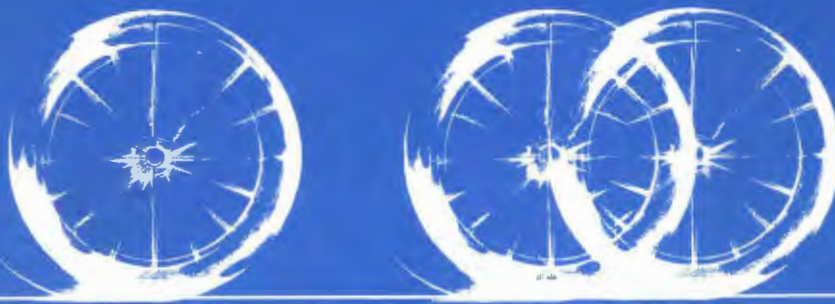




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The Way to Go

The Benefits of Quality Design
in Transportation



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The Way to Go

The Benefits of Quality Design
in Transportation

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Partners for Livable Places

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Introduction

In the post-World War II era, transportation in the United States has undergone a radical transformation as ship and rail traffic have been partially eclipsed by high-speed roadway and air travel. The change is justifiably hailed as a superb modern-day accomplishment that permits this nation an unprecedented and unrivaled capacity for speed and mobility. However, it is also clear that our new-found mobility has helped to create serious problems. Among these are the decline of downtown commercial activity and the economic viability of cities; deterioration of residential, work, and recreational environments; and an increased dependence on foreign oil and other scarce resources.

By the early 1970s, it was apparent that the nature of federal involvement in transportation should shift to provide for greater participation by state and local governments and the private sector. Two major premises were generally accepted: planning for transportation should more fully integrate the interests and goals of many segments of our society; and expenditures on transportation should also serve the investment needs of economic development, without causing significant harm to healthy neighborhoods or the quality of the environment.

In this context, the U.S. Department of Transportation (DOT) decided several years ago to encourage careful attention to quality design in the construction and rehabilitation of transportation projects and facilities. The concept is that major federal projects and other investments in transportation should be expected to produce broad and lasting benefits, and that quality investments will be most likely to produce such benefits

over time. The policy statement read, in part:

It shall be the consistent policy of the Department of Transportation to encourage good design, art, and architecture in transportation facilities and services. The environmental design arts shall be combined with other technical skills in an interdisciplinary approach to planning, constructing, and operating transportation systems.

The policy has had a positive influence on transportation programs within the several administrations located in the Department, though decisions on design quality matters have, properly, remained with state and local transportation agencies.

The Department of Transportation has worked closely with the National Endowment for the Arts (NEA) in developing appropriate technical support and publications, as well as a national awards program for transportation design. NEA's support of good design in transportation dates to the very first years of its activity. The present study is the most recent cooperative effort between the two agencies.

The cases studied in this report demonstrate that city, state, and regional authorities have shown a keen sense of responsibility for the aesthetic quality of transportation projects. The positive effect of well-designed transportation projects on the visual environment is becoming apparent to many local communities, especially in contrast to the short shrift often given to visual appeal in the extensive public works programs of the 1950s and early 1960s. Since that time, in urban, suburban, and rural communities across the nation,

notable progress has occurred in highway and roadside enhancement; in adaptive reuse of obsolete historic railroad stations; in improvement of the pedestrian environment in cities; in redevelopment of obsolescent waterfronts; and in reclamation of despoiled areas in cities and countryside. A feature common to all these programs, and actually essential to their success, is attractive appearance. As Buckminster Fuller has stated it:

When I am working on a problem, I never think about beauty. I think only how to solve the problem. But when I have finished, if the solution is not beautiful, I know it is wrong.

One goal of this study is to further develop the case for regarding design and art as essential elements in transportation planning, even in an era of tightening budgets. We have examined a variety of cases, ranging from such relatively inexpensive programs as the painted "Gus Bus" in Grand Rapids and the approachways program in Baltimore, to such large-scale projects as the design of the Montreal Metro and the rehabilitation of the Northeast rail corridor. Our purpose was to develop a fresh perspective on ways the visual appeal of transportation can be identified as a distinct element for consideration, and on the degree to which quality design contributes to the economics and function of transportation systems. A second goal has been to develop guidance and examples to assist transportation planners and citizens in dealing with these issues. This is not a recent need in our society, pragmatic as we are. "For the sake of the state, the citizen should be at his best," said city planner Daniel Burnham almost a century



The Lasalle station of Montreal's metro system.

ago, as he contemplated the development of Chicago, then a miracle of economic boom. "Citizens have a pride and loyalty to a city that is quiet, clean, and generally beautiful," he said. "With things as they should be, every businessman in Chicago would make more money than he does now."

In the course of our study, we have encountered certain questions that will doubtless remain at least partly unanswered for our readers: How should "design" or "aesthetics" be defined in transportation? Can "aesthetics" be isolated as a separate and distinct element? Can a price tag—reflecting overall costs and benefits—be effectively placed on aesthetics? Should it be necessary to assign a value to aesthetics, even if it were possible to do so?

These concerns are enduring ones, and, within the limited scope of this study, we have certainly not given the definitive responses to them. What has been achieved here is the development of a perspective leading to a better understanding of the diverse and manifold benefits that can accrue when appropriate consideration is given to design quality in transportation projects.

We have not attempted to act as judges of what is good or bad design or to provide comprehensive technical guidance. (For technical help, the reader is referred to *Aesthetics in Transportation: Guidelines for Incorporating Design, Art, and Architecture into Transportation Facilities*, a predecessor volume that was prepared by Moore-Héder Architects for the U.S. Department of Transportation.) Rather, we looked for projects where some programmatic consideration was given to facility design, architecture, art, and their relationships to the larger fabric of the community. We

are aware of this nation's long and laudable history of beautiful design for transportation: sleek and swift clipper ships; railroad tracks that met the western horizon; Frederick Law Olmsted's jewel-like parkway necklaces; the ceremonial boulevards and august railroad stations of the City Beautiful era; the Blue Ridge, the Taconic, the Columbia River, and other scenic parkways; the splendid bridges spanning the San Francisco Bay and the Hudson; and the grand underground vaults of the METRO subway system in Washington. We believe it is within this tradition that the transportation designs of our own era will ultimately be judged.

Our research has not unearthed case study material that would support a refined and definitive cost-benefit analysis of investment in visual appeal in transportation. It seems unlikely that conclusive data could be identified or that even a fine-tuned cost-benefit model could satisfy its users on pragmatic or philosophical grounds. And certainly there would be a number of objections to such an approach.

Nevertheless, the studies presented here provide precedents for the individual transportation planner, government official, or concerned citizen who wants to make the case for quality design of transportation facilities. The studies show how short-sighted it would be for any transportation planner to ignore aesthetics in making project decisions. We have tried to present projects representing the wide range of costs and circumstances encountered in transportation planning. Certain types of benefits seem to emerge very clearly, such as:

- Long-term investment—a high-quality transportation facility may in-

crease return on investment and decrease costs of expansion and adaptation;

- Economic development and rational land use—an attractive system can be used by planners to influence urban development throughout a city or region;

- Commercial revitalization—retail business can increase as a result of aesthetically planned transit;

- Private investment—public expenditure on art and aesthetic planning can leverage considerable development in the private sector;

- Utilization of wasted resources—unused land along a transportation right-of-way can be developed as a community asset;

- Improved resources for tourism—roads taking advantage of scenic beauty or made more attractive in themselves can bring an area increased tourist revenue;

- Community image-building—the effort to eliminate or reduce a transportation eyesore can spark a new spirit throughout a community;

- Improved pedestrian circulation—an attractive pedestrian environment can make walking a significant mode of transportation with concomitant increases in access to stores and offices and lower transportation costs;

- Increased potential for intermodal travel—the right facility can be the keystone of a true transportation network;

- Increased ridership—good design helps induce new groups of riders to use mass transit; and

- Cost efficiency of transit marketing—art can be an inexpensive and effective way of courting riders for mass transit.

To one degree or another, at least several of these benefits can be deduced with a fair degree of conviction. In many of the recent cases where visual appeal has been emphasized in the design, the benefits may just be beginning to flow or may not yet have reached their full magnitude. Later data may therefore allow more conclusive quantification of results. In other cases, the benefits may be self-evident to the observer but difficult to quantify because information is often fugitive, existing in odd places if at all. This study cites the dollar costs of quality design elements only when these can be clearly distinguished from other elements of the project, and when the figures appear to be reliable.

This study should aid transportation planners in promoting design quality by showing that all elements of good art, architecture, and design contribute to an atmosphere in which people are willing to work, produce, buy, and invest. In a more general way, we believe the study shows that the aesthetic benefits provided by quality materials, sensitive design, careful maintenance, and appropriate inclusion of works of art translate directly into increased patronage, cost efficiencies, and a better public environment. Such benefits make a well-designed transportation system the way to go.

Carole Rifkind
Project Director

Long-Term Investment



Yulchi Irakha

Tampa's airside and landside buildings are connected by elevated electric shuttle vehicles.

Nearly every product offers buyers a tradeoff between first cost and long-term operating and maintenance costs. Informed selection of a product involves considerations of durability, operating costs, and residual value, as well as purchase price and financing terms. American consumers are accustomed to using life-cycle costing in purchase decisions for durable items like houses, cars, and major appliances.

However, life-cycle costing is a relatively new concept in mass transportation economics. Facilities, infrastructure, and equipment have traditionally been designed for lowest first cost. The result has been costly maintenance, decayed facilities and equipment, high replacement costs, inconvenience to users and operators, and a poor public image for mass transportation.

If long-term cost efficiency is adopted as a criterion for development of mass transportation systems, it can be shown that a greater initial investment more than merely avoids the negative results of design for lowest first cost. The resultant benefits spread beyond the transit system to the community it serves.

In this section, we take up two cases of relatively expensive but cost-effective facilities: Tampa International Airport, the hub of a sun belt growth area; and Nicollet Mall, the downtown "pedestrianization" scheme that set the standard for a nationwide movement.

The case of Tampa International Airport is instructive because in the United States air transportation is provided by the private sector, while the infrastructure (chiefly airports and air traffic control) is underwritten by the public sector. The difference has meant that while aircraft and the services provided aboard

them have been carefully (and often elegantly) designed, airports and ground services have not been designed or constructed to the same standards.

Failure to grasp the importance of good design was particularly noticeable during the 1950s and 1960s, when air travel in this country grew rapidly. As aircraft demanded more space for loading, unloading, parking, and servicing, airports simply expanded by adding longer and longer concourses. Eventually, many airports sprawled for miles in several directions. Passengers, however pampered in the air, were hardly considered on the ground. A typical air journey might involve walking (with baggage) for a quarter or half mile at each end.

Tampa International Airport has provided solutions to a number of airport problems through high quality design. Both the design and its implementation have been costly, but the facility has generated many expected and unexpected benefits for its users and for the Tampa Bay region.

Nicollet Mall is also the result of a timely decision, but by the private sector rather than the public sector. The Mall was designed to conserve the assets of a still-thriving central business district when the danger signals of competition from suburban malls appeared. The businessmen of Minneapolis' central business district decided not to try to replicate the suburban shopping conditions downtown, but instead to give their district the urbane elegance of a high-quality facility for pedestrians and public transit.

Nicollet Mall, financed mainly by the owners of property on or near the Mall, has lived up to its challenge—both to keep the area the premier retail district of the Upper Midwest

and to attract sufficient office users to counter the continuing pressure of suburban mall competition.

Both Tampa International Airport and Nicollet Mall are cases that underscore the benefits of going "first class."

Tampa International Airport

Possibly the most admired airport in the world, Tampa International Airport (TIA) is a gateway to a fast-growing area of industry, resorts, and homes. In contrast to the harsh and impersonal atmosphere of many major airports, TIA gives the passenger the impression of a calm, orderly, semi-tropical resort. It is, according to the Federal Aviation Administration, "one of the most successful and workable airport complexes in the history of commercial air travel."

TIA is a large hub airport, the twenty-second largest in the country. Its primary air trade has 1.7 million inhabitants—double the number of twenty years ago. Close to eight million passengers per year use the airport, which was designed to handle from eight to ten million in its present configuration. The original plans allow for expansion to a capacity of twelve to fifteen million passengers per year. Similarly, TIA's car-handling capability—80,000 per day—can also be expanded. Sixteen scheduled airlines serve destinations throughout the United States, Canada, Latin America, and Europe.

This airport's success is due to the timely decision by the Hillsborough County Aviation Authority (HCAA) to build a warm, welcoming, and aesthetically pleasing facility that was also efficient and functional. HCAA was prepared to spend a considerable amount of money for such an airport, and the results of that high initial investment can be seen today. TIA has proved self-supporting from its own revenues, and maintains lower user charges than most of the world's major airports.

In the early 1960s, the Tampa Bay area had a population of 900,000, while its principal air facility (Peter O. Knight Airport) handled about 1,000,000 passengers per year. Cor-

rectly forecasting that the area would share in the rapid economic development of the sun belt, HCAA and the FAA began planning for new facilities.

In June of 1962, HCAA hired Leigh Fisher Associates, Inc. (now part of Peat, Marwick, Mitchell & Co.) of San Francisco, to undertake a critique of all major contemporary U.S. airports. The Fisher study found that aircraft requirements had dominated recent airport planning. To provide docking space for increasing numbers of aircraft, airport buildings stretched out farther and farther in the form of concourses or "fingers." The sprawl required passengers to walk greater and greater distances, and longer and larger airport buildings required more money to construct and maintain.

The following year, HCAA assembled a design concept study team headed by its aviation director, George Bean. Besides Leigh Fisher Associates, the team included J. E. Greiner Co. (engineers) and Reynolds, Smith & Hills (architects). Their task was to examine design concepts that would meet several basic requirements: financial feasibility, increased comfort and convenience for airport patrons, showcasing of the Tampa Bay area community, accommodation of the then-new jumbo jets, and expandability to projected requirements through the year 2000.

Designing for the Long Term

The design study team investigated three concepts. One was a conventional terminal. Another was a stacked terminal, which would function vertically, drawing airport parking spaces closer to the terminal. The third was the concept of separating landside activities (parking, ticketing, baggage processing, shops, restau-

rants) from airside activities (loading and unloading of passengers and cargo, aircraft parking and servicing), and connecting the two operating areas by some sort of ride system.

Because the design of the stacked terminal did not lend itself to expansion, the facility would have had to be built for the maximum projected airport use. This need to overbuild escalated the concept cost to \$25,279,000. Because of its inconvenience and inflexibility, the scheme was never seriously considered.

The choice, then, was between the conventional, off-the-shelf terminal concept, with an estimated cost of \$19,189,000, and the landside/airside terminal concept, estimated at \$21,594,000. The HCAA study team chose the latter, more innovative, yet more expensive, design for two important reasons: increased patron convenience and comfort, and capacity for incremental expansion as needed.

As finally built, the total cost for the completed facility was \$83,990,000, provided by HCAA bonds (a further \$20,000,000 in private investment went into the development of such features as shops, restaurants, and a hotel). Because the site was an existing secondary airport, five miles from downtown Tampa, there was no land cost. The facility, larger than originally considered, can be expanded substantially, and includes an exceptional level of amenity, art, and design. Ground was broken in 1968, and the airport was opened in April 1971, two years and five months later.



Yuichi Idaka

The interior of Tampa's airport features soft lighting, comfortable furniture, and a generous distribution of space.

Separating Airside/Landside Functions for Efficiency

The chief advantage of the airside/landside separation is that each function can develop in the optimum way. As the Leigh Fisher report explains, "Landside facilities are long-term permanent use facilities with a forty-year plus useful life, (. . . whereas) the airside is by definition and mandatory requirement a short-term, impermanent use inexorably tied to the changing aircraft technology with a useful life of approximately ten to fifteen years." The separation of airside and landside functions, therefore, permits the inevitable construction of updated airside facilities without costly, unnecessary renovations to landside facilities.

The Leigh Fisher report continues ". . . it is clear that a separation could be effected without disturbing the efficiency of the operation on either side. Indeed, it is likely that the operational efficiency of each side could be enhanced by separation. The only problem remaining becomes the means by which passengers, baggage, and cargo can be transferred between the two sides."

The transfer link between airside and landside buildings, therefore, was a key element in the design concept. More than thirty different systems of people movers and moving walks were considered. The choice was a Westinghouse system of electric shuttle vehicles running on elevated guideways. Purchased at a cost of \$5.3 million for eight vehicles, electronic controls, and a five-year guaranteed maintenance program, the system offered the essential services of cost-effective maintenance and passenger convenience. Annual maintenance costs are \$666,000

(1981). The forty-second trip between landside and airside complements the speed and efficiency of air travel.

In keeping with the landside/airside concept, the four airside buildings (averaging 200,000 square feet apiece) were each designed by and leased to a "host" airline which, in turn, subleased space to other carriers. Up to forty-eight aircraft can be accommodated at one time, and if the two other airside buildings in the original plan are built, TIA's capacity will be seventy-two aircraft at a time. The landside building (about one million square feet) is operated directly by HCAA. The controlling principle has always been the comfort and convenience of the passengers. George Bean summed up the TIA philosophy as "people first, machines second."

Because TIA passengers include an unusually high proportion of the elderly and handicapped, as well as families with small children, the "people first" philosophy was translated into a design constraint: no passenger should have to walk more than 700 feet between car seat and airplane seat. This should be contrasted with typical walking distances of a quarter of a mile (1,320 feet) at many airports.

The landside building contains parking for 1,800 cars (expandable to 4,800) on six levels, connected by sixteen elevators (with room for eight more), escalators, and stairways. An adjacent 300-room hotel was completed in 1973.

Maintaining Landside Building Aesthetics

At a cost of \$2.4 million (or 3 percent of the total construction costs), the interior and exterior design elements of the landside building contribute to an atmosphere of warmth and com-

fort for airport patrons and to an image of elegance for the Tampa Bay area. For the interior, materials of unusually high quality were selected, with the goal of creating a feeling of permanence, pleasure, and tranquility.

Floors are covered with a custom-designed carpet whose material and pattern resist wear and conceal abuse. No popcorn or chewing gum is sold anywhere in the airport. The carpet cost \$357,000 in 1971, or \$13.70 per square yard installed, and is in excellent condition after ten years.

An outdoor fountain plaza, completed at a cost of \$11,600, is a unique treatment of an airport entrance. The impression is enhanced by soft incandescent lighting and seats designed by Charles Eames. Metal sculptures of native birds rest on pilings or hang from the ceiling. The work of Roy Butler, the sculptures cost \$60,000 and symbolize for travelers the adventure of flight and the state of Florida.

Signage, which begins on the highway 1¼ miles from the airport and continues to the door of the plane, is exceptionally clear. The airport is divided into red and blue zones—according to the location of the airline used—which direct cars and pedestrians. Because of these design features, the TIA graphics system needed only two-thirds the number of signs originally plotted by traffic engineers. The interior and exterior graphics cost \$517,000.

Visitors glimpse highlights of native scenery along their journey through the airport. About 30,000 trees and shrubs (mostly palms, the Florida state tree) have been planted at strategic points along the route, giving TIA a park-like atmosphere and serving as sound barriers. Landscaping cost about \$1 million.

Ease of maintenance was an important factor in selection of materials. Walls of the elevator banks are glazed brick: red or blue, according to the graphics scheme. Structural columns are faced with broken marble. Seats and ash/trash containers are cantilevered for easier floor vacuuming. The seats themselves are covered in black naugahyde, interchangeable and reversible for longer wear.

HCAA policy is to maintain the airport in the condition it was on opening day—a policy that certainly increases maintenance budgets. But, in the long run, this policy saves the costly replacement of fixtures and design elements that wear out quickly when improperly maintained. The policy extends to staff morale: maintenance personnel at TIA receive generous fringe benefits. The annual custodial maintenance budget is \$500,000.

Although it costs more to maintain an airport at such an exceptional level, the results of excellent design and maintenance are clear. The Airline Passengers Association calls TIA “the ultimate in convenience and comfort A visit to Tampa International Airport can be compared to coming across an oasis in the middle of a vast desert Spacious, attractively colorful, refreshing are but a few of the terms that might be used.”

Planning for Expansion

The quality of the initial design ensured the continued integrity and smooth functioning of the facility even when the inevitable expansion took place. When TIA opened in 1971, it handled 3.1 million passengers per year. It is now handling about eight million. As the *AIA Journal* noted:

Long-term planning is [a] cost reducer. Lack of it has so far cost the federal government and everybody involved with air transportation plenty. Millions have been squandered on patchwork expansion which will not, in many cases, make the airport better geared to meet the future. Long-term preconstruction planning will make it possible to make the airport an integrated part of the community.

TIA’s planners did this sort of preconstruction planning. Two more landside buildings and two more air-side buildings can be accommodated when needed. HCAA has just adopted a master plan for the next twenty years, and a number of additions (including an Eastern Airlines reservation center and a general aviation terminal) have been completed.

Lowering Life-Cycle Costs for Greater Benefits

The benefits of high-quality design can be measured by increased passenger comfort, simple maintenance, less frequent repair and replacement, high employee morale, and cordial community attitudes. Three specific items should be noted at TIA. Expansion anticipated in the original plan is cheaper and less disruptive than ad hoc additions. Planned signage reduces construction and maintenance costs while contributing to passengers’ sense of well-being. And a reputation for efficient and aesthetically pleasing service helps to attract businesses to the region.

TIA is serving as a pilot project for other airports. Orlando International Airport, for example, is an adaptation of the TIA design, and is now in construction.

Even if, as architect Homer Hall has suggested, TIA cost significantly

more than it would have with an alternative design, HCAA believes its investment was excellent. Airport revenues for fiscal year 1980 were over \$17 million.

The airport is certainly the showplace for the region that it was intended to be. TIA is now the second most important gateway to Florida (after Miami), attracting one-third of the visitors to the state. It is a major attraction in its own right, and the city uses it heavily in its promotional material.

As a regional transportation hub, the airport attracts industry as well as tourists. *Town and Country* magazine points out, “Proximity to the city and travelers’ amenities have made [TIA] bait for corporate site selectors who look for easy in-and-out business gateways.” Tampa businessmen agree: “Having a first-class airport is a big drawing card for industry and development, and a major factor in their decisions to locate in the area.” HCAA’s investment in an efficient and aesthetically pleasing airport has produced benefits for the entire region.

Nicollet Mall in Minneapolis

Downtown Minneapolis is an economically strong center for a strong city. A recent seven-month study of eleven major U.S. cities by the *Chicago Tribune* rated Minneapolis as having the best municipal government, the best planning department, and the best civic leadership. The paper also called Minneapolis' skyways the best innovation, its IDS Center the best new skyscraper, and its Nicollet Mall the best downtown mall. Of all these distinctions, it was Nicollet Mall that did the most to ward off the urban decay to which so many other cities fell victim.

Nicollet Mall was the means chosen by Minneapolis business leaders to keep the central business district healthy. They planned for and achieved a first-class shopping, office, and cultural district that is easily capable of holding its own with suburban shopping malls. The vigorous central business district has attracted more than half a billion dollars in private investment since Nicollet Mall opened in 1967.

Saving a City's Assets

Minneapolis avoided the decay so prevalent in urban America because its city officials and its business community recognized and jointly responded to the early warning signals. When the city's largest employer, General Mills, moved to the suburbs in the mid-1950s, taking away hundreds of office jobs, business leaders quickly formed the Downtown Council to expand, enhance, and conserve the assets of the central business district: jobs, purchasing power, investment values, and city revenues. The Minneapolis Planning Department initiated a two-year intensive study of central Minneapolis and devised a comprehensive

strategy to preserve the vitality of the downtown. Following the recommendations of this report, *The Central Area Plan '59-60*, the Downtown Council hired the planning firm of Barton-Aschman Associates, Inc., to study existing conditions, set objectives for future development, and propose alternative plans for improvement.

Their report, *Nicollet Avenue Study: Principles and Techniques for Retail Street Improvement*, published in 1960, contained an inventory of existing conditions, and set out four planning objectives:

- to improve pedestrian circulation for efficiency (by adding walking route capacity) and for comfort (by minimizing hazards and creating a more pleasing environment);
- to improve mass transit ridership (by making transit more attractive, by providing more direct service to the retail area, by increasing pedestrian access to parking areas, and by reducing traffic congestion);
- to create new opportunities for promoting the retail area and the central business district (by concentrating on the image of Nicollet Mall as the prime retail center of the upper Midwest, and by featuring its excitement and new attractiveness); and
- to encourage private investment by creating a stable environment for retail business and other central area commercial activities.

Barton-Aschman Associates considered five types of treatment for Nicollet Avenue as ways to achieve these planning objectives:

- a full pedestrian mall closing Nicollet Avenue to vehicles for eight blocks;

- a modified public street, open to mixed pedestrian and vehicular traffic but beautified with new lighting, street furniture, and plantings;
- a series of plazas restricting the blocks of Nicollet Avenue to pedestrians but leaving cross streets open to vehicles;
- the building of above-ground or underground concourses at intersections, separating pedestrian movement at crossings and providing enclosed space for new amenities; and
- a pedestrian mall and transitway.

In choosing among the options, the Downtown Council adhered to two principles expressed vigorously by Donald Dayton (head of Minneapolis' largest department store and a prime mover in the business community): to design the project to the highest possible aesthetic standards, and to construct it to the highest standards. The Downtown Council agreed that it wanted not a version of a suburban shopping mall but an urbane environment that was simple, uncluttered, and free from garish commercialism.

The Council picked the mall and transitway option and hired Lawrence Halprin, a San Francisco landscape architect, to design it. However, construction was delayed until 1966, and Nicollet Mall opened in November 1967. The delay was caused by the Council's desire to have an extremely high degree of support for the project before beginning it, and by the unusual financing method used.

Creating a Funding Mechanism

Though the city of Minneapolis finally acted as prime contractor for the construction of Nicollet Mall, it did not finance the project. Over 70

percent of the funds came from a bond issue to be redeemed by assessments of property located within 330 feet of the Mall. The complicated assessment scheme divided an eighteen-block area into on-the-Mall and off-the-Mall zones, and included variations based on square footage and distance from the center of the Mall. Properties closest to the center bear the greatest proportion of the costs of construction and maintenance.

Nicollet Mall cost \$3,875,000, which works out to \$1,170 per linear foot and \$15 per square foot. Federal grants came from the Department of Housing and Urban Development (\$483,000 for an urban beautification project) and the Department of Transportation (\$512,000 for an urban mass transit demonstration project). The bond issue provided the remainder.

Bridging the Blocks for Pedestrians

During this long delay, private investors built the first of Minneapolis' skyways. Opened in 1962, the bridge linking two office buildings at their second stories was the predecessor of the system that now links much of downtown Minneapolis. Once Nicollet Mall was opened and the commitment to an active commercial center was clear, other private investors built skyways to permit pedestrians to circulate in their buildings via climate-controlled walkways over the city streets.

Minneapolis' skyway system currently consists of fourteen bridges that connect thirty buildings on sixteen blocks. An average of 7,000 people a day use this attractive network in the summer; the average increases to 20,000 a day in the harsh winters. Plans call for expansion of the net-

work to seventy-six bridges connecting sixty-four blocks by 1990.

Designing an Urbane Street

Nicollet Mall is an eight-block stretch of street shared by pedestrians and public transportation vehicles. Landscape architect Lawrence Halprin aimed to create a public space with the liveliness of a medieval European street market. A two-lane, two-directional transitway winds through the mall but does not overwhelm its primary orientation toward foot traffic. A high level of aesthetic amenities protects pedestrians from the intrusion of the roadway and gives the Mall its exciting atmosphere.

Despite all the high-quality visual elements on the Mall, about two-thirds of the costs were literally sunken costs: that is, expenditures for below-ground elements. The decision to use fine (and costly) surfacing materials (terrazzo tiles for the sidewalks and red brick for the transitway) and to incorporate electric snow-melting equipment in the sidewalks required that future street excavations be minimized. Therefore, all underground utilities had to be of the first quality.

Nicollet Mall is not designed to be viewed from afar or on high. It is foremost a pedestrian facility, and its beauty is to be experienced at street level. That experience is of variety within unity.

The chief unifying element is the serpentine transitway that offers relief from the endless vista typical of Midwest city streets. The mall has specially designed traffic signals, street lights, benches, flower pots, and trash containers. Trees up to forty feet high have been planted in a variety of arrangements. Sixteen uniform bus shelters offer passengers

a controlled-climate waiting room.

At the same time, each block also has a specific and special character because of a unique design element. Thus, one block has a Calder mobile; another, a weather station; another, a self-service post office. People can orient themselves by referring to "the block with the clock" or "the block with the sidewalk cafe."

Nearly all the street furniture was designed by the Mall's architects. A vice-president of Barton-Aschman, A. James Bates, stated:

Element by element, it costs no more to design for high quality stock items than for those of lesser quality. In the case of the Nicollet project, however, items of appropriate character just did not exist and we and our sub-consultant team had to create the designs for these products. Many of these products now, in fact, are catalogued by manufacturers who were suppliers to the successful bidders. For that reason, the impact of high quality on design costs was relatively high. Further, we were able to introduce more elements and greater variety into this project than would have been possible in a project with less lofty goals.

Overall, according to Bates, at least 20 percent of the cost of Nicollet Mall, and possibly as much as 50 percent, went for amenities. By way of illustration, the 1967 costs of those elements that contribute to the "special" quality of Nicollet Mall were as follows:

landscape structures	\$ 35,729
benches	12,500
sidewalk surfaces	420,679
bus shelters	219,520
bollards and chains	14,530
fountain piping	58,498
trees and planting	104,583
flagpoles	1,371
weather station	9,472
clocks	53,679
fountains	51,338
ornamental metal	23,707
clock	9,480
cut stone	33,008
cut stone installation	17,737
signal housings	40,105
illumination (prorated)	86,500

The Promotion Committee of the Downtown Council oversees a variety of special events that supplement the Mall's spontaneously-generated gaiety. With its \$75,000 annual budget, the Promotion Committee can usually obtain a further \$500,000 in tie-ins to block parties, summer festivals, Christmas decorations, and the like.

Maintenance costs are approximately \$500,000 a year (with electricity the biggest single expense), but the Mall is unusually well-maintained. Except for the amount that the city contributes toward maintenance of a street of the Mall's length (\$39,000 in 1980), the cost of maintenance is borne by the owners of property within 330 feet of the Mall.

Improving Transit on the Mall

Buses and taxis only may use the Mall's transitway, and the taxis are required to travel its full length and may not pass any buses. Supplementing the regular city buses is a fleet of minibuses that carry passengers up and down the Mall for a 10¢ fare. Nearly 6,800 vehicles use the transitway in an average 12-hour day. Despite this traffic, pedestrian and vehicular traffic conflict is minimal: granite bollards with attached chains funnel pedestrians toward mid-block crossings.

Nicollet Mall was designed primarily to increase the commercial activity of the city's main shopping street, not to improve public transportation. Nevertheless, the Mall has become an important element in the city's transportation system. As Frederick Aschman explains:

The justification for the transit lanes was, and is, that the prime retail center is directly linked by transit to every Minneapolis neighborhood. Indeed, every downtown bus route but one either crosses the Mall, operates on it, or runs parallel to the Mall only one block away Symbolically, the concept was designed to give transit a more important place in the total scheme of downtown at a time when public transportation was of much less concern than it is today. The Mall dramatizes this importance to the community and offers the shopper a genuine choice of mode.

The transitway permits buses to operate with reduced headways, and the enclosed shelters encourage users who might otherwise be unwilling to wait for public transportation. Bus volume in the central business district has tripled. Ridership on the regular



A transitway winds through Nicollet Mall without disrupting its pedestrian scale and orientation.

lines has increased (up 11 percent in 1979 alone) and the minibuses carry more than 1 million passengers per year. The average number of potential shoppers on the Mall has risen from 9,000 to 40,000 per day. There is no evidence that the Mall causes motorists to avoid the downtown area or that it causes congestion on nearby streets.

Fitting Nicollet into the Urban Fabric

The Mall has a strong visual terminus at one end: The Northwestern National Life Insurance building, designed by Minoru Yamasaki. At the center, it is marked by the spectacular IDS Center, a fifty-one-story tower with three associated buildings that are the best symbol of downtown Minneapolis' vitality. The IDS Center (designed by Johnson and Burgee) was completed in 1973 at a cost of \$135 million, and is the most prominent feature of the city's skyline. At

its base is the Crystal Court, a glass-enclosed, multifunctional atrium that has rapidly become the town square of Minneapolis. Its two levels of shops and restaurants and its skylit open space make the Court a public space of nationwide interest.

To the south, Nicollet Mall is being extended four blocks to link it with the new Orchestra Hall and the Loring Park Development District, a nine-block area containing 1,800 new apartments and townhouses. Extension of the Mall (estimated at \$8 million) will continue the design of the original section: the transitway will feature the same paving, street furniture, and serpentine design. Urban Mass Transportation Administration (UMTA) and Federal Aid to Urban Systems (FAUS) grants will be supplemented by the same type of bond issue that funded the first segment, and the completed project will produce a continuous pedestrian and bicycle route from downtown Minneapolis to the Lake of the Isles and the city's extensive parkways.

Spreading the Benefits

Nicollet Mall has infused downtown Minneapolis with a strong sense of place and a strong feeling of civic pride—both inextricably tied to the fact that the design excellence of recent architecture in Minneapolis is surpassed by that of no other city in the nation. The downtown area continues to attract unusually solid investors, and high-quality merchants and corporations. The names of the architects who have contributed to the distinguished appearance of the downtown read like a "Who's Who" of the profession, and the aesthetic standards set by the Mall will shape the character of Minneapolis for generations to come.

Since the Mall opened, there have been \$225 million in rehabilitation or new construction on the Mall itself and almost \$300 million more in adjacent areas. At present, more than five million square feet of office space are under construction in downtown Minneapolis, which will mean a 33 percent increase in office space over 1977. Approximately 1,200 new hotel rooms (a 25 percent increase) and 4,000 new dwelling units (a 250 percent increase) are also going up. The result will be 20,000 new jobs downtown by the end of the 1980s. As the city's former Planning Director, Lawrence M. Irvin, has observed:

Certainly the exodus of jobs has been completely reversed. From the time of serious consideration of the Mall, the 1960 plan to the present, there was a 15 to 18 percent increase in jobs and the occupants of buildings now under construction state they will add...approximately 17,000 jobs by 1985.

The total would be a 43 percent increase between 1958 and 1985.

Retail sales have kept pace, with businesses reporting a 14 percent increase in volume through 1973. Significantly, more than 56 percent of sales were to families living more than five miles away, and only 28 percent of sales were to employees working downtown. This means that Nicollet Mall is an attraction to people outside the immediate area and a successful rival to suburban malls. Turnover and vacancy rates are low.

The city's planning department reviews the developments over the crucial decade of the 1970s with justified pride:

The years 1969 through 1977 produced a dramatic change in the visual quality of downtown. The immediate

root of these changes can be traced directly to the civic and business spirit that completed the Nicollet Mall in 1968. The Mall demonstrated that a leap in faith . . . can bring success and that top-quality design pays. It also provided an element of community pride around which new development will continue to orient for years.

As it looks to the future, the agency recognizes the importance of a continued commitment to quality. The 1978 statement of planning principles made this commitment explicit:

Ne plus ultra. Downtown should have and should be the best. Not only the best public art and the finest buildings should be there, but the leading stores and head offices, the top entertainment. It should develop a certain grandeur which is largely missing now, and an urbanity that sets it apart from the strips and the suburbs.

Nicollet Mall has already done this for the core of the city. Its influence is spreading throughout Minneapolis.

Economic Development and Rational Land Use



The Verdun station of Montreal's metro system.

In this section, we look at public transit joint development, where public investment in a transit facility is used to guide private real estate development for an optimal effect on the surrounding community. Transportation routes and facilities have always had a profound effect on land use. But in traditional private land-use planning, the goals of the entrepreneurial risktaker most often override the public interest. With public and private interests coordinated, however, successful joint development results in a transportation site integrated with its neighborhood to the economic advantage of both.

The two projects we consider here—Montreal's Metro and Amtrak's Northeast Corridor station improvements—are examples of such planned synergy. In the 1970s many urban planners realized that urban renewal by demolition and new construction was both too costly and time-consuming and destructive of the human and aesthetic values of the

city. These planners began to adapt and reuse existing facilities, just in time to save some of the nation's most significant urban and transportation landmarks. They soon realized that successful reuse—especially of deteriorating facilities—required cooperation between the public and private sectors. Often, it is the public sector taking the lead that gives private investors confidence to sustain the revitalization effort.

In Montreal, the decision to make Metro an absolutely first-class subway enabled the city's planners to use it as a tool for directing the growth of the city above ground.

Along Amtrak's Boston to Washington line, grand old railroad stations, now being restored for improved passenger service, once more serve as magnets for investment in central business districts.

Montreal's Metro

Montreal's Metro is in a class with Tampa International Airport as one of the most admired facilities of its kind in the world. Its rubber-tired cars and advanced electronic controls place it among the smoothest of rapid transit systems. The Metro's stations are celebrated for design excellence incorporating public art and other stress-reducing amenities.

Opened in 1966, the Metro now comprises twenty-seven miles of line and forty-nine stations. In downtown Montreal, Metro links up with the vast network of weatherproofed concourses known as Underground Montreal. More than half a million passengers per working day—some 70 percent of the commuters to downtown Montreal—ride the subway.

The planning department of the Montreal Urban Community (MUC) and the system's designer and operator, the Metropolitan Transit Bureau (MTB), have been explicit in their use of the Metro line and stations as tools for influencing land use. As a result, Metro has had an unusually important role in the intense and diverse development of the city in recent years.

Designing a New Montreal

In the early 1960s, Montreal and the Province of Quebec lagged economically behind the other provinces in the Dominion. A subway system, for which planning began in 1961, was seen as an obvious spur to development. Montreal city government wanted to make the most of this opportunity and set objectives to stimulate urban investment along Metro lines and encourage major investment; to promote commercial and industrial establishments by facilitating their accessibility to clients

and employees alike; and to facilitate access to theaters, cinemas, sporting centers and exhibitions, for recreation and culture. The city decided not to let development follow the haphazard individual decisions of private investors. Instead, route alignment, station siting, and station construction—for example, the provision of knock-out panels to facilitate joint development—were used as tools to mold the shape of economic and physical development.

For example, an early decision was to have the route through the CBD run under Boulevard Maisonneuve (a narrow, twisting street) rather than Ste. Catherine Street (the broad, straight, main shopping artery). By this choice, the planners minimized the disruptive effects on commerce of two to three years of construction. They also gave the city a much better aligned Boulevard Maisonneuve by transforming it into a second major activity node a block away from the principal shopping street. Property in

the blocks between Boulevard Maisonneuve and Ste. Catherine Street increased in value, and development appeared where the planners had hoped it would.

MTB, responsible for the construction of the ever-expanding Metro lines, has set standards and established guidelines for station design. It encourages the local architects who are hired for the design of their neighborhood stations to exercise creative energies to the fullest. Each architect is encouraged to incorporate artistic design in some way and is given a budget for it that is as much as 1 percent of construction costs. The results have been excellent. At Villa-Maria, brilliantly hued wheel-like sculptures seem poised to roll down from the entrance plaza along the platform walls. At Monk, the same metal tubing that is used as guide rails is also used for heroically scaled figures that seem to dance across the station mezzanine. Stained glass reflects its jewel colors on shin-



The Monk station features sculpted figures of metal tubing.

ing steel escalator ramps at Charlevoix and on moving trains at Berri-de-Montigny.

Metro users can delight in the transportation experience as they see the sensitive design of functional elements and the artful use of ordinary materials. Designers have turned air vents, shafts, grills, benches, and hand-rails into appealing and attention-getting sculptural elements. Stainless steel wall panels, polished to mirror smoothness, reflect changing patterns of movement and color; textured concrete sets off the shimmer of mosaic tiles; and lighting tubes dramatize the awesome volume of interior spaces. The construction is solid: Montreal's Metro is designed to look good for 100 years and more.

The interdisciplinary design approach, which has been widely praised, contributes to the cost-effectiveness of the building program and to the quality that has been achieved. "The creative collaboration of engineers, architects, interior designers, graphic designers, and transportation planners," reads the American Institute of Architects medal, awarded in 1977, "has produced in Montreal a public transportation system that is not only efficient and convenient, but a positive contribution to the enrichment of the urban experience."

By such choices, the Metro's planners improved traffic circulation above ground, enhanced the value of property throughout the city, and linked the Metro to the life of the city above ground. The stations, then, are central facts in the life of the city. The most celebrated feature of the Montreal Metro, even more than its legendary efficiency and its impact on local development, is the beauty, comfort and convenience of its stations. In effect, each station is one

face of the city. Each station is unique, with a design theme that generally reflects or reveals something of the character of the environment above ground.

Capitalizing on the Underground

As the Metro was in the planning stages, private developers also looked at the development potential of the underground. William Zeckendorf's Place Ville Marie, completed in 1961, is a seven-acre complex with four major office towers, a street-level plaza, and an underground mall with 160,000 square feet of retail space. The underground mall is connected by weatherproofed walkways to nearby hotels, office buildings, retail areas, and the central railroad station.

Metro continued to spur development of subterranean linkages as it expanded. Among the grandest of these is Place Bonaventure, a massive mixed-use megastructure covering six acres in downtown Montreal, completed in 1967 at a cost of \$80 million. This project too made extensive use of underground pedestrian malls and concourses, and was connected to the new Metro system at the Bonaventure station.

Today, underground Montreal is a city complex with 25 million square feet of floor space and seven miles of concourses. The underground concourses contain or flow smoothly into department stores and boutiques, hotels, apartment houses, office buildings, train and bus stations, and the university campus. They connect a major trade mart, 150,000 seats at the Olympic sports complex, 5,000 theatre seats, 4,000 hotel rooms, and at least a dozen cinemas. Clearly, Metro gains increased patronage from this rich network, and the theatres,



The Lionel-Groulx station.

stores, and office gain from the access provided by the transportation system.

Commercial properties that connect to this network must be maintained by their owners at a level satisfactory to the city. Otherwise, the city carries out the maintenance and charges the owners.

Over the years, despite rising costs and other economic problems, the amounts allotted for design costs of the Metro have grown proportionately in the total construction budget. Construction costs rose at a slower rate. "There's no question about it," explains Jean Dumontier, Metro's chief architect; "the concern that is given to station appearance reflects the priorities of our city and the willingness to support the system, both in patronage and by subsidy."

Metro's underground lines are generally under public rights-of-way. The city leases land rights over the Metro stations to developers, which encourages buildings at station sites, since the builder is spared the high cost of land acquisition in desirable locations. For the city, the income generated by real estate, personal,



Skylights brighten the Vendome station.

service, and occupancy taxes is even greater than rent revenues.

Access to Metro and the underground concourses is another important incentive to developers. A U.S. Department of Transportation study of *Land Use Impacts of Rapid Transit* makes the point:

It is clear that Metro has influenced the nature and intensity of retail shopping activity in downtown Montreal as shown by the success of direct connections to major stores and the extensive network of underground pedestrian passages extending from the stations. The net transit system seems to have dramatically speeded the development of the underground passageway system by private property owners. Moreover, it has probably helped to increase the overall strength of the CBD relative to other areas for office as well as shopping activities.

While in other cities department stores have bargain basements, in Montreal the basement is a level for high quality merchandise.

Northeast Corridor Improvement Project

The Northeast Corridor Improvement Project (NECIP) is a major upgrading of Amtrak's 456-mile main line from Boston to Washington. The physical infrastructure of most rail lines in the Northeast dates back to the turn of the century, and few improvements have been made in the past fifty years. Authorized by the 1976 Railroad Revitalization and Regulatory Reform Act (the 4R Act), NECIP's primary goal is the improvement of the speed and dependability of the intercity rail passenger service in the corridor.

Station improvements are integral to the NECIP's program for a reliable passenger system, as are new ties, rail, maintenance facilities, and the rehabilitation of bridges, tunnels, and other structures. Since 1978, the Federal Railroad Administration (FRA) has encouraged private and public redevelopment of station areas on the Northeast Corridor (NEC), with support from the Coalition of Northeastern Governors (CONEG) and the Council for Northeast Economic Action (CNEA). Under contract to the FRA, CONEG and CNEA's primary mission was to identify the development opportunities

and constraints in the station areas and to assist local interest groups in devising appropriate implementation mechanisms.

The 4R Act authorized \$1.75 billion for NECIP, to which Congress added \$750 million more three years later. The Reagan administration plans to spend \$2.19 billion of this total. Approximately \$170 million of the total authorization has been allocated for station rehabilitation. Station improvements and related development were recognized as significant factors in influencing the modal choice of intercity travelers and thus the long-term economic viability of the federal investment in the rail system. Congress has also mandated the achievement of certain goals, one of which is to achieve a financially self-sustaining operational status for the NEC intercity rail passenger system by 1987.

From the federal perspective, station area development provided the opportunity to achieve two major goals:

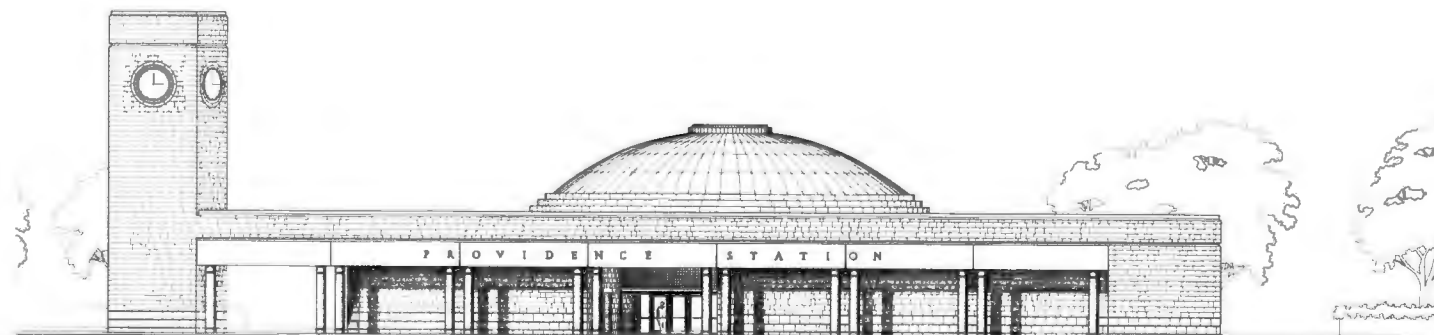
- to reduce the federal subsidies for Amtrak's NEC operations by encouraging significant revenue growth

in Amtrak's profitable real estate ventures; and

- to obtain local and state government commitments in support of intrametropolitan public transit improvements as a link with the intercity passenger system, and in support of the redevelopment of blighted areas around the stations.

Most of the stations are located on the periphery of the central business district in relatively gray areas of the city. FRA has recognized that the appearance of the station, the types of activities in the surrounding area, the condition of the buildings and facilities, and considerations of safety and ease of access are important influences for travelers choosing whether or not to use rail. Working with local communities, FRA and Amtrak have stimulated interest in making the rail station area a focal point in the community, one deserving of local public and private investment.

Of twenty-six stations in the Northeast Corridor, built mostly in the late nineteenth or early twentieth century, nine are listed in the National Register of Historic Places, and



two others are considered “potentially eligible.” Nearly a hundred years ago, when the governments and developers alike shared the “City Beautiful” vision, railroads build their metropolitan terminals on a heroic scale. Stations were large, lavish, designed by famous architects, and built of costly materials. As rail service has declined in the past thirty years—as well as the inner cities they once served—most of these structures have fallen into disrepair.

For most stations, modernization of commercial concession spaces or creation of new commercial space and offices is multiplying the value of renovation. The stations become not only multimodal transportation centers, but centers of other types of economic activity as well. These activities range from the creation of a 6,000 square-foot restaurant at New London’s Union Station to the potential development of an office tower, hotel, and parking space (approximately one million square feet) in the air rights of Boston’s South Station. The \$100-million, forty-five-story office tower, now under construction adjacent to South Station in Boston’s downtown area, is designed to harmonize with the headhouse of the

1899 station buildings on the border of the city’s retail and financial districts. The site attracted developers when the Massachusetts Bay Transportation Authority (MBTA) announced plans for turning South Station into a much-needed multimodal transportation center. The combined public investment of MBTA, NECIP, UMTA, and other state and local agencies in rehabilitating South Station is projected at about \$90 million. In addition to the tower, the public funds promise to leverage other private development in the immediate neighborhood.

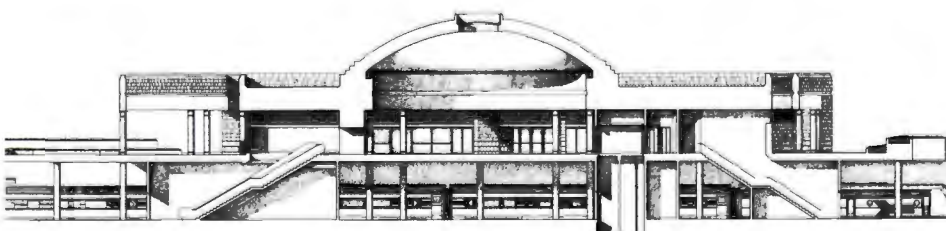
The Amtrak right-of-way and station in Providence, Rhode Island, challenge any planner. The tracks pass through the city on a twenty-five-foot embankment that creates a massive physical barrier along the north side of the CBD; the Union Station, dating from 1898, is in deteriorated condition. The first NECIP plan for improvements in Providence called simply for upgrading the tracks and renovating the station. However, in 1978, the state and city governments and a coalition of local business and civic groups requested FRA to consider

relocating the right-of-way and building a new station. The new plan, which has been adopted, would dramatically extend the CBD. The present station would be adapted for use as restaurants, shops, offices, and cultural facilities. Sixty acres of downtown Providence would be made available to public and private development, offering sweeping views from Capital Center to the State House and the College Hill Historic District. A handsome new railway station will be built above the rail right-of-way.

New Haven’s 1920 Union Station, in its current dilapidated state, had been considered a white elephant adjacent to the CBD. Revitalizing this building into a multimodal transportation center that shares the station space with shops and restaurants will provide New Haven with an attractive gateway instead of a large slum. Union Station occupancy prospects derive from a consistent view in New Haven about what spurs development. Development, a city official points out, is 80 percent attitude, and that attitude is shaped by the amount of activity one finds in the target area. In the case of Union Station, activity generation, regarded by most in the city as the hardest asset to nurture, poses no problem. The station, even in its current state of disrepair, teems with travelers.

The funding for this revitalization will come from NECIP, the state of Connecticut, and local agencies. Again, public investment in a transportation facility can be an important first step in downtown revitalization. The station improvement program adapts aesthetic assets, built by civic pride, to the requirements of modern expressions of the same spirit.

Cross-section of Providence’s Union Station.





Commercial Revitalization

Commercial activity is dependent upon a variety of factors, of which price and accessibility are only two. People will pay a premium, and often a very high one, to buy something in an atmosphere they like.

For a long time, downtown commercial areas catered to the "carriage trade" by offering merchandise in surroundings of urbanity, solidity and elegance. Since World War II, however, suburban development has deprived many American downtowns of elegance and customers, as people preferred to shop in environments with the glitter of newness and the convenience of automobile access and parking.

In many places downtown commercial districts have tried to counter this urban exodus by copying a suburban mall image and atmosphere rather than by fostering the traditional strengths of cities: the mix of public and private purposes that produces lively diversity.

In this section, we examine several cities that took a different approach. Boston, Buffalo, Iowa City, and Lafayette, Indiana, have all tried to revitalize their commercial districts in an urbane way. An aesthetically-attractive transportation facility is a key element in that process.

In Boston, Downtown Crossing is one of the most successful auto-restricted zones in the country. It has made the traditional retail district into a lively, open living room for shoppers and office workers alike.

In Lafayette, the very small, attractive bus terminal has filled an unsightly gap in the city's urban fabric and become a symbol of the city's commitment to public transportation in the downtown area. Transportation makes the commercial area appear more viable to merchants and more attractive to shoppers. A similar effect can be seen in Iowa City, where downtown merchants also have new evidence that they can do very well selling to customers who arrive by bus.

In Buffalo, which faces a harder job of urban revitalization than most American cities, major transportation improvements—a \$450-million rapid transit line, and a gleaming new bus terminal in a formerly decaying area—are increasingly linked to the economic revitalization that is so urgently needed.





Arching zelkova trees frame pedestrian walk leading to MIT's main entrance on Massachusetts Avenue in Cambridge.

Boston's Downtown Crossing

Over 100 American cities have auto-restricted zones (ARZs) of some sort in their central business districts. Many of these, like Nicollet Mall in Minneapolis and Portland Mall in Oregon, consist of straight stretches of a principal street closed to all vehicles or open only to pedestrians and public transit. Boston's Downtown Crossing is an ARZ with a very special ambience.

Because downtown Boston is not laid out in a grid pattern, the principal shopping district is truly a zone rather than a stretch. At the heart of the zone, the city's 100 percent retail corner, lies the Downtown Crossing Project. Two intersecting streets are closed to all vehicular traffic for a block in each direction. Traffic on adjacent streets is partially restricted. In all, eleven blocks are included.

Street surfaces have been paved with brick, and attractive lighting, benches, kiosks, and planters installed. The result is the transformation of an unattractive congested area into a zone that shoppers and office workers enjoy in the style of a European vehicle-free plaza. The atmosphere is that of a pleasant outdoor living room.

As a network of pedestrian-oriented streets, Downtown Crossing links Boston's major activity centers: Government Center, the waterfront, and Faneuil Hall Market to the north; the office district to the east; and the Boston Common to the west. Pedestrian traffic and retail sales have increased, and the city has gained a major outdoor amenity.

Improving Traffic Patterns

Deteriorating conditions in Boston's retail center had concerned local leaders since the 1950s. In 1976, an opportunity arose to undertake a comprehensive approach to the city's downtown problems. That year, Boston was selected as one of the five United States cities in an Urban Mass Transportation Administration (UMTA) sponsored study of methods of improving transit operations and the pedestrian environment, and of promoting the renewal of downtown areas. (The other demonstration cities were Burlington, Vermont; Providence, Rhode Island; Tucson, Arizona; and Memphis, Tennessee. Boston, the largest of the five, had the worst congestion. According to the feasibility study by Alan M. Voorhees and Associates, with Cambridge Systematics Inc. and Moore-Héder Associates, "It has the strongest downtown activity base and an extensive rapid transit system. It also has the worst traffic conflicts and few alternative traffic routes." The study highlighted the following key elements:

- a traffic plan to free major shopping streets for pedestrians but still provide access to parking and service areas;
- pedestrian streets and shuttle bus routes linking active districts just out of walking distance;
- exclusive routes for buses and trucks into downtown; and
- design techniques supporting step-by-step implementation and low cost experimental improvements.

Pedestrianization was not the first choice of downtown retail merchants. But, confronted by the much-ac-

claimed success of the pedestrianized environment of nearby Faneuil Hall Market, they saw both the challenge and the opportunity.

The Boston Redevelopment Authority moved quickly to implement the first two of the feasibility study's recommendations by creating the Downtown Crossing. It is centered about the intersection of Washington Avenue with Winter Street and Summer Street (the location of the city's two principal department stores). Restrictions on automobile traffic went into effect in September 1978, just one year after the completion of the feasibility study.

By the following year, the extensive physical improvements that had been completed gave an entirely fresh aspect to the downtown. Capital costs were \$3 million, of which the city paid about half and UMTA and the Federal Highway Administration (FHWA) half. UMTA's Service and Methods Demonstration program paid an additional \$2.1 million for such support elements as promotion, parking and traffic enforcement, upgraded maintenance, and new bus operations. The costs are outlined in Illustration 1.

Improving Travel

Before the inauguration of the Downtown Crossing, drivers had to contend with a maze of noncontinuous, one-way streets laid out, according to tradition, on 350-year-old cow paths. Congestion affected both pedestrians and vehicles.

The project removed all vehicular traffic from the main shopping blocks and widened sidewalks on other blocks where only delivery vehicles and taxis may drive. Private automobiles were channeled into a

more direct pattern of primary streets. All on-street parking was eliminated in the area around the Downtown Crossing zone. Six additional local bus routes and four additional express bus routes into the central business district, using exclusive bus lanes in some areas, encouraged a shift from private automobiles to transit and walking. Aesthetic improvements were also made to the Boston metro stations that serve the downtown area.

Improving the Physical Environment

Four blocks of the Downtown Crossing area were completely resurfaced in brick from building face to building face. On three other blocks, sidewalks were widened and sidewalks and roadways resurfaced. Distinctive lighting fixtures were installed on all seven blocks.

Large banners, hanging like standards in a renaissance Italian piazza, mark the entry points to the Downtown Crossing. Two mini-parks were also created. Attractive benches, kiosks, telephone fixtures, and other improvements were added incrementally, as the benefits to be gained were more clearly perceived.

Over time, the \$3-million-worth of aesthetic improvements have generated an increasingly enthusiastic response from shoppers and merchants. One critically important result was the formation of the Downtown Crossing Association. Dawn-Marie Driscoll, Vice President and Counsel of Filene's, explains why this is so:

The Downtown Crossing Project has been the catalyst which has transformed our area into the beginnings of a revitalized neighborhood, and stemmed the trend of neglect and decline of this traditional retail

area The formation of the Downtown Crossing Association itself is testimony to the excitement we feel about the future of downtown—our New Town. It is a major accomplishment to bring together over 100 businesses—large and small—to work toward common goals of economic improvement and enhancement of our environment. This is an historic first for our community and it is working well.

Ms. Driscoll makes it clear that expectations for Downtown Crossing are high:

As we envision our area five years from now, we see a major transportation center at South Station bringing thousands of pedestrians up Franklin and Summer Street to the financial and retail districts, fine stores and offices in the Kennedy's building, the Lafayette Place project and hotel finished, with a new garage, streets and subway stations, luxury housing on Tremont and Washington Streets, major office buildings and high technology firms in the former "Combat Zone," a bustling, revitalized Chinatown, with Chinese housing and job opportunities, and a new Theatre District, a short pleasant walk from Downtown Crossing, with restaurants, movies, and stage entertainment.

The national and regional economies permitting, there is every reason to believe that this self-confidence will be rewarded.



Downtown Crossing's designers aimed to integrate trees and plantings with bus shelters and mini-plazas.

Measuring Success

The monitoring and evaluation component of the ARZ demonstration program was an exhaustive study of the design and impact of auto restriction in Boston's downtown retail district. The researchers took surveys in the project area in June 1978 (before implementation of the ARZ) and again in June 1980 after completion of the physical improvements). The report documents that "substantial increases in pedestrian volumes and retail sales have occurred since implementation of the Downtown Crossing project The concept of an areawide network of auto-restricted streets is in contrast to the usual strip form of pedestrian and transit malls."

The study reported significant benefits in the following areas:

- *Activity level.* From 1978 to 1980, overall, the number of visitors increased 11 percent for weekdays and 10 percent for Saturdays. This,

Illustration 1: Downtown Crossing Costs

Phase I: August 1978–September 1979

UMTA Section 6 Demonstration Grant to the Boston Redevelopment Authority (Operating Funds)	\$1.5 million
UMTA Section 3 Capital Grant to the MBTA	\$0.8 million
FHWA Urban Systems Funds to Mass. Department of Public Works	\$1.0 million
Total Phase I	\$3.3 million

Phase II: June–September 1979

100% City Capital Budget	\$1.2 million
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Phase III: August 1980–August 1981

UMTA Section 6 2nd Demonstration Grant (Operating Funds)	\$0.6 million
Total Capital	\$3.0 million
Total Operating	\$2.1 million

Grand Total	\$5.1 million
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Source: Boston Redevelopment Authority

despite the competition from Faneuil Hall Marketplace.

- *Sales impacts.* Eighty percent of the businesses reported increasing sales. From mid-1978 to mid-1980, the number of store purchases increased 26 percent (an increase in dollar volume of 12 percent), representing “a major reversal of the historical trend of declining sales” in the downtown. The rapidity with which the changes were undertaken is the major reason cited for the lack of adverse impact on retail activity during the period of mall construction.

- *Goods delivery.* Loading activities, carried out in off-peak shopping hours, are now unencumbered by traffic and parked cars.

- *Air and noise quality.* Dramatic improvements were reported: maximum carbon dioxide fell 67 percent in the auto-restricted zones and 41 percent in the adjacent area. Measured noise levels also decreased noticeably.

- *Perceived impacts.* Seventy-two percent of the businesses thought the project was good for the downtown, although only 39 percent felt that it actually helped their business. In general, larger businesses had a more positive attitude than smaller businesses, even though measured results revealed books, records, fast foods, and other types of quick-stop shopping benefited particularly from increased foot traffic.

Downtown Crossing is one of the most aesthetically pleasing urban pedestrian areas in New England. It provides an enjoyable place to walk and shop in streets reclaimed for people.

Downtown Iowa City Transit Exchange

Small cities need a critical mass of commercial activity and private investment if their downtown areas are to remain vital. The Downtown Iowa City Transit Interchange is an integral part of the urban renewal program that successfully combines function with aesthetics. Urban renewal has been underway since 1963 with the aims of retaining and creating jobs, improving existing buildings, and expanding the tax base. To date, the process has added \$13.6 million to the assessed valuation of downtown commercial property. A further \$5 million is anticipated over the next few years. Over \$30 million in private reinvestment has been committed to redevelopment projects on land sold by the city in the central business district.

The three bus systems serving metropolitan Iowa City (population about 60,000) use the interchange as a common stop. Up to fifty-one buses per hour arrive and depart. In addition to buses operated by Iowa City Transit, the interchange is used by buses of Coralville Transit and the University of Iowa CAMBUS system. Prior to the construction of the new interchange, bus stops were scattered between four different downtown city blocks with bus arrivals and departures occurring at various times. The new construction successfully created a central focus for bus activity.

Locating the Interchange at a Downtown Hub

The interchange is located on Washington Street, which separates the campus of the University of Iowa from the central business district. The campus side of the street has the historic atmosphere of turn-of-the-century academic buildings. Directly opposite is Old Capitol Center, a

two-story enclosed shopping mall with two department stores and a total of 378,000 gross square feet of retail space. Opened in March 1981, Old Capitol Center is over 90 percent leased and has added about 750 jobs to the work force in downtown Iowa City.

The interchange, which began service in January 1981, was built as part of a five-block street reconstruction and landscaping project around the new mall. This example of public-private cooperative investment was possible because Iowa City, with an annual average of 82.4 bus trips per inhabitant, has one of the best bus systems in the country. The city was able to convince the developers that with the improved access to public transit offered by the interchange, the mall would not need the usual amount of parking space. Because the developers did not have to spend as much on parking, they were able to offer a higher level of interior amenities. The developers, in turn, convinced retail tenants that bus-riding customers would arrive in sufficient numbers to make a business location downtown competitive with suburban malls where customers arrive by car.

Setting Design Objectives

The street reconstruction project cost \$1 million, of which an estimated \$350,000 was for the transit interchange. Financing was 100 percent local through the sale of general obligation bonds. The city was convinced that this long-term capital investment would increase ridership through the better coordination of the three local bus systems. The designers worked to the following objectives.

- Increase the demand for and accessibility of transit services. It was

important to minimize transfer wait time and the distance between transfer points. The transit interchange had to be as close as possible to the central business district (CBD) and University of Iowa main campus area. A well-lighted location near the hub of the CBD activity was recognized as an important consideration in promoting an image of safety.

- Provide for maximum efficiency of transit operations. Ease in embarking, disembarking, and transferring for passengers and the ease in which buses can get through the interchange in the CBD area were primary factors.

- Allow for future expansion. In addition to providing for the current needs of transit and pedestrians, the transit interchange was designed so that it could accept the predicted long-term growth in transit usage.

Designing Elements for the Interchange

As part of the street reconstruction plan, Washington Street was reduced to a single lane of private vehicular traffic in one direction. (A plan for a complete pedestrian-transit mall was rejected.) Because the street is too narrow for individual bus bays, pairs of bus stops are designated at both curbsides and on a mid-street island, allowing eighteen buses to be parked at once. Inlaid brick walkways provide safety for pedestrians and define transfer points and areas for bus parking. They are also an attractive contrast to the street paving.

Custom-designed shelters allow direct boarding of buses. Benches, litter receptacles, planting, and pedestrian lightings fit into the specific character of their immediate surroundings: those on the campus

side of the interchange are of period styles; across the street, those adjacent to the new mall are contemporary in style. Trees were also chosen to fit the site. Those on the campus side are the same species found on the university grounds. Finally, the mall developers included a waiting area for transit patrons, complete with seating, in the entranceway to their building.

Thus, the Downtown Iowa City Transit Interchange, far from being an intrusion, is a bridge between the campus and the central business district. Its good design does streamline transit operations, but, as Hugh Mose, Iowa City's transit manager, stated: "A lot of thought was put into the streetscape. As much attention was given to aesthetics as to function." The public took an active role in the design process and made its influence felt through a design review committee.

Retailing for Riders

The shopping mall receives a continuing flow of customers from the 15,000 daily transit riders who use the Downtown Iowa City Transit Interchange. The three bus services report increased ridership, particularly during midday, evening, and Saturday hours. There is even a move by the merchants of the Old Capitol Center to subsidize Sunday bus service so they can benefit from additional customers.

The Old Capitol Center promotes the transit interchange in its advertising and publishes a map of the bus stops in its directory. Window displays are designed to attract the eye of the bus passenger, who is assumed to be a potential customer. The city also promotes the transit interchange as a selling point for redevelopment.

Because Iowa City is convinced that the future of its central business district is linked with the success of its mass transit system, it has provided a safe, convenient, functional, and visually appealing staging area.

Lafayette Bus Terminal

A high-quality design bus transfer facility typifies the fresh new commitment to downtown Lafayette, Indiana. In the mid-1970s, Lafayette's central business district was trying to hold its own against the attractions of suburban shopping malls. Store closings and building demolitions provided room for much-needed parking, but they also left the commercial district with gaps that were bad for the town's overall image. A new bus transfer facility is important, both as a visually pleasing infill building in the urban fabric of downtown Lafayette and as an incentive to increasing bus ridership.

Consolidating Transit Activity

The terminal is owned and operated by the Greater Lafayette Public Transit Corporation (GLPTC), which serves the 65,000 inhabitants of Lafayette and West Lafayette with a system of pulsating operations. Every thirty minutes, all buses line up on Main Street in front of the bus transfer facility, bringing a moment of unusual activity to the city center.

The bus terminal stands on a narrow 3,025-square-foot lot donated to the GLPTC in 1972 by a local bank. On this site, GLPTC built a 1,000-square-foot building with waiting areas; an office where a dispatcher announces arrivals, sells tokens, and gives information; rest rooms; and storage. The facility is accessible to the handicapped. There are a number of vending machines, a drinking fountain, and a telephone.

The glass exterior walls provide a good view of incoming buses, as well as a light, secure atmosphere. The design allows passengers the choice of waiting alone or in groups in any of several heated and air conditioned interior spaces. In front of the building,

a small landscaped courtyard provides seating in warm weather. A skylight tower and a canopy give the bus terminal a distinctive note of whimsy, while ensuring that the facility is visible from a distance. There are no graffiti.

Maintaining the Improvements

The facility, which was opened in the spring of 1977, cost \$90,000. Eighty percent of the funding came from UMTA under a capital improvements grant; the remainder of the funding was local. Maintenance costs are \$7,167 per year (1980), but are partly offset by revenue from concessions (\$4,263 in the same period). In 1980, the Institute for Urban Transportation (IUT) evaluated GLPTC. IUT found that newspaper coverage, which in 1977 and 1978 had been largely concerned with a labor dispute, was taking a more positive tone in 1979. Ridership, which had previously fallen, was on the increase.

This small but sophisticated building enhances the image of public transportation and provides excellent public relations for GLPTC. The bus terminal is a tangible commitment to the place of public bus transportation in downtown Lafayette.

Buffalo Metropolitan Transportation Center and Light Rail

Buffalo, New York, has undergone a drastic downturn since its early twentieth-century heyday as a center of industry, shipping, and entertainment. Like most industrial cities in the Northeast, Buffalo has experienced a decline both in economy and in population. The decline has persisted despite the opening in 1959 of the St. Lawrence Seaway, which made the city one of the nation's largest inland ports.

Only within the past half-decade has a turnaround seemed likely. Developments include the construction of a new convention center and a major redevelopment of hotels, offices, and apartments on the waterfront. In Buffalo, a city with a broad geographical expanse and a harsh winter climate, the best transportation in image and in function will be of critical importance. Major elements in the city's commercial revitalization are a 6.4-mile, fourteen-station light rail rapid transit system expected to open in 1984, and an \$8.6-million bus terminal that was completed in 1978. The former an artery, the latter a nerve center—both contribute to the renewed health of downtown Buffalo and to the viability of the revitalization efforts underway.

Planning a Two-Level Rail Line

After a planning process that began in the 1950s, Buffalo is now getting a light rail rapid transit system connecting the central business district with the activity of the south campus of the state university almost seven miles distant. Construction began in 1979. Eighty percent of the \$450 million total cost has been slated for support from the federal government, the rest to be provided by the state. The project is operated by the Niagara Frontier Transportation Authority, which

also runs the city buses and the new Downtown Buffalo Metropolitan Transportation Center. The Light Rail Project is on schedule and within budget, with completion expected in 1984. Studies project 88,000 riders per day in 1985.

For a variety of technical and financial reasons, planners decided on a system that runs underground for the northern 5.2 miles but then surfaces in the midst of the theater district (now being revitalized) and continues along the centerline of Main Street for the entire length of the central business district. The 1.2 mile surface portion will run through a landscaped pedestrian mall. This change from an earlier all-underground rail line made it clear that planning for the transit system and for the theater district were inextricably linked.

Developing Theaters and Transit in Tandem

The close relationship between a revived theater district and the light rail rapid transit line has become increasingly obvious as the planning process for both has proceeded. This section of the city was once a magnet for city residents and for the thousands of visitors who, between the 1890s and World War II, made Buffalo one of America's foremost tourist destinations. In those years, downtown Buffalo teemed with elegant theaters, music halls, and restaurants. By the 1960s, however, the theater district, covering about 100 acres just north of the central business district, was the worst part of town.

In 1976, a major effort began to reestablish the theater district as an entertainment center. The first project was a bold announcement of the pro-

posed plans through brightly colored murals depicting entertainment themes. A similar effort followed with the painting of storefront windows (the area was 60 percent deserted at the time). These projects received nearly \$50,000 in funding from the city, the Greater Buffalo Development Foundation, and Arts Development Services.

The following year, the School of Architecture and Environmental Design at the State University of New York at Buffalo reported on the feasibility of a comprehensive redevelopment plan for the theater district. The goals were economic (returning idle property to the tax revenue rolls and creating new jobs); social (enhancing the cultural life of the community and creating a regional and tourist attraction); and physical (restoring the downtown, preserving the city's architectural heritage, and constructing public improvements to increase pedestrian convenience and visual interest).

In 1979, the city created the Upper Main Street Development Corporation, a non-profit group, to implement the development plan for the theater district. The effort was expected to benefit from other downtown development—the convention center, hotel, office buildings, and residential development on the waterfront. Redevelopment has included the rehabilitation of three major theaters at a cost of \$1.3 million: the 3,000-seat Shea's Buffalo Theater, a 1926 movie palace; the Studio Arena Theater; and the university's Center for Theater Research. These theaters attract as many as 9,000 visitors a night. More than a half-dozen new restaurants have opened.

It is anticipated that there will be a healthy synergy between the reviving cultural attractions and the rail line.

Patrons of the theater district will also be new riders on mass transit especially welcome in the evenings and on weekends. The theater theme will be further enhanced by Theater Place, a \$3.3-million, publicly financed structure that will incorporate through-block pedestrian passages, covered outdoor performance areas, an atrium surrounded by shops, a nightclub, rent-controlled lofts for artists, and office space for arts organizations. There is also consideration of the rehabilitation of Market Arcade, an historic miniature of London's Burlington Arcade.

Stimulating Private Interest

The Niagara Frontier Transportation Authority is firmly committed to using the visual appeal of the light rail system as a contributing factor in the desired ambience of the theater district. It has advertised this intention and solicited local artists to create artworks in stations. The change from drab to chic is essential. *Federal Design Matters* reports:

By 1982 or '83, the Cultural District is expected to generate a total of \$7.4 million in new, private capital investment in the heart of the area, with an additional \$15.5 million elsewhere throughout the nineteen-block precinct. Benefits estimated from the cultural district's development include 550 construction jobs and 850 new permanent jobs, and the city expects nearly a half million dollars per year in revenues from property taxes.

The light rail rapid transit system will clearly be a key factor in the success of the theater district. It will make the cultural attractions accessible to residents who do not drive (in-

cluding the elderly, the handicapped, and thousands of students at the state university) or who choose to leave their cars at home during Buffalo's notorious winters.

Upgrading the Bus Terminal

Intercity buses provide the country with its most widespread transportation system. Buses serve 14,600 American cities, while scheduled airlines serve only 700, and Amtrak only 535. Yet, almost everywhere, the seedy facilities and neighborhoods typical of bus terminals are a major disincentive for intercity bus travel. In many places, the homeless and the outcast use the bus station as their day and night headquarters, with devastating effects on efforts to revitalize the area.

The Buffalo bus terminal "was a no-man's land," one observer remembers. But downtown Buffalo is also reviving and no development is more significant than the Downtown Buffalo Metropolitan Transportation Center: a gleaming modern glass building in a "hinge" location. The Center serves both as the intercity bus terminal and as NFTA headquarters.

The new terminal creates an appropriate gateway to a renewed city; counteracts the stereotype of downtown bus stations as dark, dingy, depressing, and unsafe places; and is so attractive as to overcome travelers' prejudices against venturing into the terminal area. Image reversal is thus a key element in the design of Buffalo's new bus terminal.

The Center occupies a square block, adjacent to the central business district and convenient to the surrounding freeways. A station of the light rail rapid transit system will be one block away. Main Street (two blocks to the west of the Center) will

then become a pedestrian mall. The Center is also adjacent to a 500-car parking ramp. A hub of a comprehensive transportation network, the Center also plays a major role in attracting private investment to a previously deteriorated area of downtown.

Designing for Ambience, Visibility, and Safety

The Downtown Buffalo Metropolitan Transportation Center is an open, lively structure with all the glamor that travel writers could want. The design self-consciously revises the preconceptions and stereotypes about security, amenity, and character of ground transportation facilities. Designer Mark Mendell, of Cannon Design, Inc., describes the terminal as "a glass box, creating a transparency that fosters public self-policing . . . and a symbolic gateway to the city, characterized by a warm, open, light atmosphere." Lit up at night, it not only welcomes the traveler—it also contributes to downtown safety. The goal was to convey a sense of excitement associated with travel, treating the bus traveler with respect usually reserved for patrons of the more romantic means of transportation.

The Center consists of vertical and horizontal elements combined into a unified statement by a roof garden. The horizontal element, low-slung and transparent, is the bus station concourse. A series of skylights and exterior glass walls allow light and motion to dominate its 15,000 square feet. Crisp, consistent graphics are confined to a three-foot band along the walls, making information an integral part of the interior architecture and the main decorative element. Exterior signage is also low-key, but a tall pylon carrying the word "bus"

identifies the structure from a distance.

The eight-story vertical element, 60,000 square feet, is built of limestone, gray glass, and black aluminum panels. It contains the offices of NFTA. Though a separate entrance minimizes circulation conflicts, the location of the operating authority right above the bus terminal should ensure unusually close attention to this facility.

The superstructure of the Center seems to float on a glass band, three feet high, that runs around the entire building. Thus, despite its size, it is perceived not as a barrier, but as an unbroken chain of vehicular and pedestrian movement. The Center's design also takes good advantage of the site's proximity to a downtown minipark.

Designing for Cost Efficiency

Despite the strict budget that governed the cost of the bus facility, the goal was to create a building that made a very positive statement. The facility would handle up to 1,500 people in an hour, moving through the concourse from the planned twenty-one bus loading docks at the rear of the building. It would also meet a decades-old need for an efficient transfer point between local and intercity modes of travel.

The building program seemed most appropriately met by a plan that would permit changes in office and workspace layout over the life of the building, and that would provide column-free shelter areas for bus loading and unloading. Steel framing was selected for the speed of construction it permitted, for its space-saving features, and because its exposed structure could be a cost-efficient aesthetic statement in its own

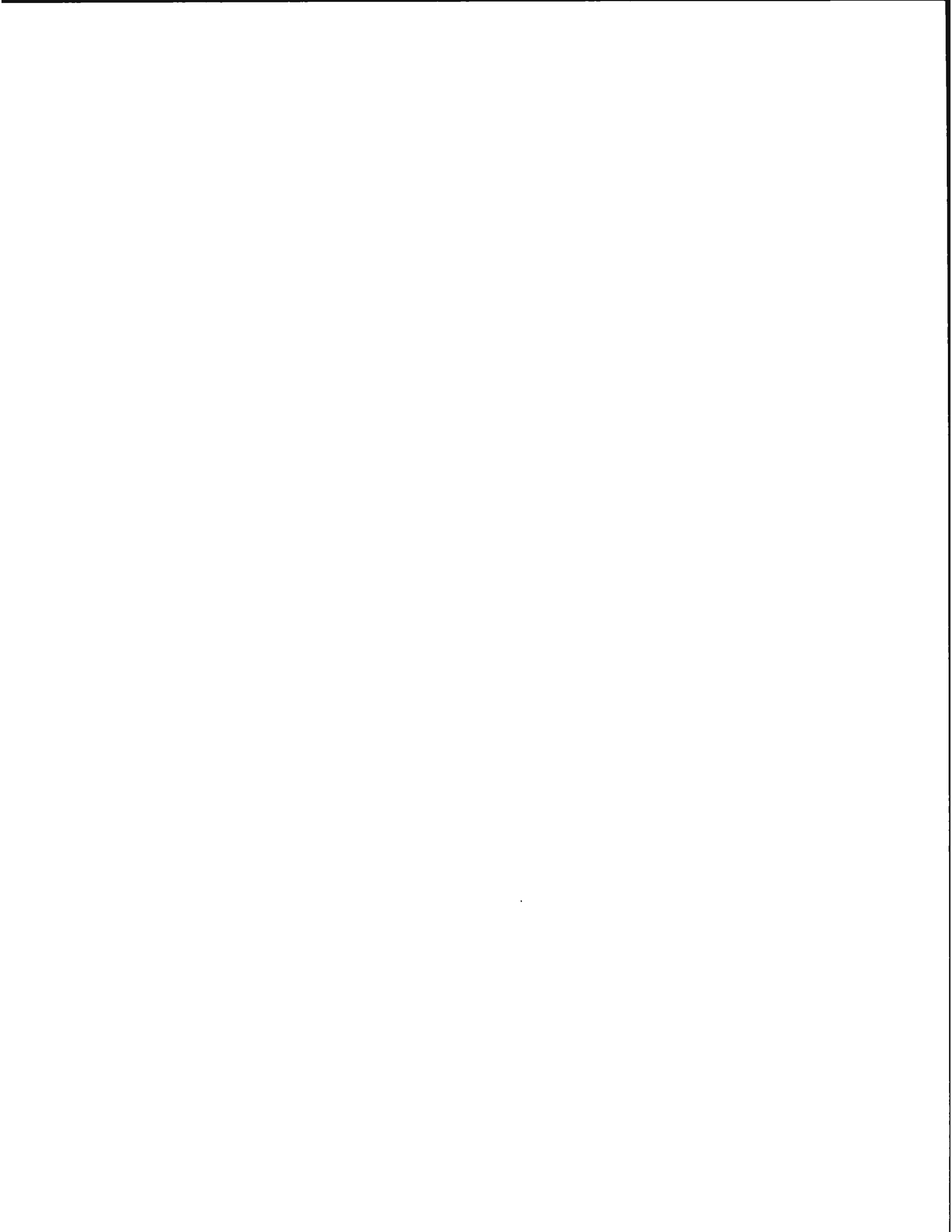
right. In the concourse, six six-foot-deep and two twelve-foot-deep trusses span the 80-foot-wide area and cantilever thirty feet on each end. Brilliant flags accentuate the drama of the framing system.

Calculating the Benefits of Ambience

At a cost of \$8.6 million, the Center has not been inexpensive. Public reaction, however, has been overwhelmingly favorable, and the Center has won several important architectural awards. Most important, it is an active and prestigious gateway to Buffalo, providing comfort, security, and a positive image to bus travelers. The public atmosphere is so agreeable that it has even been possible to provide a bar—almost unheard of in bus terminals.

NFTA reports that operations are "100 percent better" than in the previous bus terminal. Originally designed for 800,000 passengers a year, the Center accommodated 1.25 million in 1979-80 and 900,000 in 1980-81 without strain. Over 50,000 buses and over 60,000 pieces of freight move in and out of Buffalo every year through this facility. When the light rail rapid transit line is operating, the Center will handle even more traffic.

Clearly, the facility boosts the status of intercity bus travel and is making it a transportation alternative for many new patrons. The Downtown Buffalo Metropolitan Transportation Center may be a decisive factor in the long struggle to revitalize the central business district. It attracts vitally needed pedestrian activity to a once moribund area, and it symbolizes the turning tide of Buffalo's fortunes.



Private Investment

Aesthetic improvement to transportation facilities can provide the incentive for private investment. The willingness of private developers to associate themselves with attractive and efficient means of transportation is shown in the cases examined in this section.

In Burlingame, California, traffic improvements to a major intersection were combined with improvements to the appearance of the roadside and an adjacent piece of wasteland. With owners of a large tract of adjacent property involved and sharing in the costs, the results were not only an improved traffic flow and an attractive wildlife observation point, but a major asset for the privately-held tract. Once improvements were complete, the land was quickly developed.

In Detroit, the construction of a trolley line with attractive antique cars has helped arrest the decline of a fashionable area. Largely because of this aesthetically pleasing transportation system, the Washington Boulevard area has new hope as a retail center and has attracted new investment in hotels and housing.

Oakland, California, eagerly seeks new development—particularly office buildings—in its quest to become a first-class center on San Francisco Bay. The high quality of its 12th Street BART station makes a clear statement about the type of city it considers itself to be. Investors appreciate not only the convenience of the location at a major transportation nexus, but the assertion of excellence made by the station plaza design.



Fountains and open space enliven Oakland's 12th Street BART stop.



Burlingame's Airport Boulevard Intersection



Burlingame, California, on the western shore of San Francisco Bay, is the site of San Francisco International Airport. Just outside the airport is the intersection of Route 101 (a state freeway) with Old Bayshore Highway, Airport Boulevard (both major arteries), and the entrance to a busy airport hotel. A 140-acre tract of land lies 1,500 feet from the intersection. In 1975, this land (then

undeveloped) belonged to the Anza Shareholders Liquidating Trust (ASLT). Its value then was \$500,000 per acre, or \$70 million in total.

The initiative of the developer and the coordinated efforts of a landscape architect; public, traffic, and civil engineers; and public agencies made extraordinary improvements to this intersection. Traffic handling capacity was increased and a previously

Airport Boulevard's viewing plaza provides pedestrian and bicycle access to the San Francisco Bay's marshland.

disregarded parcel of land was transformed by pedestrian and bicycle paths and an overlook plaza for San Francisco Bay. The entrance to prime developable land was visually and visibly improved by the integration of traffic and visually appealing designs.

Coordinating Private and Public Plans

The Airport Boulevard Intersection Improvement Plan was initially intended to cope with only two problems: increased traffic from the development of the ASLT property, and provision of a state-mandated access way to the Bay edge. Reviewing this proposal, the developer recognized that a piece of land left over from the original plan could be reclaimed to provide an attractive entrance to his property. For the developer, any improvement to the unsightly conditions that then existed—uncontrolled vehicular parking, unauthorized dumping, and the like—meant an increase in the value of the development parcel.

In 1975, ASLT commissioned Callander Associates, a local firm of landscape architects, to prepare a conceptual plan and estimate of probable costs for the improvements. The result was a plan for widening of the intersection to accommodate two additional traffic lanes, improved street lighting and signage, the addition of a pedestrian and bicycle pathway, the creation of a viewing plaza overlooking the Bay edge bird sanctuary, and improvement of physical and visual access to San Francisco Bay. The latter provisions met the requirements of the Bay Conservation and Development Commission for increased public exposure to and appreciation of the Bay. The plan involved 780 linear feet of street improvement and one acre of landscaping. It passed a review process that ensured that the plan harmonized with the state's future goals for Route 101. Construction began in 1976 and was completed in 1977.



Designing for Visual Access to Amenities

The improved intersection has standard concrete curbing which denies motor vehicles physical access to the Bay edge. The pedestrian and bicycle path is separated from automobile traffic by gently graded turf mounds, and the trees that were removed to accommodate the extra traffic lanes were replaced by others.

The viewing plaza, reachable by foot or bicycle, has very little pavement and encroaches as little as possible on the marshland bird sanctuary. Concrete steps were incorporated into naturally arranged rock groupings that protect the marshland and harmonize with the existing shoreline. Evergreens provide shade and screen a gas station that would otherwise be visible. Timber benches have a natural weathered look; there are trash receptacles; and pedestrian lighting provides for safety and easy police observation.

Financing the Amenities

Total construction costs were approximately \$87,000, of which \$6,700 was for landscape, architectural, and

Landscaping improvements increased the intersection's traffic-handling capacity.

engineering fees. Funding came from city gas tax revenues (\$44,300), county gas tax revenues (\$26,800), and special state bikeway funds from state gas tax revenues (\$13,500). ASLT, in a special arrangement with the state, contributed \$2,500 for amenity improvements, and has assumed responsibility for maintenance (\$300 annually).

Improvements to the Airport Boulevard Intersection have significantly enhanced the attractiveness of the ASLT property. David Keyston, its president, claims the improvements have been a big help in attracting business because the previously unsightly entrance caused the loss of "literally millions of dollars in potential business." The site will be occupied by two hotels, office buildings, and restaurants. ASLT has sufficient confidence in these improvements to have spent nearly \$50,000 more on landscaping the entrances to adjacent properties to screen a sewage plant and a refuse dump.

Detroit's Trolleys on Washington Boulevard



William H. Henning

In Detroit, home of the American automobile, antique trolleys run through a transit mall along Washington Boulevard, a spine for area revitalization. This quaint, elegant, and efficient mode of transportation has been a major factor in arresting the decline of the Washington Boulevard area and in contributing to the city's "renaissance" campaign.

Detroit's antique trolleys link Washington Boulevard hotels with the city's convention center and Hart Plaza.

Countering Decline with Design

When Cobo Hall, the country's second-largest convention center, was completed at the foot of Washington Boulevard in 1970, it was expected to breathe new economic life into

downtown Detroit. But hard times persisted, and Detroit lost 21 percent of its population in the 1970s. Washington Boulevard, the city's "Fifth Avenue," shared in this decline. It became actually shabby as better shops moved away and some restaurants and a hotel closed their doors.

Detroit Renaissance, a group of businessmen, developers, and civic leaders, began planning a major project in 1973, to be located on the redeveloped waterfront on an axis with Cobo Hall and Hart Plaza. Renaissance Center, a \$350 million complex, opened in 1977 with four 39-story office buildings, 360,000 square feet of retail space, and the world's tallest hotel. True to its name, it has remained the best hope for revival in downtown Detroit despite the crippling problems of a declining industrial base.

In 1975, the Central Business District Association (CBDA) formed a committee to rehabilitate a five-block stretch of Washington Boulevard. They believed if the ongoing decline could be halted for a few years, the street would share in the revitalization promised by the Renaissance Center.

The first boost to Washington Boulevard was Detroit city planner Alex Pollock's idea of reintroducing trolleys into the city. (They had run in Detroit until 1956.) His idea was to use antique trolleys for their jaunty, friendly image, and to use them to link the struggling Washington Boulevard hotels with the Cobo Hall convention center, the new Hart Plaza, and the planned Renaissance Center on the waterfront.

The city engineer's office developed the track plan—a single line with a bypass in the middle and shunt tracks at either end—and the Detroit

Department of Transportation supervised the construction. Detroit Citizens' Railway, as the trolley line is officially known, began operations in 1976. It ran the nine blocks of Washington Boulevard from Grand Circus Park to the Cobo Hall convention center.

To further Washington Boulevard's revitalization, the CBDA set two major goals for the area: to redevelop a pedestrian environment with the quality of life once typical of urban boulevards, and to develop a theme and design encouraging street life responsive to the physical and fiscal needs.

The next step was the plan developed by Rossetti Associates, Detroit architects, to close half the boulevard to automobile traffic for a five-block stretch. Bands of concrete and brick paving made a pedestrian promenade 125 feet wide on one side of the street, decorated with flowers, trees, fountains, and pools. A 3,000-footlong space frame, painted bright red and carrying a continuous light bar, runs the length of the promenade and provides a unifying element. The pedestrian mall was completed in 1978 at a cost of \$5.5 million, with over \$3 million from the Economic Development Administration.

Linking Key Areas through Amenities

The opening of the Renaissance Center in 1977 completed the major new axis along the waterfront. In 1980, the trolley line was extended 3/8 of a mile to Renaissance Center, rationalizing the route and making the trolley a more significant element in Detroit's transportation system. On the new stretch, the line passes Hart Plaza, where Detroit holds about two dozen ethnic festivals (most lasting

three or four days) in the summers. Hart Plaza is used as an ice-skating rink in winters.

The Detroit Citizens' Railway had approximately 75,000 riders in 1979 and almost 265,000 the following year. Nearly 400,000 are expected in 1981. Trolleys run at twelve-minute intervals, and the fare is 35 cents.

In the formal grandeur of Detroit's urban plan, the trolleys add a humanizing element. The trolley line and the pedestrian boulevard promenade are mutually enhancing: the rider enjoys the stylish comfort of the vehicles and the view of the mall, and the stroller enjoys the landscaped mall and the antique trolleys. The fleet is now made up of three cars built in St. Louis in 1899; three built in Lisbon, Portugal, in the 1920s; an 1899 car with wood-paneled interior

and chandeliers; and a 1905 open-top double-decker from England. Turn-of-the-century motifs appear in other elements of the system: the motormen's uniforms, for example. The infrastructure and safety equipment are, of course, modern. The result is an attractive and functional means of transportation that recalls San Francisco's cable cars.

The final cost of the line was slightly over \$2.7 million, as shown in Illustration 2. During construction, Washington Boulevard was badly disrupted and some businesses, already in financial straits, were severely hurt. This disruption was because of work on the pedestrian plaza, rather than on the trolley line and a rebound is now apparent. Revenues currently cover about 75 percent of operating costs.

Illustration 2: Detroit Trolley Costs

\$ 676,250	State of Michigan—General Transportation Fund
422,000	Federal government—Title X, Public Employment Act
280,000	City of Detroit—In-kind services, including installation of trolley wire, street lights, utility relocations, and landscaping
200,000	City of Detroit—Capital funds
220,000	Community Development Block Grants—For brick walkways and sewer modifications to make the trolley project more compatible with the Washington Boulevard Pedestrian Plaza
2,000	Donation from <i>The Detroit Free Press</i>
920,000	City of Detroit—Capital funds for 1/4-mile extension to Renaissance Center in 1980
\$2,720,250	Total Funds for Trolley Project

Source: Detroit Community & Economic Development Department



Trolley number 14 is a 1905 open-top, double-decker model from England.

Putting the Trolley to Work

Detroit publicizes the trolley in all its promotional material. The Convention and Visitors Bureau, which handles many of the city's 600 conventions a year, uses the trolley extensively. It is considered a great selling tool and is used when the Bureau shows Detroit to meeting planners. Some groups have specified in advance that they want to use the trolley, and the Bureau is considering developing a trolley pass for conventioners, whose impact on the city's economy was estimated at \$150 million in 1980.

Washington Boulevard is now becoming one of the city's more vital streets. In the redevelopment that is taking place, the trolley line has inspired a spate of namesakes. A 29-story, \$30 million apartment tower downtown—Detroit's first market

rate high rise residence in thirty years—is now renting. Its developers named it Trolley Plaza. Other spin-offs include a Trolley Bar, Trolley Restaurant, and similar theme variations. At the southern end of the Boulevard, the Book Cadillac Hotel was rehabilitated and reopened at a cost of \$6 million; at the northern end, the Hilton Hotel will be converted to apartments. The trolley project has proved itself as an attraction for private investment. CBDA projects nearly 2,000 additional rental units in the Washington Boulevard area in this decade.

But the benefits are not confined to housing and tourism. The Downtown Record and Development Center has stated:

The focus of housing activity is important, but there is a second level of success achieved by the redevelopment of this important and historic boulevard. It is defined and measured by the degree of activity and life that is once more apparent here. And it is evidenced by those who responded on a daily basis to the enticements of this new environment: those who found the boulevard a good place for a summer stroll, for lunching beside the pools or waterfalls, or for relaxing and watching others enjoy it. The good feeling that people are beginning to have again about all of downtown Detroit seems to crystallize in their feelings about Washington Boulevard.

Washington Boulevard has become a linear version of the traditional urban marketplace, through which the trolley threads its way as a delight and a convenience. As CBDA put it, "Never has a single street in downtown Detroit been so important to our city's progress."

Oakland's 12th Street BART Station

Oakland, the sixth largest city in California, is emerging from the shadow of its larger and more glamorous neighbor, San Francisco. Transportation and accessibility are among Oakland's greatest strengths, and the Bay Area Rapid Transit system (BART)—one of the world's most advanced transportation systems—links Oakland with the rest of the Bay area through seventy-one miles of rail lines. In downtown Oakland, development and transportation have combined to create a city center that is anchored by the 12th Street BART station.

Shifting the City Center

BART's 12th Street Station is the nexus of the entire system and is serving as the focal point for the city's redevelopment. All BART lines converge at 12th Street, the largest station on the east side of the Bay, and give downtown Oakland quick and easy access to the entire region. Montgomery Street in downtown San Francisco, for example, is only ten minutes away.

This excellent public transportation network makes Oakland an extremely suitable location for offices, with the area around 12th Street being the most desirable. The City Center project, as the redevelopment area is known, is a fifteen-block, twenty-five-acre site that will soon contain 1.2 million square feet of office space, a hotel, and a convention center. All elements of the City Center project are linked by John B. Williams Plaza, a 1-acre, two-level sunken terrace designed by Sasaki Walker Associates. The mezzanine of the 12th Street BART station, well marked by a colorful neon sign, is directly accessible from the Plaza.

As originally designed, the BART

station was to be accessible only at street level. But extension of the mezzanine to an outside plaza increased the visual importance of BART and gave the city a pleasant, open and people-watching place. The cost of the breakthrough to the plaza was \$75,000.

The open door to BART makes the plaza truly the hub of the City Center project. Thirty-two commuter and shuttle bus lines arrive at the plaza. The existing garage can accommodate 1,070 cars, and a five-level garage will add a further 3,300 parking spaces.

Combining Access and Amenity

The route from the plaza to the BART station passes through several specially designed terraces. The plaza contains groups of trees and many flower-planting areas surrounded by brick walls designed for sitting. A multiple-element bronze sculpture, "Grey Portal in Afternoon Garden," by Harold Paris, was selected by the BART Art Council from a competition among fifty invited artists. The city and National Endowment for the Arts split the \$120,000 cost of the piece.

A water cascade descends through four steps into pools and fountains, while a pedestrian fly-over gives attractive overhead views of the mezzanine. Landscaping costs for the fountains and plaza were \$1.1 million.

The street level echoes the amenities of the sunken plaza. Entries to the plaza occur at interesting angles, while the walls flanking the steps serve as seating for bus stops. Trees, flowers, and sculpture have been provided at this level as well. Cultural events have been programmed for the plaza space.

Daily patronage of BART at the



Detail of Harold Paris' "Grey Portal in an Afternoon Garden," a sculpture at BART's 12th Street station.

12th Street station is expected to increase from the current average of 5,800 departing passengers (and a similar number of arriving passengers) to about 9,600 per day in 1990. Improvements planned by BART to handle the increased traffic are as follows: better signage within the station, an open-air pedestrian network linking the station with the City Center Office buildings, an underground walkway linking the station with the Trans-Pacific Center and the convention center, and continuation of the downtown Oakland Transit Shuttle. BART estimates its share of the total capital cost for these improvements at \$1.5 million, with total annual revenues of approximately \$1.66 million.

Integrating the 12th Street BART station into the extremely attractive plaza was a first step in combining excellent planning with aesthetic amenity. The city's investment in high-quality design has led to increased private investment in office space. The ten-story Wells Fargo building and twenty-four story Clorox building, opened in the 1970s phase of City Center, will soon be joined by a third new office building, a hotel and a convention center. Bramalea Limited, a firm of Canadian developers responsible for the third office building, is preparing a master plan for three to four million square feet of additional office development, retail space, parking facilities, and housing.





Marcia Nowak

City Center's John B. Williams Plaza, a one-acre, two-level sunken terrace designed by Sasaki Walker Associates.

Use of Neglected Resources: The Example of California

As land in cities becomes scarce, it is important to make effective use of all resources. Unused land in the city center is an expensive waste that can adversely affect the value of adjacent land. Poorly used lands bordering railroad and highway rights-of-way exemplify profligate use and wasteful management. In most cities, acres and acres of expressway rights-of-way that have displaced residences and businesses remain unused even when alternatives exist.

Transportation rights-of-way often carry the possibility for imaginative land use. In the joint development concept, there is opportunity for public or private use of the air rights beside or actually under them. In addition to the usual parking lots, there are opportunities for land use that provide revenue to the local municipality and services to its citizens.

In Pennsylvania, for example, air rights along Interstate 95 through Philadelphia have been used for an ice-skating rink and a mini-park. Projects such as these transform a hostile area into a community asset. At the same time, they reduce construction costs; for example, the existing highway serves as the roof of the skating rink.

Another state that has taken advantage of this concept is California, where there is a large inventory of parcels of land available for public and private development. In this section, we look briefly at a variety of California projects.

The California State Department of Transportation (Caltrans) owns many parcels of unused land acquired as the inadvertent and unintentional consequence of freeway planning. Many of the parcels alongside or actually underneath the freeways are small, odd-shaped, and unsuitable for

conventional development. Nevertheless, since the late 1960s, Caltrans has encouraged multiple use of freeway "airspace" as a means of attracting private investment and generating rentals and tax revenues for state and local governments.

Caltrans defines airspace as "any property within the Highway Right of Way limits which is capable of other uses without interference with the operation and planned future expansion of the transportation corridor. It may consist of surface rights under a viaduct structure, space above the traveled lanes, space within a loop or interchange, space between main lanes and ramps, or areas in cut or fill slopes."

Multiple use of such land can lead to good urban planning. Lawrence Halprin has observed:

We must reorder our thinking and realize that freeways must also be designed to carry their own built-in amenities with them. They should include in their design and construction the inevitable requirements of urban development—housing, parks, offices, and shops. They must in fact become a part of the city and cease being separate from it. Carrying traffic is not enough. It is city rebuilding which is at stake. In the process of city rebuilding teams of designers who are sensitive to all the vast complexities of urban problems must join together. Planners, sociologists, architects, landscape architects, economists, acoustical experts and engineers must be involved.

Reusing the Right of Way

The Caltrans Airspace Program is making freeways, even those already completed, provide some of the amenities Halprin mentioned. The

program has the following major goals:

- to integrate highways into the community in a manner compatible with local planning goals and objectives through multiple use of highway rights of way;
- to increase the local tax base through development of airspace to its highest and best use;
- to reduce the amount of private property used for highway support facilities and other public purposes;
- to enhance and protect the transportation corridor and its environs;
- to increase the return on taxpayers' investment through rental revenues; and
- to encourage the use of carpooling and public transportation to improve air quality and reduce highway congestion.

Quality design is an important part of the approval process for any proposed use of airspace. Caltrans has issued strict architectural, landscaping, signage, and maintenance standards for the development of its airspace. The environmental effect of the proposed use must be in harmony with the land-use patterns of the community, and developments are supposed to enhance the visual appeal of the transportation corridor.

Improving Improbable Sites

The Airspace Program currently has 956 parcels on its inventory, of which 459 have been adapted for other—non-freeway—uses. Ninety have been built on. Caltrans itself uses some for maintenance facilities (such as sand and gravel storage, and

warehouses) and a number of others have been developed by various state agencies (a senior citizens' center and a park have both been sited under freeway space).

The availability of long- and short-term leases encourages private development as well. Large industrial buildings, an automobile showroom, a skateboard park, and warehouses are representative of the uses to which forty-four of the parcels have been put. In Santa Rosa, a private developer has invested nearly \$1 million in a site next to Route 101. Annual rent to the city on this fifty-five year lease is 7 percent of net returns over the lease fee of \$33,000, which is pegged to a price index.

One of the more unusual developments in Caltrans airspace is Lehr's Greenhouse Restaurant in San Diego. Lehr's is a greenhouse-style building located beneath the junction of two interstate highways that carry 225,000 vehicles per day.

When Murray Lehr, an experienced restaurateur from the San Francisco area, leased the 2.5 acre site in 1977, it was a dump. The notion of putting a restaurant in such a location was so unorthodox that lenders were skeptical. Nevertheless, Lehr took a fifty-five year lease with two fifteen-year renewal options for what hindsight shows was the bargain rate of \$15,000 per year. The restaurant, opened in 1980, cost \$3.1 million to build, and is San Diego's second largest, with a seating capacity of 750.

The 25,000-square-foot building has a masonry facade and a forty-five-foot high steel skeleton covered with 7,200 square feet of a double-skinned material called Cryolon. This material, familiar in Europe, was used here for the first time in the United States. It is an effective barrier against traffic noise and is ex-

tremely energy efficient. The building is reminiscent of the landmark Crystal Palace, built in London in 1851 by Joseph Paxton, and is decorated with hanging plants and wicker furniture. From some of the seats, diners who appreciate the marvels of modern engineering can enjoy the view of the vast freeway structure.

Lehr's Greenhouse Restaurant brings together excellent architecture and engineering with the beauty of natural vegetation to create an unusual amenity for freeway airspace. It is also a financial success. Lehr now plans to develop seven adjoining acres of the airspace as an office building and recreation complex.

Making Airspace Pay

By returning its airspace to multiple use, Caltrans generated economic benefits for state and local governments. Total gross revenues from freeway airspace came to \$3,283,000 in fiscal 1979-80. Further economic benefits result when public agencies use Caltrans airspace rather than buying or leasing other property; such property remains on state and local tax rolls, rather than being removed from it by virtue of its public use. When airspace is leased to private parties, both state and local governments collect user taxes.

Caltrans estimates its statewide spin-off revenues for local governments at \$281,190 in local taxes and \$120,329 in parking taxes for fiscal 1979-80. The Airspace Program also generated nearly 1,200 jobs.



Lehr's Greenhouse Restaurant in San Diego nestles beneath the junction of two major interstate highways.

Improved Resources for Tourism

Beautiful scenery is important to nearly everybody. Surveys have shown that drivers will gladly add miles and hours to their itineraries to take a scenic road rather than an ordinary one. For millions of families, a drive in the country is by itself an aesthetic experience to which they will happily devote a Saturday or Sunday.

The attraction has been partially explained by William H. Whyte:

What makes driving along back roads such a delight? It is more than the scenery; it is the tightness of scale. You go around abrupt curves, up sudden crests, under a canopy of overhanging foliage. Sometimes the view opens up to distant hills; sometimes it narrows almost to a tunnel as you pass through the woods. But always the edge of the landscape is close by—stone fences, a line of maples, a barn—so close by that we tarry where else we would speed.

Obviously, many Americans agree. The nationwide Personal Transportation Study of 1970 found that about 10 percent of all automobile trips (accounting for 15 percent of all vehicle miles) were for purposes of recreation and tourism. In the summer, these figures rose to 12 percent of all trips (19 percent of vehicle miles), and on summer weekends to 20 percent of all trips (32 percent of vehicle miles).

Travel along scenic roads brings pleasure to passengers and drivers, but it also brings economic benefits to the suppliers of food, lodging, gasoline, and other services and to the operators of tourist attractions.

In this section we look at roads designed or managed to provide the experience of historic scenic travel, and note that such roads have aesthetic effects for local residents as well as tourists.

One scenic road, the Country Road to Carter's Grove, may give its users the sense of being on a back road in eighteenth-century Virginia, but the impression is a carefully-constructed illusion. This scenic road is only a few years old, yet it protects the tourist visiting Colonial Williamsburg and nearby Carter's Grove from the commercialism of most twentieth-century roadsides.

Vermont's country roads are not only cherished by local residents, they are an essential resource for tourism, a mainstay of the state's economy. A variety of state and local efforts preserve the attractive qualities of these roads.

Cities, too, can improve the scenic qualities of their streets. Baltimore, recently rediscovered as one of the country's liveliest tourist destinations, has undertaken a variety of scenic improvements to its approachways. These include trash removal, landscaping, and erection of attractive and whimsical "Welcome to Baltimore" signs that give the traveler the impression of really arriving someplace.

Carter's Grove Country Road guides visitors into Williamsburg, Virginia.





The Country Road to Carter's Grove



Colonial Williamsburg

At Tutter's Neck Creek, Carter's Grove Country Road crosses a curved wooden bridge.

Unless cruise ships and roller coasters are included, transportation systems are usually utilitarian before all else. While this study points up the benefits of accomplishing the utilitarian purposes of transportation in a pleasing manner, it does cede the primacy of function. Yet the Country Road to Carter's Grove is an exception, for here is a 6.5 mile stretch of automobile road whose purpose above all else is aesthetic.

The road joins two restored colonial communities that are premier Virginia tourist attractions, Colonial Williamsburg and Carter's Grove Plantation. An alternate route, U.S. Highway 60, also links the two places and is free—which the Country Road is not.

Linking Historic Sites

In Colonial Williamsburg, visitors can see about 100 reconstructed buildings, dine in an eighteenth-century atmosphere, and watch demonstrations of period arts and crafts. Restoration of this museum community began as a philanthropy in the mid-1920s. About one million visitors annually make it a remarkably successful attraction.

Carter's Grove Plantation lies a few miles to the east of Colonial Williamsburg. The main house, completed in 1755, is the center of a 790-acre estate that was once the wealthiest plantation in Virginia. Carter's Grove is now owned and operated by the Colonial Williamsburg Foundation, and is open to the public between March and November and again during the Christmas holidays. About 200,000 people a year visit the plantation, most of them coming from Colonial Williamsburg.

The Williamsburg area is not,

however, exclusively an eighteenth-century oasis in twentieth-century America. Only a few miles away is Busch Gardens, a 360-acre theme park that now draws over two million visitors a year, and that seems to be a stiff competitor for Williamsburg. Route 60 is lined with an unsightly collection of motels, gas stations, fast food restaurants, utility poles, signs and highway clutter.

Designing a Road for Atmosphere

The clutter on Route 60 presented Colonial Williamsburg with a problem. If Carter's Grove were to be successfully integrated in the Colonial Williamsburg experience, a more appealing access route would have to be found.

Since 1979, it has been possible to drive from Colonial Williamsburg to Carter's Grove without reentering the twentieth century quite so abruptly. This time warp is possible because of the Country Road to Carter's Grove, which reproduces—with minimal concessions to the motor car and the modern world—the atmosphere and environment of an eighteenth-century road in Virginia.

The Country Road is a one-way gravel-topped road passing first through the Foundation-owned land and then through a right-of-way varying in width from 300 to 500 feet. At critical points, scenic easements provide additional protection. Plantings and earth berms screen out most evidence of the twentieth century. Selective clearing and thinning have opened views into creeks and woodlands or highlighted particular trees and wildflowers characteristic of the natural landscape of Tidewater Virginia.

The twelve-foot-wide road follows natural topography rather than the

dictates of modern highway engineering. Grades are steeper and curves are sharper than on modern roads; cuts and fills have been avoided. At Tutter's Neck Creek, where a long straight bridge would have appeared intrusive, a curved bridge has become a dramatic feature of the road. The bridge is raised just above the level of the highest high tide, and so appears to float over the marsh. At all points, the road's alignment helps to enforce the fifteen-mile-per-hour speed limit.

Three bridges cross the Country Road, but the traveler sees only the weathered wood of early construction. Steel in the structures is hidden, and two of the bridges imitate the eighteenth-century king's post style of construction. An unavoidable sixty-foot underpass carries the Country Road beneath the main entrance of a housing subdivision.

Admission to Carter's Grove is \$3 for adults and \$1.50 for children. A \$3 ticket purchased in Colonial Williamsburg gives the right to use the road at no further cost. It can also be used, without admission to the plantation, for a \$1 fee. The Colonial Williamsburg Foundation estimates that 45 percent of those visiting Carter's Grove use the Country Road. For the return trip, motorists use Route 60.

The road was designed by landscape architect Meade Palmer, and cost \$1.25 million.

The Country Road is an element of the aesthetic and historic atmosphere of Colonial Williamsburg and Carter's Grove. This transportation amenity adds to scenic and historic enjoyment at the same time as it generates revenue for the plantation.

Vermont's Scenic Roads

Vermont has some of the most beautiful scenery in America, and because the state is not heavily populated or intensively developed, residents and visitors have many chances to enjoy the surroundings. Even man-made recreation facilities, such as ski trails, are inserted in a relatively unspoiled landscape.

Scenery is chiefly responsible for making tourism the state's second-largest industry; tourism accounts for 17 percent of Vermont's gross income. Only three states derive a higher percentage of their gross income from tourism. The chart below

shows the growth of tourism and its direct effect on Vermont's economy.

Because its scenery is such an important economic asset, but also because Vermonters themselves prefer an unspoiled countryside, the state has made extensive efforts toward highway beautification. Over the past thirteen years, Vermont has adopted a statewide scenic road law; removed billboards from the roadside and replaced them with uniform, unobtrusive signs; required a five-cent deposit on beverage containers; installed welcome centers on major tourist routes; and placed sculptures

alongside highways. These measures have reinforced Vermont's ability to sell its scenery as an attraction to out-of-state visitors. Natural beauty is the principal point in most of the state's promotional literature. The preservation of country roads is vigorously supported by local residents.

Legislating for Scenic Quality

In 1977, the Vermont legislature enacted a bill to "preserve through planning the scenic quality of (Vermont's) landscape and enable municipalities to designate town scenic highways which may be improved in accordance with standards combining aesthetic and functional criteria." Through this law, town and state officials have the authority to designate specific routes as scenic roads in order to preserve their character. Responsibility for designation rests mainly at the local level.

Once a road has been designated, subsequent maintenance and reconstruction must comply with standards established by the state's Transportation Board. These standards are designed to preserve scenic quality without reducing the level of safety or service required by highway users.

Removing Billboards from Roadside

The Highway Beautification Act of 1965 was the U.S. Congress's attempt to produce joint federal-state efforts for scenic development and road beautification of highways constructed with federal funds. The act limits placement of outdoor advertising and junkyards. Nationwide, the law has not been entirely successful. Some critics charge that the program has been unduly expensive, while others complain that more than fourteen billboards for every ten miles of

Illustration 3: Vermont Tourist Income 1950-80

Year	Number of Visitors	Trip Expenditures
1950	1,200,000	\$ 75,000,000
1955	2,100,000	100,000,000
1960	3,250,000	120,000,000
1965	4,000,000	140,000,000
1970	6,000,000	200,000,000
1975	6,800,000	280,000,000
1976	6,800,000	310,000,000
1977	7,100,000	380,000,000
1978	7,400,000	420,000,000
1979	6,600,000	430,000,000
1980	6,800,000	480,000,000

Figures are estimated. Trip expenditures are made by out-of-staters for food, lodging, gasoline, activities, and incidentals. Major equipment purchases are not included. Travel expenditures by Vermonters are not included.

Source:
Division of Research and Statistics,
Vermont Development and Community
Affairs Agency

highway are still standing.

In Vermont, however, there are no nonconforming, compensable billboards along the roads and highways. In 1968, the state adopted the nation's most stringent law controlling outdoor advertising. The law stated, in part:

A large and increasing number of tourists has been coming to Vermont, and as a result the tourist industry is one of the largest sources of income for Vermonters, with an increasing number of persons directly or indirectly dependent upon the tourist industry for their livelihood.... Scenic resources of great value are distributed throughout the state, and have contributed greatly to its economic development, by attracting tourists, permanent and part-time residents, and new industries and cultural facilities. The scattering of outdoor advertising throughout the state is detrimental to the preservation of those scenic resources and so to the economic base of the state, and is also not an effective way of providing information to tourists about available facilities.

This law set the criteria for uniform signs in approved locations and appropriated some funds for removal of non-complying signs by a specific deadline. When the law was passed, there were about 4,700 legal outdoor advertising signs in the state. It is a measure of the attitude of Vermonters toward their state's scenic resources that 3,400 of these signs were removed promptly with no compensation. As of December 31, 1981, compensation for the remaining 917 signs cost between \$500,000 and \$560,000, with the federal government paying 75 percent under the 1965 Highway Beautification Act.



Vermont Travel Division

In place of the privately-erected signs and billboards, the state created tourist information centers which list services and businesses in the area. These are supplemented by sign plazas, which concentrate large numbers of standardized signs in specified locations, and by individual direction signs at appropriate locations. Businesses pay \$50 for these standardized signs, for a total of \$353,000 in state revenues from fees as of May 1979. The legislature has been asked to raise the fee to \$125 to cover program costs.

When the law was proposed, business interests were generally opposed, but criticism has died down with experience. Gar Anderson, formerly executive vice president of the Hotel-Motel-Restaurant Associa-

U.S. 4 winds through Vermont's serene Ottauquechee Valley near West Woodstock.

tion, stated, "Most of our members realize the importance of the law. It doesn't take too many trips down to Florida to realize why the law's a good one. A lot of people will blame bad business or a lack (of business) on the sign law, but the point is that natural beauty is what we sell in the travel industry." In July 1978, the Vermont Agency of Transportation, in cooperation with the Federal Highway Administration, published an evaluation of the state's travel information program. Survey results showed that despite occasionally con-

fusing or poorly-located signs, most travelers found the standard signs useful and attractive. More than 90 percent of the travelers interviewed said they had noticed the standardized signs, and 85 percent said they found them attractive.

Detering Litter with the Bottle Bill

Vermont is one of a few states requiring a deposit on all beer and soda containers. The aim of the requirement is to encourage the use of refillable bottles while leaving consumers free to buy other types of containers that, when returned, can be recycled. The measure is a strong deterrent to littering, and promotes conservation of energy and natural resources.

The bill grew out of a 1970 statewide roadside cleanup day in which 75 percent of the state's population participated. "Green-Up Day" continued as an annual event for three years, but enthusiasm diminished because of the frustrating nature of the problem: the roadsides remained clean for a short while, and then litter accumulated again.

The bill was passed in 1972 by a very narrow margin. An attempt to repeal it the following year was defeated by a wider margin. In 1975, the legislature strengthened the law by an overwhelming vote that is matched by popular support. Polls show that Vermonters favor the restriction by better than ten to one. Travelers seem to respect the anti-litter law and sentiment, at least while they are in the state.

The deposit on beverage containers does reduce litter. In spot checks conducted immediately before and after the implementation of the law, the state Highway Department estimated that the beverage container portion of



Vermont Travel Division

Cyclists enjoy a Vermont panorama near Waitsfield.

roadside litter was down by 76 percent and that total litter volume was down by 35 percent. These figures have improved considerably over the eight years the law has been in effect. Adoption of similar laws in neighboring states has helped. The return rate for beverage containers was 83 percent in the first year of enforcement and is now 95 percent. This rate leaves very few bottles and cans to be discarded on the roadside.

In the first four years of enforcement, the Highway Department was able to reduce its employee hours for litter pickup by 56.5 percent even without the massive assistance of Green-Up Day volunteers. In that

period, while wages increased 18 percent for cleanup crews and equipment costs increased 90 percent, the cost of litter collection went down by almost one-third (see Illustration 4). The figures reported by the Department are strong evidence, but stronger still is the visual evidence: there is virtually no litter along Vermont's roadsides.

Illustration 4: Cost of Roadside Cleanup in Vermont

Fiscal Year	Miles of Two-Lane Roads	Employee Hours	Cost
1973	2,814	57,439	\$250,346
1977	2,923	24,983	172,030
% change	up 3.87%	down 56.5%	down 31.3%

Baltimore's Approachways

Over the past twenty-five years, as a result of \$1.5 billion in reinvestment, Baltimore has transformed itself from a decaying city into an exciting one. As a recent *Time* cover story and the Philip Morris Award for Urban Livability show, the city has gone a long way toward creating a new self image for itself. As Mayor William Donald Schaefer put it, "Six years ago, I predicted that people would spend vacations in Baltimore. Everyone laughed, but it has proved true."

One factor in Baltimore's turnaround has been the city's success in making small sums of money go a long way. For example, the attractive graphics that welcome travelers at the approachways of the city are unmistakable—and inexpensive—signs of its newly-found pride. Whether one enters Baltimore by road, rail, or air, brilliant welcoming messages communicate that growing self-confidence.

Improving Dingy Gateways

The enhancement of Baltimore's gateways began in response to Mayor Schaefer's concern that people entering the city were immediately confronted by distasteful sights. One "Welcome to Baltimore" sign, for instance, stood atop a heap of discarded tires.

The improvements began in 1976 at Russell Street, an entrance to the city from Washington, D.C., and the South. Russell Street was then an ugly stretch of road through an industrial area. By brightening its own facility in the area—a municipal waste treatment plant—the city took the first step towards improving the appearance of a significant entrance to Baltimore. Once the drab building had been painted bright yellow and



Baltimore's "Trailblazing" system of signs has helped tourists find their way through the city.

orange, the mayor and the Planning Department approached businesses located along Russell Street and encouraged privately-financed improvements to these properties.

No city money was available, but most of the firms cooperated, and within a year the area was much more attractive. Dilapidated housing got a facelift, and an adjacent piece of land was transformed into a neighborhood park. The result: travelers entering Baltimore via Russell Street no longer received an impression of urban blight.

The success of Russell Street improvements led to a continuous program of cleanup and landscaping along all of the city's approachways. The planning department launched a conscientious program of surveying the city's arteries and sending work crews to the problem sites. This program continues today, and even the mayor gets involved; he is known to spend his weekends traveling and

carefully noting the trouble spots.

The highly visible results of these efforts have created a ripple effect in surrounding areas: private owners are now much more likely to cut their grass, paint a peeling building front, and generally maintain their property. This small-scale effort, the dedicated attention to the maintenance of approachways, was combined with a few major projects at strategic entrance locations to create a successful formula for a new first impression of the city.

Brightening the Railway Bridges

In another approachways project, railway bridges spanning road entrances to Baltimore were repainted. A railroad bridge over Pulaski Highway, an eastern approach route, was given a bright graphic treatment. The design incorporates multi-hued bands of color and huge three-dimensional letters spelling "Baltimore." It is a welcome sign that is seven feet high and seventy-five feet long.

A bridge in the retail area of Brooklyn in South Baltimore was transformed into a rainbow. The traveler arriving by way of Belair Road passed under this color-saturated railroad bridge. To date, eight bridges along the approachways have been turned into these graphic welcome signs. The designs were the work of the city's planning department. A professional sign-painter stencilled in the designs, and most of the work was done by CETA crews. Materials and equipment for the eight bridges came to \$10,000. The city absorbed small costs for Department of Public Works crews who redirected traffic during the painting. Including CETA labor, the cost was about \$7,000 per bridge.



This cab stand includes a map of points of interest in the city.

Greeting Passengers with Graphics

The rail passenger arrives at the imposing Pennsylvania Station, built in 1911 and listed on the National Register of Historic Places. As part of the rehabilitation effort to improve the station's function and appearance, a four-color graphic spelling "Baltimore" has been painted on a bridge abutment at platform level. The name of the city on a train station platform is conventional, but here it has been transformed into a twenty-foot by eighty-foot playful mural. The overlapping red, blue, yellow, and orange letters present a bouncy greeting to the train traveler.

The city's airport, Baltimore-Washington International, has recently undergone a \$64.5 million refurbishment. Inside the terminal, a two-level grand concourse is a showcase for excellent signing and graphics display. Stylized airline logos and bold directional panels instruct the unfamiliar traveler while simultaneously highlighting the airport's role as a civic gateway and reception center. At a cost of \$250,000, this graphic system is a memorable feature of a visitor's arrival in Baltimore, and a functional one.

Trailblazing

Once inside the city, today's visitor is almost certain to head toward the Inner Harbor, the focus of much of Baltimore's excitement. To get there, or to any of the city's other main institutions and points of interest, tourists can follow the green, blue, and white signs of the city's Trailblazing system. Three-hundred-forty of these signs in 285 locations replace the jumble of non-standard signs that had been erected by individual institutions and agencies.

This attractive, coordinated, and easily followed network of directional signs cost \$262,000. Half the cost was supported by the private sector; the city paid the other half.

Baltimore is increasing the use of graphics as part of an over-all program called "Signing the City." The new signs will be located on approachways as well as within the city. The city limits at Russell Street will be marked by a forty-one-foot red steel pylon spelling out B-A-L-T-I-M-O-R-E vertically in 3½-foot letters. Smaller sculptural red steel "slices" will announce the city limits along other major approachways. These seven-foot-by-fourteen-foot panels will be constructed of ¾-inch steel with the word BALTIMORE cut out in large letters at the top. The pylon will cost \$61,000 and the cost has been donated by a private firm. The private sector will also pay part of the cost of the "slices" as well.

"Ten years ago," says Sandy Hillman, director of the Office of Promotion and Tourism, "nobody thought of Baltimore as a tourist destination." A recent study estimated that 2.25 million tourist visits were made to downtown Baltimore during the summer of 1980. The approachways program is an important statement—in graphics—that Baltimore cares about its guests.

"Flag" signs in the system measure two feet across.



Community Image Building

It is appropriate that transportation rights-of-way are referred to as “arteries.” The flow of people through a community and between communities is one of the vital processes of a region. Just as arterial pressure is one of the “vital signs” of the human body, so the visual appearance of transportation corridors is a vital sign of the health of a community. An attractive route is the mark of community well-being, and a poorly maintained one is often the symptom of community affliction.

In many cities an existing transportation facility provides efficient service, but at a high cost to the community’s image. Two common problems are physically obtrusive facilities that effectively divide a community, and tight maintenance budgets that permit even attractive facilities to seem run-down and blighted.

In this section, we examine two communities that turned unattractive transportation systems into new assets for area revitalization. In Woodside, Queens, a citizens group found ways to make the elevated tracks and station of the subway line less of a barrier. By making the El structure less threatening and ugly, the local residents were able to reunify the neighborhood on the two sides of the tracks and contribute to community revitalization.

In Cleveland, Ohio, a citizens group organized to clean up the trash along a rapid rail corridor and did more than simply replace an eyesore with attractive landscaping. The group proved so successful at organizing volunteer efforts and at fundraising that it has been given wider responsibilities for revitalizing Cleveland’s neighborhoods.



Abe Frajndlich



Cleveland's dense rail line corridor presents a constant challenge to the city's efforts to improve its image.

Woodside on the Move



Joe Farrington

History poster at Woodside's subway stop.

Woodside, a neighborhood in New York City's Borough of Queens, is about ten minutes from Manhattan on the elevated lines of the Interborough Rapid Transit (IRT) subway or Long Island Railroad (the "El"). The elevated structures are not only a principal part of transportation into and out of the community; they are also its dominant physical features.

The El runs along Roosevelt Avenue and provides a visual, and to some extent a physical, barrier

dividing Woodside in two. Residents have mixed feelings about the El, mindful as they are of the convenience on which they depend and of the ugliness that has prevented their main street, Roosevelt Avenue, from being a more appealing place. There is no realistic prospect of the El's disappearance or of its replacement by a more attractive mode of transportation. But in the past few years an organization called Woodside on the Move (WOTM) has managed to make the El much less of an aesthetic blight. By focusing improvement projects on the El's structure and surroundings, WOTM has turned the El to its advantage and made possible the economic revitalization of several blocks of Roosevelt Avenue.

Organizing the Neighborhood

Woodside grew up as the IRT tracks were laid down in the 1920s. The working-class neighborhood of 50,000 avoided the general blight that hit many of the older neighborhoods of Queens, but by the mid-1970s there were definite signs of decline. City services were down. Litter, shabby storefronts, and neglect were becoming increasingly common. Businesses began to leave Woodside. Unemployment rose. On this scene appeared Woodside on the Move, a neighborhood group whose original ambition of decorating an El underpass for the 1976 Bicentennial expanded into the goal of overseeing the implementation of a broad revitalization program.

The mural painted in 1975 was a vivid historical scene 135 feet long. The volunteers—homeowners, civic and commercial leaders, merchants, bankers, and manufacturers—received \$10,000 from the New York State Council on the Arts. Pleased with their ability to organize and raise funds, they decided to move on to other issues. Incorporated as Woodside on the Move in 1976, the group has received over \$5 million in grants and an additional \$418,000 in in-kind contributions. It now has a staff of nine.

Illustration 5: Growth of In-Kind Contributions

Year	Amount
1976	\$ 22,000
1977	35,000
1978	89,000
1979	142,000
1980	130,000

Illustration 6: Building Toward the Future

A single grant can generate other funding. This chart indicates the major sources of funding received by Woodside on the Move over five years. It includes such monies as Community Development funds spent in Woodside by city agencies.

							1975
							\$10,000
							1976
							\$31,700
							1977
							\$571,000
							1978
							\$823,200
							1979
							\$1,419,000
\$97,500 (Pending)	\$48,000 (Pending)	\$43,000	\$1,000,000 (Pending)	\$68,000	\$133,000	\$29,500	
DOE Chase	CCF OTB CETA Title VI NYSCOA	CETA Title VI EDA NYS Supplemental Budget	CD V	NYS Supplemental Budget CETA Title VI Citibank	SYEP Chase NY Comm. Trust Citibank	Neighborhood Preservation Program	
Employment Service	Cultural Activities	Commercial Revitalization	Roosevelt Ave. Construction	Operating Expenses	Summer Youth	Housing	

Total of Allocations, Grants, and Contracts

Abbreviations	
NYSCOA	NYS Council on the Arts
Chase	Chase Manhattan Bank
Manu. Hanover	Manufacturers Hanover Trust
Citizens	Citizens Savings and Loan
Savings	Association
DOE	NYC Department of Employment
SYEP	Summer Youth Employment Pro gram
NY Comm.	New York Community Trust
Trust	Community Development III
CD II	Community Development IV
CD IV	Community Development V
CD V	Neighborhood Preservation Program
Neigh. Pres. Prog.	Off Track Betting
OTB	Economic Development Agency
EDA	Cultural Council Foundation
CCF	

The growth of grant money has been even more dramatic, as the chart of government, corporate, and foundation contributions makes clear.

Improving the Transit Corridor

The planning and implementation of Roosevelt Avenue reconstruction was a major effort. The urban design section of the city's department of transportation drew the plans, which focused on the El station. The first phase, covering the strip between 58th and 61st Streets, was completed in 1980 at a cost of \$1.5 million (funded by block grants from the U.S. Department of Housing and Urban Development [HUD]). The second phase, which will extend the improvements to 70th Street, was scheduled to begin in 1982.

The project brought road and sidewalk improvements to Roosevelt Avenue and created two mini-parks beneath the tracks. The parks were landscaped and furnished with natural-finish wood benches, brick paving, and lighted kiosks. The El structure was painted to complement its mural, and crosswalks were paved with high-contrast black and white precast concrete elements that facilitate pedestrian traffic between the rail station and adjacent bus stops.

The El structure and surrounding buildings determine the scale of the project. Bricks match buildings, trees help to screen the El, and the station itself has been brightly painted. It is scheduled for further improvements under the city's Adopt-A-Station program. The revitalization has been attractive and functional.

Woodsiders have taken advantage of the improved facilities. In early 1981, they held an historical exhibition at what is called the Woodside Subway Museum: poster-sized

photographs in the station's advertising spaces (a \$3,500 in-kind donation by the New York Subways Advertising Company) displayed "A History of Woodside Families 1880-1945." The response from local residents was positive, and there was no graffiti. This exhibition was a successful attempt to make the El a positive presence in Woodside. Eleanor Denker, executive director of WOTM, observed, "The El is an important part of our neighborhood. It seemed logical to use that space for such a neighborhood-oriented project."

Building on Voluntary Action

WOTM has plans for housing improvements, further revitalization of the commercial strip (including a graphic design scheme), employment and training programs, and cultural activities. The group continues to emphasize the transportation system, both because of its importance and because of its sheer bulk. An exemplary market study made two vigorous recommendations concerning the El. (1) The modernization of the station should be aggressively pursued by the Woodside community as an integral component of a new image for the business district. (2) The abatement of excessive noise levels generated by the elevated trains should be actively promoted by the business community.

Community reaction indicates that Woodsiders are becoming more aware that the El has a great effect on the atmosphere of their neighborhood and that improvements are in fact possible. Merchants on Roosevelt Avenue are optimistic about the potential of visual and noise-level improvements. Harry Communiello, manager of Woodside Deli, points out that the street improvements have

helped bring outsiders into the neighborhood. Another Woodside merchant and long-time resident, Ed Fowley, noted that the improvements to the El and commercial strip have created a positive image for the neighborhood.

Business people who have funded Woodside on the Move feel proud of their demonstration of commitment. "Funding the construction of the parks on Roosevelt Avenue showed Woodside that we care about its closely knit community," explains Tom Carbone, senior community relations director of Off-Track Betting Corporation. "Our office is more than just another branch in Queens. We care about its future."

A local real estate broker, Dave Sanders, comments that of the one- and two-family houses sold in Woodside, most are being bought by younger families. "Property values are increasing," he notes, "and so is building activity."

Cleveland's Rapid Recovery



The three-year rehabilitation of the degraded right-of-way along Cleveland's rapid transit line and concomitant pick-up in business activity and community morale demonstrate the halo effect of beautification projects. For Cleveland, whose economic woes were front-page news in the 1970s, the rail line's shabby appearance seemed a grim prediction of future decline. Travelers saw embankments that were huge junkyards, tunnels, and walls covered with graffiti, and vast fields of weeds. The *Cleveland Plain Dealer* quoted a businessman who wrote to a local corporation after a job interview, "I cannot ask my wife to live in a place that is so literally a dump."

The rapid rail line had been famous as one of the nation's finest. It was

formed of the Cleveland Interurban Railroad, which had linked the eastern suburbs with the city center since the 1920s, and the Rapid Transit Line, which began in the 1950s. When the airport section opened in 1968, Cleveland became the first city in the Western Hemisphere to have a direct rail link between the airport, city center, and suburbs. The system consists of 43 stations and 31 miles of track. It carries 67,500 riders daily. Since 1975, it has been operated by the Regional Transit Authority (RTA).

Organizing the Recovery

"You can't say a city is alive and well unless it *appears* to be alive and well" is the attitude of Duane Salles, now

Eliminating trash and planting small trees have enabled Cleveland planners to begin improving the city's transit corridor.

an executive with National City Bank. In 1976, his resolve to improve the appearance of the rapid rail corridor set off a chain reaction of public and private activism. It has resulted in a significantly improved climate of commuting and doing business in Cleveland.

In less than five years, the task of transforming urban wastelands into an appealing front door to the city is 80 percent complete. Moreover, the efficacy of the treatment—which has also strengthened leadership, exper-

tise, and personal participation in community issues—has been so widely recognized that the remedy has been prescribed again, this time on a city-wide basis.

In 1976, Salles and a citizens task force of representatives from Case Western Reserve University, the Cleveland Department of Community Development, the RTA, the Growth Association, and others developed a proposal to clean up and landscape the rapid rail corridor. They identified and commended several corporations already making unusual efforts to keep their portion of the corridor attractive.

The following year, Rapid Recovery (RRx) was incorporated as a non-profit organization to solve the problem of dumping and trash accumulation along the corridor. RRx secured \$169,500 in CETA funds and local donations. It then set the pace for future fundraising with a dramatic "Insta-Mural." This 160-foot-by-40-foot painting, adjacent to an old railroad bridge, was completed in forty-eight minutes by sixty-five volunteers from two local trade unions.

In 1978, RRx undertook the *Visual Corridor Study* to put their efforts on a professional basis. The resulting plan called for guided volunteerism in order to gain maximum leverage from time, money, and effort. The right-of-way is divided into "trackside homesteads" assigned to volunteer groups. Adjacent businesses are urged to improve contiguous parcels, and area garden clubs and service organizations are aided in creating floral "rapidscares" and wayside murals. These efforts are publicized in the media and rewarded by "Good Deed Certificates."

Over seventy corporations and associations participated in the first

Illustration 7: RRx—A Summary of Results

	1978	1979	1980	Total
Number of projects	16	21	44	81
Murals	5	3	3	11
Landscapings	8	9	29	46
Cleanups	3	9	11	23
Number of volunteers	206	321	579	1,106
Total volunteer hours	1,635	2,713	3,952	8,300
Tons of trash removed	283	654	584	1,521
Trees & shrubs planted	1,526	3,490	2,331	6,347
Seedlings planted	875	500	1,750	3,125
Perennials planted	400	1,667	1,883	3,950
Gallons of paint used	155	33	66	254
Feet of fencing installed	—	—	1,160	1,160

part of the plan, which was focused on the west side of the rapid rail corridor. In 1980, the east side became the target, and neighborhood groups joined with businesses to clean up their side. With the project approaching successful conclusion, RRx sees maintenance as the principal item remaining on its work plan. However, municipal leaders have asked RRx to extend its efforts to improving the physical appearance of the city as a whole.

Funding the Recovery

Although its professional bases are solid, RRx remains above all a volunteer organization. This is due in part to the site-specific nature of its missions. Rapid Recovery was created to tackle a single task in a single locality and then to go out of business except for a small maintenance force. Its successes can be enumerated by a review of its first three years.

In the first phase, federal funds made up 62 percent of the cash

received. Donations of labor, materials, and services amounted to only 55 percent of the cash contributions received. In the second phase, federal funds accounted for only 35 percent of cash received, and gifts in-kind were one third greater than the cash contributions. By the third phase, federal funds were down to 26 percent of the cash received, and donations of labor, materials, and services remained high.

Over the first three years, federal funds accounted for 45 percent of the total cash received, but nearly all of this was for CETA workers in the initial phase of Rapid Recovery. Once launched, the program became self-sustaining. What is more, it is sustained by local people who were as willing to reach for a scythe as a checkbook.

Consolidating the Recovery

Rapid Recovery enters its fourth year with a new challenge: to continue the commitment of corporate leaders to upgrading the physical environment

Illustration 8: Funding Rapid Recovery

Phase I Summary

Funding Contributions:	
Corporations, clubs, associations	\$ 40,590
Foundations	96,350
Individuals	210
Federal grants	220,956*
Funding total	\$358,106
Gifts-in-kind:	
Labor, materials, services	198,656
Total contributions	\$556,762

Phase II Summary

Funding Contributions:	
Corporations/organizations	\$ 36,477
Foundations	98,025
Individuals	1,000
Federal grants (CETA)	59,150*
Other (National Endowment for the Arts and Ohio Arts Council)	14,182*
Funding total	\$208,834
Gifts-in-kind:	
Labor, materials, services, ad space	279,132
Total contributions	\$487,966

Phase III Funding Summary

Corporations/organizations	\$127,504
Foundations	84,000
Federal grants (NOACA)	57,500*
Other (Cuyahoga County Commissioners, New Cleveland Campaign/NOVA)	2,656*
Funding total	\$217,660

* restricted use

of their workplaces. Improvements to the city's appearance are considered vital to its economic health, and RRx has been asked to spread its good neighbor philosophy throughout the city.

The municipal administration, eager to help corporations upgrade their neighborhoods, has had to recognize that its resources are strained to the limit. Mayor George Voinovich, in asking help of RRx, explained, "We felt that based upon Rapid Recovery's past performance in helping to beautify long-neglected areas, that it would be the most appropriate agency to coordinate and implement a city-wide reclamation program."

The business community now seems to recognize the benefits to be gained by enlightened self-interest. "Because of our improvement efforts, people like to work for us," says Morton Mandel, chairman of the board of Premier Industrial Corporation, a firm that has recently decided to expand its Cleveland operations. "We've been able to attract good people, and we've been able to retain people. We're doing well by doing good."

Enhanced Pedestrian Circulation

No American city can expect to thrive if its most important commercial areas are not conveniently accessible by foot. Office workers, shoppers, and patrons of cultural activities want to be able to walk conveniently, safely, and comfortably to downtown areas, preferably through interesting and attractive surroundings.

Some cities, such as Minneapolis and St. Paul, Minnesota, and Oklahoma City, Oklahoma, are developing integrated networks of climate-controlled walkways, either above or below the street level. These aesthetically pleasing systems keep the central business district pedestrian territory even in harsh weather.

In other cities—Seattle, Washington; Chelsea, Massachusetts; and Memphis, Tennessee—short and attractive connections are making the central business district easily accessible on foot to shoppers and employees who leave their cars in peripheral lots.

Because the walkways are meant to be appreciated at eye level and at walking speed, the designers have paid great attention to detail. Walkways are made to the measure of people, not to the requirements of machines.





Office workers and tourists in downtown Seattle.

Seattle Hillclimb Corridor



The Hillclimb Corridor connects with area warehouses that have been converted to retail uses.

For quality of urban life, no American city is more highly praised than Seattle. Polls of planners and the public alike rank it as the most livable city in the country. Some of the contributing factors are givens—for example, the hilly site and damp weather—but others are the result of thoughtful design and management of resources. An instance of fine design fitted to a demanding local situation is the Hillclimb Corridor, a pedestrian connection between Seattle's historic waterfront and the central business district. This design element reestablishes a traditional pedestrian route (via the Pike Place Market) that was blocked in the 1950s by a double-deck multi-lane freeway sealing off the marketplace from the waterfront.

Reclaiming the Harbor and Saving the Market

Seattle's central waterfront was abandoned after construction of new container facilities farther out in Elliott Bay. It went through a decline before its present resurgence with tourism, shopping, and restaurants. Parks, pedestrian promenades, and an aquarium have been developed at public expense. The ferry system has been expanded by the state into a major element in the region's transportation. The central waterfront is now one of the city's biggest attractions.

The central business district overlooks the waterfront from a steep hill, sharply separated from the activity below. While there is a free downtown bus service, first introduced in 1974, the route between business district and waterfront is long and circuitous. Nevertheless, there is a short and direct route—not practical for motor vehicles—through Pike Place Market.

Pike Place is Seattle's center for food-related businesses. It was founded as a farmers' market in 1907 and nearly wiped out in 1969 by an urban renewal project. Friends of the market campaigned to save its forty-building complex, and a 1971 referendum established a seven-acre tract in the midst of the urban renewal area as the Pike Place Market Historical District. Investment in building rehabilitation is estimated at \$12 million. Residents use the market intensively, and tourists now regard it as another of the city's attractions.

Designing for Circulation

The revised 1974 Urban Renewal Plan, adopted after the referendum had saved the market, gave special attention to the need for circulation between the revived waterfront, the preserved market place, and the fringe area of the central business district. Planners aimed to encourage pedestrian access without excluding vehicles necessary to market activity. The guidelines adopted for use of street space in the area included the following points:

- reduced automobile impact;
- higher quality of pedestrian movement;
- higher priority to traffic on Pike Place;
- access to short-term parking;
- improved vehicular circulation without enlarging right-of-way;
- transformation of alleys into people-oriented pedestrian routes;
- strengthened identity of the market as an area linked to the parking facilities;

- improved bus facilities and locations to encourage use of public transit.

The rehabilitation included the installation of traditional lighting fixtures and canopies over the sidewalks. An important feature of the design is the through-block easements permitting pedestrians to walk to all parts of the historic district.

The key element in the plan is Hillclimb Corridor, a pedestrian way in a hillside park that connects the main market buildings with the central waterfront below. Covering a vertical distance of only 120 feet and a horizontal distance of one block, Hillclimb Corridor is vital in giving pedestrians access to the city, transit system, and parking lots. The corridor does not provide express transportation, but gives pedestrians an opportunity to filter through the many buildings bordering it on either side. It has been a major inducement to area revitalization.

Constructing the Pedestrian Corridor

The work was planned for two phases. The first saw the installation of concrete stairs and terraces that crossed the expressway by a bridge. Accents of brick paving match those of the waterfront promenade and park. Landscaping, irrigation, and traditional lighting were included. Construction began in 1977. The first phase was completed in a year for \$1 million.

Second-phase plans included a four-wheeled elevator that could carry 1,000 people per hour up an inclined guideway. The plans have not yet been implemented. Funding agencies have not been convinced that the elevator is a legitimate transportation element.

Linking New City Spaces

The area of the hillside park had been a gathering place for teenagers and the site of frequent acts of vandalism. It is now being developed privately for a variety of purposes, including luxury housing. Two warehouses abutting the hillside park have been converted to retail and residential use at a cost of \$3 million.

The director of the Pike Place project, Harriet Sherburne, calls Hillclimb Corridor "the spine that made the Pike Place Market work." A restaurant uses one of the corridor's

terraces for outdoor dining, and just south of the corridor, a \$5-million condominium project will connect itself to Hillclimb using a landscaped pathway.

Plantings attempt to lighten the concrete landscape leading down to the waterfront.



St. Paul Skyways

In most American cities, the central business district is subject to conflicting pressures: on the one hand, the need to concentrate a population for maximum economic activity; on the other, the need to allow physical movement in a reasonably efficient and convenient manner. Few cities have been able to create use patterns that successfully integrate automobile access, parking space, and pedestrian circulation. More recently, the value of grade-separated pedestrian networks, either above or below street level, has been recognized as one promising solution to the problem. These systems, with controlled climate and room for additional shops and services, not only encourage pedestrian access to the central business district, but also allow a far greater intensity of commercial and office use. One of the most successful of these is the skyway system in St. Paul, Minnesota.

Because of St. Paul's rigorous climate—like that of its Twin City, Minneapolis—there were clear advantages to be gained from the development of a climate-controlled pedestrian network. The skyways are glass-enclosed, mid-block pedestrian paths that typically connect the second stories of office buildings and retail stores across city streets. They are also quasi-public corridors through private spaces of office buildings and department stores. The standard twelve-foot width eliminates crowding and leaves room for magazine stands, refreshment centers, and temporary art exhibits. Separated from both traffic and climate, pedestrians are offered a double respite from city pressures.

The first of the skyway bridges was built in Minneapolis in 1962, when a private corporation decided to link two of its office buildings. St. Paul

began its system as part of the city's first urban renewal project in 1965, with the prototype linking a new federal court building with an existing office and a parking ramp. It was not until 1973, however, that enough bridges were connected for either city to have an integrated network. The Minneapolis skyways are essentially private developments, whereas in St. Paul, they are a public venture, part of the public transportation system.

Connecting Private Buildings with Public Spaces

The St. Paul skyways are a public right-of-way or "envelope" penetrating privately owned buildings. The city's Housing and Redevelopment Authority (HRA) reimburses private developers for the portion of the system, including escalators, that passes through new construction. HRA installs pedestrian furniture and graphics, and pays up to half the cost of bridges over city streets. A typical skyway bridge costs about \$360,000.

Since the network is a public easement, it is open during hours that are set by the city and the building owners—generally 6 a.m. to 1:30 a.m. daily. (The Minneapolis skyways, privately owned, may be closed whenever the owners wish.) Generally, building owners are responsible for maintenance.

St. Paul City Council has adopted the following policy on the system:

The primary purpose of this skyway system is to divert pedestrians from the minimal width street-level sidewalks, enabling pedestrian traffic to move in an enclosed environment protected from adverse weather and vehicular traffic. The skyway system has significantly reduced pedestrian-vehicle conflicts at street level, par-

ticularly during periods of peak traffic, thereby permitting a smoother flow of vehicular traffic and greater safety for the pedestrian.

Another important benefit of the skyway system is the opportunity afforded developers to provide shop and office space abutting the concourse. In the use of such shop space, the public will be unhindered by adverse weather conditions and traffic, thereby promoting the desirability of shopping and doing business in the connected buildings and contributing to the economic strength of downtown St. Paul. The skyway system, through the efforts of the developers, also may contain sculpture, water displays, artwork, and other elements contributing to the cultural and aesthetic enrichment of the citizens of the city, thereby becoming a focus of activity in the downtown area.

Creating a Network in Capital Centre

Capital Centre is the heart of downtown St. Paul. By 1974, skyways linked twelve blocks of the area. Now, more than twenty-five blocks with over 100 buildings are connected. The bridges have been consistently designed throughout the area, with exposed steel trusses painted a deep brown. The floors are terrazzo tile and the ceilings an egg-crate grid.

The network now runs for 2.6 miles and leads to over 250 shops and services, eight parking ramps, and an indoor park. The skyways are connected to the street level by numerous escalators and elevators that permit motorists to enter the city and park at peripheral locations, then walk pleasantly to their destinations. The result is reduced motor vehicle activ-

ity in the core of the central business district.

Pedestrians do use the skyways. A 1974 study by Barton-Aschman Associates showed up to 1,200 people using one skyway bridge during a single peak hour (noontime). Where there was a choice between using a skyway and walking at street level, the skyway attracted more pedestrians during nine months of the year. All indications are that the more extensive the network, the greater the proportion of pedestrian traffic it will draw.

St. Paul's skyways encourage a compact central business district but facilitate pedestrian access. *Urban Land* describes the effect on land use:

Grade-separated pedestrian systems appear to support the goal of a "compact" downtown, yet encourage longer walking distances. A frequently cited planning objective is to try to create a more compact pedestrian-oriented downtown, permitting the clustering of a wide variety of activities that are easily accessible to all. Grade-separated pedestrian systems tend to advance this objective by encouraging a compaction of retail and service activities on a level above (or below) existing activities. Because grade-separated systems can foster uninterrupted pedestrian travel over (or under) existing streets and can provide this in an environment free from inclement weather, pedestrians are encouraged to walk longer distances than they would on an at-grade system. As a result, other planning objectives, such as encouraging walking to peripheral parking garages, may become a realistic objective. This, in turn, may enhance the goal of decreasing motor vehicle traffic in the CBD cores.



A skyway in Capital Centre.



Retailing the Air

Retail business is the chief economic beneficiary of the skyway system. In a 1979 study, a consultant compared St. Paul to other United States cities and found that the annual noontime expenditure per downtown employee in Minneapolis-St. Paul was \$1,500 versus \$700 in cities of comparable size. The climate-controlled skyway system enhances shopping: For the 30,000 downtown employees in St. Paul, this means \$2.4 million in additional sales annually.

In "The Economics of Skyway Systems," a 1981 report by Barton-Aschman Associates, Inc., officials at two St. Paul department stores are said to recognize that they have two "main" floors because of the skyway

system, in effect doubling their prime space. The same report shows that second level rents in office buildings (usually less expensive than street level rents) are from 50 percent to 100 percent higher than first floor rents in St. Paul:

Retail/commercial space in downtown St. Paul currently rents for \$10 to \$12 per square foot on the ground level of buildings, and \$16 to \$20 per square foot on the skyway level of the same buildings.... In relation to office space, all buildings now have a premium of at least two dollars per square foot for office space on the skyway level as compared to office space in other places. This is in contrast to second floors of buildings that usually were hard to rent for of-

Skyways in St. Paul have proven more popular than sidewalks.

fice space prior to the evolution of the skyway systems. Vacant retail/commercial space on the skyway system occurs only in low-traffic areas where there is not much pedestrian activity.

The Chamber of Commerce, the City Department of Planning and Economic Development, and the Convention and Visitors Bureau all promote the skyways, which even have a special directory. Attractive and functional, the skyways keep downtown St. Paul pedestrian territory.

Extending the Core via Skyways

The focal point of the St. Paul skyways is now Town Square Park, a 90,000-square-foot, glass-enclosed complex. Its four levels contain waterfalls, pools, and fountains, and are planted with seventy-five trees and thousands of plants and bushes. The area includes a restaurant, a picnic area, and an amphitheater for the performing arts. A major work by the Dutch sculptor Tajiri has been installed.

Town Square Park was built in connection with a privately developed retail and office building, with the U.S. Department of Housing and Urban Development contributing \$4.8 million of the park's \$10.5 million price. The park opened in 1980 and is operated by the city's Department of Parks and Recreation.

The rehabilitation of Lowertown is the most important development being undertaken in St. Paul now. Twelve blocks near the Mississippi River banks are being renovated as an "urban village" at a cost of \$65 million. The mixed-use project will contain shops, restaurants, offices, recreational and entertainment facilities, and 3,000 new housing units. The planned connection of Lowertown to the skyway system is necessary for the success of the project. The new residents and holders of the 5,000 jobs expected in Lowertown will thus be only a short walk from the central business district.

The fact that the city plans to expand the skyway system is probably the best indicator of its success. Within the next decade, the system is expected to link sixty-five blocks. Installation of moving sidewalks is already under consideration.



The skyways are particularly attractive to pedestrians during the winter months.

Chelsea Memory Wall and Alley



History panels aim to put current Chelsea residents in touch with their past.

In the early 1970s, Chelsea, Massachusetts, a blue-collar city of 25,000 near Boston, badly needed a change of image. Once prosperous and proud, it had suffered two disastrous fires and an almost equally disastrous thoroughway project. To outsiders, it was known chiefly for its proliferating junkyards. Chelsea residents themselves had a low opinion of their city. "Cultural amnesia," one observer called the problem.

The city had a high tax rate and a declining population. Vacancies in

shops along the main street, Broadway, were increasing. A major loss of jobs and tax revenue came in 1973 with the closing of the naval hospital and shipyard.

In 1976, Chelsea hired Vision, Inc., a Cambridge planning firm, to develop preliminary recommendations for revitalization projects. The \$15,000 study led to development plans for a six-block area in downtown Chelsea. The city applied for and received \$3.12 million in federal funds to carry out the project. The use of public art was planned as a major statement about the special qualities of the community. By highlighting pedestrian orientation as a goal of the art works, the city succeeded in reserving 2 percent of the total budget for the proposed public art.

Adding the Human Element to Downtown

During 1977 and 1978, one-half mile of Broadway between City Hall and Bellingham Square was given over to rehabilitation, including street furniture, landscaping, storefront improvements, and public art. Brick sidewalks, shade trees, nineteenth-century lighting fixtures, and wrought-iron benches were installed. A number of small artworks were added to the streetscape. Sculptor Mags Harries placed five bronze objects (e.g., a purse, a shopping bag, a sweater) in the area of the improvements. The bronzes lend a whimsical element of surprise, as they appear to be forgotten on a bench or leaning against a telephone booth. The five pieces cost \$6,000.

In Chelsea Square, sixty-five bronze crabs by sculptor David Phillips are embedded in the pavement to commemorate the one-time

location of the city's seafood market. Their total cost was \$3,000. In the same square, three life-sized bronze figures, modeled on two local residents and sculptor Penelope Jencks' daughter, appear to be talking. "Chelsea Conversation" was installed for \$19,000.

Solving the Parking Problem

An early version of the City Center Revitalization Program called for a pedestrian mall, but Broadway merchants protested successfully that their business depended upon automobile traffic. Therefore, parking and driving were not banned on Broadway, but three parking lots were constructed adjacent to the commercial area: the Union Square lot, 176-car capacity (\$143,000); the Off-Broadway lot, 19-car capacity (\$38,000); and the Chelsea Square lot, 75-car capacity (\$75,000). A fourth lot, on Chestnut Street, was added in 1981; its capacity is 38 cars, and it cost \$111,000. These facilities also include amenities such as landscaping that extend the streetscape of Broadway to adjacent streets.

Chelsea Walk, one such extension, is a key element in the revitalization of the area. Formerly a fenced-off, refuse-strewn alley, it is now an arched walkway linking Broadway with the new parking lots. Along the walls of Chelsea Walk, porcelain enamel panels tell the story of the city. On this "memory wall," sepia photographs and text present famous Chelsea natives (Barbara Stanwyck, L.B. Mayer, Chick Corea, David Susskind), events from the city's history, and local characters (a veteran photographer and a nineteenth-century leader of women's liberation). This community family album helps give current Chelsea



residents the sense of place so lacking in recent years.

But Chelsea Walk is more than just an attractive bit of urban wallscape. This sort of pedestrian passage is an essential connection that amplifies the commercial potential of Broadway. The arcade cost \$18,000, including design and the cost of the panels. Its design treatment helps it to be perceived not as a barrier, but as a safe, inviting passageway.

Extending the Revitalized Area

The improvement of Chelsea's downtown streetscape has halted the persistent decline of the area, stabilized its economy, and acted as an incentive for investment in other parts of the city. There are now few vacan-

cies along Broadway. After the improvements were made, a new movie theater and several new shops and restaurants opened.

The city's Office of Community Development has planned additional projects to extend the boundaries of the revitalization district. The Neighborhood Strategy Area Program is expected to generate \$3.8 million for commercial and residential rehabilitation near Chelsea Square. A strategy for redeveloping the site of the naval hospital and its surroundings, made possible by a \$6.7 million Urban Development Action Grant, includes the construction of 1,200 housing units, a home improvement loan program, and street improvements. This project is scheduled for completion in 1985. A waterfront

Bellingham Square includes small artworks and carefully designed street furniture.

park, a small business loan program, and extensive housing and capital improvement programs make up the balance of Chelsea's \$30 million revitalization strategy.

Cotton Row Alley in Memphis



Cotton Row Alley has been restored and rebricked.

Memphis, Tennessee, is the principal city in the mid-South, with a population of 700,000. Situated on bluffs overlooking the Mississippi, Memphis retains a strong historic flavor of a river port. The city's central business district lies right along the riverbank.

The revitalization of downtown Memphis has been influenced by the fact that it is a city in which pedestrians fare extremely well. The former main street, parallel to the Mississippi, is now Mid-America Mall, the longest pedestrian mall in North America. At its north end is the city's grandest public space, Civic Center Plaza, site of several government buildings. The mall is also connected to the Medical Center, another major center of activity in the city, by a free shuttle bus. High-quality design and significant amenities reflect the area's commitment to a pedestrian orientation.

Restricting the Automobile

The transformation of Main Street into Mid-America Mall took place in 1976. A year later, Memphis was selected for a feasibility study of auto restricted zones (ARZs). The ARZ study, funded by the U.S. Urban Mass Transportation Administration (UMTA) and carried out by Alan M. Voorhees and Associates, recognized that the city already had a great deal to offer pedestrians:

The downtown provides an expanding base of activities that presently includes opportunities for a range of shopping, services, and eating places. Moreover, activities are mixed in such a way that walking distances are not long. The buildings in downtown represent a rich collection of commercial structures which date back to various periods of the city's history,

and these older structures offer a significant measure of interest to the eye in their different styles and decorative details. The climate is conducive to pedestrian travel with generally mild temperatures and minimal problems with snow, ice, and wind.

For Memphis, therefore, the study recommended only selective improvements to expand and enhance the auto restricted zones that already existed. The planners aimed to increase the attractiveness of downtown Memphis to shoppers by extending the effects of the mall, which had been limited.

One recommendation was to transform the linear mall into a two-dimensional network linked to the major access routes (still open to motor vehicles) of Front Street and Second Street. As the report stated, "The revitalization of downtown activity at night and on weekends is tied to the success of the new parks, entertainment, and cultural opportunities. The viability of these new ventures will be greatly improved by an extended pedestrian circulation network."

Reconstructing Cotton Row

Between Mid-America Mall and the riverbank runs Front Street. Along a three-block stretch of Front Street, a registered historic district known as Cotton Row includes warehouses and other buildings dating from the nineteenth century, when Memphis was the center for the financing, marketing, and transportation of King Cotton. Cotton brokers and factories still operate in some of the Cotton Row buildings, and the Cotton Exchange is still here. In the three-block historic district, ten buildings

have been adaptively rehabilitated as condominiums, rental apartments, restaurants, offices, and stores.

Front Street and two of the alleys connecting it with the mall have received streetscape improvements at a total cost of \$1,513,930. City and county contributed \$262,500 each in fiscal 1980, and a further \$169,465 each in fiscal 1981. A \$650,000 Economic Development Administration grant completed the funding.

Front Street remains open to cars, but has been made more attractive to pedestrians with the addition of granite curbs and a brick sidewalk. Trees surrounded by wrought-iron gates and guards, and period-style streetlamps, have been installed. These and other design elements were extended to a parking area developed from a vacant lot.

Reclaiming the Alleyways

The Voorhees report also called for the upgrading of service alleys between the mall and Front and Second streets in order to provide pedestrian walkways between the parking lots, the mall, and other attractions in the central business district. The planners foresaw that the alleys, once used exclusively for services—deliveries and refuse collection—could better enhance circulation patterns in the city. They intended to replace the alleys' minimal vehicular functions with major pedestrian functions. The city's role was to provide the following services and assistance during the conversion: repave the alleys, including public niches provided by private concerns; provide lighting; provide trees at the mall end and shelters at the other; and provide tax breaks, design assistance, and free paint or canvas for private improvements. The complementing

private-sector role would be to provide entrances and display niches onto pedestrian alleys and paint and refurbish the sides of buildings.

The original cobblestones of one particularly narrow alley were lifted and reset at a cost of \$25,000. This alley provides access to four rehabilitated condominiums, but is not otherwise heavily used. (The difficulty of walking on cobblestones may account for this.)

Another alley was paved with a combination of materials that give an effect like that of cobblestones, but is easier to walk on. The cost of this treatment was \$40,000. This alley gives access to two new restaurants and to condominiums. The developer of these facilities was instrumental in bringing about the improvements to the alley. The work snowballed. An advertising company bought a building on the alley and rehabilitated it for its offices, and a delicatessen and a seed store already there made additional improvements. This alley is heavily used, both as a means of access to the commercial establishments and as a walkway between the new parking lots and Mid-America Mall.

Because neither of the alleys was more than ten feet wide, no planting or murals were added. However, the city is currently studying possible graphics treatments, along with mural projects and surface treatment for other downtown alleys.

Complementing Aesthetics with Investment

In the past four years, almost \$200 million in downtown development projects have been completed or are under construction in Memphis. Another \$150 million of projects are in the planning stages. Residential development has increased by 35 per-

cent and restaurant space by 33 percent.

Restrictions on automobiles have served not as constraints to growth, but rather as triggers to vitality. The changes are seen as a basic new image for downtown Memphis. The aesthetic qualities of pedestrianized areas—freedom from dirt, noise, congestion, and air pollution—and their amenities are only part of the story. The quality of goods and services available downtown, safety considerations, and accessibility also play roles. But the aesthetic factors are clearly important to the change in public perception which, in turn, is vital to the economic success of downtown Memphis.

Oklahoma City Metro Concourse



Like the frost belt cities of St. Paul and Minneapolis, Oklahoma City, a sun belt capital of 400,000, has based the revival of its downtown on the construction of a protected pedestrian environment. Oklahoma City Metro Concourse is a network of walkways, mostly below ground, but it includes some skyway bridges and street level crossings. Pedestrians can escape the city's extremes of heat and cold, and its heavy winds, in an attractive network that links the active downtown core.

Planning for Urban Renewal

Oklahoma City began planning for urban renewal in the mid-1960s. I. M. Pei and Partners were hired, first by a citizens group and then by

The underground Metro Concourse is brightly painted and well marked.

Oklahoma City Urban Renewal Authority, to produce a comprehensive plan. Their General Neighborhood Renewal Plan, completed in 1965, recognized the importance of five major elements in the revitalization of the central business district (CBD): a major office center, a government buildings complex, an active regional retail center, a major recreation and entertainment center, and a residential community. The Metro Concourse began its growth in

the context of this plan.

Between 1972 and 1975, a team headed by Gruen Associates, Inc., revised the plan. For the central city, the Gruen revisions called for a number of major new projects:

- The Galleria, a four-block, multi-level shopping mall and office building complex in the heart of downtown. When complete, the Galleria will contain three office buildings, 800,000 square feet of retail space, two hotels, and parking for 3,000 cars. The total cost is expected to be about \$244 million. (The first office building opened in 1980, and the second was under construction in 1982.)
- Myriad Gardens, an urban park on a four-block site just south of the Galleria. The park, which was scheduled to open in the summer of 1982, will contain a sunken lake and gardens, an enclosed botanical garden, and a number of entertainment and cultural facilities. An Economic Development Administration grant of \$4.9 million covered part of the total cost of \$8 million; private funds will pay the rest.
- A six-block area of new housing construction slated for townhouse development. Clearing of land started in 1978; the first units are nearing completion.

Metro Concourse links these new developments with the existing office buildings, hotels, and four-block convention center, largely because the Gruen plan foresaw the need for a better pedestrian environment:

Existing sidewalks do not provide adequate space for peak volumes of pedestrian traffic, and few are provided with cover from rain, shade

from sun, or other amenities. During rush hours, there is a significant pedestrian-vehicular conflict within the financial district.

Planners believed Oklahoma City citizens would want to be able to use their cars to get to the central business district, but would then want to park and walk. There was some early discussion of a people mover, but because of the high cost this option has not been pursued.

The Gruen plan's proposed solution was to extend the protected pedestrian network:

Projections based upon proposed CBD development programs suggest heavy volumes of pedestrian traffic. From an image standpoint, connections to the proposed Galleria from parking and connections from proposed New-Town-in-Town housing are needed to attract new functions to the CBD area. From a safety standpoint, grade-separated access is needed at all major arterials. For weather protection and convenience, a complete and comprehensive system covering the entire CBD area is desirable.

These criteria have led to the proposed CBD climate-controlled pedestrian network concept Types of connection and linkages in this proposed network include sidewalks, outdoor plazas and malls, indoor malls and arcades, skyway bridges, tunnels, elevators, escalators, and stairs.

The system planned on the basis of the Gruen report is about 80 percent complete, but the city is receiving a second update from Skidmore, Owings & Merrill, and the concourse may grow beyond the Gruen concept.

Designing for Pedestrian Amenities

The walkways are carpeted throughout, and are decorated with murals and interesting graphics that provide a unifying motif. There are skylights at points on the underground sections, and elsewhere—as at Myriad Gardens—the concourse comes into daylight while remaining below street level. The many shops and services, ranging from a post office to medical and dental offices, make the concourse a great convenience to CBD employees. Retail activity is brisk, and rents have recently increased from \$4-\$6 per square foot to \$12-\$20 per square foot.

Parts of Metro Concourse are at street level. There, street improvements such as fountains, landscaping, and automobile-free plazas enhance the pedestrian environment. Two of the planned overhead skyway bridges have been completed.

The dramatic point of the Metro Concourse is the Bridge-of-the-Gardens crossing the lake in Myriad Gardens. The lake itself is twenty-three feet below street level, and the concourse at this point is fourteen feet below street level. The bi-level bridge will have an open upper level integrated into the sidewalk system, and a glassed-in lower level that will form part of Metro Concourse. Thus, the pedestrian on the concourse encounters sunlight and greenery on this part of the route.

The steel bridge has an unusual configuration. At the abutments, it is fourteen feet wide and fourteen feet high—a square in cross-section. At the center, it is ten feet wide and ten feet high, having gradually diminished in height and width while remaining square. This ingenious self-bracing design is quite beautiful and provides a remarkable visual ex-

perience from its interior. Continuously curving planes give the illusion of floating.

Financing the Concourse

Metro Concourse was not designed to be luxurious. It offers the pedestrian a simple but attractive environment in which to circulate through the central business district. Except for two passages under city streets, the concourse has been paid for by the owners of the buildings it serves, by means of a bond issue.

Construction costs have risen from a range of \$600 to \$800 per linear foot in 1972 to \$2,800 per linear foot in 1981. The total cost of the system to date is estimated at \$4 million. The Bridge-of-the-Gardens will cost an estimated \$307,500 when complete.

Between 1968 and 1981, approximately \$350 million in new private investment was linked to Metro Concourse. A further \$300 million in new development is expected by 1988. The retail sales climate in the CBD has improved tremendously. One department store that moved from Main Street to a location on the concourse reported that its business increased 400 percent in the first year.

Perhaps the strongest evidence for the value of the concourse is that lenders are beginning to want buildings to be located on the system. Pedestrian access once may have seemed an eccentric demand, but now it is a necessity for business in downtown Oklahoma City.

Increased Potential for Intermodal Travel

As modes of transportation change, facilities become outmoded and are often scrapped or abandoned. The investment of the past is deemed to have been completely depreciated, with negligible residual value—at least for purposes of transportation. Railroad stations, of which there were once 40,000 in this country, are a good example.

Yet, because they are there—and at least 20,000 of them are still standing—they can often be adaptively reused. In many cases, the second life can be as an intermodal transportation facility.

If mass transit is to serve as a satisfactory substitute for private automobiles, its passengers must be able to transfer easily and pleasantly from one mode to another. For example, commuting becomes practical if the suburbanite who takes a rapid transit line into the central city can then shift easily to a bus line (or vice versa) for the rest of the trip to work. Railroad stations are often ideally suited to shelter such intermodal shifts.



New London's Union Station, before and after its restoration.



Courtesy of Anderson Notter Finegold, Inc.



Randolph Langenbach

New London's Union Station

In this section, we look at one of the most successful adaptive reuses of a railroad station, New London's Union Station, in Connecticut. This beautiful facility, nearly a victim of the wrecking ball, now serves for transfers among trains, ferries, buses, and taxis, and also provides space for shops, a restaurant, and offices.

New London's Union Station was a candidate for demolition in 1968. After considerable controversy, the station is now preserved and undergoing adaptive reuse. The imposing brick structure is still the railroad station, although Amtrak's comparatively small number of passengers needs only about one-third the space required in the nineteenth century. Union Station also houses an intercity and commuter bus station, a restaurant, offices, and a number of small businesses. By providing access to rail, road, and nearby ferry service, the station has become the hub of a multimodal transportation network. Union Station is an excellent example of a facility that can help to make transportation as pleasing today as it was a century ago.

Preserving a Masterpiece

Union Station is located along the banks of the Thames River at the foot of New London's main street. It was one of the last works of the outstanding American architect H. H. Richardson. Some architectural historians consider it one of his masterpieces. Yet Union Station generated controversy from the time of its construction. Because of its location, the building blocked a view of the river that would have enhanced the visual appeal of the city's main street.

When New London adopted a fifty-four-acre urban renewal plan in

1968, Union Station was slated to be razed. It was in poor condition, and only a fraction of its capacity was used by the faltering New Haven Railroad. As part of the plan, the main street was to be transformed into a pedestrian mall (renamed "Captain's Walk"), and the site of the station was to become a park.

The plan had its merits. Nevertheless, the impending loss of Union Station aroused some residents who believed the city should preserve this existing asset. In 1974, these residents formed Union Railroad Station Trust, Inc., headed by Clare Dale, to examine possibilities for adaptive reuse. With assistance from local citizens, they commissioned a study to determine the economic feasibility for reuse.

Adapting to New Transportation Needs

The consulting firm selected, Anderson Notter Finegold of Boston, drew up a plan to retain the building's original function while developing other areas of the building for rental income. Amtrak would share the building with retail and office space that produced enough income to pay for full restoration.

Once the feasibility study was complete, the Union Railroad Station Trust expected private investors to ask the New London Redevelopment Agency (which had purchased the building from the railroad) for permission to redevelop the station. When no such investors were forthcoming, the Trust asked Anderson Notter Finegold if the firm would take the unusual step of redeveloping the station itself.

Anderson Notter Finegold agreed and submitted a proposal in 1974. Approval took 18 months, but was

facilitated when Amtrak made a commitment to lease one-third of the building for twenty years. Greyhound Bus agreed to locate its terminal in the adjacent baggage building, and a restaurant operator was found to lease 6,000 square feet.

Reconstruction began in 1975 and was completed in 1976. The slate roof was repaired and the brickwork cleaned and repointed. Inside, a majestic stairway was built to connect the ground floor and the basement level so that Amtrak and the restaurant could each have part of the main floor while providing rail passengers with extra waiting room downstairs. The interior oak trim was restored on the main level, and on the lower level, brick and granite walls were dramatically lit. The second-floor offices have working fireplaces and views of Long Island Sound.

Rehabilitation cost \$835,000, of which 85 percent was private investment (mostly through a conventional mortgage). The New London Redevelopment Agency paid for a portion of the restoration of the exterior. A U.S. Department of Housing and Urban Development (HUD) Community Development Block Grant, two National Register of Historic Places grants, and a low-interest loan from the National Trust paid for the rest. Amtrak will make some further improvements as part of the Northeast Corridor Improvement Program.

Operating a Multimodal Transportation Center

Amtrak operates eleven trains each way in and out of Union Station daily. Greyhound, with a three-bay bus terminal in the station's rehabilitated baggage building, averages twenty buses a day.

Greyhound permits passengers from the Southeast Area Transit District commuter buses to use its waiting room and rest rooms. There are also a grassy area with benches outside the terminal where passengers can wait in pleasant weather, and a taxi stand.

When the rehabilitated station opened, the city transferred ferry service to a dock close by. Passengers for Block Island, Fisher's Island, and Long Island can easily transfer between buses, trains, and ferries. As a multimodal hub, Union Station facilitates tourism in southern Connecticut. Tourism is playing an increasingly important role in the region's economy, and the station helps generate economic benefits throughout the area.

New London's increased awareness of the historical and aesthetic importance of its oldest buildings has led to redevelopment of adjacent properties. The Bank Street Facade Improvement Program has given a nearby rundown commercial street a new image. On Starr Street, nineteen Greek revival houses are also being restored. These effects are city-wide. According to *The New England Real Estate Directory*, "The renovation of Union Station in 1975-1976 is credited with stimulating the revitalization of the surrounding area in the Central City. The successful reuse of the station building . . . was vital in launching a trend toward rehabilitation. New London has centralized its public transportation services in Union Station, further magnifying its economic impact on the city."

The developers apparently are making a satisfactory return on their investment. Anderson Notter Finegold allows that, given the state of the economy, the company is satisfied with the Union Station development

and considers it a financial success. Union Station has also become a source of direct revenue for the city. As long as it belonged to the railroad, the property was exempt from local taxation under state law. Now it has an assessed value of \$607,000 and returns over \$20,000 per year in property taxes to the city.

Increased Ridership

Traditional economics considers transportation not as an economic good, but rather as a means of access to goods. Except for recreational travel, transportation is considered an experience people endure rather than seek.

The experience of most Americans, however, indicates that transportation, if not strictly an economic good, is nevertheless something people care about. Americans with a choice of transportation often pay considerable attention to choosing the mode they will use, and spend a great deal of money to use the means they prefer.

Increased ridership on public transportation has been seen as a national goal for many years now. Major benefits are reduced consumption of imported oil and scarce resources, reduced pollution, less chance of accident, and reduced intrusion of the automobile in the urban environment.

In this section, we consider two cases in which operators of public transportation systems have used quality design attractions as a means of increasing ridership.

In Portland, Oregon, a twenty-two-block transit mall through the downtown office core speeded up bus service tremendously while providing pedestrians with a high level of amenity. The combination also encouraged a shift from private cars to buses and walking.

In Glenside, Virginia, near Richmond, the attractions took the form of a pleasant park-and-ride facility feeding an express bus service. Drivers who realized that they could commute to their jobs in Richmond by express bus without unpleasantness proved very willing to shift modes.



Dean Covey



Park-and-ride facility at Glenside, Virginia.

Portland Mall

Portland, Oregon, has one of the country's largest and most efficient transit malls. Stretching for eleven blocks on each of two parallel streets, Portland Mall is unusual in that it runs the length of the downtown office district, intersecting retail blocks. Unlike many auto-restricted zones, Portland Mall was designed primarily to improve public transit; it was not intended to improve the shopping environment.

The mall accomplishes its primary purpose very efficiently. Implementation of the mall plan, coupled with bus rerouting, has led to greatly reduced trip times and thus to considerable cost savings. At the same time, the mall also provides a high level of pedestrian amenity and creates an appealing outdoor space for shoppers in downtown Portland.

Planning for Improved Transit

Portland Mall grew out of a consultant's recommendation in 1971 for express bus lanes in the central business district. Citing traffic congestion and pedestrian conflicts, the report predicted that these express lanes would reduce bus travel time and foster downtown redevelopment. This 1971 proposal was for a modest restriping of streets at an estimated cost of \$50,000.

Several years of debate followed, centering on the degree of automobile access to the central business district. The final plan was chosen in 1973, work began in 1976, and the mall was opened in March 1978. The total came to almost \$16 million (\$33 per square foot) with the U.S. Urban Mass Transportation Administration (UMTA) paying for 80 percent.

The mall is noted for the excellence of its visible physical amenities, even though two thirds of the project's

Illustration 9: Cost of Portland Mall Elements (1978)

Description	Cost/Item	Total Cost
A. Street furniture and structures		
1. Benches (54)	\$ 1,370	\$ 74,000
2. Bicycle rack bollards (38)	921	35,000
3. Newspaper dispensers (38)	1,000	38,000
4. Trash containers (112)	800	89,600
5. Flag poles (2)	12,500	25,000
6. Banner poles (42)	476	20,000
7. Light bollards (83)	1,687	140,000
8. Concession and info. stands (2)	15,000	30,000
9. Newsstands (3)	2,100	6,300
10. Display kiosks (4)	5,000	20,000
11. Poster kiosks (4)	3,600	14,400
12. Bulletin Board kiosks (2)	1,200	2,400
13. Artworks	n/a	250,000
14. Fountains (5)	\$60,000 to \$138,000	444,000
	Subtotal	\$1,188,700
B. Landscaping		
1. Trees, lawn, and soil preparation	—	\$ 89,500
2. Sprinkler irrigation system	—	15,000
3. Planters		
4' diameter (67)	800	53,600
6' diameter (31)	1,500	46,500
	Subtotal	\$ 204,600
C. Bus shelters		
1. Passenger shelters (32)	41,720	\$1,335,000
	Subtotal	\$1,335,000
D. Transit information system		
1. CRT (television) system—complete	—	\$ 189,000
2. Underground conduct and wiring	—	40,000
3. Trip planning kiosks (8)	\$11,250	90,000
	Subtotal	\$ 319,000
	Total	\$3,047,300

From:

*Streets for Pedestrians and Transit:
An Evaluation of Three Transit
Malls in the United States*

cost was for subsurface improvements. (Some cost elements are shown in Illustration 9.) Eleven blocks of S.W. Fifth Avenue and eleven blocks of S.W. Sixth Avenue were extensively redesigned, repaved, and landscaped. Artwork, bus shelters, fountains, street furniture, and new lighting, as well as an ultramodern information system, were fit into the budget.

Speeding the Buses

On each avenue, the mall consists of pedestrian areas and three lanes of traffic in one direction. Two of the lanes are reserved for buses (thus increasing capacity over single-lane transit malls); the third is open to general traffic. However, every four blocks, the general traffic lane is replaced by widened pedestrian areas. Thus, private cars cannot use the mall as a thoroughfare. For reasons of safety, the city of Portland conducted an enforcement campaign against jaywalking on the mall in early weeks of its opening.

When the mall opened, the Tri-County Metropolitan Transportation District (Tri-Met) rerouted its bus lines extensively. Out of a total of forty-six routes, thirty-eight now run on the mall. Previously, only twenty-two had run along S.W. Fifth and S.W. Sixth Avenues. Tri-Met divided its service area into seven districts, each designated by a symbol (e.g., a green leaf, an orange deer). The symbols mark appropriate buses and bus stops along the mall.

In the peak morning hour, 158 buses run through the mall on S.W. Fifth Avenue and 175 on S.W. Sixth Avenue. In the peak evening hours, 167 run along S.W. Fifth and 142 along S.W. Sixth. Two lanes are reserved for buses to allow them to



Portland's mall shelters include scheduling information transmitted via closed-circuit television.



The mall includes fourteen sculptures and five fountains.

pass easily and to minimize delays at stops.

The result is a much faster bus trip. In 1979, UMTA's Transportation Systems Center evaluated three U.S. transit malls. Discussing Portland, the report stated: "Initial impressions of bus operations in Portland suggest that trip time at rush hours on the eleven-block mall may have fallen from twenty minutes before the mall to under seven minutes after the mall. Bus speeds may have changed from about 1.5 mph to 5 mph." These time savings represent a major productivity gain. Audrey Adcock, Tri-Met's superintendent of schedules, claims that the savings translate into about one peak-hour trip in each direction per line, the equivalent of thirty-four extra trips at peak hour.

Ridership is up. In the first four months after the mall opened, system-wide ridership was 9 percent greater than in the corresponding months of the preceding year. (However, ridership had also been increasing before the opening of the mall.)

Informing the Passengers

Portland Mall is the centerpiece of Tri-Met's information system, one of the most advanced bus-line information systems in the world. Each of the thirty-one bus shelters along the mall is marked by the symbols of the buses that stop there, and contains a closed-circuit television displaying the scheduled departure time of the next three buses.

In addition, there are four trip-planning kiosks on each of the mall's two avenues. Each is equipped with a television screen and keyboard to answer automatically route and schedule inquiries, and a map of the mall indicating the appropriate stop for each route. The kiosks also include a free direct telephone line to Tri-Met information and a ticket-vending machine. At \$11,250 apiece, the trip-planning kiosks are an expensive amenity that makes travel easier for Tri-Met's 145,000 weekly riders.

Combining Past and Present

Portland Mall is a happy blend of technical efficiency, nostalgic design, and modern art. Bus shelters and kiosks have an umbrella-shaped design of Victorian flavor, and street lights, benches, and drinking fountains carry out this theme. Among the contemporary elements are eleven works of sculpture, five fountains, and enamel graphic panels, all chosen in a juried competition of more than 500 entries. The budget for artwork was \$250,000 (more than 1.5 percent of total costs).

The Victorian blends well with the contemporary. As Tri-Met puts it:

The purpose of art on the Portland Mall is to make the Mall more "people-oriented." As the focal point of downtown activity, the Mall will

be a place for people to go and shop, a place for people to enjoy. The architectural design choices have been directed towards this aim The Mall has also been carefully designed so that it will harmonize the existing flavors of Portland, the old with the new.

Flower carts and food vendors set up in the mall, and office workers congregate there at lunchtime in nice weather. The mall's brick walkways and sixty large trees are clean and well-maintained. Tri-Met spends approximately \$17,000 a year for maintenance of bus shelters and kiosks.

Looking Around and Looking Ahead

The principal aim of the mall planners was to improve bus transportation. They succeeded without significant negative effects on downtown traffic conditions. There have also been other benefits. There is virtually no vacancy in commercial retail space in downtown Portland. The occupancy rate for office space is about 94 percent. The mall has served as a spur to downtown redevelopment and has helped to keep the central business district economically active.

Planners foresaw that bus volume may eventually increase to the point at which private vehicles will have to be excluded from the mall. A variety of options for meeting this eventuality exist. There are also preliminary plans to convert two more streets in downtown Portland into transit malls.

Glenside, Virginia, Park-and-Ride Facility



Dean Covey

Since April 1981, the Glenside Express Bus service has been providing residents of suburban Henrico County, Virginia, with an alternative to automobile travel to downtown Richmond. The benefits of this service—energy savings, reduced traffic congestion and air pollution, and increased safety—would not exist without Glenside Park-and-Ride Facility.

The facility is an 800-square-foot shelter with a seven-acre parking lot. It is located in a residential area dominated by multifamily developments and moderate-income one-family houses. Over 1,500 dwelling units and over 150,000 square feet of shopping are within walking distance of the facility. An Amtrak station is about 2,000 feet away.

Transit studies, carried out by the Greater Richmond Transit Company (GRTC) in 1973 and 1975, indicated the potential for over 1,000 revenue trips per day for an express bus service between eastern Henrico County and downtown Richmond, where many area residents work. GRTC already operated express bus service from another park-and-ride facility in western Henrico County, and demand was strong.

GRTC and county officials agreed that the demonstrated demand of area residents would best be met by an attractive park-and-ride facility that would blend with the suburban character of the neighborhood. Without such a facility, the express bus would neither attract the attention of new riders nor project the im-

Glenside's park-and-ride facility encourages suburban commuters to take public transportation to downtown Richmond.

age of permanence needed to convince potential users to switch transportation modes.

Financing and Developing the Site

Development of the Glenside Park-and-Ride Facility was difficult. In May 1976, GRTC applied to UMTA for a capital improvement grant. In July 1978, UMTA approved a negotiating range for site acquisition. Approvals were not complete until the spring of 1980. The total cost of \$1.6 million (including \$285,000 awarded for the land) was met by 80 percent funding from UMTA, 18 percent from the Commonwealth of Virginia, and 2 percent from Henrico County. Construction began in June 1980. Express bus service started nine months later.

The express buses operate on ten-minute headways during rush hours. In addition, a transit shuttle passes through the facility throughout the day. The shuttle provides transfer opportunities to other parts of the county and to eleven employment sites with a total of over 4,000 workers. The Amtrak station is also on the shuttle route. Thus, the Glenside Park-and-Ride facility has the potential of becoming the transportation hub of eastern Henrico County.

Attracting Riders

The facility has parking space for 480 cars, and is entered via two intersecting feeder roads from nearby main arteries. Separate lanes are provided for “kiss-and-ride” traffic. The shelter area accommodates forty commuters in covered seating and forty more in open seating. Architects Leibowitz/Budouva & Associates of New York designed it to be a nostalgic building reminiscent of rural

train stations of the nineteenth century. The shelter, located in the middle of the parking lot, is screened by trees and earth berms so that one does not have the sense of being on an island in a sea of cars. Construction of the shelter cost \$43,000; the landscaping cost \$125,000.

Construction is of wood (fir), using pressure-treated, stained lumber. Tempered glass was chosen over plexiglass for the wall panels because of its long-term, high-quality appearance. The roof is metal with a plexiglass skylight. The building is raised above a paved surface and thus is “self-cleaned” by air currents.

For landscaping, trees and grass were chosen over shrubbery because they require less maintenance. The trees will provide shade, cooling, and rainfall retention within the site. Sodium vapor lights operate at different levels to identify pedestrian areas and provide safety at vehicular crossing points.

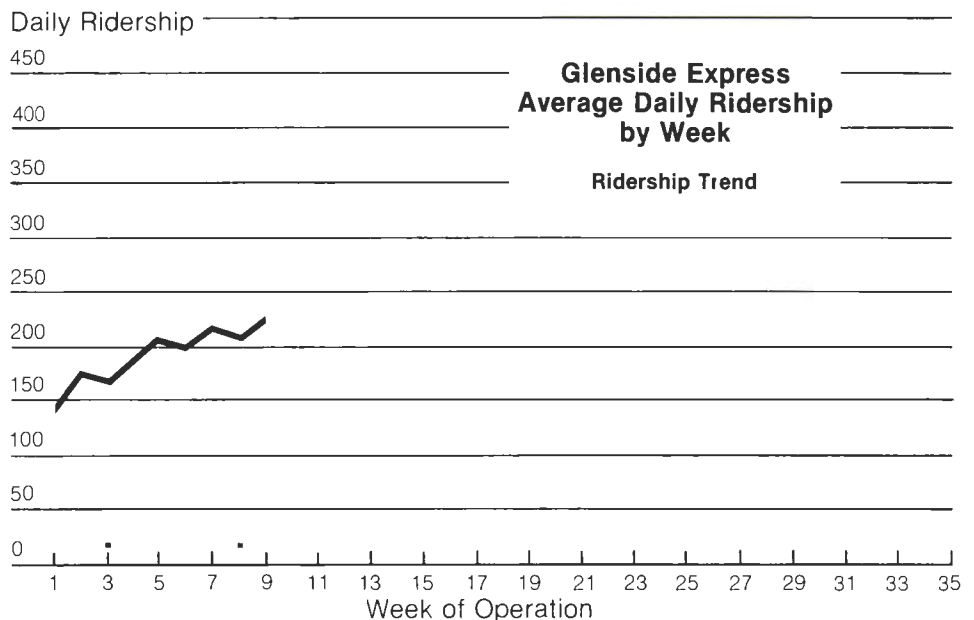
Fulfilling the Promise

Express bus service from the Glenside Park-and-Ride facility was expected to reach the level of 800 to 1,000 revenue trips per day within its first nine to twelve months, according to Wyndham B. Blanton III, Henrico County transportation development engineer. During the first week of operations, daily ridership averaged 140, and 15 percent of the parking spaces were filled—with cars that would otherwise have been destined for downtown Richmond. By the ninth week, daily ridership averaged 225, an increase of more than 60 percent (see Illustration 10).

A survey on board the buses showed that 30 percent of the passengers had switched to public transit from private cars and carpools. County officials estimate that the continuation of these trends should result in annual net savings to the community of more than \$350,000.

Illustration 10:

Growth of Ridership During the First Nine Weeks



• holiday week



Dean Covey

**The shelter, designed by Leibowitz/
Budouva & Associates, echoes
nineteenth-century train stations.**

Cost-Efficiency of Transit Marketing

The private sector of the transportation industry knows that a good image is extremely important. Its willingness to pay for the creation of such an image is evident. Automobile manufacturers spend vast sums on art and design in order to portray their products as features of "the good life." Airlines, competing for passengers, look at their corporate images in every aspect of their operations: from advertising and promotion to the painting of their aircraft, the uniforms of their crews, and even the packaging for the peanuts served with cocktails.

By contrast, the public sector has scarcely used the arts or design as a marketing device to attract mass transit users. American mass transit customers have traditionally been considered "captives" with very little choice. The prevailing assumption has been that those who can afford private transportation will use it, while those who can't must rely on mass transit.

Manufacturers and operators of public transportation have overlooked any number of opportunities to project a good image for their systems. A 1980 report of the Urban Consortium's Transportation Task Force addressed itself to marketing of public transportation. In considering market solutions, the report stated: "Improved marketing fundamentally relies on effective market research, i.e., discovering consumer needs, preferences, etc. Effective methods of providing transit information can be researched. Service planning and development, pricing, promotion efforts, and other decisions should be approached from the standpoint of maximizing consumer appeal. Marketing methods to achieve increased ridership need to be

developed as a standard industry practice."

In this section, we consider a variety of ways of attracting new transit users through marketing techniques that link transportation with aesthetic appeal. Some of the techniques have required the design (or rehabilitation) of physical facilities that make up the transportation system. Making a subway station into an artistic attraction (as will happen in Cambridge, Massachusetts, through the Arts on the Line program), or at least into a pleasant place to wait for a train (as has happened at Philadelphia's Fifth Street station and is happening in New York City through the "Adopt-a-Station" program), requires considerable expenditure. But an attractive, informative bus stop indicator (such as the kiosk of the Golden Gate Transit system in San Francisco) need not be a prohibitive expense.

Many transit operators will argue that their budgets simply do not allow for major marketing efforts, or even for marketing efforts that will make any difference at all. However, the assumption that marketing requires major physical changes in facilities or expensive advertising and public relations campaigns need not be true. Marketing programs exist that link the provision of a new service with an aesthetic attraction: culture buses in New York and Chicago and the GUS Bus in Grand Rapids, Michigan, are examples of marketing through program or service changes.

Transit operators have also taken good advantage of existing public art programs. The public relations and marketing benefits of programs such as Poetry-on-the-Buses, Art on Cleveland's Buses, Cincinnati Public Art Project, and the Mass Pass are extremely cost-effective when com-

pared to the professional fees that would otherwise have been charged for a commercial advertising campaign. Self-employed artists and non-profit cultural agencies have a great deal of experience in achieving low-budget solutions to design problems, and public art works and innovative cultural programming get media attention.

The arts and good design are image-building and attention-getting in ways that no mere slogan or advertising campaign can be.

Cleveland commissioned photographers to supply transportation-related photos for installation in its buses' advertising spaces.



Herbert Ascherman

Philadelphia Fifth Street Station



Lawrence S. Williams

The Fifth Street Subway station was, until the approach of the U.S. Bicentennial Celebration, a seedy entrance to Philadelphia's Independence Mall, one of the most beautiful and historic urban sites in the country. The station has since become an attractive gateway that begins the passenger's orientation (particularly if, like so many users of Fifth Street, the subway rider is a visitor to the city) to the historic sites above ground: Independence Hall, the Liberty Bell, the grave of Benjamin Franklin, and the Betsy Ross house. The area is the tourist hub of Philadelphia, with over one million visitors annually, and is one of the few parts of the city where one can still envisage the "green country town" that William Penn planned in 1683.

Planning for the Bicentennial

Independence Mall is the anchor for several government office buildings as well as the headquarters of some of Philadelphia's most important businesses. It thus has a large work force in addition to the large number of visitors. Southeastern Pennsylvania Transportation Authority (SEPTA) serves Independence Mall by bus, trolley, and subway. The subway station is on Fifth Street and, as the 1976 Bicentennial approached, it was in miserable condition. Maintenance had been neglected for years. Peeling paint, exposed pipes, obsolete fixtures, and graffiti intensified the image of the SEPTA subway as dirty, dangerous, and dated.

Philadelphia counted on the Bicentennial celebrations as the

The Fifth Street station is constructed of long-lasting materials that resist graffiti.

motive for a number of civic improvements. Millions of tourists, including the Queen of England, were expected. Preparations were extensive and meticulous: The city wanted to project a proud appearance during a time of national exposure. Since the Fifth Street subway station was located literally in the shadow of Independence Hall and was a major means of access to the historic district, it was an obvious target for improvement.

Massing Community Support

In 1973, the Greater Philadelphia Chamber of Commerce (GPCC) took on the challenge of improving the station. The theme of the campaign was "Adopt-a-Station," and GPCC convinced about twenty companies in the area (including Penn Mutual Life Insurance, Rohm & Haas, Inc., and Philadelphia National Bank) and the William Penn Foundation to contribute. One weighty argument was that the employees of these companies used the station and improvements would affect their transit environment as well as that of the Bicentennial visitors.

In total, the Chamber raised \$75,000. This money was used for technical studies and for a portion of the local matching funds required for a U.S. Urban Mass Transportation Administration grant. With this seed money, SEPTA hired the local architectural firm of Ueland and Junker to prepare a design proposal at a cost of \$30,000. Ueland and Junker eventually administered construction activities as well.

Image-Building through Design

SEPTA and the designers agreed on a theme of orienting tourists and other infrequent subway riders to the district's historic attractions. They believed the station could present a fresh, new image of the subway in this way and at the same time improve passenger flow and ease of maintenance. They chose forms and materials to evoke the excitement and mechanistic quality of trains, to permit the use of lively graphics, and to complement the traditional brick architecture of the above-ground environs. Resistance to, and easy removal of, graffiti were also major factors in the choice of materials.

As a result of these considerations, the designers used porcelain enamel panels throughout the station. The porcelain enamel allowed the use of brilliant colors and bold designs. Not surprisingly, the choices were red, white and blue. Aluminum was chosen for the ceiling and stainless steel to cover columns. Balancing these materials and blending with the historic district outside were brick and natural clay floor tiles.

Color, illumination, wall graphics, map murals, and pedestrian furniture attract, stimulate, and serve the users. There are several amenities for elderly and handicapped riders.

Taste considerations were extremely important in the choice of a design, but so were time and budget. In order to have the new station ready for the Bicentennial, the Chamber of Commerce convinced local authorities to move the project up three years in the capital improvements program.

Building on private-sector seed money, SEPTA received federal and state funds to rehabilitate the station. The state paid \$400,000 and the federal government \$1.8 million toward the final cost of \$2.2 million.

Reducing Maintenance and Vandalism

SEPTA and the Chamber of Commerce point to reduced maintenance costs and spinoff projects for improving other stations as the chief economic benefits of the Fifth Street rehabilitation. There has been no formal research, but Philip Caldwell, SEPTA's assistant general manager, says, "There is no question that (the Fifth Street station) is considered our most successful station rehabilitation." A staff member of Penjerdel Regional Foundation, which supported the project, calls Fifth Street

"as good a subway station as there is."

The excellent design of the station has achieved an intangible yet significant result: pride in its appearance. There is far less vandalism than at other stations in the city and, according to Harry Reichner of the Chamber of Commerce, Fifth Street receives "better public care than any other subway station in Philadelphia."

Arts on the Line in Cambridge

Arts on the Line is the most ambitious attempt to date to integrate the fine arts into public transportation. It will place twenty major works of art in the stations of a new subway line in Cambridge, Massachusetts. Cambridge, well known as one of the leading cultural centers of the country, is also a residential city of 100,000 mainly blue-collar families who have little contact with the cultural and aesthetic resources of Harvard, MIT and Boston College.

The opportunity to integrate artworks into transportation arises because of the extension of the Massachusetts Bay Transportation Authority's (MBTA) Red Line. The new subway branch will run northwest from Harvard Square to Somerville, and will require the reconstruction of the Harvard Square Station and the construction of three new stations. Scheduled for completion in 1984, the line will cost \$560 million, of which the state pays 15 percent and the federal government 85 percent.

The chance to use fine arts as a public relations medium was welcomed because the disruption to neighborhood businesses and residences during the lengthy construction period was foreseen by the line's planners. In 1977, Cambridge Arts Council, the official arts agency for the city, took up the initiative.

Finding New Possibilities for Art and Design

MBTA had long appreciated the benefits of integrating art into the mass transit system. For about fifteen years, whenever an older station became eligible for modernization, it was the policy of MBTA to place works of art, photo murals, and artistic graphics in the station. Cam-

bridge Arts Council, therefore, found a ready partner in the transit system operator. UMTA granted the council \$45,000 to research, develop, and implement an arts program for the Red Line extension, and followed with a second \$25,000 grant.

Cambridge Arts Council formed Arts on the Line to encourage the installation of permanent artworks at the four stations and to administer temporary projects during the construction period. The public accepted the program because the council was perceived to be locally controlled. Had the MBTA been responsible for the selection of the works of art, there might have been a negative reaction to an organization perceived occasionally as monolithic and overbearing, and not generally perceived as competent in matters of art and design.

Arts on the Line began operations in September 1978, when design of the four stations, by four different firms, was underway. All the firms agreed to set aside 1 percent of their bricks-and-mortar budget—equivalent of 0.5 percent of the total construction costs for each station—for art. This decision produced \$680,000 for works of art in the four stations, to which the National Endowment for the Arts added a further \$30,000. No funds were contributed from private sources. The budget had to cover all expenses related to the artwork: artists' fees, fabrication, transportation, insurance, site preparation, and travel. Arts on the Line decided on five works at each station.

Selecting the Art Works

Arts on the Line developed an elaborate selection process open to all artists. It involved the local community in the choice, and operated under

public, democratic, and professional procedures. The group distributed 4,000 flyers throughout the United States art world announcing the establishment of an ArtBank. Over 400 artists responded. Arts on the Line then formed an art committee for each station.

The art committees made the selections for three of the stations. (At the fourth, the architects had decided to include artwork and had already chosen the artists before Arts on the Line was organized.) In all cases, architectural planning was substantially complete before the works were chosen, an obvious limitation on the degree of integration possible. Nevertheless, when the models and projects of the twenty chosen works were displayed at MIT's Hayden Gallery in February and March of 1980, they made an extremely favorable impression on public, press, and art critics alike. The show actually broke the gallery's attendance records.

Easing the Inconvenience of Construction

In addition to the show at Hayden Gallery—important in winning over a new constituency for subway transit—the temporary art projects that have taken place during construction have also contributed to the Red Line's public image. The temporary projects are intended to give local residents and business people the sense that a major construction project is more than an inconvenience; it is also a dramatic and intricate process. The interim projects have included feature stories and photographic documentaries about aspects of construction that the public does not see, involving riders and potential riders in the progress of the line. Murals on plywood barriers

around the site, concerts, and environmental events have served both as public relations devices and as means of heightening public appreciation of a technological adventure.

All the station works meet the important criterion of being design for public spaces rather than for galleries. None appears monumental or intimidating, and many are imaginative, humorous, and even eccentric. They include sculptural wooden benches, a ten-foot by eighty-foot backlit glass mural, a series of tall granite columns, a large kinetic wind sculpture, photographic panels, and poetry sandblasted into brick floors, among others. All are designed to last for seventy-five years with a minimum of maintenance and to be impervious to weather and graffiti.

Although much of the artwork has already been fabricated, completion of the Red Line extension is still a while off. Nonetheless, Arts on the Line has gone a long way toward meeting the challenges of art in a seemingly hostile environment. The selection process brought forth works bold enough to capture the one-time rider and complex enough to engage the daily commuter for years.

When the Red Line extension is opened, its riders will have a comprehensive experience of art in a mass transit setting. Entering a station by foot or in a train, or even waiting on a platform—traditionally the most onerous part of mass transit—will take on new drama for many people. The MBTA may even find itself collecting fares from people whose main purpose is not simply to get from point A to point B, but to see the art in the subways!

New York's Platforms for Design

Many people would agree that a New York City subway station is one of the grimmest places they know. Because New York's Metropolitan Transportation Authority (MTA) has been financially strapped for years, it has been unable to repair and maintain these facilities, some of which are more than seventy five years old. The stations have become increasingly dilapidated and depressing—in fact, a negative factor in transit marketing.

In response to this problem, an energetic private sector initiative to share responsibility for the appearance of the subway platforms has expanded into a continuing public program. If New York subway riders are to experience renewed pride in the system, credit must go to those who recognized that a clean and attractive station is an important marketing tool.

Enlivening the Underground

In 1975, the Arts and Business Council received a \$25,000 grant from Exxon Corporation to develop a pilot program for some aesthetic improvement in New York City that would benefit a great number of people. The Council approached the Public Arts Council (an affiliate of the Municipal Art Society) to implement a program for visual improvement in the subways.

The two councils asked four leading design firms to choose one station each and devise and implement a solution for its deteriorated appearance, with the budget for each station limited to \$5,000. The MTA, the Transport Workers Union' and the New York Subways Advertising Company all agreed to cooperate.

The improvements, collectively called Platforms for Design, were carried out in 1976. The results sparked

public delight and comment and earned considerable media recognition. At the station nearest the Bronx Zoo, a landscape of rolling hills was painted on the walls and the advertising panels were filled with large silk-screened posters of animals. The station became a portal to the zoo.

Four large neon designs now hang in a dim passageway in a Brooklyn station: a person winking, another blowing smoke rings, a television set, and a lightbulb. These simple graphic statements, protected by Lexan cases, have transformed a sometimes threatening underpass into a corridor for a whimsical walk.

At the Fifth Avenue and 53rd Street station, near the Museum of Modern Art, bold directional graphics replaced a gray ambience with colors: red, yellow, cerise, purple, white, and green.

The station serving the American Museum of Natural History was decorated with fantasy versions of the dinosaurs on display in the Museum. Passengers were entertained by pictures and descriptions of the "railosaurus" and the "thesaurus rex."

Platforms for Design was extremely well received, demonstrating the tremendous interest public art can generate even in so unexpected a place. The program also showed the potential effects of private investment in improvements to public transit. Concerned companies and individuals saw the results of their efforts: the gift of attractive surroundings to a vital element of the community. The Municipal Art Society reported that the project:

suggested rethinking entirely the interplay between art and amenity in the subway system, within a greater context of safety and security, the

acoustical environment, engineering improvements and better traffic flow. "Platforms" had also demonstrated what could be accomplished through the cooperation of previously unallied organizations. Art groups and designers might initiate public art projects, but joined with the interest and know-how of the business community, government officials, transit engineers, neighborhood associations and cultural institutions, a virtual crusade for a large-scale improvement of urban life could be forged.

These solutions were not designed to be permanent, but they demonstrated what could be accomplished on a subway platform with enthusiasm, imagination, and hard work.

Extending the "Adopt-A-Station" Concept

Platforms for Design resulted in a commitment from UMTA to make available up to \$500,000 on a one-to-one matching basis for more aesthetic improvements, to be accomplished through an "Adopt-A-Station" program. MTA had already begun a modest program of encouraging neighborhood groups to buy materials for high school art students who would paint murals in subway stations, and the Public Arts Council used the remaining \$5,000 of the first Exxon grant to publish a how-to-do-it manual for would-be participants in the new Adopt-A-Station program.

In March 1978, the National Endowment for the Arts gave the Municipal Art Society \$30,000 to spur public and private funding and participation in station improvements at minimum cost to taxpayers. With this money and an additional \$40,000 from private donors, the Municipal



Courtesy of Alexia Lalli

Art Society created the current program. A professional program coordinator is the liaison between the agencies, firms, and individuals active in the improvements. The coordinator's office space and support services are donated by the MTA.

As of January 1982, nine major projects were planned or under construction. At the Clark Street station in Brooklyn Heights, the mezzanine

and platform level, already decorated with fine mosaics, were to receive new floor treatment, lighting improvements, new graphics, and new pedestrian furniture. The Wall Street station was to receive new lighting, new signage, resurfacing with glazed brick and quarry tile, and a vivid paint job on a long row of structural girders that divide the tracks.

Bit by bit, efforts such as these

Project coordinator Alexia Lalli is flanked by Clark Street mural artists Johan Seelenraad, Alan Samalin, and Joe Stallone.

produce image-building improvements that reflect—and bolster—the significance of the transit system to the economic health of the city.

San Francisco's Golden Gate Bus Kiosks

To be reassured about the efficiency and convenience of bus travel, passengers need a good deal of information—information the transit operator should be happy to provide. Riders must be able to distinguish the bus from other vehicles on the street. Bus stops have to be distinct portions of the sidewalk and curb. Route information, destinations, and schedules help passengers find out what the system can offer them. A highly visible symbol identified with the bus system is at once information and advertisement.

Certainly, one tangible expression of the seriousness of purpose of the Golden Gate Transit System (GGT) is the attractive modern kiosks it has chosen to identify its major bus stops and inform riders about routes and schedules. GGT service, which includes ferries as well as buses, covers an area about sixty miles by twenty miles and links San Francisco with suburban communities to the north across the Golden Gate Bridge.

Combining Information and Elegance

When the Golden Gate Bridge, Highway and Transportation District (a public agency) began operating its transit system in the late 1960s, it chose the San Francisco design firm of Landor Associates to produce a system-wide visual identity program. The identity program included a logo, a color scheme, and other graphic elements.

During 1977-79, GGT developed the kiosks to extend the visual identity program to provision of information to riders at the system's most heavily used stops. These stops included those frequented by tourists and other occasional riders not familiar with the GGT lines. Each kiosk contains three basic informa-



tional elements: the bus stop marker at the top, a map of the entire system, and route and schedule information for that stop. The overall height of the kiosk, ten feet, makes it easily visible even on crowded sidewalks.

GGT designed the kiosks in-house. Fabrication is in the system's shops, using commonly available materials: steel struts, styrene and acrylic plastics, common fasteners, neoprene, and paper. The kiosks are produced as needed for about \$160 each.

Designing a Street Presence for the System

The immediate environment of the kiosks is typically a developed area with streets, curbs, and sidewalks. Their visual presence is in a scale appropriate to nearby street furniture

The Golden Gate Transit bus stop kiosks include a map of the city and route and schedule information.

(lamp posts, signs, hydrants), and the components—steel and graphic panels—are coordinated in color and format with other elements of the GGT system. Stops and service are clearly linked.

The kiosks are simple but elegant. A good deal of complicated information is presented in a modern framework that minimizes street clutter. These high-quality objects transform a basic—even critical—element of any transit system into a prestigious symbol for the entire GGT system. For GGT, design is an integral part of its marketing approach.

Grand Rapids' GUS Bus

Grand Rapids' GUS buses—their sides brightly painted with caricatures of typical riders—are part of a park and ride commuter shuttle service instituted in 1979 to alleviate parking congestion in the downtown area of this Michigan city. GUS is an example of an exterior bus design used to identify a particular kind of service, attract riders, and convey an image of the city's transit system to all residents, riders and non-riders alike.

The GUS route serves two parking lots, both accessible to area interchanges, with bus stops at strategic locations in the central business district. Parking is free in each lot, and GUS bus fare is 50 cents per day. The bus is intended to appeal especially to "nine-to-five" workers: those people who need cars only to drive to and from work, not for business purposes during the day.

Planners of the GUS bus—officials from the city's Department of Transportation, the Grand Rapids Area Transit Authority, and the design firm that advised them—took into account both the mechanics of the program and the need to promote it forcefully. Choices of parking lot sites and bus routes were of paramount importance. Equally important, however, was making the shuttle bus eye-catching and appealing. Planners decided to develop a theme for the bus service, including an easy-to-remember name and a "unique and recognizable exterior bus design."

Designing Buses as Billboards

The GUS buses are all full-sized sixty passenger buses, purchased used by the transit authority and rehabilitated. Exterior design planning took into consideration the audience of shuttle riders, the age and size of the buses, the severe Grand Rapids area

winters, and design of other buses in the Grand Rapids system.

The visual theme painted on the bus sides is a line-up of Grand Rapiidians waiting to board the bus. They are drawn as cheerful, cartoon-like caricatures in bright colors that harmonize with upper and lower side stripes of orange, white, and brown. Business people, smiling secretaries, college students and others of all ages and races are depicted as greeting and talking with each other in the line.

In the middle of each bus panel, between the passenger line-up, is the word GUS in large, lower-case orange letters. Beneath it is the slogan, "Gets you down to business . . . free." Above and to the left, over a passenger's head, is the slogan, "Hop on the bus, Gus," from the refrain of a popular Paul Simon song. According to planners, the name GUS was chosen because it is short and catchy and conveys the idea of a friendly, convenient, and efficient shuttle service.

The slogans and the graphic design were part of that same effort: both to advertise a service and to develop a spirit of concern for and cooperation with the riding public, on the shuttle bus service and in all other services of the Grand Rapids Transit Authority. The emphasis on design throughout the system gives the system a personality to which passengers respond positively.

Measuring GUS's Success

At its start, projected ridership figures for the GUS bus were 250 riders per day. Ridership at first was modest, with approximately 150 passengers per day. However, within a few months, ridership exceeded the projected figures, with as many as 600 passengers on winter days, and

an average ridership of 350. More riders take the GUS bus in inclement weather, and some commuters prefer to park free and ride to work.

Initial operating costs for the GUS bus were \$70,000, part of which came from a U.S. Department of Transportation UMTA grant. The used buses cost \$5,000 each and were rehabilitated at a cost of \$50,000 each. Federal and state subsidies added to the GUS budget. The City of Grand Rapids gave the project \$100,000 in matching funds for bus purchase, operating costs, and surfacing of parking lots.

Theodore Perez, of the Grand Rapids Department of Transportation, cited two examples of financial benefits derived from the GUS service. The estimated cost of providing a parking space for a single vehicle in the downtown central business district is \$75. For every one hundred employees who shift from downtown parking to use of the GUS bus, the saving is \$7,500. The parking capacity of both GUS lots, 750 vehicles, represents maximum possible savings of \$56,250.

The shuttle service also gives a strong development incentive in a city experiencing rapid development of its downtown area. Perez explained that zoning regulations require developers of office buildings to show available parking space for 350 vehicles for every 150,000 square feet of office space. The shuttle system is one means of providing for that parking space, which will increase as more shuttle lots are added to the GUS system.

Culture Buses in New York and Chicago



New York City's Culture Loop buses link museums, landmarks, and performing halls.

Transit operators in America's two largest cities use their rich cultural and aesthetic resources to attract bus riders in off-peak weekend hours. New York and Chicago offer "Culture Bus" loop services that link major cultural institutions and tourist attractions. Riders pay a single daily fare (\$2.50 in New York; \$1.40 in Chicago) and may get off and re-board the buses on the loop as often as they wish. Both the transit operators and the institutions share in the benefits of the service.

Drawing Off-Peak Riders in New York

New York's Metropolitan Transportation Authority (MTA) initiated Culture Buses (and also special Shoppers' Buses and Night Owl Buses) in the fall of 1973 as a way to use its new air-conditioned buses in off-peak periods. The city now has two routes. Culture Bus I covers midtown and upper Manhattan, and Culture Bus II covers midtown, lower Manhattan, and parts of Brooklyn. Tickets between the two routes are not interchangeable.

The list of institutions is impressive. Culture Bus I makes twenty-three stops on a seventeen-mile circuit that serves Madison Square Garden, Rockefeller Center, Fifth Avenue, the Museum of Modern Art, Carnegie Hall, Lincoln Center, the American Museum of Natural History, Columbia University, Audubon Terrace, Museum Mile (including the Museum of the City of New York, the Guggenheim, the Jewish Museum, the International Center for Photography, the Metropolitan Museum of Art, the Whitney, and the Frick), the United Nations, and the Empire State Building. Culture Bus II makes thirty-two stops, allowing the rider to visit

the Brooklyn Academy of Music, the Botanic Garden, the Prospect Park Zoo, the Brooklyn Museum, Little Italy, Chinatown, Greenwich Village, Soho, the World Trade Center, the United Nations, and Battery Park. Service is offered on weekends and holidays from 9 a.m. to 6 p.m., with buses running every twenty to thirty minutes.

Linking Neighborhoods and Culture in Chicago

The Chicago Transit Authority (CTA) began operating its first Culture Bus in the spring of 1977 at the prompting of the Chicago Council on Fine Arts. The first route began at the Art Institute and ran south to the Museum of Science and Industry, the University of Chicago, the Oriental Institute, Adler Planetarium, and Shedd Aquarium. The service proved so popular that other institutions asked to be included.

CTA added two more loops in response to demand. Culture Bus North links the Chicago Public Library, the Academy of Science, Lincoln Park Zoo, and the Museum of Contemporary Art. Culture Bus West circulates in the ethnic neighborhoods and makes stops at the Polish Museum of America, the Ukrainian National Museum, the Ukrainian Institute of Modern Art, the Russian Orthodox Cathedral, and the Sears Tower. Volunteer guides describe the sights along the routes.

Chicago's Culture Buses operate between Memorial Day and October on Sundays only, making a total of thirty-eight runs on the three lines from 11 a.m. to 5:15 p.m., with intervals ranging from twenty minutes to one hour. A number of cultural institutions offer discount admissions to holders of Culture Bus transfers.

Illustration 11: Chicago Culture Bus Ridership

Year	Number of Routes	Day Operating	Trips	Riders/Day	Riders/Trip
1977	2	25	n/a	1701	n/a
1978	3	33	1112	2322	69
1979	3	19	1073	2976	80
1980	3	26	964	2656	72

Source: CTA

Promoting the Service and the Institutions

Both New York and Chicago publicize their Culture Buses with brochures, maps, and flyers listing attractions on each of the routes. CTA printed and distributed 50,000 brochures and 100,000 flyers for \$4,000 in 1981. In New York, two prominent local banks donated the cost of the brochures, which were designed by the Municipal Art Society.

Services in each city are well known to tour operators and travel agents, with tourists joining local residents in using an extremely popular transit program. In New York, Culture Bus I attracted 123,000 riders in its first 2½ years of operation, while Culture Bus II drew 84,000. The chart above breaks down Chicago's Culture Bus ridership figures.

These programs have untapped potential, both for large cities famous for their cultural treasures and for

those whose cultural institutions are awaiting a simple marketing technique such as Culture Bus service. These benefits of the service are easily pointed out: improved image of mass transit, increased ridership in off-peak hours, increased revenues for cultural institutions, and experience in coordinating public and volunteer improvements to the system. Culture Buses are a demonstration of the transit operator's sensitivity to existing public interest in cultural heritage.

Cincinnati Public Art Project

In 1976, Boris Goldman, a Cincinnati artist and chairman of the city's Commission on the Arts, convinced Queen City Metro officials to sponsor the Public Art Project as part of the Bicentennial celebration. From then until 1978, the city's 90,000 daily bus riders were treated to performances and art works on the "gallery coach" buses and at bus stops. Buses were turned into exhibition space for poets and visual artists, into stages for musicians and storytellers, and into studios for photographers and painters.

By putting art where people were, the Public Art Project hoped to achieve three goals: provide valuable exposure for professional artists, increase the community's awareness of the arts, and improve the ambience of the transit system's facilities.

Commuting with the Arts

The project sought art forms adapted to the unusual surroundings of bus stops and moving buses. Nine professional artists were given \$500 commissions to design an eleven-inch-by-fifty-six-foot work to replace all advertising in a gallery coach. Other buses displayed the winning entries in a haiku poetry contest and 3,000 placards designed and painted by local residents in temporary studios provided by the project. Riders on gallery coaches reacted to the art works as if they were in a gallery: by walking around the vehicles to view them.

Performances of theater, dance, and music were presented during off-peak hours, except when winter driving conditions prevented it. Twenty-three groups presented 141 two-hour performances in 1977 and 1978. On the moving buses, solo artists or duos played to "houses" averaging 150



Rindberg Photography

persons per hour, while larger groups—orchestras, drama groups, and dance companies—played at bus stops, where audiences ranged from 200 to 500 per day. Some fixed locations drew as many as 10,000 people in one day. Performers were local professionals paid for their work.

Quantifying the Results

Cincinnati's Public Art Project was supported locally during its first year. The Batchelder Company, manager of local transit advertising, donated space worth \$40,000 over the life of the project. Performers were paid \$15,300 during the 1977-78 phase, and the cost of blank advertising placards and supervisors' fees for the do-it-yourself studios came to \$2,000. The second

A local folk duo, Om Shanti, entertains Cincinnati bus passengers.

phase (1977-78) was funded by the National Endowment for the Arts.

Although passenger reaction was obviously enthusiastic (and the maintenance staff reported no graffiti on the exhibits), Queen City Metro wanted a quantifiable assessment of the project's value. They commissioned Message Factors, Inc., of Memphis, Tennessee, to evaluate the Public Art Project. Using telephone surveys and interviews, Message Factors found that public awareness of the project was high and that the au-

Illustration 12: Survey Questionnaire on Cincinnati Public Art Project

Statement	Agree	Disagree	No Opinion
It is a good outlet for local artists	92%	2%	6%
It improves the image of Cincinnati			
Among visitors	86%	3%	11%
Among residents	82%	5%	13%
It is a good way to expose people to the arts	79%	12%	9%
It improves the quality of life in the area	77%	10%	13%
It is a good use of Federal tax money	66%	17%	17%
It attracts new riders to the Metro	49%	27%	24%
It promotes respect for public property	43%	35%	22%

Source: Southwest Ohio Regional Transit

dience's perception of Queen City Metro had changed as a result of exposure to the project:

Although cause and effect cannot be proved by the survey data, it is obvious that those persons exposed to the Public Art Project have a significantly more favorable impression of Queen City Metro than those who have not come in contact with the Project In terms of overall performance, about 45 percent of those who had been exposed to the Public Art Project felt that Queen City Metro was doing a noticeably better job than in the previous year. On the other hand, of those who had no exposure to the Art Program, only 16 percent felt that Queen City Metro was doing a noticeably better job.

The transit system operators had hoped for three marketing benefits from their support of the Public Art Project: a friendlier bus ambience via beauty and vitality, identification of the system with the community's interests, and constructive breaching of departmental boundaries to involve a variety of municipal staff in a community project. The Public Art Project fulfilled, and in some cases exceeded, these expectations. It was particularly effective in improving public attitudes toward the transit system.

Art on Cleveland's Buses



Photo by Bill DePalma, included in Cleveland's on-coach photo exhibition.

From May to July of 1981, the 2.5 million weekly riders on the Greater Cleveland Regional Transit Authority (RTA) had the chance to see one of the largest photographic exhibitions ever organized. The Bus Project placed 9,000 photographs on Cleveland's 900 buses and rapid transit cars in a public art program coordinated by Cleveland State University.

The five to fifty individual photographs placed in the advertising space in each vehicle were all related to transit systems or transportation. The poster that announced the exhibit called the project "an examination of the day-to-day working of the transit systems from a documentary and fine arts perspective; the exhibition will serve not only as a document of transit systems, but also as a vehicle for the display of attitudes and observations about those systems." Throughout Greater Cleveland, 8,500 such posters called for submissions of photographs. The Bus Project was neither a contest nor a juried show, and all entries that met the size requirement for display in buses (11" x 14" horizontal format) were shown.

Stimulating Public Participation in an Arts Program

The Bus Project was conceived and directed by Mark C. Schwartz, a teacher of photography at Cleveland State University, and carried out with the cooperation of RTA. Participants were urged to enter a body of work rather than individual pieces, and the project offered a free thirty-six-exposure roll of black and white film to anyone who requested it (3,200 were given away). Entrants were responsible for processing and printing their submissions.

More than 800 photographers contributed to the exhibit, with submis-

sions ranging from silver and color prints to cyanotypes, photocollages, and copier images. The subjects included vehicles, structures, and human relationships aboard buses, boats, trains, and cars.

Funding the Bus Project

Cleveland State University's initial grant of \$3,500 sparked donations from the Ohio Arts Council, the Gund Foundation, the Greater Cleveland Regional Transit Authority, companies and private individuals that totaled \$45,000. The 9,000 bus advertising spaces contributed by TDI Winston Advertising Company were valued at \$90,000 for the two-month duration of the exhibition. Since much of the available space went unsold, the company did not lose revenue, and the project's photographs enhanced the paid advertising carried in the vehicles.

The Bus Project raised the consciousness of many Cleveland passengers about a service they often ignore even as they use it. Maintenance crews reported no graffiti, and pilferage was slight. The project created new expectations for mass transit riders, who for two months commuted to and from work in mobile photographic galleries.

Poetry on the Buses



Few bus manufacturers or other operators have made concerted efforts to provide lasting amenities for bus passengers. Any note of color in the vehicles' interiors has been the result of commercial advertising (which gave operators badly needed revenue) or graffiti (which replaced ads in spaces that weren't sold). However, ads for cigarettes, jewelry stores, and trade schools seldom enhanced the experience of riders and never improved the image of public transportation. Into this bleak bus-scape has come Poetry on the Buses.

Poetry on the Buses was started in Pittsburgh in 1974. Coming in the wake of the oil embargo, the project reflected widespread public feeling that mass transit should be made more attractive in order to promote ridership as an energy-saving measure. The project was started by

Frances Balter, who was then a member of the Pennsylvania Council on the Arts, and a group at Carnegie-Mellon University. The purposes were to enhance the image of public transportation, to provide riders with an aesthetic experience, and to bring poetry and visual art to a wider audience.

Reading and Riding

In recent years, Poetry on the Buses has been offering bus passengers bright spots and bright moments. The program places 11" x 28" poetry cards among the commercial advertisements and, in some cities, in place of all commercial advertising. The poems are contemporary, brief—usually no more than eight lines—and strikingly illustrated. The poets are both known (e.g., Richard Eberhard, Robert Bly, Marge Piercy, Richard Wilbur) and previously unknown. Works of well-known artists (Andrew Wyeth, Romare Bearden, Andy Warhol) have served as illustrations. The poems, however, are primary. While the artists are encouraged to work with the poets, the poets do have veto power over the artwork.

San Francisco Mayor Dianne Feinstein inspects poems mounted in a local bus.

The poetry cards are noted for their extremely good graphics, which must meet some unusual requirements. They must be designed to be read from a distance of eight feet on a lurching bus. This naturally restricts the length of the poems, as well as the detail that can be incorporated into the artwork.

To date, about 100 poets and 60 artists have been "published" by Poetry on the Buses. Some poems have appeared in bilingual editions, with translations into Spanish, French, Polish, Swedish, Sioux, Hungarian, and Japanese. The selections and presentations are so highly regarded that poetry cards have been exhibited in many galleries and museums, including the Museum of Modern Art in New York and Pompidou Center in Paris.

Paying for Poetry

The success of the project's philosophy is best illustrated by its

rapid introduction into other cities. In its first year, Poetry on the Buses produced 1,000 poetry cards for display on the buses and trolleys of the Pittsburgh Area Transit system. Within six years, the project had placed 150,000 cards in the vehicles of twenty-three cities, including New York, Los Angeles, Philadelphia, San Francisco, and Washington. In 1981 alone, Poetry on the Buses printed 120,000 cards featuring thirty-two different poems. Sixty million bus passengers a week are exposed to fine poetry and visual art as a result of this project. Each card costs two dollars. Poetry on the Buses has analyzed the costs for a dozen of the transit systems using them.

The costs have been met by contributions from foundations, corporations, and government agencies. The U.S. Department of Transportation,

the National Endowment for the Arts, and the Pennsylvania Council on the Arts have made grants to the project. In 1979-80, the budget was \$45,000, and included staff salaries, printing and production, and payments to poets and artists (\$75 per poem).

A major factor in the success of the program has been the growth of in-kind contributions, which vary from city to city. For example, local transit systems generally assume distribution costs. Advertising companies that lease space from the transit systems have either donated space or made it available at a nominal fee. In 1976-77, such in-kind contributions amounted to \$16,000. Two years later, they totaled \$182,000; in 1979-80, the sum was \$360,000. This is a 2,250 percent increase in a four-year period.

Handwriting on the Walls

The benefits of Poetry on the Buses are of several types. The most direct was described by the poet Richard Wilbur. "For many people, I should guess, a ride on public transportation is the only contemplative opportunity of the day, and you have given them something to contemplate." The poetry cards have a humanizing effect on one of the most abrasive of urban environments, and riders appreciate this. The files of Poetry on the Buses and transit operators are bulging with unsolicited letters of thanks. Reader surveys have elicited overwhelmingly favorable reactions to the cards.

The cards also increase the advertising on the buses. Advertisers are reluctant to have their cards set in spaces adjacent to graffiti, a reluctance that can spiral into more empty spaces, more graffiti, and losses of advertising revenues. Poetry cards fill unsold blanks and make the remaining spaces more attractive to advertisers.

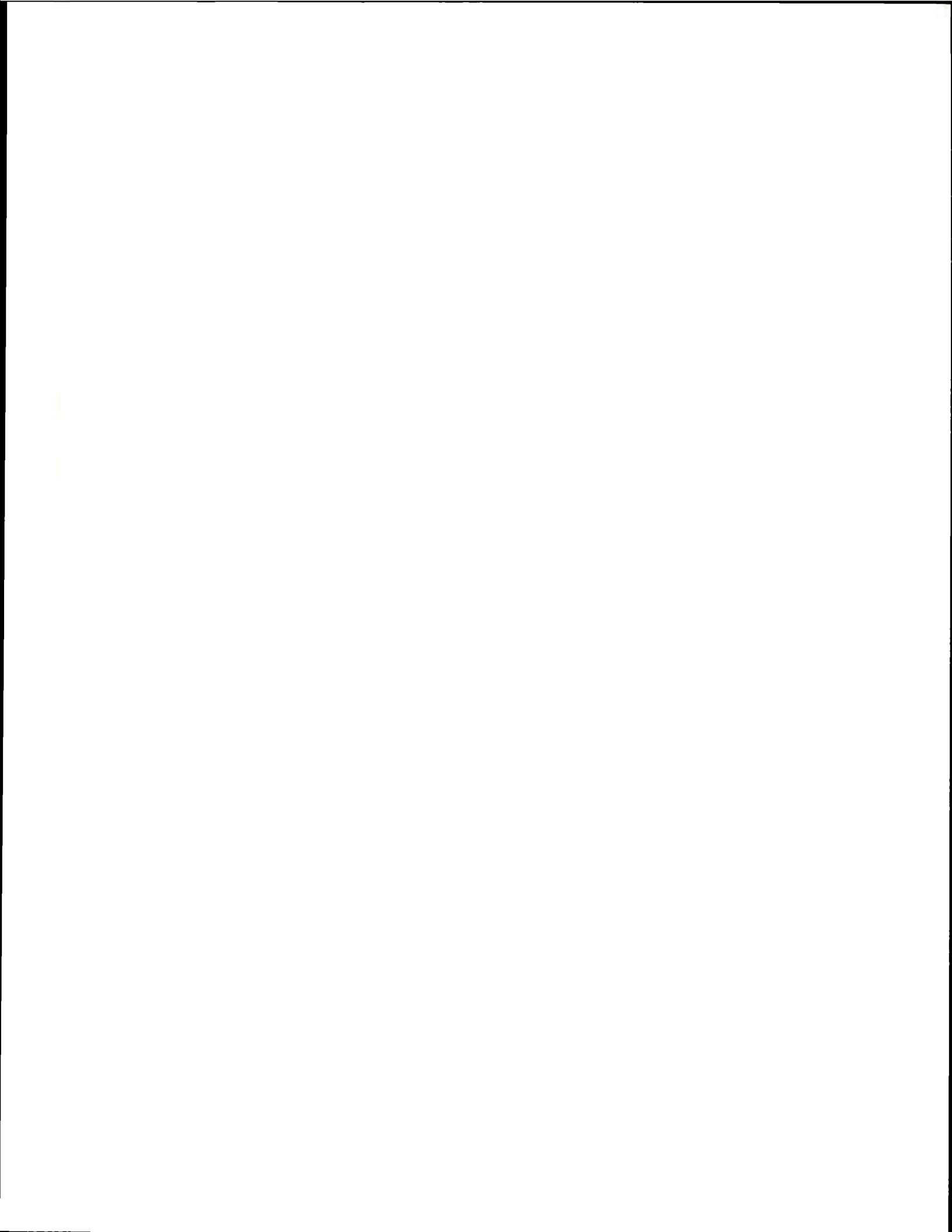
Philadelphia's SEPTA reports that Poetry on the Buses helped improve the appearance and rider awareness of advertising, and increased revenues from advertising. Not only do poetry cards reduce graffiti by eliminating obvious sites, they reduce vandalism in general by contributing to the aesthetics of the vehicles' interiors. Transit experts agree that a more attractive vehicle is less likely to be defaced.

Poetry on the Buses cannot make a bus ride quicker, smoother, or less crowded. It cannot make it warmer in winter or cooler in summer. But the program does enable many passengers to enjoy a memorable experience during their ride, while enhancing the image of public transportation and making it more attractive to many riders.

Illustration 13: Poetry on the Buses: Cost per City and Rider

Transit Authority	Number of Cards	Riders Annually	Cost/ Rider
SEPTA, Philadelphia	8,000	48,840,000	\$.0004
PAT, Pittsburgh	12,000	7,680,000	.003
SCRTD, Los Angeles	12,000*	84,000,000	.0002
MUNI, San Francisco	12,000	41,703,000	.0005
D.DOT, Detroit	8,000	15,600,000	.001
SEMTA, Detroit	8,000	10,478,064	.002
METRO, Washington, DC	14,000	23,955,480	.0008
MBTA, Boston	6,000	6,072,000	.003
MARTA, Atlanta	6,000	18,600,000	.001
RTD, Denver	12,000	9,630,000	.002
TMTD, Portland	12,000*	4,562,000	.004
PATH, New York	12,000*	9,000,000	.002

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Lafayette:

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_____ and Virginia Dzurinko. *American Urban Malls: A Compendium*. Institute for Environmental Action in association with Columbia University Center for Advanced Research in Urban and Environmental Affairs. Footnotes series, no. 4. Washington, D.C.: U.S. Department of Housing and Urban Development, 1976. HUD-PDR-192-4.

A tabular presentation of information on 68 downtown malls, including accessibility, parking, dimensions, traffic restrictions, legal bases, financial data, and contact persons.

Gladstone Associates. *Economic Impact and Implications of the Transitway/Mall*. Prepared for Regional Transportation District and Downtown Denver, Inc. Washington, D.C.: Gladstone Associates, 1978.

Based on a previous study of downtown malls and transitways in the United States, this study assesses the possible impact of a transitway on downtown Denver, Colorado. It relates the transitway proposal to the regional economy and notes the readiness of many businesses to make major improvements if the proposal is implemented.

Section 4 Private Investment

Publications

Detroit:

Looking Ahead to the 80's. Detroit: Central Business District Association, 1980.

"Transportation Fact Sheet for Year Ending June 30, 1980." Mimeographed. Detroit: City of Detroit Department of Transportation, 1980.

Washington Boulevard Area Redevelopment Study. Prepared by Rosetti Associates. Detroit: Detroit Renaissance/CBDA, 1976.

Washington Boulevard Improvement Area General Plan. Prepared by Rosetti Associates. Mimeographed. Detroit: Community and Economic Development Department, 1977.

Oakland:

"Oakland: Economic Development Profile." Oakland: Office of Economic Development and Employment, 1981.

"Fact Sheet: Oakland City Center, Oakland, California. December 1980." Oakland: Grubb-Ellis Development Company, 1980.

1980 BART Passenger Profile Survey. San Francisco: Decision Research Institute, 1980.

Key Interviews

Burlingame:

Peter Callander, Callander Associates, Burlingame, Calif.

David Keyston, president, Anza Shareholders Liquidating Trust, Burlingame, Calif.

Detroit:

Richard Keye, director of marketing, Detroit Convention and Visitors' Bureau.

Robert McCabe, president, Detroit Renaissance.

Alexander Pollock, City of Detroit Community and Economic Development Department.

Tom Walters, City Planning Department, Detroit.

Oakland:

Patrick Cashman, Office of Economic Development and Employment, Oakland.

Al Lee, Bay Area Rapid Transit System, Planning Department, San Francisco.

Dale Odell, Office of Economic Development and Employment, Oakland.

Further Reading

Wolf, Peter. *Land in America: Its Value, Use and Control*. New York: Pantheon, 1981.

Includes an excellent analysis of the effects of transportation design and access on land use values.

Dyett, Michael, et al. *BART Impact Program: The Land Use and Urban Development Impacts of BART*. Final Report. Prepared by John Blayney Associates and David M.

Dornbusch and Company for U.S. Department of Transportation and U.S. Department of Housing and Urban Development. Washington, D.C.: U.S. Department of Transportation, 1978. DOT-BIP-FR-14-5-78.

This assessment of the influence of BART on land use and urban development was premature, but is now useful as background. Most important is its focus on coordinating public improvement programs with transportation investments.

Lerman, Steven R., et al. *The Effect of the Washington Metro on Urban Property Values*. Prepared by the Center for Transportation Studies, Massachusetts Institute of Technology, for the Urban Mass Transportation Administration. Washington, D.C.: Urban Mass Transportation Administration, 1978. UMTA-MA-11-0004-79-1. (PB293730)

This study analyzes econometric models for determining the economic impact of mass transit on real estate prices. Discusses limits and usefulness of various models. Includes a bibliographic essay on work done in this field.

Section 5 Use of Neglected Resources: The Example of California

Publications

Caltrans. *Airspace Leasing and Development Program*. Mimeographed. Sacramento: California Department of Transportation, n.d.

_____. *Annual R/W Airspace Development Report*. Mimeographed. Sacramento: California Department of Transportation, 1980.

_____. *Architecture Landscape and Sign Requirements for Airspace Development*. Sacramento: California Department of Transportation, n.d.

Halprin, Lawrence. *Integrating Freeways into the Cityscape*. New York: Reinhold, 1966.

Key Interviews

Otto Kihm, supervisor, Airspace Development, Caltrans, Sacramento.

Section 6 Improved Resources for Tourism

Publications

Vermont:

Designating Scenic Roads: A Vermont Fieldguide. Montpelier: Vermont Scenery Preservation Council, Vermont Transportation Board, 1979.

Jeffords, James M., and Webster, Donald W. "Vermont 5^c Deposit. A report on Vermont's experience with beverage container deposit legislation over a four-year period. Preliminary edition." Mimeographed. Montpelier: Agency of Environmental Conservation, 1977.

Laventhol and Horwath. *Study of Economic Benefit of Vermont's Travel Industry*. Prepared for Vermont Agency of Development and Community Affairs. Boston: Laventhol and Horwath, 1979.

"Measured Effectiveness and Public Acceptance of the Travel Information System in the Brattleboro, Vermont, Area." Final Report. Prepared by

Peat, Marwick, Mitchell and Co., Boston, Massachusetts. Mimeographed. Montpelier: Vermont Department of Highways, 1971.

"Report of the Committee to Study Outdoor Advertising." Proposal No. 21. Mimeographed. Montpelier: Legislative Council of the State of Vermont, 1967.

Travel Promotion: A Unique Opportunity for Vermont in the 80's. Prepared by the Travel Advisory Council, Agency of Development and Community Affairs, State of Vermont. Reprint edition. Montpelier: Vermont State Chamber of Commerce, 1979.

"Vermont's New Signs of the Times." *Innovations*, May 1979. Council of State Governments, 1979.

"Vermont Tourist Information Services." A reprint of Title 10, Vermont Statutes Annotated, Chapter 21, (Section) 481-505. Mimeographed. Montpelier: Development and Community Affairs Travel Division, n.d.

"Vermont Travel Information Study: An Evaluation of the Statewide Travel Information Program. Prepared by Vermont Agency of Transportation Planning Division. Montpelier: Vermont Agency of Transportation, 1978.

Baltimore:

City of Baltimore. Office of the Mayor. News release 9/8/80.

City of Baltimore. Department of Public Works. Bureau of Highways. "Baltimore City Trailblazing Program." Press release. Mimeographed. 11/25/80.

"He Digs Downtown: For Master Planner James Rouse, Urban Life Is a Festival." Demarest, Michael, *Time*, 24 August 1980.

City of Baltimore Trailblazing Program. Baltimore: City of Baltimore, 1980.

Real Estate Research Corporation. "Expenditures and Characteristics of Visitors to Downtown Baltimore: Summer 1980." Prepared for the Baltimore Office of Promotion and Tourism. Washington, D.C.: Real Estate Research Corporation, 1981.

Key Interviews

Carter's Grove:

Peter Brown, vice president, Colonial Williamsburg Foundation, Williamsburg, Va.

Meade Palmer, landscape architect, Warrenton, Va.

Vermont:

Christopher Barbieri, executive vice president, State Chamber of Commerce, Montpelier.

David Kaufman, Travel Information Council, Agency of Development and Community Affairs, Montpelier.

Don Lyons, director, Travel Division, Agency of Development and Community Affairs, Montpelier.

Donald Webster, director, Agency of Environmental Conservation, Montpelier.

Baltimore:

Whit Drain, project manager, Approachways Program, Baltimore Department of City Planning.

Colin MacLachlan, project director, Department of Public Works, Bureau of Highways, Baltimore.

Larry Reich, director, Baltimore Department of City Planning.

Further Study

Blair, William G., and Harvard, Peter. *Esthetics and Visual Resource Management for Highways: Seminar Notes 1979-1980.*

These presentation notes for a training program for highway professionals are designed to explain the visual effects of highways and ways consideration of those effects can be translated into policy and construction choices.

Blum, Randolph F. *Junkyards: The Highway and Visual Quality.* Final Report. Washington, D.C.: Federal Highway Administration, U.S. Department of Transportation, 1979. GPO S/N 050-003-00350-6.

An introduction to principles of visual quality design, with a manual of suggested design practices for screening junkyards. Includes lists of commercially available screening materials.

Purposes of Automobile Trips and Travel. Nationwide Personal Transportation Study, Report no. 10. Washington, D.C.: Federal Highway Administration, 1974.

Teal, Roger, Wood, Edward, Jr., and London, William. *Tourist Traffic in Small Historic Cities: Analysis, Strategies, and Recommendations.*

Final Report. Washington, D.C.: U.S. Department of Transportation, 1976. DOT-TST-77-2.

This extremely important state-of-the-art study of tourist transportation is also essential for understanding the economic importance of tourism. It also suggests a policy of framework for controlling the negative effects of tourist transportation. Although dated, the extensive bibliography is still quite useful.

U.S. Federal Highway Administration. *Visual Impact Assessment for Highway Projects*. Washington, D.C.: U.S. Department of Transportation, 1981.

A collection of studies that demonstrate the principles of documenting, measuring, and evaluating the aesthetics of highway construction projects. Case histories embrace urban, suburban, and rural landscape problems.

Whyte, William H. *The Last Landscape*. New York: Doubleday, 1968.

Classic overview of the concepts, issues, and strategies of managing scenic roadside resources.

Section 7 Community Image Building

Publications

Woodside:

BAFA Ben-Ami Friedman and Associates. *Woodside Business District Improvement Study*. Prepared for Woodside on the Move. New York. BAFA Ben-Ami Friedman and Associates, 1980.

Update. Woodside, N.Y.: Woodside on the Move. 1980-1981. Bimonthly.

Cleveland:

Rapid Recovery Progress Report. Cleveland: Rapid Recovery.

Rapid Recovery Visual Corridor Study. Prepared by William A. Behnke Associates, Barnes-Neiswander Associates, Studio 7. Cleveland: Rapid Recovery, 1978.

Key Interviews

Woodside:

Eleanor Denker, executive director, Woodside on the Move.

Cleveland:

Holli Birrer, director, Cleveland Rapid Recovery.

Lawrence Jones, president, Van Dorn Company, Cleveland.

Duane Salls, vice president, National City Bank, Cleveland.

Section 8 Enhanced Pedestrian Circulation

Publications

Seattle:

Myers, Phyllis, and Binder, Gordon. *Thinking Small: Transportation's Role in Neighborhood Revitalization*. A report on a conference held February 22-24, 1978, in Baltimore, Maryland. The Conservation Founda-

tion. Washington, D.C.: U.S. Urban Mass Transportation Administration, 1979. UMTA-O-UPP-78-7.

Brambilla, Roberto, and Longo, Gianni. *Learning from Seattle*. New York: Institute for Environmental Action, 1979.

Pike Place Urban Renewal Plan. Seattle: City of Seattle, Department of Community Development, June 1974.

Urban Renewal Plan: Pike Place Market. Amended 4 January 1974. Seattle: City of Seattle, Department of Community Development, January 1974.

St. Paul:

Barton-Aschman Associates, Inc. "Economics of Skyway Systems." Minneapolis: Barton-Aschman Associates, Inc., 1981.

"General Policy Statement for the Construction of the Saint Paul Skyway System." Adopted by the City Council of Saint Paul, Minnesota, 8 January 1980. St. Paul: Department of Planning and Economic Development, City of St. Paul, 1980.

Podolske, Richard C., and Heglund, C. Todd. "Skyways in Minneapolis/St. Paul: Prototypes for the Nation?" *Urban Land*, September 1976, pp. 3-12.

Chelsea:

Gowan, Al. *Nuts and Bolts: Case Studies in Public Design*. Cambridge, Mass.: Public Design Press, 1980.

Memphis:

Downtown Memphis 1979: The Annual Report of the Center City Commission. Memphis, Tenn.: Center City Commission, 1980.

Herald, William S. *Auto Restricted Zones: Plans for the Five Cities.* Vol. 3. Final Report. Prepared by Alan M. Voorhees and Associates, Inc., Washington, D.C.: U.S. Urban Mass Transportation Administration, 1977. (UMTA-VA-06-0042-78-3)

_____. *Auto Restricted Zones: Technical Appendix: Memphis.* Final Report. Prepared by Alan M. Voorhees and Associates, Inc., Washington, D.C.: U.S. Urban Mass Transportation Administration, 1977. (UMTA-VA-06-0042-78-7)

Oklahoma City:

“Background and Basic Facts about Oklahoma City’s Urban Renewal Programs and the Oklahoma City Urban Renewal Authority (OCURA).” Compiled by OCURA Public Information Office. Mimeographed. Oklahoma City: Urban Renewal Authority, 1981.

Gruen Associates. *Central City Plan.* Prepared for the Oklahoma City Urban Renewal Authority, Oklahoma City, February 1975.

Oklahoma City Urban Renewal Authority Nineteenth Annual Report, for the Year Ending June 30, 1980. Oklahoma City: Urban Renewal Authority, 1980.

Key Interviews

Seattle:

John Richmond, Office of Community Development, City of Seattle.

Harriet Sherburne (formerly project manager, Hillclimb Corridor), Cornerstone Development Corporation, Seattle.

St. Paul:

C. Todd Heglund, principal associate, Barton-Aschman Associates, Minneapolis.

Weiming Lu, director of Lowertown Development Corporation.

Chelsea:

Michael Gavin, director, Chelsea Office of Community Development.

Memphis:

Don Paight, assistant executive director, Center City Commission, Memphis.

Oklahoma City:

James Dan Batchelor, attorney, Oklahoma City Urban Renewal Authority.

Bob McMillan, associate partner, Conklin & Rossant, New York City.

Tiana Zaffuto, assistant city manager, City of Oklahoma City.

Further Study

Knight, Robert L., and Tryg, Lisa L. *Land Use Impacts of Rapid Transit:*

Implications of Recent Experience.

Prepared by DeLeuw, Cather and Company, San Francisco. Washington, D.C.: U.S. Department of Transportation, 1977. DOT-TPI-10-77-29

Detailed study of improvements to rapid transit facilities in the United States and Canada. Addresses policy, planning, technical, and economic questions in relating transportation improvement to development of nearby areas, but does not view transit as an economically determining factor.

Opportunities for Downtown Improvement: Recent Projects in Transportation and Urban Design. Prepared by Alan M. Voorhees and Associates, Inc.; Cambridge Systematics, Inc; Moore-Héder; and A.T. Kearney, Inc., Cambridge, Mass: Moore-Héder, 1977.

Useful brief surveys of UMTA’s auto-restricted-zone (ARZ) plans for Boston, Burlington (Vt.), Memphis, Providence, and Tucson. Analyzes traffic, transit, retail, and circulation configurations, and suggests results of modifications to each element.

People Movement for Downtown Improvement. Prepared by Institute of Public Administration and Moore-Héder Architects and Urban Designers. Washington, D.C.: U.S. Urban Mass Transportation Administration, 1977.

A community handbook showing successful pedestrian and transportation improvement projects. Has brief accounts of many projects cited in the present study.

Transportation Needs and Programs Summary. A report of the Transportation Task Force of the Urban Consortium for Technology Initiatives.

Prepared by Public Technology, Inc., Washington, D.C.: U.S. Department of Transportation, 1980.

A report on 106 transportation research and development needs paired with programs, studies, projects, or agencies that have addressed them. Issues of pedestrian amenities and convenience are included, although the primary emphasis is on infrastructure techniques (finance, administration, construction, operations, etc.).

"Urban Ecological Analysis Techniques." Mimeographed. Cambridge, Mass.: Moore-Héder, n.d.

Extracts from three of this firm's urban studies detail the methodologies of aesthetic evaluation. Includes an explication of the variables of urban ecological environments and analyzes various "fits" of pedestrian, transit, and economic activity. ARZ in Memphis is featured.

Section 9 Increased Potential for Intermodal Travel

Publications

Coalition of Northeastern Governors and the Council for Northeast Economic Action. *Northeast Corridor Station Area Development: Catalyst for Regional Revitalization*. Boston: Coalition of Northeastern Governors, 1981.

Knight, Carleton. "New London Restores Station." *Preservation News*, September 1976.

Marlin, William. "Rail Depot Back on the Right Track." *Christian Science Monitor*, 5 November 1976.

New London Redevelopment Agency. *Annual Report 1973/74: A Decade of Planning Becomes Reality*. New London, Ct.: New London Redevelopment Agency, 1974.

_____. *Annual Report 1979*. New London, Ct.: New London Redevelopment Agency, 1979.

_____. *Annual Report 1980: More Than Yesterday, Less Than Tomorrow*. New London, Ct.: New London Redevelopment Agency, 1980.

Notter, George M. "The Architect as Developer: Union Station in New London." *Journal of Architectural Education* 30, November 1976.

Plummer, Dale S. "A Star Is Reborn." *Connecticut College Alumni Magazine*, winter 1980.

Recycling Historic Railroad Stations: A Citizens Manual. Washington, D.C.: U.S. Department of Transportation, 1978.

Key Interviews

Sharon Churchill, executive director, New London Landmarks, Union Railroad Station Trust, Inc., New London, Ct.

Thomas J. Kelly, chairman, New London Connecticut Redevelopment Agency.

Paul McGinley, architect, Anderson, Notter, Finegold, Inc., Boston.

Further Study

Webster, F.V. *Urban Passenger Transport: Some Trends and Prospects*. Paper presented to the 10th Symposium on "The Future of Con-

urbation Transport," University of Manchester, Department of Extra-Mural Studies, October 19-21, 1976. Reproduced by National Technical Information Service, Springfield, Va. PB-280-870.

A study of the changes in public transit use in Great Britain from 1954-74. Describes public transit users, factors affecting demand for public transit, and long-term strategies for changing ridership habits.

Section 10 Increased Ridership

Publications

Portland:

Edminster, Richard, and Koffman, David. *Streets for Pedestrians and Transit: An Evaluation of Three Transit Malls in the United States*. Prepared by Crain and Associates, Menlo Park, Ca. Washington, D.C.: U.S. Urban Mass Transportation Administration, 1979. UMTA-MA-0049-79-1. PB 295728.

Tri-County Metropolitan Transportation District of Oregon. "Tri-Met Fact Sheet: February, 1981." Portland, Ore.: Tri-Met, 1981.

_____. "Tri-Met News." Press releases. Mimeographed. Portland, Ore.: Tri-Met, 1977.

Webber, Alan. "The Mall: Sic Transit Gloria." *Willamette Week*, 27 March 1978.

Key Interviews

Portland:

Phillip Colombo, manager, public information, Tri-Met, Portland, Ore.

Glenside:

Wyndham B. Blanton, III, transportation development engineer, County of Henrico, Va.

Philip T. Rutledge, Jr., director of public works/county engineer, County of Henrico, Va.

Section 11 Cost-Efficiency of Transit Marketing

Publications

Cambridge:

Arts on the Line: A Pilot Project in Arts and Transportation. A report to the U.S. Department of Transportation's Urban Mass Transportation Administration. Cambridge, Mass.: Cambridge Arts Council, 1980.

Hyde, Andrew. "Arts on the Line—Design Quality in Transit." Speech at 3rd Annual Meeting, Partners for Livable Places. Mimeographed. Washington, D.C.: Partners for Livable Places, 1980.

New York's Platforms for Design:

"Background Information." Mimeographed. New York: Arts and Business Council, 1976.

Chapin, Louis. *Platforms for Design.*

New York: Arts and Business Council, Public Arts Council/Municipal Art Society, 1976.

"General Press Release for Platforms for Design Project." Mimeographed. New York: Arts and Business Council, 1976.

"Platforms for Design: Background." Press release, 17 November 1976. Mimeographed. New York: Platforms for Design Information Office, 1976.

Culture Buses—New York:

"New York's Weekend Culture Buses." New York: Metropolitan Transit Authority, 1980.

Tauranac, John. *Culture Bus Loop I: Manhattan.* New York, Metropolitan Transportation Authority, n.d.

_____. *Culture Bus Loop II: Brooklyn and Downtown Manhattan.* New York: Metropolitan Transit Authority, n.d.

Culture Buses—Chicago:

"CTA Culture Buses." Pamphlet. Chicago: Chicago Transit Authority, May 1981.

Chicago Transit Authority. "RTA/CTA Culture Bus Ridership Report." Chicago: CTA, 1977, 1978, 1979, 1980.

Cincinnati:

Gallagher, Siebahn M. *Metro: Moving Art.* Final report on the Public Art Project in Cincinnati, Ohio, sponsored by The Southwest Ohio

Regional Transit Authority, Queen City Metro Operating Division. Cincinnati, Ohio: Southwest Ohio Regional Transit Authority, 1979.

Message Factors, Inc. "Public Art Project Evaluation." Prepared for Southwest Ohio Regional Transit Authority, Metro Operating Division. Mimeographed. Memphis: Message Factors, Inc., 1978.

Cleveland:

Kravitz, Lee, and Soltes, Ori Z. *The Bus Project.* Cleveland, Ohio: Art Department of Cleveland State University, 1981.

Pittsburgh Poetry on the Buses:

Poetry on the Buses. "Annual Report 1976-1977." Mimeographed. Pittsburgh: Poetry on the Buses, 1977.

_____. "Annual Report 1978-1979." Mimeographed. Pittsburgh: Poetry on the Buses, 1979.

_____. "Annual Report 1979-1980." Mimeographed. Pittsburgh: Poetry on the Buses, 1980.

_____. "Teaching Aids Based on Slide Presentation." Mimeographed. Pittsburgh: Poetry on the Buses, 1980.

Key Interviews

Philadelphia:

Philip Caldwell, assistant general manager, Southeastern Pennsylvania Transportation Authority.

Henry H. Reichmer, Jr., executive vice president, Greater Philadelphia Chamber of Commerce.

Cambridge:

Ann Ducille, formerly director, Arts on the Line, Cambridge, Mass.

Rob Ferris, Communications Department, Massachusetts Bay Transportation Authority, Boston.

New York Platforms for Design:

Alexia Lalli, partner, Lalli and Moore Associates; coordinator, Culture Stations Project, Metropolitan Transportation Authority.

San Francisco's Golden Gate Bus Kiosks:

Robert David, Marketing Department, Golden Gate Transit.

Grand Rapids:

Theodore M. Perez, Grand Rapids Area Transit Authority.

Culture Bus—Chicago:

C. William Baxa, manager, public affairs, Chicago Transit Authority.

Jeff Stern, Culture Bus Project Manager, Chicago Transit Authority.

Culture Bus—New York:

Bernard W. Byrnes, deputy controller, New York City Transit Authority.

Linda Marshall, marketing business manager, Metropolitan Transportation Authority.

Cincinnati:

Siebahn M. Gallagher, special projects administrator, Queen City Metro, Cincinnati.

Boris Goldmund, Eyes and Ears Foundation, San Francisco.

Cleveland:

Mark Schwartz, Art Department, Cleveland State University.

Taras Svmagala, manager of communications, Greater Cleveland Regional Transportation Authority.

Pittsburgh Poetry on the Buses:

Frances Balter, formerly executive director, Poetry on the Buses.

Further Study

Transit Marketing. A report on the Transportation Task Force of the Urban Consortium for Technology Initiatives. Prepared by Public Technology, Inc. Washington, D.C.: U.S. Department of Transportation, 1978.

A short, useful survey of marketing principles for transit operators. The report concludes that, despite the lack of evaluative methods, some successful marketing programs have been devised for

transit systems. Includes a bibliography and list of current transit marketing programs.

Information Aids for Transit Consumers: Conference Proceedings. Prepared by the Transportation Research Board of the National Academy of Sciences. Washington, D.C.: U.S. Urban Mass Transportation Administration, 1979.

A series of short papers explaining information systems, system maps, timetables, and signs in the context of transit marketing programs. Contains recommendations of workshop participants.

Rausch, R. W. et al. *ATA Rail Transit Conference Held in San Francisco, California on April 14 and 16, 1974. Operations Sessions. Papers.* Washington, D.C.: American Transit Association, 1974. Distributed by NTIS, PB-234825.

Ten papers on transit operations. Four cases focus on ridership, promotions, off-peak incentives, prepaid system passes for commuters, reduced transfer charges, cultural institution routes, shoppers' routes, weekend fare reductions, publicized express services, park and ride plans, fleet modernization, and graphic systems. All are discussed as marketing aids.

Transit User Information Aids: An Evaluation of Consumer Attitudes. Prepared by Battelle Memorial Institute, Heiman Affairs Research Center, and Ilium Associates, Inc. Washington, D.C.: U.S. Urban Mass Transportation Administration, 1976.

Laboratory tests and population surveys are used to define discrete problems in transit information systems. Suggests ways to pre-test and evaluate changes in graphics, schedules, and information aids within the context of system marketing.

Appleyard, Donald. *BART I—Traveler Behavior Studies*. Vol. 1, Pt. 2. East Bay Panel. Berkeley, Ca. Metropolitan Transportation Commission, 1973. Distributed by NTIS, PB 236734.

Excellent discussion of impact of news media on public opinion of transit systems. Detailed survey is a model of polling techniques.

Center City Environment and Transportation: Transportation Innovation in Five European Cities. Prepared by Public Technology, Inc., for the Urban Consortium for Technology Initiatives. Washington, D.C.: U.S. Urban Mass Transportation Administration, 1980.

Included in the case studies of transportation systems management are details of aggressive marketing programs that have successfully improved the position of public transit and pedestrians relative to the private automobile.

For further information about design and transportation, contact the Livability Clearinghouse of Partners for Livable Places, 1429 21st Street, NW, Washington, D.C. 20036; Linza Bethea, director. Phone (202) 887-5990.

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