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Joint Development and Multiple Use of Transportation Rights-of-Way

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Preface

UNTIL recent years, costs for right-of-way acquisition were about ten percent of the total highway construction costs. Today, on some urban freeway projects, right-of-way costs have increased to 70 to 80 percent of the total construction costs. In addition to the increasing costs of right-of-way there is growing social and political resistance to the further intrusion of freeways into the urban environment. There is increasing concern that transportation systems improve our cities as well as our mobility. In response to these economic and social considerations, increased attention is being directed towards the application of multiple use of rights-of-way and joint development projects for transportation systems.

At the suggestion of the Institute of Transportation and Traffic Engineering at the University of California and the Civil Engineering Department at the Polytechnic Institute of Brooklyn, and with the support of the Automotive Safety Foundation, the Highway Research Board convened a conference on multiple use of transportation rights-of-way.

The concept of multiple use is space oriented. It uses a right-of-way corridor for more than one type of transportation or functional purpose. During the deliberations of the Board's conference planning committee, it became immediately evident that in order to achieve multiple use for functions not transportation oriented it would also be necessary to consider joint development in connection with transportation systems. Joint development is time rather than space oriented and is aimed at coordinating the development of the total transportation corridor rather than merely the immediate right-of-way. Therefore, the conference was oriented to consider both the problems of multiple use of the right-of-way and joint development of the transportation corridor.

The concept of multiple use is not new. It has been with us for many centuries. However, economic and social considerations up to the present time have not warranted extensive development. We are all familiar with examples of multiple use and joint development. On the Interstate and toll road systems we have all used the safety rest areas, the service plazas; we have stopped at scenic overlooks; we have seen truck weighing stations and maintenance sheds along the right-of-way. In urban areas like New York and Chicago, we have seen railroad and subway facilities parallel, above or below highway facilities. We have seen the construction of apartment houses, schools and public buildings over right-of-way in cities where the density of population and the high cost of land makes such opportunities feasible.

Because the people have demanded increased public services, new governmental organizations have been created to fulfill these requirements. Governmental responsibility for public construction programs has now become so fractionalized that it is very difficult to plan and develop unified urban transportation, construction and renewal programs. The concept of joint development puts emphasis upon coordinating the construction of new highways and other transportation facilities with the long-term planning and development programs within an urban area. It seeks to plan for the entire transportation corridor and to integrate the social and economic environment with the transportation facility. Out of this need for joint development have arisen new concepts such as the transportation design team, the high accessibility corridor and the need to control developments at interchanges.

To design and implement joint development and multiple use projects a multi-disciplinary approach is needed. Therefore, the planning committee sought to bring together a broad interdisciplinary group of professional and community leaders to examine and discuss these topics and their potential applications.

The conference covered four areas. First, multiple use and joint development had to be described, defined and given a historical prospective. Second, examples of how the concepts of multiple use and joint development are being utilized in the planning of transportation systems in a number of cities were presented. To point out some of the problems and impediments to the application of joint development and multiple use the third part of the conference was directed to analyzing the planning, economic, social, engineering and legal considerations. In the fourth section of the conference, the two agencies — the U.S. Department of Transportation and the U.S. Department of Housing and Urban Development — which are primarily responsible for coordinating the Federal programs for transportation and urban renewal were asked to present their current positions and attitudes on these subjects.

The response to the invitations to the conference was overwhelming. Over 300 officials and professional people attended the conference.

An additional 200 people desired to attend the conference but were unable to do so because the facilities were limited.

The speakers and the panel discussions described a multiplicity of objectives that could be achieved through increased application of joint development and multiple use. For example, costs of right-of-way could be decreased. A transportation corridor could be designed not only to meet user demands but to actually reduce the demand for transportation. Land use could be arranged to preserve the capacity of freeways and arterial corridors. Transportation corridors could be designed so that mass transit could complement the automobile use through high-density corridors. By planning land use along transportation corridors, activities requiring high accessibility could be located in close proximity to the transportation facility and reduce travel on nearby local streets. By coordination of transportation and other land use activities, competition in the allocation of urban land among governmental agencies and among government and private interests could be reduced. By coordination of development programs a greater return of public expenditure could be achieved.

Through the use of these two techniques there could be better use of remnant parcels resulting from right-of-way takings. Local governments could be compensated for property tax loss from land taken for right-of-way by replacing taxes through multiple use functions. Multiple use and joint development might also be used to provide replacement housing and business sites for those affected by right-of-way takings and might redirect funds back into the central urban areas. Not only could multiple use and joint development make use of scarce urban lands but it might also provide a means for avoiding splitting neighborhoods and causing other adverse social and economic effects along the right-of-way corridor.

While joint development and multiple use offer a number of potential benefits especially to the urban environment there are a number of constraints and impediments to extensive application of these two ideas. First there is lack of clear jurisdictional authority. Within an urban area, frequently there are a number of agencies who have the responsibility for transportation and comprehensive planning. Intergovernmental relations and responsibilities have not been clearly defined nor has a well-operating coordinating agency in most instances been created. Also, there is a problem in planning and coordinating private construction with public planning construction. There are difficulties in tying together the construction practices and resources of different public agencies as well.

Economic as well as governmental and social considerations affect the application of multiple use and joint development. Joint development generally costs more in terms of construction costs. These must be compared to the economic and social benefits to be derived. Unless the governmental agencies involved are willing to underwrite construc-

tion and operating costs, it might be difficult to make multiple use development competitive with other sites near or along the corridor.

Multiple use must be considered in terms of return on investment and alternative investment opportunities. If public funds are involved these will be in competition with other public expenditure programs and they will accordingly compete in importance and priority.

If the projected multiple use or joint development program is deemed desirable construction and maintenance costs must be allocated. Which governmental agency should pay how much of the cost and how should it be funded? How should local tax bases which are lost to the new facilities be replaced?

In the engineering considerations, there are also a number of problems and impediments. There is currently a dearth of construction and architectural standards for multiple use projects. Design standards which take into consideration safety and public health, lighting, ventilation, vibration and noise, traffic capacity, maintenance, emergency services and compatibility with surrounding environment must be set up. Means for maintaining the facilities must be developed. The effects of the multiple use and joint development must be considered in relation to possible future growth and needs of the transportation facility and the multiple user.

The greatest immediate impediment, however, to the applications of joint development and multiple use of transportation rights-of-way are legal constraints. Most states will need enabling legislation before there are clear directives and authority to acquire, lease or dispose of rights for multiple use. Similarly, there must be legislative standards for joint public or public-private ventures. The concepts require a much broader definition of the powers of condemnation and eminent domain than the state and local governmental units have had to date. The states and local governments either through a governmental agency or a third party will have to acquire property needed for the transportation facility as well as the excess property for joint development activities. It will have to sell, lease or manage excess properties not needed for the transportation facility or for other governmental agencies. The notion of "public development corporations" to bring together the land gathering and physical development strength of various agencies has been suggested.

The function of the conference was to bring together a wide interdisciplinary group of professionals and public administrators to review the state of the arts of joint development and multiple use of transportation rights-of-way. The value of the conference comes from establishing communications between the planners and administrators who have responsibilities of planning and developing our transportation systems. Since the conference, the U.S. Department of Housing and Urban Development has approved a major project for joint development for Washington, D.C., over the center leg of the Inner Loop Freeway. The

U.S. Department of Transportation has issued two memoranda approving the use of Federal-aid highway funds for joint development planning and implementation of the corridor joint development plan associated with a Federal-aid project. Though these two memoranda have come out since the conference, they are included as part of the proceedings for the information of the reader.

If there were any general consensus of the conference, it might be that in urban areas major transportation rights-of-way should be considered in a context broader than that of the facility itself. Right-of-way now must be considered in a total corridor concept and transportation planning must consider not only the design of the facility but also its effects on the surrounding economic and social environment. Impact on the environment must be considered in both the location and design of the transportation improvement.

The conference is the beginning of what we hope will be continuing activities of the Highway Research Board in this field. In the future the Board hopes to deal with the specific problems involved in multiple use and joint development through broadly based workshops, committees and research efforts.

D. Grant Mickle
Conference Chairman

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Highlights of the Conference

KENNETH E. COOK
Highway Economist
Highway Research Board

THE two broad concepts of joint development and multiple use of transportation rights-of-way hold promise in helping to resolve some of the problems in the urban environment. However, they have not been discussed widely among engineers, planners, political leaders, and decision-makers. The Highway Research Board convened this conference to bring together a broad interdisciplinary group of professional and community leaders to examine and discuss these topics.

The conference was divided into four general topic areas. The first session was a general overview of joint development and multiple use of transportation rights-of-way with illustrations of projects that have been constructed or contemplated throughout the country. The second session reviewed a number of case studies that utilized the joint development and multiple use concepts. The third portion of the program considered planning, economic, social, engineering, and legal aspects of joint development and multiple use. The final portion of the program reviewed current programs and policies of the Federal Highway Administration, the Bureau of Public Roads, and the Department of Housing and Urban Development toward multiple use and joint development.

In his opening remarks D. Grant Mickle stated that multiple use can provide economies in the use of land requiring high accessibility. It may also be utilized to improve the structure of neighborhoods and add to any housing supply or supplement open space. However, the erection of high-rise apartment developments or multistory office buildings straddling transportation systems may provide insurmountable obstacles to adding subsequent capacity to the transportation facilities.

Joint development and its related notion of multiple use of transportation rights-of-way was defined by Frederick T. Aschman as a "process of conceiving, designing, and carrying out a combination of urban development activities in a unified way, to the end that benefits are greater than if each individual activity were separately planned and executed." Aschman pointed out that the way land is used is a major determinant for the demand for transportation. Concomitantly, transportation is a major determinant of the extent and way land is used. Therefore, both transportation and land use must be jointly considered. Transportation rights-of-way, especially on a scale in which we think of them today, are themselves a major land use. The joint development concept is a potential method for reducing the frictions of competition in the allocation of urban land use.

Joint development sees its implication in the economics of right-of-way acquisition and more efficient urban forms that may tend to reduce the need for actual movement. Joint development is a concept of collaboration and cooperation on a scale we have seldom before encountered. It demands an expanded view of cost and benefits. Some see joint development as mainly a means of achieving economy or public acceptance of plans. Others place its value on achievement of excellence in design and on reducing the frictions of competition for space and on the possibilities of achieving new city forms and structure. The corridor concept places emphasis on multiple-mode transportation routes as the core of linear concentration of land uses with accessibility requirements matching the level of access provided by the transportation systems.

Since the requirements for joint development and multiple use are interdisciplinary, a new design team approach is necessary to bring together the route location and design dimensions in consideration of broad economic, social, and political impacts of such projects, especially in urban areas. The design team approach implies that transportation facilities can no longer be blasted through existing urban areas or expensively and inefficiently maneuvered through the city to avoid adverse economic and social effects to those within the transportation corridor. Instead the concept team approach advances the notion of replanning and restructuring the entire transportation corridor using the joint development concept as a means of adding new values to the corridor, compensating those affected by the transportation system and attempting to design a transportation facility that will enhance rather than deteriorate the environments through which it passes.

The presentation by David Levin was primarily directed at illustrating the many joint development and multiple-use projects that currently exist throughout the country, the proposals currently being considered, and further possibilities for the application of these concepts. He pointed out that new highway rights-of-way presently take taxed lands off the tax rolls. Multiple use offers an opportunity for restoring some taxable base or even expanding the tax base.

Another characteristic of multiple use in conjunction with freeway or other transportation development is the economy of space. When the land values are high enough to justify it, people may be generally relocated into about one-third of the space that they formerly occupied, at the same time, leaving additional open space for other kinds of uses such as parks or playgrounds.

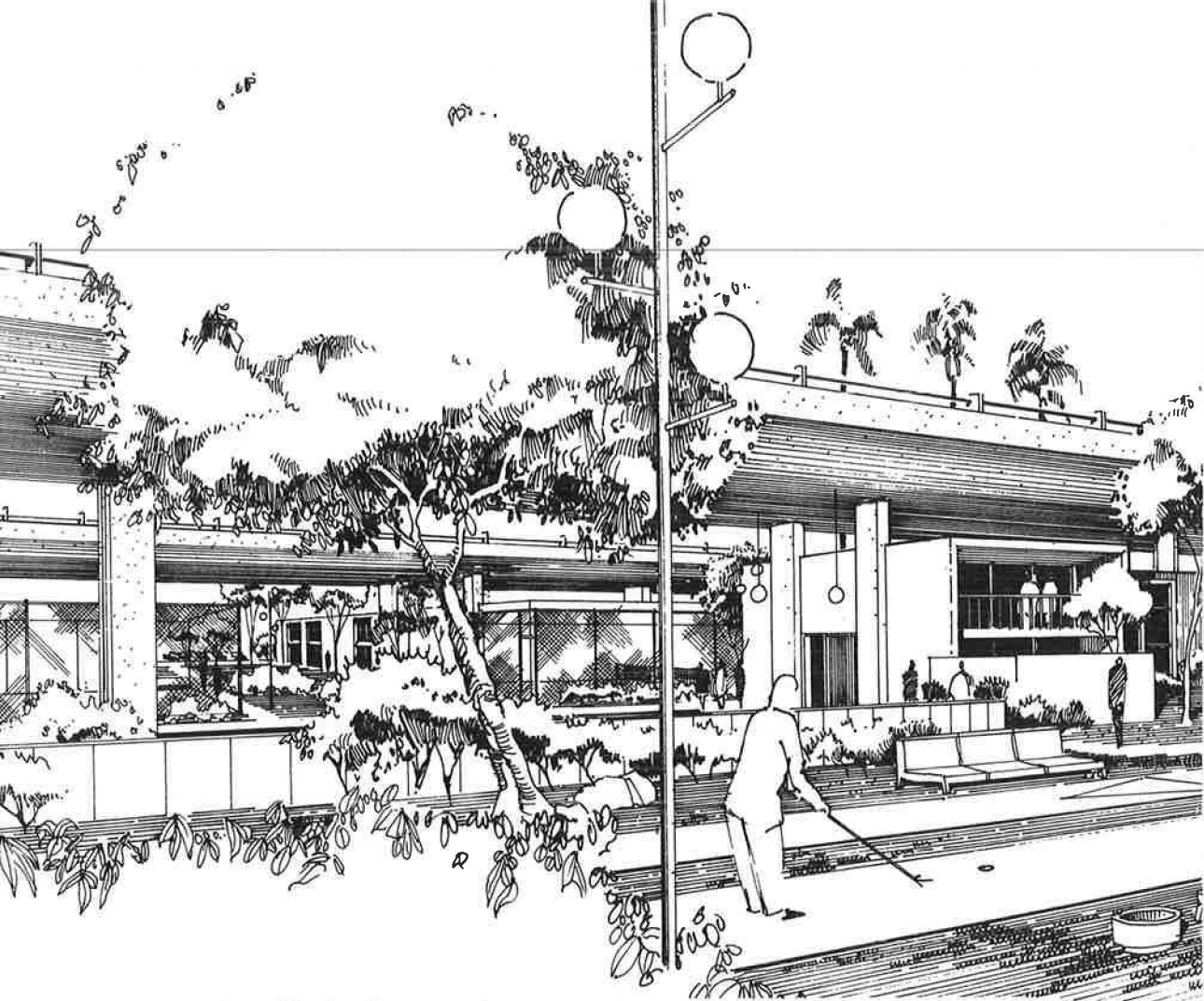
The cost of right-of-way taking in urban areas is extremely high. Part of this high cost is due to the current policy of only acquiring the limited right-of-way necessary for the facility itself. In most cases the highway corridor requires only 25 to 35 percent of the block width, but the cost is approximately 65 to 75 percent of the total block value. If the highway department or other public agencies could acquire total blocks, the remaining 65 to 75 percent of the area not needed for right-of-way would amount to only about 20 to 30 percent additional cost. This land then could be put to public or private uses that otherwise would not be economically justifiable.

Joint development and multiple use is applicable to all modes of transportation. Samuel Hellenbrand addressed himself to the topic from the railroads' point of view. He pointed out that the railroads have been in the multiple-use business for more than a half a century. He suggested that not only should other modes cooperate with railroads in designing multiple-use facilities, but also that railroads had a knowledge on the subject that they could share with highway and other mass transit interests. He pointed to the need to have cooperative planning by all modes of transportation in the location of new facilities. With the growing shortage of industrial sites, it is important to avoid losing such potential sites by cutting off rail access service in locating a highway or transit facility.

The second session of the conference was devoted to examining case studies illustrating the use or planned use of joint development and multiple use of rights-of-way. Because of the magnitude of the subject the illustrative cases were primarily limited to the urban scene. Case studies were presented for current projects in Chicago, Baltimore, Minneapolis, St. Paul, Los Angeles and New York. It is hoped that later workshops will consider joint development and multiple use as they relate to rural areas.

Milton Pikarsky discussed the planning of the Chicago Crosstown Expressway. Each potential alignment within the corridor was evaluated separately from three different aspects: engineering, community impact, and demographic and population effect. While relative values were given for each of the individual criteria in the three categories with respect to one another, alignments were rated separately for each category.

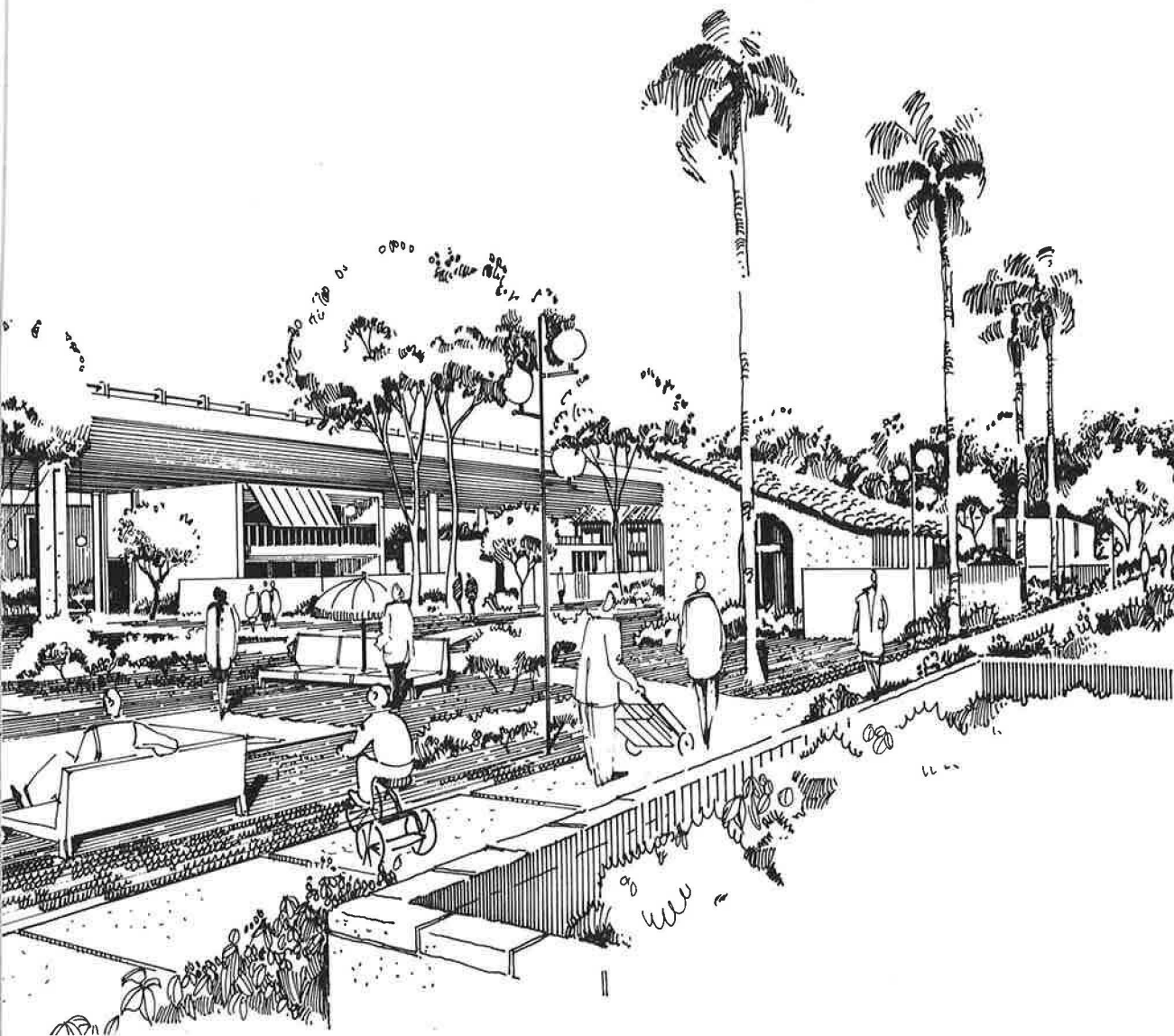
The category for engineering considerations included all technical and economic requirements of the facility itself. The community impact category attempted to evaluate ethnic, religious, and political bases



Possible development of commercial or residential used in conjunction with low elevated section of a proposal for the Papago Freeway which will create an inner beltway for Phoenix, Arizona. (Source: Johannessen & Girard Consulting Engineers, The Papago Freeway, A Report prepared for the Arizona Highway Department, Phoenix, Ariz., 1968.)

and the extent to which people and business would be dislocated by the proposed alignment. The demographic survey investigated population trends, potential displacement of schools, churches, parks, and special purpose public districts.

One of the specific factors considered in the location of the expressway was an attempt to make the highway development compatible with the way those affected by the facility would like to see their community developed. Special attention was given to the addition of badly needed small parks and recreation areas, to the reduction of heavy



trucking over residential streets, and to the minimum displacement of families. Location and design proposals attempted to eliminate the possibility of commercial strip development and to assist in consolidating commercial activities into efficient centers. Provision was also made for right-of-way for mass transit within the alignment.

A number of transportation agencies have recognized the need to consider social, economic, and aesthetic needs of the city's environment in conjunction with the location of a transportation facility. Some cities have created design teams including not only engineers but also

economists, sociologists, psychologists, demographers, planners, architects, and representatives of other disciplines to develop a totally integrated transportation system in the urban environment. The city of Baltimore has probably had one of the most extensive design teams which is currently in the process of developing plans for a highway system through the Franklin-Mulberry corridor. The design concept team attempts to bring together consultants with expertise in urban affairs and local agencies responsible for the design location of the highway system. A number of consulting firms were retained by the State Roads Commission to plan the 24-mile route which passed through a park, a ghetto area, the waterfront, and historical and industrial areas as well as open space. Norman Klein reported on the activities of the design concept team and how they have operated since their inception.

A general survey of the total route location has been completed and current planning activities are directed toward the development of a school multiservice center in Franklin-Mulberry corridor. The school system is to be built upon a platform over a right-of-way. Special attention is being given to the problem of acoustics and noise as well as that of pollution and of providing necessary ventilation incident to the highway below.

Robert Jorvig reported that in the Twin-Cities area of Minneapolis and St. Paul many of the best examples of current development were related to urban renewal programs. He gave special attention to the large general neighborhood renewal project in the St. Paul area that consisted of a series of renewal activities accomplished over a period of years. A problem arose between the renewal program and the location of the Interstate Highway System. Because of problems of timing the acquisition and clearing of land for the redevelopment project and the ultimate location and construction of the freeway, the city and the highway department could not reach a mutual agreement. As a result the renewal project had to be reduced in size and the portion of the area within the highway right-of-way was deleted. The blighted area continued to deteriorate and ultimately agreement was reached between the two parties. A key feature in the design of the Interstate Highway System and the urban renewal programs was the development of attractive vistas, especially in the state capitol area as seen from the highways.

The metropolitan council of the Twin-Cities area was designated by the state legislature as the reviewing agency for any program requiring regional review by the Federal Government. The agency also has reviewed functions and the right to suspend plans of multipurpose special districts when they are not in conformance with the guide for the general metropolitan development.

The planning for the Century Freeway through Watts in the Los Angeles area was described by Stuart Hill. He pointed out that the

introduction of any major transportation improvement in a city disrupts the community. In addition, in Watts there has already been a riot. The proposed freeway is to have two interchanges in the Watts community. In addition, 2,600 families will be displaced, most of them from low-cost housing. Half the houses affected are owner occupied, and 20 percent of the occupants are retired or on a fixed income. The average value of the homes to be taken is about \$13,000. Cost of comparable homes outside the Watts area is estimated to be between \$18,000 and \$22,000. Therefore, a compensation of the homeowner by fair market valuation techniques would prohibit the displaced families from finding comparable housing. Part of this problem has been offset by the additional compensation provisions of the 1968 Federal Highway Act. The area affected by the Century Freeway is one of the most stable elements in Watts, and a survey indicated that only one-third of the residents really wanted to relocate outside of Watts. Most of them have lived in Watts for many years and had no desire to leave. In addition, nearly all proposals for community improvement began to be viewed with suspicion as an attempt by the white power structure to break up the Watts population and distribute its residents throughout the Los Angeles area.

With these problems before them, the highway planners developed a different strategy for land acquisition in the Watts community. The keys to the strategy were involvement of the community in the development of plans and the provision of replacement housing within the Watts area.

Local groups in Watts, including militant organizations, home improvement organizations, street improvement associations, garden clubs, churches and every other group that would listen, were contacted and the effects of the highway on the community were discussed. The Watts Labor Community Action Committee has been one of the most active forces in the program.

At first the highway department had conceived the freeway as an attempt to upgrade living conditions in the Watts environment through the development of modern public buildings and parks. However, these plans did not represent the desires of the Watts residents, especially those most seriously affected by the freeway. The vast majority of the residents lived in single-family dwellings on individual lots. The house was a status symbol. Any thought of replacing houses by apartment units would be rejected by the community as not providing the same dignity, meaning, and comfort as their present homes.

There is still substantial undeveloped open space in the Watts area as well as sites of homes and businesses that were destroyed during the Watts riots. The joint development program, therefore, became one of replacement housing for the displaced residents mainly in single-family dwellings. Houses from the right-of-way could be removed and relocated on vacant sites in the Watts area and renovated using local

community labor. In this way the replacement housing program could offer the community an opportunity to change the shape of their environment in a manner that would most suit their own expectations and aspirations.

To make such a program possible, the California legislature passed a law enabling the highway department to acquire and condemn vacant unoccupied property outside the freeway right-of-way, providing for contracting with public and private entities for the financing, planning, development, construction, management, sale, and exchange or lease of replacement housing for low-income families displaced by the freeways.

For years there has been a need for an east-west expressway to serve the central Brooklyn area in New York City. As part of the Interstate program several alternative routes have been proposed for such an expressway. Cost and community resistance have prevented the development of such a route. Archibald Rogers reported on a proposed alternative route, the Cross-Brooklyn Expressway, that will utilize the existing right-of-way of the Long Island Railroad's Bay Bridge Line.

The land use along the existing railroad right-of-way is already incompatible with corridor development to a substantial extent, and the intrusion of the new highway could cause an even more detrimental effect to the east central Brooklyn area which is already seriously hampered in its efforts to achieve residential stability. Therefore, it was necessary to combine the highway needs and community needs and to develop a new linear community along and over the right-of-way. The new development would include housing, commercial facilities, and school and recreation centers. In this way the corridor would act as a means of bringing together the community in a more cohesive manner, rather than as a Chinese wall further dividing the area.

Current planning emphasis has been put on the development of a new full-range educational institution for 18,000 to 20,000 students. The educational campus will provide preschool through adult educational facilities and will reflect the needs and desires of the community. When the linear city is completed it will be six miles in length and will be anchored at one end by Brooklyn College and at the other end by another major institution.

Like the Baltimore approach, the planning is being done by a team using the multiple disciplines necessary for developing such a community plan. Also there is an attempt to obtain public participation, and all planning is done with as much public knowledge and participation as possible.

In his formal speech, Lowell Bridwell discussed how highways should contribute to the satisfaction of community desires and goals while at the same time providing mobility. He explained that the 1968 Federal Highway Act provided far-reaching relocation assistance programs to minimize injury and to provide equitable treatment for fami-

lies to be displaced by the highway improvements. He pointed out that if adequate replacement housing could not be obtained it would be no longer possible to build highways in urban areas.

He also discussed the urban impact amendment to the 1968 Highway Act requiring that in addition to considering economic effects, highway departments must consider the social effects of highway location and the impact on the environment as well as their consistency with the goals and objectives of the community involved.

Highway development has become more than the mere construction of the roadway. It requires consideration of the development of the corridor as an integral part of highway planning. Both public and private uses of corridor development should be considered by the community as a means of increasing the tax base. Highways can contribute to community development through their ability to assemble large tracts of land.

Of special note was Mr. Bridwell's statement that ". . . rights-of-way for highway purposes are rights for the roadway plus whatever additional lands, or space, are necessary to assure compatible usage." In the panel discussion after the formal presentation, he amplified this statement to the effect that the right-of-way necessary for a particular project need not be totally contained within the normal right-of-way limits but may include adjacent land that is necessary for compatible use.

He pointed out that the question that we must resolve is whether we are going to have planned development or the development that will occur inevitably by the mere fact of the existence of a highway facility. He advocated that highway funds be made available for the assembly of land, which could then be taken over by either the highway department or some other public agency and sold by competitive bid to private investors who want to develop land in accordance with a compatible plan. Funds so received should be reinvested in the highway program.

Mr. Bridwell also discussed cases where highway location has provided residual landowners with excessive profits from the sale of land, especially around the interchanges. Such remainder parcels are sometimes used for a purpose that is not compatible with the highway. He indicated that he did not concur with such a policy.

In response to concern over whether highway user funds should be spent for activities such as joint development, he stated that he could no longer tell the difference between the highway user and the citizen of the country. He pointed out that the definition of highway use that would not allow expenditure for anything other than the roadway and its appurtenances is just as ridiculous as saying that property taxes cannot be used to support schools because the individual paying the property tax does not have any children in school.

The third portion of the conference sought to examine political, economic, social, engineering, and legal aspects of joint development and multiple use of transportation rights-of-way.

Charles Blessing spoke on policy and planning considerations. He pointed out that in order to prepare a comprehensive plan that will satisfy the human values and goals of the community it is first necessary to find better ways to identify such goals and values. He commended the recent developments of the design team approach and efforts at total transportation planning. He pointed out that people want to identify with the community, yet they also want to be free from feeling that their lives are institutionalized. Overplanning and massive and sudden change resulting in human dislocation can cause such dehumanization. The objectives of urban planning are to provide an environment in which the individual, the family, and the group can develop according to their desires and expectations.

He indicated a need to resolve the problems of intergovernmental relations and responsibilities for joint development projects and for projects incorporating multiple use of transportation rights-of-way. He pointed to the problems that exist between zoning ordinances and multiple-use projects. On the one hand, multiple-use projects may require a reconsideration of current zoning provisions. On the other hand, if we are to have orderly development of urban land use it is necessary to find some technique that will make zoning less sensitive to a change desired by special interest groups.

Philip Hammer addressed himself to the economic considerations of joint development and multiple use. His main theme was the need to rejuvenate the urban centers by utilizing joint development and multiple use as catalytic agents for precipitating reinvestment in the urban core. He felt that appropriate change in environmental conditions within the urban center could change people's attitudes toward it. In the next ten years or so the suburbs are going to have to absorb an additional 35 million or more people. If we can counteract the decay in the central cities we may also counteract the current exodus from the city to the suburbs. Investment is currently taking place where growth is taking place because these are the areas where a return can be obtained. Similarly we are not reinvesting in the central cities because the dwindling population results in the submarginal investment opportunities. By redirecting public investment policy back toward the city center we may also redirect private investment.

In joint development projects there is always the problem of financing and allocation of costs. At the present time there are no firmly stated policies and the cost allocation between the Federal governmental agency and the local multiple community or private community is on an individual project basis. Like several of the other speakers, Mr. Hammer advocated the creation of a public development corporation to acquire necessary land for the development of joint projects either in conjunction with other public activities or private investment opportunities.

Roger Nusbaum presented the engineering considerations for joint development and multiple-use projects. He first compared the ad-

vantages and liabilities of the depressed as compared to the elevated freeway. Of the two types of construction he stated that the depressed urban freeway detracts least from the surrounding urban community in that the aesthetics are not marred by embankments or overhead structures, and it offers more opportunities for a safer design than afforded by elevated freeways. The advantage of elevated freeways is the possible utilization of the ground surface below the structure and the right-of-way taking is normally much less than would be required for a depressed freeway with the result that the land requirements for the facility are minimized with savings of right-of-way costs. An elevated structure will require higher maintenance costs. In selecting projects for joint development and multiple use Mr. Nusbaum pointed out that freeway ramps cannot be constructed indiscriminately at locations to provide access for some joint project without seriously affecting the capacity of the system. In considering multiple use or joint development, the function selected should not increase peak-hour traffic flow by any substantial amount. Likewise, multiple-use projects can restrict future expansion of the transportation facility.

As was pointed out in several of the case studies, adequate provision should be made for light, open space, and air circulation, and consideration should be given for pollution, noise, dust, and distractions for the users of the facility and for the adjacent multiple-use activities. Pedestrians should be segregated from vehicular traffic. Vehicular traffic, on the other hand, should be protected from vandalism, the opportunity for which may be provided by the multiple-use activity.

In designing the structure within the right-of-way, proper provisions should be made for fire and explosion hazards. The collapse of any structure within the right-of-way from any cause could result not only in a loss of life and loss of the structure but the closing of the transportation facility until such time as the debris could be cleared away.

Every effort should be made to provide for the normal movement of traffic during the construction period. The construction program should be designed so that all work on all phases could proceed without delay or interruption until the project is completely finished. Rather than the current procedure of constructing long segments, where one phase is completed in its entirety before construction of the next, urban construction programs should attempt to complete smaller segments and thus disrupt the community to a lesser extent. Fringe landscaping and other techniques should be utilized to shield businesses and residences adjacent to the freeway from the highway activities as much as possible during the construction phase.

In the design of the freeway, special consideration should be given to the maintenance and operation of the facility. The use of the area below the structure for multiple activity may have adverse effects upon such maintenance operations as full-depth deck removal and patching.

Multiple-use structures whether below or above the right-of-way will require added maintenance and operating costs, and every effort should be made to reduce such costs and allocate cost responsibility and liability for such maintenance prior to construction.

Where multiple-use activities are located under the roadway structure, new and better ways must be found to provide drainage and snow removal. Present drainage techniques have been inadequate. Snow removal will present a problem, and either additional storage space for the snow must be provided on the facility or it will be necessary to perform a costly and time-consuming operation of loading and hauling the snow away. With structures over the freeway or closely adjacent to it the roadway surface will be shaded from the sun and scattered icy spots can be expected to cause an additional problem.

Finally, adequate right-of-way and access must be provided in order to allow unimpeded progress for emergency vehicles, both for the activities within the transportation right-of-way and the adjacent facilities.

The construction of freeways in the urban environment has become a highly charged emotional issue in a number of cities. Thomas Fletcher discussed community values in urban transportation systems, especially as they relate to the District of Columbia. He pointed out the fact that Washington has had one of the fastest growing metropolitan areas in the United States for the past decade and a half with a population that has doubled since 1950. The street and mass transit facilities have not been able to keep pace with this rate of development, and the city is far behind in its ability to move people within its boundaries.

He pointed out that the citizens of the District did not need any more through-type traffic on neighborhood streets but needed better quality and probably cheaper mass transit facilities. Mass transit facilities are not adequate and often require substantial amounts of travel time from its users. He pointed out that solutions to the problem must be such that they do not cause extensive disruption to the fabric of the community. At the same time they must serve the needs of the residents as well as users. Requirements for transportation systems in the District are that they protect the homogeneous neighborhoods and keep them from being fragmented or destroyed, that no "Chinese wall" be constructed separating the residents from their schools, churches, recreational and other essential facilities, that freeways be designed so that through traffic on local streets is minimized, that the freeway system be unobtrusive and aesthetically pleasing, and that the transportation facilities promote rather than destroy the welfare and the development of the city.

The freeway system should be designed so as to provide additional sources of revenue to replace the tax dollars lost to the demolition of residential and commercial structures. More importantly, current employment opportunities for the citizens should be protected. Low and

moderate income family housing, especially for the elderly and the handicapped, should be a part of the transportation program, and relocation should be adjacent to their old neighborhoods. Freeway projects if they are to be constructed must be planned with full community participation.

A total transportation system must be balanced between individual and mass transit vehicles. If mass transit cannot be put upon a paying basis it may require subsidization or public ownership.

The multiple use of rights-of-way, including air space, and the joint development concept, which may require acquisition of property in excess of that needed directly for the transportation right-of-way, are new segments in the law. Most states do not have any enabling legislation for such activities, and most state courts would consider it in the light of common law or of standard existing statutes, which do not pertain specifically to the problem of joint development or multiple use. So stated Robert R. Wright in his analysis of the legal implications of joint development and multiple use.

The first thing you must determine in any state is whether the title to be taken for the right-of-way is in fee simple or is only an easement. If it is an easement it is important to discover the type of easement. Mr. Wright pointed out that it was advisable to obtain acquisitions in fee title in order to assure the highest possible degree of control over the right-of-way but that in some instances the use of easements may be advantageous. If a highway department only acquired a so-called "tunnel easement" the adjacent landowner would still be able to utilize, sell, or lease the overhead airspace subject to limitations by law.

In some jurisdictions in the United States, in the absence of statutory authorization a municipality does not have the power to allow private encroachment to be erected over public streets. In other jurisdictions, some cases have held that the city possesses the inherent power to allow overhead encroachments even in the easement situation.

However, in the majority of states, according to Mr. Wright, in the absence of specific constitutional or statutory sanctions, the municipality or state holding a fee-simple title to the streets and highways can permit overhead encroachment into the airspaces so long as there is no interference with the use of the facility.

It was brought out later on in the conference that the Bureau of Public Roads of the Federal Highway Administration was in the process of designing a model legislation that could be enacted by the states to provide a positive basis for multiple-use and joint development projects.

Frank Turner further expanded on the role of the Federal Government in encouraging joint development and multiple-use projects. He pointed out that the 1968 Federal Highway Act requires state highway departments to certify if they have given consideration not only to the economics of the highway's location but also to the social and environmental impacts and their consistency with community goals and ob-

jectives. The Bureau of Public Roads considers the joint development and multiple-use concept a major component in comprehensive environmental considerations. The concepts are not limited to urban use and the Bureau of Public Roads is interested in encouraging rural applications of these concepts. Mr. Turner pointed out (as did several of the other speakers) that it might be beneficial for the states to create a public or even private corporation to acquire and assemble the necessary land involved in a joint development project. In the future the Bureau of Public Roads will be issuing procedures permitting Federal participation in basic site development costs for joint use projects on rights-of-way, such as parks, recreational areas, and parking lots.

While endorsing the concepts of joint development and multiple use, Mr. Turner pointed out that under the currently accepted concepts of finance we cannot appropriately use highway funds for other than highway purposes.

In further defining the Federal role for joint development and multiple use, Don Hummel reviewed the activities of the Department of Housing and Urban Development in this area. The 1964 Housing Act authorized renewal projects for air rights development but limited the sites for use to low and moderate income housing and closely related uses. It accepted the cost incurred for foundations and platforms but restricted such costs to be not greater than sites that could be provided through the use of cleared land. The Act prohibited the expenditure of funds for acquisition of airspace over publicly owned rights-of-way. In 1966 the Demonstration Cities and Metropolitan Act extended the use of air rights sites to renewal areas for industrial development where sites were unsuitable for low or moderate income housing. The 1968 Housing Act further extended the uses for educational purposes with the same limitations. There have been only two instances of the use of air rights up to the present time under these Acts. One of the continuing problems that must be resolved in multiple use is intergovernmental responsibility and the gap between the agencies authorized to provide only a part of the solution to the problem. Resolution must be made of the problems of different time schedules, authority, jurisdiction, and allocation of costs. In particular the question of whether one governmental agency should pay another agency for the use of air rights must be resolved.

Mr. Hummel alluded to the concept of the three-dimensional city by stating that urban space should facilitate the conduct of business by vertical travel rather than by further extending the distances on the surface plane.

In the conference summary, D. Grant Mickle concluded that transportation systems must be considered as a part of the total economic and social environment in which the community and non-user must be given equal consideration.

Because of the increasing complexity of the urban transportation

problems it is necessary to include many disciplines in the planning process. The community to be affected must be brought into deliberations at a very early stage in the planning process, and compromise must be reached between user and community interests. We must review and redefine goals and objectives, costs and benefits of transportation systems. We are increasingly moving toward an urban transportation program based on the consensus of those affected.

Opening Remarks of the Conference Chairman

D. GRANT MICKLE
*Executive Vice-President **
Automotive Safety Foundation

ON BEHALF of the sponsors, may I welcome you to this Conference on Joint Development and Multiple Use of Transportation Rights-of-Way. The sponsors include the Highway Research Board, the American Association of State Highway Officials, the U. S. Department of Transportation, the U. S. Department of Housing and Urban Development, and the Automotive Safety Foundation.

This is the first national conference of its kind. However, this is not to say the matters we will be considering have not been discussed at other meetings. On the contrary, this conference stems from common concern with our subject that has been manifested at past Annual Meetings of the Highway Research Board and its several committees, in university circles, among state and local highway officials, planners, attorneys, highway user groups, and civic leaders.

We are here to review and evaluate what already has been accomplished, to examine what further research needs to be done, and to discuss how and to what extent the concepts of joint development and multiple use may be put into general practice. We are concerned with two things. On the one hand, we have the obstacles or the problems. Some of these are quite apparent and there may be others that are not yet fully identified. This conference should shed some light on the legal, financial, technical, or administrative conditions that hamper full and effective use of joint development. We are also vitally interested in the potentials of joint development and multiple use to improve urban transportation development in relation to community needs and objectives.

* Presently, President, Automotive Safety Foundation.

Many have looked on joint development as a way of conserving a dwindling supply of urban land. This is an important factor that I do not wish to minimize. Urban land is scarce and getting scarcer. It is expensive to acquire, both in economic and social costs. But land conservation is only one of many factors. Multiple use can provide other economies. It can place those land uses that require high accessibility (such as transportation terminals) close to the travel arteries that serve them.

There are other opportunities to use joint development to further the land planning or environmental goals of a community. This conference should explore ways in which multiple use has been applied to improve the structure of neighborhoods, to add to the housing supply, or to supplement open space. Joint development and multiple use may present us with one of our most important tools for urban improvement.

This conference will examine how joint development and multiple use can best be meshed with urban highway programs that are already going concerns. Joint development projects should be planned and put into effect in such a way that the future highway utility is preserved.

It is most important that requirements of the years to come be taken into account in the earliest planning stages of all multiple use projects. Once a series of high-rise apartment developments or multi-story office buildings has been erected straddling a freeway, for instance, there may be insurmountable obstacles to adding subsequent capacity to that facility. The same would be the case with certain types of development adjacent to the right-of-way.

In the announcement of this conference, the broad objectives were set forth. I am reluctant to amplify on that statement of purpose in any more detail because I do not want to limit the boundaries for our deliberations or the direction for our discussions. I do want to point out that in the organization of this meeting every effort was made to bring together representation from all the many groups sharing an interest in urban transportation and urban development and redevelopment. We have among us today, engineers, planners, sociologists, economists, architects, lawyers, public administrators, political leaders, university faculty, legislators, and civic and business leaders. Both the official and the private sectors have an important role in this area because both government and private enterprise are involved.

Because we wanted representation from the many interests and points of view we had to abandon the idea of the roundtable type of discussion that would have been possible in a small workshop. A panel has been named to represent the various interests taking part in the conference.

Opening Remarks on Behalf of the National Academy of Sciences

JOHN S. COLEMAN
Executive Officer
National Academy of Sciences

NEXT year the National Research Council will celebrate its fiftieth anniversary. For forty-nine of those years, the Highway Research Board has been a leading activity of the National Research Council. For those of you who are not familiar with the structure of the National Academy of Sciences and its sister organization, the National Research Council, the Academy was established by Congress in 1863 to serve two principal roles: first, to further the development of science and its applications in the American scene, and second, to serve as an adviser to the Federal government.

I have been with the Research Council and the Academy for twenty years and in that time the annual budget has grown eightfold, from around \$3 million to more than \$25 million. All of this activity, representing some five hundred committees, boards, and panels involving some six to seven thousand scientist-engineers, is supported by grants and contracts that provide for recovery of the expenses of those who are volunteering their services. The Academy receives no fee and charges nothing for its services. It makes up its resultant deficit by a small endowment that some of you may have heard about.

I think the Highway Research Board typifies much of what we think is best in the total organization in that it provides a forum so that people from a variety of disciplines and backgrounds can bring a variety of experiences and can meet together to provide the base for joint planning on national and state programs.

The activities of the Academy and its Research Council, and more recently of its new affiliate, the National Academy of Engineering, have

been moving more and more into the examination of problems where science and engineering perhaps provide the groundwork for participation but, nevertheless, they concern problems that have strong economic and sociological inputs.

It is highly appropriate that this conference involves a variety of people, all of whom are interested in contributing to the solution of problems involving multiple use of transportation rights-of-way.

I might add there are several new activities of the Research Council that we regard as supporting activities of the Highway Research Board. We have done a good deal of work recently on the problems of urban development involving not only our Division of Engineering but also our Division of Behavioral Sciences. We have established a new Board on Medicine, which has taken on some major programs: one is in the development of health services to the poor, to relate closely to urban problems, and the other is in the development of new programs of medical education. In addition, we have an Environmental Studies Board that was set up primarily to consider problems of pollution (land, air, water) and also all the problems that involve the change of man's environment. In this area, the Highway Research Board and the groups that are concerned more directly with urban planning are going to be closely related. Some of you may know that we have been deeply involved in some of the problems of the supersonic transport, particularly in determining the boom characteristics and its physical effects and its effects on people. Within another three weeks, we will issue a report on the UFO study that is being carried out by Professor Condon at the University of Colorado.

There is a wide diversity of activities going on within the Research Council under the sponsorship of the Academy. We feel that the pattern of activities that has been established by the Highway Research Board must go beyond the simple problems of highways. The Board should look at the interrelationship of highways with all of the other problems of modern life and it is on that note that we welcome this conference.

Opening Remarks on Behalf of the Highway Research Board

W. N. CAREY, JR.
Executive Director
Highway Research Board

ON BEHALF of the Highway Research Board, I am proud indeed to welcome you to this milestone conference. First I wish to compliment the members of the conference steering committee and the conference advisory committee for their perception in recognizing the need for this conference and the timeliness of the subject matter, and for the excellent program they have arranged. Although this is a Highway Research Board conference, it would not have been possible without the enthusiastic support and cooperation of the other sponsors, the American Association of State Highway Officials, the U. S. Department of Transportation, the U. S. Department of Housing and Urban Development, and the Automotive Safety Foundation. Finally, and perhaps of greatest importance, I wish to thank the presiding officers, speakers, and panelists who have prepared papers and discussions that will form the backbone for the conference.

Many of you are attending your first Highway Research Board meeting—a special welcome to you. I hope that this meeting will influence you to contribute your special talents to the work of the Highway Research Board in the future. For our new friends, the Highway Research Board is a unit of the Division of Engineering of the National Research Council, serving the century-old National Academy of Sciences and the relatively new National Academy of Engineering. This is a nongovernmental organization established to advise and assist the government and others in the scientific community on all matters of science and technology.

The Highway Research Board itself is supported by the state highway departments, the Bureau of Public Roads, by a large number of

industries and associations, and by thousands of individuals all over the world. Fundamental policy is determined by a 25-man executive committee representing the highway transportation community. The Board administers for the state highway departments a 3.5 million dollar annual program of contract research in the transportation field through the National Cooperative Highway Research Program. In-house, the Board conducts certain research for special sponsors, usually governmental, but the long-time traditional functions of the Board involve the stimulation, correlation, and the dissemination of information across a wide spectrum of transportation-oriented subject matter.

We hold an Annual Meeting each January in Washington at which more than 3,000 registrants hear some 300 technical papers in the field. Some 2,500 individuals from government, industry, universities, consulting firms, and so forth, serve on approximately 150 committees and panels on a continuing basis. We publish over 10,000 pages of technical literature each year and maintain an extensive computer-based information storage and retrieval system for highway transportation research. This storehouse contains descriptions of over 7,000 ongoing research projects and an extremely comprehensive coverage of transportation research literature.

For its first 40 years, the Highway Research Board was concerned almost exclusively with highways. In the past 10 years, it has been increasingly apparent that there is little in highway research that does not interact or interface with other modes of transportation and with the community that transportation is designed to serve. This broadened base has been recognized by the sponsors of our activities who enthusiastically support our new broad look at transportation. The Board is undergoing a reorganization of its departmental and committee structure that will result in a three-sided structure of its major activities. First, there will be a group concerned with transportation systems planning and administration; second, a group involved with design and construction of transportation facilities; and third, a group on operation and maintenance of facilities.

The Highway Research Board has no empires to build. It takes no position in policy matters. It is interested only in the development and dissemination of facts. Therefore, the Board serves as an ideal forum where disparate interests can get together in an atmosphere of objectivity. This may be our most important reason-for-being in these days of increasingly complicated intergovernmental relationships, with suspicion and mistrust among the various professions and industries, all of whom should be working together.

Before closing I have a few words relating to this conference on joint development and multiple use. It is fairly easy to chart the history of the conference. I believe it was first suggested by Harmer Davis and Wolfgang Homburger of the Institute of Transportation and Traffic Engineering at Berkeley, and by Louis Pignataro of the Polytechnic

Institute of Brooklyn. From the outset it was encouraged to proceed by J. O. Mattson, President of the Automotive Safety Foundation. In April this year, an *ad hoc* committee consisting of the members of the conference steering committee and the conference advisory committee met and decided to proceed with the conference. Since then the steering committee has met to develop the program that will be presented.

It is not easy to pinpoint the history of the concepts of joint development and multiple use of facilities. History is full of examples of multiple use, going back into antiquity. If we limit our definition of multiple use to one in which transportation is involved, an early example in this country was in New York, which in 1903 permitted air rights over the New York Central Railroad trackage to be used for construction of a portion of Park Avenue, for the Waldorf-Astoria Hotel, part of Grand Central Station, and several large apartment houses. There have been several more recent examples in Albany, New York; over the Massachusetts Turnpike in Boston; in Fall River, Massachusetts; in Cincinnati; in Los Angeles-Hollywood; in Detroit; and so on. You will hear many of these discussed at this meeting. Perhaps a few of you have not heard of what is probably the smallest space involving air rights on which rent is paid. This is the space occupied by the metallic bosom of a lady statue on the facade of an art gallery in New York that projects 18 inches beyond the building line. The city collects \$25 a year for this infringement.

The Federal Aid Highway Act of 1956 contained a provision that authorized the use of air space for parking. In the 1961 Federal Aid Highway Act the government authorized the use of air space above and below Interstate highways for virtually any use. The recommendations that led to such legislation were initiated in the Bureau of Public Roads.

Perhaps the strongest recent impetus toward getting the use of these concepts off the ground can be credited to Frank Turner, director of the Bureau of Public Roads, who has been urging the use of air rights for several years and who delivered a major address at the AASHO meeting in Wichita two years ago on the subject of the joint development concept. We are indeed fortunate to have Mr. Turner on the program for this conference.

In addition to the impetus given by the Bureau of Public Roads in these areas, highly imaginative developments have been suggested and applied in recent years by highway engineers in several states and by many architects and planners throughout the country.

New problems identified through the medium of this conference will be attacked within the HRB committee structure. New committees will be formed if appropriate. We are interested in an expression of interest in service on these committees from any delegate.

Background and Objectives

FREDERICK T. ASCHMAN
Executive Vice-President
Barton-Aschman Associates

WE HAVE convened here to examine a dynamic concept of cooperative planning that has the essential objective of integrating transportation and other forms of community development.

The need for this integration has a wide range of manifestations. At one extreme, it presents itself in the troublesome form of vexing political problems of the mayor who must be sensitive to those who oppose highway construction and of the highway official who is mandated to get on with the job. At the other extreme, the need is manifested in the search for ways in which urban transportation policy can be used positively and imaginatively to help reshape city patterns, maintain and enhance existing communities, create new environments, and to bring more and greater urban opportunity within reach of all city dwellers.

This calls for new ideas in planning and design, in legal technique, and in the ways that governments, private enterprise, and professional disciplines can cooperate and collaborate — new ideas that attract broad public support because they respect and achieve basic community values — new ideas that look to a future that is more than a computerized projection of old ways of doing things.

Joint development and the related notion of multiple use of transportation rights-of-way make up a concept that offers much in the way of these needed new ideas. It can be broadly defined as a process of conceiving, designing, and carrying out a combination of urban development activities in a unified way, to the end that benefits are greater than if each individual activity were separately planned and executed.

The major thrust in advancing this concept in the field of urban transportation has come from the Bureau of Public Roads. The interest of the Department of Transportation is obviously widely shared by the Department of Housing and Urban Development, the American Association of State Highway Officials, the Automotive Safety Foundation, local government, and indeed all of us represented here today. As background for our discussions, it may be well to examine some of the conditions that have generated such widespread interest and some of the objectives that characterize the growing practice of joint development.

The underlying conditions that support the joint development concept are to be found in the fundamental three-part relationship of land use and transportation.

The first element of the land use-transportation relationship is that the way land is used is the major determinant of the demand for transportation. The most obvious result of today's dynamic urban growth patterns is an explosive demand for more and better means of movement. In keeping with our times, this has called for larger-scale, more expensive development in a day when competition for the public dollar is greater than ever before and transportation officials are unable to meet every demand with the funds at their disposal. Joint development is thus of interest to the highway official who sees its implications in the economics of right-of-way acquisition, or in the fostering of more efficient urban forms that may tend to reduce the actual need for movement, or in the demonstration of greater benefits that may offset the costs of transportation.

Less obvious, but well-known to the highway engineer, is the fact that the way land is developed, especially in interchange areas, may threaten the workability of freeways. To the engineer, the joint development concept may afford new opportunities to foster land use arrangements and characteristics that avoid this threat.

To the transit official, joint development of land and transportation facilities may well imply an arrangement of high-intensity land uses in more effective relationship to mass transportation arteries.

The second element of the land use-transportation relationship is, conversely, that transportation is a major determinant of the extent and way that land is used. It is this fact that offers the great potential for using transportation policy and planning and programming as a series of levers to help reshape our cities and create new forms and structures in urban settlements of the future.

If the location and nature of transportation facilities is a determinant of how and when land will be developed, it logically follows that the freeway and the rapid transit facility must be potentially effective tools for influencing urban growth in predetermined directions and ways. The joint development concept pursues this principle by generating ideas of how the use of space above, below, and adjacent to transportation rights-of-way may be planned to accommodate urban



The Anthony Wayne Recreation Area on the Palisades Interstate Parkway, located some 40 miles north of New York City, is an example of the coordination of freeways with major recreation facilities. (Source: NCHRP Report 53.)

activities attracted by the new accessibility afforded by the highway or transit line.

Promotion of the joint development concept has thus given rise to new interest in the corridor as an urban form. The term “corridor” is variously defined, ranging in definition from the broadest view of linear cities and metropolitan sector plans to the more practical statement by David Levin that simply defines a highway corridor as a major highway and its abutting land uses.

The significant underlying fact in all thinking about corridors as urban forms is that their achievement demands a correlation of the planning, design, and execution of transportation projects with the planning, design, and execution of land development projects—in short, joint development.

The third element of the land use-transportation relationship represents a basic condition that probably has been the greatest generator of interest in the joint development concept and its companion idea of multiple use of rights-of-way. That element is that transportation rights-of-way, especially on the scale in which we think today, are themselves a major urban land use.

As such, urban transportation facilities, especially the freeway and its parking terminals, are major competitors for space in the city, and usually for space that is already occupied. To further complicate matters, the space it seeks is not directly revenue-producing, a fact that may not really be relevant in view of the offsetting economic advantages of improved transportation but nonetheless a fact that often generates political controversy.

The joint development concept is a potential method of reducing the frictions of competition in allocation of urban land use. This may come about in several important ways. Multiple use of rights-of-way is obviously one of these. Another is to combine use of rights-of-way with use of adjacent land in a way that enables large-scale "planned unit" development of housing, community facilities, institutions, and a host of other uses that meet either community or regional needs. Still another way is to view the transportation right-of-way simply as open space, designing it to meet some of the needs for this important urban use.

As important as space allocation is, however, the most critical aspect of the use of land for transportation rights-of-way is that like all land uses, freeways and rapid transit facilities certainly should be compatible with the other land uses in their environs. It makes no more sense and arouses no less public indignation to inject a poorly designed or poorly located transportation "land use" into a residential community than to propose development of a noxious factory.

The joint development concept responds to this condition by calling for comprehensive analysis of the corridors through which transportation facilities are projected, the determination of ways that routes can be located and the facilities designed to minimize friction, and most of all, to actually create new values and new qualities of compatibility.

Of course, none of this is to say that joint development offers a panacea for all of the problems involved in integrating transportation and urban land utilization. But there have been a number of events or activities that clearly promise that the joint development concept will prove to be one of the most effective new devices in urban development to be advanced in many years. This conference has as its main purpose the exposition and discussion of this experience.

The most significant of these activities has been, of course, the thrust that the Bureau of Public Roads has given to the concept at the national level and on a national scale. At the same time, the Department of Housing and Urban Development has complemented this effort



The Illinois Tollway Commission has built five over-the-roadway restaurants which allow a considerable reduction in land requirements as opposed to other types of road user service plazas. Shown here is the Des Plaines Oasis on the North-West Tollway. (Source: NCHRP Report 53.)

with its interest in correlating other urban development programs with transportation development, through the Model Cities effort, urban renewal, open space and urban facilities grants-in-aid, and the urban planning assistance program.

Both of these agencies are supported in these efforts by Congressional mandate. The Federal-Aid Highway Act of 1966 specifically directed that study be made of the feasibility of joint development in aiding relocation. The Metropolitan Development Act of 1966 called for "greater coordination and additional participation and cooperation from the States and localities" in perfecting solutions to metropolitan growth problems.

In the specific area of multiple use of rights-of-way, other than air rights development, a great deal of activity has taken place in two broad categories: multiple uses oriented primarily toward the highway user, and those that are more strongly related to surrounding local areas. At least three states (Connecticut, California, and New York) have developed a dozen or more different ways to use the unpaved portions of rights-of-way, and 13 other state highway departments and six toll road authorities have reported that they employ from five to seven different types of multiple usage.

In urban renewal there is growing interest in how transportation can be integrated with renewal activity and can support and be sup-

ported by it. And well it might, for in Chicago it was found that 15 miles of proposed expressways and 36 miles of rapid transit lines traverse areas of urban renewal potential. The advantages of this collaboration can be dramatic. New transportation facilities, well-located and well-designed, enhance the market for innercity renewal by providing new qualities of accessibility, for aiding in achievement of new and more viable land use patterns, and for themselves being a form of redevelopment. Collaborative renewal activity can benefit transportation development by providing land for rights-of-way, by relating new land uses to freeways and rapid transit in a constructive way, by providing sites for relocation, and by avoiding land use and circulation conflict through integrated design.

Interchange area planning in recent years makes up another significant activity related to the potentials of the joint development concept. The large contiguous areas of land, often 25 acres or more, that must be devoted to freeway interchanges challenge the imagination of both freeway designers and joint project developers. Market demand for developable land is usually at its peak in these high-accessibility areas, and this offers both opportunity for large-scale joint development and a means of designing land arrangement that will protect the operating capability of the highway facility. Studies in Illinois and elsewhere have suggested, in effect, that the joint development concept be expanded to include large-scale planning of the interchange influence area, combining zoning and access regulation with developmental activities.

Initiation of the concept team approach is another of the significant events leading to the widespread interest in joint development. Its greatest significance probably lies in the fact that it brings to route location and design the new dimensions afforded by a multidisciplinary consideration of community values. At the same time it implies that new transportation facilities are neither to be blasted through existing environments or tortuously and expensively and inefficiently maneuvered through the city. Instead it advances the notion of replanning and skillful restructuring of entire corridors, using the joint development concept as a means of adding new values and compensating for the impact of what otherwise might constitute fatal disruption.

In a broader sense, a significant trend related to joint development is the growing interest in the "corridor" as a new element in comprehensive plans. In Washington's Year 2000 plan the basic concept of urban structure for the future was proposed to be a series of corridors of urban development radiating away from the central city and characterized by their lines of high-speed transportation.

In Chicago, a densely developed grid-pattern city, the concept of "high-accessibility corridors" has been adopted as the basic element of the Chicago Plan. This concept calls for multiple-mode transportation routes as the core of linear concentrations of land uses with acces-

sibility requirements matching the levels of access provided by the freeways and mass transit lines. Within the corridors, zoning and urban renewal and the building of major private and public projects are proposed to be combined in a joint development process to achieve a city-wide corridor system. The work of the Crosstown Concept Team is the first major step in implementation of this element of the city's comprehensive plan.

Along with these major activities there are several important embryonic or emerging efforts that are related to the potentials of joint development. One of these is the increasing activity in research on community values, examples of which are the National Cooperative Highway Research Program's ongoing major study and the Highway Research Board's workshop to be conducted in the Spring of 1969. Another is the series of studies of mass transportation as it specifically relates to Model Cities programs in a number of cities. Here the aim is to find ways of providing more equitable access to urban opportunity for those of our citizens to whom urban opportunity has largely been something for others to enjoy. And perhaps the most significant as well as the most ambitious of these corollary activities has been the Department of Housing and Urban Development's New Systems Study and successive collaboration between the Department of Housing and Urban Development and the Department of Transportation in fostering technological advancement throughout the field of transportation. What opportunities this may hold for joint development is today impossible to determine, but certainly they will be great.

Against this background I think we might well ponder two of the most important operational implications of joint development.

The first of these is that joint development is a concept of collaboration and cooperation on a scale that we have seldom before encountered. It calls for a more intimate relationship between transportation engineers, others in the design professions and in the social sciences, developers, and political leaders and the citizenry in whom final decision in our programs is vested. It means developing processes in which opportunities for joint development are identified in the broadest of urban planning contexts. It calls for expanded legal concepts of public purpose, a deeper understanding of community values, and improved mechanisms for interagency and intergovernmental cooperation. In the practical area of route location and design, it should mean progressing from the *ad hoc* concept team approach to the establishment of routing procedures that are based on expanded multidisciplinary capabilities of our official transportation and community planning agencies.

The second important operational implication is that joint development demands the expanded view of costs and benefits that many leaders in the transportation and community planning fields have sought in recent years. If transportation is to be used in this way to advance broader community objectives and create expanded com-

munity values, its benefits must be better measured and credited against its costs.

Out of this background, I hope I have been able to make it possible to identify the broad range of objectives that may be attached to joint development. There is certainly no need for each of us here to allocate our interest uniformly to all of these. It does not matter if some see joint development as mainly a means of achieving economy or public acceptance of our plans, or if others place different values on achievement of excellence in design, or on reducing the frictions of competition for space, or on relocation potentials, or on the possibilities for achieving new city forms and structure.

Yet we do need a common interest and this may well be found in the broad theme stated in the Williamsburg Resolves: "The Planning and development of facilities to move people and goods in urban areas must be directed toward raising urban standards and enhancing the aggregate of urban values. . . . Federal, State and local governments are urged to coordinate plans for the location of buildings, highways and other facilities in the context of overall physical design of the urban environment."

Panel Discussion

MR. BARBER: Of the instances of multiple use that have been vividly described here, I found a great many to be appallingly bad. I think high quality endeavors are strikingly few. Looking at what has been done, by and large, it seems to me that we have not been using the development concept or it has not been applied in ways that are consistent with that grand scale of corridor shaping Mr. Aschman spoke of in his opening remarks. What is needed at this time are systematic and comprehensive programs for joint development to be undertaken through the cooperation of Federal-state and local governments.

MR. ASCHMAN: I tried to be very careful in my definition to point out that joint development really ought to be a process of conceiving and designing as well as executing in a unified way.

I could not agree with you more. The idea of designing a transportation facility and then attempting to hand something onto it really is not, as I see it, in the spirit of the joint development process. We really ought to be trying here to conceive, design, and carry out joint projects in a unified way.

Probably the greatest possibilities in joint development may be obtained if we go back to the regional transportation study, the metropolitan planning process, and the community renewal program, which

analyze renewal opportunities in an overall way, before going into projects. We should see if there is not something we can do to replan the corridors through which transportation facilities will pass. Then, we should plan transportation and community development in a process that includes conception at the very earliest stages in both the transportation planning and community development planning process.

In this way, we can use transportation policy, which is the strongest public level that we really have, to make positive environmental contributions.

MR. RUBIN: First, a comment on Mr. Aschman's presentation and three major points about the relationship of the use of land and transportation.

First, the use of land, recognizing it as a determinant of travel demand—I am sure we all agree on this. The second point—the transportation system as a determinant of land use—I think there is a tendency among people who are involved in the transportation business, whether highway or transit, to overstate the function of a transportation system as a shaper of land use.

It has been my observation over the years that in many cases transportation decisions are made subsequent to the development of travel demand and are a response to existing need, a rather easily projectable need.

There are two other major physical facilities that man provides that I think are far more determinant of the use of land. These are sewer and water facilities. All three go together. Topographical and other considerations will determine the relative importance of the three, but I think we can overstate the case for transportation as a shaper of urban regions. We have to recognize that if we hope to use these facilities, to shape urban regions in corridors or whatever we want to do, it will have to be a coordinated effort to relate land use desires on our part to sewer and water and transportation facility systems. It is a bit easier to accomplish this with a freeway in which clearly the function of the freeway requires some limitation of access so you can orchestrate the interchange locations in such a manner that you encourage development or permit it where you think it is appropriate and discourage it in those areas between the interchange where you prefer it to occur in a somewhat less dense fashion.

I have yet to convince anybody involved in the sewer and water building business that they should accept a concept of a limited-access sewer or water line. We will have to work on that one, if we are really serious about affecting the way our urban regions grow and develop.

Specific Types of Joint Development and Multiple Use

DAVID R. LEVIN
*Deputy Director
Office of Right-of-Way and Location
Bureau of Public Roads*

A LITTLE more than 5 percent of the physical land area of the United States contains almost 50 percent of the population. That, in a way, is a definition of the complexity of our surface urban transportation problem. We have to provide surface facilities to cater to the work needs, the social needs, and to all kinds of transportation needs for 50 percent of the population in that little area. The situation in the year 2000 is not going to improve at all because by then over 60 percent of the population in the United States will be residing in 8 percent of the land area.

One of the problems in our cities especially is the limitation of public dollars. Everyone is competing for public funds (for legitimate purposes) for housing, schools, parks, and whatnot. One of the basic

Editor's Note: These remarks were taken from Mr. Levin's presentation, which was primarily visual, with many slides and illustrations. All references to the slides have been deleted. The reader is referred to the following publications in which many of these illustrations are included:

A Report on the Status of Multiple Use and Joint Development. Environmental Development Division. Office of Right-of-Way and Location. Bureau of Public Roads, Sept. 30, 1968. 103 pp.

Joint Project Concept: Integrated Transportation Corridors. Barton-Aschman Associates, Chicago, Illinois, January 1968. 129 pp. (Prepared for the U.S. Department of Housing and Urban Development.)

Multiple Use of Lands Within Highway Rights-of-Way. NCHRP Report 53, 1968. 68 pp.

A Book About Space. Bureau of Public Roads, Federal Highway Administration, U.S. Department of Transportation, 1968. 53 pp.



Scenic overlooks are appropriate multiple uses for sections of highway traversing particularly scenic areas. The Rockefeller Lookout on the Palisades Interstate Parkway, located in the New Jersey Palisades area, affords a fine view of the Hudson River Valley. (Source: NCHRP Report 53.)

concepts, of course, of joint development is that the same public dollar will be made to do double or triple duty. The concept is that if we engage in joint development or multiple use we will be able to construct two or three or four different types of uses together at a lower aggregate than if we did them individually. Not only is the public dollar getting increasingly limited but space is also becoming limited. Invariably, in the urban area, as we construct one use, we push out or preempt some other use from being constructed.

Joint development and multiple use make possible new dimensions in urban drama and provide not only a transportation corridor — eventually a multimodal transportation corridor — but permit uses alongside it never before tolerated so close to transportation. Under the joint development concept we see nothing wrong now if all uses are planned jointly and appropriately in relation to each other. For example, you may have an elevated transportation corridor, an express highway like the Interstates combined with high-rise residential uses

with swimming pools. The swimming pool areas could extend under the expressway itself. Using the expressway as a separator, you could have a lower structure kind of development — a little shopping plaza. The advantage of the highway structure as against earth fill is that it does not constitute an interruption of surface accessibility. The people living in the high-rises can easily walk to the shopping plaza with a maximum of safety and facility. The whole project can be designed within an aesthetically pleasing block-wide area.

Another example of multiple use is a multimodal corridor. You may have a transportation terminal facility that is elevated, with a heliport on the top and buses and rail transit under the structures. Still another possibility is a school with the playground and other kinds of facilities extending right into the highway rights-of-way, under the highway structures in a way we have never permitted before.

What happens if a vehicle should unfortunately careen off the highway and go through the sidetrails? Presumably, the engineers are designing our railings so that they will contain the vehicles traveling at speeds that are common to urban areas. Up until now, I have not heard of any fatality or casualty precipitated by this kind of joint development or multiple use. It is hoped that such accidents will not occur. We would like to build the transportation system as part of a total urban environment. The presumption is that the kind of multiple use is compatible with the area traversed. There has to be a basic compatibility of the uses that are contemplated over, under, or alongside the transportation corridors.

New highway rights-of-way take presently taxed land off the tax rolls. Multiple use at least compensates in part (and perhaps, in many cases, overcompensates) for tax losses by restoring some taxable base.

Joint development and multiple use do not necessarily involve the use of air rights. When they do, we have to be very discreet about what kind of uses we encourage. There are such things as noise and pollution and other environmental problems we must work on.

Another characteristic of multiple use with our urban freeway and other transportation development is the economy of space. When we have to relocate people we can generally put them into higher density structures in about one-third of the space that they formerly occupied because the land values are high enough to justify this. At the same time we can leave open space for other kinds of uses, such as parks or playground facilities. A block-wide width in the average city is 350 or 400 feet.

Normally, we probably would take about 25 to 35 percent of a block-wide width for our three-dimensional tunnel for a highway purpose. The remainder could be used for other purposes. We have found that the cost of that simple 25 to 35 percent of a block-wide width is greatly out of proportion to the area. We have to pay approximately 65 to 75 percent or more of the total cost of a block-wide width for that



Fort Hamilton Playground constructed in conjunction with the Verrazano-Narrows Bridge, New York City. (Source: Triborough Bridge & Tunnel Authority, New York City.)

narrow corridor. The reason is quite obvious. We have to pay for the actual land physically taken and the buildings on the land, and damages to the remainder. The net result is that we have to pay for 25 or 30 percent of the area about 65 or 75 percent of the cost. However, highway departments or other public agencies can take the entire block-wide width, obtain the needed right-of-way, and control the remaining 70 to 75 percent of the area for only about 25 to 35 percent added cost. The remaining low cost land is an important economic phenomenon because many types of uses, public and private, that formerly might have been marginal or even submarginal could be economically constructed.

Parking is a traditional understructure use. In some cases, however, we might want to question whether parking is the highest and best kind of use in comparison to other uses that contribute to the neighborhood and the environment and making the city a better place in which to live. To the extent that we do think that parking continues to be a good use, we want to make sure that the parking use is not a

blighting one and that it is orderly and has a reasonable amount of amenities and landscaping. Frequently, a highway section in an urban area has been denounced by architects and others when the highway is not at fault, but the parking has had a blighting effect.

When a facility really begins to be clogged up, many people condemn the highway or freeway, and say that we ought to eliminate further development of such facilities. But when you build a new hospital or new school that operates at capacity within a couple of months, nobody says that hospitals or schools should no longer be built—they say we should build another school or another hospital.

Every freeway facility has a designed capacity, and all elements of it have predetermined capacity limitations. As long as we operate within these capacity and design limitations, we are all right, but when we try to exceed them we are in trouble.

Railroads in the Urban Environment

SAMUEL H. HELLENBRAND

Vice-President

Industrial Development and Real Estate

Penn Central Company

THE mere mention of the words "urban" and "cities" causes most people to think of difficult problems being faced by cities these days. Yet throughout history, cities have been the symbols of civilization. Man is naturally gregarious. He needs and wants to associate with other people for maximum productivity and creativeness. There is a basic need for the interrelating of ideas and products. We might say that proximity among people is a key to human progress.

Some 75 percent of our nation's economic wealth and productive capacity is concentrated in about 2 percent of the total land area occupied by metropolitan areas. Two-thirds of our population now live in and around cities. Almost all of our population growth is predicted for these areas, and 20 years from now probably 85 percent of our people will live in metropolitan areas. When this happens, over one-half of our total population will be living in about 40 great urban complexes.

The importance of an adequate transportation network under such circumstances would seem obvious. I have in mind not only a strong and viable railroad system, but good highways, air and water systems as well. Within this framework let me discuss with you very briefly four major areas in which railroads are involved.

Mass Transit

A great deal has been said in recent years with respect to the opportunities and problems of mass transit. I would guess that highway



In the design of the elevated portion of the Bay Area Rapid Transit system in California, effort was taken to avoid the feeling of massiveness associated with older elevated systems. Designers tapered the girders, separated the roadway girders to let a band of sunlight through, tapered the T-beams, and made the piers octagonal to eliminate bulk. In residential areas, as above, the area under the aerial structure will be landscaped and planted for the use of the community. (Source: Cronk and Associates, San Francisco, Calif.)

planners as a group are considerably more informed on this subject than most other groups. I see no inevitable conflict between mass transit and highway planning. On the contrary, there should be every reason for coordination and cooperation. I am sure that highway planners are no more desirous of covering the surface of major parts of urban areas with highway and parking areas where the real need exists for high-density mass transit than commuter railroads or other mass transit operators would be of operating their facilities where people can be better served by some other form of transportation.

Mass transit facilities require today (and even more so tomorrow and 20 years from tomorrow) a great deal more coordination with highway and parking planners. I want to urge you therefore to talk with

us about your plans. Having participated in the development and implementation of several demonstration projects, I know from first-hand experience how important coordination of rail, highway and parking planning facilities can be. I urge you to come and talk with us about your future plans and ideas. Let me add that I hope we in turn will come to talk with you about our ideas.

We are on the threshold of a new high-speed rail service between Washington and New York. In light of the growing population complexes that I have noted before, I can think of no more important development. We simply have to know from direct experience the contribution and benefit that such service can make to a properly functioning society. Here too, proper highway and parking planning is absolutely essential. As our experience grows and develops with this new service, I would urge that your own planning efforts would take fully into account the lessons from this service, whatever they may be.

Multiple Uses of Rights-of-Way

This is a subject which is not a new one to many of us. Railroad rights-of-way have historically been subjected to a multiple of uses. Aside from providing for railroad service, they have also served as paths for oil and gas pipelines, water lines, electric transmission lines, communication lines, etc.

Yet as the access lanes to and from our growing centers become more important, we must further intensify their use. Almost 50 years ago we saw planning result in one of the most important center city complexes develop over a railroad right-of-way in the heart of New York City. Other examples are familiar to all of us. I can almost hear someone say, "But there are not enough of these examples." I agree — we need to do a great deal more. Sometimes though, it seems so difficult to bring together all the required interests that it is simpler to look elsewhere. Whatever may have been the problems in the past, I think we all realize now the opportunity these rights-of-way afford to us. Certainly there are problems and difficulties, but I suggest to you that if we talk about these matters and work together looking for affirmative results, that we can look for progress.

Air Rights Over Railroad Yards and Other Facilities

Here is an area which is really yet untapped for urban development. With the historical growth of cities and urban areas, very often we find that railroad yards are in important locations. While use of the air rights over these yards has long been recognized, progress has not been as great as one might expect. In recent years there has been a great deal of talk on this subject, and here and there a little progress, but not enough for the potential benefit. It does not take much imagination to recognize what an uplift a major development on the air rights of a

railroad freight yard would give to an entire neighborhood. Here are opportunities for planning and development. There are problems, but there are opportunities here as well.

Industrial Development

The role played by railroads in this field is not well understood. I think it is of particular relevance to highway planners. Railroads working with industry, government agencies, and others make a significant and important contribution in this field. Their efforts result in billions of dollars of new investment each year, thousands of new jobs and job opportunities, and substantial amounts of new tax revenues.

Railroads devote a great deal of effort to this function not only because of the benefits to the community, but also to provide for future growth potential for railroad-borne traffic. Many of you know how important we think highways and highway planning are to this function. A location otherwise suitable for industrial development can hardly be considered if there are not adequate highways to service the facility.

But adequate planning cuts more than one way. Consideration must be given to proper and adequate highways to serve existing industrial areas. Equally (and perhaps more importantly, because more can be done about it) we need adequate planning for future industrial growth. Important in this regard is to avoid cutting up good potential industrial sites or cutting off access to railroad service of good potential industrial sites. Those of you who have had contact with this problem know of the growing shortage of good sites. We in the railroad industry think that we have developed a special competence in this field. We urge you in your planning to take this problem into account, and let us give you our ideas and the benefit of our experience.

The Chicago Crosstown Expressway

MILTON PIKARSKY
*Commissioner of Public Works
City of Chicago*

CHICAGO'S method for expressway planning is unique in that we are the first public works planning body in the United States to mobilize and coordinate various professional disciplines systematically in order to arrive at recommendations for an alignment location and a highway design. In addition, for the Crosstown Expressway, members of Federal, state, county, and city governments have cooperated to form a single committee — the Crosstown Study Group — which includes representatives not ordinarily included in planning from the time of preliminary study through completion of an expressway. The Crosstown Study Group's interdisciplinary committee members include the following:

- U. S. Department of Transportation, Federal Highway Administration
- Illinois Division of Highways
- Cook County Highway Department
- The City of Chicago's
 - Department of Development and Planning
 - Department of Public Works
 - Department of Streets and Sanitation
 - Department of Urban Renewal
 - Department of Water and Sewers
- Mayor's Committee for Economic and Cultural Development
- Chicago Transit Authority
- Chicago Area Transportation Study

Northeastern Illinois Planning Commission Crosstown Associates, a joint venture of Skidmore, Owings and Merrill; C. F. Murphy Associates; Howard, Needles, Tammen and Bergendoff; and Westenhoff and Novick, Inc.

In addition, the following agencies contributed ideas and suggestions, as well as reviews, of several aspects of the Crosstown Expressway study:

Chicago Board of Junior College District #508
Chicago Board of Education
Chicago Park District
Chicago Housing Authority
Chicago Dwellings Association
U.S. Department of Housing and Urban Development
U.S. Department of Transportation, Federal Aviation Administration

Design Concept Team

A circumferential boulevard of monumental scale for Chicago was first envisioned in the broad concepts of the renowned Burnham Plan of 1909. One of its purposes was ". . . to divert from the center, traffic not having its objective point in the central area." Since then, a circumferential roadway has been an integral part of all the plans of Chicago.

At present, Chicago's transportation network contains a series of radial routes that converge slightly to the west of the central business district. The proposed highway, which in recent years has been termed the Crosstown Expressway, would run north and south at the western edge of the city, connecting the various arms of the existing network and easing the demand on these radial routes. The Chicago Area Transportation Study of 1962 recommended that the location of the Crosstown Expressway be fixed in the general region of Cicero Avenue, and in 1964 this routing was incorporated into the basic policies statement of the official Comprehensive Plan of Chicago.

A more definitive analysis of the needs and character of the Crosstown Expressway was completed in 1966, when a transportation advisory group composed of representatives of the State of Illinois, County of Cook, and the City of Chicago, prepared a pioneering study of various locations and designs for the expressway, giving special emphasis to nontraffic considerations and exploring new possibilities for improving relocation and land planning associated with its concepts. This interagency team demonstrated the desirability of comprehensive planning for highways.

The general location for the Crosstown Expressway was selected through study of traffic congestion on arterial streets in the area, daily trip computation to determine the traffic-attracting power of the Loop, and a survey of existing roadway facilities. Once the need for a corridor across town was established, Creighton's Theory for Optimum

Spacing of Expressways was applied to establish specific alternatives of corridor location. The Cicero Avenue corridor was clearly in the area of greatest street deficiency. The Cicero corridor was equidistant between the hub of the radial expressway routes and the Illinois Tollway bypass route in the western environs of the city. Because of its location, an expressway in this corridor could connect directly to the Edens Expressway in the vicinity of the existing Edens-Kennedy junction near the northwest boundary of Chicago. It would also provide a direct connection between O'Hare and Midway, the city's two principal airports. The Cicero corridor clearly emerged as the priority area for detailed alignment investigations.

At present, traffic volumes in the Cicero corridor are heavy, with about 30,000 vehicles a day on Cicero, 20,000 on Archer Avenue, and 16,000 on 55th, 47th and 63rd streets. In addition, local streets are forced to carry heavy employee and truck traffic related to the surrounding industries. This environmental conflict may in some measure be responsible for the incomplete development of residential areas, where scattered vacant lots are common.

Initial proposals for the Crosstown Expressway were announced during December 1965 and January 1966. At this time, an alignment along the belt railway was proposed. This alignment was to be constructed as an 8-lane facility elevated for much of its length on structures built on air rights. Proposals for the alignment served a useful purpose in establishing the general route and in clarifying the urban goals for a detailed alignment with regard to the environment through which it passes.

Though not the optimum solution, the alignment selected was a satisfactory proposal and one that reflected Chicago's concern for social and human values. At the time of this recommendation, the Bureau of Public Roads guidelines for joint development (first defined in "A Concept for the Joint Development of Freeways and Other Urban Facilities" by F. C. Turner, December 2, 1966) were not available to the Crosstown study team. Because of the serious concern of Chicago and other urban centers for the consequences of existing Bureau of Public Roads design and land acquisition policies, the Bureau issued its joint development proposals and recommended a restudy of the Crosstown Expressway. New studies were therefore essential to determine how joint development concepts could be specifically applied to the proposed alignment.

In October 1967, the Crosstown Design Team was formed as a professional consultant to the Crosstown Study Group on the design of the Crosstown Expressway and related joint development. Crosstown Design Team's staff was composed of civil engineers, structural engineers, traffic analysts, architects, landscape architects, urban designers, city planners, sociologists, urban geographers, economists, applied mathematicians, lawyers, and market analysts. This staff of experts has grown to over 100 persons since the team's initiation. On

August 16, 1968, all of the professional consultants working on this project were merged into "Crosstown Associates."

Because of the recent reactivation of Midway Airport, one of Chicago's two most important airports, it was determined that the priority section of the Crosstown Expressway should connect Midway Airport with the Stevenson Expressway to the north and the Dan Ryan Expressway to the east. Crosstown Design Team's work began with studies to select the best possible alignment, both in terms of engineering and of joint development potential, within this priority section of the Cicero Avenue corridor.

Procedures and Evaluation Criteria

Three viewpoints, or categories, constituted the framework of our study. Each of the three had its own set of objectives and criteria, and each was treated separately in analysis. While relative values or weights were given to the individual criteria in each of the three categories, with respect to one another, alignments were rated with respect to each category separately. Thus, if one alignment emerged as the best in all three categories, it obviously would be the best solution.

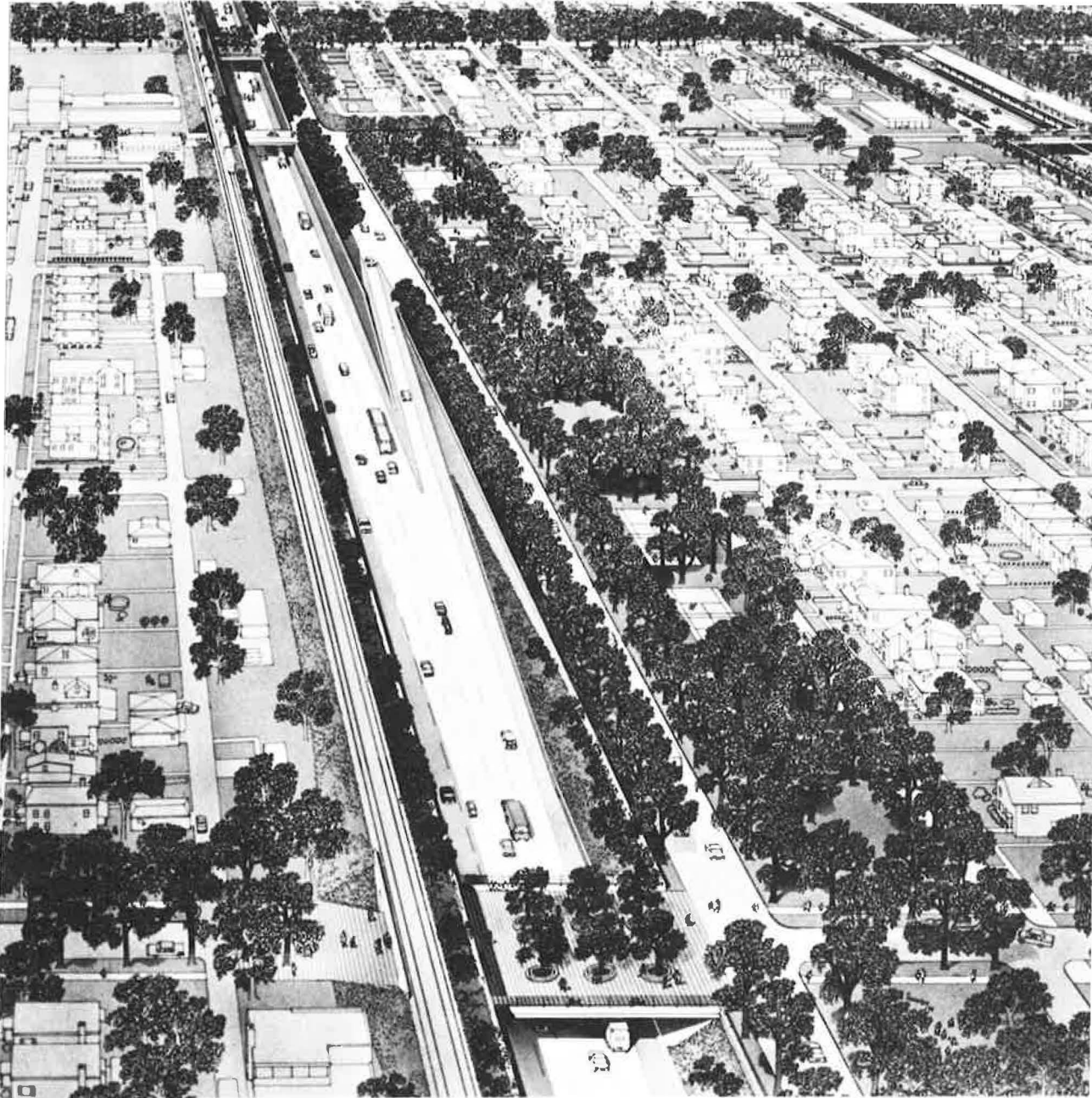
The category of engineering aspects included criteria for considering all technical and economic requirements of the expressway facility itself in its primary purpose of moving people and goods more safely, rapidly, and efficiently, and evaluating alternative alignments to other transportation facilities.

The category of community impact analyzed community groups on ethnic, religious, and political bases and considered the number of people and business establishments that would be directly dislocated by the alternative alignments.

The survey of demographic and population data investigated such aspects as the displacement of schools, churches, and parks; and the splitting of districts: school districts, fire districts, and police districts. For the purpose of community analysis, distinctions were made between the highly neighborhood-oriented grocery or drugstore and the more sector-oriented concerns such as the motel, or the used-car lot.

The population is composed primarily of families with an average of four persons per family. Most people own their own houses; about 20 percent rent homes or apartments. Monthly housing expenses average about \$130 for both owners and renters and the mean family income is just under \$10,000 per year. The area is almost exclusively white, except for the public housing area, which is almost entirely nonwhite.

The third category, potential land use improvements, explored opportunities presented by the alternative alignments as a possible catalyst for achieving desirable objectives—a means of linking the community as it is to an image of what it might ideally be. Chicago's basic policy requires that "transportation facilities should be used as



Proposed Chicago Crosstown Expressway from Stevenson Expressway to 67th Street. The depressed freeway is a split alignment located between the Belt Line railroad and Cicero Avenue. Design teams were created to consider engineering, economic and social impacts of several alternative routings.

positive factors in improving Chicago's communities and in establishing the future form of the city."

Having thus established a framework for the study, these three categories were then related to a process of analysis. Because the study group was to consider all alignment possibilities, the method of analysis had to function as a deductive process of elimination. Three sequential levels of analysis (general, intermediate, and detailed) were decided on as best able to accomplish this process of elimination.

At the general level of analysis, all proposed alignments in the Crosstown Study corridor (there were several dozen) were considered in the broadest context with respect to the city as a whole and the communities involved. Comparative evaluations of each alignment were made. Thus, each of the alternatives was given a rating with respect to the criteria for the engineering aspects category.

Concurrently, and in a similar manner, but entirely independently, each of the sociological, economic, and city planning factors were rated in their respective categories of impact on existing communities and potential land use improvements. Finally, findings were brought together and compared. If we were hoping for a decisive consensus in favor of a single alignment at the general level of analysis, we were disappointed. Six routes received acceptable ratings in all three categories. The pro's and con's of these six might be listed as follows:

Combined Alignment

PRO: Low industrial displacement.

CON: High residential displacement, prevents Midway Airport expansion.

Belt Line Alignment/Frontage Roads

PRO: Continuous frontage roads distribute traffic evenly and protect residential neighborhoods.

CON: Heavy industrial displacement, high residential displacement.

Belt Line Alignment

PRO: Minimum disruption of existing neighborhoods, least commercial displacement, lowest cost.

CON: High residential displacement, little opportunity for joint development projects, no frontage roads.

Belt Line-Cicero Alignment

PRO: Minimum disruption of existing neighborhoods.

CON: Highest residential displacement, little opportunity for joint development projects.

Divided Alignment/Exterior Access

PRO: Low residential displacement, great opportunity for short-range joint development projects, high protection of neighborhoods inside corridor, continuous frontage roads.

CON: Less protection of neighborhoods outside corridor, egress from Midway Airport requires use of preferential street interchange system.

Divided Alignment/Interior Access

PRO: Low residential displacement, great opportunity for both long and short range joint development projects, continuous frontage roads, highest accessibility.

CON: Highest commercial displacement.

In this manner, the study advanced into the second, or intermediate level of analysis. This level of analysis might be compared with the second power of magnification in a microscope. The field was narrowed to encompass only those alignments surviving the first screening, but these now were to be brought into sharper focus for more detailed analysis. New criteria were introduced in each area of investigation, and some of the criteria examined during the general level of analysis were given more detailed study. Finally, the three independent evaluations again were brought together.

Still there was no decisive result. Three alignments received acceptable ratings, and were selected from the six studied. These three seemed to offer the best possibilities for accomplishing our objectives. They were the Belt Line alignment, the Belt Line-Cicero alignment, and the Divided alignment with interior access.

The Belt Line alignment would connect at Stevenson Expressway and come south immediately adjacent to the belt railway. The Belt Line-Cicero alignment comes south along the belt railway to 55th Street, then bends to the west and, at 60th Street begins to follow along Cicero Avenue. The Divided alignment with interior access is divided into two one-way roadways. The roadway carrying traffic south starts at Stevenson Expressway and comes south right along the Belt railway. The northbound roadway replaces Cicero Avenue and carries traffic going north. At the conclusion of detailed analysis, the evaluation chart showed that all three of these alignments equally satisfied engineering requirements. In the impact on existing community and the potential land use categories, however, this last alignment emerged as the clear preference.

The Belt Line alignment was found to require displacement of some 160 families. In addition, it would allow for relatively minimum opportunity for neighborhood improvement. It would have the minimum cost of the three trial alignments, but only at the expense of minimum opportunities. The Belt Line-Cicero alignment could be integrated into the existing neighborhoods more successfully than the Belt Line alignment, but not as effectively as the divided alignment with interior access. In fact, it would displace some 208 families. The divided alignment with interior access became the recommended alignment.

Midway Stevenson Section: Plans and Innovations

From a casual first examination, the divided alignment with interior access might seem to be unorthodox, but in reality, the recommended solution operates as a simple system of one-way pairs, with the two elements separated by a quarter-mile of intervening space. A summary of its important characteristics is as follows:

1. A basic policy of the Chicago Comprehensive Plan is the provision of high accessibility corridors in the city. The recommended alignment recognizes this policy to the maximum extent.

2. The divided alignment provides for joint development of 48 acres of open space and 43 acres of developable space. It facilitates joint development by other agencies, both public and private.

3. Through joint development of remnant parcels taken for the expressway, neighborhoods will be improved by the addition of badly needed small parks and recreation areas. These will be located along the frontage roads, integrating the expressway with the neighborhoods.

4. With the frontage roads and the expressway performing as buffers, neighborhoods both external and internal to the corridor will be protected to the maximum extent. The system will reduce use of residential streets by trucking and other through traffic.

5. The recommended alignment results in the minimum displacement of families: 41 in single-family dwellings; 28 in multiple dwellings.

6. The recommended alignment offers the opportunity for relocation of families. Industrial and commercial establishments will have opportunities for relocation in areas near Midway Airport.

7. Elimination of strip commercial and consolidation of commercial activities into efficient centers is the goal of Chicago's Comprehensive Plan. The recommended alignment accomplishes this without displacing adjacent residential areas.

8. The divided alignment offers the highest quality of transportation service for both transient and local users. The frontage roads serve to assist in handling peak traffic loads. The split alignment will reduce gapers' block by at least 50 percent and eliminate the possibility of head-on collisions.

9. The recommended alignment provides a right-of-way for mass transit. Mass transit provision is located at the west side so that a bus stop or station can be located right at Midway Airport. Mass transit would be located next to the walled sections of the highway so that its noise will be shielded from the neighborhoods close by.

10. The divided alignment with interior access provides the best assurance that the large public investment in the crosstown expressway will benefit not only the users but also the neighborhoods in its corridor and the entire Chicago region. It reflects the search for new and imaginative solutions to highway planning desired by the public and all agencies of government.

The split alignment, with its reduced cross sections, results in minimum disruptive effect and maximum positive benefits to the neighborhoods. Air rights development becomes more feasible, both economically and practically. Pedestrian bridges are easily provided as safe means for children to walk to school and others to communicate between neighborhoods.

Consulting the Community

This, then is the contribution of the Chicago planning approach. If it is a unique contribution, it is because it introduces a systematic and objective method of analyzing and evaluating the many diverse factors of social, economic, psychological, fiscal, and political considerations — each area of study conducted independently of the others and each according to its own professional disciplines. It is a methodology that documents the thoroughness and objectivity of every step in reaching its conclusions.

We who share the direct responsibility for the decision-making processes are bound in good conscience to strive for a proper balance in achieving transportation goals that are in harmony with other community objectives. We are concerned about losses to small businesses, disruption of neighborhoods, and the relocation of displaced families. For these reasons, we have recommended the divided alignment with interior access. For these reasons, we have encouraged our recommendation to be seen by and explained to the people who live and work in the vicinity of the premier section of the Crosstown Expressway. For these reasons, we set out to achieve total community acceptance.

A community relations consultant was employed to assist us in planning and carrying out a series of presentations. A model of the Stevenson Expressway to Midway Airport area, which included the proposed Crosstown Expressway, was created. Graphic displays, slides, a basic give-away brochure and press kits were prepared.

On June 24, 1968, a series of public presentations was made in Mayor Daley's office to civic, business, and professional organizations. This presentation was thoroughly chronicled by the city-wide communications media.

A week later, an evening meeting to present the proposal locally was held at an elementary school in the Midway-Stevenson area. An overflow crowd of more than 700 people attended. So many others wanted to attend that a second meeting was immediately scheduled and held the next evening at which another large crowd turned out. Both of these community meetings continued until all questions had been exhausted.

Following these meetings, from July 3 through July 10, 1968, the model and other display material were put on exhibit at Midway Airport. Arrangements were made for free parking for all visitors to the

exhibit, and staff members were there constantly between noon and 9:00 P.M. to answer questions. Later, the exhibit was placed on display at a local shopping center and it has been viewed by more than 300,000 persons.

On July 9, another evening meeting was held in the Midway Airport-Stevenson Expressway area for property owners and tenants who would be affected by the alignment. This meeting was also heavily attended, with some 400 persons present. The purpose was to explain relocation provisions and policies and to assure tenants and property owners that no precipitous action would be taken, and that fair and equitable procedures would be followed. The city's efforts to achieve meaningful relocation benefits in the ultimately adopted Federal Aid Highway Act of 1968 were described.

Persons attending all meetings were encouraged to submit written questions and were promised personal letters in reply. More than 260 such letters have been received and answered for persons living and working in the vicinity of the expressway.

Finally, three weeks after the first announcement, a public hearing was held by the Illinois Division of Highways and the Chicago Planning Commission at which the Midway-Stevenson proposal was again explained and all persons attending were given an opportunity to be heard. Approximately 100 persons from the Midway-Stevenson area attended.

By the time of the public hearings it was clear that the overwhelming weight of public opinion was in favor of the innovative Midway-Stevenson Design. This was evident in the uniformly favorable comments of professional groups, civic organizations, and community and metropolitan news media. Equally telling, in my judgment, was the character of the questions and criticisms voiced by local residents. Their responses did not challenge the basic design, which they endorsed. Their comments were directed at particular parts of the overall plan — a particular access or intersection — or they were concerned with specific questions of dislocation and relocation.

The success of our organized effort was mirrored by the press coverage following the four hour official public hearing. Of the four major metropolitan newspapers, one allotted four column-inches, one allotted one column-inch and the other two papers did not report the meeting at all. No controversy, no coverage!

We in Chicago are confident that we have both the political leadership and the professional talent among our cooperating public agencies and local professional consultants, to develop and achieve a new urban expressway with related community developments that will materially improve the quality of living for the surrounding urban environment. And, at the same time as we achieve our own urban goals, we expect to set design standards and develop design methods that will be of benefit to other urban communities.

Panel Discussion

MR. BURMEISTER: Highway designers, for some time, particularly with respect to freeways, have been urged to get some uniformity in the design of interchanges, off-ramps, highway movements in general; yet I understand that on this particular piece of highway, you are now proposing to completely reverse the traffic movement in order to get interior exit.

Was the cost of the alternate routes considered? I noticed Mr. Klein pays particular attention to that matter in the Baltimore situation.

MR. PIKARSKY: We are going through evolutionary changes and it was our position that we wanted to bring to bear all of the social influences so we did not constrict either design, engineering, or architecture to existing standards.

While AASHO has come up with standards over the years that created the finest highway system in the world, we are not willing to accept current standards as the ultimate. We have said that wherever an individual designer comes up with a departure he must justify that departure. We then have a review board which includes the highway agencies.

Money is one of the key issues here. This approach costs more money than the conventional highway if you consider only the highway itself. We have to change the attitude of all of us that are in the highway field to be social advocates. Where we design a highway only on the basis of the cost/benefit ratio and the funds are coming from only highway user sources, we may create a situation in the environment around that highway that will cost much more to correct. We felt that the conclusion we reached was the best public solution with a minimal increase in highway costs. It is about an 8 percent increase in cost, of a total of \$145 million for this one section; 8 percent is somewhere in the neighborhood of \$12 million.

MAYOR BRILEY: Mr. Pikarsky has some comments on who represents the neighborhoods that I wish he would share with us.

MR. PIKARSKY: As someone who is in the political family, I find it rather interesting when someone says we should have community participation. The question is, who represents the community? The militant who tries to organize a block club? The person who quietly tries to persuade the community that school systems are fine and that we should continue?

Basically the decision-makers are the elected representatives, and I think if you leave this room thinking anything else you are making a very great error. What we have done that has proved successful in some of our projects in Chicago is that we have gone to whoever claims to be a community group and we have said in essence: If you oppose

the project you are not helping. If you have any meaningful suggestions we will respond to those. Give us your suggestions, your contributions. We will then take all of those that we receive and the political entity that represents a combined effort of the various professionals in municipal government, in urban renewal and planning, and so forth, will come up with a series of recommendations. The mayor and the city council are the decision-makers and they will respond to their individual public who elects them. To assume anything else again is sheer folly. Who are the community leaders today? Who will they be tomorrow? A project may take a year or two years. You may find that you have received community support from local groups, block clubs, and others only to find when the project is under construction that there are different presidents, different leaders, different advocacies. The only people you can depend on to represent the community are their elected representatives.

Baltimore Joint Development Project

NORMAN M. KLEIN
Skidmore, Owings & Merrill

IT IS my belief that history will judge the success or failure of any urban highway project by the way it meets or fails to meet four conditions: (a) Was the route in the right place as a transportation facility? (b) Were those displaced handled justly? (c) Were the neighborhoods through which it passed better off or worse off than before? (This relates to the idea of compensatory joint development as opposed to optional joint development opportunities.) (d) Was the city and region as a whole improved economically, socially, and environmentally?

During the first year of the two-year Baltimore Urban Design Concept Team project I have heard joint development both oversold and undersold. One myth is that it is a kind of candy that automatically comes along with an urban highway. However, I am not as pessimistic as Ed Logue, former Director of the Boston Redevelopment Authority, now head of New York State's Urban Development Corporation, who said at the recent NAHRO conference, "What the national government is presently doing and contemplates doing is not only not going to make any difference, it is going to make it worse, because it is arousing expectations with no possibility of fulfillment and no appropriations seriously sought."

In the Baltimore Project, with 60 percent of the time now elapsed, there is measurable progress in joint development planning but it is still too early to tell whether delivery will be achieved.

I would like to first bring out a few background facts on the Baltimore Project and then describe in chronological order the highlights of the Team's joint development operation and then to discuss administrative aspects of local, state and Federal Government.

Background

This experimental program, primarily funded by the Department of Transportation through the State Roads Commission of Maryland, has as its objective: "To assure that the Interstate system within the city will provide for the social, economic, and aesthetic needs of the city's environment, as well as provide an efficient transportation facility."

This is a tall order. When it comes to the hard cash realities this means that the Team must design, engineer, and promote programs to assure that the social, economic and aesthetic requirements are met in sufficient quantity and in sufficient time to match the already available road funds. The participants in the Baltimore Team are a Joint Venture consisting of Skidmore, Owings & Merrill; Wilbur Smith and Associates; Parsons, Brinkerhoff, Quade and Douglas; and the J. E. Greiner Company. Consultants are in housing, Charles Abrams; in economics, Real Estate Research Corporation; in sociology, George Grier; in acoustics, Bolt, Beranek and Newman; and in design techniques, Kevin Lynch; as well as others.

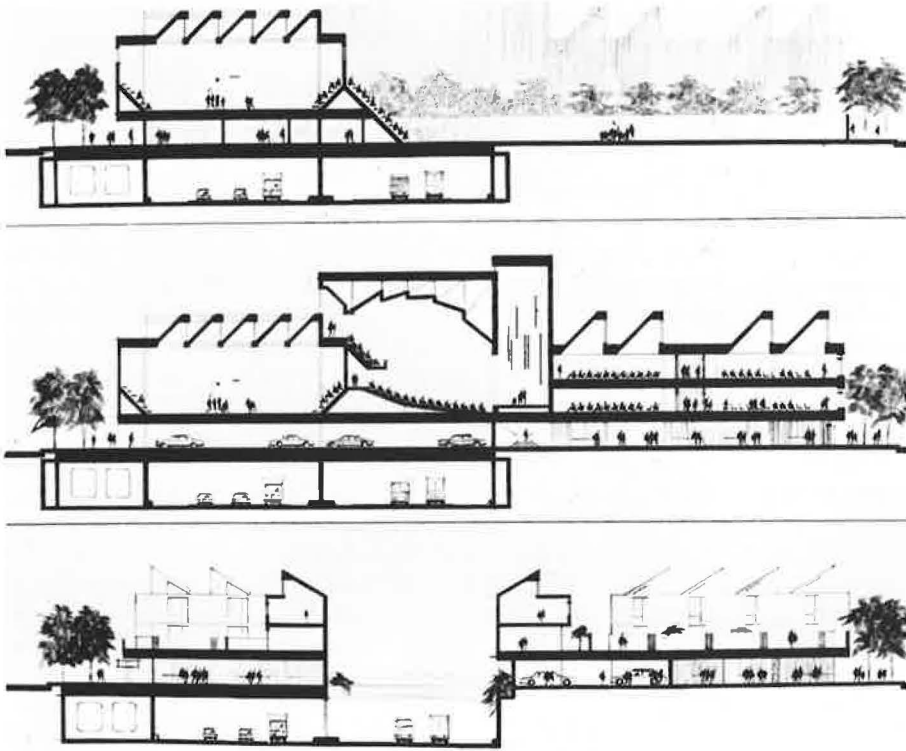
The actual condemnation line of the Baltimore Project was given to us before the project began. It goes through Leakin Park, then enters from the west, the ghetto area of Baltimore, Rosemont, Franklin-Mulberry Corridor, and Fremont. Then it goes down in the Inner Harbor adjacent to an urban renewal project and runs along the waterfront near Fells Point. The southwest leg comes toward Washington and runs generally through the middle branch and through a lot of open space.

The process network is fairly straightforward to draw on a piece of paper but extremely difficult to do. The end products that we visualize are three: the road alone, the road in conjunction with the joint development physically that is necessary to have it fit in the city, and the environmental programs, such as compensation, that are not built but are fundamental to locating a highway in a city.

Joint Development Studies

In the Fall of 1967, when we began, the Concept Team did a preliminary survey of the 24 miles of route that passed through park, ghetto area, waterfront, and historical and industrial areas, as well as open space. We began by developing exploratory initial concepts. In one area, the Franklin-Mulberry Corridor, this concept displayed all the things that this hardpressed, already half-demolished ghetto area appeared to need at first glance: job facilities, recreation, housing, schools, and commercial facilities.

Last winter, programming took a harder look and together with the City Planning Department and School Board evolved a proposal for a three-block school and multi-service center for the neighborhood. The



School and multi-service center using the air rights over the Interstate highway and rapid transit routes through Baltimore, Maryland. (Source: Urban Design Concept Associates, Baltimore, Md.)

Concept Team developed preliminary design and cost analyses for the facility and submitted them to the Federal Highway Administration.

Three schools were programmed in the area and to build them on other blocks would have meant even more relocation, even though land values from a purely economic sense are about \$2.00 a square foot in the area. This scheme was costed out to be somewhere between \$15 to \$30 a square foot, essentially for the platform — at one point it ranged about \$4 or \$5 million of premium over building the same facilities on “dry” land. Still there was a great deal of support for the concept in the Bureau of Public Roads.

According to a later plan drawn up about four months ago, the Franklin-Mulberry Corridor would retain perhaps half of the land for recreation, housing, and other development instead of using the whole corridor for transportation.

The subject of acoustics and noise is something we are considering very seriously. One idea to decrease the noise in terms of decibel rating is to simply depress the road. However, this still causes problems. You find high levels of noise in the adjoining houses with noise on the upper floors 50 and 60 decibels, because there would be not only the depressed highway but existing traffic on Franklin and Mulberry Streets. One solution would be to put walls and joint uses that will contain or dampen the noise level adjacent to it. We are tracking carefully the noise output from various configurations of design. Another idea is to bury the road under decking or in a tunnel and thereby eliminate a good deal of the noise problem. Ventilation stacks could be clustered together and run through the center of tall buildings in the adjacent area.

Another possibility in the Franklin-Mulberry Corridor is elevating the road in some places. This is still met with horror whenever we mention it but you will see later that there are some possibilities in reducing the ground noise level. If you take the trucks off the existing streets and put them on an elevated expressway there would still be a bad situation in the houses but not quite as bad as it is now. If you elevate it but try to contain the noise by putting in certain uses that might be needed in the neighborhood, this explores possible structural or office uses. Another possibility is an elevated highway and rapid transit in the air down the center, containing the sound by building needed facilities along the sides.

Still another idea would be to stack the transportation facilities with two levels of road plus rapid transit with one above the ground level. A variation of this would be to stack it all on one side, putting the highway below and the rapid transit above, and using the condemned corridors for recreation purposes in some places.

At about the same time last winter the Concept Team also submitted a proposed 500-foot covering of the highway in an important area of Leakin Park as well as a third project called the Quad Street Industrial Park which would put the highway on structure instead of on fill, thereby generating space for industrial development below it. While these three proposals were cooking, the consultants in economics and in sociology were investigating the need for additional joint development projects along the whole 24 miles of the route.

Administrative Actions

The Federal Highway Administrator, Mr. Bridwell, insisted that the Team and the city get together and come up with a whole set of joint development packages with priorities and costs so that the full magnitude could be known before decisions were made on a piecemeal, fragmented basis.

This spurred the city and the Team into a more concentrated and coordinated planning effort. The mayor set up a Coordinating Com-

mittee consisting of the heads of all city departments to meet weekly with the Concept Team and to assign people from the City Planning Department and the Housing and Community Development Agency to work together with the Team in programming and in setting priorities for the joint development projects.

A report was produced in September 1968, outlining some 16 specific projects. Each one was outlined in terms of objectives of development, summary of proposal, programming details and potential implementation resources and funding.

It was agreed by everybody that the first priority joint development project should be the school multi-service center in the Franklin-Mulberry Corridor. The Baltimore School Board, City Planning Department, the Mayor's office, the Housing and Community Development Agency, the State Roads Commission, the Bureau of Public Roads, the U.S. Department of Health, Education and Welfare — all are on record as supporting this proposal. A revised submittal has been made to the Department of Transportation and some decision is expected very soon.

In joint development, the Concept Team also acts as a kind of marriage broker in bringing together consultants with expertise in urban affairs throughout the country with the local agencies. A proposal to set up an urban development corporation in Baltimore to manage joint development projects within portions of the transportation corridor is under serious discussion now. Among its purposes are the following:

1. To provide professional staff capable of identifying, planning, and implementing the development of required housing, commercial, and community facilities;
2. To develop methods of maximizing private and non-city public financing of required facilities;
3. To coordinate participation of the several local, state, Federal, public and private agencies and necessary individual and joint developments; and
4. To prepare or assist in the preparation of applications to appropriate public and private agencies to provide requisite financing.

It is visualized as a nonprofit action agency organized for the single purpose of analyzing and developing solutions to minimize the impact of highway construction on the Baltimore community.

Its organization could consist — and this is still in the speculative stage — of a Board of Directors including the Mayor's Development Coordinator, the Director of the Housing and Community Development Agency, the Director of City Planning, and the Chief of the Interstate Division of the State Roads Commission. The funding for this facility might include either direct appropriations by the Housing and Community Development Agency, grants from national foundations and local civic agencies, contracts with Federal or state agencies including

funds from DOT, HUD, and OEO. The next steps are the securing of informal concurrence of the city officials and formal discussion with foundations and other public and private fund sources.

Conclusion

These are simply a few of the studies that are now in progress, and we have not arrived at conclusions. In order to accomplish joint development in urban areas on the scale appropriate to a 24-mile urban freeway a new industry is needed, as efficient and at least as well-funded as the highway building industry. In Baltimore the work has begun, substantial progress is being made, but the machinery and the funding are not quite in hand at this date. In this we — the Team, the city, the state, and the nation as a whole — are taking significant baby steps when we should be taking giant steps.

Panel Discussion

MR. PIGNATARO: There has been considerable talk about compatible land use as being encouraged and required for joint development. This means that very often housing, recreation, shopping, etc., can be in very close proximity of the highway right-of-way, and yet there are many undesirable aspects of the subsystem regarding pollution, including air, noise and dirt.

It has been claimed by some that about 80 percent or more of the noise is due to traffic. I wonder how we can talk about compatible land use, and housing particularly, when you are so close to all of these undesirable effects? What has been done and what is being planned to minimize these undesirable effects?

MR. KLEIN: The firm of Bolt, Beranek and Newman has been working with us on the Baltimore project in the submittal to the Bureau of Public Roads for the three-block school project. There has been a complete analysis of the acoustics problem and this can be handled as well as the ventilation problem.

The question has been raised, I think, largely because of that George Washington Bridge project. From the engineering advice we get, there does not seem to be any technical difficulty that is not solvable.

As I understand it, the problem in the George Washington Bridge complex is that there was insufficient mechanical ventilation. There were 500-foot platforms on which the houses were built so the lower stories of the building, particularly when the cars were stopped and the exhaust came out in vast quantities, created quite a problem.

Twin Cities Metropolitan Area

ROBERT T. JORVIG
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St. Paul, Minnesota*

MY ASSIGNMENT is to present a series of case histories of joint development of transportation rights-of-way over a period of several years in the Twin Cities Metropolitan Area. These examples had their beginnings back as far as 1949 and cover a range of activities up to the present time. The idea of joint development is certainly not new and I am sure it dates back just as far in many other communities. However, its potentials for achieving improvements in development, construction and land utilization economies, opportunities for aesthetic achievements, and its importance as a means of achieving total urban development concepts are not being fully realized. Examples I will relate to you do not represent some of the more dramatic ideas that may be currently under consideration. However, I believe they illustrate the importance of a continuous process of searching for opportunities for improvements in urban development via joint efforts by all of us who are responsible for a variety of governmental and private development operations. This positive attitude of cooperation is vital if we are to be successful in maintaining and improving our living environment in the face of the tremendous growth taking place in our urban areas.

Many of the best examples of joint development in the Twin Cities Area relate to urban renewal programs in both the cities of Minneapolis and St. Paul. They represent a variety of achievements resulting from joint development activities. Probably the most dramatic is the redevelopment of major portions of both cities achieved through joint transportation and renewal activities. Redevelopment was not only ac-

completed through the efforts of the redevelopment process itself, but the transportation system contributed to substantial improvements via the private market, without other public assistance. These joint efforts also aided the community in reaching decisions on transportation plans. They represent achievements in accomplishing community design objectives and the preservation of neighborhood values. Although joint programs offer great opportunities, objectives are not achieved easily.

St. Paul

One of the most dramatic of joint development activities undertaken in the Twin Cities Area is the renewal and highway developments adjacent to the State Capitol in St. Paul. These were initiated after World War II when the program for improvement of the Capitol Approach was proposed as an alternative to a proposal for establishment of a typical War Memorial. The State Capitol in Minnesota is a large attractive building that, in 1946, was surrounded by an area of dilapidated buildings, "skid row" in character. The plans proposed for the area followed original ideas presented at the turn of the century by Cass Gilbert for a very large plaza that would extend through the heart of downtown St. Paul. This concept was followed but foreshortened to provide a visual tie between the Capitol and the Cathedral.

Development of the Capitol Approach plan was carried out in conjunction with the State Highway Department, City of St. Paul, and a Capitol Approach Commission created for that purpose. The initial plans provided for a major freeway to pass through the city, between the Capitol Approach and the downtown area. A model of the Capitol Approach shows the existing buildings, a mall, the new Veterans Service Building, and the John Ireland Boulevard connecting the Capitol building to the Cathedral.

With the redevelopment of some 75 to 80 acres for the Capitol Approach in prospect, the city gave consideration to the redevelopment of adjacent areas to the east and west that were seriously blighted. As a result the Capitol Approach and two adjacent redevelopment projects known as the Eastern and Western Redevelopment Areas were carried out simultaneously. The redevelopment plans did not initiate detailed freeway schemes since there was no funding for the freeway system at that time. The redevelopment plans were prepared to provide for a wide right-of-way for a parkway and median strip that could serve the area in event the freeways were not ultimately built but at the same time would reserve substantial rights-of-way for freeway at such time as it could be approved for construction. This procedure permitted the redevelopment project to proceed as planned with a degree of flexibility to coordinate with freeway plans. At the time this plan was proposed there was some doubt as to whether the Veterans Service Building and two major state office buildings would be required. The plan has now been essentially completed and the buildings are in place essentially

as proposed with the addition of one more building, an Armory. The Veterans Service Building itself was not fully completed with the office structures above it, but this is expected to be under construction this year.

Between the Cathedral and the Capitol is located a new Vocational High School as a part of the Cathedral renewal project. This project involved joint development activities in connection with the provision of storm drains and sewer facilities which were jointly financed by the City of St. Paul, the State of Minnesota, and the Highway Department. Adjacent to the Capitol Approach area to the west is the Western Redevelopment Area, which includes a substantial commercial development by a department store and a major motel constructed almost identically to the plan originally proposed. This motel fronts on what was the initial plan Rondo Parkway and the plan was ultimately constructed with the freeway in the foreground as originally contemplated. The remaining land became a service drive to serve adjacent development. This provides an indirect access from the freeway.

As a result of the Capitol Approach, the redevelopment improvements, and the freeway, many seriously dilapidated old buildings have been removed and new development has taken place privately on the downtown side of the freeway. The improvements have been a catalyst for a major redevelopment for the heart of downtown St. Paul, which is rapidly being completed. The freeway provides a visual separation between the Capitol area and downtown St. Paul. A view to the east carries into the Eastern Redevelopment Project and a view from the center of one of the bridges provides the kind of picture that you might see on a publication criticizing the design of freeways in the center of a city. However, this depressed freeway with the bridge crossings actually provides the close visual tie between the Capitol Approach and downtown which is most critical. Other new buildings have been built adjacent to the Capitol Approach development, such as the new Capitol Square office building, apartment buildings, and the new Arts and Science building.

Moving to the Eastern Redevelopment Area is the new St. Paul Ramsey Hospital, which was constructed and related to the highway circulation pattern. Beyond this there is a low-rent housing project, also a part of this total development of close to 300 acres of land in the heart of the city, which is now essentially complete. A new high-rise building for the elderly is set against the high ground adjacent to a neighborhood park overlooking the freeway area and hospital area.

Another early example of coordination of development was the McDonough low-rent housing project begun in 1949. Much of the land here was tax forfeited. The Housing Authority acquired a substantial portion of the land required for the housing purposes but the city retained a large area on the eastern side for potential playground and school use and reservation for an anticipated future freeway. The

school was ultimately built, and finally, many years later, the freeway which then could be constructed with adequate service facilities without disrupting the project. After construction of the freeway some land remained that permitted the addition of a small group of buildings along the eastern boundary.

Another example of joint participation in St. Paul is the West Seventh Street overlook. Here a new bridge was constructed over the Mississippi River, and the old bridge connecting St. Paul and Fort Snelling was torn down. The removal of the old structure afforded an opportunity to construct an overlook focusing attention to the new Fort Snelling State Park across the river. This includes the confluence of the Mississippi and Minnesota Rivers. Proceedings to accomplish this began in 1964. The Highway Department took bids to construct the scenic overlook but the State Attorney General ruled that State Trunk Highway funds could not be spent, so the project was cancelled. It was ultimately taken over by the city after numerous correspondence and a clear title was provided to the property by the Highway Department and the Corps of Engineers. The result was a very attractive overlook that will be much used as a viewing point of the restored Fort Snelling Park. The new freeway through this part of old Fort Snelling was tunneled to preserve the continuity of the park.

Some of the less dramatic joint efforts include efforts at financing storm sanitary sewer separation programs jointly with highway construction. This has been undertaken to a substantial degree in both Minneapolis and St. Paul with resulting savings both to the city and to the Highway Department. An additional joint venture has been the interim financing by the central cities to expedite the timing of highway projects. In both cities local bond funds have been made available to the Highway Department to finance certain highway improvements that could not have otherwise been scheduled for several years. In these cases, the cost of the improvement is ultimately repaid by the Highway Department, with the city bearing the interest cost.

Minneapolis

The City of Minneapolis renewal program got under way somewhat later than that of St. Paul. After initial projects, the city did a detailed study of housing conditions and developed a program that recognized that freeway projects would be undertaken within the heart of the city and that the opportunity existed for development of adjacent blighted lands as the lands for freeways were being cleared. The Housing and Redevelopment Authority undertook condition studies primarily following the proposed rights-of-way of freeways and set a system of priorities that was based on the needs for renewal and related to highway development. An up-to-date map of the urban development activities in Minneapolis would show the actual projects that are being carried out to closely follow these rights-of-way. There are examples of joint de-

velopment activities in addition to the overall concept of encouraging renewal processes adjacent to freeway rights-of-way. Almost the entire ring of the freeway system is enveloped by renewal projects under way or in planning. The major area to the south has been designated as the city's model city area.

The first project was the Glenwood Redevelopment Project in North Minneapolis. Here the redevelopment agency acquired right-of-way for a future proposed portion of the Interstate System in 1958 and designed its housing and industrial development to meet the proposed highway program. This project has been essentially complete for several years. The freeway right-of-way is still reserved and construction is expected to begin next year. During the interim period a major arterial street runs through that area and provides service to the project area. This was done merely by an exchange of letters with the Highway Department and Redevelopment Authority. Under present regulations this would not be permitted and would require a binding contract that could not have been accomplished at the time this project was undertaken. This would have required either a substantial advancement of the freeway construction program or a curtailment of renewal to properly coordinate. Low-rent housing adjacent to this portion of the freeway was constructed. The ground was raised, and grade levels and service drives were set to conform with proposed freeway plans several years in advance of construction.

To the west of the Glenwood Redevelopment Project a rehabilitation area was initiated adjoining an existing highway, which is to be upgraded to freeway standards several years in the future. This required widening and acquisition of the properties currently adjoining that highway. A substantial portion of these buildings were commercial structures and immediate questions had to be answered as to whether these structures would remain to be acquired at some future date for freeway purposes. The obvious result of such a decision would be the gradual depreciation of these properties in anticipation of their eventual acquisition. This would obviously contradict the objectives of the renewal program for rehabilitation of existing structures. In this case the redevelopment agency made an agreement with the Highway Department to acquire these buildings immediately and to develop a service drive which would eventually be tied into the upgraded freeway system. This improvement provided an open-space attractive buffer between the highway and the adjoining residences. The result was an asset to adjoining residential properties, which encouraged the rehabilitation of this area rather than detracted from it.

To the north of this area is a large general neighborhood renewal project consisting of a series of renewal activities to be accomplished over a period of several years. Here Interstate 94 traverses the area from north to south and will connect ultimately in the center of the project area with a future northwest diagonal.

Again this creates the serious problem of depreciation and deterioration of neighborhood pending ultimate construction of the freeway system. In this case, the City of Minneapolis was to proceed immediately with the acquisition of the freeway right-of-way within areas to be cleared by redevelopment, with the land to be acquired by the Highway Department and held until the freeway was ultimately constructed. The Highway Department could not proceed with the acquisition and the renewal agency would not in turn allow the area to be redeveloped without such an agreement. As a result the initial project, the Grant Renewal Project, had to be reduced in size and the portion of the area within the highway right-of-way was deleted. This was a seriously blighted area and as a result it deteriorated further and caused serious problems in the neighborhood. Ultimately an agreement was reached to purchase the property and hold it with potential interim use for recreational purposes or other short-term uses. The remaining portion of the freeway running to the north is in the rehabilitation area. Here agreement must be reached to permit the rehabilitation of these properties pending the ultimate construction of the freeway several years in advance. Even though this would maintain the property values or increase them, the alternative would result in the deterioration and decrease in value of other adjacent property, contrary to the objectives for rehabilitation of the neighborhood — ultimately that would have been a more expensive solution.

The St. Anthony Renewal Area represented an effort at preservation of community values through the joint programming of renewal and highway development. The initial proposal for the Interstate System provided for the freeway to go through the center of this neighborhood, which was bordered on one side by a railroad and on another side by a major arterial. The freeway would have bisected the area served by several churches, schools, and playground facilities. The freeway was ultimately moved to the south border of the project adjacent to the railroad and industrial area. This provided industrial sites adjacent to the railroad and preserved the residential area to the north. As a result of this change, substantial support was gained from the community, both for the freeway system and the rehabilitation program proposed.

The Minneapolis Housing for the Elderly Program provided a large number of tower buildings that fulfilled two purposes in addition to providing needed housing for the city's large elderly population. It provided for spot renewal of the city, coordinated with the urban renewal objectives, and provided sites adjacent to freeway rights-of-way. These were carefully selected to point out the advantages of tower buildings at strategic locations along the freeway and to demonstrate their usefulness in carrying out community design objectives. For example, a single tower along the vista of a freeway or other major arterial provided a variety in the landscape and an attractive image of the city. The

first project of this kind was adjacent to the major interchanges on the Interstate System, which was not to be constructed for several years. Here some joint acquisition programs were carried out by the Highway Department and the Housing Authority, and easements were provided on highway lands to provide access to the parking area for the housing projects. In northeast Minneapolis another project was developed adjacent to the freeway where lands had been acquired for slopes in connection with the freeway system. These lands were made available to the Housing Authority to enable it to proceed with its project.

Another development is adjacent to Interstate 94 bordering the heart of downtown Minneapolis. Here a joint agreement was reached with the Highway Department whereby the Housing Authority could make use of the slope areas adjoining the depressed freeway to provide necessary open space setting for a tower building. A tower building in turn creates a very attractive structure along the freeway and carries out the cities objectives for creating attractive vistas and community design image along the freeways. This project is currently being completed. Another project involves additions to existing homes for the elderly. Here landscape treatment is being developed jointly with the Highway Department to make use of slope areas on the adjacent raised freeway to provide a more attractive setting for the housing development and a better buffer between housing and the freeway system.

Additional programs are being considered. The city of Minneapolis is currently undertaking, together with the Highway Department, a program for improvement of freeway design in landscape treatment both as to the landscape treatment along the freeway itself and its relationship to adjoining properties. This relates to the city's community design studies. A key feature is the consideration of attractive vistas as you move about the city on its transportation systems. This has again been accomplished to a degree by the city housing and renewal programs as illustrated by the Elderly towers near downtown and the tower buildings in the Seward East renewal project.

The City Planning Commission, the school board, and the Highway Department are also considering a multiple-use development in southeast Minneapolis to provide for the construction of an elementary school over the freeway. This is an unusual school district adjoining the university where the neighborhood is small and the land availability is limited. The use of a substantial amount of land for an elementary school would in turn substantially decrease the number of families in the community to use a school. Therefore, the land is of critical concern regardless of the price in order to maintain a proper balance. This project has been under consideration for some period of time. It has strong support in the community and there is optimism that the development can be carried forward.

A similar type of development is proposed in the city of St. Paul where the City Center for Learning in the city's model neighborhood

area is proposed for construction over the adjacent Interstate System. The Center for Learning contemplates pooling a number of elementary schools, junior and senior high school, community facilities, and vocational training into a large center for learning to serve a major sector of the community. This proposal would provide greater learning opportunity, greater community facilities, and a thoroughly integrated school system. The center for learning concept is still under study as well as the proposal for multiple use of the freeway rights-of-way.

The examples that have been discussed have been developed over a period of many years and to a great extent the joint efforts have been designed not only to achieve immediate advantages of joint development efforts in a particular location, but also to accomplish the development and execution of long-range highway plans. In more recent years a metropolitan highway network has been designed and the joint development efforts are turned to the implementation of the transportation program in a manner that will take maximum advantage of opportunities for joint development consistent with a total system plan.

The Metropolitan Council

The Metropolitan Council of the Twin Cities Area has been recently created as a successor to the Twin Cities Metropolitan Planning Commission. The Council has been designated by state legislation as the regional review agency for any programs requiring regional review by the Federal Government. In addition, it has review functions and the right to suspend plans of multipurpose special districts, when such plans are not in conformance with the guide for metropolitan development.

The Council has developed a three-year work program. As a part of this plan, the Council is setting aside certain sums of money for case studies. These case studies are designed to provide the opportunities to assist local communities in carrying out particular development objectives as well as to assist the Council in carrying on special studies in real-life situations to implement broad metropolitan objectives.

Here is an opportunity for joint planning for transportation. An obvious example would be a program to provide for interim use of acquired freeway rights-of-way in areas like the one mentioned in north Minneapolis. Here interim housing use might be explored. The Metropolitan Development Guide for the Twin Cities Area provides for the development of a number of major centers as the concept for future metropolitan development. These centers will be located largely through the shaping effects of transportation, the timing of service, and construction of utilities and open space. Here standards and designs for intra-center circulation access and service to major industrial parks and access to these diversified centers might be appropriate. Model development controls for local communities pending the actual development of a major center would also be helpful to local units of government.

It is imperative that a major center be located adjacent to a freeway and have access by directional interchanges rather than following the policy of locating adjacent to interchanges between major highway routes. Here we have found difficulties because of the reluctance to provide directional interchanges to commercial centers that may benefit a particular developer. It seems to us that this is short-sighted since the service of the transportation system depends on such directional interchanges. The alternative would be to locate on a typical interchange between routes, which only serves to decrease the capacity of the interchange and to provide poor access to development. Another problem relating to such access is the limitations on signing the system to advise the motorist as to the location of the center.

Joint development efforts can be an important tool to aid in the implementation of metropolitan transportation goals. However, the policies of the many public agencies involved and the attitudes of all of us having responsibilities for development activities are as important as the ideas and projects that may be conceived.

This means that policies must be established by all agencies that actively encourage interfunctional relationships and joint development opportunities as a continuous process beginning early in the planning process and carried forward in mutual confidence.

Century Freeway (Watts)

STUART L. HILL
*Supervising Right-of-Way Agent
California Division of Highways*

INTRODUCTION of a major transportation improvement in the urban environment disrupts the community, its patterns and established relationships. Means of minimizing the disruption and obtaining community support for our programs is one of the objectives of this conference.

In California the adopted route of the proposed Century Freeway has achieved not just community support, but advocacy from a community which it severely affects — the community of Watts.

Time magazine claimed that one of the causes of the Newark riot was the “Negro removal” by three Interstate freeways. Replacement housing was not available for the thousands displaced by freeways.

In Watts, we face a similar problem — only we have already had a riot. Two freeways interchange in the heart of the community. The displacement of 2600 families will be necessary. The housing units affected are low cost. Half are owner occupied. Twenty percent of the occupants are retired and on fixed income. It is impossible to replace this housing. The average value of the houses to be acquired is \$13,000. The cost of comparable homes outside of Watts is between \$18,000 and \$22,000.

Watts is not an average community — it is black and it has been wracked by a riot. Today it is not much different than it was in August 1965 — the root causes of the riot are still there.

There is one major difference that had tremendous impact on our freeway proposals. Since the riots, Federal, state, and local agencies and universities from all over the world have launched studies of Watts. Residents are besieged by door-to-door surveys. Even the U. S.

Census Bureau did a special census. Tours of Watts are constant, and dozens of remedial programs are proposed by innumerable government agencies. Millions of dollars have been spent in Watts in the last three years. The results have been a great many promises for change and a significant increase in the daytime white population.

But even more foreboding for highways, the Los Angeles Community Redevelopment Agency for a number of years had studied Watts and had submitted a plan for redevelopment to public hearings. Coming on the heels of a great many other proposed programs, some seemingly exploiting the community, the redevelopment plans were completely rejected by the community and nearly all proposals for community improvement began to be suspiciously regarded as an attempt by the white power structure to break up Watts and scatter its residents all over Los Angeles. This issue and this idea were beginning to pervade Watts at the time our freeway proposals were introduced.

In the face of this, we obtained acceptance of the freeway and support and advocacy of a route right through the community. The results are dramatic, but they came about through the routine practices of the California Division of Highways and good planning procedures.

We achieved these results by involving the community in the development of our plans and by taking into consideration the impact and effect of the freeway. It has always been the practice of the California Division of Highways to involve the local community, local groups, and service clubs at early stages in the planning process.

In California, terminals are set by the state legislature when they designate a highway as part of the state highway system. The California Highway Commission selects the specific location of the highway or freeway after public hearings. Although broad design features may be set by the location of the highway, detailed design follows location of the highway.

Throughout the highway route location process, prior to adoption by the Commission, the highways staff present their studies to local city technical staffs, to concerned government agencies, to local interest groups, service clubs, garden clubs — in fact, to anyone who is interested in hearing our story. The net result, we hope, is a fully informed public at the time of the Division's hearings on the route location.

Such a policy preceded hearings on the Panhandle Freeway in San Francisco. The Technical Report on the Panhandle Freeway was a joint city, county, and state study of freeway route locations and design. This report publicly presented early concepts of joint development and multiple use of rights-of-way. However, despite local participation in planning and employment of well-qualified consultants, we lacked the legal means, then, of achieving some of the broad planning goals; and that freeway, and ultimately others, was rejected by the community.

Public involvement in our planning activities continues after route adoption during the design stage. In addition, the California Division

of Highways negotiates and executes with the local community a freeway agreement that sets some of the features of the proposed freeway.

Identical procedures were followed in Watts during the route location stage. We contacted local groups in Watts, including the militant organizations that receive so much publicity in the national press. We contacted home improvement associations, street improvement associations, garden clubs, churches — every conceivable group that seemed to have an interest in the effect of the highway on this community, and Watts has a plethora of groups. We presented our story to them, what we proposed, the nature of the highway investment, and the anticipated impact on residential property within the community.

It became evident that the huge right-of-way investment to be made (about \$100 million) provided a rare opportunity for Watts. Unless a program was developed, it could be dissipated throughout Los Angeles. That is, the recipients — the homeowners, the individuals directly affected by the freeway — most likely would take their payment and leave Watts. Yet, this community, which had suffered so much during and after the riots, could use the investment in right-of-way to improve and upgrade the community.

Since the riots, normal economic activity has dwindled in Watts. Investment institutions, banks and speculators, conservative in most cases, are reluctant to invest any money in Watts. As a result, there has been almost no money for housing since 1965. Loans for new housing have been nearly nonexistent. The right-of-way acquisition program of the Division of Highways could be an opportunity to stimulate real estate development within the community again, an opportunity to use the right-of-way investment to renew or rehabilitate the community, to give it a new start on building its own identity in a more satisfactory environment.

With this in mind, we developed a different strategy for land acquisition in the Watts community. The key item in this strategy involved replacement housing.

Ninety-five percent of the properties to be acquired in Watts are residential and, as we previously stated, half are owner-occupied. Our survey indicated only one-third of the affected residents really wanted to relocate outside of Watts. Most of them had lived there many years — their roots were there, their friends were there, community activities and organizations remained in the community — they had no desire to leave. The people affected by the Century Freeway are part of the most stable elements in Watts. Displacing them would leave a vacuum in Watts that would be hard to fill.

Learning from our experience in San Francisco, we formalized our replacement housing strategy before the freeway route was adopted by seeking legislative sanction of the idea. The Governor included in his 1968 legislative program a bill proposed by the Assemblyman from Watts to provide for the development of a replacement housing pro-

gram in California. This legislation provides that the Division of Highways may acquire and condemn vacant unoccupied property outside freeway right-of-way and that it may contract with public and private entities for the financing, planning, development, construction, management, sale and exchange or lease of replacement housing, in order to provide replacement housing for low-income individuals and families who reside in economically depressed areas and who are displaced by freeways. It further provides that we may acquire other property for such purposes by means other than condemnation.

Freeway planning and the replacement housing program in Watts may or may not involve joint right-of-way development or the multiple use of rights-of-way. At this stage, we are not certain. We feel that community improvement projects that are stimulated and developed in relation to the housing program, especially for recreational purposes, will probably be developed on large remainders adjacent to the freeway. Total community planning, at this stage, has just begun, but the impact of the freeway on Watts will certainly be much wider than the narrow corridor involved in joint development or the multiple use of rights-of-way.

Our first approach to the problem, in fact, was very similar to our proposals in San Francisco for the Panhandle Freeway, with high-rise apartments alongside and straddling the freeway. We envisioned the freeway as upgrading the living conditions and environment of Watts through modern buildings. We even embellished the corridor with industrial sites to provide jobs for the 40 percent unemployed in Watts. But these visions do not fit Watts. They do not represent the aspirations of its residents, most especially those affected by the freeway.

The vast majority of people live in single-family dwellings — small units, but with fenced yards, privacy, and a garden. Their house is a status symbol, especially to the retired Negro who worked and saved all his life to acquire his own home. An apartment may easily replace the functional utility of the home, but it would never have the same dignity, meaning, and comfort.

For Watts, then, joint development is for nonresidential units — multiple use of airspace is not likely on the scale originally conceived. Our replacement housing program will involve mainly single-family dwellings.

At the present time, it is proposed that the Division of Highways acquire scattered lots throughout an area roughly six blocks from the core of the freeway. These lots will be developed individually with single-family residences and a few multiple units. It is expected that such activity in this community will generate additional activity by other nonprofit organizations that are attempting to develop programs in the community. We expect that the improvement of housing in the neighborhoods we affect will stimulate additional development adjacent and in the vicinity of our housing. We expect that the total develop-

ment of all this housing will encourage owners to apply for loans to upgrade their own housing. We expect that the investment involved in both our program and the other programs will persuade banks and lending institutions to make additional loans in this community for upgrading the community.

In Watts, we intend to implement the replacement housing program through continued community involvement. The replacement housing program will offer the community an opportunity to change the shape of its environment in the manner of its own choosing. In this connection, California proposes to involve a unique organization in Watts — the WLCAC, or the Watts Labor Community Action Committee.

The WLCAC is a community union. It is headed by an international representative of the UAW, and it is supported by the AFL-CIO. Its purpose is to put union skills and organizational experience to work in the community to attempt to improve and revitalize it by promoting and providing much-needed services to its neglected citizens. It also seeks to develop the economic base necessary for the area to become a healthy, self-sustaining segment of Los Angeles.

Their accomplishments, thus far, have been many. They include the development and maintenance of over 20 vest-pocket neighborhood parks, two gas stations, a nursery for the beautification of Watts, a chicken ranch, a credit union, and, last summer, a youth camp for several thousand Watts youths — a camp that will be used in winter for training programs for operating engineers and marine cooks and stewards. Most recently, they shared with the City of Los Angeles the job of preparing the Model Cities Application, and it is expected that if a planning grant is received from HUD, then the WLCAC will play an important role in planning the future of Watts. In the state's replacement housing program their role looms large. Not only do they have planning capabilities, but their job training program provides a source of labor and community participation in the job of providing housing.

For example, one of the replacement plans that our program will make possible involves moved housing. The Division of Highways and other public agencies acquire hundreds of houses every year for public projects in Los Angeles. These are sold at auction, moved, and rehabilitated for resale. This housing could be diverted to Watts. Utilization of this housing in a replacement housing program provides an opportunity to use the unique services of the WLCAC. They can use the site preparation, house-moving, and rehabilitation to provide training and building skills for Watts residents.

The Century Freeway displaces thousands of residents in an area where a depressed real estate market makes replacement impossible through normal means. But, at the same time, it offers the community and the people of Watts an opportunity to improve and revitalize their community through total community involvement in a replacement housing program.

The Century Freeway through Watts could have been like any other freeway in the country. It could have approached the community without regard to the impact and the effect on the people living within that community. It could have been just another case of "Negro removal" in the urban communities, but in California our experience with the Panhandle Freeway in San Francisco has taught us something. Beautiful pictures and sketches of joint development do not buy public acceptance. The changes wrought by the freeway must be channeled to match the needs and desires of the people in that community. The freeway must reinforce the change desired in the community, and most important, the program proposed in the pictures and brochures must be capable of attainment, not merely be an embellishment to sell the product. To sell their product in today's urban environment, freeway planners must become social advocates — they must assure that the programs they advocate — joint development or multiple use of airspace — can be achieved and take the steps to achieve it. Otherwise, their proposals will merely be pictures and brochures, and their freeways will just be lines on the map.

In California we are just beginning to develop our program. It is a long way from achievement, but highway engineers and planners are now in the housing and community development business to assure the success of our program and the acceptance of our product.

Panel Discussion

MR. KRAUSE: In the Watts project replacement housing will be constructed pursuant to the legislation enacted by the California Legislature in July of 1968. As Mr. Hill pointed out, there is no available housing, nor can substitute housing be constructed at anything near the cost of the housing that is being replaced. Fortunately, the Congress passed the Highway Act of 1968 in August, and that provided a satisfactory answer. Federal funds will participate in the cost of replacement housing up to the limits set in that Act, that is \$5,000.

MR. McGRATH: The actual thrust of important public construction such as highways begins with the application of a whole range of comprehensive planning principles in a single corridor and may indeed produce the interaction among professionals that we have not been able to deliver despite a number of ritualistic statements over the years.

How much further do you feel that the community can actually continue to participate in this interprofessional activity?

MR. HILL: In the case of Watts, the Division of Highways intends to take several actions. The primary one, however, is related to this Watts Labor Community Action Committee which has a very broad-based support within the community of Watts. I think they represent diverse groups in the community also because of the processes they used to obtain community acceptance themselves.

We intend to do something like contract with them directly for their assistance in the production of our replacement housing program. We have to involve the official community in the development of some of the plans for zoning or building ordinances and whatever is involved there. The City and the County of Los Angeles both also use the Watts Labor Community Action Committee as one of the prime contact groups within this community. The Watts Community Action Committee has planning funds of their own. They are also supported by the Ford Foundation and Carnegie Institute and they have in the past employed architects and planners themselves, especially in the development of the Model City proposal. Therefore, they have the capability and contacts to assist us in the development of our program so they are sort of an unofficial representative of the community, having no official status as such, but it offers us a contact point with the community. Other communities have similar community unions also.

MR. PIGNATARO: You mentioned that there has not been much change since 1965 in Watts. I am wondering to what degree if any has the HUD demonstration grant project been exhibited in the Watts area?

MR. HILL: Well, primarily I am speaking of physical changes in the community. There have been a few new structures and there is a medical center in the community but as far as any real program, Federal or state, producing anything that is acceptable within this community or a program which will improve the community, at this stage nothing has happened.

Linear City and Cross-Brooklyn Expressway

ARCHIBALD C. ROGERS
and BRADY D. ARMSTRONG
Rogers, Taliaferro, Kostritsky and Lamb

THE Linear City and Cross-Brooklyn Expressway project has grown out of two major development needs for central Brooklyn — the expressway and schools. Other needs to be met, both physical and social, are equally important and are added to the total complex now that the project has advanced to reality.

The project is conceived to be one of total community development, integrating normally independent public programs and some private programs into one cohesive and mutually beneficial endeavor. This effort requires cooperation and coordination among a number of public agencies at all levels of government — a requirement that has few, if any, precedents.

The skills and resources exist to produce each of the elements independently but the formula and expertise are lacking to coordinate and direct the widely divergent (and sometimes at odds) groups — government, private enterprise, designers and planners, and community — into a community development symphony. This recognition of the need to synchronize public efforts is not limited to New York; indeed, the principle is simultaneously being called for throughout the United States. The Model Cities Program is a response to this need. The Federal Department of Transportation's Bureau of Public Roads has recently initiated action in many cities to encourage them to consider the urban expressway in the broader context of the total community before the highway is irrevocably committed. The Department of Transpor-

tation's program, employing an Urban Design Concept Team is the basis for accomplishing the Cross-Brooklyn Expressway and the Queens-Interboro Expressway. The Concept Team approach includes an integral part of its planning technique participation at every step, both by the local officials responsible for approving and carrying out the plan, and by the citizens of the community who will ratify it.

The Expressway Need

Brooklyn is served by an expressway system that encircles it, except on the northeast boundary with Queens. For years, there has been a need for an east-west expressway to serve central Brooklyn. When the Interstate Highway program was instituted, the Bushwick Expressway was proposed to link Manhattan Bridge (and the proposed Lower Manhattan Expressway) via Bushwick Avenue to the Nassau Expressway near Kennedy Airport. Later, the Triborough Bridge and Tunnel Authority proposed an alternate route leading from the Queens-Midtown Tunnel (and the proposed Mid-Manhattan Expressway) along the Brooklyn-Queens boundary line to the Nassau Expressway.

Recognizing the extra through-traffic load that this would impose on Manhattan, as well as the disruption such a plan would bring to the crowded communities along the proposed rights-of-way, New York transportation planners suggested the Cross-Brooklyn Expressway as an alternative. This would cause through traffic to bypass Manhattan entirely, by connecting the Nassau Expressway via the Verazzano-Narrows Bridge and Staten Island to New Jersey and points south and west. Furthermore, by using the existing right-of-way of the L.I.R.R. Bay Ridge Line, this route would entail minimal displacement of people. The route proposed would follow the Bay Ridge Line right-of-way to Linden Avenue, at which point it would swing southeast, follow Flatlands Avenue, and then swing northeast to the Linden Avenue-Conduit Boulevard intersection, in the vicinity of Kennedy International Airport.

Later, the Queens-Interboro Expressway was proposed to connect the Cross-Brooklyn Expressway to the approaches of the Triborough Bridge near LaGuardia Airport. This north-south link would follow the New York Central Connection Railroad, interchange with the Interboro Parkway near Atlantic Avenue at Broadway, and join the Cross-Brooklyn Expressway near Linden Avenue at the Bay Ridge Railroad. The Queens-Interboro and the Cross-Brooklyn would complete a highway loop around Manhattan through areas that have a high potential for future industrial, commercial, and community development.

The combined Cross-Brooklyn and Queens-Interboro Expressways, now proposed as part of the Interstate Highway System, are superior in two ways over the prior alternatives: they would tend to reduce rather than add to the congestion in Manhattan, and they would be a great deal less disruptive to the local community because they would cross areas of low population density and utilize established rights-of-way.

The School Need

Parents' Proposal

In 1965, the New York Board of Education proposed to construct seven schools on scattered sites to alleviate severe overcrowding in the Brownsville, Canarsie, Midwood Flatlands, and East New York sections in east-central Brooklyn. Parents in Brownsville felt the schools would do nothing to alleviate the *de facto* segregation in Brownsville schools and, in fact, believed the proposed schools would result in further school segregation.

The parents developed a proposal for an education park for intermediate grades to house a minimum of 15,000 children and serve all east-central Brooklyn. It was to be located on a large undeveloped tract (Flatlands Industrial Park) just south of Brownsville. Among those children attending such a park would be students from six existing intermediate schools that were already predominantly either Negro or white. Under the terms of the parents' proposal, five of the intermediate schools replaced by the park would be transformed into elementary schools to alleviate overcrowding. The sixth would be turned into a high school annex.

The parents sought and obtained an injunction in the spring of 1966 from the New York State Commissioner of Education to prevent the Board of Education from proceeding with the construction of the seven scattered-site schools until the feasibility of their plan was studied.

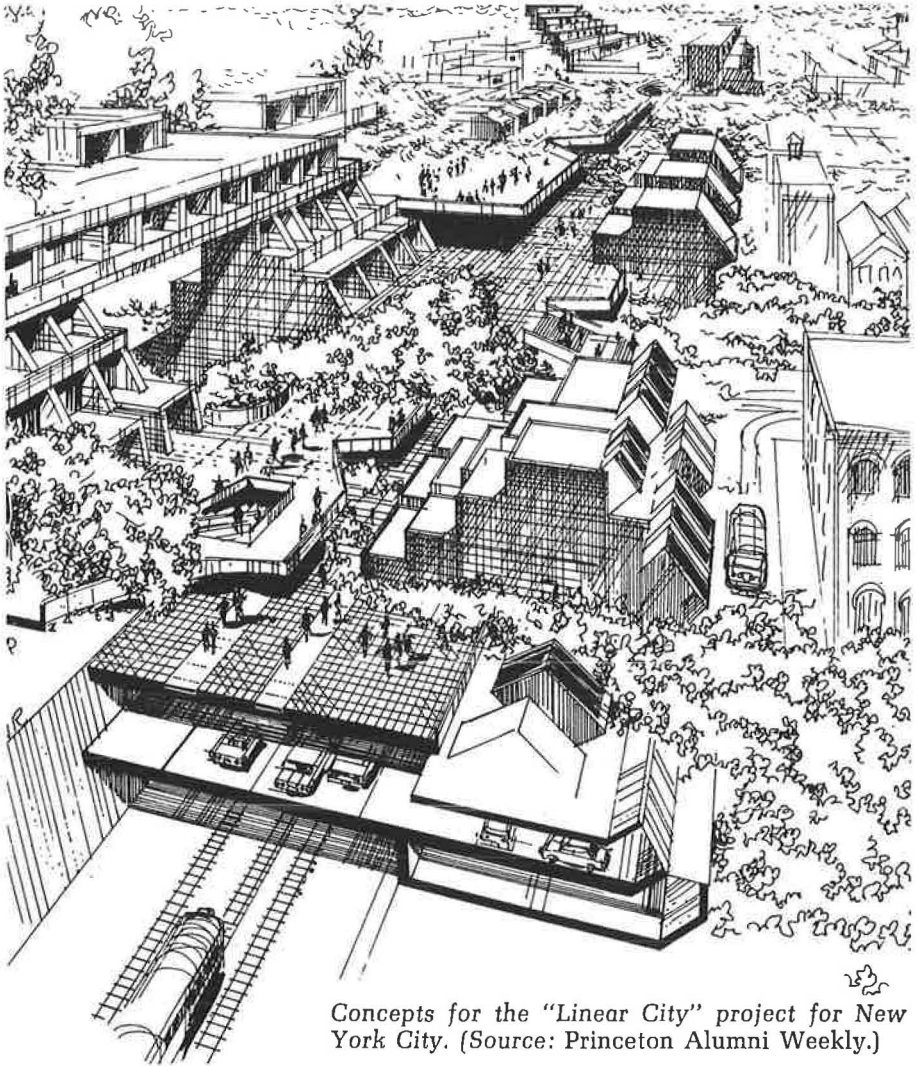
Board of Education Staff Counterproposal

During the summer of 1966, the School Planning and Research Division of the New York City Schools developed an alternative school construction proposal for east-central Brooklyn. It called for the construction of two education parks: one to serve Canarsie, Brownsville, Flatbush-East Flatbush, and Midwood Flatlands; the second to serve East New York and parts of the neighboring borough, Queens.

The first park was to be located in Flatbush-East Flatbush and comprised one senior high and three intermediate schools, with a total capacity of 10,000 students. In addition to the park, three scattered-site intermediate schools were proposed — one in Brownsville, the other two in predominantly white neighborhoods with no site specified. The second park, to be located in East New York, included a high school and three intermediate schools with a total capacity of 9,400 students.

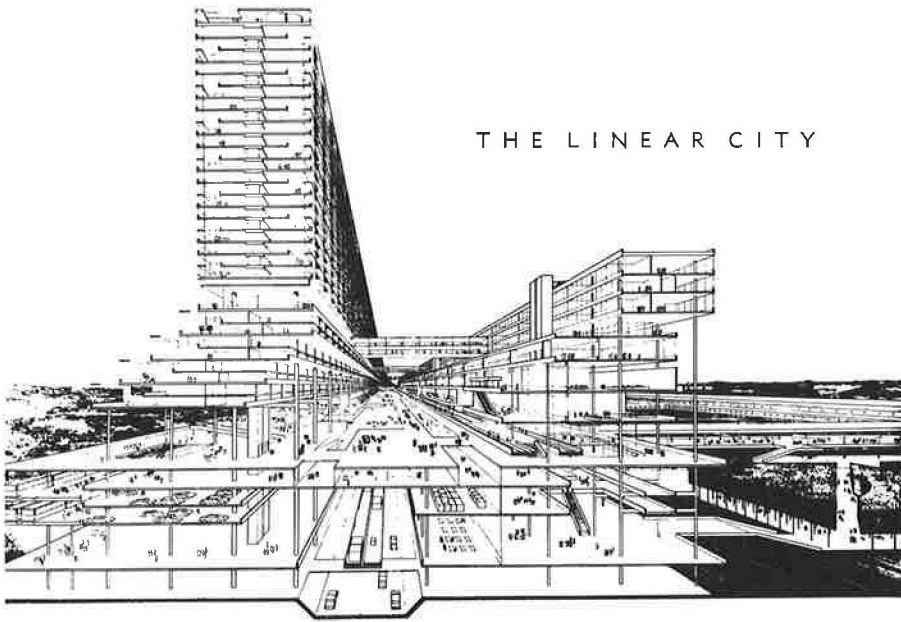
Corde Corporation's Evaluation of the Two Proposals

At this point, the Board of Education asked the Corde Corporation, which was then in the midst of a general study (*Report on the Education Park*, Corde Corporation, Wilton, Connecticut, 1966) of the education park, to evaluate the parents' proposal and the counterproposal by the staff of the Board.



Concepts for the "Linear City" project for New York City. (Source: Princeton Alumni Weekly.)

Corde's investigation of the education park had revealed that "several important opportunities an education park can offer include the provision for greater decentralization of school administration, the creation of specialized facilities not normally feasible in all scattered-site schools, a greater potential for racial and economic integration, and the opportunity for more effective deployment of staff." It also suggested that "if the park is to be an effective new approach to school



THE LINEAR CITY

programming, its organization and form must be kept flexible to meet the specific needs of the area it is to serve. This applies not only to its size and grade organization, but also to its physical relationship to the community.”

One of the big points of contention between the parents and the Board of Education staff, as stated in the public record, was the question of what was happening to the racial composition of east-central Brooklyn. The only way to determine who was right was to develop a comprehensive demographic analysis. None existed.

The Board’s staff responded unfavorably to the parents’ proposal because the administrators felt the racial composition of areas to be served by the park was unstable, and that the park would lead to *de facto* school segregation. Using the same data, the parents, with the outside help of a statistician, arrived at substantially different conclusions.

The difference, therefore, between the staff and the parents was substantially as follows: The parents saw increasing stability for the five communities that could be assured by the construction of an education park serving all intermediate school children and offering quality education as a positive attraction to white students. The staff took a pessimistic view. It felt that the parents’ proposal, because of racial

change in the population, would ultimately result in a segregated park. As an alternative, the staff offered two parks, both located in predominantly white neighborhoods, with one drawing from Queens for many of its white students. In addition, it proposed the construction of three neighborhood intermediate schools, at least one of which would have been clearly segregated.

Corde's examination of the five communities described in the Board of Education's proposal (the Brownsville parents' proposal had included only four of these) observed that within the area, populated by 725,000 people, one can find the diversity in people, buildings, and geography that makes for a city. It has a waterfront, ghetto tenements, large commercial areas, single-family homes, apartments, industry, open space, and major transit facilities. It also has many important city institutions, including Brooklyn College. In the highly developed northern section of the area, one sees evidence that physical blight, already pervasive in Brownsville, is beginning to spread. To the south, the new construction represents another chapter in New York's frantic effort to augment its supply of standard housing. Along the Bay Ridge railroad line many of the present land uses (marginal light industry, junk yards, obsolete plants, and inefficient storage facilities) represent a distinct threat to the area.

The Corde Corporation's analysis also showed that both the parents and the staff had underestimated the probable student enrollments by more than 2,600 intermediate school pupils by 1972.

The study pointed out some advantages, but many shortcomings in the proposals of both the parents and the administrative staff, including the problem that neither of the proposals took into consideration the Cross-Brooklyn Expressway which would traverse the entire area along the alignment of the railroad. The highway would therefore cut through part of one of the park sites proposed by the school staff and partially isolate the Flatlands site proposed by the parents.

But the highway did more than cut through two of the sites under consideration. It promised to create a physical barrier between the north and south portions of east-central Brooklyn. In other words, the huge public investments represented by the expressway and the schools were in direct conflict with each other. East-central Brooklyn had all the conditions for disaster — a lack of precise demographic data, massive housing construction unrelated to total community planning, unchecked blight and deteriorating housing, and the clash of a highway alignment with school sites.

Linear City Proposal

The Corde Corporation reported that "under the prevailing conditions in east-central Brooklyn, both park proposals seem inadequate. What is needed is a way in which school planning can be related to the

existing strengths and planning opportunities. High among these is widespread community concern, as typified by the efforts of the Brownsville parents. Another is that, while east-central Brooklyn has its problems, it has much in the way of community strength in terms of buildings as well as institutions. The third is the highway — the fact that the area was slated for huge, public investment in a major facility, which, if properly planned, could help rather than hurt. Indeed, the highway represents a key to the revitalization of east-central Brooklyn.”

Each of the five communities borders the alignment proposed for the highway, the existing railroad line. While each community presents widely divergent characteristics, the railroad presents a common theme among them and unites the entire area.

The Corde report states that “combination of the already incompatible land uses along much of the railroad and the new highway could be a severe blow to the health and vitality of east-central Brooklyn, seriously hampering efforts to achieve residential stability. If the highway is meshed with sensitive community planning, however, it could lead to total linear development of a new community center that would include housing, commercial facilities, recreation, and schools connecting the entire east-central Brooklyn area.

“Through the use of air rights, adjacent sites, and spot clearance, the construction of a transportation spine [can be] accompanied by large-scale residential, commercial, and public development, including local transit services for at least the five communities in which the schools would play a major role. Thus, the means for total linear development would be established. The system of schools could be anchored at one end by Brooklyn College, at the other by a new community college and technical institute or a commercial center. . . .”

Corde felt that the proposed development would meet not only the objectives of the original education park proposals, but would achieve the equally crucial objective of combining school programs with total community development.

Corde specified the goals for the undertaking and the requirements for achieving them by stating that “in concert with other public agencies, and with community involvement in the planning, this comprehensive effort to provide housing, community service centers, employment opportunities, shopping clusters and school and cultural centers could result in a revitalized city-within-a-city. This linear city would be stable, environmentally pleasing, and capable of offering the urban dweller conditions for the attainment of his personal aspirations.”

The Corde Corporation pointed out that the first step toward this total development is recognition by the city of the opportunity to create a major transportation spine that would not just cross the area, but also serve it. The city has recognized this potential and is proceeding with the development of Linear City.

Call for Action

In February 1967, the Mayor proposed that Linear City be developed in conjunction with the Cross-Brooklyn Expressway. In August, the Commissioner of Education for the State directed the City Board of Education to include in Linear City the school facilities it had programmed for the east Brooklyn communities already described. At the same time, the Planning Commission established the goals of the three major elements composing the project — the highway, the linear city, and the planning organization itself, an innovative administrative mechanism — and initiated action to realize them.

Goals for the Expressway

The Cross-Brooklyn Expressway will complete the expressway system of western Long Island and form a link in the Interstate Highway network. Its planning should take into account all forms of transport, including motor vehicles, trains, and mass transit, in a balanced tri-state program. The expressway should be a catalytic agent, stimulating development over, around, and under it, and improving the quality of the area. Its design should exploit the latest technological innovations for construction, safety, speed and efficiency. Last, and not least important, it should please the eye of both traveler and resident. Architectural quality should be recognized as an essential ingredient of good expressway design, not treated as a luxurious accessory.

Goals for Linear City

The Linear City idea is not a new invention; it comes from a distinguished theoretical tradition. Soria y Mata, a Spanish engineer who was inspired by the introduction of the trolley car in Madrid, constructed in the late 1800's a small portion of his Ciudad Lineal, a strip one block wide of mixed development on either side of the line. Le Corbusier's 1929 proposal for Rio de Janeiro (a 14-mile long serpentine building with a highway on its roof) and New York's Grand Central Terminal complex are other examples of the linear city concept.

Multiple use of the right-of-way or of the transit corridor became a practical reality in the 1950's and 1960's with projects such as the Tokyo Expressway, which accommodates commercial and industrial facilities under its arches; downtown Montreal's system of layered separation of different modes of travel, with carefully coordinated access to multi-use development aboveground; and the Scottish new town, Cumbernauld.

Brooklyn's Linear City is to provide a community facilities spine, including space for both public and private services, that will serve the entire borough, with primary emphasis on the neighboring communities. The social aims include planning to minimize need for relocation of people, affirmative action to achieve racial integration, and the provision, besides efficiency and comfort, of aesthetic delight. Also, in

the course of design and construction, and later, when the project is completed and operating, widened employment opportunity should be a byproduct of Linear City. Linear City should become an attractive symbol that can stimulate neighborhood pride and a sense of community.

The basic component of the public facilities will be a new educational system for 18,000 to 20,000 pupils, in accordance with the order of the State Commissioner of Education. It is intended to provide a full range of services, from preschool through adult education, and to reflect the needs and desires of the community. This system should have autonomy in curriculum development, programming, and administration, and should take account of the fact that there are many life styles in a big city, and that people must be encouraged to realize their potential on their own terms.

Housing to accommodate all income groups should be an integral part of Linear City. Although actual number of units would be determined at the time of specific design, a minimum of 6,000 units is suggested.

Linear City will be 6-miles long, anchored by Brooklyn College at one end and another major institution, perhaps a technical college or commercial center, at the other. There will be room along it for a full range of urban functions. Besides applying the linear design theory, it will test more recent theories which subordinate individual architectural elements to an overall urban whole that serves a variety of uses. The form of this linear, multilevel structure must be sensitively fitted into its social and physical setting. The form will promote integration of city functions, which, in turn, will generate new administrative relationships. The final aspect of the physical planning will be the design of new managerial mechanisms required by private enterprise and local government to operate the new form of integrated city.

The Design and Development Process

A basic aim of the project is to establish a viable planning mechanism that can coordinate the responsible public agencies, the local residents, and the planning and design professionals concerned with the project into an effective organization for planning the project to their mutual satisfaction. The object is to eliminate from the planning and development process the delays and misunderstandings that have hampered or even prevented completion of public works projects. The goal has already been acted on. The system has been officially adopted and is being implemented.

Implementation of Linear City

The Planning Commission chose to follow the multidisciplined approach to highway planning recommended by the Secretary of Transportation and the socially responsive planning process evolved by the Committee on Urban Design of the American Institute of Architects.

The commission requested Rogers, Taliaferro, Kortritsky and Lamb, architects-planners who had been involved with both systems, to apply them in preparing a plan for planning the Expressway-Linear City project. Their report, published September 1967, outlined a method to be used in organizing the planning work and the people who would be involved in planning, spelling out the following:

- Who is required to do the planning: Team 1 — architects, engineers and other professionals; Team 2 — decision-makers (public officials responsible for funding and administering the project); and Team 3 — users and ratifiers (residents of the community);
- When each set of proposals and the decisions concerning them must be made to meet the development schedule (completion of construction is planned for 1975, and the school facilities are programmed for occupancy in the fall of 1972);
- How the design process functions, in a series of decisions arrived at by interchange between the teams leading from basic objectives to final details;
- How much is required by way of dollars and professional manpower for the planning process.

Organization for Planning

The approach to planning calling for three teams is today embodied in the following form:

Design Team — The Brooklyn Linear City Development Corporation has contracted with the Board of Education and the Federal Department of Housing and Urban Development and is in the process of contracting with the State Department of Transportation. The corporation will have its own staff to perform duties such as contract administration, scheduling, coordination of consultants, administration of the design team apprenticeship program, dissemination of information, community relations, technical review of consultants work and project historian. Eventually, the corporation is conceived to perform the additional duties of construction management and possibly project management when Linear City is operating.

The work of the corporation will center around educational planning and programming and design. Design will be performed by a multidisciplined group headed by a qualified urban designer. The design group's primary disciplines are architecture, urban planning, highway engineering, transportation planning, and landscape architecture. The group will also include other relevant disciplines, such as real estate economics, housing, sociology, pollution control, acoustical engineering, lighting, and graphics, which will be brought into the work as they are required.

The Decision-Making Team — The design team must be responsible to a decision-making team, including representatives plenipoten-

tiary of all levels of government involved, of all public programs involved (highways, housing, recreation, education, etc.), and of all private interests involved. This team is the Brooklyn Linear City Development Corporation's Board of Directors. Presently, the Board's membership is proposed to include the Commissioner of the State Department of Transportation and the following city members: the chairman-director of the Planning Commission; a member of the Board of Education; a member of the Board of Higher Education; and the administrators of the Human Resources Administration, the Housing and Development Administration, and the Transportation Administration.

The Community Team — The general public, in a democratic society must ratify the decisions taken if these are to become reality. Instead of the secrecy that has traditionally surrounded highway planning, the planning should be conducted in a "fish bowl." At the very least, the alternatives considered by the decision-making teams should be publicized by the news media before a selection is made. The team will consist of representatives of neighborhoods surrounding the project, and of local, social, business, and political groups. Each representative should have the authority to speak for his constituency. The team will be responsible for providing information as to the local aspirations, for voicing the reactions of the residents to the design proposals as these are presented, and for making recommendations of its own. It serves as the community's advocate. This guarantees that those who will live beside Linear City and use its facilities will have a voice in the design process that shapes it. Inclusion of the user in the design process is one of the chief goals of the plan and represents a major departure from the traditional method of designing community facilities.

The Decision-Making Process

Interchange between the teams builds on basic assumptions and shared planning objectives and proceeds through stages of increasing particularization to establish the ultimate form for Linear City. Each stage of decision-making requires the presentation and consideration of possible alternative solutions, and each of these alternatives must be evaluated in the light of total cost and the social, aesthetic, economic, and functional benefits predicted for it.

Decisions will be reached on the basis of a creative dialogue between designer, decision-maker, and community, but the ultimate responsibility for the decision rests with the decision-making team who, by choosing a particular alternative, make a public and political commitment to carrying it out. They are taking a step in translating design into practical fact. They are responsible for reconciling theoretical designs with community aspirations, administrative practicality, and political reality. They have the authority to choose, modify, or even reject any of the designers' proposals, substituting alternatives of their own, at any point. Their discussions with the other teams will be the

instrument for adjusting technical costs and benefits to the objectives of the public programs and the political facts of life. Only by such adjustments can urban design proposals be translated into practical reality. Whatever the outcome of the discussion, the alternative adopted by the decision-makers is binding on the design team as conditional to subsequent phases of the design process, unless later developments require re-evaluation.

Progress to Date

The initial decision in the planning process is to develop Linear City in conjunction with the Expressway, and to employ a multidisciplinary team to plan it. The planning process then must translate the overall goals into practical terms, and end with an acceptable design for the project, arrived at through a series of decisions on increasingly detailed proposals. Today, the corporation has been formed, and its executive officer hired. It is assembling its staff, establishing its administrative organization, and negotiating for office space in east-central Brooklyn.

It is developing a community relations program and presently has several people in the field in Brooklyn. It is negotiating the contract with the State Department of Transportation to design the highways, and it is initiating workshops and other efforts to begin the educational programming and planning. On executing the agreement with the State Department of Transportation, it will start its design activities.

The overriding goal for Linear City is to create a totally new kind of urban environment. In light of the failure of existing social and physical institutions to meet our urban needs, a new approach is called for. Linear City is conceived as an urban laboratory, radical in concept, massive in scale, and embracing the fundamental aspects of the urban environment — its architectural form, the processes that produce the form, the life that flows within it, and the technical and managerial apparatus that serves this life. Linear City is intended as a prototype for a new solution for our urban needs, and as such merits nationwide attention.

Panel Discussion

MR. KRAUSE: Who will pay the fees for the "advocacy planners"? To whom should they be responsible? And if the highway department, for example, should pay their fees, would that not raise the suspicion that they are biased in favor of the highway department?

MR. ROGERS: I used that term deliberately because the pattern has evolved where advocacy planners have been retained by local communities to in fact oppose public programs. This is why the rather facetious term "adversary planners." Their fealty has always been to their client, the community retaining them for either a nominal fee or no fee. I propose to take very seriously the point Mr. Pikarsky makes that we do have to be advocacy planners in a different sense. As members of a design team, we have a professional relationship to our client.

Normally, our fees are paid in this case out of Federal highway trust funds. The point is made therefore that you cannot in fact become an adversary planner where you are using your client's money to go out and oppose his project. I think being paid from highway trust funds, the advocate planner is simply an element of the total design team who works with the community to try to understand its true aspirations and to bring the parties into some kind of structured, meaningful dialogue so that their aspirations shape the final results (insofar as these can be shaped) in a Federal highway project.

MR. PIGNATARO: Is not much of what you suggest about community involvement in the planning, design, decision-making, implementation stages of the process largely the objectives of the Model Cities Program? And if so, has there been any intercourse between the linear cities group and the Model Cities Program in Brooklyn?

MR. ROGERS: The answer is yes, there has. The Model Cities Program in Brooklyn as geographically described covers a portion of the Cross-Brooklyn Expressway in the city, but not a large portion. In fact only two things have been concretely accomplished this past year: one being the organization of this multidiscipline team, and the other the sophisticated advocacy program that has been going forward within the community itself.

Now the Model Cities area has its own self-generated citizen's group to whom we are now addressing ourselves. It exists as an institution and does not exist in some of the other communities.

Freeways in the Urban Environment

LOWELL K. BRIDWELL
*Federal Highway Administrator
Federal Highway Administration*

I WOULD like to try to get some perspective on joint development and multiple use of rights-of-way. I think we need to look first at what we have been doing and then at the directions in which we can move to make the most of our opportunities.

For more than a decade the highway program has been moving toward a new role. It has been a groping effort, marked by *ad hoc* decisions. It has gained definition by the statements and actions of the Federal and state highway agencies and of the professions which serve them. It has been helped along at times by the cities, by the direction of Congress, and by the pressure of opposition. At the center of this search has been our recognition that transportation and land use are interrelated — really two dimensions of the same urban complex. Our experience to date with highways shows that mobility and the other goals of the community are inseparable. Changes in accessibility have brought changes in land use and the character of urban life. Thus, our actions and *ad hoc* decisions over this period have moved us toward accepting a larger concept of highway responsibility — a concept that highways should try to contribute to the satisfaction of community desires and to the fulfillment of community goals, while at the same time providing mobility.

In defining this role of highways, many incremental steps have been taken, ranging from landscaping to the Linear City idea. We have seen highway departments take responsibility for providing roadside rest areas and scenic overlooks. We have seen full-parcel takes

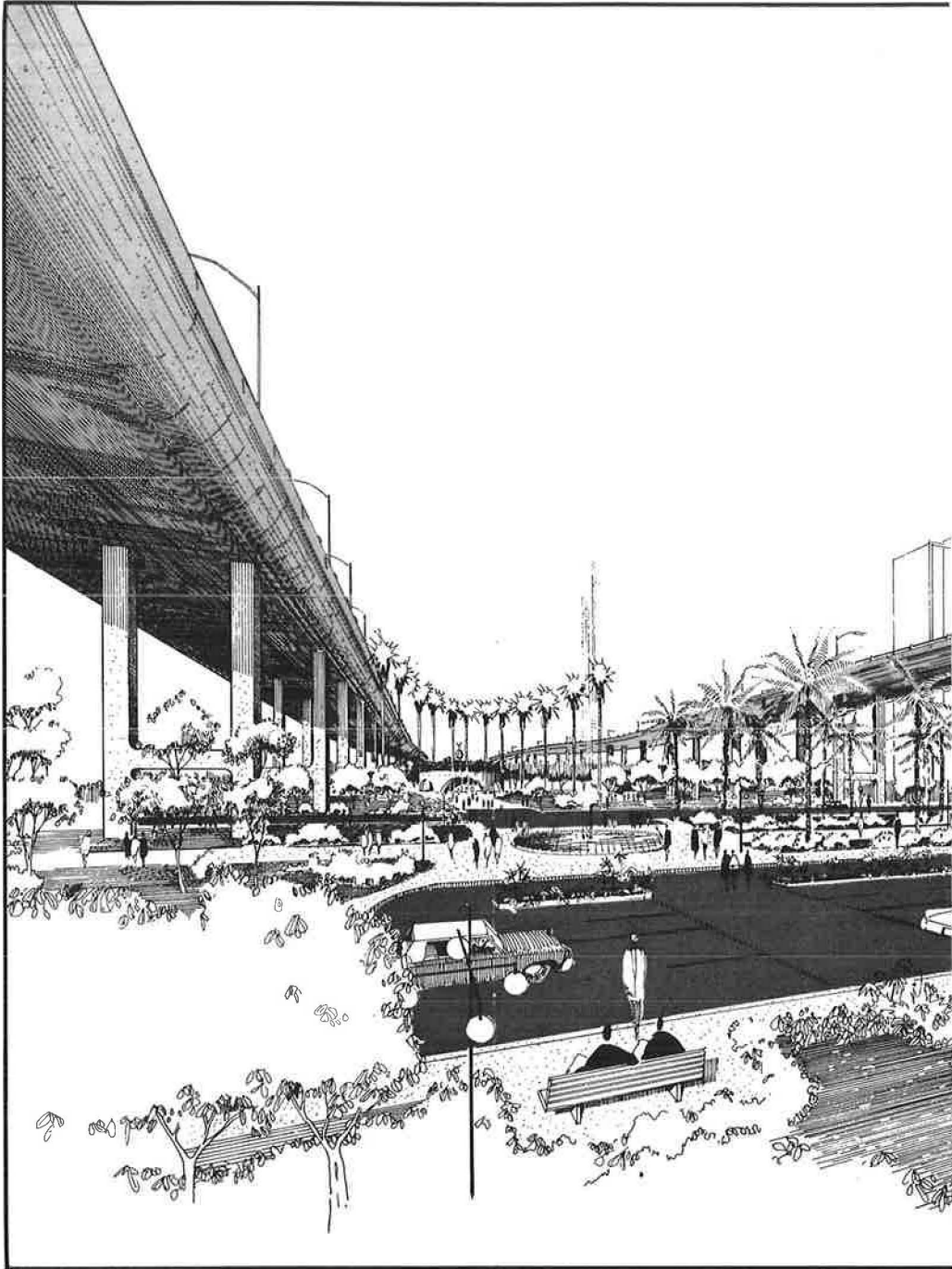
to use the remnants for recreation areas and open space. We have seen use of highway rights-of-way under elevated structures for parking, recreation, public and private uses. We have seen use of airspace above highways for many uses — residential, offices, open space, transportation facilities, etc. We have seen extensive design treatment costing more money for freeways crossing sensitive areas, including depression of roadways below ground level, and architectural treatment of structures.

We have approved design changes that accommodate adjacent land uses and create usable airspace. In Baltimore, for example, we have approved elevated structure extensions in place of fill to permit visual access to a park and to permit industrial development. We have seen highway departments participate in the cost of platforms over freeways to provide environmental continuity and development — Philadelphia, New York, Cincinnati, Fall River are some example cities. Additional sites are under study in numerous cities with highway department encouragement. We have seen highway-financed interdisciplinary teams charged with environmental enhancement and corridor development planning in Chicago and Baltimore.

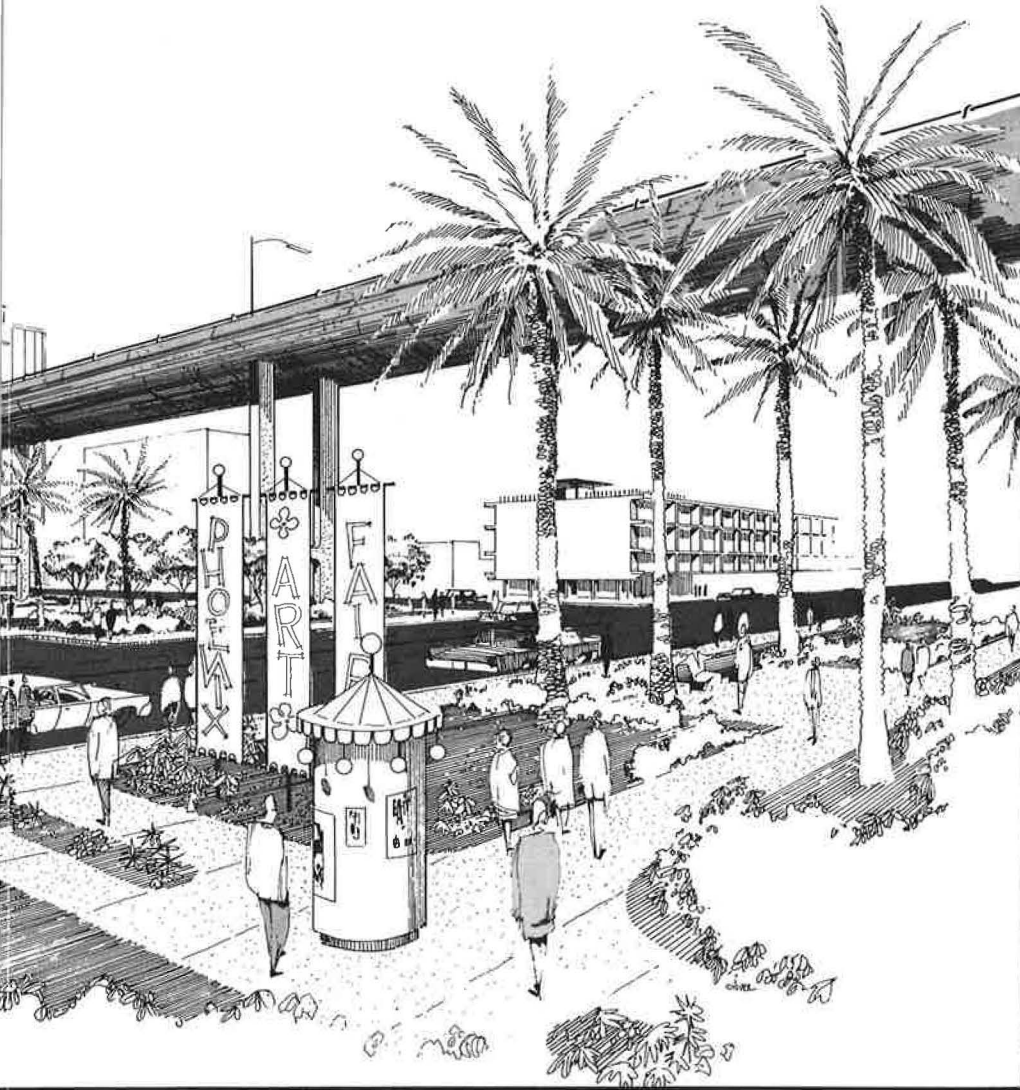
We are about to see an interdisciplinary corridor-planning effort in Cambridge that will look at the total benefits and total costs — social and economic — of all projects that will correlate with the freeway, and on that basis choose the best highway location and design. In connection with the Cambridge project, we have seen suggestion of the exchange principle, so that joint-use space in the right-of-way can be made available for a commercial or industrial activity in order to make the space it now occupies available for residential purposes. Similarly, the California Division of Highways has gotten statutory authority to condemn property off the highway rights-of-way for use in relocating displaced families. The plan makes imaginative use of the additional compensation to displacees authorized by the Federal-Aid Highway Act of 1968. And, of course, we may have the Linear City project in Brooklyn, which will involve educational, highway, and HUD planning resources in a coordinated corridor-development effort.

This is not an exhaustive list, but it clearly indicates the changing concept of the role of highways. Taken together, these steps represent a series of specific actions that recognize the unique contributions highways can make to other nontransportation community objectives.

There are a number of developments at the Federal level which should be noted, since they emphasize the new role of highways. One that goes back a number of years is the pooling of 1½ percent highway funds with HUD "701" funds to assist metropolitan areas in transportation planning based on comprehensive land use planning. This correlated the highway interest with land-use planning and community development. It has been followed by an agreement between the Department of Transportation and the Department of Housing and Urban



By using highly elevated freeways in conjunction with parks and shopping malls, and by separating the directional lanes, the proposal for the Papago Freeways for Phoenix, Arizona seeks to minimize some of the unattractive features of elevated freeway systems. (Source: Johannessen & Girard Consulting Engineers, The Papago Freeway, A Report prepared for the Arizona Highway Department, Phoenix, Ariz., 1968.)



Development that assures the close coordination of transportation planning and development at all stages (even on a project-by-project basis) with community development as laid out in the comprehensive planning process.

This past year we established an Environmental Development Division in the Bureau of Public Roads to guarantee full consideration of environmental factors in the location, design, and construction of freeways. This division is bringing together all appropriate disciplines to develop standards for evaluating the economic, social, aesthetic, cultural, and environmental factors to be weighed in providing freeways. Its job includes fostering the joint-development concept.

In this connection, I might note the promotional efforts of the Federal Highway Administration in encouraging joint use and environmental development. To this end, we published "The Freeway in the City" and are now publishing a picture treatment of joint development, called "A Book About Space." To this end also we joined others in supporting this conference.

Finally, we have had the social and community responsibilities of the highway program asserted as never before in the Federal Aid Highway Act of 1968. This landmark legislation includes, among other things a far-reaching relocation assistance program to minimize injury and provide equitable treatment of those displaced by highway improvements. This responsibility gives the highway program a direct interest in one of the essential community facilities, housing, and makes close cooperation with public and private housing officials imperative. In short, if we can't find housing, we can't build highways.

The Highway Act of 1968 also contains the Urban Impact Amendment. This requires that in addition to the economic effects, the highway department consider the social effects of a highway location, its impact on the environment, and consistency with the goals and objectives of such urban planning as has been promulgated by the community.

Here we have, then, the outlines of a broad national policy — a mandate to employ the highway program to help communities achieve their social and economic goals and the beginnings of organizational methods to accomplish this goal. This role of highways was, of course, implicit in the series of *ad hoc* steps I reviewed earlier. These steps have given us experience in these areas, and signify our acceptance of wider responsibilities to city development and character.

It is time now that we in the highway program explicitly recognize our new role. It is time to consolidate and distill the experiences we have had in this field and to establish a formal policy for joint development that will implement the role on a continuing routine basis. Such a policy is being drafted now in the Bureau of Public Roads. The details, of course, remain to be worked out, but we can discuss the underlying tenets of this policy.

I see three imperatives for an effective program of highway corridor development. First, corridor development should be regarded as part of the job of building highways, as an integral part of normal highway planning, location, acquisition, design, construction, and use. To get the maximum benefits, it is in the community's interest to plan for the development of the transportation corridor — to assure the highest and best use. The community needs to consider not only public uses such as recreation or education, but private uses — industrial, commercial, or residential — that will increase the tax base and provide the needed capital investment for development and renewal.

Up to this point, in broadening our role, we have approved additional expenditures of highway funds to achieve social purposes with little thought of monetary return. The social gain — be it a park, a playground, or a scenic view — was our justification. But we should not ignore opportunities for economic development — and for getting dollars back on the taxrolls for reinvestment in the highway program. At the same time, from the viewpoint of highway transportation, the objective is to assure complementary and compatible development of the corridor. Putting it another way, to optimize the total contribution of the highway to the city and to protect the highway facility from detrimental or incompatible uses, we must have corridor planning and corridor development.

Using tools already available, highway departments should take the initiative in corridor development. It is well established that the highway program has responsibilities beyond the roadway; if not, we should not be in joint development. However, having accepted these responsibilities, it is incumbent on us to make joint development work. This means highway departments, in close working cooperation with the communities, should take the lead in preparing comprehensive plans for corridor development and encourage coordination among all agencies having an interest in it. The highway, as part of this plan, should be so located and designed to allow the combined activities of all entities involved to make maximum contribution to the well-being of the area. This will call for increased analytical sophistication. It also means the highway department will need additional expertise in all the appropriate disciplines, either on their own staffs or through consultants.

Secondly, highways can contribute to community development and redevelopment through their ability to assemble space. The difficulty and often impossibility of buying and assembling land in developed areas through private means led to creation of the urban renewal program, with its use of eminent domain. The highway program has the same ability to assemble space and to deliberately attract private and public investment with the advantage of proximity to highway transportation.

To take advantage of this ability and fulfill the needs of corridor development, the highway department must purchase or control these areas that must go through a land use change in order to make them compatible with the new highway facility. In other words, in land acquisition, rights-of-way for highway purposes are rights for the roadway plus whatever additional lands, or space are necessary to assure compatible usage.

We have seen this concept applied in the highway program, as I noted earlier, particularly in regard to full-parcel takings and scenic easements. It is also applied with regard to air transportation. The Federal Aviation Administration and local airport bodies now buy development rights for land adjacent to airfields to assure compatible uses and to avoid the errors of the past that permitted housing developments on the edges of runways.

The third condition concerns implementation of the corridor development plan. Once the corridor is planned (responsive to the desires of the community and compatible with the highway facility) and once the indicated land, or space is acquired, assurance of development in accordance with the plan is necessary. Part of this assurance will be in the agreements reached between the highway department and the other public and private agencies during the process of arriving at the plan with its schedule. In addition, the plan will be accomplished through the lease or sale of land or rights under free competitive bid, conditioned on carrying out the planned development. This will provide an equitable means of involving private investment in corridor development, while at the same time retaining control of that development in the highway department and community.

Additionally, the income from sale or lease of the acquired land will be recouped for use in the highway program. This is of importance as it will help to offset the additional expenditures required to carry out the plan—increases similar to those we have allowed in our *ad hoc* decisions.

The result of this process, because of the highway actions combined with those of other private and public factors, will be, in effect, corridor renewal that also supplies essential mobility for the city. It will provide the city with roadway integrated with compatible land uses on both sides and under or over, through imaginative use of rights-of-way.

We recognize that such a program for joint development of highway corridors will require some revisions in state legislation as well as Federal procedures. We are drafting model legislation for this purpose which will authorize full state participation under the new Federal procedures.

The opportunities and the potential benefits from joint development of highway corridors are enormous. Through multiple use we can help satisfy a great range of community needs—needs that in too

many instances would otherwise go unmet. Too often today the gratification of these needs is being put off — postponed for lack of suitable space to accommodate them in crowded urban areas, postponed for lack of capital for their development, postponed for lack of administrative machinery to effect them. To such needs, joint development of highway corridors offers a positive answer.

It would be tragic if we failed to make the most of such an opportunity — tragic for the highway program and for our cities.

The time to act is now. As we put a formal, coherent program for joint development into action, we will be entering a new era of service for the highway program. It will be an era in which highways, while improving the mobility we require, will contribute more than ever before in meeting the many other human needs of our citizens.

Panel Discussion

QUESTION: Assuming that a highway can sever a community into one or more of several dimensions, and assuming the accuracy of the assumption that a community severance takes place, then to what extent are highway funds going to be made available to reestablish continuity of communities?

MR. BRIDWELL: There is no precise answer to that question, and this is because each individual case would have to be judged on what kind of severance took place and what it would take to recreate continuity.

This is not an attempt to duck the question. It is an attempt rather to elaborate on what I have already said by stating that there is no specific width of highway rights-of-way contemplated under this program. It is not 150 feet or 300 feet or to the parcel limits of any particular parcel touched by the roadway itself; but rather it is an opportunity to plan highway rights-of-way that include the space for the roadway itself as well as the adjacent land necessary for compatible use. Highway funds then are available for use in this newly described definition of highway rights-of-way.

Now it is perfectly obvious that if a corridor plan called for redevelopment of land adjacent to the roadway as commercial office space, apartments, or as some kind of industrial or commercial productive facility, any attempt to use highway funds for that kind of a development would be so overwhelming that there just simply wouldn't be funds available. What I am saying instead is that highway funds can be made available for the assembly of this land, which then could be taken over by a public agency, by a development corporation, or

could be sold under competitive bids to a private investor who would agree to develop the land in accordance with the plan, and the amount paid for that assembled land would be reinvested in the highway program.

QUESTION: In New York City the city planning commission has more or less advised us that it is hard to plan what we can build over an expressway until certain decisions are made as far as decking. Will there be a cost-sharing formula for decking or will it just be a local community expense?

MR. BRIDWELL: We have stated on a number of occasions — although there is no formal paper out as such — that in a planned air space use above a highway, we would pay the footing and foundation cost providing it was done as a part of the highway construction. That has been helpful in some instances. In some instances that I could describe it has not provided enough of a subsidy for the planned development to make it otherwise economically attractive.

In one instance we paid 90 percent of the cost of a deck, and there probably will be other instances in which we will pay 90 percent of the cost of a deck.

I think it is completely unrealistic, however, to assume that in every instance that someone wants to build a structure in air space over an Interstate highway that we will pay 90 percent of the cost of the foundation, of footing, the support work, and the deck. So if you are asking the question, What is the specific formula? I cannot give you an answer because it is going to range all the way from zero to 90 percent.

In the instance of the description yesterday by Norm Klein of the possible educational complex in Baltimore, it would be my expectation that if that development occurs the cost will be shared jointly by the highway program, by the Board of Education, and by the City of Baltimore, which benefits from this over and above the specific location of a school.

QUESTION: Is it legal to spend Federal highway funds for the property off the right-of-way?

MR. BRIDWELL: It is not off the right-of-way. It is on the right-of-way. I think that is precisely the point. We are not talking about off the right-of-way, we are talking about in the right-of-way.

The specific answer to your question is that we have a legal opinion saying that Federal funds are available or can be used for this program. It has never been court-tested. Each state, of course, has its own laws as to what it can spend money for, and in some instances it has a fairly tight description of what can be considered highway rights-of-way. So the state part of it will vary from state-to-state.

~~But let me make it clear because the point is obvious, we are not talking about space outside the rights-of-way. We are talking about~~

space inside the right-of-way, when a right-of-way is greater than that necessary for the roadway and its appurtenances.

MR. McGRATH: In articulating this concept of linear renewal, which this really would amount to, I think you have suggested the possibility of adding a very dramatic new dimension to the entire highway program. I am sure we all appreciate that it is fairly close to setting a precedent in urban development comparable to *Berman v. Parker*, a legal benchmark in the history of urban renewal legislation. This will have a dramatic effect on the cities, because even though the highway right-of-way may be fairly small, in many cities it will be much larger than most renewal projects. The median size of renewal projects in 15 years has been only 60 acres. Suddenly the highway with these new development capabilities, will have the attraction and potential to be very serious competition and to require absolutely new planning criteria for the entire industrial base and related commercial development in communities. I would like to know how you see determinations of the compatibility of land use being made and how the priority of development for the highway right-of-way will be determined in relation to other development priorities that the community may have. Would the local plans from place-to-place along the route be dominant or would they suddenly require rethinking?

MR. BRIDWELL: First of all, it may only be a semantic quarrel, but nevertheless let me quarrel with your use of the word "renewal." I would rather call it development because there is a certain connotation to the word "renewal," stemming from our urban renewal program that I do not think is the same as what we are talking about in corridor development.

Also I would not regard this in any way as competition with an urban renewal program. I think they have two completely separate and distinct philosophical bases that certainly can be compatible in some instances, but that I never would regard as competitive.

As to major thrust of your question, I think the answer lies in the fact that development and redevelopment does in fact take place when a highway is built or reconstructed in a complex urban environment. So the question is really not what priority we should assign; the question is, Are we going to have planned or unplanned development and redevelopment? Without question, this is going to occur anyway by the mere fact of the decision to build a highway facility.

In the sense that this may force or have a tendency to put priorities on various kinds of development in the highway corridor, I think yes, it will have that effect. But if that constrained, if you will, priority that is placed on the community could theoretically be considered a penalty, I would also suggest that it has many benefits.

There is no question but what is being talked about here in this conference is a rather substantial increase to the highway program.

But for those of you who had a part in it, I would suggest that what we are discussing and contemplating here is just that, an incremental increase or change in the highway program, and it doesn't begin to challenge the scope and imagination necessary any more than the original concept of a 41,000-mile system of controlled limited-access superhighways challenged the initiative, the imagination, and the innovativeness of people 12, 14, 16 years ago.

MR. McGRATH: With respect to the relationship between local development plans which may contemplate the same amount of acreage for industrial and many other compatible land uses and those in the highway corridor, where will this sort of decision be made? At this point it is unclear, and traditionally it has been unclear, how these things are reconciled.

MR. BRIDWELL: Well, the decision for all practical purposes has to be made by the local community and the state highway department cooperatively.

You know, we talk a lot and we are quite proud of the fact that the highway program is a Federal-state partnership. In this instance we are adding a third partner — the local community.

We already have, and have had for six years, a law requiring that highway projects be planned as a part of the total transportation system of a metropolitan area, and that these take into full account the comprehensive land use plans, and the development goals and objectives of the community as a part of the planning process.

So again, I do not see any conflict. I do see some constraints on the comprehensive planning process of a community by the mere fact that a decision to build or rebuild a highway is made, and it puts all kinds of emphasis, priorities, time constraints, and that sort of thing on the activities that follow. But once again I would make the point that those activities are going to occur anyway in some degree. The question before us is, Are they planned or unplanned changes, developments, renewals, redevelopments?

MR. BURMEISTER: Mr. Bridwell, this is a bold new concept you have presented here this morning. I have heard it discussed among state legislators and in our highway department, but I have never found anyone who had the courage to get up and make it in an open statement as you have this morning in a public gathering.

MR. BRIDWELL: That's one of the privileges of a lame duck.

MR. BURMEISTER: The thing that has been running through my mind in the discussions is that we have been talking about multiple uses in cities where either the highway has been constructed through a built-up portion of the city or where we are proposing to build a highway through a built-up portion of the city. The thing we have not talked

about is the multiple use of highways in the fringe areas of the cities and the fringe area of the urban part of the city or the suburban part.

Further, when we start talking about multiple use we also get into the rural portion of the freeway systems in the various states.

I know from experience in Wisconsin that in one instance we bought an entire subdivision which was in the process of being developed. In several other instances we have bought entire farms and interchange areas because the farmer wished to be made whole and taken out of the area so he could reestablish himself. I know from the accretion in value of these lands when the excess parcels were subsequently sold that where this is carried far enough, you could almost finance the highway system from the accretion in values of these properties, which subsequently sell for eight to ten times the cost of their original appraised market value.

What concerns me, Mr. Bridwell, is the vast change in the public concept that will have to come about if tracts of land adjacent to these new highway facilities are acquired in the public interest and subsequently sold, as you have indicated, by sealed bids or public auction or otherwise to persons involved in land development adjacent to the highway.

Prior to this time, the accretion in land has gone to the abutting owners. There is some forerunner for this, I believe, in the situation of the railroads where at one time they got alternate sections of land on either side of the railroad to interest them in the development.

Do you think this can be sold on a public interest basis to the extent that we would be able in the highway development to acquire extensive lands beyond those actually needed for the highway development?

MR. BRIDWELL: Yes. I do not think there is any question, but this is something that is not going to occur overnight. It will come about gradually, I hope very rapidly.

I cannot believe that the public interest is served, nor can I believe that the public would support — if it were dramatically called to their attention — the tremendous number of accidental millionaires that have already been created by the Interstate Highway program. And when I say accidental millionaires I am talking about those who by pure chance, by accident, own the land in the four quadrants of any given interchange. I am afraid I do not understand a public program which offers an opportunity for a person to accidentally become tremendously wealthy almost overnight, by selling off the land for land use purposes that frequently detract from, if not absolutely conflict with, the expenditure of public funds in putting the facility there.

Now I think the interchange situation is probably the most dramatic. All of us are familiar with it. But I think there are many other instances other than interchange where this is equally true in varying degrees.

Now I am sure that there are right now, and will continue to be, questions and severe problems in the minds of those associated and responsible for the highway program as to how can we spend highway users' money for this kind of activity. Well, I guess I would answer this about as follows: I can't tell the difference between a highway user and a citizen of the country. I really can't. They are one and the same as far as I am concerned. And to so narrowly constrain the definition of a highway use that it would allow no expenditure for anything other than the roadway and its appurtenances is just as ridiculous as saying my particular family does not have any children in school, therefore no part of my property tax can be paid for the support of school capital and operating cost.

Certainly it is a radical modification of what we have been doing, and I recognize that. But I sincerely believe that this is an opportunity to manage resources which are not only in the best interests of the public at large, but from the most narrow, from the most parochial viewpoint, in the interest of the highway program itself. And I believe that many of these incremental increases in value which result completely and solely from a public improvement, namely, the construction of a highway or development of a highway corridor, should accrue to the public and should accrue to the program creating the benefits.

Policy and Planning Considerations

CHARLES A. BLESSING
Director
Detroit City Plan Commission

THE Highway Act of 1962 required that every urban region with a population of 50,000 or more prepare a comprehensive land use and transportation study and plan. The Bureau of Public Roads required that the studies include inventories and analyses of ten basic elements: (a) economic factors affecting development, (b) population, (c) land use, (d) transportation facilities, including those for mass transportation, (e) travel patterns, (f) terminal and transfer facilities, (g) traffic control features, (h) zoning ordinances, subdivision regulations, building codes, etc., (i) financial resources, (j) social and community value factors, such as preservation of open space, parks and recreational facilities; preservation of historical sites and buildings; environmental amenities, and aesthetics.

Thus was set in motion a national planning program involving nearly 250 metropolitan regions at a scale and cost never before dreamed of. So broad was the required study that it could be seen to relate to any long list of the cumulative ills and problems of the American city: obsolescence, decay and instability at the center, uncontrolled development at the periphery, a generally deficient living environment because of inadequate planning or no planning in the past, congested circulation, uneven accessibility, imbalance and obsolescence of public facilities, instability of activity patterns reflecting a general trend of escaping from the older city center to the newer suburban fringe, residential segregation and limiting of choice for minority groups, and finally a general indictment that the city is visually characterless and confused as well as noisy and uncomfortable.

Manifestly, the most perfect conceivable transportation plan, taken alone, could never hope to solve the total ills of the city. On the other hand, the result of these transportation and land use studies has been to lay the groundwork in this nation of cities for the greatest period of creative planning any nation has ever known. As the conviction, at both the Federal and the local levels, has grown that somehow the ills of the city must be faced up to and solutions found, many new tools have been developed: the annual recertification of the Workable Program for Urban Renewal, the Community Renewal Program, the Planning Provisions of Section 701 of the Housing Act of 1954, public assistance for regional planning, and more recently the Model Neighborhood Program of 1966 and the Neighborhood Development Program of 1968.

While these and many other special purpose programs such as those relating to health, education, and welfare; conservation; and pollution control were being introduced, it was hardly surprising that in the process of constructing thousands of miles of urban freeways in the Interstate System in the effort to keep urban America mobile, inevitably some violence has been done to traditions, human values, aspirations, goals, and objectives of the urban resident in America's cities. Opposition and open resistance to both highway programs and renewal programs has appeared, and in some instances entire urban highway programs have been brought to a virtual halt. It was clear that better ways, new and innovative ways, must be found to respond to the growing concerns of cities across the nation that the price paid for freeway building—in loss of tax dollars, in human dislocation, in community dislocation and in the visual scarring of cities—was too great!

One of these ways is the concept of development of multiple use and joint development of transportation rights-of-way, and a second way is the design team approach to transportation corridor planning. Out of the combination of these two ideas, emerges one insistent and compelling idea: that of using the highway to structure or restructure the city. The Bureau of Public Roads has declared itself "ready to work with the nation's cities—to seek new and bold uses of the joint development concept to achieve maximum use of that part of our scarce urban land which must be devoted to highway transportation."

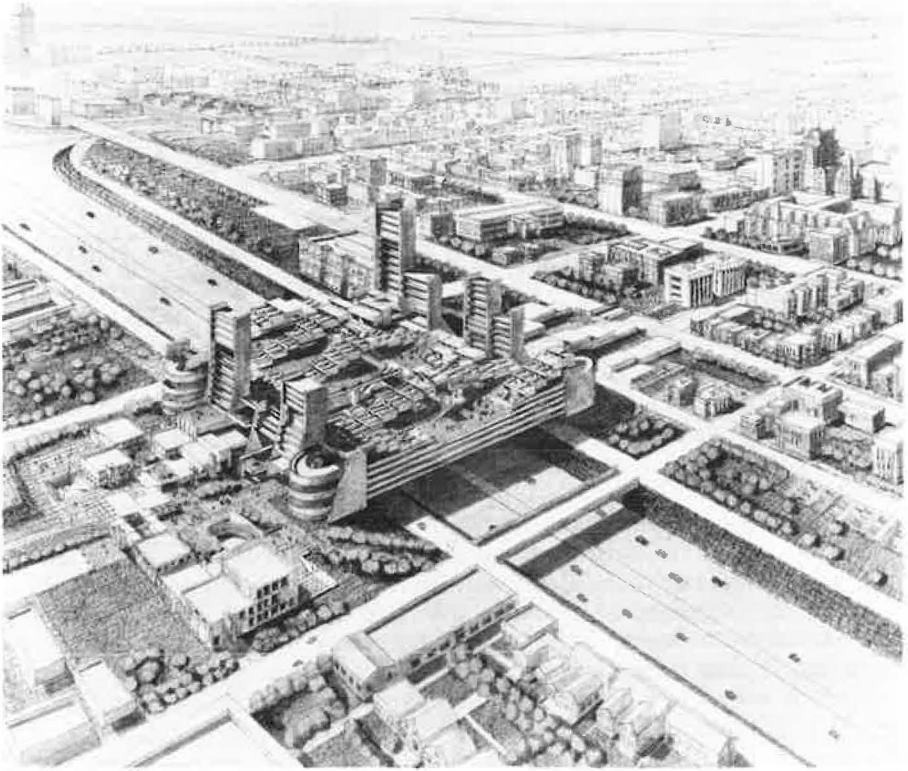
If the above approach is to succeed, cities must coordinate freeway considerations with the comprehensive planning of every affected community, city, and region. The planning and design of a freeway in the urban environment should be, in fact, accomplished by a competent planning body concerned with the shaping of each community, region, and state, and its highways into a balanced and integrated system. Proper weight should be given to the convenience, safety, comfort, beauty, and economic viability of every area served.

I am certain that joint development and multiple use of transportation rights-of-way can become one of the most positively creative forces in the design and shaping of the American city of the future — if the program's full potential for good is guaranteed by a formally established requirement that the corridor design become an integral part of a comprehensive urban design concept plan for the city as a whole.

The joint project corridor concept, in its broadest potential use, provides a sophisticated and effective tool for refining and more sharply molding the form and image of the city if it is applied within a truly creative comprehensive planning and design framework, at metropolitan, region, city, district, community, and neighborhood level. By a "truly creative comprehensive planning framework," I mean a planning framework including all ten elements in the comprehensive land use and transportation study as required by the Bureau of Public Roads and an additional element — the design concept plan. This plan will provide a basic design framework for the urban structure at the scale of region, city, and district. Such a broad concept study for the entire city and urban region is absolutely essential if we are to transform a visually characterless and confused city into a city of dramatic beauty and visual excitement. Within such a comprehensive planning policy framework that will establish land use and transportation patterns including intensity of land development, open space patterns, and a broad expression of the basic skeletal form of region and city, the concept of joint development and multiple use of rights-of-way could become the most promising concept in the design of cities in the future. If the design concept team approach is valid and of such great promise in transportation corridor design (as I feel certain it is), then how much more valid must be the application of the design concept team approach to the entire city and metropolitan region itself.

Environmental and Social Impacts of the Physical Plan

In order to prepare a comprehensive plan which will satisfy the human values and goals of the community, better ways must be found to identify these goals and values. Sample surveys of attitudes are helpful but not always conclusive. Much more reliable information is needed on questions such as, What is the relation of the physical city to man and to society? How is individual and family life affected by the kind of city we live in? What is it that people value most in society, and what kinds of human potential is society most concerned with reinforcing and enhancing? What is the best environment for learning and growing as an individual in society? What is the cause of alienation of people from their society, their community, and from their identity with their immediate family and surroundings?



Proposal for a parking-housing complex over the John Lodge Freeway for Wayne State University. The facility would provide parking for 2500 cars and 260 one and two bedroom dwelling units. A clear span of 230 feet would be required and the structure might use a cable suspension system rather than truss and girder. (Source: O'Dell, Hewlett and Luckenbach Inc., Birmingham, Michigan, 1968.)

Much more must be learned about the contribution of a better designed environment toward satisfying psychological, social, and emotional needs of all the people of the city — the poor, the minorities, the disadvantaged, the uneducated, the forgotten — as well as of those who are thought to have fewer problems.

While there are no easy or conclusive answers to such broad questions concerning the goals of society, research into the response of urban people to the environment of the city has resulted in some tentative findings that have a significant bearing on what people look for and want in their environment. Urban sociologists and psychologists have studied human reactions to the human environment.

A few city planners have begun to do research on the kind of city people seem to want.

Kevin Lynch has contributed unusual insight into the problem of what people look for in the urban environment and has done much to articulate design goals for the city. His observations are clearly relevant to design for multiple use of rights-of-way. Such a comprehensive city-wide design concept study would include such considerations as provision for a wide variety or mix of activities, of accommodation, and of structural characteristics, development of a transportation grid with lines of circulation differentiated with respect to intensity and speed of travel, the encouragement of peaks of activity and density in sharply defined areas such as the central business district, the form of such intense use centers in relation to transportation corridors, and a system of linked major open spaces designed so as to give as vivid a visual image as possible.

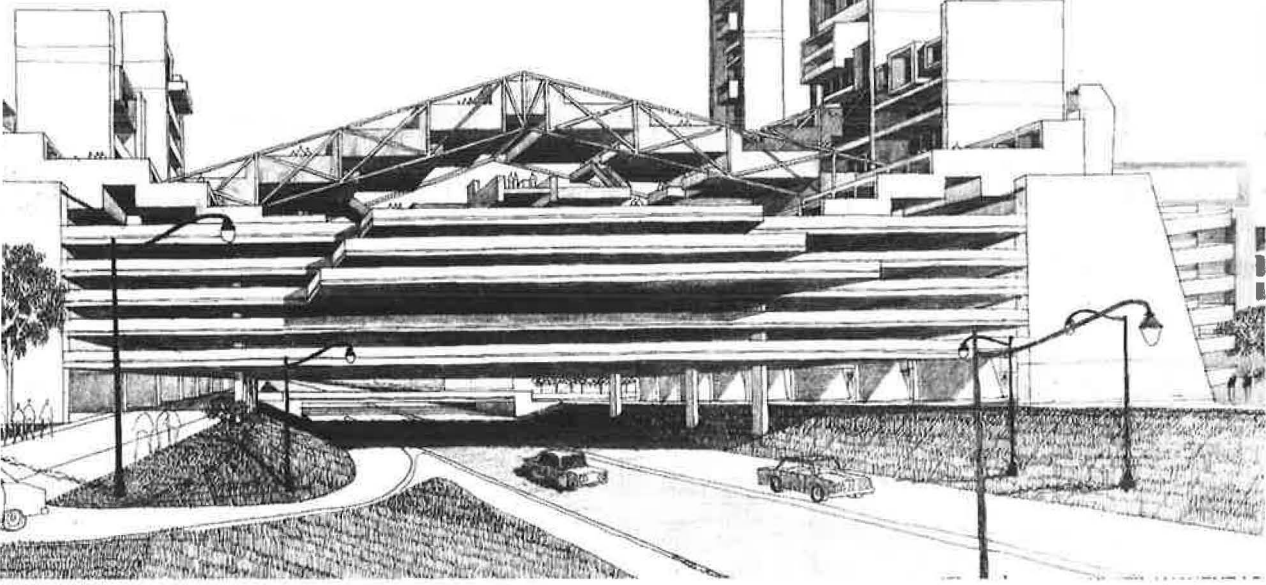
Such a metropolitan and city design concept plan must be intelligible to the citizens of the region and it must represent their goals for a metropolitan form that will include the opportunity for choice — by providing ready access to the greatest variety of goods, services, and facilities; choice of kind of habitat; and access to many kinds of environment at will, with maximum personal control over environment. This wide range of choice requires an environment of great variety — a fine grain mix of land uses and services linked together by quick and convenient transportation. It follows that there will be a possibility of a high degree of interaction between people but under the full control of the individual to interact or not as he wishes. Other goals would include reasonable cost, comfort, participation, growth and adaptability, continuity, and imagability.

It is not likely that many of the 250 comprehensive land use and transportation studies now in preparation have found really convincing answers to the complex problem of identifying goals and translating these goals into physical plans which will adequately satisfy the goals. In order to make valid use of socioeconomic goals in determining metropolitan or city form, we must first determine how explicit goals can be better served by one physical plan than by another.

Unless we can give expression to socioeconomic goals in formulating the community development plan — the planning process itself might be academic, since effectuation decisions will be based on physical developments reflected in the plan. In the effort to determine priorities for programs for improving the life of people in the city, we must find ways to determine what are the really most critical social issues, what are the most urgent problems in the judgment of the citizens of the community. To do this the citizens must set the priorities; the people of the city must be involved.

This process of involving people in decision-making about the physical environment or the social environment is really much more

Side view of proposed parking-housing complex over John Lodge Freeway.



important than the plan on the wall. We must find a way to conceive of whole complex systems of development that engage the social, the economic, the physical, and the institutional in one comprehensive concept. The really important goals are the goals related to social and economic development. The formulation of a physical design plan for the city or region must rest on what kind of physical development is going to maximize the achievement of these social goals.

The relationship of people to community and of community to land is the basis for urban form. People want identity with the community; they also want to be free from the institutionalization of their lives that can result from over-planning and from massive and sudden change and human dislocation. The objective in urban planning is the development of the individual, of the family, and of the group.

Studies have shown that the frequency and extent of use of physical facilities such as schools, public health facilities, recreation and athletic facilities, branch libraries, social clubs, churches, and shopping facilities may be greatly influenced by the location chosen for these facilities and by the relationship to the other facilities. For example, it has been found that people tend to be more likely to use a public health clinic or a branch library if it is located in or adjacent to a shopping center or next to a school. Such desirable relationships can be expressed as location criteria and will help the planner develop policies that are problem-oriented — that have to do with solving problems of the here and now.

Continued effort must be made through the use of opinion surveys and human response studies of a psychological and sociological nature to determine which alternative design concepts — for housing, for shopping, for schools, parks, health centers, family centers, employment areas — are preferred by the people of the community.

In the design for multiple use of transportation rights-of-way, individual projects might be examined with respect to such environmental factors as neighborhood and social impacts, city and regional impacts, open space and nature, cultural assets, amenities from the road, and economic factors.

In examples where freeways have already been completed and opportunities exist for multiple use development, the design concept should be in harmony with the social goals of the citizens in the affected neighborhood, and might include facilities needed to serve the people in the area — housing, shopping, a recreation center, for example.

Intergovernmental Relations and Responsibilities

The Federal role, particularly through the Department of Housing and Urban Development and the Department of Transportation in the joint development and multiple use of rights-of-way, is essentially one of encouraging a wider adoption of the concept at the local level. The Model Cities and Metropolitan Development Act of 1966 establishes methods for Federal encouragement of coordinated metropolitan development.

The regional planning agency must make a favorable recommendation on any proposed joint use project as consistent with the comprehensive regional plan. The regional planning agency and the comprehensive land use and transportation planning agency might well include in their planning programs an evaluation of multiple use of rights-of-way in connection with the total mileage of the freeway network being studied. This evaluation could lead to a priority rating of all possible sections of the freeway network which could accommodate multiple-use and joint development projects based on such evaluation factors as compatibility with the planning and design criteria relating to the general location of the project, benefits to the adjoining section of the region, functional relationship to surrounding land use, and circulation considerations and economic justification factors. It would be logical for the comprehensive land use and transportation study to formally recommend general lineal sections of the freeway system that it believes to be advantageous for multiple use projects, and also those lineal sections which should be specifically excluded from development of multiple uses over air rights where the disadvantages would clearly outweigh the advantages.

The state highway department should provide a formal policy statement representing its commitment to cooperate with cities, counties, and towns and the terms governing granting of air rights, stan-

dards of development, clearances, basis for purchase or lease of air rights over the freeways and contract procedures generally.

The city through the city planning commission of the central city should have responsibility for independently studying joint project opportunities within the city while the transportation planning agency would invite joint project proposals. Initiative should be with the comprehensive city planning agency because that agency is responsible for preparation and updating of the comprehensive city plan, including the urban design concept plan, which provides a direct visual design framework and criteria for evaluation of the visual design as well as all other comprehensive planning aspects of the project.

The government jurisdiction that controls the private property adjacent to the study area and has planning jurisdiction over the study area is the logical body to coordinate the preparation of planning studies for multiple use projects. The actual studies and plans will logically be developed by the government or private agency that intends to use the project when completed.

Four general types of public building opportunities in relation to the comprehensive city plan include medical facilities, educational buildings, government facilities, and cultural public assembly facilities. In addition to these categories, other use types might include churches, welfare institutions, labor union halls, and civic social and fraternal associations. In those projects involving a variety or a combination of uses such as housing; public, cultural, and recreational facilities; and private shopping facilities, a special development authority would be the logical primary sponsor responsible for the construction of the project and its management and leasing or cooperative ownership arrangements.

Zoning and Land Use Controls

The zoning ordinance should provide a planned development district to accommodate a variety of compatible uses and to permit and encourage the maximum creativity and design innovation. The project should be evaluated as a total unified design entity compatible in land uses and design concept with the surrounding land uses.

It may frequently occur that major multiple-use projects may require exceptional consideration and possibly waivers of existing zoning or other use controls that were not enacted with such innovative developments in mind. If present zoning ordinances do not provide effective district controls for such projects, the appropriate Federal agencies such as the Department of Housing and Urban Development and the Department of Transportation might initiate the development of recommended zoning district definitions and regulations for consideration by local jurisdictions at county or city level.

Program Priorities

It is most logical that the comprehensive planning agency play a strong continuing role in fostering the joint project concept and coordinating its use. A major responsibility of the planning agency should be to identify the potentials for the joint project development at the earliest possible stage of selection of route and design characteristics to assure that the potentials are taken into account in relating the route to the land use plan for the adjoining area. There should be early, continuing, and full collaboration between the comprehensive planning agency, the transportation planning agency, and the user-developer agency interested in the multiple use project. The planning agency can furnish the joint developers with all available information or development needs on the recommendations of the design concept plan.

Because the Interstate System is far advanced in planning and construction in most of the major cities of the nation, a high priority assignment initially will be an evaluation of all existing freeway routes as to feasibility of multiple use of rights-of-way, and as to impact of such development on present planning and design concepts and on completed projects in the vicinity of freeway development project proposals.

Panel Discussion

MR. BURMEISTER: With the sophistication of the comprehensive planning that has been carried on by the various planning units in these cities and in areas and regions we now have for the most part quite well-developed land use plans, and with these land use plans in mind we can to a considerable degree develop the type of multiple use that might be desirable for the highway.

I believe that the organization of intergovernmental committees consisting of elected officials is one of the best ways to get at the protection of these proposed uses so that our land use planning will not be totally disrupted. I am thinking of master plans, I am thinking of zoning ordinances, and so forth.

Do you believe that the present methods of protection I have mentioned are adequate to assure that when these highways are ultimately developed on the basis of the current land uses that these land uses will still be effective: in other words, that for selfish gains the local units have not changed residential areas to industrial areas, and so forth?

MR. BLESSING: Recently a map was made of the Detroit area, in which the intent was to show the time span between initial speculative investment in large land areas and eventual development. I think the time span was about 25 years, and herein lies the problem. An investor purchased rural farm land, paid taxes on it over a 25-year period, often he sought changes in zoning, and then was ready to develop it. Since zoning is essentially the instrument of the local incorporated area, the developer approaches the local jurisdiction to secure zoning changes.

Local pressures by developers on local zoning boards make effective land use control difficult in terms of regional land use planning. This would seem to suggest that if you are going to spend all the time, money, and effort in making a comprehensive regional plan, through a council of governments or similar administrative device, more effective regional zoning controls must be found.

The essential problem is whether you can do something at a level comprehending the regional pattern that is going to provide effective zoning control. The local suburban village and township jurisdictions are frequently susceptible to influence, often with good intentions, so that it may be questioned whether the regional plan can be effectuated without some form of effective regional zoning. Since suburban zoning is usually administered at the level of towns, townships, and villages, their zoning ordinances and maps should reflect the proposals of the regional plan.

MR. TABOR: Mr. Blessing stated that the citizens should set priorities and social goals. It seemed to me that if we start talking about social goals it becomes a pretty ambiguous term. Social goals do not stay social goals very long. They become political goals one way or the other, and they become political goals pretty quickly. I think that the elected governing members of a local government eventually have to make decisions and set the priorities based on these political goals.

I think the sooner we start realizing that we are talking about political goals, and we have to go through a political process to try to determine what we have been traditionally doing, that we are going to come closer to understanding the decision-making process.

We have to talk in terms of politics. We have to talk in terms of who is going to finally make those decisions, and it is not going to be citizens themselves, it is going to be elected governing board members that are going to make those decisions.

MR. BLESSING: Well, I essentially agree with you. But for any city that has been through street riots where millions of dollars of damage was done, it was an emotional thing. A riot is a search for a share in decision making as Irving Rubin has expressed it. It changes the political thinking of that city.

Now, just as encouragement, we have 108 citizen members in the Detroit model city governing board. We tried last April to effectuate

through council action a rather considerable modification of the 1950 master plan of major thoroughfares, so the citizens' board said they were going to take a look at it. They wrote the council and asked that no action be taken until they rendered their report. There were two extensions of 30 days each, and within the past month there have been some intensive discussions again with this citizens' governing group and its committee on transportation. The citizens were running the committee, and discussions were set up to determine the wishes of the citizens.

Fortunately the citizens through the large 108-member group sent a letter to the common council in which they concurred in all but three route problems. I would say 95 percent of the thoroughfare plan gained the concurrence of the Model City group after discussions.

As it stands, I believe we will have favorable citizen action on all but one route. And that route is not insoluble. It may be resolved the way the citizens propose; there may be some degree of reasonable compromise.

In effect, the mayor and council said to the citizens "We will listen to you — we want your comments, and your support, but in the final decision responsibility rests with the elected officials, with a responsibility to the entire city with broader interests than those of the Model City with a population of 140,000 — less than 10 percent of the total city population."

In this way you approach problems seeking with constructive cooperation in order to avoid an impasse. I agree with you that this is what democratic government is all about. But you have got to give some attention to both the city-wide and local citizen points of view.

Economic and Social Considerations

PHILIP HAMMER

Hammer, Greene and Siler Associates

TO BE simplistic, but I think still accurate, we must recognize two major sets of forces that are impacted on us, and they are not in any sense diminishing in their total strength and continuity. One, of course, is the overwhelming force of growth in our urban areas, and this force is making itself felt in the outlying parts of our country. In the next ten or eleven years the suburbs are going to have to absorb 35 million more people, and by the end of the century somewhere between 80 and 90 million more people. And if we think we have seen chaos in the suburbs of America, all we have to do is wait for the next several decades.

The other force is the overwhelming force of decay attacking the central cities of our country. The main effect of these forces of decay is to divert our resources away from central areas into outlying areas, leaving large vacuums and areas that are unserved. These areas are economically unviable and require a greater number of services with dwindling resources. These forces are continuing apace, and I might say they are continuing on the broad strips of transportation arteries that, in fact, make them possible.

I have a real sense of urgency about how we deal with these particular forces. So many of our programs, Federal, state, and local, are dealing almost entirely with symptoms. We are talking now about some basic things happening to our physical form that can be directly affected by the kinds of actions we are discussing today.

It is perfectly clear that every kind of land use has been found in every part of a metropolitan area, but the functions are different in different parts of the area. We are finding today that these close-in

land uses are losing their viability. They are losing their recreative powers, they are not attracting new investment, they are being left by the wayside. The plight of the central city is indeed a sorry one, one you are most familiar with. We are simply not getting proper resource allocation.

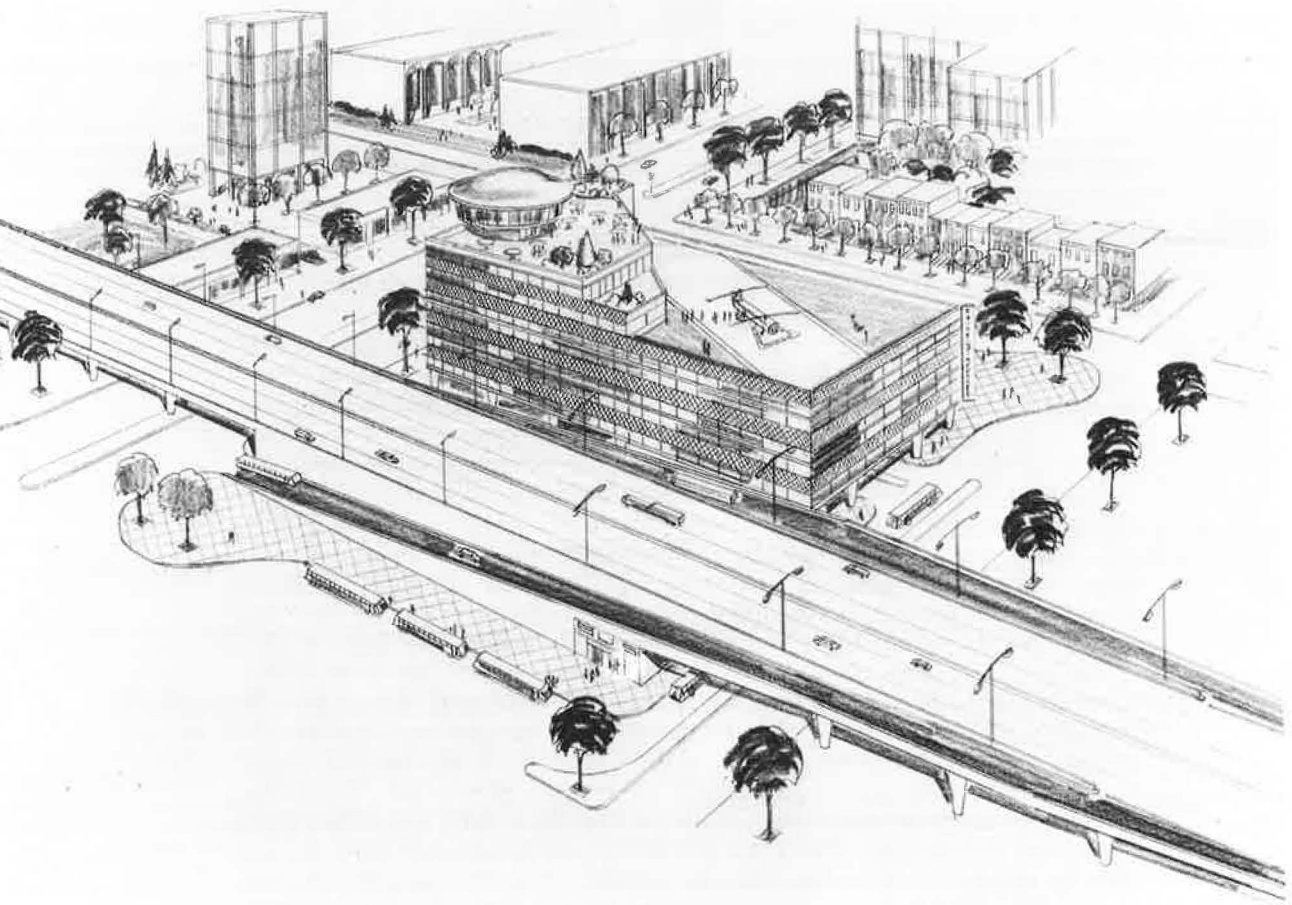
In our urban area there is an impending breakdown in the economic efficiency of the area. The disarrangement of land uses itself has been a major cause of inefficiency in our production process. And as time goes on the transportation cost is going to become the increasingly important one in the American productive apparatus. I think we are reaching the point of developing a new economics, for local development in a very real sense runs parallel to and is comparable with the new economics that we have devised for national development.

Thirty years ago, the disequilibrium between investment and savings necessitated injecting monetary and financial activities to bring about an equilibrium and keep our economy on an even keel. I think we are facing the same kind of situation locally where we have a disequilibrium in investments and the returns that we get from them. Investments in our local areas are being made primarily where growth is taking place because these are the areas where returns can be obtained. As a result of this we are not reinvesting in our central cities. It is going to take something drastic to reverse this trend. Urban renewal has made a tremendous start in this direction, but it has only scratched the surface. The tools of joint development and multiple use can be important in redirecting investment toward the central city.

In emphasizing the great importance of a new thrust in private investment back into our central areas, I would also put major emphasis on providing for the suburbs. I think we should be thinking now about new devices for utilizing transportation systems to influence new kinds of patterns of development in the suburban areas.

We are looking at both aspects of the growth problem and the decay problem which, as I said, are simply different sides of the same basic technological forces that are moving our country ahead. I do not believe that joint development and multiple use is the only tool. But it certainly offers an opportunity to make a major thrust at the basic problems of redirecting funds back into central areas. We can use this tool, with a great deal more leverage than the actual direct expenditure involved in any specific development project, because by the attraction of public and private investments in strategic spots in our built-up areas there will be a spin-off into the adjacent areas, which then, in turn, creates new investment opportunity.

There are numerous examples of how we can attract new private investment back into areas where vacancies and deterioration exist if we create the appropriate conditions. Indeed, with the exception of urban renewal and some public buildings that have been judiciously brought into central areas, there have been no real thrusts in most



Multi-modal public transportation terminals integrated with office space are receiving increased attention as applications of multiple use and joint development. (Source: U.S. Bureau of Public Roads.)

cities, and the conditions have simply not been favorable to any major new investments close-in. And this is what we are talking about here — the creation of these new kinds of activities.

Of course, we are concerned with the potential negative impact of highways going through central city areas. A great deal of thinking has been done on this, and a great deal of progress has been made in the minimization of this impact. We have a number of instances where freeways have not been well planned and where we have minimized the aesthetic and physical impact and cut markets in half. In some instances we have removed populations that support the private facilities and public facilities in the affected area. We have added to the problems of the central city by increasing the demand for public services while decreasing the tax base and the economic generators to meet these needs.

One of the great justifications for joint development and multiple use is simply to minimize these economic impacts and to redress at least some of the difficulties and negative forces that result from breaking markets or removing potential support and patronage of activities that already exist.

I am much persuaded that the private investments will be forthcoming in the kinds of projects that might be made available either in a corridor or in some linear development, or around the interchange. I think we can pretty well be assured that we will get economic reuses of urban land if we can create the accessibility factor that is so important, and make absolutely certain that this particular use ties in with neighborhoods in the proper way. This calls for broader planning of a neighborhood than we have been visualizing up to now. In high-cost areas it is more difficult to develop economically feasible land uses. The uses themselves must be capable through their production of revenue to pay for the kind of land values we are talking about.

This means that such redevelopment is feasible everywhere, but it will take relatively few of this type of developments in most cities to effect a major change in the direction of economic development, because of the heavy leverage factor.

The implementation of joint development and multiple-use projects raises economic questions as to how the land cost may be allocated; how the total cost of projects may be allocated and financed. I think it is quite difficult at this stage to state policies firmly with respect to the allocation of cost among the Federal highway program, the local people, and in some cases the state. At the moment we are playing this by ear on each project. Because of the importance of urban renewal in central areas, it is quite possible that most of the joint development taking place in central cities will be within the context of an urban renewal approach. In the suburban areas where the impact of new growth is going to be so tremendous it is likely that we will utilize some types of quasi-public or public development corporations established under state law, operated under public aegis of one kind or another, that might take these lands from the highway department at appropriate prices and hold and develop them.

The leverage of interchange controls and substantial land purchases around major highway nodes could constitute the beginnings of a new town pattern in many suburban parts of our country. This may be a good substitute for new towns that are in effect created from scratch at some distance from the large metropolitan areas. Here potential exists by the proper control of land around interchanges where the major facilities of a public and private commercial nature might be developed.

Giving this kind of assignment to highway engineers is giving them the problem of urban America in the future, and it is not exactly intended that this should be a highway engineer's prime responsibility.

But as part of a total team approach to the problem of accommodating another 80 to 90 million people in the suburbs it seems to me we have some promising prospects.

There are the other implications of highways, such as "the white highway running through the black man's community," and other familiar problems. They involve citizen participation and attitude, and they must be taken into account.

But when we talk specifically about joint development and multiple use we are talking about trying to weave into these projects a new emerging economic life on the part of the community, which for many years has been denied participation.

In summary, the concepts of joint development and multiple use offer a way of getting transportation systems through urban areas and at the same time getting some new flow of economic investment back into the central areas.

Panel Discussion

MR. RAVICH: You articulated among other things the very strong case for looking at the problem of planning for our cities as only a part of total planning for regions. You talked about the need for completely understanding the economic impact, what the impact is of the suburban growth on the central city and *vice versa*, and the whole conference is obviously dealing with the question of how we can make the planning tool more useful and to provide multi-uses of sites.

I wonder if you could comment on this. It seems to me that there is a diametrically opposed trend of thinking going on in this country at the very same time, and that is that every community within a city, any community anywhere, however it may be defined, is to be the final arbiter of its own fate, the real meaningful participant in the decision making. The model cities program is perhaps the most institutionalized example of this trend.

It seems to me that these are absolutely inconsistent. Just at the point in time when we are aware of the implications of transportation systems, the juxtaposition of the cities and suburbs, and the need for overall planning and control and institutions that can effectuate that kind of planning, it seems that we are fractionalizing, decentralizing the process at the same time in other areas — obviously not yet in the highway area, otherwise we would have as few highways as new housing in our cities.

MR. HAMMER: It seems to me that in the last few years we have come a long way toward working out a very practical and pragmatic rapport between the different levels of government at the local level. We have made a big noise about creative federalism which, in effect, is a series of guidelines and controls attached to funds with hopefully the appropriate responses and actions at the local level. And though we have succeeded in some areas more than others, by and large we have begun to hammer out an accommodation at the different levels of government, which I believe is beginning to work.

I think you are quite right. On one hand we are trying to insist on standards and objectives from a national point of view. We are talking about national policies in effect. We really are talking about the elements of a national development policy or a national land policy at the same time that we are talking about local control.

But despite the fact that these seem incompatible, it seems to me the essence of our Federal system is that they always have been incompatible in theory, but in practice we make them work. I see it as a constant state of tension, but it seems to me that is what democracy is all about anyway.

One area that we have not fully explored, is the accommodation of these extra tens of millions of people in the suburbs, the impact of which is going to be incredible, and that is the role the state is going to have to play. We are reaching the point where the state government is going to have to get involved in these regional approaches, not perhaps directly by having programs, but through the establishment of state guidelines and controls and devices through law such as the creation of development corporations having state charters that might fill in the gap somewhere between the ineffective and fragmented local government in the areas that are involved, and the Federal government that sets the national procedures.

MR. McGRATH: You have used a figure several times of about 100 million people as the reflection of the population explosion impinging on the urban areas. What could be the unknown consequences of not reckoning with the "pill" or with the suburban orientation of these 100 million people? Won't these factors have some effect on how heavily we bank on the in-town use of the traffic corridor?

MR. HAMMER: One thing I did not think you would ask me about was the pill. We have lots of unknowns as to what people want at this particular time and what they will want in the future. At the present time the suburban life is still basically a good life, and I think it is the life to which perhaps most central city people aspire.

At the same time, the conditions that have been created in many of our suburbs have shattered what has been a dream for many people. Ten years ago, thousands of people felt that in the suburbs they were going to escape taxation and have lots of good breathing open space,

with quiet and privacy, and their area was going to be free of crime. I think they are waking up today to find that costs are escalating, the crime rate in the suburbs is growing faster actually than in the city, it is no longer quiet in most cases, congestion has mounted, and it is difficult to get to work.

So I am not saying that the suburban life may not still be the main aspiration of people, but I would say there is increasing recognition that just because you are in the suburbs you are not assured that you are going to have safeguards against the same kinds of impacts that have happened in the city. All of which is to say, that what we do by way of amenities, by creating environments, employment opportunities, interest and pride in communities and an identity with the community might have a tremendous effect in creating some new attitude in the future with respect to central city living.

For us to assume that past trends and the impact of factors such as the duration and out-migration of wealth and jobs are going to continue, and consequently everyone is going to run away from the central area to the suburbs, I think is a very invalid assumption.

I think the most realistic assumption is one that is based on the unmistakable recognition that the creation of appropriate conditions and environment can change people's attitudes, and indeed that is exactly what I think the name of this game is. We are talking about the linear concept, or even on a much more modest basis, the beginnings of a turnaround, and interchange in a neighborhood that is in the throes of decline. I think these things can have tremendous effects in changing people's attitudes.

Now with respect to the racial composition — the fact that the suburbs are getting whiter and the central areas are getting blacker — I think this is an imponderable that is very difficult for anybody to put his finger on at the present time. If it were not for that I think we could well assume as time goes on that by reintroducing amenity and employment factors in the central city, we will be able to develop a kind of life that will have a tremendous impactive power upon the whole population.

Whether or not this is going to happen rapidly — particularly now with the tensions created by the dichotomy of the races — is a fact of life that nobody knows.

I think our hope is really this: that we will create these amenities, we will indeed make the city viable and attractive, and we will try to open up options and keep them open for all the population. I have a suspicion that over a period of time we will create conditions in which we will find a substantial amount of people coming back to cities, or those who intended to go to the suburbs staying in the central city.

Engineering Considerations

ROGER F. NUSBAUM
*Deputy Chief Highway Engineer
Illinois Division of Highways*

I WILL NOT discuss the detailed technical aspects of freeway design. Many excellent technical publications are available on such subjects as geometric design, freeway capacity, theories of traffic flow, and the many other technical elements that are the tools of the highway engineers' profession. Instead, I will attempt to discuss some of the basic physical and operational requirements that must be considered in any joint development or multiple use highway project.

We must recognize that there are basically four possible combinations of multiple use of joint development. There is the possibility of (a) developing areas under an elevated freeway structure, (b) developing the air rights over the freeway, (c) developing land adjacent to the freeway, and (d) developing various combinations of joint development in the suburban and rural freeway setting.

In this discussion, I will deal principally with three separate phases of freeway development: first, with the design of the facility; second, with the actual physical construction of the facility; and last, with the operation of the facility once it has been completed.

Design Considerations

In the advance planning for an urban highway, the major decision lies in the question: Should the freeway be depressed or elevated? The question presumes too much for an unreserved selection without qualification. In practice, a considerable portion of any proposed freeway will make maximum use of existing public rights-of-way and is planned as an at-grade facility with depressed or elevated portions only where

dictated by land use or degree of interruption. With this understanding, we can consider other factors that should influence the final profile selection.

It is the generally accepted opinion that a depressed urban freeway detracts the least from the surrounding urban development for two principal reasons: the existing space profile or skyline is not marred by an embankment or an overhead structure nor are there intermittent humps in the profile caused by interchange ramps that must be provided for access to the elevated freeway, and the depressed expressway offers more opportunities for a safer design than those offered on elevated highways. Bridge rail components can be made strong enough to preclude traffic crashing and falling to the ground below, but even so, we end up with an unyielding obstacle relatively close to the traveled way that will not "give" with dynamic impact. It is apparent that an elevated highway cannot feasibly furnish the same lateral clearances as a depressed highway for recovery of out-of-control vehicles. If this were done, the cost of elevated structures would soar upward out of reach of practical economics. There are, however, certain advantages to elevated structures, not the least of which is the possible utilization of the ground surface under the structure for parking, recreational areas, etc. Coupled with this possibility is the general condition that right-of-way taking is normally much less than would be necessary for a depressed highway, with the end result that interruption to existing land use is minimized with commensurate savings in right-of-way costs.

Conversely, an elevated structure will invariably require increased maintenance cost for the life of the facility. Because of the densities of traffic that originally justify an expressway facility, an elevated structure requires almost constant pavement upkeep to retard deck deterioration. On heavily traveled freeways, we have found it necessary to waterproof all wearing surfaces on structures with a laminated coating of fiberglass fabric bonded with coaltar pitch emulsion, covered with a thin course of bituminous concrete.

Full knowledge of expected maintenance costs of an elevated freeway again is only part of the problem. It must be realized that in any maintenance program it will often be necessary to make deck repairs, thereby causing inconvenience and hazard to the road user. A further hazard to road users is the inherent bridge-width restriction occasioned by the necessary long ramp structures to funnel traffic on and off the elevated highway.

In summary, it might be stated that a depressed highway system is safer, more aesthetic, requires less maintenance, and is less interruptive to the local road system than an elevated highway. The proper answer to the basic question must, therefore, be a result of weighing all these factors, as well as factors related to the proposed joint use to furnish the best facility known for the corridor.

In considering the traffic capacity of the freeway and the traffic impact on the area, it must be recognized that freeway ramps cannot be constructed at any indiscriminate location to provide access for some joint-use development. The number of ramps to be provided and the spacing of these ramps must be in delicate balance with the capacity of the main traveled way of the freeway. When the generated traffic and the potential ramp capacity exceed the capacity of the freeway itself, turbulence and congestion will result. The technique of electronic traffic surveillance coupled with ramp metering can help offset this problem.

Any joint development or usage should be reviewed in depth with respect to its impact on capacity, operation, and access. There should be minimal reduction in capacity and little or no substantial impact on the operation of the freeway. Urban freeways are normally constructed in corridors where the existing streets and highways are already operating at or near their capacity. In considering multiple use, should we select functions that will increase peak-hour traffic flows by large percentages, we must insure that the surface street system, as well as the freeway, has reserve capacity to provide for this added traffic flow. Conversely, if the joint use functions are of a nature that will not generate additional peak-hour flows, it is possible that the existing surface street system may be adequate for some years to come. Joint use development should provide off-street parking, off-street loading areas, and adequate storage provision.

Multiple use of rights-of-way can restrict future expansion of the public highway facility and may eliminate any flexibility needed for future improvements. Careful consideration must, therefore, be given to the original geometrics of the highway in order to provide for any future expansion or development. Because of the permanency of some air use development and linear construction, it is imperative that an in-depth study be made of future needs. These needs should not only consider added lanes for capacity, but changes in vehicle design.

If space is to be provided for future rail mass-transit within the right-of-way, a preliminary design of such transit system should be performed at the same time the highway location work is going forward in order to accurately determine the amount of right-of-way to be provided for the transit project. Often a late addition of a joint use project within an existing highway may mean the loss of a highway shoulder, disruption of traffic operations, extensive revisions to the highway facility, alteration of access, geometrics, etc.

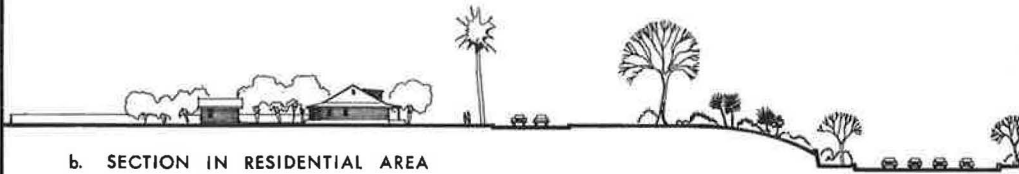
Joint development includes provisions for improving major arterial streets intersecting the expressway, generally in conjunction with the planned location of interchanges. These improvements, together with a reorganization of local streets to fit a comprehensive land use plan, provide an excellent opportunity to increase capacity and availability of access to areas that may have been previously restricted. Of course,

Cross sectional concepts for the Papago Freeway for Phoenix, Arizona, using simple below grade freeway for open rural areas and decked over park areas through the city's central business area. (Source: Johannessen & Girard Consulting Engineers, The Papago Freeway, A Report prepared for the Arizona Highway Department, Phoenix, Ariz., 1968.)

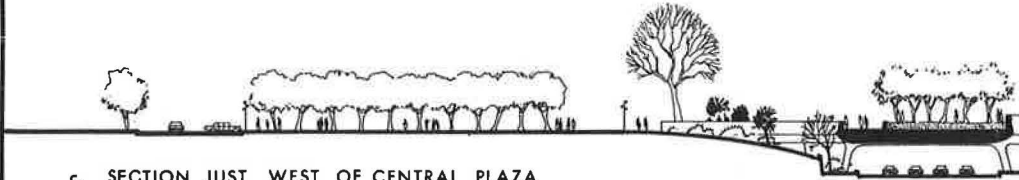
a. SECTION IN PAPAGO PARK



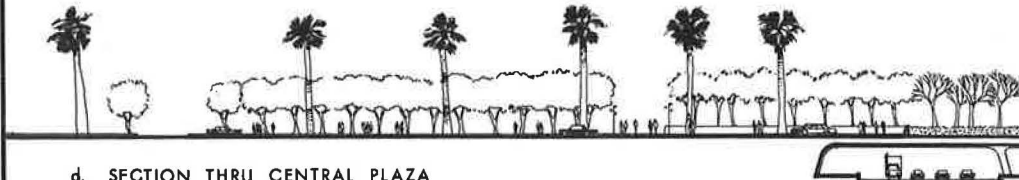
b. SECTION IN RESIDENTIAL AREA

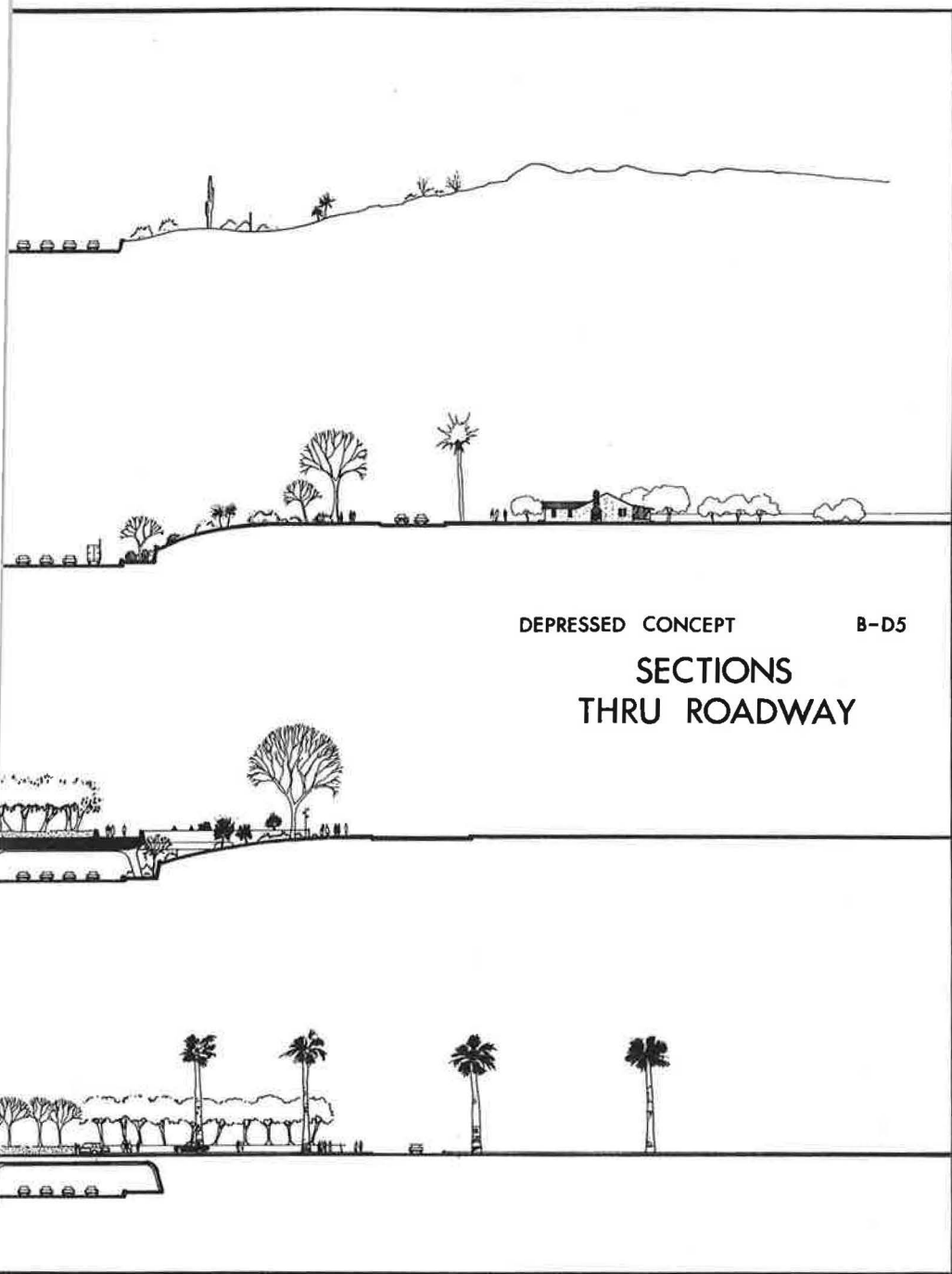


c. SECTION JUST WEST OF CENTRAL PLAZA



d. SECTION THRU CENTRAL PLAZA





DEPRESSED CONCEPT

B-D5

SECTIONS
THRU ROADWAY

the redevelopment of the land, in line with appropriate land use planning, also provides an opportunity to coordinate the land use with the revitalized street and highway systems. This should result in the optimum use of the highway facility and eliminate undesirable traffic impacts such as the routing of commercial and industrial traffic through residential areas while traveling to and from the freeway. In a nutshell, joint development affords a "second chance" to implement modern techniques to integrate land use and highway planning for the purpose of achieving the objective of total functional mobility.

Critical to the proper operation of a freeway is the capacity of the arterial streets that act as feeders to the freeway. The capacity of signalized intersections at the ramp terminals on these feeder arterial streets is critical. In considering joint use, locations adjacent to these ramp terminals may be expected to be highly valued because of their ready accessibility both to the arterial street and to the freeway. However, to locate major traffic generators at these critical points could present some monumental traffic problems. It would be much preferred to locate joint development projects that may become major traffic generators a block or so away from the ramp terminals with access provided along frontage roads adjacent to the freeway corridor. It should be remembered that the freeway must serve a wide corridor of land and not just that land immediately adjacent to the freeway. For this reason, the traffic capacity of these arterial feeders to the freeway must not be impaired.

Joint development and joint use should assure the safety and public health of not only its tenants but also the highway user. Serious consideration must be given to the effects of air pollution, noise, dust, and distractions on the freeway and on any development over or along it.

Adequate provisions for light, space, and air should be made. Pedestrians should be properly segregated from the vehicular traffic and the motorists should be protected from vandalism on the part of delinquents over and adjacent to the highway. If space is not sufficient to provide a buffer, this protection can be provided by proper screening. Proper safeguards should be provided so that damage and injury from destructive fires and explosions from either the joint development or the highway can be minimized. The lighting of tunnel sections passing under developments over the freeway is a particularly difficult problem. Most critical is the portal area where the motorists pass out of sunlight into the artificially lighted area. Research is needed to aid in the development of designs permitting progressively less natural illumination within the subterranean area. The lighting system for the highway should be compatible with any development over or alongside the highway to preserve uniformity and for aesthetic reasons. Governmental control must be retained over lighting to prevent the installation of distracting lights that would affect the safety of the motorist.

The multiple use of rights-of-way must take into consideration the signing necessary along the freeway. It may be necessary to increase the headroom in tunnel sections to provide space for overhead illuminated signs and to provide catwalks from which they can be cleaned and maintained.

If air rights are to be developed in a linear manner over any substantial length of the freeway, ventilation requirements must be considered. Depending on the joint use, it may be necessary to collect, clean, and exhaust the fumes and impurities at a point well above the top of the buildings over the freeway. With other functional uses, it may be acceptable to merely force the fumes out of the tunnel without treatment. We must not only be concerned with the vibration, noise and air pollution caused by the highway as they may affect the adjacent area or joint use, but we must be equally concerned with environmental problems developed by the joint use facility that would have an adverse effect on the operation of the freeway. These could include things that would distract the motorist's attention, the emission of steam, smoke or other pollutants or the dropping of water or snow on the roadway surface.

Vibration and noise caused by vehicles using the freeway should be considered in choosing the type of joint use function so that their combined effects will not adversely affect the usage of the development. Vibration and noise are particularly incompatible where residential, hospital, or transient motel-hotel usage is contemplated, unless the effect of vibrations can be dampened and the noise controlled. Linear park development can be screened by plantings to reduce the effect of noise. It must be borne in mind that certain types of use can emit noises that could be particularly distracting to motorists. Where joint uses are found incompatible because of the noise problem, we may have to explore the possibility of installing acoustical materials.

Because vehicles are propelled with combustible fuels, fires resulting from traffic accidents are a frequent occurrence. This is further compounded by the fact that many flammable and explosive materials are transported on our freeways. It is therefore imperative that any development over the freeway be designed to withstand intense heat with consideration given to the installation of sprinkler systems that would be automatically turned on in the event of fire.

A similar situation in reverse would develop should a fire occur in the structure above the freeway. The collapse of a structure due to fire, explosion, or sabotage would result in a complete closing of the freeway until such time as the debris could be cleared away.

Proposed development and multiple use of rights-of-way impose a particular responsibility on the highway agency. In the past, the primary responsibility has been to provide construction standards that would be compatible with other public and private agencies. For example, the construction of highways over railroads would be designed

to accommodate the use of the railroad right-of-way. Construction of a highway over a navigable stream is also designed to accommodate the use of that stream. The use of air rights, however, now presents the additional problems of establishing standards that will protect the safety and usage of the highway right-of-way. It is therefore necessary for the highway engineer to establish some minimum criteria for clearances, lighting, ventilation, and other necessary elements as a guide to the architectural discipline.

Construction Phase

Since urban freeways are usually constructed in areas already plagued with traffic congestion, every effort is made to provide for the normal movement of traffic during the construction period. Careful planning must be done to phase the work so as to cause the least disruption to traffic circulation. The construction activity along any given section of freeway will probably last about 24 months. This places a financial strain on adjacent businesses and an annoyance to adjacent residents.

If fringe landscaping and land forms were created during the first phase of construction, those businesses and residences adjacent to the freeway could be shielded from the many highway activities and be afforded a more pleasant environment during the construction phase.

Some disruption due to construction is necessary, but every effort should be made to keep it to a minimum. There is a temptation to build urban freeways in an assembly-line fashion, that is to say we may place all the bridges under contract in one year, then follow the next year with grading, and then with paving. This gets the overall job done in minimum time but it keeps the overall linear area torn up throughout the entire construction period. We should study ways to husband our construction forces so that when we move into a neighborhood to construct a facility, all work on all phases could proceed without delay or interruption until the project is completely finished. In too many instances we move in and out of a particular area several times during the construction of the project.

Construction problems could be greatly reduced if all components of a joint use project were constructed prior to the time that the freeway is opened to traffic.

If structures are to be constructed over the freeway at a later date, we most certainly must presume that the freeway will be left open to traffic and that construction procedures will be adopted that will not hinder the flow of traffic or endanger the highway users.

Operations

The occupancy of the area below the roadway structure could have an adverse effect on certain maintenance operations such as full-depth deck removal and patching. Pier construction should be such as to

provide for emergency maintenance in case of failure or damage to bearings or rockers. There will have to be space available for cribbing up the structure from the ground or pier widths will have to have adequate width to permit jacking or cribbing from the top of the pier.

The question of liability for improper maintenance should be resolved at an early stage and recognition of added maintenance or operations costs due to joint development over, under, and adjacent to the road should be studied in the formative stage so that every effort is made to reduce such costs and arrive at a proper division of such costs.

Ideally, all maintenance should be performed without adversely affecting either the highway operation or the joint use function. Certainly every effort should be made to minimize the effect. Choice of materials and type of construction can minimize the need for maintenance and its distracting effect.

Where developments are proposed under a freeway or structure, new and better ways must be found to provide drainage for the roadway surface. Past experience with cast iron plumbing systems has left much to be desired. These facilities become clogged with debris and freeze in the winter. Most bridge designers have resorted to the age-old use of scuppers that permit the water to fall directly onto the land below. If the space below the freeway is to be utilized for development, a solution to this problem must be found. In freeway snow-removal operations, it is not uncommon for our large plows to throw snow over the handrails of our structures. This procedure has not presented a problem where the land below the freeway is undeveloped. With development under the freeway, snow removal could present a problem unless adequate storage space is provided on the structure where the snow can be stored and permitted to melt; otherwise it will be necessary to perform the costly and time-consuming operation of loading and hauling the snow away.

In considering maintenance problems connected with structures developed on air rights over the freeway or on land immediately adjacent to the freeway, we can expect icing problems in the winter where short stretches are shaded from the sun and scattered icy spots develop. The sun is the maintenance engineers' strongest and best ally in his fight to remove snow and ice from the roadway surface.

To prevent objects from being dropped on the highway below, it would seem appropriate that buildings built in air rights should be provided with windows that cannot be opened, and any walkways above or adjacent to the roadway should be screened to prevent vandals from throwing objects onto the roadway.

Of major importance is the ability to bring emergency service in the form of police, fire, and ambulance to the site of an accident, in a joint use development. Due to the critical nature of any accident, fire, or explosion over, under, or immediately adjacent to the highway, a special study of the need for emergency service and for an early warn-

ing system may be in order. The occupancy of space over or adjacent to the highway by apartments or a similar activity could pose a special problem if adequate provisions are not made in the design stage. Adequate right-of-way and access must be provided to allow unimpeded progress for emergency vehicles both to the transportation rights-of-way as well as to adjacent facilities.

Summary

Most of our attention has been directed to the problem of fitting the freeway into the urban setting especially where we must pass through built-up sections of our cities. It is entirely proper that we should do this and I hope that we can produce some significant results. However, hundreds of miles of freeways must soon be built to serve the rapidly developing suburban areas surrounding the cities. It is here that we can make the best use of the joint development concept without having to alter or disrupt existing developments. We must start at once to develop plans for these facilities so that the rights-of-way can be protected.

We have one such facility planned in the Chicago area where the freeway is to be located along a stream in an area unsuitable for residential development. Retention basins will be formed in conjunction with the freeway construction to effect flood control and aid in raising the ground water level that provides the water supply for the adjacent communities. There is no limit to the joint uses that can be conceived for freeway development in these yet undeveloped areas.

Panel Discussion

MR. RUBIN: The Bureau of Public Roads policy has been fairly firm with respect to providing direct connections from freeways to shopping centers and other types of traffic generators. Do you think that in view of the intense concern expressed about joint development and multiple use that perhaps this position might be rethought, and what kind of problems would you envision there?

MR. NUSBAUM: I envision that the Bureau will eventually change their position with regard to very heavy traffic generators. Initially it will be directed toward the public type of traffic generator such as the airport and the recreation areas. I doubt if we see the time that they would relax this to the point to permit us to construct ramps into privately developed facilities unless they were of tremendous impact.

Community Values and Urban Transportation Systems

THOMAS W. FLETCHER
Deputy Mayor Commissioner
Washington, D. C.

AROUND the District of Columbia the subject of freeways evokes highly charged emotions, but since limited-access highways are so intertwined in the fabric of the modern city and play such a substantial part in our nationwide transportation picture, I do not think any speaker talking on urban transportation can avoid the subject.

Now, why does the Nation's Capital need greater transportation capability? Why do we need to change the status quo? The answer I think lies in a series of circumstances that are now almost clichés since they have been recited so often:

1. The Washington area has been one of the fastest growing metropolitan areas in the United States for a decade and a half. The population has practically doubled since 1950.

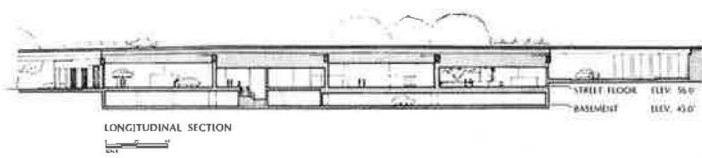
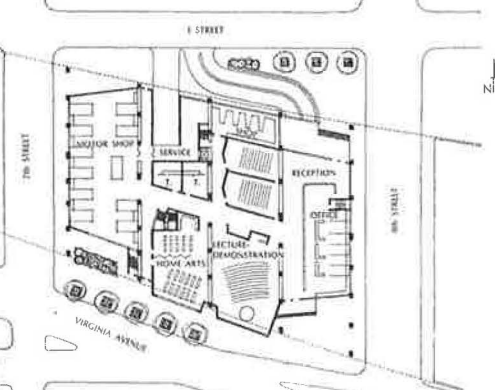
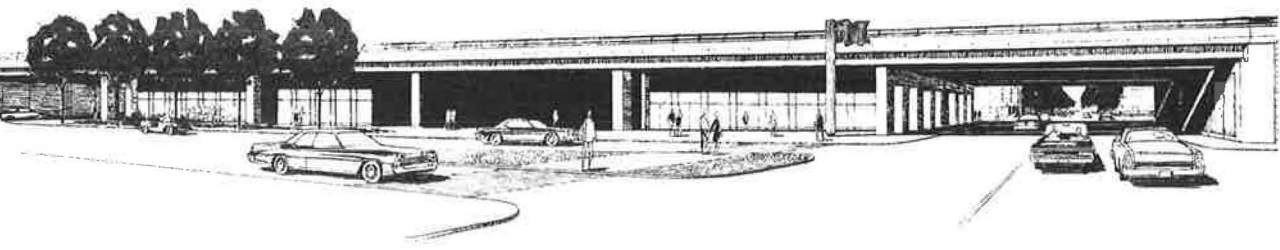
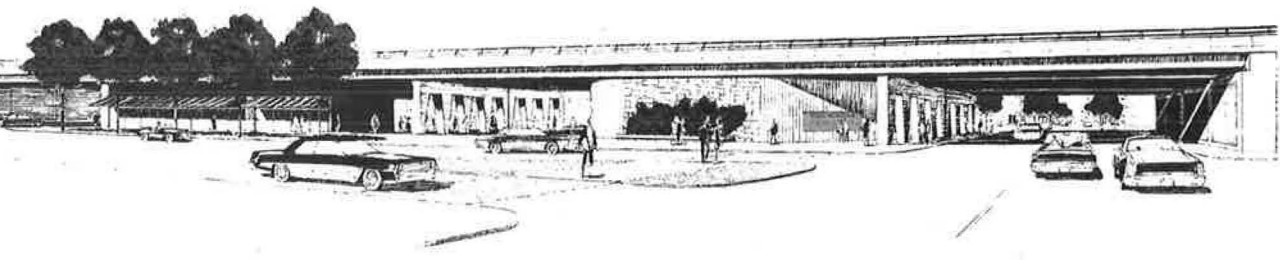
2. To accommodate the population increase and accompanying business increase, building has been going on at a terrific rate — up to a billion dollars per year.

3. As a result, traffic has been increasing 3 to 7 percent per year.

4. Heavy-type traffic movements are beginning to infiltrate residential streets to an unsatisfactory degree.

These are the physical manifestations of our need. Coupled with them, of course, are the specific needs of the community, particularly those of the underprivileged segments. For one thing, our residents do not need any more through-type traffic on neighborhood streets; secondly, it is easy to observe the need for better quality and probably cheaper — even subsidized — mass transit.

You may recall the incident reported in the newspapers last summer wherein a domestic worker required two and one-half hours to go



The areas under elevated freeway offer opportunities for a variety of multiple uses. Three schemes for under structure use of the proposed Southeast Freeway in Washington, D. C., are presented. The illustrations show possible recreation, commercial, or educational development of a site. (Source: Richardson, Gordon & Associates and Harbeson, Hough, Livingston & Larson, Inner Loop Freeway System, Washington, D. C., Southeast Freeway Understructure Study 7th to 8th Streets, Philadelphia, Pa., 1968.)

via bus from her home in Anacostia to the western edge of the District where she worked.

Ridiculous? Certainly! George Avery, Washington Metropolitan Area Transit Commission Chairman, made some quick changes and, presto, it was changed to forty-five minutes to an hour.

This is merely an indicator. There are others. Foremost is the community requirement that any of our solutions not be overly disruptive to the fabric of the community and most important that they serve the needs of our residents. Here are some other requirements:

- We want to do everything within our power to protect homogeneous neighborhoods, to keep them from being fragmented, truncated, or destroyed.

- We want no "Chinese walls" separating residents from their schools, churches, recreational, and other essential facilities.

- We want to see freeways carefully planned and integrated with the areas through which they run so that there is no through-traffic on local streets.

- We want the Freeway System to pursue its course as unobtrusively as possible and yet be aesthetically pleasing.

- We want the legislative tools and authority that will promote the economic health and development of our city, particularly its downtown area, since these will also promote the welfare of our citizenry.

- We want to develop additional sources of revenue for the District. We especially want to see the tax dollars replaced that are lost through the demolition of residential and commercial structures.

- More important, we want to protect the employment opportunities of our citizens.

- We want to encourage the development of relocation housing for low and moderate income families and individuals, especially the elderly and the handicapped. Whenever possible, they should be relocated in or adjacent to their old neighborhoods.

- Most important, there should be full community participation in the determination of the need for a balanced transportation system and the decision as to its location.

As you probably know, here in the District we are trying mightily to build a balanced transportation system, in its true sense. I know "balanced" lately has become a fighting word to some, but when we examine alternatives and when we look at the experience and supposed good practice in other cities — Montreal, Toronto, Cleveland, Chicago — we still come up with this objective:

An improved network of major streets and arterials plus a minimal heavy duty freeway system connecting to Interstate routes and distributing traffic to centers of heavy use; an adequate rail rapid transit system to handle movement in heavy density corridors particularly rush hours; and a very much expanded bus system on both streets and freeways.

Now, how to achieve these objectives? I must confess, we do not know completely. Frankly, the solution is just evolving; we must guide its evolution into a correct form.

The Washington Metropolitan Area Transit Authority has just received a mandate on its bond issue in five political subdivisions and we are pressing for release of funds from Congress on its proposed 97-mile rail rapid-transit system.

Our own Department of Highways and Traffic is coming along satisfactorily on street improvements — not so good on Freeways. Of a minimal 29-mile system, 10 are built and carrying up to 80,000 vehicles per day on Southwest Freeway, 140,000 vehicles per day on 14th Street Bridges; 5 miles are under construction and 14 are yet to be nailed down. On these 14 miles, emotions run high.

As you know, WMATC, by law, controls the bus companies; they carried 172 million passengers in 1967 for a year's increase of 1.3 percent, thereby bucking the national trend. They have a future role of greater importance. They recently solved a most difficult bus robbery situation, by instituting scrip for fare change. Right now they are being threatened with a bus boycott, and we have fare trouble.

Lest you think however, our lot is peculiar to this time and generation, let me quote Sir Edmund Burke, a distinguished English statesman of the eighteenth century, on performing public works: "Those who carry on great public works must be proof against the most fatiguing delays, the most mortifying disappointments, the most shocking insults and, what is worst of all, the most presumptuous judgments of the ignorant upon their designs."

Accordingly, let us continue to press for success.

Legal Considerations

ROBERT R. WRIGHT, III
Professor of Law
University of Arkansas

WHAT we are involved in when we consider the multiple use of highway rights-of-way from a legal standpoint is, in fact, new conditions and new circumstances. And while the law will surely change in every jurisdiction to accommodate and permit such uses, it will move slower in some than in others, it will change by case interpretation in some jurisdictions but only by statutory enactments in other jurisdictions, and in some states constitutional amendments may be necessary.

So, you first have to carefully research the law of your own individual state to find out what you can do and to find out how the law deals with certain situations in your particular jurisdiction. In this regard, before we move into a consideration of enabling legislation of a type that would permit the use of airspace over and under rights-of-way, I want to approach the subject from the standpoint of the common law, keeping in mind that most states do not have any enabling legislation and that most state courts, if confronted with this subject, would consider it in the light of common law concepts or rather standard existing statutes that do not pertain specifically to the problem at hand.

The Common Law

The first thing you have to determine in any state is whether the title in the particular highway or right-of-way in question rests in the state or municipality in fee simple or whether the governing authority only has an easement.

If they have only an easement, it is important to discover what kind of an easement they possess. In a minority of American jurisdictions, an easement is all that a state highway commission has the power to acquire. Highway Research Board Special Report 32 (1958) listed around 10 states in which an easement was all that could be acquired by the state highway authority, and nine other states were listed in which the statutes did not contain a specific provision on the subject. The majority of states can acquire rights-of-way both in fee and through easements, although acquisition in fee seems to be the most common method of acquiring highway rights-of-way today.

I would suggest to you, however, that as the years go by it may become more common in densely populated urban areas to acquire limited dimension easements in order to save on acquisition costs. Although the Highway Research Board report stated that it was advisable to permit the acquisition of a fee title in order to insure the highest possible degree of control over the right-of-way, and although I think this policy would normally be correct, I would suggest that there may be a plus factor in acquiring only an easement in situations in which the governing authority is acting in concert with other governmental agencies for the joint development and multiple use of a given right-of-way.

In such a situation, you might have the joint activity of the highway commission or similar authority and the local urban renewal agency or slum clearance or housing agency; and it would be contemplated in advance of the acquisition of any land that the highway or freeway involved would simply be a limited dimension type of structure with apartment houses and other facilities constructed over it, or over part of it, or possibly below it. In this joint effort, there would be a sharing of the expenses of land costs, while at the same time permanent displacement of large numbers of individuals could be partially avoided, and the diminution of property values in areas surrounding the highway or freeway in question for residential purposes could be minimized. Moreover, there would be a maximal use of the land space involved.

Getting back, however, to the original question of the acquisition of an easement as opposed to a fee simple absolute, if a state or other condemning authority acquires a fee simple absolute, then from the standpoint of the law of airspace, it has acquired the use of the airspace over the freeway upward to a reasonably usable height. In other words, Lord Coke's old maxim that the individual who owned the land surface owned the airspace above it indefinitely up to the heavens, although it has theoretically been limited due to the rise of aviation, has in actuality not been limited in terms of usable airspace. The upward reaches of airspace never was worth anything to surface owners because no one could use it. The only airspace which was ever worth anything was the airspace which lay relatively close to the surface. The land-

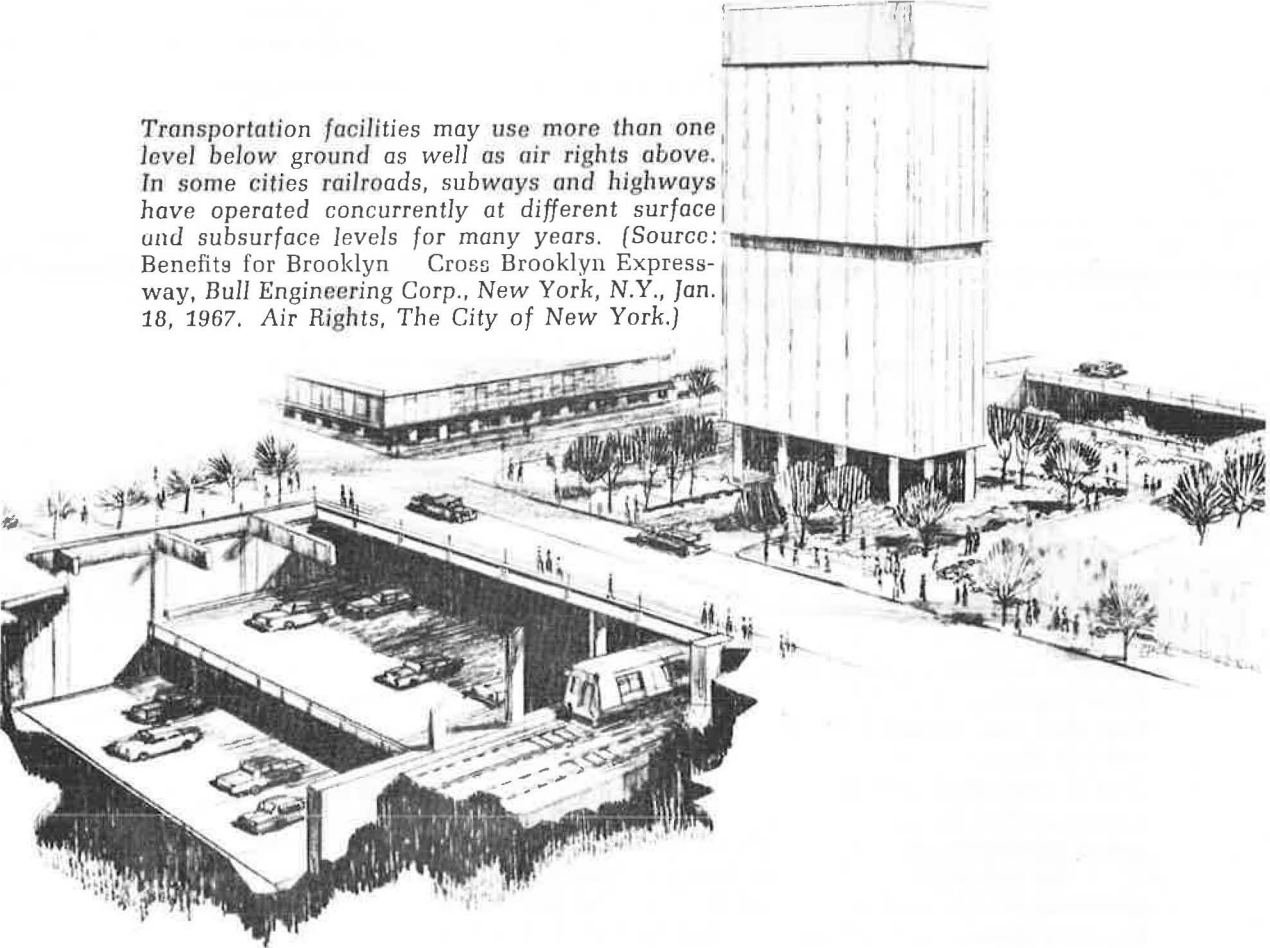
owner still owns that, and he owns it as high up in the sky as he can now or in the future make use of it. Consequently, when the highway department acquires a fee simple absolute for use as a highway right-of-way, it acquires the space over it as well. Whereas if it acquires a limited dimension easement, that is not the case.

If the highway department only acquires a so-called "tunnel easement," as it is known, the adjacent landowners will still be able to utilize, lease, or sell the overhead airspace, subject of course to limitations of Federal or state law, because these adjoining landowners still own the overhead space. This also means that in those states in which the right-of-way represents only an easement of any height, the airspace cannot be dealt with on a commercial basis because the adjacent landowners own the fee to the center of the right-of-way. This is unfortunate, since airspace in a highly concentrated urban area may be worth as much or more than the land surface. It is a very valuable commodity from the standpoint of the highway authority, and if the highway department is able to sell the airspace over a right-of-way that was acquired 15 or 20 years ago in a large city, it may find itself in the enviable position of receiving more money for the airspace than it ever paid for the right-of-way. The other side of the coin, of course, is that by joining with other agencies in the acquisition of land and space today, the cost of right-of-way may be substantially reduced.

I do not wish to dwell on this problem of the acquisition of an easement as opposed to a fee simple absolute, but I would add that if a highway department or street authority has acquired an easement of unlimited vertical dimension, you have a much more difficult situation presented from the standpoint of common law theory as far as the adjoining landowners are concerned. It can be asserted by these adjoining landowners that even in that situation they may make use of the airspace at a certain height, so long as it does not interfere with the use of the street or highway. After all, the nature of an easement is such that all you really acquire is the right to do some act upon, or make some use of, a specific piece of land. In the case of a highway, street, or expressway, it simply involves a passage across the land, and as far as the adjoining landowners are concerned they have the right to make use of the land over which the easement runs to the extent that it does not interfere with the easement.

This rather common rule was stated in *Elmhurst National Bank v. City of Chicago*, 157 N.E.2d 781, 782 (1959) in this way: "It is well established law that where an owner of property abutting the street is the owner of the fee to the street and the municipality has only an easement over the property for use as a street the owner has the right to make any reasonable use of the land, including the subsurface, which is not inconsistent with the easement and does not interfere with the paramount rights of the public."

Transportation facilities may use more than one level below ground as well as air rights above. In some cities railroads, subways and highways have operated concurrently at different surface and subsurface levels for many years. (Source: Benefits for Brooklyn Cross Brooklyn Expressway, Bull Engineering Corp., New York, N.Y., Jan. 18, 1967. Air Rights, The City of New York.)



A similar Texas case is *City of Fort Worth v. Citizens Hotel Co.*, 380 S.W.2d 60 (1964), and there are many such cases that say this. Consequently, when a highway department acquires an easement, it can control the right-of-way to the extent of preventing overhead encroachments or obstructions that might tend to limit or interfere with the use of the right-of-way for highway or street purposes, but other than that, under the common law, the owners of the fee (these being the adjoining landowners) can theoretically utilize, sell, or lease the space above it or under it in the absence of any prohibition under state law. Now, this latter qualification is important because some states have such prohibitions in the case of streets and highways.

I think it is obvious, even in the absence of local legal prohibitions, that unless a right-of-way is specifically limited to a certain height, as in the case of a "tunnel easement," most anyone contemplating the use of the airspace over the right-of-way is going to be reluctant to construct anything of any substance overhead without first seeking and

obtaining the permission of the governing authority having such responsibility, assuming such an instrument is permitted under state law. Otherwise, the question of encroachment in the airspace might be presented.

You run into another situation in connection with this, which I have briefly mentioned and which is that there is a substantial body of authority in the United States which holds that *in the absence of statutory authorization*, a municipality *does not have the power* to allow private encroachments to be erected over public streets. In *Sloan v. City of Greenville*, 111 S.E.2d 573, a 1959 South Carolina decision, the state supreme court denied the power of the city to permit private individuals to erect an overhang into two public streets. These were streets that had been dedicated to the public, and the court stated that an obstruction that was placed anywhere within the limits of the streets, even though not on the part of the street ordinarily used for travel, or that was placed in the space above a street, might constitute a nuisance. The court said that the public right goes to the full width of the street and extends indefinitely upward and downward at least as far as to prohibit any encroachment on such limits by anyone in any way, since the enjoyment of the public right might be hindered or obstructed or made inconvenient or dangerous.

The court quoted a previous South Carolina decision to sustain the proposition that if a municipality does not own the fee title to its streets, it is without authority to permit other uses, and such other uses amount to a nuisance and a purpresture. On this you might also see *People v. Amdur*, 267 P.2d 445 (Calif., 1954); *McGowan v. City of Burns*, 137 P.2d 994 (Ore., 1943).

To the contrary, even in the easement situation, some cases have held that a city possesses the inherent power to allow overhead encroachments, although such power might be considered to stem from general statutes pertaining to municipalities. You can find citations to cases of this type in 76 A.L.R.2d 896, 901-902 (1961).

I think you may conclude, in the usual situation, that the importance of ownership by the municipality or other governing authority of a fee title to the streets and highways is that it would seem that its power to control and regulate them would be unhampered and unlimited in most jurisdictions, so long as its power were exercised in such a way as to protect the free and unimpaired use of the streets by the public. Even in that situation, there are a few states that appear to make no differentiation between the municipality's ownership of a fee title and the possession of an easement, and seem to indicate that an enabling act would have to be passed before the municipality could approve any private use, even if it held the fee simple title. This would seem to be the minority view, and it would certainly not be the preferred view.

In summary, I would say that the majority of states, in the absence of specific constitutional or statutory sanctions to the contrary, would

permit a city or highway department that owned the fee simple title to its streets and highways to permit overhead encroachment into the airspace so long as there was no interference with the use of the highways or streets. However, as I have stated, you have to look at the law of the individual jurisdiction in order to make this determination and in order to arrive at an evaluation. In any situation in which you are dealing with this problem, once you have determined whether the city or state holds the fee simple title as opposed to an easement, you have only begun to arrive at an answer, since you must then consider the constitutional, statutory, and common-law restrictions, if any, that obtain in that particular jurisdiction.

Specific Enabling Legislation

Some forward-looking jurisdictions in the United States have passed specific statutes that pertain to this problem, and I might say that this is by far the better way to deal with the situation in that it eliminates the uncertainty involved. Even in such situations, however, you must make an initial analysis and determination with respect to whether the statute offends any state constitutional provision that may be in force in that particular jurisdiction and that may limit the power of the state or municipality to deal with rights-of-way. If an enactment pertains to rights-of-way at all, keep in mind that it pertains to the airspace because the airspace is no more than an upward extension of the property rights in the land surface itself.

Returning to some of these statutes, I should first comment as a matter of historical significance that the problem of use of airspace over rights-of-way first arose in connection with railroads, rather than highways, and quite a few analogies can be drawn in that connection. As a matter of fact, in 1927 the Illinois legislature passed a landmark statute permitting railroads to divide their real estate (if owned in fee) into different lots and levels, and to sell or lease any part of the real estate, whether at, above, or below the land surface, so long as there was no reasonable impairment of the property for railroad purposes.

This statute, of course, was only limited to railroads, and you are not interested in railroads. However, this is the type of statute we are talking about, and I think the analogy is quite clear. Illinois later adopted an equally significant statute empowering every municipality "to lease the space above and around buildings" located on municipally owned land for a period of not more than 99 years and "to lease in the same manner and for a similar term, space over any street, alley or other public place . . . more than 12 feet above the level . . . to the person who owns the fee or leasehold estate . . . in the property on both sides of said street, alley or public place." This is found in the Illinois Annotated Statutes, Chapter 24, Section 11-75-1 and following. Certain terms were provided in connection with the lease, and other

provisions pertaining to the lease were provided in other sections of this same act.

A similar statute is in effect in Wisconsin, which is Wisconsin Statutes Annotated, Section 66.048(3). In addition to these statutes, Colorado, New Jersey, and Pennsylvania have adopted the following provision (or essentially this provision, since there is some change in the wording in Pennsylvania): "Estates, rights and interests in areas above the surface of the ground, whether or not contiguous thereto, may be validly created in persons or corporations other than the owner or owners of the land below such areas and shall be deemed to be estates, rights and interests in land." This statute, of course, leaves no doubt in states adopting it that the surface owner owns both the airspace above him to the extent that it is capable of being used and occupied, as well as the land surface, and that he has the right to subdivide, sell, and convey the airspace the same as he could the land surface.

On this, you might see New Jersey Revised Statutes, Section 46:3-19; Colorado Revised Statutes Annotated, Section 118-12-1; and Pennsylvania Annotated Statutes, Title 68, Section 801. Another section of this same act provides that these airspace estates, rights, and interests shall pass by descent in the same manner as land and "may be held, enjoyed, possessed, alienated, conveyed, exchanged, transferred, assigned, demised, released, charged, mortgaged, or otherwise encumbered, devised and bequeathed in the same manner, upon the same conditions and for the same uses and purposes" as land and shall be dealt with and treated as land. This act further provides that all the rights, privileges, powers, remedies, burdens, duties, liabilities and so forth pertaining to estates and interests in land apply to such super-surface estates. The New Jersey statute, incidentally, was interpreted (although not adjudicated) to permit the highway commissioner to sell airspace over state highways.

In addition to these enactments, Ohio adopted a provision, which became effective in November 1965, concerning the conveyance, transfer or permit for the use of land not needed for highway purposes. This is Ohio Revised Code Annotated, Section 5501.162. Among other things, this statute provides that the director of highways can convey the fee simple estate or any lesser estate or interest in, or permit the use of, any property determined as not needed for highway purposes. The statute provides that this conveyance, transfer or permit to use may include areas or space on, above, or below the surface of the earth and include the grant of easements or other interests in any such property for use for buildings or structures or for other uses and purposes and for the support of buildings or structures constructed or to be constructed on or in the lands or areas or space. The statute makes other extensive provisions allowing quite broad powers in dealing with airspace over highways. Its implication, moreover, would seem to

extend full power to the director of highways for Ohio to divide the airspace into separate parcels.

This Ohio statute provides the basis, then, for the acquisition, ownership and use of separate parcels of airspace over the highways of Ohio, and thereby recognizes in statutory form that airspace is capable of separate ownership and may be carved up in approximately the same manner as other forms of real estate. Without trying to improve upon the wording of the statute, I would have to say that its intent and its concept are excellent. Similarly, I would say that the provisions of the Colorado, New Jersey, and Pennsylvania statutes are also quite good, although I think you could do all those things that they provide at the common law.

Let me say at this point that I much prefer statutes of a very broad and general nature encompassing all types of options that might be available to someone making use of airspace over highway, railroad, street, and alley rights-of-way. I prefer the Ohio approach to the more specific and limited statutes in Illinois and Wisconsin. The type of statute I think is needed is a statute combining some of the wording of the Ohio statute on the one hand and the Colorado, New Jersey, and Pennsylvania enactments (which are approximately the same statute) on the other hand. The value of these latter statutes is that they provide for private, non-right-of-way usage. I would reiterate that the enactments in Colorado, Pennsylvania, and New Jersey are only expressive of the common law, but the value in them is that they give certainty to the law.

More and more, in America, we have become used to dealing in somewhat a continental fashion with codes and statutes and the like, rather than with the common law. It is my opinion that it is not absolutely necessary to have these statutes, but certainly I think a state is better off by having them. The beauty of the Ohio statute is that it specifically deals with the distinct problem we are concerned with — the problem mentioned previously of the power of governing agencies to deal with airspace over rights-of-way. I think the Ohio statute should apply to municipalities, however, as well as to state highway authorities. It should be very broad, allowing the greatest flexibility and permitting the same estates, interests, and rights to be created in airspace as are created in the land surface. Airspace should be viewed as land, of course, because that is all it is from a strictly legal concept.

I am not going to go into some of the enactments that have been proposed in the District of Columbia with regard to the use of airspace within the District. I have noticed, however, that whenever Congress gets ready to pass a statute permitting a building to be erected in airspace in the District of Columbia, you have to get the permission of everyone in order to do anything. Despite the shortcomings of the legislative process as it operates in the various states, I must say that the statutes the states come up with are often simpler and more clean-

cut, at least in the field of airspace, than those emanating from the United States Congress.

Legislative Standards for Joint Public or Public-Private Ventures

First of all, we ought to stop thinking of the joint concept purely in terms of a highway matter or a housing matter. What is needed is a statute which takes into account, first of all, the fact that airspace is property and should be dealt with as such; second, the proposition that the highway and street authorities on a local, state and national basis are still in the transportation business and that they still have as their chief aim the necessity to move people and goods as rapidly as possible and as safely as possible over wide areas; third, that there is a great deal to be gained from the standpoint of public housing and from the standpoint of land use within a highly concentrated urban area by making multiple use of highway rights-of-way; and fourth, that in a private enterprise system such as we have in the United States, there is no reason why private developers should not be permitted to engage in this sort of thing as well as public developers.

As a matter of fact, in connection with the last point, this is the best way to get the thing operating on a substantial and active basis, in my opinion. Therefore, the standards you engage in have to be at least sufficient, first of all, to protect the users of the highway and to permit the rapid transit of people and goods without any interference from the structures that are constructed over and above the highways and freeways. You still have to have limited-access facilities in urban areas. You have to provide access from these structures to side roads that eventually feed on at various points to the freeways without clogging up the traffic patterns. In other words, you have engineering problems in that respect, and most of those individual engineering problems have to be resolved in favor of the highway or freeway and the transportation problems involved, rather than in terms of the multiple-use aspect.

At the same time, however, once these considerations have been met, there is no reason why more flexibility cannot be provided than has been provided in the past under the memorandums and regulations of the Bureau of Public Roads, as far as public and private developments are concerned. We have learned from railroad developments in the United States that at the very minimum you have to permit long-term leases of airspace in order to make it salable and in order to develop it. Moreover, you should permit the sale of airspace in fee; in short, you should permit people to deal in airspace in essentially the same manner that they deal in land. Once you have protected the highway and the rights of the traveling public, once this overriding consideration has been met, then the object becomes to make airspace reasonably usable to the greatest degree possible.

In my opinion, previous memorandums of the Bureau of Public Roads have not done this. I am referring specifically to IM 21-3-62.

This memorandum hampered the use of airspace and deterred the development of the multiple use concept because it was overly cautious and lacked flexibility. Too much red tape, a lack of imagination, and a disregard of the realisms with respect to the financing of operations of this type by private and public developers have deterred airspace development. We need to consider fully the public interest considerations in terms of public and urban redevelopment and the appropriate use of land in an urban setting, in the type of situation that exists today in large cities such as New York, Chicago, Philadelphia, and Washington.

Therefore, the legislation that is drawn in this connection, once it has provided enough protections for the traveling public, should provide the broadest possible flexibility in permitting a full public and private development of airspace over, under, and around rights-of-way. In this manner, I think we can promote a much fuller development of our urban areas, providing for a more sensible use of the land that is available to us. I think we can help eliminate slums in this manner; I think we can put people closer to transportation facilities; I think we can begin to convenience rather than to inconvenience the urban poor in terms of housing redevelopment and urban renewal in large American cities. I think we can find in private development and private investment a source of support that can be tapped much more fully than it has in times past. And further, I think we need to develop more Federal and state programs that are aimed in this direction and that attempt to solve the problems of urban blight by taking into consideration the full range of urban problems and available solutions.

Airspace certainly is not the sole answer to the problem of crowding in urban areas. It is simply another asset that should be used in resolving such problems as urban renewal, slum clearance, public housing and relocation, zoning, and the myriad related problems that confront us in our congested cities.

Panel Discussion

MR. PIGNATARO: I wonder whether the wide flexibility you recommend in legislation would possibly deter the development of air rights and multiple use because it may lead to controversy of intention or interpretation or lack of interpretation and therefore to litigation in the courts.

MR. WRIGHT: Lawyers are going to litigate no matter what kind of laws you pass, so you might as well pass the kind of laws you want while you are passing them.

It seems to me that on the national level you have a situation in which you have laws pertaining to housing and urban redevelopment, and then you have laws pertaining to highways, and if you want to fulfill this joint concept it seems to me you might begin to put them together. And I think the same thing would be true on the state level. You do run into a problem on the state level of constitutional prohibitions. On the other hand, where the state constitution provides that you can condemn land for public purposes rather than for public use, you have a much broader flexible base to operate from in that state.

MR. KRAUSE: You said the common law is flexible enough to permit individuals to make any lawful use of airspace that they wish. I certainly agree with that concept. However, difficulty arises when it is applied to the public agency or a political subdivision that is inhibited by statutory and sometimes constitutional limitations on what it can do, deriving all its powers from the legislature. I think it might help all of us if we also follow a dictum that most of these things are possible but anything may be litigated.

I had one question to ask Professor Wright, and that is on the definition of right-of-way in the airspace. I know Professor Wright is familiar with Section III of Title 23 and our regulations, Section 1.23 of the Code of Federal Regulations. It seems to me that our statute is somewhat ambiguous in talking about nonhighway uses within the right-of-way. Professor Wright, has that ambiguity ever bothered you, and do you have any suggestions?

MR. WRIGHT: I have noticed that, and I think it is somewhat ambiguous. As a suggestion I would say that after you have made provision to protect the highway right-of-way that the first thing you ought to do is get rid of that provision, because if you are going to have a really meaningful joint development of the highway you are going to have to have some highway uses within the right-of-way unless you seriously limit what the right-of-way extends to at the present time. Otherwise you are going to have to change your concept of nonhighway uses within the right-of-way.

I think what you intend is that you do not want any outside use interfering with the transportation facility. But by this provision you eliminate the public and private development of airspace to a large extent, or at least you hamper it.

Current Governmental Policies

F. C. TURNER*
Director
Bureau of Public Roads

I AM sure you will agree that our opportunities for joint development and multiple use are substantial, despite some limitations, and that opportunities will be missed unless all of us and the agencies we represent are committed to the joint development concept. I was fully committed even before my presentation of the concept to many of you at AASHO almost two years ago. I can also vouch for the dedication of the Bureau of Public Roads to a concept which, during the process of satisfying the public's highway transportation needs, leads toward optimum use of highway rights-of-way, maximum compatibility of the highway with its environment and maximum achievement of a community's comprehensive development goals.

Our concern is now reflected in the 1968 Federal Aid Highway Act, which requires the state highway department to certify that it has given consideration to a highway location's economic, social, and environmental effects and their consistency with community goals and objectives, as expressed through the planning process required by Section 134 of our Act, Title 23, U.S. Code.

The Bureau of Public Roads considers the joint development concept a major component of adequate environmental consideration. Moreover, the concept is not entirely limited to urban areas; we are also interested in and encouraging rural joint development. Also, at the

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outset I must stress that joint development and multiple use are important parts of environmental study but do not take its place.

Obviously the 3-C planning process must be the vehicle by which the planned development of urban corridors is handled; it makes possible the intelligent and simultaneous planning of both private and public facilities. One difficulty, of course, is that we must start from where we are and this requires us to find a way to work with many facilities already built; we are already 90 percent finished with present urban highway plans.

What Is Being Done by the Bureau of Public Roads?

1. An Environmental Development Division has been established and is operational at this time. Represented on the staff of this division are specialists in Regional and City Planning, Landscape Architecture, Architecture, Highway Engineering, Sociology, Economics, and Real Estate Appraisal.

Operating on a team approach, these interdisciplinary professionals are charged with the responsibility of development and promotion of total environmental design, including joint development and multiple use. They form the connecting link with other agencies — Federal, state and local — for achieving an environmental highway program. Several states within their own departments and within the scope of their own needs are currently establishing one form or another of the multidisciplinary team approach. These people will devote their efforts to the broad social-economic-aesthetic and environmental aspects of highway design. Our team will study all major projects to insure a full and coordinated approach. We commend this initiative of individual state highway departments and recommend it to all.

2. Conferences are being sponsored by many field offices of the Bureau of Public Roads and the state highway departments. Attendees are from all levels of government and from groups interested in the governmental programs, including HUD, BPR, state highway departments, city planning departments, park administrators, representatives of mayors' offices, and many others. It is from these informative meetings that many of the more comprehensive multiple use-joint development proposals have been generated.

3. In the area of research and development, we have an Economics and Requirements Division specifically charged with supporting studies of social and economic aspects of highway improvements. One study the Division is currently preparing concerns the development and testing of social and economic indicators of changes in neighborhood character and cohesiveness resulting from highway improvements. Such studies may be financed entirely from our Bureau administrative funds and may be performed either by our staffs or under research consultant contracts. Many research studies on this subject are being thus financed and prosecuted.





Example of multiple use of highways below a revitalized park. Proposed renovation of the South Mall Complex in Albany, New York. Two arterial routes will intersect below Washington Park. (Source: Parsons, Brinkerhoff, Quade & Douglas, Mid-Crosstown Arterial, New York, 1968.)

4. The Bureau of Public Roads has prepared a comprehensive collection of examples of multiple use and joint development for distribution to each field office and state highway department. This will be updated frequently and distributed widely so that our national experiences, both successful and unsuccessful, can be shared.

5. You have heard from representatives of some of the existing Joint Concept Teams concerning their multidisciplinary approach to highway location and design, including the investigation of all possibilities for multiple use and joint development on specific projects. Federal-aid funds are being used to help finance the work of these teams. This approach has been initiated in Chicago, Baltimore, and Cambridge, Massachusetts. The Bureau of Public Roads has assigned a full-time representative to both the Baltimore and Cambridge groups, so that stumbling blocks can be avoided or recognized and removed as soon as possible in the conceptual stage. These activities have already been described but I would point out that they are being financed and administered under the normal and traditional state highway department-BPR partnership that over the years has created the world's finest highway system. This is another effort by the partnership to make that highway system even better.

6. Federal highway funds are currently being used to finance feasibility studies that determine the suitability of highway right-of-way for multiple use and suggest possible uses of this space.

7. Approvals have been given in the past and are being given now to numerous joint uses of Federal-aid rights-of-way, many of them imaginative and novel. These uses are occurring over, under, and adjacent to the roadways, and we are receptive to any and all kinds of uses for consideration as to their suitability.

8. Federal-aid funds are now being used to participate in the acquisition of whole parcels or portions of remainders extending to street lines or other logical barriers or boundaries where such acquisition will provide a highway facility more in conformity with the neighborhood through which it passes. These portions of the right-of-way are being used for green strips, open spaces, parks, play areas, parking, and other public or quasi-public purposes. Some of these might be used for industrial development also.

9. In addition to the planting and preservation of vegetation and acquisition of scenic strips, the Highway Beautification Act of 1965 provides for the expenditure of Federal funds for roadside development for construction and treatment of minor structures (walls, cribbing, barriers), all of which are considered essential to create scenic beauty along and adjacent to Federal-aid highways. We are also participating in noise-suppressive design features where these are practical and found necessary.

10. Federal-aid rights-of-way in some areas are being acquired in

limited vertical dimension to permit existing land uses to continue, or to facilitate new multiple use and joint development.

11. The whole-block-taking concept is being utilized. The use of this concept means that the highway department or some other public agency can retain those unneeded portions of blocks through which the highway passes at less cost than would have been realized without the highway.

For example, a minimum freeway right-of-way might require only about 40 percent of the area of a city block for its actual construction needs. Because of severance damages, however, the cost of acquiring this right-of-way might actually equal the cost of acquiring the entire block. If we assume, as in this example, that the minimum area for a freeway right-of-way would cost \$8 million, plus severance damage payments, even though only 40 percent of the block would be taken, then the entire block could very likely be acquired in fee for not more than \$10 million or about the same price as the taking area plus damages to the remainder. In a case such as this, some local agency (such as a public corporation or authority) could acquire and clear the full block, then sell back to the highway department the space needed for the freeway for something less than it would have had to pay if it acquired it alone. Thus for about \$2 million, let us say, the local public agency would have available for development all of the remaining land, which would have cost at least \$6 million and probably \$8 to \$10 million if purchased separately.

An added refinement of the joint development procedure is worthy of further exploration and application. Here a public or even a private corporation would be created — a so-called third-party holding corporation — to acquire and assemble the necessary land and property involved in a joint development project. It could then sell to the highway department what is needed for highway right-of-way, build or arrange for the building of relocation housing, and compensate relocatees with a reasonably equivalent housing unit, which would be payment in kind rather than in dollars. A plan similar to this was being considered in connection with the North Leg of one of our freeways in the District of Columbia.

What Will Be Done by the Bureau of Public Roads in the Future?

1. Our current policy on air rights is being revised to allow fuller use of the vertical space beneath viaduct structures.

2. We will soon be approving demonstration fringe area parking lots wherein land may be acquired adjacent to the right-of-way on any Federal-aid system outside of a central business district for the construction of publicly owned nonprofit parking facilities. These facilities may also be on the right-of-way, including the use of airspace above and below the highway. Such facilities are to serve urban areas of more than 50,000 people. However, they must be located and designed

to permit use in conjunction with existing or planned public transportation facilities. The Federal-aid share of the cost will be 50 percent, as limited by law.

3. In the near future we will be issuing instructions that will permit participation in basic site development costs for public joint use projects on the right-of-way, such as parks, recreational areas, bridle paths, hiking trails and parking lots.

4. We will also be approving the additional expenditures of funds for constructing viaducts or structures in lieu of embankments or lengthening of structures where such construction will be conducive to joint development in urban areas.

5. Section 138 of Title 23 of the U. S. Code and a section of the Department of Transportation Act clearly directs us to make special effort to preserve and enhance the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites. Each Federal-aid project is to include all possible planning to minimize damage to these areas. Federal funds are available for this planning. One request has already been received from a state that wishes to use a highway embankment as a dam for a recreational lake.

6. The Highway Relocation Assistance program has been greatly expanded. The provision calls for both payments and advisory assistance. There are many possibilities here in conjunction with the provisions for advance acquisition of right-of-way to provide quality solutions in the area of multiple use and joint development. It is our intent to fully explore and promote these possibilities.

7. Policies are being developed for accommodation of utilities within Federal-aid rights-of-way and will be issued in the near future.

What Are the Concerns of the Bureau of Public Roads in Joint Development and Multiple Use Proposals?

We recognize a responsibility to the public, and feel it incumbent upon us to determine that all multiple use and joint development proposals are in the public interest. For this reason, our reviews for approval are performed from the standpoint that:

1. The proposed use does not impair the construction, operation, and maintenance of the highway project and the use does not endanger the highway facility or the traveling public;

2. The proposed use is compatible with existing and future land use in the area;

3. The timing and feasibility of the proposed use are identified where Federal-aid funds are to be used to facilitate the use;

4. The extent of the opportunity for involvement by others than the proposed user are made known;

5. The local governing body has approved the joint proposal and its location;
6. The final appearance will be desirable;
7. The proposed use will be properly maintained and policed; and
8. The proposed use will make a contribution to the social, economic and physical development and well being of the community.

Because the Bureau of Public Roads first developed, advocated, and promoted this concept, the Bureau is, of course, firmly committed to the growth of the concept of multiple use and joint development as a major contributing element in the area of environmental quality. With the growth of the American population and the concurrent growth of its needs, coupled with the decline of usable space, we must be ready as public policy-makers and decision-makers to insure the wisest and broadest use of our public investments.

Most of the proposals made to us thus far have had only unilateral financial support, which has come from the highway agencies. Under present and reasonably acceptable concepts of finance, we cannot appropriately use highway funds for other than highway purposes. Therefore, it behooves those other cooperating agencies, as joint sponsors and beneficiaries of such a joint development project, to put something tangible into the project beyond mere endorsement or enthusiasm. I suggest that this financial participation is really the key to success of the joint development concept at this time, and I repeat that as highway agencies we are ready to proceed financially and structurally with our reasonable share of the cost of joint development, and we await a similar responsive action from our joint partners.

Panel Discussion

MR. PIGNATARO: I have a question that deals with satisfying the defense aspects of the Interstate System. Is there any consideration being given to a requirement for blast-resistant structures that are associated with air rights in joint development?

MR. TURNER: No, we have not given much consideration to that. We have required that the use of airspace alongside or under the structure shall be performed in such a way that it does not endanger the structure, the roadway, and the traffic using it. We have not gone so far, however, as to give consideration to blast-resistant structures being required. I do not know whether that would be a necessary thing or

not. If we are going to be worried about blast resistance we may not have the highway left either.

MR. McGRATH: Is it possible to interpret the new concept of joint development as extending to the acquisition of separate sites — perhaps elsewhere in the community — to accommodate housing for persons who would be displaced, whether simultaneously with the construction of the highway or even before?

MR. TURNER: I believe that this was described in connection with the planning of the Century Freeway through the Watts area. There the State of California has proposed to acquire land away from the highway some distance and to place on it housing that would be removed from the right-of-way and transferred to the new site, thereby providing displacement housing.

We have even been talking about the possibility of taking some of the burned-out lots and stores scattered through the Watts area and use them as sites for replacement housing. In effect, this would trade the residences within the right-of-way limits for housing units that may be located some distance away from the highway right-of-way itself. This is a concept that appears to have some merit. It has not yet been implemented except in the instance of about a dozen housing units. But the concept might permit the type of development that you describe. We do not have the details worked out yet.

MR. RUBIN: How much additional legislation do you think will be necessary on the Federal and the state level in order to really carry out this new concept of the extent of a right-of-way, and to what extent would you anticipate opposition from people who fought so hard over the years for antidiversion amendments?

MR. TURNER: I am sure your anticipation of opposition is well founded. If, however, we can sell the idea that this is a necessary part of getting the highway itself I believe we can then construe it as a highway purpose. Therefore it would be eligible. We will have to expand our thinking on that a rather considerable distance, however, from the generally accepted concept that highway purposes are those entirely within the right-of-way for strictly utilitarian purposes of transportation movement.

I think that the biggest problem in legislation, is going to be in the states, because to do this job at all you have to have authorization of state law. We can pass all the Federal laws we want and wrap this up neatly, but unless the state law can execute the objective, at the Federal level we cannot make it go. So I believe the big problem is really at the state level, and this is why we have been working on this model legislation that was referred to this morning. We have a lot of legislative work to do at both levels, however.

Appendix

Subsequent to the Conference on Joint Development and Multiple Use of Transportation Rights-of-Way, the Federal Highway Administration, Bureau of Public Roads, issued two memoranda on joint development and multiple use. The memoranda define the terms and make provision for the use of Federal-aid funds in the planning and implementing of a corridor joint development plan in conjunction with a Federal-aid highway project. While these memoranda were not part of the Conference, they are included in these proceedings for the reader's information on current governmental policy.

January 17, 1969

INTERIM POLICY AND PROCEDURE MEMORANDUM 21-19
20-01

SUBJECT: Joint Development of Highway Corridors and Multiple Use of
Roadway Properties

1. PURPOSE

This memorandum describes the procedures to be followed in joint-development planning activities related to new facilities on the Federal-aid systems within urbanized areas, and policies for Federal participation in the costs of such planning and of the implementation of the resulting joint development plan.

2. DEFINITIONS

As used in this memorandum:

a. The term "joint development" or "joint development project" means the set of actions taken in concert by a State highway department, other government agencies, private organizations, and individuals to prepare for and construct a new highway—including those activities to develop, re-develop or adjust the land uses and local network of services affected by the new highway.

b. The term "joint development reconnaissance" means an activity during a highway location study which identifies, for each of the locations under study, the activities which should accompany highway department activities concerned with the new facility, and those development activities which profitably could be coordinated with highway department processes to produce a cohesive and compatible relationship between the new highway and the communities it serves.

c. The term "joint development planning" means a survey or study jointly sponsored by the local governments, and participated in by the State highway department and others as may be required to: (1) describe the social and economic patterns, including utilities and community facilities providing

service to the people of the area, which will be affected by the new highway facility; (2) analyze and evaluate these effects and develop recommendations concerning the desired patterns of land use and local services compatible and consistent with the proposed highway facility and other goals and objectives of the affected communities; and (3) create a financial plan and schedule of actions to be taken by the various entities involved to develop the desired patterns.

d. The term "corridor joint development plan" or "joint development plan" means the officially adopted end-product of the joint development planning process. It, thus, includes a complete description of the desired pattern of land uses (including the highway improvement) and the network of local services, associated with a schedule of actions and fundings for which each of the involved entities are responsible.

e. The term "highway joint development corridor" or "highway corridor" means the general path of a proposed highway including the zone affected by the highway facility on a particular route location or the associated joint development activities. It thus bears a slightly different meaning than the more technical one intended in transportation planning.

f. The term "State highway department" refers either to the State agency concerned with Federal-aid highways or such agencies as it may designate to manage a particular project.

3. JOINT DEVELOPMENT RECONNAISSANCE

Section 109 of Title 23, U.S. Code, requires that the Secretary of Transportation "shall not approve plans and specifications for proposed projects on any Federal-aid system if they fail to provide for a facility (1) that will adequately meet the existing and probably future traffic needs and conditions in a manner conducive to safety, durability, and economy of maintenance; (2) that will be designed and constructed in accordance with standards best suited to accomplish the foregoing objectives and to conform to the particular needs of each locality."

In addition, Section 24 of the Federal-Aid Highway Act of 1968 amended the first sentence of Section 128(a) of Title 23, U.S.C. to read as follows:

"Any State highway department which submits plans for a Federal-aid highway project involving the by-passing of, or going through, any city, town, or village, either incorporated or unincorporated, shall certify to the Secretary that it has had public hearings, or has afforded the opportunity for such hearings, and *has considered the economic and social effects of such a location, its impact upon the environment, and the consistency with the goals and objectives of such urban planning as has been promulgated by the community.*"

The italics have been added for emphasis.

Joint development reconnaissance is a new tool wholly consistent with the requirements of Section 109 and will provide the additional information necessary in the consideration called for by the amendment to Section 128(a). It will also further implement our long-stated policy objective that the highway program, while providing increased mobility through new or improved facilities, should also to the maximum extent possible assist communities in the attainment of their other stated goals and objectives.

The purpose of joint development reconnaissance is threefold. First, it should serve to relate the proposed highway to the other plans, programs and

goals of the affected jurisdictions. Secondly, it should highlight the opportunities for cooperation and collaboration between the State highway department, and other public or private agencies in carrying out the development of the highway corridor as a coordinated public work. Finally, it should give a more explicit framework for the discussion of alternative route locations in relation to the locality's stated goals and objectives.

Joint development reconnaissance, therefore, is primarily oriented to the selection of a specific location for a proposed highway. A reconnaissance study is authorized and should be undertaken for those Federal-aid projects where the State highway department has been officially requested to undertake such work by an affected municipality or by the Division Engineer. Joint development reconnaissance is also authorized to be undertaken for other projects at the option of the highway department. It is expected that reconnaissance work will be performed concurrent with route location studies, and will be concluded in time for presentation to the public along with other results of the route location studies.

The joint development reconnaissance work should be done cooperatively with local governments and other recognized planning and resource organizations and groups representing the people of the affected areas. Wherever possible, these activities should utilize the existing cooperative arrangements established for the urban transportation planning process which is required by Section 134 of Title 23, U.S. Code. However, the exact form of organization used and the list of participants in the reconnaissance process should reflect local conditions as the primary concerns considered in reconnaissance are local ones not regional in nature.

Joint development reconnaissance work should be utilized as necessary for alternative route locations to provide:

a. A collection and analysis of basic data describing the land uses, and broad characteristics of the jurisdictions, and their constituent neighborhoods, potentially affected by a highway.

b. Description of the primary economic and social patterns, the local transportation and utility networks, and other services which would be interrupted by a highway.

c. A listing of those actions needed to adjust and restore those interrupted patterns to an acceptable level, with a recommended assignment of responsibilities.

d. A description of the development pressures apt to occur within the corridor following construction of a new highway facility, and their relationship to the locality's goals and objectives.

e. An analysis suggesting how the plans and programs of local private groups and political jurisdictions might be beneficially combined with highway department activities to produce the desired development of the highway corridor.

Particular attention should be paid to the policies defining the land uses and types of development intended for the highway corridor. Typically, the improved accessibility provided by the new highway and the immediate environmental impact of the facility and its traffic combine to produce change in the value of adjacent land. At times, significant shifts in land uses occur, with detrimental effects on the locality, and impairment of the highway facil-

ity and its interchanges. The reconnaissance process should highlight the likelihood of varying degrees of change, and the opportunity to use local powers and resources to deliberately shape land uses in the corridor to accomplish local objectives. Such local programs as urban renewal, streets, sewers, water, other community services, and zoning should be examined to see if their powers or funding might be profitably aligned with State highway department actions to produce compatible corridor development consistent with local plans and objectives. The reconnaissance should indicate the desired development goals and suggested means to reach them for each of the alternative locations.

Joint development reconnaissance, as defined in Section 2 of this memorandum, is an integral part of route location studies and the costs thereof are eligible for Federal-aid reimbursement as part of preliminary engineering.

4. JOINT DEVELOPMENT PLANNING AND IMPLEMENTATION OF THE CORRIDOR JOINT DEVELOPMENT PLAN ASSOCIATED WITH A FEDERAL-AID PROJECT

Following route selection and approval, local jurisdictions should assume responsibility for preparation of a detailed corridor joint development plan. Joint development planning, when undertaken, would continue the relevant reconnaissance studies in greater detail, include additional studies as required, and conclude with official acceptance of the joint development plan by the local jurisdiction's governing body. The highway department is encouraged to participate fully in the process imaginatively using the available tools in the highway program to achieve compatibility between the highway and other corridor activities. Particularly important is the need to carry out highway design and construction activities in harmony with the joint development plan.

Federal-aid participation in the joint development planning process and the plan's implementation is allowable as a Federal-aid highway project cost as follows:

a. *Participation in the Planning Activities*

Federal-aid funds may participate in expense related to joint development planning as defined in Section 2 of this memorandum to the extent that the information developed may be needed in making decisions concerning corridor developments related to the highway and in the design of the highway facility itself.

b. *Design of the Highway Facility*

The primary structural element of a corridor development plan is necessarily the highway itself. Thus, corridor planning and highway design activities should be regarded as a single effort with the goal of having the total joint development plan make maximum contribution to the well-being of people in the corridor. The highway should, as part of the corridor plan, be so located and designed as to allow full benefits to be derived from the combined activities of all entities involved in the plan. There are a number of design variations which can be used to aid in the implementation of the corridor planning objectives. Many of these were examined in *The Freeway in The City*, and were endorsed in a Circular Memorandum of August 23, 1968.

The Regional Federal Highway Administrator, or upon redelegation, the Division Engineer, may approve such design features as part of normal PS&E approval upon a showing that the combined contribution to the objectives of the approved corridor plan or the social and economic benefits to the users of the roadway and the other components of the plan, justify the expenditure.

Such design features as architectural treatment of highway components, use of extension of structure in place of embankment, adjustment of interchange ramp patterns to increase the usability of enclosed or adjacent lands, and provision of independent alignment for the roadway can be approved in that review. Major choices of the roadway configuration such as a shift from a conventional design on grade or viaduct to a depressed section or one of substantial elevation above ground level should be referred to the Director of Public Roads for prior review and concurrence.

c. Development of Properties Acquired for the Highway

There are a number of ways in which rights-of-way can be used to serve the objectives of the approved joint development plan. A recent Instructional Memorandum titled, "Federal Participation in the Development of Multiple-Use Facilities on the Highway Right-of-Way" discusses allowable expenditures to provide for a variety of multiple uses of right-of-way properties. Through these means and others the corridor plan and its highway design should attempt to make full use of the right-of-way properties over, under and about the roadway itself and to integrate such use with the other aspects of the corridor development. These planned facilities and uses must conform to the rules established in PPM 80-5 to assure that there is no impairment to the construction, operations or maintenance of the highway facility which would affect its integrity or endanger the travelling public.

d. Provision of Platforms for Utilization of Airspaces Above the Highway

The utilization of freeway airspaces should be encouraged within the highway corridor development plan. Federal-aid funds may participate in the highway-related costs of construction of platforms in the airspace above a highway when: (a) the use of such space is an integral part of the total corridor joint development plan; (b) the added cost for this type of air-rights development can be generally supported on the basis of the intensity of the land use in the corridor, the public use or tax benefits to the locality, or the advantages to the highway program of the selected route location over alternative locations; and (c) the proposed facility complies with the rules established in PPM 80-5 to protect the highway and its users. The use of Federal-aid highway funds may be justified when further participation in the costs of providing a platform is required to allow action by another entity in implementation of the corridor plan, and it is the Federal Highway Administrator's finding (a) that the proposed joint development project is necessary to conform the highway to the particular needs of the locality or (b) that a joint development project is the most reasonable means of minimizing the impact of the highway upon the environment.

5. PUBLIC HEARINGS

The material developed under Joint Development Reconnaissance activities or Joint Development Planning for a highway corridor should be presented in public hearings as appropriate and as provided for in PPM 20-8, "Public Hearings and Location Approval." It is also recommended that the

State highway department correlate its presentations with those made by local jurisdictions as may be required by the laws of the locality for their parts in a corridor plan.

Lowell K. Bridwell
Federal Highway Administrator
F. C. Turner
Director, Bureau of Public Roads

January 17, 1969

INSTRUCTIONAL MEMORANDUM 21-2-69
34-50

SUBJECT: Federal Participation in the Development of Multiple Use Facilities
on the Highway Right-of-Way

In executing the federal-aid highway program one important objective is that to the extent possible and practicable, highways, in addition to their basic purpose of fulfilling the important goal of improved transportation, should make a positive contribution toward enhancement of the environment through which they pass and assist communities in attainment of their stated goals and objectives.

Section 128, Title 23, U.S.C., as amended is a clear indication that highway planning can be used in the accomplishment of this purpose. In implementing this policy every encouragement should be given to making maximum utilization of the highway rights-of-way for both public and private development, provided there is no impairment to the full use and safety of the highway. To take full advantage of this policy and to attain the greatest benefit for the community highway departments should encourage the greatest possible participation of local government agencies and the private sector. In many instances financial participation by other agencies of government or the private sector will be necessary.

I. *Procedural Requirements*

These requirements apply to all multiple uses of highway rights-of-way, regardless of the extent of federal-aid highway fund participation in the multiple use.

A. Proposals for multiple use shall be in the public interest as determined by the local governing body and the state highway department. Such use must be in conformance with an officially approved comprehensive land use plan for an area within which the proposed multiple use is an integral part.

B. Proposals for multiple use shall include documentation of the extent to which environmental factors affected by the proposed use have been considered.

C. Any multiple use of the highway right-of-way will require the execution of an agreement between the using party and the state highway department, and approval of the Bureau of Public Roads. This agreement shall be

in conformance with the Policy and Procedure Memorandum concerning air rights. If subsequently such usage can be changed for other purposes, the condition under which such usage will be permitted is also subject to the provisions of the PPM on air rights. Where conveyance documents are used, such documents shall include restrictive covenants which describe or otherwise limit the type of development and make the plans for development subject to the joint approval of the state highway department and local governing body.

D. Maintenance and policing of multiple use facilities included within federal-aid projects will be considered in the same category as maintenance of all the other project features, and the state highway department's responsibility for maintenance will be extended to cover all such items. However, the state highway department may make contractual arrangements with the local unit of government or the sponsor of the multiple use to maintain and police facilities constructed under the provisions of this memorandum or to share this responsibility.

II. Participation

A. Feasibility Studies

Feasibility studies may be undertaken to evaluate and develop recommendations concerning the optimum joint development and multiple usages of land involving the highway right-of-way. These studies are considered as preliminary engineering and may be financed accordingly.

B. Right-of-Way

Paragraph 5(g) of PPM 80-1 authorizes the acquisition of whole parcels or portions of the remainders to a logical barrier or boundary, such as a street, under the conditions stated therein. The areas thus acquired which are not specifically required for the safety, maintenance and operation of the highway may be devoted to either public or private uses.

C. Construction

It is considered appropriate to use federal highway funds in the financing of the following types of work in the achievement of such objectives subject to the conditions which are subsequently discussed herein on the premise that work needed to make the highway conform to its environment in a reasonable manner is a part of the basic highway cost.

The items described by the following numbered paragraphs 1 through 4 inclusive may be approved by the Regional Federal Highway Administrator or by the Division Engineer upon redelegation of the necessary authority. The item described in numbered paragraph 5 should be referred to the Director of Public Roads for prior review and concurrence.

1. The construction of mini-parks, including minimum facilities such as walks or other paved areas, benches, sandboxes and the like, where this type of facility can be provided on right-of-way parcel remnants or other portions of right-of-way acquired for highway purposes but which may not be needed for operational purposes.

2. Site preparation for recreational facilities, such as basketball or handball courts, play areas, tennis courts, etc. Site preparations may include the necessary grading and drainage facilities and, where necessary because of

safety or aesthetics, the provision of minimum hard surfacing, lighting, fencing and landscaping on land areas of the type described in paragraph 1 above.

3. Lighting, fencing, curbing, landscaping, false ceilings and a minimum type of hard surfacing on areas under a viaduct when safety or aesthetic considerations are involved and to prevent the area from becoming a public nuisance.

4. Increased span length for structures or modifications or variation of structures or highway cross section where such would promote and encourage desirable public and/or private uses of land areas beneath, over, and adjacent to the highway.

5. The use of structure instead of embankment where the same would be more conducive to development of the land space beneath the structure, improve local traffic circulation, provide for better public services, or be more aesthetically pleasing.

D. Requirements

The following conditions shall be met prior to the approval of the financing of any work described above with federal highway funds.

1. The work proposed must be part of a comprehensive plan approved by the Division Engineer for a substantial section of the route on which the project is located. This plan must be developed by the state in cooperation with the responsible interested local or other agencies of government. A comprehensive plan developed in accordance with the provisions of the Interim Policy and Procedure Memorandum on Joint Development is desirable.

2. All facilities constructed with federal funds must be located on the highway right-of-way.

F. C. Turner
Director, Bureau of Public Roads
Lowell K. Bridwell
Federal Highway Administrator

Housing and Urban Development Considerations

DON HUMMEL

*Assistant Secretary for Renewal and Housing Assistance
U. S. Department of Housing and Urban Development*

AS a representative of the Department of Housing and Urban Development, I would like to enumerate the principal authorizations and designate the areas of multiple use arising out of the authorization and then, at the risk of going beyond the boundaries of the subject, to project a few concepts of some of the more obvious uses that I think are attainable.

There are two principal legislative enactments concerning the use of air rights as they pertain to urban renewal — both enactments, however, have more emphasis on limitations rather than use. The Housing Act of 1964 authorized renewal projects for air right developments but limited the sites for use in housing of low and moderate income families and for closely related uses. It accepted as proper project costs those incurred for foundations and platforms but with the further stricture that the costs not be greater than sites that could be provided through use of cleared land. This was further limited administratively by a prohibition of expenditures for acquisition of airspace over publicly owned areas and rights-of-way. In 1966, the Demonstration Cities and Metropolitan Act extended the use of air rights sites in renewal areas to be used for industrial development if they were determined to be unsuitable for low and moderate income housing. The Housing Act of 1968 further extended this use for educational purposes with the same limitation.

It is obvious that legislation that is so restrictive and essentially negative in character cannot be expected to make a major contribution to solving some of the basic problems accompanying the increasing

urbanization of our country. In fact, little use has been made of the authorization permitted under the Housing Acts of 1964 and 1966, and of course, none under the recently enacted Housing Act of 1968.

Only two instances of use of air rights under this legislation have reached the approval stage. One in New Bedford, Massachusetts, provides for an air rights platform of 194,600 square feet, with 124,000 square feet allocated to nonvehicular open space and 70,600 square feet devoted to buildings for low and moderate income families. The site will be located within walking distance of schools, churches, banks, and other downtown services. A medical center will be linked by a pedestrian overpass to a new commercial civic complex located just south of the air rights site. The platform will cover a municipal parking area, local service rights-of-way, and a small portion of Interstate 6.

The RLA recently approved an application by the District of Columbia Redevelopment Land Agency to expand the Northwest I Urban Renewal Project area in order to provide for the joint construction of part of the Center Leg Freeway and housing in a two-block area in space over part of the freeway. The "multiple-use site," as it is designated under the Urban Renewal Plan, is to be created by covering the freeway with a platform. The total site, including adjacent ground, will occupy about five acres. The plan will permit the construction of approximately 300 units of housing for low and moderate income families, which is critically needed in the District of Columbia. In addition, the plan requires that one acre be devoted to a public park.

This proposal was initiated by the D. C. Department of Highways working closely with the Urban League's Neighborhood Development Center. It was their objective to develop a method to provide new relocation housing for families to be displaced for the freeway right-of-way in this area and by other freeway projects.

The Highway Department then sought the RLA's participation to develop a feasible procedure utilizing urban renewal assistance. Together, these agencies requested the National Capital Planning Commission to expand the Northwest I Project Area boundaries to include an adjacent area in which the approved right-of-way for the proposed Center Leg Freeway was located.

The Planning Commission adopted the modified project boundaries and modifications to the urban renewal plan establishing controls and regulations for the multiple use site providing for the redevelopment of the site for housing for families of low and moderate income on the surface, and the construction of the freeway below the surface through part of the site. These modifications were then approved by the District of Columbia Council as required for urban renewal projects.

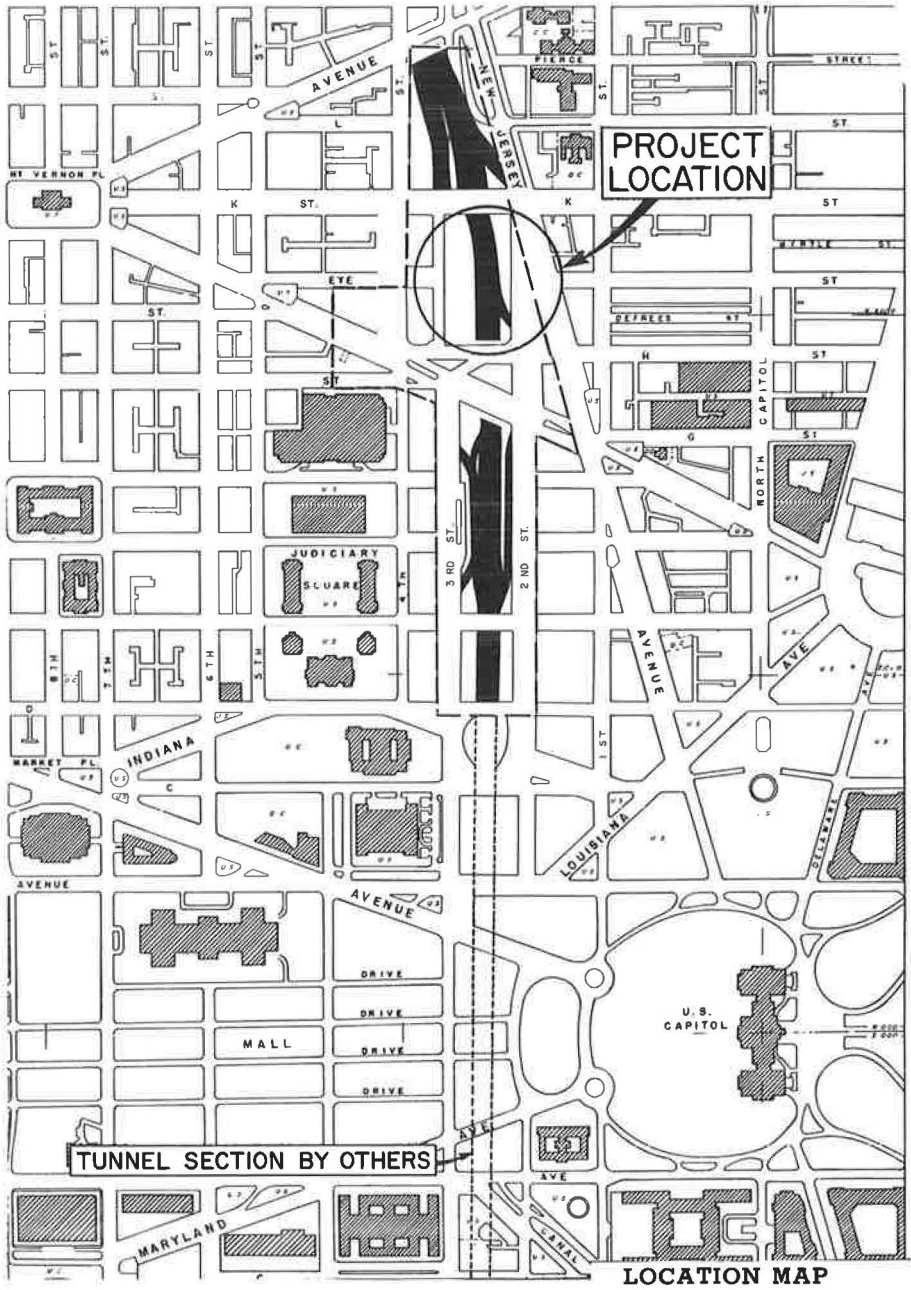
The development of the area over the freeway more effectively utilizes urban space. In addition, this proposal will substantially improve the environmental quality of the surrounding neighborhood. It



The U.S. Department of Housing and Urban Development has recently approved the use of Federal-aid funds for the development of the air rights over part of the center leg of the Inner Loop Freeway (Interstate 95) in the District of Columbia. The depressed freeway will be decked over and high rise apartments and town houses will be constructed. (Source: Tippetts, Abbott, McCarthy, Stratton, The Joint Development of Housing & Freeways. New York, N. Y., 1967.)

will eliminate several of the undesirable effects of freeways in dense urban areas. Instead of creating a canyon disrupting the continuity of the surface uses, the freeway will be built in a cut entirely below existing grade and will be covered by a continuous platform approximately 1300 feet long. The tunnel will be ventilated by ducts in at least one residential high-rise building. This will eliminate noise and fumes and there will be no visual evidence of the location or presence of freeway from the surface of the multiple use site or adjacent areas.

Greater efforts should be made to at least use airspace over publicly owned rights-of-way, considering the problems arising from fur-



Location of air rights development over the center leg of the Inner Loop Freeway in Washington, D.C.

ther extension of the sprawl that now besets us and the pressure of skyrocketing costs of land in our cities. This is particularly evident when we examine the use now made of the land in some of our large metropolitan centers, for instance, in Los Angeles where two-thirds of the total downtown area is allocated to streets, or in Detroit where one-half of the central area is given to streets and parking lots. What a shameful waste of prime land! We cannot afford to use only the surface plane much longer.

According to a study made by Texas A&M University, land values gained 544 percent over the period 1941 to 1955 in Houston — and this in a state and city that is blessed with an abundance of land.

Along Boston's circumferential freeway, property values jumped as high as 700 percent after its construction, and in Atlanta, values along its freeway skyrocketed from \$100 to \$400 per acre to \$1,200 to \$1,400 almost overnight, demonstrating that people are willing to pay for easy access to work, shopping facilities, etc. How much easier it would be for many if we used the space available to us in the downtown areas. Considering the continued urbanization of our country and the prospect that continued population growth will require accommodations and services for another 100 million Americans by the turn of the century, we cannot longer afford such a profligate use of land. We are in the space age; let's apply this concept on the ground as well as in our race to the moon.

Some of the legal problems and limitations have been discussed. I think it might also be important to mention some of the other problems even if they are obvious to all, as they must be solved. In a way, legal problems are the simplest to solve because they are susceptible to legislative action. Other problems require a change in human habits and behavior. These are usually more difficult to change than accepting new legal concepts.

One of the persistent problems that we face in any multiple use is the fact that we must bridge the gaps between the agencies authorized to provide solutions to only part of the problem. The fragmented nature of our governmental structures does not encourage expanded approaches. The roadbuilder whose prime objective is a transportation course facilitating the movement of goods and services has enough problems with costs, safety features, and engineering limitations without becoming involved in the psychological impact on adjacent residential owners who are antagonistic to fast-moving traffic after they have driven home.

Even after we have engaged the highway engineer in a dialogue with the urban planner and have harmonized the objectives, we have the problems not only of different schedules, timetables, authority, and jurisdictions, but the inevitable one of cost. Who pays the bill? With limited budgets and expanding demands, this question often terminates the discourse.

These problems are difficult enough between public agencies but when you add the private sector with its profit objectives, all kinds of ethical as well as legal obstacles are added. It is therefore understandable that renewal legislation is so restrictive in its application. We have accepted as public policy the fact that low-income people are proper recipients of a public subsidy but we have not accepted its broader use, and we prevent many of the most desirable uses that would make it economically feasible and therefore acceptable.

I believe it is particularly unrealistic for one governmental agency to expect payment for air rights from another public agency. The cost inherent in utilizing air rights by building the necessary structures and platforms is burdensome enough without payment for unused space above public rights-of-way. In fact, we should be recognizing that the costs of implementation should be shared by all public agencies involved as part of the preparation for multiple use. The preparation for total use of space as well as surface use should be standard operating procedure. It would make for better planning and in the long run would be less expensive.

The construction of a mass transit system whether rail-borne or rubber-borne should be considered for principal public arteries. The median strip should be wide enough, and the roadway should be designed for construction of one or more decks. The price this country is going to pay for failure to provide rights-of-way for mass transit is horrendous. Airspace offers solutions that would be cheaper than subsurface.

A major problem facing us in urban areas is the problem of separation of vehicular traffic from pedestrians. Use of urban space should facilitate the conduct of business by vertical travel rather than by further extending the distances on the surface plane.

The Philadelphia-Market Street East Urban Renewal Project is a good example of the great potential for multiple use of public rights-of-way incorporated into good urban design. The Transportation-Mall Center is a bold multilevel complex designed as a huge megastructure. The structure is eight levels, beginning two levels below the street, above which will rise a series of office buildings providing up to 3,000,000 square feet of office space.

Two levels below the street there is to be a commuter rail station replacing the present Reading Terminal and providing a crosstown link between the Reading and Pennsylvania commuter lines. On this same level there will be a truck tunnel to service the entire complex. One level below the street will be the air-conditioned skylit concourse level, the spine of the pedestrian circulation system. Retail activity will face both sides of the mall and the rail station will be at the center. This level also will contain the subway lines and reconstructed subway concourse and stations. The street level plan provides open entry via escalators into the concourse plazas and pedestrian mall. One level above the

street, the commuter bus station, a platform, will run the full length of the Transportation-Mall Center. In addition, the intercity bus terminal will occupy a compact single block in the center of the complex. Escalators will lead into each midblock plaza. Two levels above the street will begin four to five levels of parking served by expressway links. The roof plan calls for the Center to be topped by eight high-rise office buildings located to relate to elevator and service cores. This is an example of what can and should be done if we are to make reasonable use of the third dimension in our cities.

There are innumerable opportunities to use the technology developed for other uses that could be adapted to help solve some of those urban problems by coupling them with multiple use of public rights-of-way. Why not construct utility tunnels for power, heat, and air conditioning ducts in public rights-of-way connected with nuclear energy stations designed to serve entire communities? Why not remove solid waste by conveyor belts in utility tunnels and lessen traffic congestion in downtown areas by avoiding the need for garbage trucks on congested streets? By the year 2000, we will be faced with the problem of the daily removal of 260 million tons of solid wastes from our cities.

Since we have designed most of our cities around the use of the automobile, we have not only produced nightmares in traffic problems but we have encouraged the desertion of our cities as desirable living habitats. The result has been urban sprawl. This has been exacerbated by zoning laws which cause people to live away from their work, shopping opportunities, and cultural enrichment — leaving the cities' downtown areas deserted and dead after office hours. Europeans love and live in their cities. Why shouldn't we?

We need to bring people back to live in proximity to their work, and their recreational and cultural opportunities. This means multiple use of surface space for living and recreational facilities. Here again the source of space most available is rights-of-way now used for streets, freeways, and transit use.

A good example of the use of highway air rights is Concourse Village in New York City, which stands athwart the New Haven Railroad yards in the Bronx. Another is the Bridge Apartments, opened in 1963, over the Manhattan approaches to the George Washington Bridge. Other examples are the following:

- The municipal building complex over the Interstate Highway in Fall River, Massachusetts.
- Libraries over major thoroughfares in Buffalo, New York, and Hartford, Connecticut.
- The U. S. Post Office Building over Congress Street Expressway in Chicago.
- Cobo Exhibition Hall over the John Lodge Expressway in Detroit.

- The Prudential Center over the Massachusetts Turnpike in Boston.

These are proof of what can be done with airspaces that criss cross our metropolitan complexes. Many cities are taking a new look at rights-of-way and airspace. Pittsburgh urban planners have on the books a complex of modern high-rise communities that will be erected over the Pennsylvania Railroad right-of-way in the Lawrenceville section.

Achievement of the full potential of air right uses over highways would in fact seem to depend upon the quality of planning for such uses within the broader context of urban development. Among the broader considerations underlying the existing cases of airspace development are the following:

1. The scarcity of developable land within a city along with its constantly rising price;
2. The prospect of restoring in part the tax-paying capacity lost through public streets;
3. The avoidance of splitting established neighborhoods; the ability to provide sequence to design; and most important, the building of livable cities.

We pride ourselves in our capacity to build with ever-expanding new technologies, but we sometimes lose sight of the purpose for which we build. We build for people — to protect their health and safety and to enrich their lives. No cost should be too great to achieve this objective.

Panel Discussion

MR. McGRATH: Will the neighborhood development program expedite execution of the corridor development concept and has the Department of HUD done work to integrate this with the joint development concept as proposed so dramatically to us by Mr. Bridwell?

MR. HUMMEL: The neighborhood development program of urban renewal will greatly facilitate because, first of all, it is on a program basis rather than a project basis and fits into the local community's financing methods. The approval is on a year basis plus a tentative approval for the second year, which is consistent with most of the capital development programs of the local community. So it fits as a program into the time schedule.

Second, the area designated as the neighborhood development area can be much larger than the present urban renewal program and can embrace more than one area — noncontiguous as well as contiguous areas. So if you had an area with a freeway going through it you might have four or five spots on that freeway where you would need urban renewal assistance to solve some of your highway problems, and it would fit in very closely with the highway development program. I say it would greatly facilitate it.

Conference Summary

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WHEN the Steering Committee for this conference first began work on the program, our intent was to examine the possible applications and limitations of the multiple use of highway corridors. As the matter was discussed further it became clearly evident that when we talk of multiple use we must not only consider the immediate right-of-way but also the people and environment bordering and affected by the transportation corridor. The more we considered the problem the broader the approach we had to take to get the proper grasp on the topic. In the presentation of this conference, it has been our aim to point out the necessity of viewing roads and rails as part of a total transportation system, and that the transportation system exists not only for its users but is part of the total economic and social environment in which community and non-user interests must be given equal consideration with user needs.

The resistance of local communities to further construction of urban freeways can be seen in many of our cities. Recently a citizens' planning group held a conference at which one of the groups presented some resolutions relating to urban highways. I might give you a few excerpts:

We recognize that the present course of federally-funded interstate highway building through our urban areas is a policy of present and potential disaster which can no longer be tolerated. In accordance with this view we propose: (1) a moratorium be placed on all federally-funded freeway building through urban areas until studies, local, regional

and national in scope, can determine the ecological and sociological damage of roadbuilding; (2) that true "citizen participation" in the planning as well as the governmental process be instituted; and (3) an immediate stop to the misuses of the right of eminent domain in the confiscation of homes and property for urban freeway and other such projects which serve only the interests of the few.

I cite these resolutions not to attack or defend them but to indicate what those of us involved in transportation planning are up against. During the past two days we have heard how it has become increasingly necessary to include nonengineering disciplines in the urban transportation planning process and how the community to be affected by the corridor must be brought into the deliberations at the very early stages of the planning process.

The ground rules for the location of highways and rails have been changed. The mandate to the planner and engineer has been to create the most economically safe and efficient system within the available resources. We are now in the midst of a substantial redefinition of what and to whom economic benefits should accrue and what are the true costs; what is the acceptable level of safety and at what price; and what are the trade-offs between efficiency and other social and environmental considerations.

This would be most difficult by itself but we must now in addition consider the needs, desires, and interrelationships of the total social and physical environment. I have no doubt that in the future we must also take into account not only the social changes but changes in life style and its effect on the urban environment and transportation systems.

We already have many instances of multiple uses of rights-of-way. There are several hundred proposals that encompass the concepts of joint development and multiple use awaiting approval and funding. We saw how joint development, multiple use, and direct community involvement offer hope for finding means of conciliating user and non-user transportation interests.

But while they offer hope they are not a panacea. They are not without their limitations and liabilities. There are engineering and design, economic and political constraints. Because of their greater cost and impact, once constructed, there is a greater commitment to such projects and there is less flexibility for change.

The Bureau of Public Roads and HUD programs relating to multiple use and joint development have been presented. Perhaps the real value of this conference is that it has pointed to the fact that transportation planning, whether highway, rail, water, or air, cannot be done in isolation from the rest of the environment with concern only for the users. The participation of additional interests and groups in the planning and deliberation processes will cause a substantial increase in the time required for planning preliminary engineering, and design of projects. It will require patience on the part of planners and engineers to educate the public about technical problems. Many of us remember

highway programs over the past forty years that were run very much like military operations where the program was pushed ahead, and we got the nation "out of the mud" by responsible, decisive administrators.

The world and the transportation problems have changed. Management is now changing through broad participation — and decision-making is increasingly by consensus of those affected. The primary transportation problem is no longer to provide access and to design all-weather roads but how to move people by all modes through and within densely populated areas with as little degradation of the environment and dislocation of the population as possible. On the other hand, we can never lose sight of the dollar cost of any public facility. I hope that the concepts of joint development and multiple use will help us toward rational solutions to the urban transportation problem.

Conference Summary by Panel Members

MR. PIGNATARO: I would like to make a few observations. First, it was stated directly or indirectly by many of our speakers that there is a need to modify the traditional benefit-cost analysis to include the consideration of community values. We have talked of this necessity for a long time, and a current NCHRP study may provide some insights on how this may be accomplished in a systematic manner.

Second, it would have been most constructive if more attention had been given to various procedures to minimize the undesirable effects of all types of pollution on many of the land uses that have been suggested for joint development and multiple use. Different forms of pollution are certainly incompatible with community values.

Third, a thread of commonality that has woven through many of the presentations was the essential need for appropriate planning and community participation in any joint development project.

Fourth, most of the projects discussed in the second session were associated to a greater or lesser degree with problems in ghetto areas. However, one notable exception was the many excellent examples in the Twin Cities that were presented by Mr. Jorvig. Mr. Levin also presented many examples of projects that were not intimately associated with social ills.

Fifth, the need for advance planning is mandatory when consideration is given to the number of agencies involved and the diversity of their interests. Since there could be duplication and possibly conflict of legal, appraisal, design, administration, taxation, and other components of joint development and multiple use between the local, state, and Federal agencies, a statewide centralized authority with appropriate decision-making powers might accelerate the implementation of projects. This was a recommendation in the report prepared for the State of California by the Real Estate Research Corporation, and I think it should receive serious consideration.

Sixth, it is unfortunate that time did not permit a further exploration of how to involve the private investor and/or developer in early stages of the development, particularly with respect to air right projects.

MR. HOLMES: I think we ought to remember that despite the dramatic problems and the critical nature of the problems in Watts and Brownsville, there is still opportunity for joint development in areas like the Twin Cities, and in this country there are still a lot more St. Pauls than there are Brownsvilles, so don't let's get totally pointed in thinking of our opportunities for joint development and multiple use of rights-of-way into these areas of critical social impact on the country right now. Opportunities ahead are certainly much broader than those. We tend to concentrate on those, certainly, but let's not forget the others.

MR. RUBIN: There are several points I would like to make.

One, I think we should recall the caveat in Mr. Bridwell's statement that to assure that multiple development plans become multiple development projects, there must be legislation at the Federal and state levels that will provide the kind of assurances of long-range stable funding for education, renewal, housing, health, library, and other programs that have made it possible for the highway program to do long-range advance planning to get things done.

Second, the interdisciplinary approach to the design of multiple development projects has to become normal routine procedure for highway departments, not just an *ad hoc* response to an occasional project that promises to cause trouble.

Third, we need adequately staffed and funded local and regional comprehensive planning—social and economic, as well as land use and facility planning. This has to be encouraged in order to provide the framework of community goals within which multiple development transportation corridor planning can proceed.

Fourth, citizen participation and community involvement are required if plans are to be responsive to the needs of the people affected and if they are to be politically possible to implement. But the professional cannot abdicate his role. He must somehow walk the razor's edge between planning by fiat and the complete abdication of responsibility.

We cannot have romantic notions about citizen involvement and throw our own professional responsibilities out the window. People are much alike in many respects. Most respond to plans in terms of relatively parochial, narrowly perceived views of their own best interests. Highway planners have been forced for years to deal with, and often make compromises with, affluent white suburbanites; but they haven't turned over their professional responsibilities to those protagonists. There is no more reason to abdicate this responsibility because we are now dealing, as we should have been all along, with people who are poor and/or black.

So far as multiple use is concerned, we must recognize that it has been occurring over the years, where existing and future uses and demands were very intensive, creating unusual and dramatic competition for particular spaces. Since most, if not all, of the population increases in the future will be in suburban areas, multiple-use opportunities will continue to be limited. There are many more than we have taken advantage of in the past, but where they exist they will be costly and dramatic. Most importantly, they are going to require degrees of integration and cooperation among governmental agencies and private individuals and institutions far beyond anything we have achieved in the past.

MR. TABOR: I think one of the most exciting ideas I have heard in this conference is Lowell Bridwell's revival of what evidently was an old idea about acquiring more land for highway rights-of-way than you need for that particular project. I think this proposal has tremendous potential, and I hope that there is going to be a lot more discussion of it. I hope we don't have to wait another 25 years before it actually receives public acceptance.

But if there are real problems in the use of highway user funds for purchase of this additional property maybe we should look to some other public mechanism for land acquisition, and I think Frank Turner touched on this in his remarks earlier this afternoon. Maybe we could set up a state land acquisition agency that could purchase property for state agencies and local governments for certain uses. This agency could resell the land needed for a particular project back to the state agency or local government that needs it for that particular public purpose and then sell the remaining land for private development. This would prevent the charge that highway departments are getting into too many activities and it would keep the highway user funds untainted.

It has been suggested, I think, by the advisory commission on intergovernmental relations that this should be one of the functions of their proposed urban development corporation. But I think we should be thinking more in terms of just a state agency that would have the sole function of land acquisition for public purposes.

One case I have seen of an urban development corporation is in New York City. As it is set up it could go into housing or almost anything it wants to, and it is almost an autonomous-type organization. Once the terms have been set and appointments have been made by the governor there is not really going to be very much public accountability for what that agency does. In fact, they can go into an area and decide they are going to put up a housing project. All they have to do is just go to the local government and hold public hearings. The local government officials come into the public hearing as everyone else, and at the end of that time they can say, "Thank you, gentlemen, for your views," and go ahead and put up the project as they see fit.

Somehow or other that goes against my ideas of what home rule is all about. I think that if we set up an agency with one sole purpose of land acquisition that this could hold a great deal of promise. At the same time we could avoid some of the problems that we anticipate such a program would have with the use of highway user funds and save money.

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THE NATIONAL ACADEMY OF SCIENCES is a private, honorary organization of more than 700 scientists and engineers elected on the basis of outstanding contributions to knowledge. Established by a Congressional Act of Incorporation signed by Abraham Lincoln on March 3, 1863, and supported by private and public funds, the Academy works to further science and its use for the general welfare by bringing together the most qualified individuals to deal with scientific and technological problems of broad significance.

Under the terms of its Congressional charter, the Academy is also called upon to act as an official—yet independent—adviser to the Federal Government in any matter of science and technology. This provision accounts for the close ties that have always existed between the Academy and the Government, although the Academy is not a governmental agency and its activities are not limited to those on behalf of the Government.

The NATIONAL ACADEMY OF ENGINEERING was established on December 5, 1964. On that date the Council of the National Academy of Sciences, under the authority of its Act of Incorporation, adopted Articles of Organization bringing the National Academy of Engineering into being, independent and autonomous in its organization and the election of its members, and closely coordinated with the National Academy of Sciences in its advisory activities. The two Academies join in the furtherance of science and engineering and share the responsibility of advising the Federal Government, upon request, on any subject of science or technology.

The NATIONAL RESEARCH COUNCIL was organized as an agency of the National Academy of Sciences in 1916, at the request of President Wilson, to enable the broad community of U.S. scientists and engineers to associate their efforts with the limited membership of the Academy in service to science and the nation. Its members, who receive their appointments from the President of the National Academy of Sciences, are drawn from academic, industrial and government organizations throughout the country. The National Research Council serves both Academies in the discharge of their responsibilities.

Supported by private and public contributions, grants, and contracts, and voluntary contributions of time and effort by several thousand of the nation's leading scientists and engineers, the Academies and their Research Council thus work to serve the national interest, to foster the sound development of science and engineering, and to promote their effective application for the benefit of society.

The DIVISION OF ENGINEERING is one of the eight major Divisions into which the National Research Council is organized for the conduct of its work. Its membership includes representatives of the nation's leading technical societies as well as a number of members-at-large. Its Chairman is appointed by the Council of the Academy of Sciences upon nomination by the Council of the Academy of Engineering.

The HIGHWAY RESEARCH BOARD, an agency of the Division of Engineering, was established November 11, 1920, as a cooperative organization of the highway technologists of America operating under the auspices of the National Research Council and with the support of the several highway departments, the Bureau of Public Roads, and many other organizations interested in the development of highway transportation. The purposes of the Board are to encourage research and to provide a national clearinghouse and correlation service for research activities and information on highway administration and technology.