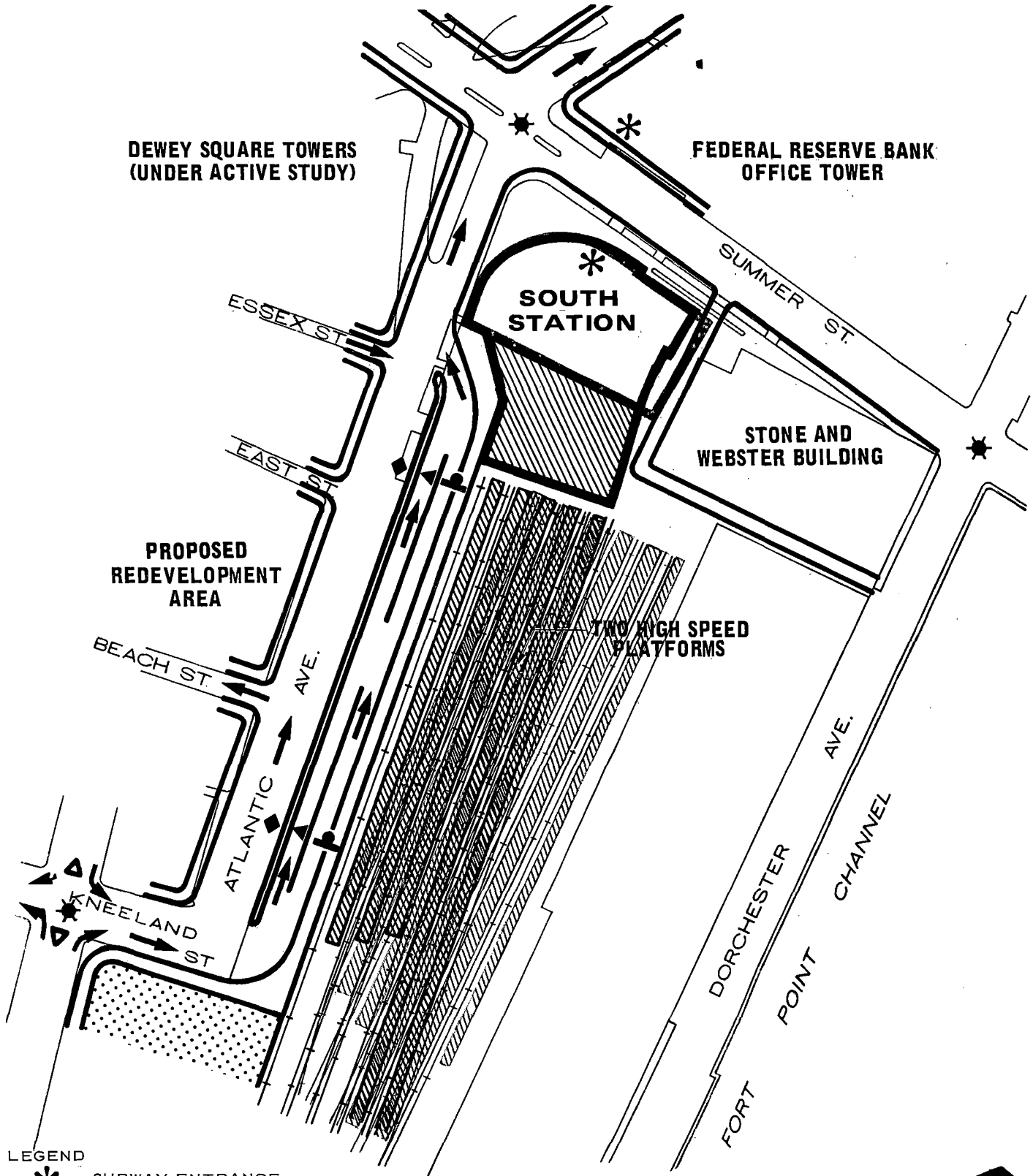
If the proposed Third Harbor Tunnel is constructed south of the terminal area and the suggested bus priority access system is implemented at the South Station, recirculation and rechannelization improvements would be required in the terminal area. Specific designs for the proposals do not currently exist, and it is not possible to evaluate them or consider them in this 1990 concept plan.

The 1990 concept does, however, involve some local street circulation changes. Pedestrian access is a prime consideration in view of the proximity of the terminal to the CBD. In order to provide safe pedestrian access, it would be necessary to significantly improve the intersections in the Dewey Square area. There will also be an urgent need for wider sidewalks, better street lighting and other improvements to separate pedestrian and vehicular traffic.

Rechannelization of the intersection of Summer Street and Atlantic Avenue, as recommended in the 1972 "Downtown Boston TOPICS Study," should be undertaken to alleviate congestion and enhance circulation in the terminal area. It is also recommended that South Street and Atlantic Avenue be made into a one-way couplet in order to increase accessibility from I-90. This would also increase the circulation capability for buses traveling to and from the CBD. Specifically, it is recommended that Atlantic Avenue be designated one-way northbound from Kneeland Avenue to Summer Street, and that South Street, from Summer Street to Kneeland Avenue, should be one-way southbound. In addition, Kneeland Avenue should be designated one-way eastbound between South Street and Atlantic Avenue.

19.6.2 PARKING

Based on the patronage projection, it is estimated that 300 to 1,100 parking spaces, with an



1990 CONCEPT
SOUTH STATION
BOSTON, MA

FIGURE 19-6

estimated median of 900, will be required specifically for HSR patrons by 1990. A parking structure, constructed on air rights over a portion of the terminal tracks, would easily accommodate the anticipated parking requirements. An alternative possibility would be to purchase the vacant area south of Kneeland Avenue from the city of Boston. This property could be utilized as the site for a multi-level parking structure.

19.6.3 INTERMODAL TRANSFER

The 1990 concept includes an intermodal transfer facility which would be constructed close to the Atlantic Street entrance as an integral part of the terminal. This glass and steel frame structure would contain an adequate number of bus bays to meet the requirements of both local and intercity service. A waiting area for taxis and limousines would be located adjacent to the bus bays. A separate area would be designated for the use of kiss-and-ride patrons. Taxis and limousines would also unload arriving passengers at this location.

Modern baggage-handling equipment and services would be available to facilitate the transfer of passengers between the various modes of transportation. Convenient access to the interior of the main terminal building would be provided from each of the functional areas of the intermodal facility.

The Dewey Square entrance to South Station would be enlarged and renovated to include an interior connection to the existing MBTA subway.

19.7 RECOMMENDED 1990 PASSENGER TERMINAL PLANS

The proposed main floor plan is shown in Figure 19-7.

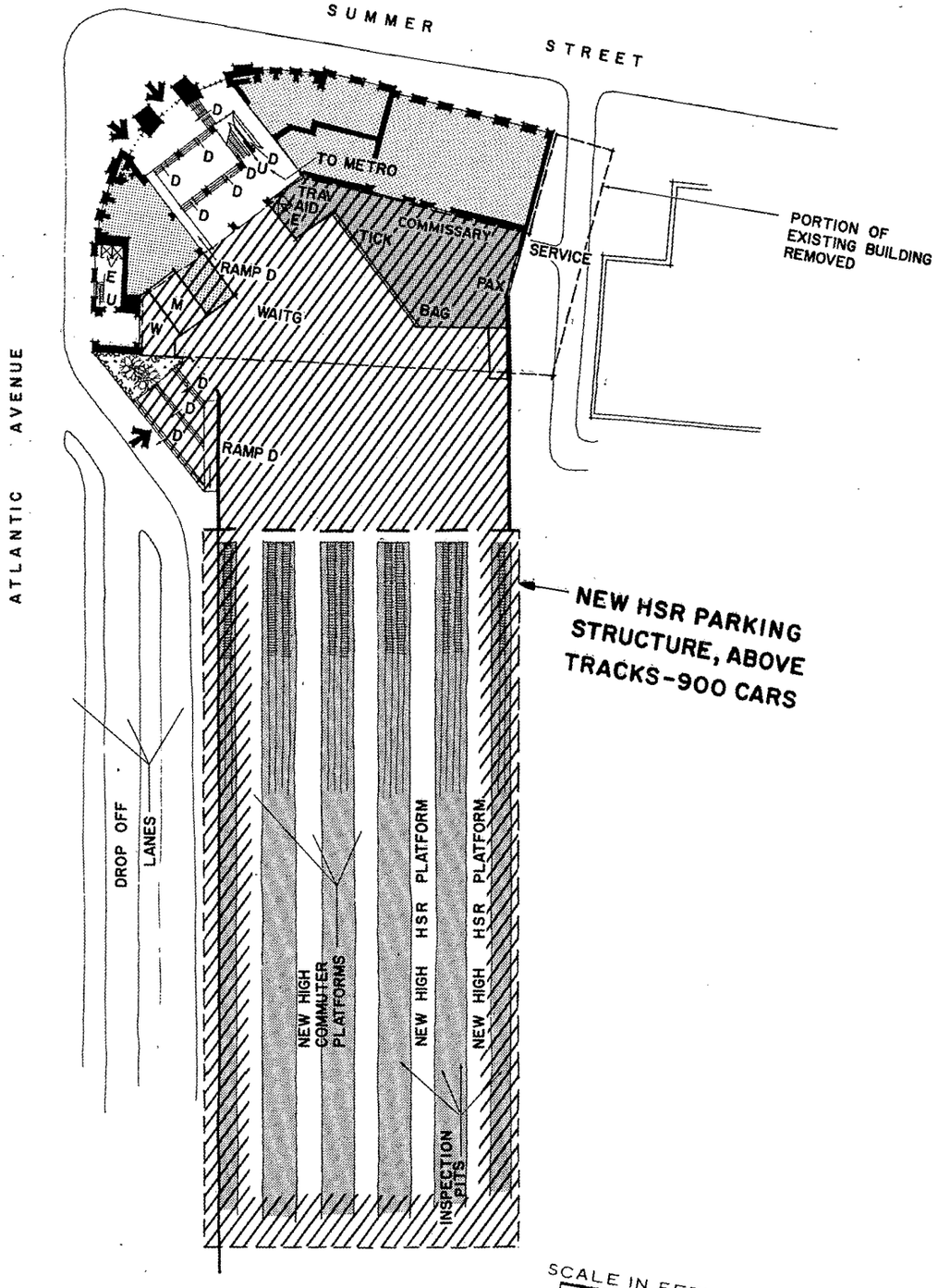
For historical and cultural reasons, it is recommended that a portion of the existing headhouse, fronting on Dewey Square, be retained for train terminal, civic and commercial uses.

The entrances at both Dewey Square and Atlantic Avenue would be enlarged and renovated. The remaining former waiting room, with its high ceiling, would be utilized for civic or commercial uses, and the upper and basement floors would be available for the use of non-passenger rail operations or for rental to commercial concerns.

The central portion of the ground floor, of the existing headhouse, would be renovated to provide a suitable entrance foyer and lobby which would include an interior entrance to the nearby MBTA subway. Stairs and ramps would lead up to the new concourse-floor elevation.

The existing concourse area and platforms would be demolished. The new concourse would be constructed at the same grade as the new high-level platforms. A new exterior closure wall would be finished to complement the exterior of the headhouse.

Interior renovations would include general rehabilitation of all surfaces as well as adjustments and improvements to utilities. The existing openings in the wall, between the old waiting room and the newly constructed offices, would be sealed and finished on both sides.



MAIN FLOOR PLAN

DC/STV

1990 CONCEPT
SOUTH STATION
BOSTON, MA
FIGURE 19-7

19.7.1 PASSENGER ACCESS AND EGRESS

All entrances would have automatically actuated doorways and protective canopies, as well as special facilities, where required, to aid the physically handicapped.

On Atlantic Avenue, a new entrance would be developed to serve passengers arriving by bus, taxi, limousine or private auto. Short wide flights of stairs would lead from sidewalk grade to the concourse area, and a ramp would be provided to serve the physically handicapped. An existing entrance, off Atlantic Avenue, would be retained as an office floor entrance, and the existing stairway and elevator lobby would be reserved for the exclusive use of upper-floor tenants.

The Dewey Square entrance would serve as the main entrance to the new transportation complex. Passengers arriving at this entrance on foot would enter the terminal at sidewalk grade. Broad flights of stairs or a pedestrian ramp would provide access to the new concourse-floor level. Subway transferees would reach the lobby by means of stairs, escalators or an elevator. These alternative modes for passenger movement would make all facilities accessible to physically handicapped passengers.

Ticket windows would be located at the concourse level. Admission to HSR train platforms, from the concourse, would be controlled and, prior to a scheduled boarding, passengers would either line up at a designated area or sit in the waiting room.

"Red Cap" assistance would be available on request. Baggage could, however, be checked at a counter near the ticket office or carried on board. Baggage storage and transporting aids would also be available at the concourse level.

19.7.2 PASSENGER PROCESSING

Information

An information booth, with overhead train information board, would be located within the line-of-sight of passengers entering the terminal level from either of the main entrances. A public address system, with speakers distributed throughout all public areas, would augment the train board and closed-circuit TV information monitors.

Waiting Room

The main waiting area would be located in the southwest quadrant of the terminal main floor where seating would be provided by individual cushioned seats, arranged in clusters. Glass walls and doors would permit observation of train movements.

Ticket Purchase

Ticket offices would be located near the Atlantic Avenue terminal entrance. Passengers entering from Dewey Square would be guided to the ticket counter by overhead signs. All types of tickets would be sold at the windows, with one window reserved for the physically handicapped, providing service upon passenger demand.

The ticketing facilities would be arranged so that the queuing area would not interfere with primary passenger movements.

Baggage Handling

To avoid any conflict with passenger movements, baggage would be checked in and claimed at counters adjacent to the ticket offices, and would be stored in this area until transported to the trains. A separate area for package express handling would be provided.

Concourse

The deteriorated concourse would be demolished and a new concourse area would be constructed at the proposed high-level platform elevation. Information, ticketing, baggage handling, rest rooms, and all other required passenger processing functions would be concentrated in this area. Electrically-operated locked doors would be actuated by the Train Master who would be responsible for controlling access to the HSR platform.

Platforms

The existing platforms would be demolished and the tracks would be rearranged. The new construction would include two new high-level platforms, 1200 feet in length, with full-length canopies to serve four HSR tracks. These tracks would be situated over 1200-foot-long train inspection pits. In addition, three commuter high-level platforms, 850 feet long with full length canopies, would service six tracks.

19.7.3 PUBLIC SERVICES

Rest Rooms

Rest room facilities would be grouped near the Atlantic Avenue entrance. Modern rest-room standards would govern new construction. The design would include ceramic tile walls and floors, wall-hung fixtures, ceiling-hung toilet compartments, electric hand dryers, suspended plaster ceilings, high-level lighting, and adequate ventilation. A janitor's closet with a mop receptor, storage space for supplies, and complete new plumbing and sanitary work would be included in this general area.

Storage Lockers

Public lockers would be available along the length of the east corridor, adjacent to the ticketing and baggage claim area and the rest rooms. These lockers would be used for the short-term storage of baggage and personal belongings.

Ground Transportation

An area for securing ground transportation would be conveniently located immediately inside the Atlantic Avenue entrance. This facility could be manned jointly or individually by the various

carriers. Direct telephone lines would connect to various modes of ground transportation. Services would include information concerning local and intercity buses, intercity rapid transit, airport connections, car rentals, limousine service and taxis.

Travel Aid and Accommodations

Traveler's aid assistance would be available immediately inside the Dewey Square entrance. Services would include general travel assistance, first aid, and directories for hotels, churches, and local, state and federal offices.

19.7.4 CONCESSIONS

Main floor concessions and commercial services would include a restaurant (possibly within the former waiting room), cocktail lounge, snack counter, and food, drink and entertainment vending machines. In addition, there would be a barber and shoe shine service and a gift and tourist shop. Additional floor area, which would be available for utilities, commercial or railroad operations, would include:

	Approximate Square Feet
Basement Floor	60,000
Mezzanine Floor	4,000
Second Floor	14,000
Third Floor	14,000
Fourth Floor	14,000
Fifth Floor	14,000

19.7.5 RAIL PASSENGER OPERATIONS FACILITIES

Passenger Services Office

A suite of offices consisting of a waiting room, an office for the Passenger Service Manager, and desk space for his secretary would be located adjacent to the ticketing area.

Railroad offices generally would be air conditioned with carpeted floors, paneled and plastered wall surfaces, suspended acoustic-tile ceilings, and flush-fluorescent lighting fixtures.

Ticket Offices

A suite of offices would be partitioned off behind the ticket counter to accommodate a supervisor's office; a cashier's office which would contain a safe; a sales and clerk's area; a storage room for tickets, supplies and equipment; and, an employee's lounge with rest rooms. These areas would be air conditioned and finished with vinyl-asbestos floor tile, plastered wall surfaces, suspended acoustic-tile ceilings, and flush-fluorescent lighting fixtures.

Security

A new security office would be constructed adjacent to the ticket offices. In addition to security patrolmen, public areas would be under closed-circuit TV surveillance and monitored in the security office during periods of terminal operation.

19.7.6 UTILITIES

Heating, Ventilating and Air Conditioning

Planned construction would include heating, air conditioning and proper ventilating of all rail passenger processing and office areas.

Electrical Service

Adequate electrical service and distribution would be provided in both rehabilitated and new construction areas.

Water

Municipal water service is adequate for future terminal uses. New toilet facilities and relocated drinking fountains would require new piping within the building.

Sanitary Sewer

Relocation and updating of rest room facilities would require interior modifications to the sanitary sewer system.

19.7.7 EXTERIOR BUILDING RENOVATIONS

The exterior of the existing headhouse would be improved as follows:

Exterior Masonry

The new closure wall, facing the Stone and Webster office building, would be finished to complement the general exterior appearance of the headhouse. All exposed masonry surfaces would be cleaned by sandblasting, steam cleaning or other appropriate methods. Joints, as required, would be pointed and restored.

The cost of finishing the interior surface of this wall could be absorbed by future upper-floor tenants.

Roofing

A new roofing surface would be installed, and gutters and downspouts would be completely rehabilitated.

Windows

Wood frames and sash, on the main floor, would be restored as required. Upper story sash could also be restored, with the resultant costs passed on to future tenants. New spandrel panels could be provided, with integral grills for self-contained air conditioning and heating units, as future tenants' needs became known.

Entrances

Existing masonry openings would be utilized, and all main passenger entrances to the building would have double treadle-operated doors with sidelights and transoms. New contemporary-design canopies, extending to the roadways, would protect passengers at both main entrances. The existing Atlantic Avenue canopy, to the office floor lobby, would be replaced.

Landscaping

Components of a unified design for the station environs would include planter boxes for trees and shrubs along Atlantic Avenue and Summer Street; roadway and accent lighting standards and fixtures; outdoor seating and information kiosks ; and, textured sidewalk and crosswalk surfaces.

19.8 CAPITAL COSTS

Unit costs based on current prices have been developed for major renovation and construction items. These unit prices and the illustrated concept sketch plans form the basis for the following estimate of construction costs.

Terminal work, including renovation and new additions	$4,063,000
Platforms and canopies	3,470,000
Escalators, stairs and elevators	263,000
HVAC, plumbing and lighting	162,000
CCTV surveillance and electronic information systems	170,000
Sitework including paving, curbs and sidewalks	440,000
Intermodal vehicular facilities along Atlantic Avenue	432,000
Subtotal terminal and site work	$9,000,000
Contingency – 30%	2,700,000
Total terminal cost	$11,700,000

Cost for platform work indicated above includes provision for four 1,200-foot-long, run-through train inspection pits. Costs for relocation of trackwork, signals, and communication lines and construction of electric railroad catenary are not included in this estimate.

Parking structure construction cost of $2,970,000 was calculated at the rate of $3,300 per car space for an approximate median of 900 spaces required for HSR patrons.

19.9 SCHEDULING AND PHASING OF CONSTRUCTION

Terminal reconstruction and site improvements would be undertaken during a 30-month implementation period. Construction of intermodal vehicular facilities and an air-rights parking structure would also be phased within this time frame.

High priority should be assigned to early implementation of recommended improvements in view of the general state of facility dilapidation and the large numbers of daily train patrons utilizing this terminal.

Temporary passenger-processing facilities would be provided along Atlantic Avenue in the area of the proposed intermodal vehicular zone. Pedestrian access to trackside would be from Atlantic Avenue, with the existing concourse and headhouse ground floor freed for complete reconstruction and renovation.

Initial construction of high-level platforms and tracks would be concentrated in the present vacant area. On the opening of these, successive platforms would be reconstructed to high-level standards.

Construction of the rapid-transit subway connection, exterior building renovation and site improvements would proceed concurrently with other terminal work.

19.10 SPECIAL CONSIDERATIONS

The recommended development plans for the terminal assume that the BRA proposal is still in a very preliminary planning stage, with no formal commitment to proceed with detailed design and construction in the near future. Therefore, no specific consideration was given to incorporating their plans in this analysis.

Intermodal vehicular facilities would be sited parallel to Atlantic Avenue at approximate street grade. This area formerly housed the Railway Express Agency. Realignment of terminal trackage and platforms, proposed to be reconstructed to high-level standards, to parallel Atlantic Avenue and the proposed vehicular facilities, places the platforms in near proximity to the intermodal transfer locations, and shortens the walk from the existing headhouse to the end of the platforms. See Figure 19-6, 1990 Concept.

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