4. L.A. Hoel, M.J. Demetsky, and M.R. Virkler. Criteria for Evaluating Alternative Transit Station Design. U.S. Department of Transportation, Rept. DOT-TST-76-78, Final Rept., Feb. 1976.
5. M.R. Virkler, M.J. Demetsky, and L.A. Hoel. Transit Station Design: Case Studies of Planning and Design Method. U.S. Department of Transportation, Rept. DOT-RSPA-DPB-50-79-14, Final Rept., Feb. 1980.
6. J. Griffiths, L.A. Hoel, and M.J. Demetsky. Transit Station Renovation: A Case Study of Planning and Design Procedures. U.S. Department of Transportation, Rept. DOT-RSPA-DPB-50-79-14, Final Rept., June 1979.
7. L.G. Richards and L.A. Hoel. Planning Procedures for Improving Transit Station Security. U.S. Department of Transportation, Rept. DOT-RSPA-DPB-50-80-14, Final Rept., Feb. 1980.
8. D.M. McCants. Decision Weights for Transit Station Design. Univ. of Virginia, Charlottesville, thesis, 1981.
9. D.M. McCants, M.J. Demetsky, and L.G. Richards. Decision Procedures in Transit Station Design. Univ. of Virginia, Charlottesville, Final Rept., May 1981.
10. N.H. Nie, C.H. Hull, J.G. Jenkins, K. Steinbrenner, and D.H. Bent. Statistical Package for the Social Sciences, 2nd ed. McGraw-Hill, New York, 1975.

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Planning and Preliminary Design of White Plains, New York, Transportation Center

BERNARD ADLER AND MARVIN C. GERSTEN

A consolidated transportation center in downtown White Plains, New York, was initially proposed in 1967 as part of the Urban Renewal Agency's revitalization plans. Subsequent studies led to site selection and basic planning concepts. The planning and preliminary design study for the White Plains Transportation Center is described. Its purpose was to advance the Transportation Center from a planning concept to working preliminary engineering and architectural plans and to establish planning standards and design criteria, passenger demand estimates, and preliminary cost estimates. A four-phase study was conducted in which maximum participation of project sponsors and local planning agencies was fostered through a series of workshops. To supplement existing information, passenger travel surveys were conducted to determine bus and rail passenger origin-destination patterns, peak-period pedestrian volumes, and parking, taxi, and bus operating characteristics. Projections of passenger demand were made to the design year based on local and regional population, labor force, and employment forecasts. The final design concept recommended for implementation includes a ground-level bus facility located on two parcels of land adjacent to the relocated White Plains railroad station. The second level provides for loading and unloading of kiss-and-ride, taxi, rail, and corporate minibus passengers. Four parking levels are provided above the kiss-and-ride level. Provisions have also been included for direct pedestrian connection to future downtown developments, including a proposed convention center, offices, and a hotel complex. Implementation of the project is being advanced by the City of White Plains through a combination of joint development (private and local) and federal funding.

The City of White Plains, New York, the seat of Westchester County government, is the major regional retail shopping center for Westchester and Putnam Counties of New York and Fairfield County of Connecticut and is the headquarters of numerous major international corporations. White Plains is located in the south-central portion of Westchester County. Three Interstate highways--I-684, I-87, and I-95--connect the city and the region with New England, New York City, and coastal Connecticut. The Consolidated Rail Corporation (Conrail) provides both freight and passenger service. Located about 22 miles north of Grand Central Station, White Plains is an express stop for commuter trains to and from New York City.

The city, which had a 1980 population estimated at 47 000 people, provides employment for 40 000 people. White Plains is the home of 11 corporate headquarters or major office complexes. As a retailing center, it has an annual sales volume of more than $600 million generated from approximately 900 establishments. Eight leading retailers are located within the city, in addition to the new $100 million enclosed shopping mall known as the Galleria, which houses more than 150 stores and 20 restaurants. Currently, there are plans for an additional 200 000 ft^2 of retail space, 800 hotel rooms, 1 million ft^2 of office space, 900 dwelling units, and 600 000 ft^2 of public facilities to be added to the inventory of downtown White Plains. The study area and location of the proposed Transportation Center are shown in Figure 1.

TRANSPORTATION SYSTEMS

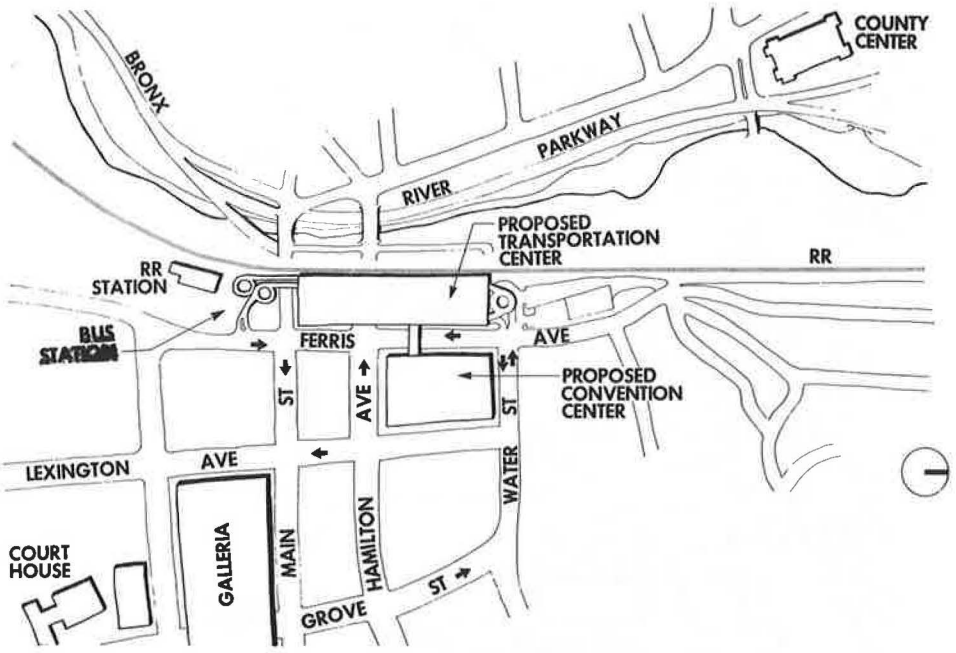
Efficient transportation is a necessity for White Plains to accommodate its anticipated growth. The internal highway network has been completed, and additional roadways are under construction and in the planning and design stages. The intracounty bus system, coordinated by the Westchester County Department of Transportation, has been improving its existing service through route additions, schedule improvements, and modernization of the bus fleet.

These existing public transit facilities, including the commuter rail station and bus terminal, are poorly located and improperly coordinated. Both public transportation modes must be improved and better used in order to ensure continued urban vitality and growth.

Rail

The present White Plains railroad station was built in 1914 by the New York Central Railroad. The station building was constructed near the northerly end of a sharply curved section of tracks. Low-level passenger platforms were built between the tracks with passenger access via two sets of stairways served by a tunnel or "subway" through embankment.

Figure 1. Study area.



In the 1960s, New York State created the Metropolitan Transportation Authority (MTA), which assumed responsibility for operating commuter rail service. To modernize and improve service, the MTA ordered a fleet of new electric passenger cars known as "Metropolitans", which required high-level passenger platforms on tangent or near-tangent sections of track. New high-level platforms were subsequently built in White Plains north of the old station building. The southerly ends of the new platforms are more than 500 ft north of the access subway and more than 700 ft from the main commuter parking lot.

As part of a New York State Department of Transportation project to widen Hamilton Avenue under the railroad to five lanes, the tracks for the overhead commuter rail lines will be realigned and a new center railroad passenger platform will be built. A railroad station will be provided on this platform, including a ticket booth and other passenger services.

Bus

The existing White Plains bus station is a temporary facility that consists of four open platforms with bus shelters located on a parcel of land adjacent to the railroad platform. Twenty-one routes serve the bus station, operated by the Westchester County Department of Transportation (DOT).

Parking Facilities

Nine at-grade parking lots provide approximately 1770 parking spaces for users of the White Plains railroad station and bus terminal. These are located as shown in Figure 2. Most of this land is to be reclaimed for redevelopment.

Other Modes

Other transportation functions and modes include taxis, which queue along the western curb of the bus facility; private employee bus service provided by several corporations; intercity bus; and a short-term parking area in front of the railroad station.

NEED FOR TRANSPORTATION CENTER PROJECT

The relocation of the railroad platform from the existing original station building represents substantial inconvenience for passengers. The ticket booth, waiting room, rest rooms, and other facilities in the station building are inaccessible to passengers waiting on the new platform. There is no access for the handicapped except for a long, weather-exposed walkway that connects the main parking lot to the northbound platform only. Direct pedestrian access to the railroad platforms from the central business district (CBD) and from the adjacent parking lots, bus station, and taxi loading area has shifted north to a staircase near Main Street and Hamilton Avenue. This has generated a hazardous condition in which railroad passengers must cross two busy streets in the height of rush-hour traffic. The at-grade parking facilities are located on land that is part of the urban renewal area. By state law, this land must be used in an expeditious manner and cannot remain as surface parking areas.

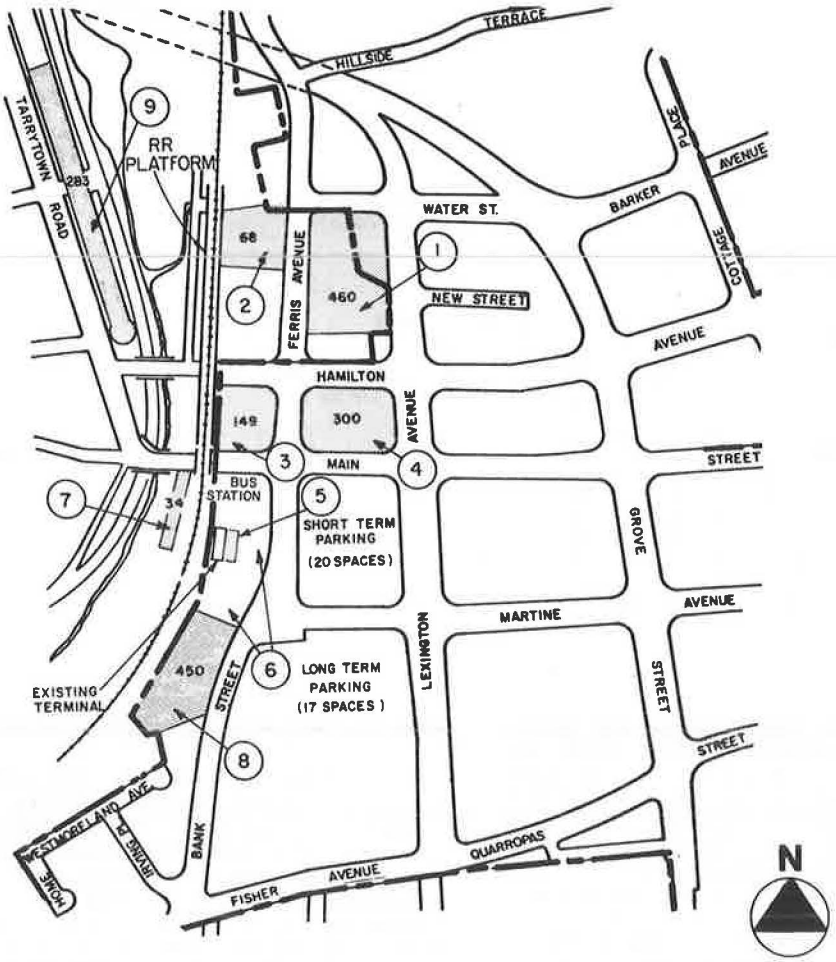
To eliminate the above conditions and facilitate intermodal transfers, the existing disorganized rail, bus, taxi, drop-off/pickup, and park-and-ride functions are to be relocated into a single, efficiently operated multimodal facility, the White Plains Transportation Center. The interrelatedness of the various modes and facilities of the Transportation Center, as perceived by its planners, is shown in Figure 3.

SCOPE OF PLANNING AND PRELIMINARY DESIGN STUDY

In March 1980, the City of White Plains, with the sponsorship of the Tri-State Regional Planning Commission, under a Section 8 Technical Study Grant (Urban Mass Transportation Act of 1964, as amended), initiated work on phase 1 of a four-phase study whose objective was the development of a recommended preliminary design plan suitable for advancing to final construction plans.

A structured workshop design development process was accomplished by the study consultant, Howard Needles Tammen and Bergendoff, to ensure the full

Figure 2. Existing parking location.



participation of all City, State, County, and regional agencies. This process, which involved four workshops over a two-month period, was successful in identifying potential planning concepts, narrowing them down to a reasonable number of design alternatives, and finally selecting a preferred alternative as the design solution.

The four study phases were as follows:

1. Site analysis,
2. Design criteria and standards,
3. Planning alternatives, and
4. Recommendations.

The transportation surveys, analyses, and facility planning and design studies conducted during the above work program and the final recommended design of the Transportation Center are described in the following sections.

TRAVEL DEMAND STUDIES AND PROJECTIONS

Railroad and Bus Passenger Surveys

Counts and origin-destination surveys of railroad and bus passengers were taken over a two-week period in March 1980 at the White Plains railroad and bus station. Postage-paid mail-back survey forms were distributed to all railroad and bus passengers during a morning peak period. A copy of the boarding rail-passenger survey form is shown in Figure 4. The sampling rate, or the percentage of total survey forms distributed that were returned and usable, varied from 17 percent for deboarding bus passengers to 47 percent for boarding railroad passengers. The survey indicated that approximately 1900 passengers boarded southbound trains during the morning peak rail travel period (6:56-9:00 a.m.), and 1560 passengers left northbound trains during the afternoon peak period (3:56-7:00 p.m.). During the morning peak period, 550 passengers departed from northbound trains; during the afternoon peak period, an average of 840 passengers boarded southbound trains. The morning peak bus travel period (6:45-9:00 a.m.) included the highest bus passenger volumes--1020 passengers boarding and 930 passengers deboarding.

Several design considerations for the Transportation Center were identified by the surveys. The relative importance of the various modes of arrival and departure at the existing railroad and bus station is illustrated in Figure 5. The majority of the boarding railroad passengers arrived by car or van, and the remaining passengers were evenly distributed by mode among kiss-and-ride, bus, and walk. A significant transfer movement between buses was noted: More than 55 percent of both boarding and deboarding passengers transferred during the morning peak period. The predominant trip purpose for both railroad and bus passengers was work--93 and 80 percent, respectively. A significant number (12-16 percent) of bus passengers were students. The surveys also provided origin-destination data that were used for forecasting future Transportation Center passenger use and travel patterns.

Figure 3. Intramodal transfer movements.

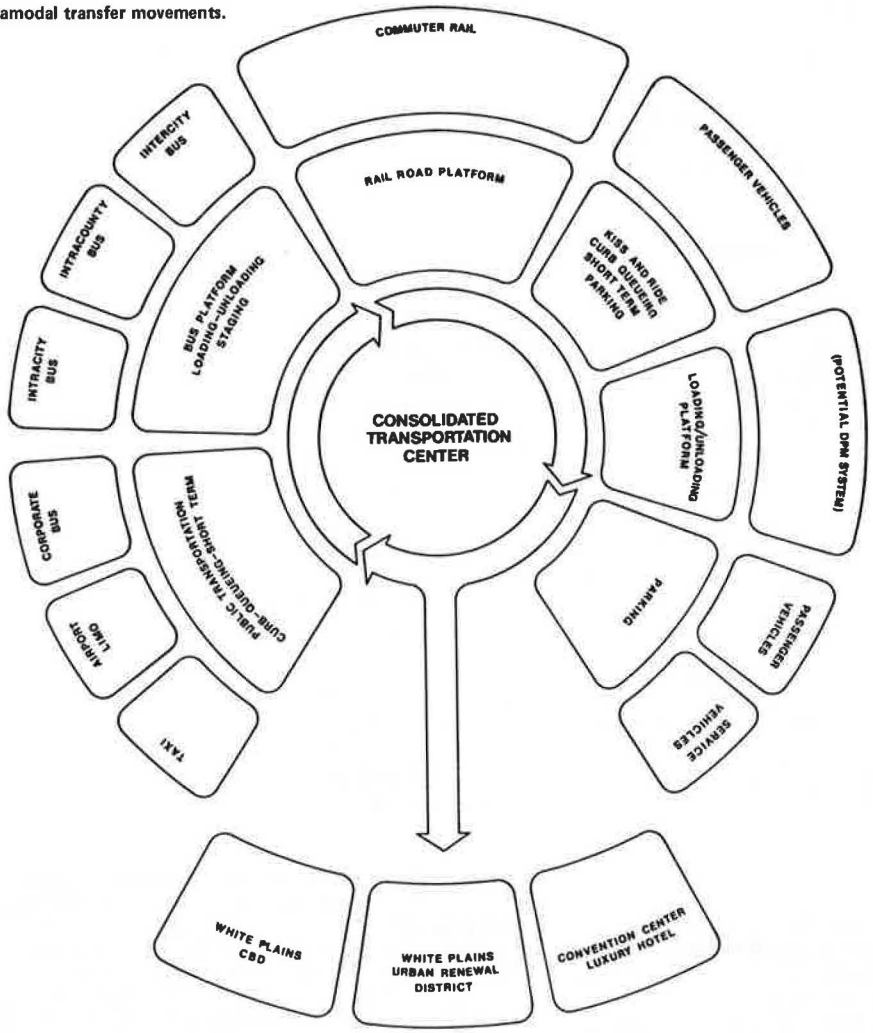


Figure 4. Boarding rail passenger survey form.

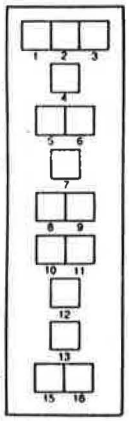
WHITE PLAINS TRANSPORTATION CENTER STUDY—RAILROAD PASSENGER SURVEY BOARDING

The City of White Plains is conducting a study of a modern, efficient Consolidated Transportation Center to serve rail and bus passengers and replace temporary bus and parking facilities adjacent to the railroad station. Your cooperation and assistance in planning this new facility is requested. Please take a few moments to answer the following questions about your trip today. When you have completed this questionnaire, just drop this postage paid form in any U.S. mailbox or in one of the collection boxes at Grand Central Station. Your answers will be strictly confidential.

Thank you for your cooperation.
Alfred Del Vecchio—Mayor

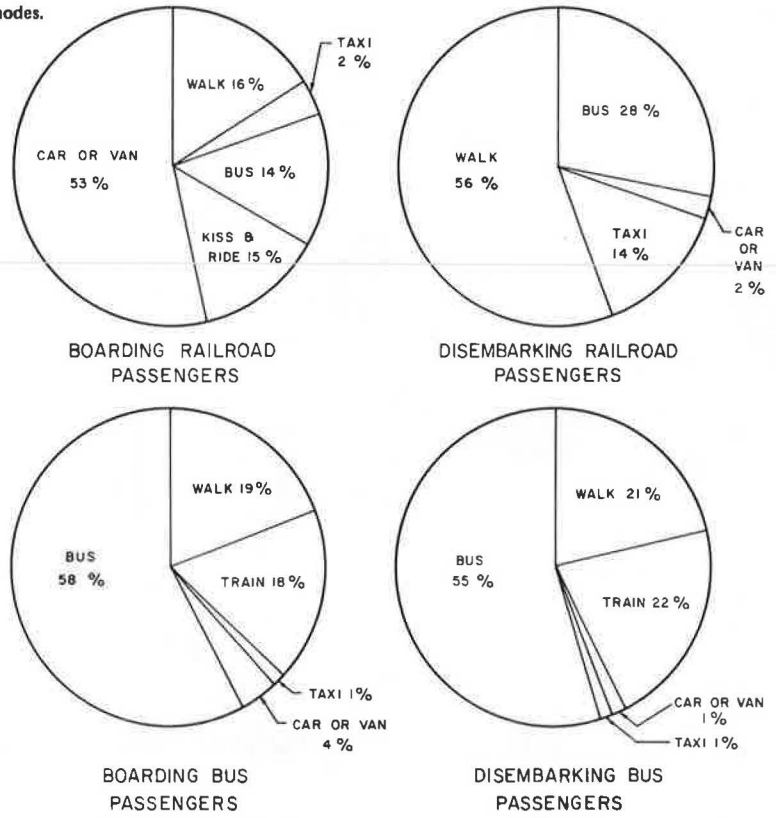
1. In what City or Town did your trip start this morning?_____
2. What is the name of the street corner nearest the point where your trip started?
_____ & _____
3. How did you get to the White Plains Railroad Station? (check one)
☐ Car ☐ Van ☐ Public Bus ☐ Private Bus ☐ Taxi ☐ Walk ☐ Other (specify)_____
4a. If you came by car or van, where is that vehicle parked? (check one)
☐ Municipal Lot ☐ Private Lot ☐ Vehicle was driven away by someone else ☐ Other (specify) _____
b. How many people were in the car or van when you arrived at the station?_____
5. If you came by public bus, what is the bus route number?_____
6. If you came by private bus, what is the name of the company that operates the bus?_____
7. What is the purpose of your trip today? (check one)
☐ Work (commuter) ☐ Infrequent Business (not a commuter) ☐ Shopping ☐ School ☐ Other (specify)_____
8. How frequently do you make this trip? (check one)
☐ Daily ☐ Weekly ☐ Monthly ☐ Less than once a month
9. At what Railroad Station will you leave your train? (check one)
☐ Grand Central Terminal ☐ 125th Street Station ☐ Other (specify) _____

Comments _____



This questionnaire has been financed in part through funds from the United States Department of Transportation, Urban Mass Transportation Administration under the Urban Mass Transportation Act of 1964 as amended.

Figure 5. Arrival-departure modes.



Parking Surveys

Since most of the existing parking spaces are expected to be relocated to the proposed Transportation Center, additional surveys were conducted to determine the peak accumulation of parked vehicles, average parking duration and turnover, percentage of compact cars, and percentage of parkers with downtown White Plains destinations. The parking survey determined that the maximum number of cars parked at the peak moment was 1500 and that a total of 1850 vehicles parked during the average weekday. Approximately one-third of the vehicles surveyed were classified as "small cars". Interviews conducted in the morning peak period at two of the lots that were expected to include a high percentage of White Plains CBD employees showed that 416 passenger vehicles, or about 70 percent, carried passengers and drivers who had downtown White Plains destinations.

Kiss-and-Ride and Taxi Survey

About 60 vehicles were counted loading or unloading passengers along the curb of the railroad station during the afternoon peak period. It was estimated that, when a peak-hour train is late enough to overlap with the scheduled arrival time of the next peak-hour train, as many as 100 passenger vehicles could accumulate in the station area waiting for arriving passengers.

Observations of taxi operations at the railroad station indicated a maximum of 23 taxis waiting for fares at one time during the morning peak period, immediately before the arrival of a northbound train.

Bus Operations

During the morning peak hours surveyed, an average of 57 buses stopped in the bus station and another 17 stopped along Main Street. Similar bus volumes were observed during the afternoon peak hour. On most days, there was a maximum of 10 buses in the station at any one time; however, 17 buses were counted during one morning peak period. The most heavily used of the bus routes serving the station are those that operate between White Plains and New York City subway stations in the Bronx and between White Plains and Mount Vernon. Annual bus ridership statistics on the 21 routes indicated that passenger volumes increased by more than 17 percent between January 1977 and December 1979, from 8.1 million to 9.5 million passengers. By comparison, overall County bus ridership grew by more than 22 percent during this period, from 20.7 million to 25.7 million passengers.

Passenger Rail Operations

The White Plains railroad station is served by Conrail's Harlem Line. The morning peak schedule provides 13 trains southbound and 8 trains northbound between 6:30 and 9:00 a.m. Annual passenger volumes between White Plains and New York City increased by nearly 14 percent between 1977 and 1980, from 3.15 million to 3.60 million.

Passenger Demand Forecasts

Socioeconomic Projections

A total decline in County population of 10 000 persons between 1980 and 2000 has been estimated by the Westchester County Planning Department. However, the work-force population (aged 25-64) has been estimated to increase by approximately 11 percent in that period. An increase of approximately 13 percent in the work force residing in the central County areas is anticipated between 1980 and 1990. This work force generated about 70 percent of the bus riders surveyed at the existing bus station.

Table 1. Morning peak bus passenger movements.

Mode of Arrival or Departure[a]	1980		Design Year	
	Boardings	Deboardings	Boardings	Deboardings
Car or van	36	14	41	19
Train	180	204	248	231
Private bus	-	21	-	29
Taxi	12	14	16	18
Walk	215	189	301	261
Total	443	442	606[b]	558[c]

[a] Excludes bus-to-bus transfer passengers, since these transfers will be shifted to other central White Plains locations under the County DOT proposed bus operating plan.
[b] Increase of 36.8 percent.
[c] Increase of 26.2 percent.

Table 2. Morning peak rail passenger movements.

Mode of Arrival or Departure	1980		Design Year	
	Boardings Southbound	Deboardings in Both Directions	Boardings Southbound	Deboardings in Both Directions
Car or van	1298	14	1382	16
Public bus	237	180	268	248
Private bus	31	23	35	32
Taxi	27	92	30	127
Walk	294	352	412	486
Total	1887	661	2127[a]	909[b]

[a] Increase of 12.8 percent.
[b] Increase of 37.5 percent.

It was considered unrealistic to assume that the recent high annual rates of growth in transit ridership would continue over the next 20 years. The following factors were expected to govern the growth of public transit ridership and were used in the forecast of future Transportation Center use:

1. As noted above, the work force in the central County area will increase by 13 percent to 1990. This increase was used to project the increase in bus and rail boarding passengers who arrive at the Center by passenger vehicle.
2. Over the next 20 years, the number of CBD dwelling units is expected to increase by 40 percent. This increase was used to forecast the increase in boarding bus and rail passengers who walk to the Center.
3. Downtown office and retail space is expected to increase by 38 percent to a maximum level. This projected increase was used to estimate the increase in deboarding bus and rail passengers who walk and take private buses from the Center, boarding bus passengers who transfer from trains, and deboarding bus passengers who transfer to cars.

Forecast Growth in Bus and Rail Ridership

Origin-destination tables were developed for bus and rail passengers during the design-year (2000) peak period, peak hour, and peak 15 min. The current and projected design-year bus and rail passenger movements that were used to develop space requirements in the Transportation Center design studies are summarized in Tables 1 and 2.

TRANSPORTATION CENTER FACILITY REQUIREMENTS

Public Bus Berths

The maximum number of buses at the Transportation Center during the critical morning peak moment was projected to increase to about 26 buses in the design year, and 26 bus berths were recommended as the minimum design requirement.

Parking Spaces

Commuter Parking

The observed distribution of rail passengers who arrive at the White Plains station by park-and-ride and kiss-and-ride modes was approximately 80 and 20 percent, respectively. Assuming that this distribution will continue over the planning period, about 1100 rail passengers will come from the commuter parking facility and another 280 will be dropped off at the kiss-and-ride curb. Based on surveyed passenger vehicle occupancies, it was estimated that 900 parking spaces will be required for rail and bus commuters arriving at the Transportation Center during the design-year morning peak period. The observed number of vehicles parked during the peak accumulation time was about 30 percent higher than the peak-period commuter parking space demand due to the presence of early and late commuters and other rail passengers parking prior to and after the morning peak period. Accordingly, the design-year supply of commuter parking spaces needed to meet the projected demand at the peak accumulation time was estimated as 1170 parking spaces (1.30 x 900). Because the existing parking lots will be unavailable due to planned redevelopment uses, a new parking facility will be required to meet this demand.

Noncommuter Parking

The parking spaces provided by the Transportation Center will be available to commuters as well as to the planned adjacent hotel, convention center, and other commercial development users. Since major activities at the hotel and the convention center will occur during evening hours, the spaces required for these uses will, for the most part, be vacated commuter spaces. Only minimum replacement parking spaces will be provided in the Transportation Center for long-term CBD parking. The remaining demand will be accommodated at other CBD facilities. Additional parking spaces have also been planned in the Transportation Center for revenue-generating rental car operations and related commercial activities. The resulting estimates of design-year parking requirements for commuters, CBD parkers, hotel, convention center, and other commercial users were approximately 1675 parking spaces for maximum daytime demand and 1300 spaces for maximum evening demand.

Airport Limousine and Long-Distance Bus Service

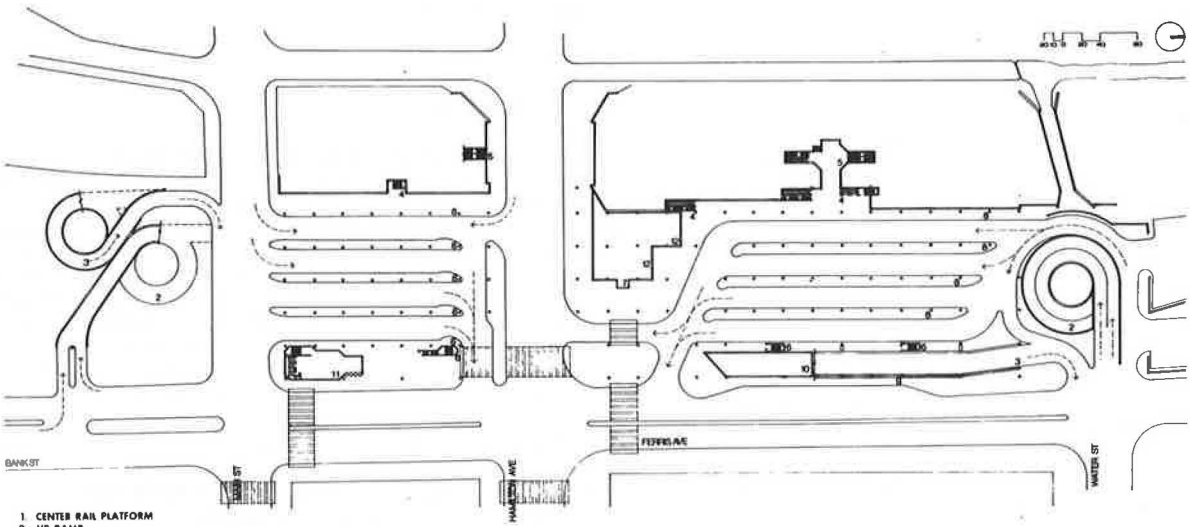
The airport limousine operator serving White Plains indicated a need for curb loading space at the Transportation Center for three vans used to serve the LaGuardia and John F. Kennedy International Airports. Studies of commercial long-haul bus operations at the existing interstate bus station indicated a need for at least two spaces to accommodate the current schedule. To provide for future service expansion, four spaces have been recommended for interstate bus service.

Curb Loading and Unloading Space

Kiss-and-Ride and Private Bus

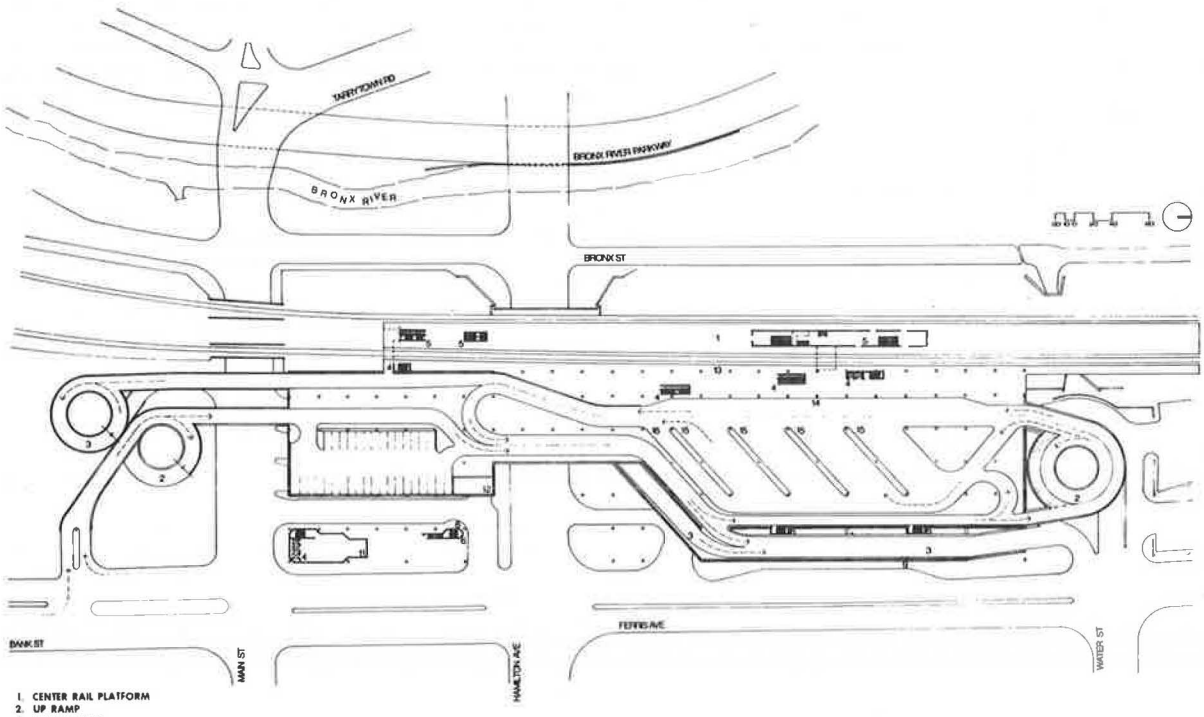
Sufficient space to accommodate twice the maximum afternoon peak-period waiting passenger vehicles has been recommended to allow for late train arrivals. The design-year estimate was also based on a 13 per-

Figure 6. Bus operations level.



1. CENTER RAIL PLATFORM
2. UP RAMP
3. DOWN RAMP
4. PRIMARY PEDESTRIAN VERTICAL CIRCULATION
5. PEDESTRIAN ACCESS TO RAIL PLATFORMS
6. SECONDARY PEDESTRIAN VERTICAL CIRCULATION
7. COUNTY BUS OPERATIONS
8. COUNTY BUS PLATFORM
9. INTER-CITY BUS PLATFORM
10. INTER-CITY BUS OPERATIONS
11. OFFICE BUILDING (FUTURE)
12. COMMERCIAL SPACE
13. NORTHBOUND RAIL PLATFORM
14. DROP OFF
15. PICK UP
16. TAXI STAND
17. PEDESTRIAN OVERPASS AT PARKING LEVEL 2
18. DPM (FUTURE)
19. COMMUTER RAIL STATION

Figure 7. Kiss-and-ride level.



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14. DROP OFF
15. PICK UP
16. TAXI STAND
17. PEDESTRIAN OVERPASS AT PARKING LEVEL 2
18. DPM (FUTURE)
19. COMMUTER RAIL STATION

Figure 8. Typical parking levels.

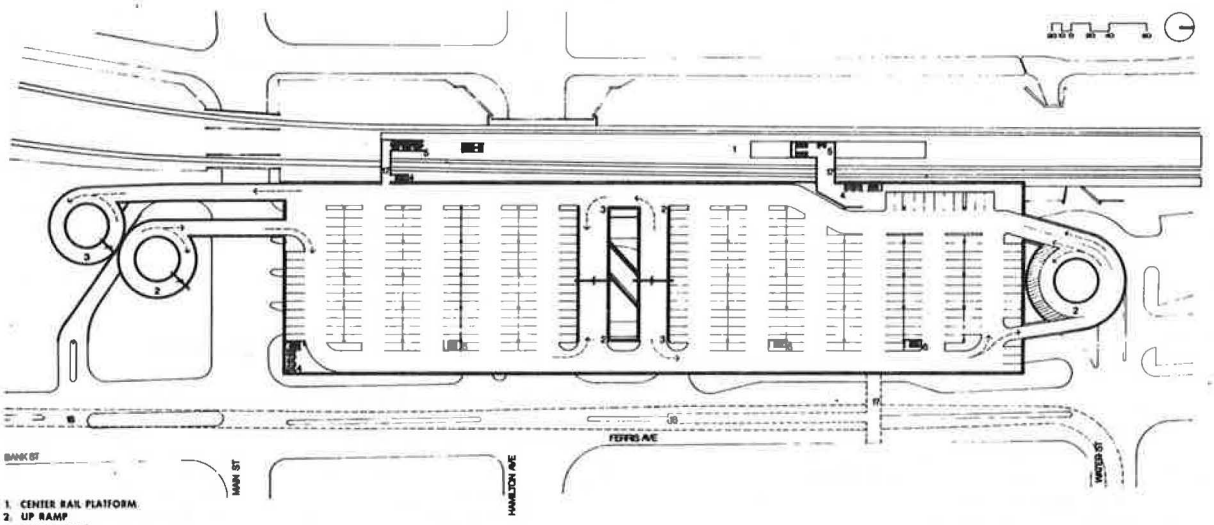
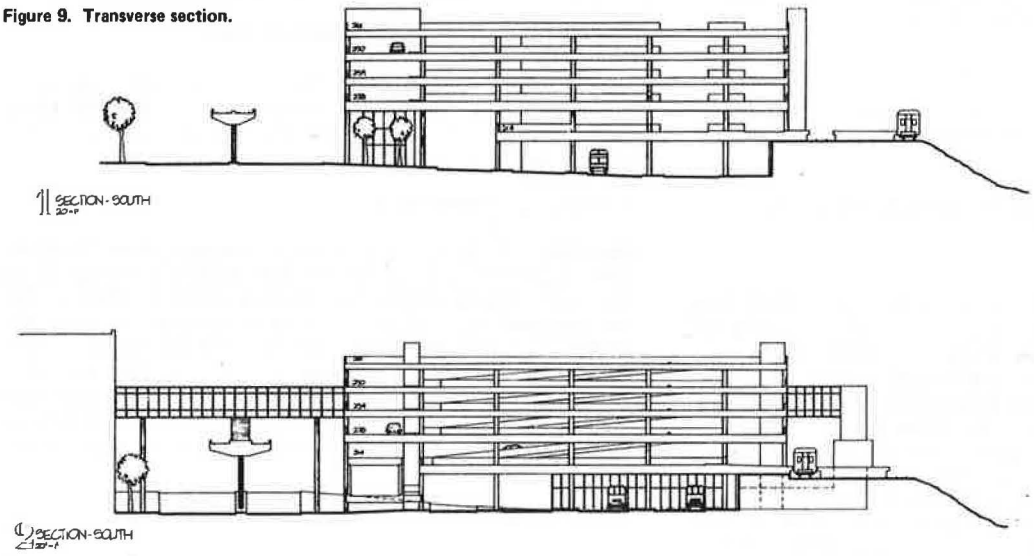


Figure 9. Transverse section.



cent increase over current conditions, which reflects the projected growth in the labor force. This resulted in a need for approximately 130 short-term kiss-and-ride parking spaces to serve passenger vehicles and the local private bus and van services.

Taxi

It was assumed that the growth in taxi use will be directly related to the growth in CBD floor space. A 40 percent increase in the length of taxi waiting curb, sufficient for about 30 taxis, was recommended.

RECOMMENDED PRELIMINARY DESIGN

Basic Layout

The proposed design concept for the White Plains Transportation Center, which evolved from a series of conceptual studies and workshops, is a six-level structure that provides intermodal transfer facilities for Westchester County and intercity bus operations and MTA's Harlem Line commuter rail service.

The basic layouts of each level of the proposed Center are shown in Figures 6-8. A transverse section that indicates the various levels is shown in Figure 9.

Bus Operations Level

County bus operations at the Transportation Center will serve the rail station and adjacent development, including the proposed convention center, hotels, and office buildings. The at-grade location (Figure 6) responds to the route structures: Westbound routes (outbound from the CBD) will use four parallel platforms on the north parcel, and eastbound routes will operate from four parallel platforms on the south parcel. The two bus areas will be able to accommodate about 28-32 buses at any one time, depending on the frequency and headway of the bus routes serving the Transportation Center and the queuing spaces used per bus. Long-distance buses and airport limousines will be accommodated along Ferris Avenue between Water Street and Hamilton Avenue. This level also provides a pedestrian connection to the commuter rail station at the second level. A series of enclosed areas will be provided along the pedestrian concourse to accommodate transit-related service concessions and the mechanical and electrical utilities for the Center.

Kiss-and-Ride Level

The second level (Figure 7) will be dedicated to drop-off and pickup of rail passengers by private automobiles, taxis, or corporate minibuses and vans as well as facilities for car-rental concessions. A new northbound rail platform with vertical circulation cores to all levels is located along the western edge of this level. Cars, vans, and taxis waiting to pick up passengers will use the short-term spaces provided on this level.

Parking Levels

The third and subsequent levels (Figure 8) provide four parking decks, each with approximately 340 parking stalls.

Ingress-Egress and Internal Vehicle Circulation

Buses

Since all bus operations are at grade, existing bus routes will be adjusted to permit westbound buses to enter the north bus area from the intersection of Water Street and Hamilton Avenue and exit via Hamilton Avenue. Eastbound and southbound buses will access the south bus area from Main Street and exit into Bank Street, where they can proceed south on Bank Street or continue east by making a left turn to Main Street at the intersection. Long-distance buses and the airport limousine service will use Water Street to access the loading area along Ferris Avenue.

Passenger Vehicles

The Transportation Center is designed to facilitate access to and egress from the parking levels by means of external helix ramps and internal ramps between floors. The major access to the Transportation Center from the south and east will be provided by an entrance helix parking ramp located opposite the intersection of Water Street and Ferris Avenue. Traffic from the north and west will enter the Transportation Center via a helix parking ramp south of Main Street. Adjacent to the entrance helix ramp is an exit helix ramp that will permit vehicles to exit from the kiss-and-ride level and the parking levels to Main Street for destinations east and south of the Transportation Center. Circulation on the parking levels will be via a counterclockwise, two-lane perimeter roadway.

Pedestrian Access and Internal Circulation

The primary pedestrian circulation corridor within the Transportation Center runs at grade level from the intersection of Hamilton Avenue and Ferris Avenue diagonally to the pedestrian subway connection to the commuter rail platform. This pedestrian concourse also serves bus operations located in the north parcel. Escalators and stairs provide vertical circulation between the bus level and the second-level rail platforms. The center rail platform is also served by a vertical core that consists of two elevators and a stair connecting all levels of the Transportation Center. At the fourth level (parking level 2), two pedestrian overpasses will provide connections to the center rail platform. The fourth level will also act as the major horizontal pedestrian connector between the Transportation Center and future adjacent development.

PRELIMINARY ESTIMATE OF PROJECT COST

The estimated construction cost of the proposed Transportation Center is approximately $34 million, exclusive of additional air rights or future development project costs.

PROJECT IMPLEMENTATION

The City of White Plains is pursuing joint development opportunities in which developers interested in the air rights above the Transportation Center for the purpose of office building construction have offered to build the south helix parking ramps to obtain an equivalent cost reduction in the purchase price of the land. A grant has also been obtained from the Urban Mass Transportation Administration to help fund the final architectural and engineering design costs.

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