I-84 ENVIRONMENTAL AND JOINT-USE STUDY

HARTFORD, CONNECTICUT

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A REPORT TO THE

CONNECTICUT DEPARTMENT OF TRANSPORTATION

CITY OF HARTFORD, CONNECTICUT

UNITED STATES DEPARTMENT OF TRANSPORTATION,
FEDERAL HIGHWAY ADMINISTRATION

I-84 ENVIRONMENTAL AND JOINT-USE STUDY

HARTFORD, CONNECTICUT

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FOREWORD

Planning for a new urban freeway today involves intimate participation by specialists in many disciplines. The new highway must be carefully located and designed to meet traffic requirements of the neighborhoods it serves and passes through. It must also be fitted to topography and existing land uses so that it will disrupt these communities to the smallest extent practical and will fit unobtrusively into neighborhood environments. If all this seems only reasonable it has, nevertheless, taken years of patient pleading by enlightened highway engineers and community leaders to achieve the political and financial support upon which this multidisciplinary process is based.

During the last twenty years, several thousand miles of freeways have been completed in urban areas throughout the United States. Very few of these highways were built with the elaborate attention to alignments and details of construction which are necessary to achieve attainable levels of harmonious integration with abutting properties. Today, community leaders and highway officials are often painfully aware of missed options for better environmental planning and many of them would like to take a second look at the roads they administer to see what might be done to reclaim some of those latent opportunities.

This study has been made to illustrate how existing freeway properties can, indeed, be modified or adopted to better meet social and community goals without sacrificing or impairing any of the traffic services that they provide.

Several questions immediately confront the analyst when he sets out to reconcile or reduce areas of conflict between urban neighborhoods and the freeways which presently serve them:

What, and how extensive, are the points of conflict between community and highway?

How might these conflicts best be resolved?

How much will remedial measures cost and who will pay the bill?

The first question may be the most difficult to answer; the others, too, require a multi-faceted approach and consideration of numerous alternative to finally arrive at fair and equitable answers.

In the study that follows, a segment of Interstate Highway 84 in Hartford, Connecticut, has been closely examined and a number of attractive opportunities have been found for alleviating points of conflict and providing community improvements with significant economic and aesthetic implications. Alternate solutions have been investigated and plans for numerous joint-uses and other improvements throughout the length of the route under study have been suggested for further serious consideration.

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THE REPORT IN BRIEF: THE ENVIRONMENTAL AND JOINT-USE STUDY

Several thousand miles of freeways have been built in urban communities throughout the United States during the last quarter-century. These roads have evolved as essential components of an automobile-oriented society and are necessary for realization of the contemporary urban life style.

The urban freeways have been developed over a relatively short time span, based largely on experience gained in the construction of rural highways, and a variety of problems have come to be recognized as more or less typical of new highways in cities. This study has set out to identify some of the principal difficulties of integrating highways with their surroundings and to suggest treatments to solve or ameliorate these conditions, with particular attention to more intensive use of the highway acreage itself.

Three main problem areas have to be dealt with:

- **Appearance** — The highway consists of complex, large-scale structures and bisects the city on a wide right-of-way. It frequently dominates and is out of harmony with its physical environment. How can the freeway be made to fit more comfortably into the urban environment?
- **Function** — The freeway is designed to accommodate heavy traffic volumes at rapid speed; thus, large numbers of cars are discharged from it in short periods of time onto the streets at principal interchange locations. What can be done to achieve better transition of vehicles between the freeway and their terminal destinations and storage areas?
- **Economic Viability** — Many acres of urban land are used in building the freeway, much of it in valuable, core-area environments. Use of this land for highways reduces the amount of taxable real-estate in the affected community; exclusive occupancy by the highway means further erosion of the tax base as other public users from time to time seek still more of the diminishing supply of private property. How can more economic use be made of highway lands?

Each of these problems has been treated piece-meal, as historic examples attest. Some of the earliest limited-access highways were built as "parkways" in which multilane, high-capacity roadways were skillfully fitted into a carefully graded and landscaped alignment — the Westchester County Parkways (New York) and the Merritt Parkway (Connecticut) are outstanding examples. Problems of high-volume discharge of vehicles onto city streets have been handled by developing parking garages near freeway ramps (the Constitution Plaza garage in Hartford and the Temple Street garage in New Haven for example). Express buses on the freeway with bus terminals and loading platforms near freeway ramps; judicious use of one-way streets, actuated traffic signals and other traffic engineering methods; and other planned or fortuitous developments have demonstrated how traffic circulation problems can be met where heavy volumes of traffic emerge from the freeway. Joint-use of freeway lands and air-rights are most dramatically illustrated where buildings have been constructed over the freeway, (as was done with the Hartford Public Library, with apartment buildings over the East River Drive and George Washington Bridge approaches in New York, and numerous other examples).

INTERSTATE 84 IN HARTFORD, CONNECTICUT

This is a report on a multi-disciplinary investigation of a freeway and its environmental impact in the City of Hartford. The study proceeded under the joint sponsorship of planning and transportation branches of the Hartford City Government, the Connecticut Department of Transportation, and the U.S. Department of Transportation, Federal Highway Administration, and with special participation by the Greater Hartford Chamber of Commerce. The Study Team was drawn from four private firms and consisted of specialists in Architecture and Landscape Architecture; Urban Sociology; Urban Land Economics; and Urban Planning, Transportation Analysis, and Traffic Engineering. A technical Advisory Committee with membership from each of the sponsoring agencies guided the work.

The route selected for study is a 3.3 mile segment of I-84, the "Yankee Expressway" in the City of Hartford. The new highway was opened to traffic over all its length in the fall of 1969, following a 10-year construction period. Properties acquired for the freeway alignment in the City amounted to about 276 acres of land, much of it in the highly urbanized city center. Roadways and structures occupy about 40 per cent of this area, with the remainder given over to side areas, interiors of interchange areas, excess remnants and reserve areas for future construction.

Within the Hartford route segment, the freeway passes through or beside an almost complete range of urban land uses. Its alignment follows the general course of the Park River, a small tributary of the Connecticut, and parallels the mainline tracks of the Penn Central Railroad which (as the New York, New Haven and Hartford Railroad) first established a main transportation facility in the Park River corridor about a century ago.

Relatively little of the freeway is constructed at grade in the study area. The mainline roadways are depressed below natural ground level over about a quarter of the route (4,000 feet). About twice that length of the through lanes is built on elevated structure; at critical locations, eastbound and westbound roadways are separated vertically to better meet site limitations and access needs.

At the point where I-84 crosses the Hartford-West Hartford Town Line, the freeway now carries about half of the daily flow of cars, buses and trucks that utilize the six major traffic arteries which serve east-west travel in the Interstate highway corridor. Travel at the Town Line increased from about 100,000 vehicles per day, just prior to opening of the freeway, to about 150,000 immediately after opening.

ACTIVITY CENTERS IN THE CORRIDOR

Although I-84 cuts a wide swath through the City, its direct impact on lands appropriated for construction has been less than many other urban freeways because the path it follows is parallel to and superimposed upon the long-established railroad alignment. Industrial activities border the tracks through much of the rail route in the City, and it was these and other non-residential uses that felt the brunt of freeway land-taking.

Some of the properties that bound the freeway, or which are within nearby areas of immediate impact, have been included in the study. In general, the freeway and adjacent lands constitute a "service corridor" which has been subdivided into several "sectors", labeled according to dominant land uses. These are:

The Downtown Area — Sector 1, from the Connecticut River on the east to High Street on the west;

The Union Station Area — Sector 2, from High Street on the east to Broad Street on the west;

The Aetna-Capitol Avenue Area — Sector 3, from Broad Street on the east to Laurel Street on the west;

The Underwood-Pope Park Area — Sector 4, extending on the south side of the freeway from Park Terrace to Hamilton Street;

The Hartford Public High School Area — Sector 5, on the north side of the freeway, bounded by Laurel Street, Farmington Avenue, Sisson Avenue, Park Street, and the freeway;

The Parkville Industrial Area — Sector 6, on the north side of the freeway, bounded by Park Street, New Park Avenue, Kibbe Street, and Prospect Avenue;

The Brookfield Flood Plain Area — Sector 7, on the south side of the freeway, bounded by Prospect Avenue, New Park Avenue, Flatbush Avenue, Brookfield Street, Hamilton Street, and the freeway.

IMPACT OF THE FREEWAY ON ACTIVITIES IN THE CORRIDOR

Visual Impact — The most immediate environmental impact of I-84 on the City of Hartford has been visual. The presence of the freeway has wrought great changes in the way the City is seen by people, whether they are traveling on the new road and view familiar neighborhoods from new perspectives, or are traveling the streets within site of the ramps, bridges and elevated structures that dominate older establishments in the highway's surroundings. The opportunity to see the City from new approaches has many favorable implications; but the presence of massive and complex interchanges, bridges, and elevated sections of highway may also be visually overwhelming in some instances. Consideration is given in the study to possible application of joint-use techniques to buffer undesirable contrasts between the highway and adjacent land uses.

Land-Use Impact — The freeway was built along the general alignment of the Penn Central Railroad, and likewise follows the course of a small stream, the Park River. The route was carefully engineered to preserve the railroad, while much of the stream was placed in conduit, with several remaining portions to be similarly enclosed in the immediate future. Although the railroad may be somewhat more constrained in its new environment, potentials for revitalization of passenger-carrying functions may be improved through eventual joint development of a transportation center at which rail and highway traffic would interface.

The effect of highway development on existing residential neighborhoods has been small, since the railroad in the corridor was bordered mainly by industrial establishments. Small enclaves of mixed uses — residential, retail, service, storage, and manufacturing — were disrupted in the Downtown Sector and in the Parkville Industrial Area, while more substantial housing was affected by development of the Sisson Avenue interchange in the Hartford Public High School Area. Housing in the Downtown area had been removed by urban renewal activities prior to construction of the freeway, while rezoning of the Parkville area to industrial use in 1967 suggests that non-industrial activities will be phased out in that location, thereby minimizing negative highway effects. At most other places along the route, the freeway reasserts the neighborhood boundary formed by the railroad and is recognized as a permanent line of demarcation between different classes of land use.

Urban renewal activities extending along several parts of the freeway alignment have been in progress throughout the highway construction period. Many of the environmental changes in areas near the highway during recent years were partly or mainly due to renewal activities rather than highway construction. In Downtown Hartford, redevelopment has been completed or is underway in most of the areas penetrated by the freeway, so that the initial impact of the new highway was largely masked by the renewal effort. Traffic access has been much affected, and peak demands have increased because of the more rapid delivery of cars into the center, but streets have been able to accommodate changed travel patterns quite effectively. Now that the freeway is complete, there is concern that the depressed route section in the central business district may present a psychological barrier to the successful spread of central city activities to lands north of the freeway, and the study has sought means of overcoming this constraint.

Renewal, rezoning, and code-enforcement areas have been defined in other parts of the corridor as well as in and near the central business district. Since these activities are now in process, opportunities exist to coordinate them with joint-use of lands in the highway right-of-way to alleviate adverse aspects of the highway presence and optimize its benefits to surrounding areas. The Underwood area will be wholly transformed by present urban renewal programs and should benefit directly from such collaboration. Parkville has been rezoned for industrial uses and the freeway is expected to stimulate conversion of non-conforming uses.

Some of the industrial establishments in the railroad corridor had been in existence for many years. Some of the plants had become obsolete and had been abandoned or were preparing to close before the freeway was built. A few of the more vigorous firms had elected to modernize their plants and expand facilities on their existing sites. Among those that have gone out of business were the Underwood plant, largest in the corridor, and activities that once occupied the loft buildings along Capitol Avenue in the Aetna-Capitol Avenue Area (Sector 3). While the advent of the freeway did not provide sufficient stimulus to revitalize these activities, neither was it responsible for their demise.

On the other hand, several major employers have found that the freeway has made them more accessible. It also seems likely that, with the help of an industrial renewal program, obsolescent industrial buildings and non-industrial uses in Parkville (and other parts of the corridor) might be removed and the area reorganized for modern industrial development in association with joint-uses plans for optimizing the use of highway lands.

The effect of I-84 on business office development and retail activity seems to have been the further stimulation of center-city activity. Substantial new office construction has occurred in the central business district, in the Asylum Hill insurance complex, and in the immediate neighborhood of the State Capitol. More new office space is under construction, and the improved accessibility provided to these areas by I-84 and other new freeways has doubtless been a factor in this continued growth. Some expansion of retail activity has taken place, and more is under consideration. Development of major new stimuli such as the projected new Civic Center at Trumbull Plaza, a Transportation Center in the Union Station Area, and/or other major multiple-use facility would be heavily dependent on the accessibility afforded by the freeways and would be expected to generate additional demand for retail, entertainment, hotel, and office functions.

The I-84 freeway was routed through a corner of Pope Park, a major open space facility in the City, and also traversed the site of the obsolete Hartford Public High School. Other than this, the freeway had relatively minor impact on public and recreational facilities in Hartford. The damage done to Pope Park seems susceptible to remedy by joint-development utilization of highway properties (and other lands) for an extended linear park along the south side of the freeway, beginning at the western edge of Pope Park and extending through the Park River Flood Plain area to the vicinity of Flatbush Avenue. Similar cooperative sharing of highway properties near the site of the relocated high school would provide space for improved parking and playfields at the school. Thus, the net impact of the freeway on these uses has generally been favorable.

Economic Impact — Like the land-use effects considered above, the economic impact of the freeway cannot be accurately judged at this time. However, certain observations about economic factors can be made. First, it is apparent that sizable amounts of real estate were removed from the tax rolls for the construction of I-84. Immediate results tended to be negative, insofar as city revenues were concerned. In the longer range, however, all signs point to positive economic effects in the corridor. Land values, especially in the vicinity of interchange locations, have increased due to improved site suitability for business and commercial uses, and these effects are evidenced by requests for re-zoning to more intensive uses. Also adding to the tax base are the values that accrue to commercial or business structures that are located so as to receive maximum exposure to users of the highway.

While it is not possible to separate the economic effects of redevelopment from those due to opening the new freeway, the freeway has been under construction for a long time and some increment of the new growth has likely been due to anticipation of a completed highway. West of the Aetna and Underwood areas, where redevelopment has not been experienced, economic benefits to the corridor resulting from construction of the freeway are not yet in evidence; it is too soon to reach any conclusions concerning economic impact of the freeway in this area.

TRAFFIC IN THE CORRIDOR

Although the I-84 freeway extends over a length of only 3.3 miles in Hartford, access is provided to the facility at eight points, all but three of them representing full interchanges:

Market Street	**Full Access**
Trumbull Street	**To and From West**
Ann-High Streets	**Full Access**
Asylum-Capitol Avenue-Broad Street (Union Station)	**Full Access**
Sigourney Street-Park Terrace	**To and From East**
West Boulevard-Sisson Avenue	**Full Access**
Flatbush Avenue	**To and From East**
Prospect Avenue	**Full Access**

In addition to the access noted above, the freeway provides direct interchange with I-91 (from the north; to and from the south) and with I-484 (to and from the west on I-84; interchange will not be fully operational until I-484 is completed).

Improvement of access via I-84 has resulted in faster travel by persons diverted from parallel streets, with a narrowing and sharpening of peak-hour activity. Even under the heaviest daily traffic flow conditions encountered on the freeway, travel using that route needs less than half the travel time required on the best alternative route.

During the years when the freeway was being planned, traffic congestion became very real in many parts of the I-84 corridor. The backlog of traffic that was potentially divertible to the new highway was sufficient in volume to use a large proportion of its peak-hour capacity. Traffic at peak hours is presently approaching mainline capacities on some segments of the highway, based on "Service Level D" values.[1]

During the **morning peak hour,** between 7:00 and 8:00 A.M., **eastbound traffic** exceeds 80 per cent of the computed capacity of the highway over most the distance from the West Hartford Town Line to the Trumbull Street exit in CBD, and rises to 98 per cent in the four-lane section between Asylum and High Street access points. Eastward from the Trumbull Street ramp, volume drops well below capacity levels as central business district-oriented vehicles reach their destinations.

At the afternoon peak hour, between 4:00 and 5:00 P.M., traffic flows tend to duplicate the morning picture on opposite lanes of the highway. On the western approaches to the central business district, in the area from Aslyum Street to Ann Street, traffic volumes are roughly in balance at both morning and evening peaks, using 85 to 95 per cent of capacity in most sections.

Local Streets — According to local traffic authorities, the general impact of I-84 has been to reduce traffic problems at locations where congestions and delay had been chronic and severe.

The principal exception to this statement seems to be the interchange area at Asylum and Farmington, where peak-hour traffic from the east delivers about 1,200 cars in the morning, and a nearly equal volume enters the freeway toward the east in the afternoon. Congestion occurs on streets leading into the Asylum-Farmington intersection in the morning, and on Farmington Avenue at the I-84 ramp approach in the evening. Most of the problem is due to excessive demand generated by large numbers of drivers going to and from work in Asylum Hill insurance offices.

Heavy flows of traffic also enter and leave the freeway at other interchange ramps, including those at Sigourney Street, Trumbull Street, Market Street and Ann Street. Frontage and service roads in the Downtown Sector are in heavy use on selected links. At present, these volumes are being handled quite effectively.

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[1] **Highway Capacity Manual,** Highway Research Board Special Report 87, Wash., D.C., 1966, p. 250: "In Level D, which is in the lower range of stable flow with volumes higher than in Level C, traffic operation approaches instability and becomes very susceptible to changing operating conditions. Operating speeds generally are in the neighborhood of 40 mph. . ."

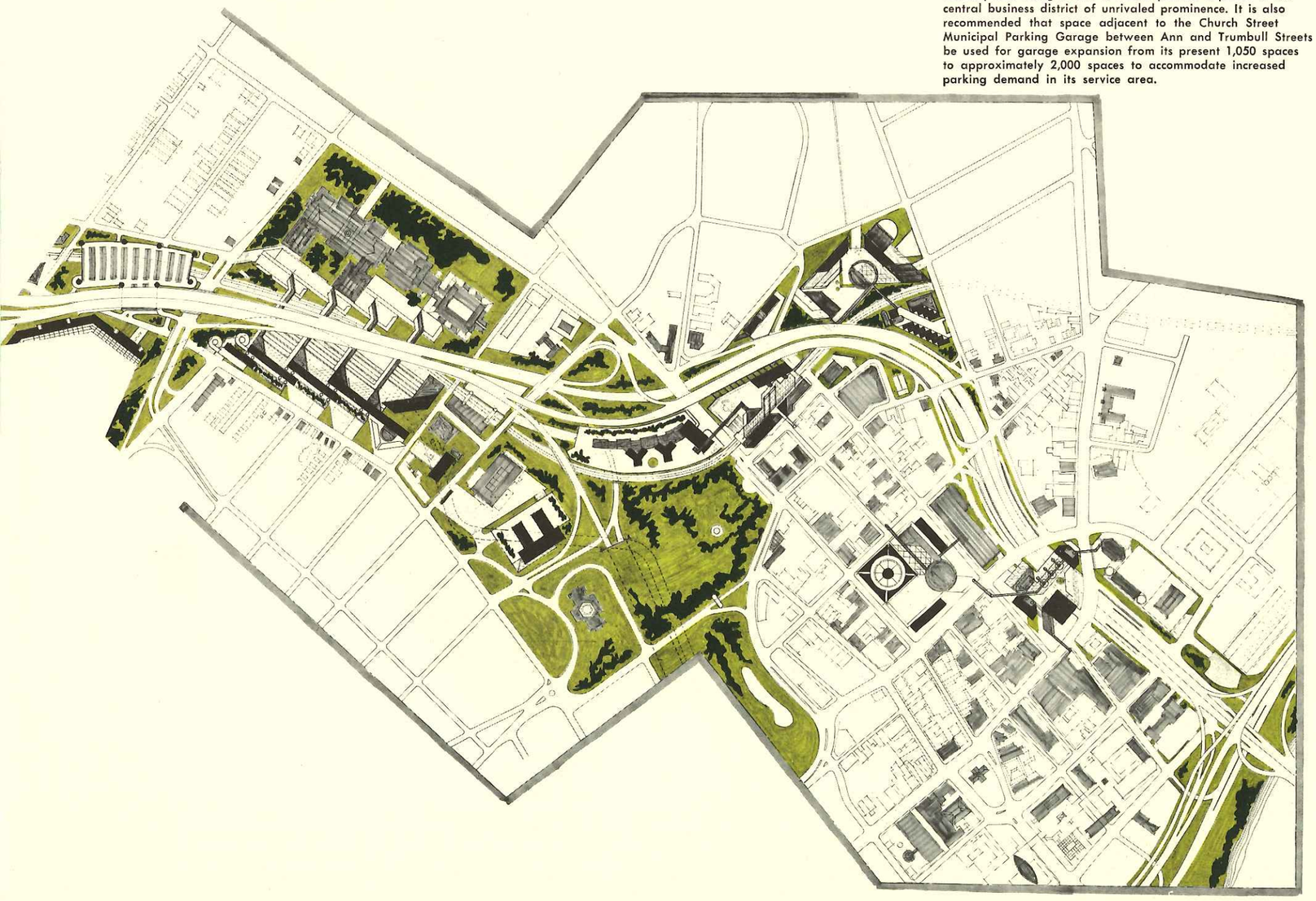


FIGURE 1: THE JOINT-USE DEVELOPMENT PLAN

The Recommended Plan of Development incorporates the uses found to most closely meet the conditions established for the study. The major joint-use projects for the seven sectors of the corridor are summarized below:

Downtown Area — A large, multi-use structure suggested for the Main-Trumbull-Church block, spanning the freeway and rising above it, would provide a portal to the central business district of unrivaled prominence. It is also recommended that space adjacent to the Church Street Municipal Parking Garage between Ann and Trumbull Streets be used for garage expansion from its present 1,050 spaces to approximately 2,000 spaces to accommodate increased parking demand in its service area.

Union Station Area — It is recommended that serious consideration be given to the development, in collaboration with adjoining land users, of a major center-city complex incorporating a Transportation Center to interface long-distance and local travel modes. The Transportation Center might provide the nucleus for a variety of related and peripheral activities, eventually including an office building, and other uses. Adjacent to Union Station, across Asylum Street, a site is recommended for construction of approximately 400 units of medium-to-high-income apartments with a parking deck for up to 1,000 cars.

Aetna-Capitol Avenue Area — Redevelopment of the Capitol Avenue frontage east of Sigourney Street would include major rearrangement of backyards, with parking for office structures occupying lower floors of the new building and extending behind them, and pedestrian passageways linking to existing development north of the freeway. West of Sigourney Street, more intensive use of the area for parking is suggested, through construction of a multideck parking structure on the Sigourney-Hawthorn-Laurel-Capitol superblock.

Underwood-Pope Park Area — It is recommended that highway properties adjacent to the renewal area be incorporated into redevelopment plans, which currently call for 1,200 medium-to-high density apartments. The area west of Laurel Street should logically become the site for a variety of uses, including expansion of the existing shopping center, addition of community installations such as a library, recreational facilities and meeting spaces and parking. A parcel north of Park Street, located beneath the main through lanes, offers an opportunity for construction of a service or commerical use appropriate to the area.

Hartford Public High School Area — It is recommended that the Farmington Avenue ramps be designed to minimize the amount of land they occupy so that a maximum amount of land can be made available to the high school for expansion of athletic facilities. Use of a portion of the area beneath the Sisson Avenue ramp for parking is also recommended. Development of a small playground for usebv neighborhood children and a pedestrian-way to the high school grounds is suggested for the narrow strip of highway land which parallels the southern edge of the Sisson Avenue ramps.

Parkville Industrial Area — It is recommended that an active renewal project be inaugurated in the area between I-84 and the Penn-Central Tracks; that the isolated portion of Pope Park be incorporated into a redevelopment plan for an industrial park; and that the street system be improved. It is further suggested that improved access to I-84 might be achieved by extending a new street parallel to the railroad tracks beneath the viaduct section of I-84 and devising an at-grade intersection with existing Flatbush Avenue ramps. Also recommended is the development of a joint-use warehouse under the elevated portion of I-84 immediately east of New Park Avenue.

Brookfield Flood Plain Area — It is recommended that most of the excess Highway properties be developed as a Public Park extending along the Park River channel, with appropriate landscaping from adjoining industrial uses. Just north of the suggested connection between the Parkville Industrial Area access road and the Flatbush Avenue ramps, there is land that might be used for industrial purposes, if screened from the freeway by a narrow continuation of the Linear Park.

ECONOMIC GROWTH PROJECTIONS

The economic feasibility of the major joint-use developments proposed for rights-of-way in the I-84 corridor must consider the overall development potentials in the Capitol Region and the entire Hartford-Springfield corridor. In total, the combined Hartford-Springfield economies generate an imposing growth potential, focused on the transportation and land-use corridor lying between the two urban centers.

Overall employment by 1980 is expected to increase about one-third over 1968 levels, with more than two-thirds of the increase in the Greater Hartford portion of the area. Nearly 40 per cent of the increase will be in manufacturing and other industrial employment. Overall, Greater Hartford's work opportunities will likely increase by about 130,000 jobs, from 365,000 in 1968 to 495,000 in 1980.

Population in the Hartford-Springfield area is expected to grow from nearly 1.37 million persons in 1968 to about 1.62 million in 1980, with nearly four-fifths of the increase in Greater Hartford. Nearly 60,000 more homes (in **addition** to replacements for any housing that may be demolished) will be needed to house nearly 197,000 more residents of the Hartford area.

The City of Hartford is almost completely built up at the present time, however, so only a small fraction of these increases can be expected to occur in the City itself. Nearly 19,000 additional workers (mostly in service occupations) have been projected for the City, but a net population gain of only 8,700 persons and 4,700 additional households is forecast. Approximately 380 additional acres of land will likely go into industrial development to accommodate a net increase of 2,700 industrial workers.

An increase of some 10,700 office jobs has been forecast for the 1968-1980 period. Approximately 1,600,000 square feet of new office space would be required to house these additional workers in the City.

Demand for additional retail area in the City of Hartford has been projected at 360,000 to 390,000 square feet by 1980. Service space will also be needed in the amount of 400,000 to 450,000 square feet by that date.

These projections provide the background against which the major joint-use activities suggested for the I-84 corridor have been examined and tested.

POTENTIALS FOR JOINT-USE OF FREEWAY

The assignment for the joint-uses study included the designation of 89 parcels of land that comprise portions of the highway rights-of-way or are "excess" remainders or remnants of land still held by the Highway Department but no longer needed for highway purposes. The goal of the study was to determine how these parcels of land might best be used for further improvement of the highway and the corridor it serves; it was suggested that the means for achieving better use of the corridor might be met by incorporating compatible uses, both private and public, into portions of the highway properties where there was suitable space for such development, where the proposed uses would be logical extensions of adjacent activities, would meet needs of the surrounding area, or were otherwise meritorious and economically viable.

The Interstate Route 84 right-of-way is wide, averaging about 180 feet, with greater width at complex interchanges. Over most of its length, one half or less of the right-of-way is paved for use by vehicles; the remainder is mostly open space, much of it planted and landscaped. Of some 276 acres within the freeway right-of-way in the City of Hartford, about a hundred acres have been designated as lands that might be used at higher intensities by incorporating non-highway uses into them.

The economic investment of private funds in uses located on highway properties is closely related to the intensities of land use on private properties immediately adjacent. Where land-use intensities are high and site cost correspondingly expensive, private investors may find it economically sound to construct platforms for high-rise buildings on the air-rights over a freeway; however, only a few blocks away from the concentration of expensive building sites, the potential returns on investment are not sufficient to meet the cost of air-rights construction and more modest forms of joint-use development may be in order; as the highway passes into areas of still lower densities of land occupancy, the constraints on joint-use of highway land may justify only the most nominal expenditure for site rental and preparation.

The initial phase of the study was an exploration of community needs in the freeway corridor and the extent that these might be met by making better or more intensive use of portions of the highway rights-of-way. The experience gained in past joint-use undertakings has demonstrated that nearly any type of land use can be successfully incorporated into a highway right-of-way if careful attention is paid to the requirements of both the traffic stream and the added activity.

At an early stage in the study, the land-holders abutting the highway were identified and a list developed naming owners, agents and business managers who might be interested in expanding into the highway areas, or who might have useful suggestions for the development of excess parcels by others. Added to this list were City department heads and their counterparts in various branches of State government, representatives of the Greater Hartford Chamber of Commerce, and the administrative directors of various religious and secular organizations with interest in community development. These persons were interviewed and suggestions for possible joint-uses solicited.

A variety of suggested public uses for I-84 properties were found to be reasonable and clearly in the public interest. Parcels identified for specific uses included several that are needed for street widening; difficult remnants of land that might best be landscaped and maintained to improve neighborhood appearance; pieces of land that abut upon and enlarge public parks, schools and other activities; lands that lie adjacent to tracts undergoing redevelopment; and so on. The fact that proposed public uses were reasonable was not allowed to inhibit the Study Team from investigating other possible uses, however, in order that the potential uses for properties in the I-84 alignment be fully analyzed and the relative benefits of alternate uses thereby determined.

The parcels of land that form the base for the study do not stand isolated in their environments, of course, so that very much larger areas have been encompassed in the analysis of potential joint uses. Within the central business district, for instance, where the main "through" roadways of the freeway are largely in structure depressed below street level, the studies have given serious consideration to bridging the highway itself; a bridged area would truly represent use of "air rights" in the freeway corridor and would create acreage in excess of that included in the parcels specifically designated for study.

Kinds of Joint Uses — The types of activity that might be expected to develop around the I-84 expressway depend on many factors. Compatibility with the highway and the traffic using it, as well as with the character of adjacent neighborhoods, is very important. Most impelling however, from the standpoint of private investment, are the economic limitations imposed by community need for specific types of activities, particularly on the larger sites, including the relative costs of site development and the special business advantages which might accrue to users of air-rights as such.

The general categories of development and the portions of the I-84 route in Hartford to which they might apply, were determined as follows:

Housing — Although limited amounts of housing could be accommodated at many points along the corridor, the Underwood area has the best potential at present. Low-moderate rents or subsidized housing would be particularly appropriate. "Walk-to-work" high-rise apartments oriented to the Asylum Hill insurance complex and the central business district are another strong potential. These developments would likely be geared to the middle income market, with a relatively small proportion subsidized for low income occupancy.

Office Space — This use is mainly dependent on continued growth of the central business district and Asylum Hill insurance activities. Additional potential would be generated in conjunction with a transportation center near the existing railroad station, and possibly as part of a "service center" in the Prospect Avenue area near the West Hartford Town Line.

Industrial — Major possibilities include redevelopment in the Parkville area. More limited treatment might also occur in other industrial portions of the corridor and through development of "incubator" industrial loft space.

Retail-Commercial — Growth in the central business district retail core, centered on the G. Fox Department Store, is the most obvious opportunity. Other important potentialities exist for specialty shopping and visitor services as part of a possible transportation center. Convenience shopping facilities would also be required to serve major development in the proposed Underwood residential project.

Conditions Favorable to Joint Use — Some of the special conditions that might help to make joint-use of I-84 properties attractive to potential developers include the following:

- **Scarcity of land in the immediate environment** — A highway parcel in the central business district may represent an open buildable site, where no other land is available at an attractive price. The extra costs for preparing and developing the site may be offset by locational advantages, provided the foundation areas can be obtained at a low enough cost to overcome the inconveniences associated with adapting them to use.
- **The property is adjacent to an existing use that needs land for expansion** and is a feasible site for that purpose. Cost of development would be viewed in context with the overall cost of the next best alternative, which might be to move the parent activity to a new site.
- **The site can be developed with a minimum of effort, to house ancillary uses,** such as parking or the dead storage of materials. Again, if combined cost for site (rental, lease or purchase) and construction are competitive, the parcel may prove attractive.
- **Land is made available at low cost** and/or site acquisition entails minimum difficulty for the potential user (public agencies, in particular).
- **The State and City are interested in improving the appearance of the roadway** and are prepared to undertake development of small parks, playgrounds, ball courts, and similar activities within the right-of-way, as sociologically suitable and potentially more advantageous to abutting neighborhoods than landscape treatment.

RECOMMENDED JOINT USES IN THE I-84 CORRIDOR

Although many possible uses for portions of the I-84 corridor were suggested and studied, relatively few proposals were found to meet most of the desired criteria. The matter of **economic viability** is the most important criterion for **private investment,** and this proved to be a wide-ranging variable. Within areas of most intensive land uses, the economics of joint-use development were shown to be far different than along portions of the highway that traverse vacant land. The kinds of uses that might prove profitable in the downtown area are those that have shown vigorous growth in the area, for which there continues to be need, and to which the available highway sites have strong appeal. Costs to develop new facilities in the highway right-of-way must, of course, be competitive with costs of other suitable locations in the vicinity.

Figure 1 illustrates a Recommended Plan of Development which incorporates the uses that the Study Team has found to most closely meet the conditions established for the study. Alternative means of effecting the proposed uses have been investigated, in most cases, as well as other kinds of uses which, in the judgment of the Study Team, were less attractive than those suggested for development; some of the alternatives are described in the main body of this report.

Recommendations are described below for each Sector of the Corridor:

SECTOR 1 — THE DOWNTOWN AREA

The most stimulating possibilities for joint development in the Downtown Area occur in the block bounded by Main, Trumbull, and Church Streets. This block is bisected by the freeway, which is below grade at this point and overpassed by both Main and Trumbull Streets. A large, multi-use structure has been suggested for the block, spanning the freeway and rising above it.

An air-rights building located here, at the core of Downtown activity, would provide a portal to the central business district of unrivaled prominence. Such a structure has the potential to accomplish much more than new revenue-producing space in Downtown Hartford; it would provide a bridge over the freeway for expansion of central city to the north, and would act as an interface or medium of transition between activities north and south of I-84.

It is recommended that a second-level pedestrian plaza be developed within the structure, with direct pedestrian access to the retail core (particularly G. Fox) and Constitution Plaza, to the proposed new civic and convention center at Trumbull Plaza, and to the emerging Windsor Street urban renewal project with its business offices and Rensselaer Polytechnic Institute. The building would also incorporate a large parking garage on the Church Street portion of the block and an extension of the South Frontage Road from Trumbull to Main Street would provide additional access to parking space and loading docks.

A complex structure containing some 400,000 square feet of office and retail space, plus a 150-unit hotel and a 1000-car garage, has been visualized at this location for the purpose of preparing a land residual analysis. An investment of about $16,000,000 would be required to realize such a structure at current costs, and might be expected to gross over $4,000,000 per year. However, recent high cost for borrowed capital (the study assumes 9.5% interest rate on 70% financing over 25 years) would leave very little available for land purchase. If interest rates become appreciably lower, more of the income could be used for land purchase and each dollar of income would finance larger borrowing.

Excess lands and underarea spaces available for development are very limited in Sector 1, with the air-rights building representing the most significant site. Space under the freeway east of Market Street is presently used by the Hartford Police Department for parking and a car pound. It is recommended that these uses be continued, and that the areas be suitably screened and planted.

Narrow parcels of excess highway lands along the southern boundary of the freeway should be used to develop a continuous frontage road (Chapel Street South) to provide continuity of traffic flow from the eastbound exit ramp at High Street all the way to Columbus Boulevard. This, to work, would require redesign of the ramp access to High Street, to permit traffic from the ramp to continue on the frontage road, and extension of the road through the air-rights site between Trumbull and Main Streets, noted above; the existing roadways should be widened where excess parcels permit.

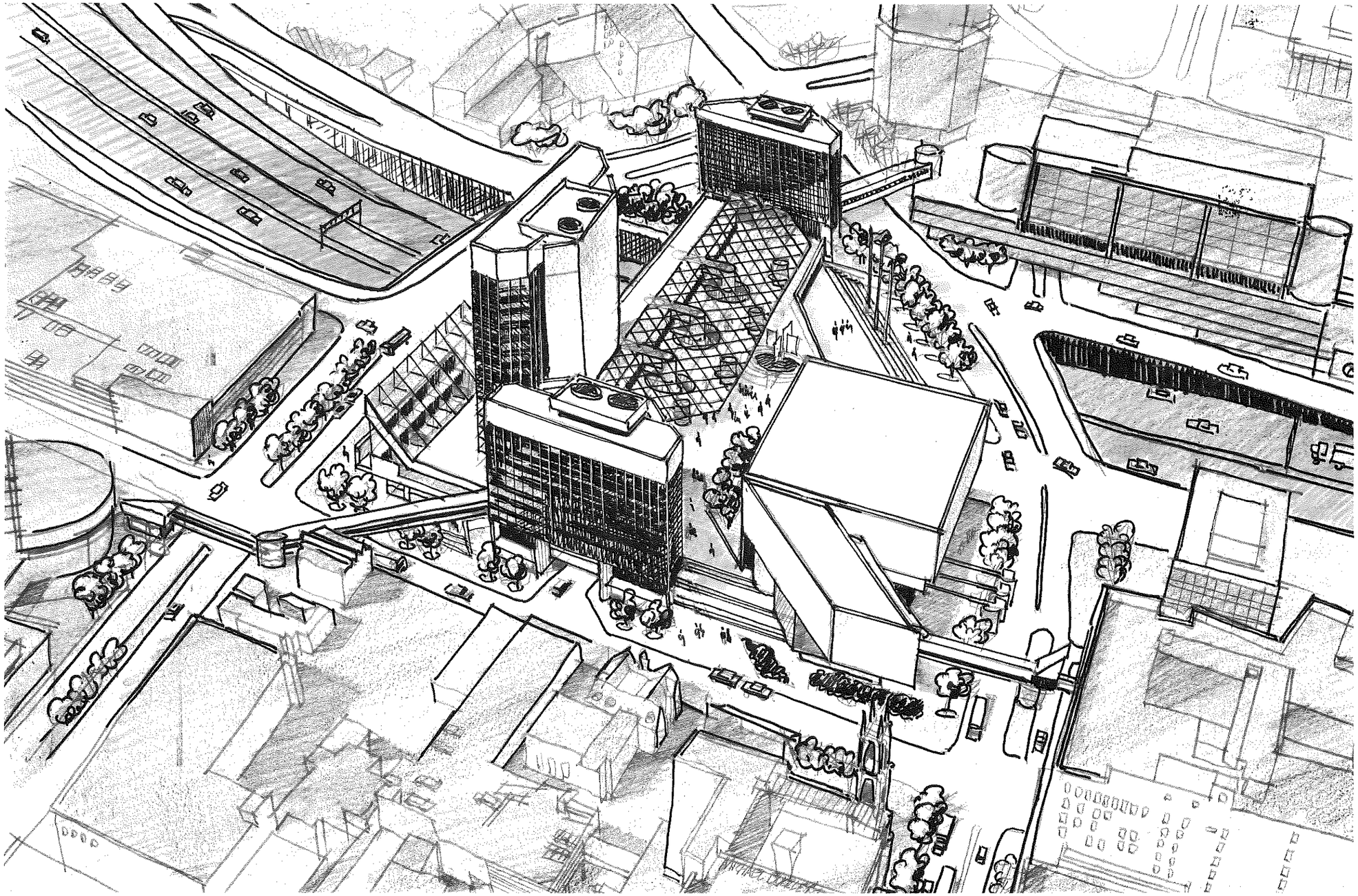
It is also recommended that space adjacent to the Church Street Municipal Parking Garage between Ann and Trumbull Streets be used for garage expansion and for additional access to the garage from Chapel Street South. The garage should be expanded from its present 1,050 parking spaces to approximately 2,000 spaces to accommodate increasing parking demand in its service area.

Another parcel of more than half an acre is located east of Market Street, just north of the freeway. A small portion of this area will probably be used in the projected reconstruction of the I-91 interchange with I-84. The remainder of the area is slated to be incorporated into future redevelopment of the Penn Central Freight Terminal; until that time it should continue in use as an off-street parking lot.

The possibility of public use of the freeway rights-of-way for a "people-mover" system of public transport (probably at the second floor level of abutting developments) or a pedestrian plaza spanning or cantilevered partly over the freeway are valid considerations for the future.

FIGURE 2: DOWNTOWN SECTOR JOINT USE COMPLEX

A large multi-use structure is suggested for the Main-Trumbull-Church Street block bisected by the freeway, which is below grade at this point and overpassed by both Main and Trumbull Streets. An air-rights complex spanning the freeway and rising above it would provide a portal to the central business district of unrivaled prominence while acting as an interface between activities north and south of I-84. The project visualized here would contain some 400,000 square feet of office and retail space, a 150-unit hotel and a 1,000-car garage, in a project containg a second-level pedestrian plaza with direct pedestrian access to the retail core, the Windsor Street renewal area and the new civic and convention center at Trumbull Plaza.



SECTION 2 — THE UNION STATION AREA

The railroad passenger station occupies an equivocal position in central Hartford. Train service is infrequent and the station has fallen into disrepair, as have many other establishments in the immediate vicinity; vacant lots and empty buildings betoken a depressed area with little vitality. This, however, seems likely to be a temporary condition, for the current revitalization of Downtown Hartford, together with expansion of office functions in the State Capitol area and in the insurance complex on Asylum Hill, will probably result in re-definition of the central business district to encompass these employment centers. Such re-definition would find the Union Station almost precisely at the center of the business district. Growth potential should be very good, over the longer range.

Nearly ten acres of highway land is available for joint use in the Union Station Area, portions of it beneath viaduct sections of the freeway. It is recommended that serious consideration be given to the development, in collaboration with adjoining land users, of a major center-city complex incorporating a Transportation Center at which to interface long-distance and local travel modes (trains, intercity buses, airport limousines, possibly helicopter services, exchanging passengers and cargo with local buses, taxis, automobiles, trucks, and possibly one or more forms of short-distance "people movers"). The Transportation Center might provide the nucleus for a variety of related and peripheral activities, eventually including an office building, a large hotel, a pedestrian plaza with specialty shops, a parking garage, and other uses.

The idea of a Transportation Center to replace the old Union Station is not new, and the City of Hartford is currently sponsoring a study of the project. The scale of such an undertaking, and the variety and mix of uses that would prove most attractive for joint public and private development, have yet to be determined. To give perspective to the study, alternative configurations for possible developments on the Union Station site have been discussed and one scheme tentatively dimensioned for evaluation. It is assumed that construction of a Transportation Center plaza, with office building, shops, restaurants, theaters, and related activities would be a private undertaking. A parking garage associated with the plaza might also be built with private capital. An office building could be a public investment, however, since the site is convenient to the Capitol building and might be used for expansion of state offices.

A land residual analysis has been prepared for an assumed set of uses, to provide perspective on the project, and the amount of resources that might go into site development. For this purpose, an overall construction cost of about $10,440,000 was projected, and estimates made of likely income, operating and maintenance expenses, taxes, and costs of debt amortization. Income remaining after all other expenses had been met would appear to be sufficient to support an investment of about $1,400,000 for purchase of site, assuming 9.5% interest on borrowed capital. At more favorable interest rates, substantially greater amounts could go into site acquisition.

Again, it must be noted that the magnitude of the construction project upon which these calculations were based is very tentative; other developments of larger or smaller scale would have to be examined in the search for the most viable undertaking on this site. An expanded project might consider the eventual construction of a heliport and/or a fixed-route passenger distribution system to serve the present central business district and nearby employment centers. On the other hand, the long-range plan might well have small beginnings, with the several principal elements staged for construction at intervals during a considerable time span.

Adjacent to Union Station, across Asylum Street between the main roadways of I-84 and I-484, a large parcel of land has been examined for joint-use possibilities. This site is recommended for construction of up to 400 units of medium-to-high-income residential apartments, and could include a parking deck for up to 1,000 cars. The parking space supply would serve residents of the complex and would also supply parking space for the proposed Transportation Center and the State Office Buildings in the vicinity of the State Capitol.

North of I-84 are several acres of privately-owned land, which is largely vacant except for the Bloomfield spur of the Penn Central Railroad, and where development should be coordinated with the joint-use activities recommended for the Transportation Center and other portions of the freeway right-of-way. Development at this location might be accomplished by stages over a period of years, with a parking garage of about 1,500 spaces in the first stage and important non-parking uses on the super-structure of the parking facility in successive stages. The parking garage could be built on five or six acres of land and might consist of three parking levels.

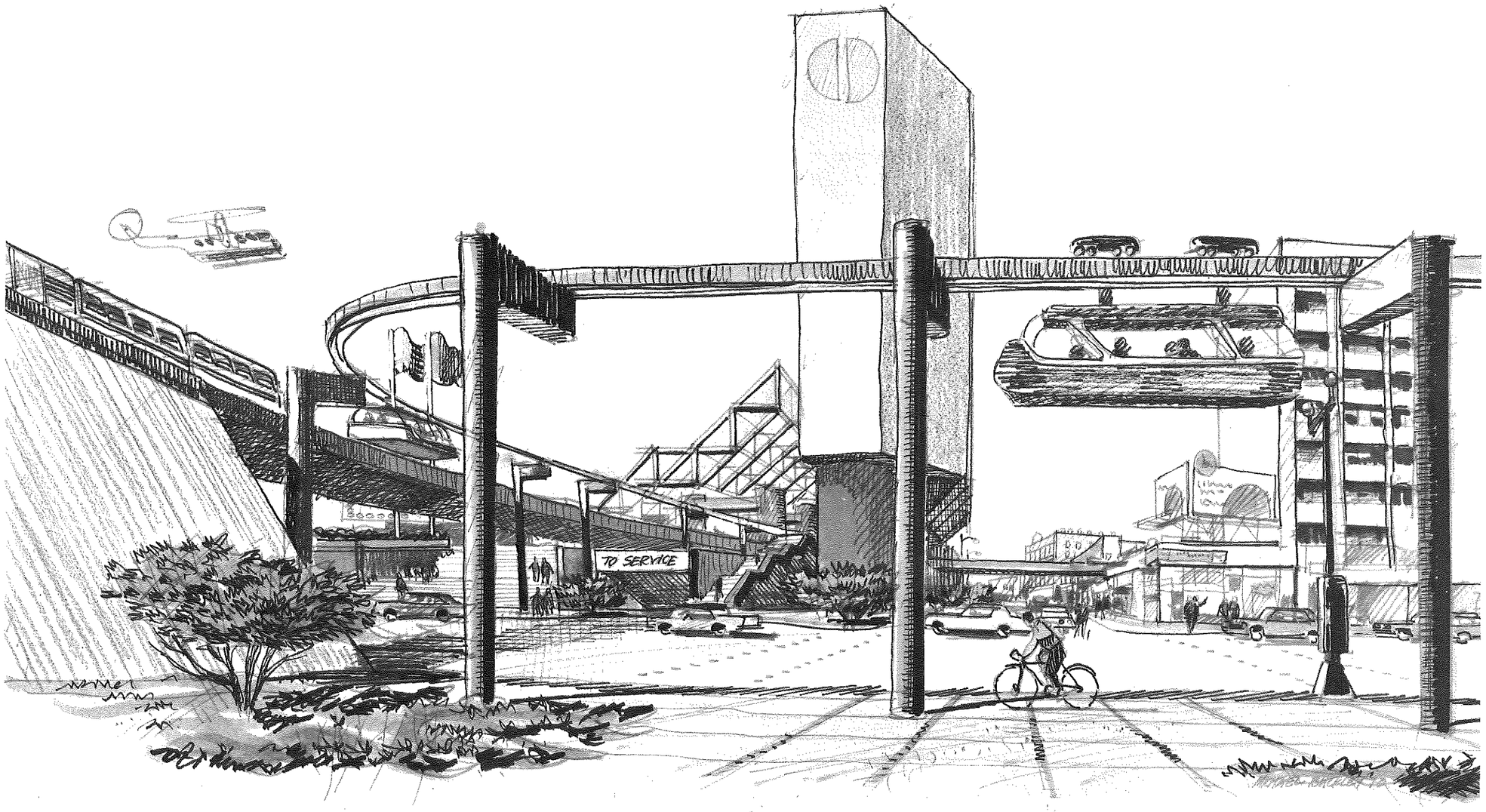
FIGURE 3: UNION STATION SECTOR TRANSPORTATION CENTER

The rendering below shows the Union Station Area as it is today from a vantage point on the north edge of Bushnell Park; the view to the right shows what the area might look like in the year 2,000. The monorail concept in the sketch is not a recommendation for a specific type of mechanism but rather a symbolic indication of the need for some form of "people mover" by the horizon year.

Later-stage enlargement of the garage to about 4,000 parking spaces might be considered, but would likely entail modification of freeway access ramps at High and Asylum Streets to accommodate the heavy flows of traffic into and out of such a large facility. Careful planning, with full participation by the Highway Department, should precede commitment to expansion of parking on this site beyond the 1,500 spaces recommended for the first stage. Costs to rebuilt ramps, retaining walls, and other construction would likely be considered chargeable to the garage expansion project, if approved.

Several possible alternative uses for areas on top of a garage on this site have appeal. A high-rise residential building, utilizing the roof of the parking structure as a plaza level for apartments, could be developed here if the market warrants. The site would also be suitable, from the standpoint of the surrounding community and geographic location, for a community college serving greater Hartford. Alternatively, the garage roof might be developed as a heliport, in conjunction with other Transportation Center activities.

Other possibilities for joint-use developments in the Union Station area are generally of minor scale, such as proposed landscaping of remnants of land on either side of Asylum Street just north of the freeway. Several very small parcels of excess land north of the freeway between High Street and the railroad tracks should become part of the redevelopment site in this area.


TO SERVICE

SECTOR 3 — THE AETNA-CAPITOL AVENUE AREA

Sector 3 contains 12 parcels of Highway property (nearly 14 acres of area) that have been studied for possible joint use. Nearly all of this land is currently under lease (or has been sold) for parking use, mostly for employees of the Aetna Life and Casualty Insurance Company. Continuation of this use is encouraged, with certain modifications.

The highway parcels available for joint-development in the Aetna superblock exceed six and a half acres in extent, with most of the usable area located beneath the main through lanes of I-84. The privately-owned Capitol Avenue frontage might be developed for office space by one of the insurance companies and/or by the State. Pedestrian walkways could be provided at one or more points in the superblock, to connect uses on opposite sides of the freeway; there is sufficient highway clearance to permit construction of pedestrian crossings beneath the freeway, with adequate separation from the railroad tracks, thus providing Aetna's workers with better access to parking spaces under the freeway.

The appearance of the freeway would be enhanced by landscaping within the back lots of properties that adjoin the freeway and by discreet use of screening. Redevelopment of the Capitol Avenue frontage might incorporate major rearrangement of backyards, with parking for office structures occupying lower floors of the new building and extending behind them; several levels of parking could be developed in structures under parts of the freeway, and uses other than parking might develop for parts of the right-of-way parcels. Such uses might include service and storage facilities, a lunch concession area, ball courts or other recreation facilities for insurance company employees (and possibly, for use by neighborhood residents).

About five acres of land, beneath and adjoining the freeway just west of Sigourney Street, are currently used for surface parking. It is recommended that these areas be used more intensively for parking, through construction of a multideck parking garage for as many as 2,000 cars, and by incorporation of other appropriate uses. Shops, service establishments, loading docks and warehousing might occupy portions of the area, particularly the frontage along Capitol Avenue and Sigourney Street. The roof of the parking deck might be developed with a swimming pool, ball courts, cafeteria, and so on for neighborhood residents and employees of firms using the garage.

The primary function of the parking garage would be to help meet parking needs of the Aetna Casualty and Life Insurance Company. The facility could also fulfill some of the parking requirements of the large residential complex proposed for the Underwood Redevelopment Area to the south, since the peak parking demands of these two potential users occur at different hours. The construction of the Sigourney Street Parking Garage would be a private project.

SECTOR 4 — THE UNDERWOOD-POPE PARK AREA

About ten acres of highway lands have been examined for appropriate forms of joint-use development in the Underwood-Pope Park Sector. The freeway and/or Penn Central tracks constitute the boundary of this Sector on the north and northwest, with areas of potential joint development under and around the freeway and portions of the Capitol Avenue overpass. The overpass structure is complex and rises more than sixty feet above the railroad tracks where two of the main ramps cross; the structure is massive and dominates the areas around it.

South of the freeway, an area bounded by Laurel Street, Park Street and Park Terrace was, until recently, principally occupied by the multi-story Underwood Typewriter factory. That use is now abandoned and the area is being cleared for redevelopment, most likely for medium-to-high density multi-family residential use. Current plans call for approximately 1,200 apartment units. Although the freeway borders this area, modern construction methods and good architectural design could minimize traffic noise in residential structures and, by facing them inwards and towards Pope Park, provide an unusually attractive setting for apartment dwellers.

It is recommended that highway properties adjacent to the renewal area be incorporated into redevelopment plans. In addition to the Sigourney Street Parking Garage, recommended in discussion of joint-use developments in Sector 3, parking for the Underwood residential complex might also be incorporated into the northern portion of the tract along Capitol Avenue, using air space under I-84 near Laurel Street.

West of Laurel Street, portions of the Park River not presently in conduit are soon to be boxed in, providing additional area (now owned by the Highway Department) for development in association with the Underwood project. This area should logically become the site for a variety of uses, including expansion of the existing shopping center, addition of public and community installations such as a library, recreational facilities and meeting spaces and parking for up to 400 cars.

FIGURE 4: AETNA-UNDERWOOD JOINT USE PROJECTS

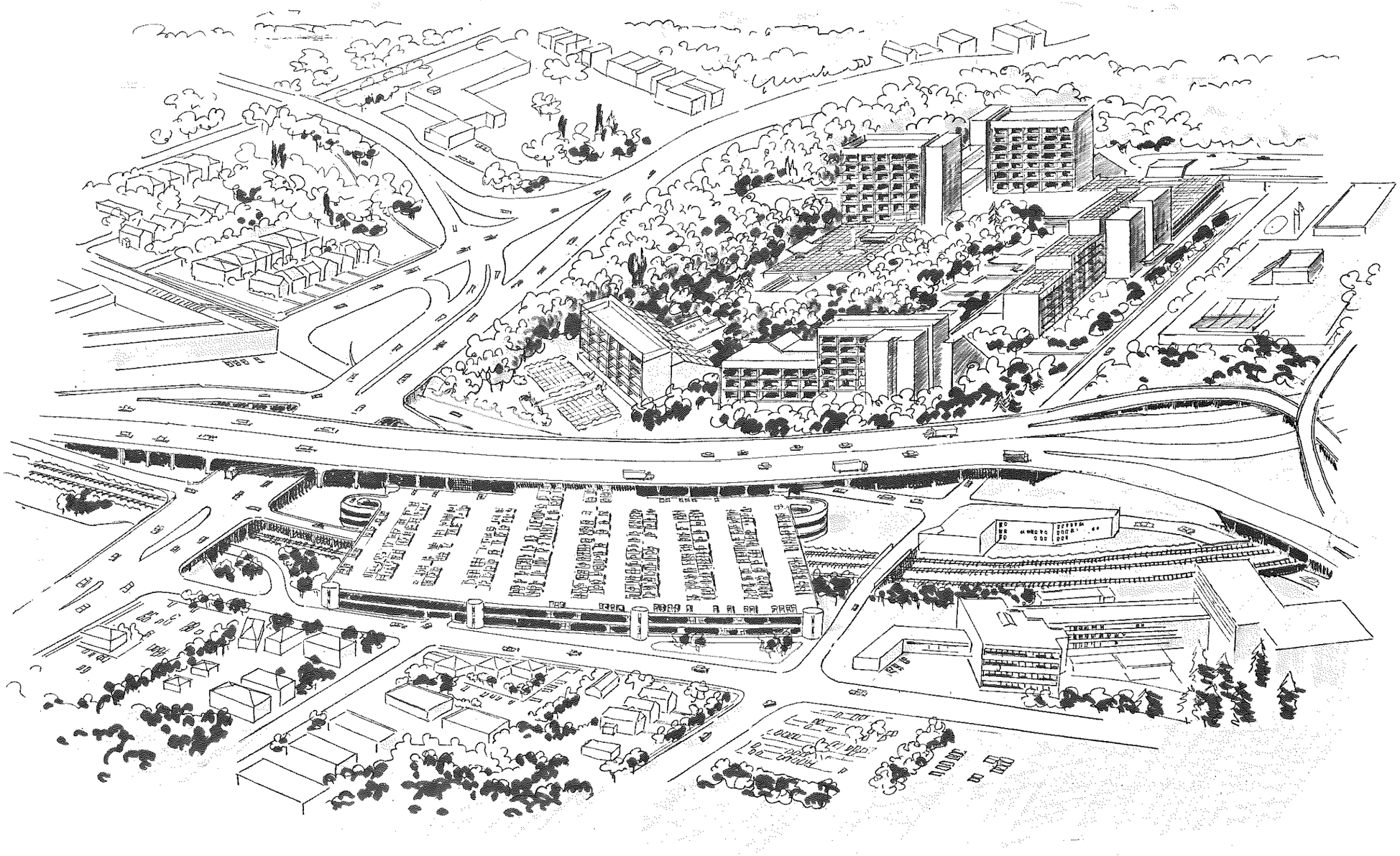
The adjoining rendering shows the multideck parking garage suggested for the Sigourney-Hawthorn-Laurel-Capitol superblock in the foreground, and the proposed Underwood residential complex to the south of I-84 in the background. Much of the highway rights-of-way in the two sectors incorporates joint uses, such as surface and structured parking, and service and commercial facilities.

A parcel of land fronting on the north side of Park Street and located beneath the main through lanes of the freeway, affords an interesting opportunity for development of non-highway uses. This area, nearly two acres in extent, has sufficient clear space under the freeway for construction of building that might be used to house any of a variety of uses appropriate to the area — a cleaning establishment or other services; retail outlets, such as a bakery, grocer, delicatessen, etc.; blueprint office, computer sales office, or other business use. It is recommended that the area be reserved for development along these lines.

An analysis has been made of likely development costs for a commercial structure on the Park Street site beneath the freeway. A building containing 13,000 square feet, at $23.00 per square foot, would represent an investment of some $300,000. Based on likely income and costs, with capital borrowed at 9.5% annual interest rate, such an establishment might allocate about $4,000 per year to underwrite site costs.

Other parcels of land investigated were found to have little potential for intensive non-highway use. About an acre of land adjacent to Pope Park, just north of Hamilton Street, is recommended for incorporation in Pope Park, to be appropriately landscaped for continuation of the lineal park that borders the freeway in this vicinity.

Another parcel of about two-acres extent, located between lanes of the freeway within the Capitol Avenue interchange, is typical of open spaces that occur frequently in roadways of this type. It is concluded that the best advantage to road users and the community would result from landscaping and maintaining the plot as attractively as possible.



SECTOR 5 — THE HARTFORD PUBLIC HIGH SCHOOL AREA

The High School is the most prominent feature in this Sector, occupying the block west of Forest Street and extending from the freeway ramps on the south nearly to Farmington Avenue at the north. Behind the school, five or six acres of land have been reserved by the Highway Department for proposed extension of a freeway along the North Branch of the Park River. The construction of a freeway extension through this area has been indefinitely postponed, but provision was made in the design for ramps to Farmington Avenue and it is strongly recommended that these be built.

Since most of the lands reserved for the freeway extension will not be used immediately, an opportunity is afforded for appropriate "temporary" uses in the area. Existing High School playfields are cramped for space and the City would like to use the property for expansion of athletic facilities. Whether temporary or permanent, such use is appropriate, and it is recommended that the Farmington Avenue ramps be designed and located to minimize the amount of land they occupy so that a maximum amount can be made available to the High School.

At the southern side of the school grounds, a joint-uses parking lot for 600-700 cars is currently being planned, with portions of the lot extending under the overpass structures and ramps. Several acres of area are available for consideration in this parcel, only part of it to be occupied by the parking lot. Other uses that might be developed by the High School include ball courts (handball, volleyball, badminton), locker rooms, storage and maintenance facilities, repair shops, and the like.

A special problem is presented by the visual impression of the freeway from the High School grounds, dominated by the high, interweaving ramps of the freeway overpass. It would be very difficult to completely screen the overpass without planting a small forest of tall trees, and this does not seem warranted. From a little distance, the overpass has visual interest and variety and can be made quite acceptable by landscaping and planting a few trees which, when mature, will interrupt and soften the rigid horizontal lines that dominate the structure. The Highway Department is currently undertaking a landscaping program which may achieve this objective.

Along the south side of Capitol Avenue, immediately under the interchange ramps near the Penn Central tracks, there is space for some commercial frontage. Commercial buildings could be spaced under the freeway, with room for customer parking. Buildings with commercial frontage would be a private undertaking. The specific site layout and orientation of buildings and parking spaces to serve them would have to be carefully coordinated with the Highway Department to insure adequate access for maintenance of I-84.

Across Capitol Avenue from the above parcel, is a tract containing about three-fourths of an acre, almost entirely under the overpass. While there is room for construction of small service establishments or other businesses fronting on Capitol Avenue, the more likely use at present is for open lot parking, which is in short supply throughout this vicinity.

A narrow strip of highway land parallels the southern edge of the Sisson Avenue ramps, from Sisson Avenue to the vicinity of the parcel noted just above, separating the highway from a row of residential properties. The best use of this area will be for landscaping to screen highway traffic from the adjacent homes. It is recommended that a small playground be developed along this strip of land for use by neighborhood children and that a pedestrian-way be maintained for use by persons walking to and from the Hartford Public High School grounds.

Directly north of the freeway ramps, adjacent to Sisson Avenue, the highway properties abut lands occupied by a new fire station. About an acre and a half of space is available here for further expansion of the City's public works facilities, and highway properties might reasonably be developed jointly with uses desired by the City.

SECTOR 6 — THE PARKVILLE INDUSTRIAL AREA

The Parkville Sector lies northwest of I-84 and is bisected by mainline tracks of the Penn Central Railroad. The enclave between the railroad and freeway is predominantly devoted to industrial uses, with mixed residential, retail and other activities in the northern half of the area. Similar uses occupy the two blocks of land south of Hamilton Street on the west side of the tracks and other properties bordering Kibbe Street. The lands in this Sector have been zoned for industrial use, and conversion of non-conforming uses would be expedited by inauguration of an active renewal project in the area. It is recommended that the City take steps along this line, and that the portion of Pope Park isolated by the freeway be incorporated into a redevelopment plan for an industrial park. Other portions of Highway lands suitable for joint use should also be made part of the plan, with particular attention to reorganization of the street system for subdivision of the area into efficient industrial sites.

Besides recommending improvements to the street system within the Parkville area, it is further suggested that improved access to I-84 might be achieved by extending a new street parallel to the railroad tracks beneath the viaduct section of I-84 and devising an at-grade intersection with existing Flatbush Avenue ramps, thereby developing a direct freeway connection to and from the east.

An open tract of land between Kane Street and the northern boundary of the freeway is available for industrial expansion in the Parkville Sector and joint-use potentials for the adjacent freeway rights-of-way should be explored in conjunction with future development of this area.

There is also an opportunity to develop a joint-use activity under the elevated portion of I-84 immediately east of New Park Avenue. This could be a warehouse for either Royal Typewriter to the north or Heublein Foods to the south. The economic feasibility of the latter undertaking has been examined in general terms. A warehouse and loading dock area of some 75,000 square feet might be built on this site at a cost of about $900,000 if construction costs can be kept to about $12 per square foot. Estimates of income, costs, taxes, and return on investment indicate that, on the basis of financing at 9.5% interest for the portion of funds borrowed, an annual residual amount of about $6,000 might be available for land lease and site development.

SECTOR 7 — THE BROOKFIELD FLOOD PLAIN AREA

Nearly a third of the Highway Department land designated for joint-use analysis in the study is found in Sector 7, most of it in the flood plain area of the Park River. The large block between Flatbush Avenue and the freeway was originally purchased for construction of a Cedar Ridge Connector, but that route has now been abandoned and much of the area is surplus. The land has been drained by placing the stream in a paved channel along the southeastern boundary of the property, leaving a flat, unused field of about 25 acres extent, traversed only by the Flatbush Avenue ramps.

It is recommended that most of the excess Highway properties be developed as a public park, with extension of a linear park along the length of the Park River channel and development of a 12 to 15 acre recreational park north from Flatbush Avenue on the west side of the River channel.

It is further recommended that the frontage on Flatbush Avenue be used to house one or more youth clubs or centers, possibly under the sponsorship of the YMCA and/or the Boys Club of Hartford. Development might consist of recreational buildings with athletic facilities, a swimming pool, playing fields and ball courts north of the buildings.

Most of the privately-owned properties along Wellington Street, south of Hamilton, might also be incorporated into the linear park, extending the park treatment from the southern edge of Pope Park into the flood plain area. The existing industrial plant in this area could be allowed to remain, but should be properly landscaped and screened to maintain the park treatment along the south side of the freeway. It is suggested that the linear park be placed under the City Park Department, to assure a high level of park supervision and maintenance.

Just north of the suggested connection between the Parkville Industrial Area access road and the Flatbush Avenue ramps, there is land that might be used for industrial purposes, if screened from the freeway by a narrow continuation of the linear park. Site preparation would include expenditures to fully enclose Kane Creek as it flows through the area.

TRAFFIC GROWTH AND JOINT-USE DEVELOPMENT

Although the I-84 freeway has been open for traffic throughout its length for only a few months, it is already receiving very heavy use. Consideration has been given to continuing traffic growth in the freeway corridor, especially with regard to new traffic that would be generated by, or attracted to, possible joint-use activities recommended in this study.

Traffic Growth Due to Joint Development — If all of the joint-use activities that have been proposed for serious consideration were actually developed over the next decade, plus the anticipated uses on properties adjacent to the freeway, a large proportion of all new growth in Hartford over the decade, 1970 to 1980, would be accounted for. Estimates of new traffic likely to result from these sources indicate that as many as 7,700 additional car-driver trips would be generated during the afternoon peak-hour. Only a fraction of these would use I-84, of course, and those assigned to it would not all use the same sections. Nevertheless, additional traffic would seek to use the freeway, and consideration has been given to how more vehicles might be accommodated.

Heaviest traffic flows presently occur on the portion of I-84 that extends eastward from the Asylum Street interchange to the Connecticut River. Substantial peak-hour relief on this route section will be afforded when I-484 is completed to its new connection with I-91. Morning peak-hour volumes would likely be reduced in the range of 13 to 19 per cent, while the afternoon peak is expected to experience 20 to 25 per cent traffic reduction. The result will be more uniform capacity utilization throughout the sections of I-84 in the City of Hartford, and considerable potential to absorb traffic increases in the corridor.

Besides the relief expected from I-484, several highway modifications have been recommended in discussions of joint-development in each sector, as noted above. None of these would have substantial effect on freeway capacities, but would be intended to improve access and local traffic operations.

Potentials for Bus Rapid Transit — Brief consideration has also been given to possible use of the freeway by buses. Where practical, from a transit operations standpoint, buses should use the freeway to reduce running time and thereby improve passenger service. As freeway use at peak hours approaches capacity, thought might be given to "metering" traffic into the freeway at selected locations to avoid overloading the facility, with the special provison that buses receive "priority" access at these locations. Such measures, if carefully applied to avoid congesting the freeways, would help to preserve transit use and induce new ridership.

The possibilities for instituting a bus rapid transit service have also been briefly examined, giving consideration to several basic components of such service. If a substantial proportion of the persons who use I-84 in driving to work in the enlarged Downtown area (including the State Capitol office complex and Asylum Hill insurance offices) could be induced to use an express bus service from outlying parking fields located near points of access to the freeway, significant traffic relief could be achieved on the congested route sections in the center of the City. Service frequencies, speeds, and costs would have to be tailored to very close tolerances if conventional buses were used and routed over the freeway. Possible use of private rights-of-way have not been investigated nor have the potentials for innovative new transport methods been examined, but both ideas might have merit in developing greater use of public transportation. It is certain, however, that much careful study would have to go into the development of any improved public transit service capable of meeting the indicated performance requirements for substantial diversion of car drivers.

Overall Freeway Landscaping — Landscaping of the I-84 freeway is currently in progress, based on a carefully prepared landscaping plan developed by the Highway Department. The appearance of the highway and its structures, as viewed both by drivers and other observers, has much to do with how well it is received by the Hartford Community.

As part of the joint-use plan, further refinement of the Highway Department's landscaping plan has been proposed. A principal revision is the suggestion for a "linear park" along the southern boundary of the freeway from the vicinity of Sigourney Street to the West Hartford Town Line. Several specific components of the plan are detailed in discussions relating to each of the seven sectors of the corridor. In addition, attention has also been given to other recommended landscaping treatments in the High School area, the Aetna-Capitol Avenue Area and at the Broad Street-Asylum Street interchange.

THE ROAD AHEAD

This study has shown how the selective application of joint development can improve the amenity of a major freeway passing through the center of a large urban area. The principles and potentials provide a frame-work for coordinated highway and land development planning for other key components of Metropolitan Hartford's freeway system. The task ahead is to preserve the necessary movement corridors, incorporate joint development into the route selection and highway design process, and establish the needed institutional arrangements for implementing proposals. In this way, "mobility with amenity" will come to characterize I-84 and Hartford's other urban motorways.

CHAPTER ONE

JOINT DEVELOPMENT: CONCEPT AND CONSIDERATIONS

Interstate Highway 84, the "Yankee Expressway", is the most recent in the evolutionary series of transportation facilities that have nurtured the City of Hartford since it was founded on the banks of the Connecticut River in colonial days. Completed in late 1969, after a 10-year construction period, I-84 is a contemporary and integral component of the major restructuring and rehabilitation that the City is presently experiencing. As one of the great highways that meet and interchange in Hartford, the opening to traffic of I-84 has provided a new level of accessibility to, from, and within Connecticut's Capitol Region.

The processes of urban freeway construction are tedious and time consuming; I-84 was not completed for use until many years after its conception. It was badly needed by the time it became available and was immediately put to intensive use. The traffic relief it afforded has given the highway a very favorable image to its users and in the neighborhoods where congested streets have been relieved. Such acceptance can only enhance the freeway's latent potential for further stimulating economic development of lands in and adjacent to the right-of-way. The freeway constitutes a permanent new boundary between the bordering neighborhoods which make up its "service corridor," and needs to be made as compatible with them as possible. If the many new and exciting opportunities that joint use of the freeway reservations make available for further economic development are enthusiastically pursued, the City will be the richer for it.

FREEWAYS IN URBAN AREAS

Urban freeway systems have evolved within the last two decades. As recently as 1950, there were very few urban highways in the United States worthy of the "freeway" designation; by 1960, more than 2,000 miles of freeway had been constructed in cities and their suburbs, and by 1970 that mileage had more than doubled, not including additional hundreds of miles of "rural" freeways that had been engulfed by urban expansion[1]. In the decade of the 1970's, it has been suggested that the need for major travel corridors to accommodate the growth of city traffic will increase to at least 16,000 miles of route, more than a third of which would be on alignments not presently incorporated in the designated system of Interstate highways.[2] Nearly half of the freeways corridors would be located on lands that were not yet in urban use when the Interstate system was authorized in 1956.

The Interstate highways, which account for most of the mileage of urban freeways presently built, are constructed on rights-of-way that are devoted almost exclusively to the roadway itself; until very recently, most freeway legislation specifically prohibited non-highway uses in highway preserves. The state highway departments that planned and acquired rights-of-way and designed and built these highways have by law and custom devoted most of their efforts to technical and engineering aspects of the roadways. In their efforts to keep up with the urgent demands of the largest highway-building program in history, they have devoted relatively little of their resources to researching the potentialities of a multi-disciplinary "systems" approach to urban highway development in concert with overall transportation planning.

Because the City is a very complex mix of land uses, subject to subtle social, political and economic interplay, the introduction of such an elaborate and large-scale element as a freeway into the urban context is a seriously disruptive undertaking. It naturally follows that those directly affected tend to resist the intrusion, regardless of the community-wide benefits that freeways provide. As more and more freeways have been built, larger numbers of city dwellers have come to regard them as threats, and organized resistance to them has developed, forcing a slow-down or cessation of new construction in some situations and causing highway agencies to undertake serious reappraisal of plans for proposed freeways on new alignments.

Considering today's state of transportation technology, and the logistical requirements for support of the modern city, there can be little doubt that freeways are essential elements of urban design, and indications are that they will remain so for the foreseeable future. It is essential then, that steps be taken to forestall the developing impasse that is implied by selective resistance to new freeways. Ways must be found to correct or reduce the negative aspects of freeways and to define and enhance as many as possible of the social and economic advantages that accrue when the freeway is in use. Moreover, because freeways are major users of urban space, and as such are competitors for space in the city, ways must be found to reduce the frictions caused by this competition. In the process of optimizing the quality of services promoted by the freeway, planners, designers, and affected citizens can expect to gain better appreciation of their mutual problems.

This study of I-84 is intended to suggest a variety of positive and compatible uses for joint occupancy of all or portions of properties that were acquired for freeway uses. These joint-use "opportunities" consist not merely of land sharing, but should also suggest ways to reduce noise, fumes, stray light, and other disruptive elements of highway traffic.

The study of I-84 has been undertaken as a prototype investigation of techniques that can be applied to many critical segments of the several thousand miles of urban freeways presently built and in use in the United States. In proposing measures that could be taken to better integrate freeways with neighborhoods through which they pass, it is expected that those solutions that are found to be most effective in Hartford can be generalized and applied to similar situations elsewhere.

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(1) Wilbur Smith and Associates, **"Future Highways and Urban Growth,"** prepared under commission from the Automobile Manufacturers Association, Detroit, Michigan, 1961, Appendix A.
(2) **Ibid., Table 51, p. 211.**

JOINT DEVELOPMENT AND MULTIPLE USE DEFINED

Joint development and multiple use of transportation rights-of-way has been defined — when applied to a new transportation facility — as "the 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[3]." In the case of a completed freeway, the definition of joint development might be modified as follows:

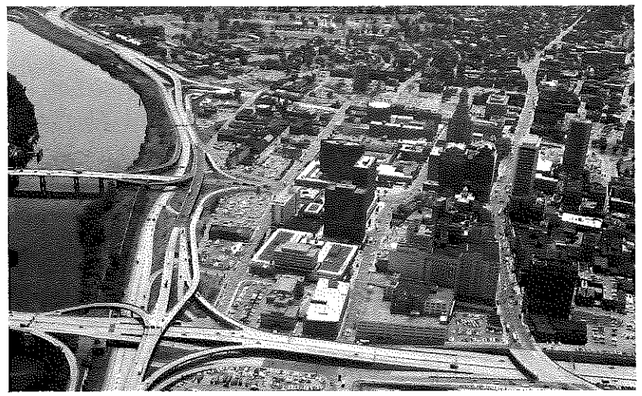
> **The process of conceiving, designing and carrying out a combination of urban development activities within an existing transportation corridor in a manner that protects the integrity of the transportation facilities, yet provides total benefits that are greater than if each individual activity were separately planned and built and located elsewhere in the urban area.**

EXAMPLES OF JOINT DEVELOPMENT

The need to do something about freeways to make them better neighbors to abutting land uses has been advocated by urban planners and sociologists for a long time. A poorly located or designed transporation "land use" should be no more acceptable today in a residential neighborhood than a noxious factory. Some of the earliest limited access highways — the Parkways built in the 1930's near a few of the nation's largest cities (Westchester County Parkways, for example, near New York City) — employed the joint skills of highway engineers, architects, and landscape architects to design very attractive roads which usually were restricted to non-commercial auto traffic.

The Parkways were aesthetically satisfying highways, but were sometimes regarded by conventional highway builders as both "impractical" and excessively expensive. The highways met the approval of the general public, however, and it has recently become a firm national policy to require an "interdisciplinary team" approach for improved environmental planning of all new urban freeways funded with Federal participation.[4]

FIGURE 5: DOWNTOWN HARTFORD — 1899
FIGURE 6: DOWNTOWN HARTFORD — 1970
The two contrasting views of Downtown Hartford today and at the turn of the century show the intensification of development in the central business district as well as dramatic shifts in the modes of transportation from the bicycle and horse and carriage of the turn of the century to the auto today. (Photo courtesy Hartford Times).



In 1968, a special report prepared by the Environmental Development Division, Office of Right-of-Way and Location, U.S. Bureau of Public Roads, published a summary of joint-use activities that had been developed throughout the United States on Federal Aid Highways, subsequent to the Federal-Aid Highway Act of 1961.[5] More than 350 examples of joint-use of the highway were reported, and well over 200 additional projects had been approved. Early in 1970, a supplement was issued, updating that report.[6]

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[3] Frederick T. Aschman, Executive Vice President, Barton Aschman, Associates, Proceedings of a conference held November 14, 15, 1968, on **Joint Use of Transportation Rights-of-Way**, Washington, D.C.

[4] See **"Joint Development of Highway Corridors and Multiple Use of Roadside Properties"**, Interim Policy and Procedure Memorandum 21-19; U.S. Department of Transportation, Bureau of Public Roads, January 17, 1969.

[5] **A Report on the Status of Multiple Use and Joint Development,** U.S. DOT, Federal Highway Administration, Environmental Development Division, Office of ROW and Location, Bureau of Public Roads, September 30, 1968, Washington, D.C.

[6] **Highway Joint Development and Multiple Use, U.S.** DOT, Federal Highway Administration, Environmental Design Division, Office of ROW and Location, Bureau of Public Roads, Washington, D.C., 1970

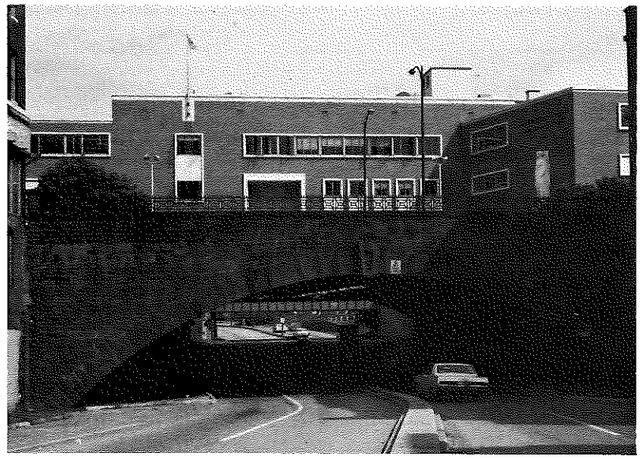


FIGURE 7: THE HARTFORD PUBLIC LIBRARY
The city's main library is an outstanding example of air rights development near at hand. The interior of the 90 foot clear span, which forms a base for the three story building and the plaza facing Main Street, is the main storage area for its closed stacks.

The experience gained in past joint-use investigations has demonstrated that nearly any type of land use can be successfully incorporated into a highway right-of-way if careful attention is paid to the requirements of both the traffic stream and the added activity. Uses range from high-rise residential buildings constructed over the approaches to the George Washington Bridge and over the East River Drive (both on Manhattan Island) to restaurants placed on bridges that straddle the Illinois Toll Highway and other major roads. In urban environments where roads are carried on structure for long distances, parking use of the area beneath the pavement is common, while ball courts, cinemas, retail stores, warehouses, municipal offices, and many other uses have found their way into the highway environment. An outstanding example near at hand is the Hartford Public Library, constructed over the Whitehead Highway (I-484).

THE FREEWAY AS AN URBAN "PRESENCE"

The potential for joint-use development of urban freeways goes far beyond the aesthetic considerations that dominated the parkway idea, although the importance of highway appearance certainly transcends the mere superficial face-lifting of a highway environment or the screening out of unattractive land uses.

The variety of aspects that the freeway can attain in the eyes of its beholders is virtually unending. While the list below applies to most other roads as well, the scale of the freeway so dominates the areas through which it passes that these considerations assume more than usual significance and effect. It is the growing awareness of these impacts that has aroused the urban public to insist on more thoughtful and perceptive planning for freeway development:

- The **scale** of the freeway, as contrasted to other man-made structures, makes it the dominant architectural feature in whatever context it appears, whether it is of good or bad design in the aesthetic sense;
- At the point where a radial freeway enters a city, it becomes the **gateway** to that city for all users who work, visit, or live there;
- It may also represent a means of **escape** from the city, for those who live in it or who have stopped there;
- The freeway is sometimes a **wall** (on trestle or fill) or a **moat** (in cut), and may either define a boundary between unlike land uses, or disrupt the integrity of neighborhoods it bisects;
- The freeway is also a **cleared space** and in heavily-built areas may substitute for some of the functions of a park by admitting light and air (think how dense the city might become if it were not the practice to leave the passageways for earthbound travel open to the sky);
- The freeway is a **catalyst** for new economic growth within the environs it serves, and its construction seems likely to fix the patterns of urban land-use development for generations to come;
- Adversely, the freeway is a **source of noise,** dust, engine wastes, vibration, stray light, and fumes that result from the specialized uses to which it caters;
- The freeway, as with redevelopment and other undertakings that change the face of the city, represents an **encroachment** on the historic structures and patterns of city growth; and poses a consequent hazard to local traditions.

BENEFITS OF JOINT DEVELOPMENT

As an application of more thoughtful highway and land-use planning, joint development and multiple use of highway rights-of-way holds much promise for hundreds of cities containing thousands of miles of **existing** urban freeways. The following are some of the benefits that can accrue through the application of the principles of joint development and multiple use of the highway right-of-way:

- **Economies in the use of land requiring high accessibility.** Central business district land uses generally require high accessibility and are, therefore, expensive properties to own or acquire. Because urban freeways are major land users, the ability to achieve joint use of this land is a definite economic gain.
- **Improvements in the quality of the urban environment.** Multiple use can be a means to improve the structure of neighborhoods and add to the supply of community facilities, supplement open space or add to the housing supply.
- **Reduced competition for urban land.** Joint development is a potential method of reducing the frictions inherent in competition for urban land uses. This benefit is evident because transportation rights-of-way, especially as constructed today, are themselves major land uses and land users. The land needed for the right-of-way may also be needed for a variety of other urban land uses.
- **Reduced need for travel.** The ability to achieve more efficient urban forms that may reduce the need for actual movement. If, for example, terminal facilities can be provided as a joint development of a parking structure over a highway, traffic movement on city streets can be reduced tremendously. The benefits obtained from this reduction in street congestion could more than offset the added cost for constructing such a facility.
- **Increased economic return to the city.** Multiple use offers an opportunity for restoring some taxable base or even expanding the tax base.
- **Stimulus for private investment in urban redevelopment.** Joint development and multiple use may be the catalytic agents for inducing reinvestment in the urban core. In other words, additional public investment in a joint development project in the transportation right-of-way may be sufficient stimulus to move a major redevelopment or renewal project into the implementation stage and encourage private interests to invest in associated projects within the general framework of the overall project.

LIMITATIONS OF THE JOINT-USES APPROACH

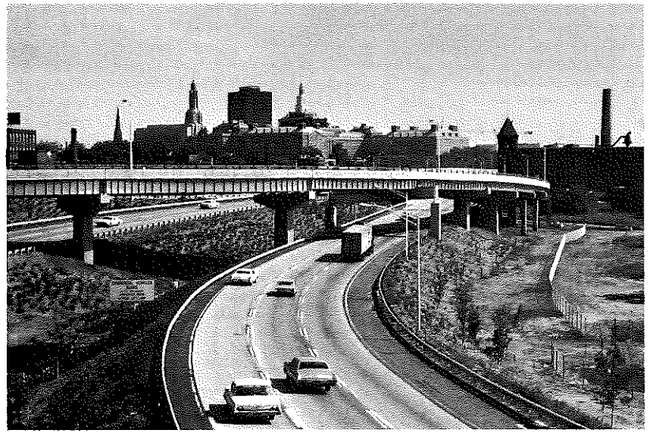
The specific problems and opportunities for improvement of urban freeways as neighbors are governed by three principal considerations:

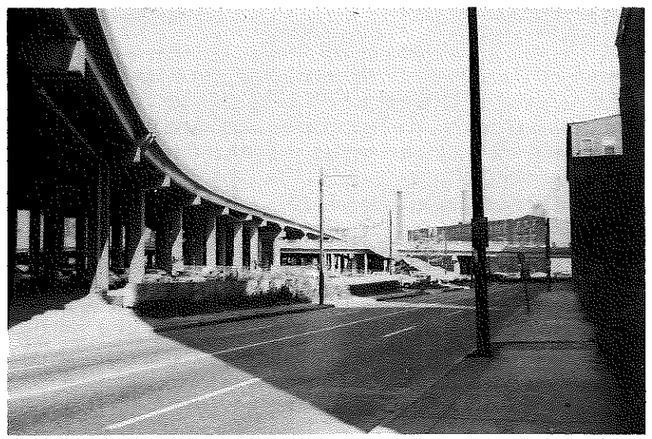
- The **aesthetic,** relating to the visual and environmental impacts of a completed freeway on properties and people who live within its area of influence;
- The **functional,** concerned with traffic operations on and off the highway and with the efficient use of lands within which the freeway is located, both for the accommodation of abutting land users who might effectively expand into the highway preserve without adversely affecting the highway and its functions, and for development of entirely new uses on suitable sites within highway properties;
- The **economic,** concerning the effects the highway has on property values, the city's tax base, new employment opportunity and the costs of transportation, in relation to highway expenditures.

The third of these considerations, the economic, is often the most sensitive, for it involves public policy and the willingness of responsible public agencies and private citizens to compromise their differences and agree on some form of positive action.

ENVIRONMENTAL INTEGRATION

Overall, the effect of a new freeway is to improve the general economic level of the communities it serves, and there are many dramatic proofs of such success. It is the micro-environment immediately surrounding the freeway that is most sensitive to the intrusion of the highway and is most likely to generate adverse reactions. Residential properties, in particular, are sensitive to the appearance of highway structures, and the fumes, noise, glare and other forms of "fallout" that traffic generates. Residential uses are likely to avoid lands nearest the freeway; simultaneously, properties nearest the freeway, particularly at interchanges, will probably become more attractive for retail and service activities. Presence of the freeway may induce strong pressures for zoning changes to accommodate a revised pattern of land uses in keeping with these economic relationships.





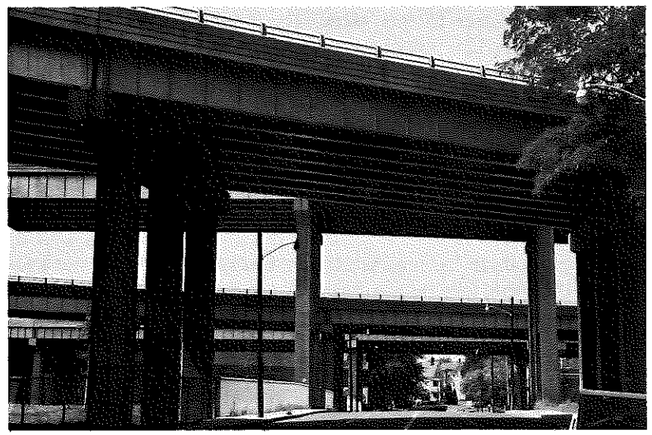


FIGURE 8: THE VIEW FROM THE ROAD
FIGURE 9: THE VIEW OF THE ROAD
FIGURE 10: THE VIEW BY THE ROAD
The three views shown here — of the driver's vista as he passes the Sisson Avenue interchange, of the pedestrian's view of the highway viaduct while walking along Capitol Avenue, and of a resident's view of the Sisson Avenue interchange — reflect the varying physical perspective and emotional context of the viewer.

Good appearance is a functional quality of the basic structural design and not something that can easily be achieved by superficial treatment or "face-lifting" after the structure has been completed. Yet such "cosmetic" treatments, as a last resort, may be the only reasonable means left to improve appearances if a particularly bleak piece of road must be dealt with; it is usually too late to change roadway elevations relative to the natural grade, to modify slopes of roadway and ramps, or to realign the highway to take better advantage of natural topography. The basic solution may be to screen as much as possible of the structure from view, either by planting and landscaping, or by constructing buildings or screen-walls which do not violate the basic performance of the highways nor conflict with approved joint-uses of highway rights-of-way. The same considerations apply to efforts that may be made to reduce noise, glare and other negative environmental factors.

Much of the visual impact of the freeway relates to its scale. From any perspective, the freeway transcends the human dimension and dominates its immediate environs; even from the air far above, freeways are seen to be the principal man-made features in the city. On the ground, the freeway's dimensions and bulk are far greater than those of other constructions except in vertical comparison with tall buildings and monuments.

The aesthetic or visual effects of the freeways are strongly influenced by the physical perspective and emotional context of the viewer. Another writer has grouped freeway viewers in three categories as persons who experience:[7]

The View from the Road,

The View of the Road,

The View by the Road.

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[7] **A Study of the Social, Economic and Environmental Impact of Highway Transportation Facilities on Urban Communities,** Highway Research Section, Engineering Research Division, Washington State University, Pullman, Washington, 1968. p. 13.

FIGURE 11: A DRIVER'S VIEW OF DOWNTOWN
The major elements of the view from the road are firmly established, as shown in this driver's view of Downtown Hartford as he approaches Trumbull Street. On the other hand, some of the measures that might be proposed to add economic value to surrounding areas may also affect the "View from the Road" — especially air-rights development over the highway.

The study of I-84 is but incidentally concerned with the "View from the Road", inasmuch as the roadway is built and the major elements of that view are firmly established. Landscaping to screen out objectional or diversionary roadside uses, or to maintain a consistent and unified roadway environment for the motorists on it, represent the most likely steps that can be taken to improve the environment for road users. On the other hand, some of the measures that might be proposed to add economic value to surrounding areas may also affect the "View from the Road" — especially those new uses that contemplate the construction of buildings or platforms over traveled lanes of the freeway. When such "joint-uses" of freeway property are proposed, it is essential that careful attention be given to the rights of road users and the opportunities that may be present for improving the driving environment or introducing desirable variety into it.

The "View of the Road" from outside the highway right-of-way is of major interest to this study. The freeway becomes a main feature in the urban landscape as soon as it is built, and its appearance, the degree to which it constitutes a barrier (physical or psychological) between land-use areas, the public uses to which freeway lands are put, and other aspects of highway and community interaction are of much concern to residents and visitors alike.

Finally, the most pronounced impacts of the freeway to be examined in this study are those produced on properties with a "View by the Road". These are the immediate neighbors, who live with the freeway 24-hours a day and are inevitably a part of the freeway environment whether they like it or not. The effects of this environment are both good and bad, and one aspect of the study is concerned with means that can be taken to relieve unpleasant or neutral aspects of the freeway and augment those that are favorable.

FUNCTIONAL INTEGRATION

The designation of appropriate "joint uses" within the immediate freeway corridor is subject to a variety of interpretations, depending on the perspective from which the particular respondent views the highway structure. The most important categories of these participants are:

The highway owners
(City, State and Federal participants in its construction);
The general public; and
The directly affected property owners
(Adjacent or neighboring).

Having built the road, the Highway Department is obliged to justify it from engineering and technological points of view. Highway engineers are concerned that the freeway perform well and accommodate the traffic it was intended to serve. At the same time, highway departments have become increasingly sensitive to the needs and frustrations of urban residents, and are actively exploring means to enhance the acceptability of freeways in cities, as the present study illustrates. Joint development and multiple use of highway rights-of-way represent one way to do this; some of the possible uses also promise new sources of income with which to help meet highway maintenance and other costs.

The general public is concerned with the impact of the freeway on the local economy and the quality of urban living. As taxpayers, city residents are adversely affected by the removal of properties from the tax rolls when highway rights-of-way are purchased; the same residents would be expected to welcome the preservation or expansion of desirable uses which represent taxable investments that might reasonably be incorporated into the highway area. The hardship imposed on displaced businesses and residents is recognized as an especially difficult community burden in many cases; the public interest has to be kept foremost in the development of non-highway uses to which the right-of-way may be put. There is also a great deal of public concern that political favoritism not influence the letting of public highway lands for private use.

Impact of a freeway on the individual property owner is often direct and severe. Sometimes the effect is immediate, as when he is displaced, sometimes gradual, as when properties not directly in contact with the freeway experience slow erosion of values (or, conversely, rise in value due to the freeway's improvement of accessibility and demand for special use areas).

GENERAL ECONOMIC PRINCIPLES OF AIR-RIGHTS DEVELOPMENT

Part of the difficulty in dealing with air-rights development is that, while not technically a new form of land use, it has not had sufficiently widespread application to generate the body of fact and experience that can be drawn upon for more conventional forms of development. In theory, however, there is very little difference in using "air-rights" versus "surface" as the development medium.

The feasibility of air-rights development is directly tied to two fundamental real estate principles or concepts — the theory of the "bundle" of rights and the principle of substitution. In simple terms, the first holds that ownership of "land" in fee simple is not a single commodity but actually a complex bundle of rights, i.e., the right to use the space above the surface, at the surface, or below the surface; the right to sell, lease or build on it, or not to do those things; to have access across it or prohibit access, and so on. The second principle simply holds that the value of a property to a willing buyer (land and/or building) is no greater than the cost of providing an alternate or substitute possessing equal utility and amenity for the purpose intended.

The application of these principles to an air-rights development project tends to set limits on what is economically feasible. At the upper limit there is the cost of acquiring land with similar locational features and constructing a conventional structure of the same degree of utility and amenity as the air-rights project. All else being equal, the market presumably will not pay more than the cost of providing this equally acceptable substitute. As the lower limit there is, in theory, an air-rights cost of zero plus construction cost savings, if any, over conventional methods.

In practice, the method is to determine the acquisition cost in fee simple of a suitable parcel of land and then to discount this cost by the amount that functional utility is lost or construction costs are increased by virtue of being limited to air-rights. This discounted value then reflects the value of the air-rights to a potential user. If the market will accept a price for the air-rights at or below this figure the project is considered feasible.

FIGURE 12: THE STATE CAPITOL
The historic ninety year old Capitol building, sited on a rise overlooking Bushnell Park, is a landmark visible to both eastbound and westbound travelers on I-84. (Rendering courtesy Raymond, May, Parish, Pine Associates).

The discounts arise from the fact that the air-rights purchaser or lessor foregoes some of the bundle of rights that normally pass with title. Customarily his use of the surface and a set distance above it is limited to certain easements, he is often constrained in the type of use to which the property may be put, the methods, timing, and type of construction employed; he frequently is required to take certain measures for the protection of the surface use. While actual construction techniques are similar in both air-rights and conventional structures, added cost may be incurred to the extent high clear-spans must be maintained over large surface areas or other atypical engineering problems must be solved. Common extra cost items include: extra-strength or specially constructed load-bearing members to protect against surface hazards or extended extra distances to provide the required surface clearance, provision of necessary basement-type space for maintenance equipment and storage in the more expensively finished above-grade areas, employing time-consuming and/or expensive working procedures to avoid interference with or danger to existing surface uses, and possibly providing above-grade pedestrian and/or vehicular access.

The resulting discounted value obtained, in effect, by ascertaining the differences between the air-rights project and conventional construction provides a useful approximation of the base value of the air-rights to the potential user or, perhaps more correctly, how much he can afford to pay for them.

However, there are several intangibles which are either difficult or impossible to treat with the precision suggested by this method but which nonetheless influence value and hence feasibility. These include the elements of prestige and visual or locational prominence which may accrue to an air-rights project over an expressway, for example, but which cannot be achieved at a similar functionally adequate nearby site. This may have a direct effect on value by permitting higher rental charges or quicker initial rental or may be only indirectly beneficial such as an advertising or public relations benefit but which can be very important in attracting an institutional tenant.

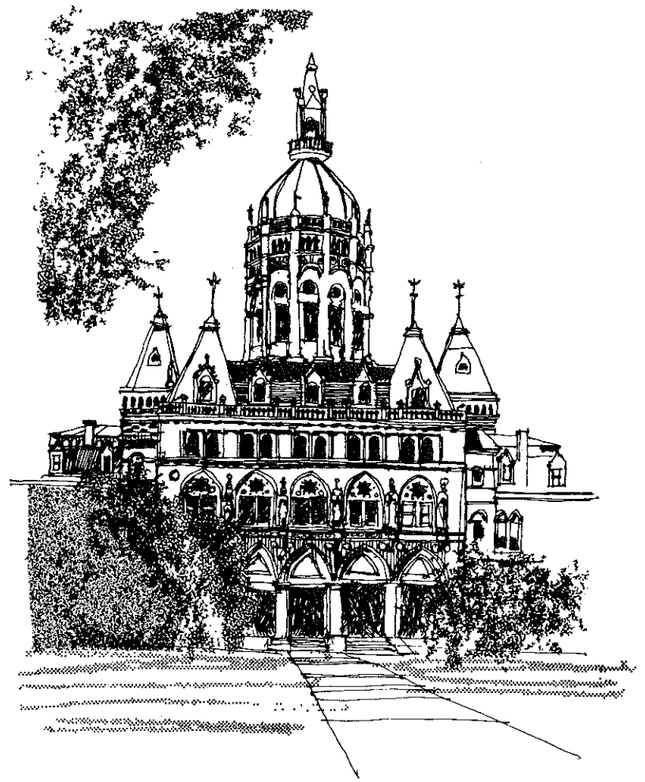
Application to the I-84 Corridor — In summary, the air-rights over any specific part of I-84 should only be put to use if:

- **The increment of additional development costs attributable to air-rights construction does not exceed the market value of available land of comparable locational quality and development profit potential; or**
- **The excess of additional development costs over available land of equal profit potential is justified by some non-economic good which is generated by the use and somebody is able and willing to absord this excess increment of cost.**

The importance of the time dimension in analyzing the desirability of air-rights utilization should also be considered. As the supply of vacant or underutilized land in a built-up city decreases, and the size of the total metropolitan area increases (and thus its demand for central functions), the right to develop land becomes both economically and socially more precious. Experience shows that potential profitability increases at a substantially more rapid rate than does the excess incremental cost of air-rights construction. As a result, more and more sectors of I-84 will be in demand for air-rights development in the longer run. The non-economic values from air-rights will also increase at a rate exceeding that for costs but this cannot be empirically measured.

Non-economic considerations also can play an important role in the decision to proceed with air-rights development. The assembly of a suitable alternative site, while feasible economically, may involve dislocation of families or removal of other uses which are beneficial to or enhance the immediate environment. Or, the use of the air-rights space may in itself serve a useful community or public purpose by removing a dead spot in a vital area of the city, providing additional employment base and tax revenue which would otherwise be unobtainable, or permitting the retention in prime areas of economically less viable but socially important functions. In these cases there may well be premium value for specific purposes that overrides the discounted value test of feasibility.

The application of these criteria in the I-84 corridor must be accomplished sector by sector, based on market, design and cost estimating, and investment studies, supplemented by inputs as to the non-economic needs of adjoining neighborhoods (housing, schools, parks, etc.) or the city as a whole (tax revenue, employment, secondary or indirect benefits, neighborhood unification, etc.).



THE JOINT DEVELOPMENT PLAN

The study of potential non-highway uses on portions of the I-84 right-of-way, on abutting parcels of excess land that were acquired when the highway right-of-way was purchased, and on air-rights above or below the highway, is intended to develop a broad perspective of the highway and its inter-relationship with the communities through which it passes. The study suggests uses that fit this environment well and which are themselves attractive and viable, socially and/or economically, and can be justified as reasonable and desirable public investments.

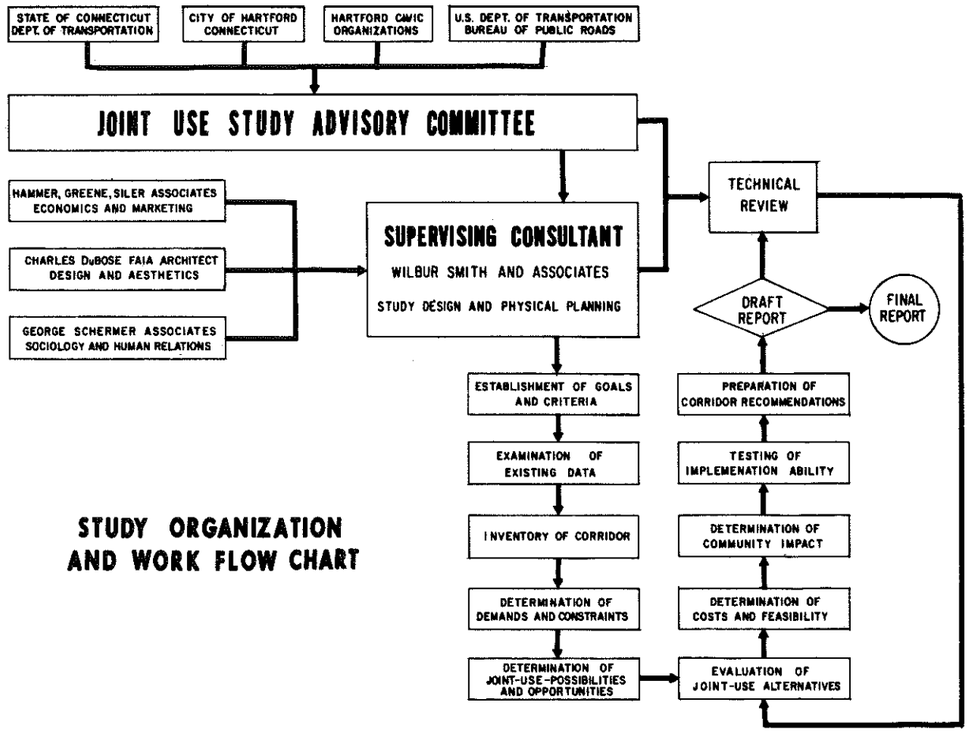


FIGURE 13: STUDY ORGANIZATION AND WORK FLOW CHART

The several governmental agencies have administered the study through an Advisory Committee, whose primary function has been to review and comment on study procedures and provide general guidance to the study.

The Multidisciplinary Approach — The study has been co-sponsored and supervised by several branches of government: The **State of Connecticut** owns the highway and the lands upon which it is constructed — the "real estate" itself. The **City of Hartford,** through directly affected citizens and several departments of city government, has given up the lands to the State; city streets provide access to, from and over or under the freeway; other city properties, such as parks, redevelopment areas, and parking facilities, abut the highway. The responsibilities of the Departments of Planning, Traffic, Engineering, Parks, Redevelopment, Development, and others will be directly affected by changes in land uses within the highway boundaries. Finally, **the Federal Government,** by virtue of its participation in the cost of the I-84 freeway, and like interest in urban redevelopment, housing, and related urban activities, is more than an interested on-looker; as a coordinator of urban transportation developments throughout the Nation, the outcome of the I-84 studies could have national significance, through the agency of the Federal Department of Transportation (DOT).

The governmental agencies have administered the study through an Advisory Committee, whose primary function has been to review and comment on study procedures and provide general guidance to the study. The Advisory Committee, in addition to membership by the three levels of government, has included representation from the Greater Hartford Chamber of Commerce to assure that the City's business community have a full understanding of the aims and methods of the Study Team.

EVALUATION OF THE I-84 CORRIDOR

Specialists in several different aspects or urban development have been employed to study and evaluate the interrelationships of the new freeway and the urban environment it has penetrated. The study was designed, first, to measure the impact of I-84, and then to define deficiencies or needs in the service corridor which might be met by judicious application of joint-development principles. The special studies fall into several distinct categories which are detailed below.

Economic — One of the first requirements was an economic study of the highway corridor to identify land-use needs and trends, both for amount (quantity) and timing. The firm of Economists and Real Estate specialists, Hammer, Greene, Siler Associates of Washington, D.C., has worked extensively in the Hartford metropolitan area and was retained to undertake these evaluations.

Sociological — Aside from projected need for many types of business, industrial, residential and recreational facilities in the I-84 corridor, there is the more subtle consideration of neighborhood acceptability. Neighbors often feel strongly about new uses that are brought into their area, and may regard some proposed uses as less attractive than others; some, indeed, might be considered wholly unacceptable. Public facilities that are intended for the use and betterment of the community may also fail to elicit favorable response unless those who are expected to benefit are given a chance to participate in the selection and planning. So that an appropriate sense of priorities and values might be maintained throughout the study, the firm of George Schermer and Associates, Urban Sociologists, became a part of the investigating team.

Architectural — Many or most of the potential uses of land or air space in the highway corridor will occupy structures of one sort or another — parking garages, warehouses, service structures, loading docks, shops, offices, even residential uses. The amount of space needed and the organization of space to meet the many uses is a prime concern of architects. So that the projected uses may be tested for reasonableness — that there is enough room, that it can be organized effectively, that the resulting structure is aesthetically pleasing — the firm of Charles DuBose, Architects, also became a component of the Joint Use Study Team.

Physical Planning — Basic to the investigations are the disciplines of physical planning — highway design, traffic engineering, landscape architecture, land-use and transportation planning. These are the familiar tools of the urban environmentalist, and they have been drawn on heavily, through the staff of Wilbur Smith and Associates, to inventory the freeway corridor, to assemble information on traffic use and limitations of the freeway and streets to which it gives access, and to suggest and analyze a large number and variety of potential joint-use applications throughout the corridor study area.

LEGAL ASPECTS OF I-84 JOINT-USE DEVELOPMENT

Although not investigated in detail, a number of legal considerations will influence the degree and pace at which the suggested joint-use plan can be implemented. Some of these relate to the development of air-rights over and under the expressway. Others are concerned with the development of joint uses in close proximity to, or on the designated flood plain of the Park River. Still others relate to the possible exchange of land between one public agency and another. Examples of the latter are a possible exchange of land between the Connecticut Department of Transportation and the City of Hartford or one of the public agencies within the city (i.e., Redevelopment Authority, Parks Department, Housing Authority).

Air-Rights Development — The 1969 Session of the Connecticut General Assembly enacted a law allowing the Connecticut Department of Transportation (then the Connecticut Highway Commission) to lease or otherwise dispose of the State's interest in air rights over or under any state highway right-of-way in the State of Connecticut. This is now Public Act No. 549, entitled, "An Act Concerning Multiple Use and Joint Development On, Over, or Under Any State Highway Right-of-Way". The Act is summarized below.

Section 1 provides that the Highway Commissioner, with the advise and consent of the Commissioner of Finance and Control, may in the name of the State sell, lease and convey, or otherwise dispose or enter into agreements concerning any interest the State may have on, above, or below State Highway right-of-way. The State Highway Commissioner may place restrictions on the use of the area to provide for the safety and adequacy of the highway facilities and for the protection of abutting or adjacent land users. In addition, a committee composed of the Highway Commissioner, Commissioner of Finance and Control, and the chief executive officer of the affected municipality, may also place restrictions on the proposed use which they believe to be necessary to provide for the efficient, economical, and socially beneficial use of the area.

Section 2 provides that the Highway Commissioner shall have the power to sell or lease various levels of space at the same location to different parties.

Section 3 provides that the Highway Commissioner may acquire, by purchase or condemnation, additional interests in land or air space needed to make feasible the multiple use and joint development of existing highway rights-of-way under state control.

FIGURE 14: THE TRINITY ARCH
The archway, a civil war memorial located in Bushnell Park, is a prominent historical feature in the City of Hartford. (Rendering courtesy Raymond, May, Parish, Pine Associates).

Section 4 provides that the use of any air space must conform with the zoning regulations and ordinances of the local municipality.

Section 5 provides that the municipality has the power to tax air-rights buildings and lands that are located in the air-rights space.

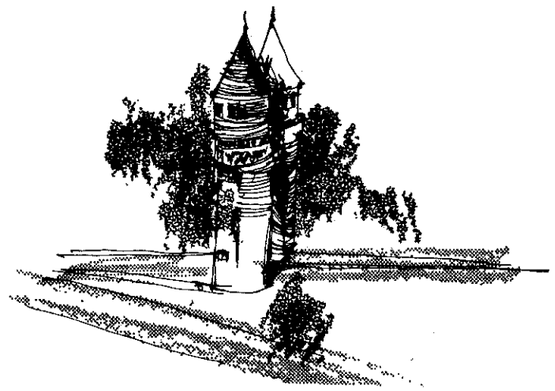
Section 6 sets forth an order of priority in the disposition or assignment of space. The State has first priority, then the municipality, then the Federal Government and finally the need for housing persons, businesses, or other facilities displaced by highway construction.

Section 7 requires that any funds derived from the sale or lease of air space shall be deposited in the State Highway Fund.

Section 8 provides that the Highway Commissioner cannot exercise any provision of the Act if it would result in a loss of revenue granted by any agency of the Federal Government.

Probably the most important provision of Public Act No. 549, insofar as the I-84 Environmental and Joint-Use Study is concerned, is Section 3 which authorized the state to purchase additional land adjacent to the right-of-way in order to strengthen the economic or environmental case for an appropriate joint use. There are several instances in the I-84 corridor where it might be appropriate to apply this provision of the Act. One application might be in the Parkville Industrial Area and South Park River Flood Plain Area where additional land might be purchased to complete a linear park along the South Branch of the Park River. In the area around Union Station, additional parcels might be purchased in conjunction with a joint-use transportation center and/or parking facilities. There will be opportunities for the sale or lease of air-rights in a number of instances along the highway.

Regardless of the legal arrangements for lease or acquisition of land in the highway right-of-way, any contemplated users must meet the building code and land zoning requirements of the City of Hartford. In addition, the Highway Department is certain to restrict activities on these lands to uses that will not interfere with the safe and efficient operation of the highway itself.



Policy Questions — In the course of the studies that follow, a number of questions occur that relate to policies for the possible implementation of joint-use projects. These include such questions as:

- How far should the concept of multiple use and joint development be employed in the case of an **existing freeway?** In other words, can emerging national policies which favor multi-use corridor development be successfully applied to completed highways?
  a. Can federal and state aid be applied to develop the proposed joint-uses?
  b. Should highway money be spent for non-highway projects such as recreational facilities, housing, garages, and so on?
- Can additional highway funds be spent on a completed highway to modify its basic components to better suit the joint-development plan? (Such changes as lane widenings, additional lanes, revised or relocated entrance and exit ramps, new frontage roads or collector-distributor roads, and other functional revisions.)
- Can additional highway funds be spent on a completed highway for aesthetic and social benefits? (Such as retaining walls, improved landscaping to screen out objectionable views or reduce glare and noise, the construction of stone or ceramic facings and screenwalls, and higher levels of illumination for pedestrian safety or other purpose.)

These questions are reasonable and inevitable in considering the steps that will have to be taken to realize the benefits and advantages of the joint-use approach to urban highway development. A positive approach is recommended as the first step in reconciling the issues involved.

CHAPTER TWO

THE I-84 CORRIDOR IN HARTFORD

"The character of many cities has been changed forever; in some instances the visual and social effects have been catastrophic; in others the results have been tolerable. Meanwhile other cities are threatened by the same treatment. Yet it is well understood by urban designers that the freeway need not generate changes in urban form in a purely negative way. The potential of the urban freeway in its separation of vehicles from pedestrians is boundless. Far from being a destructive element in the city, it can be an instrument of good urban design."(1)

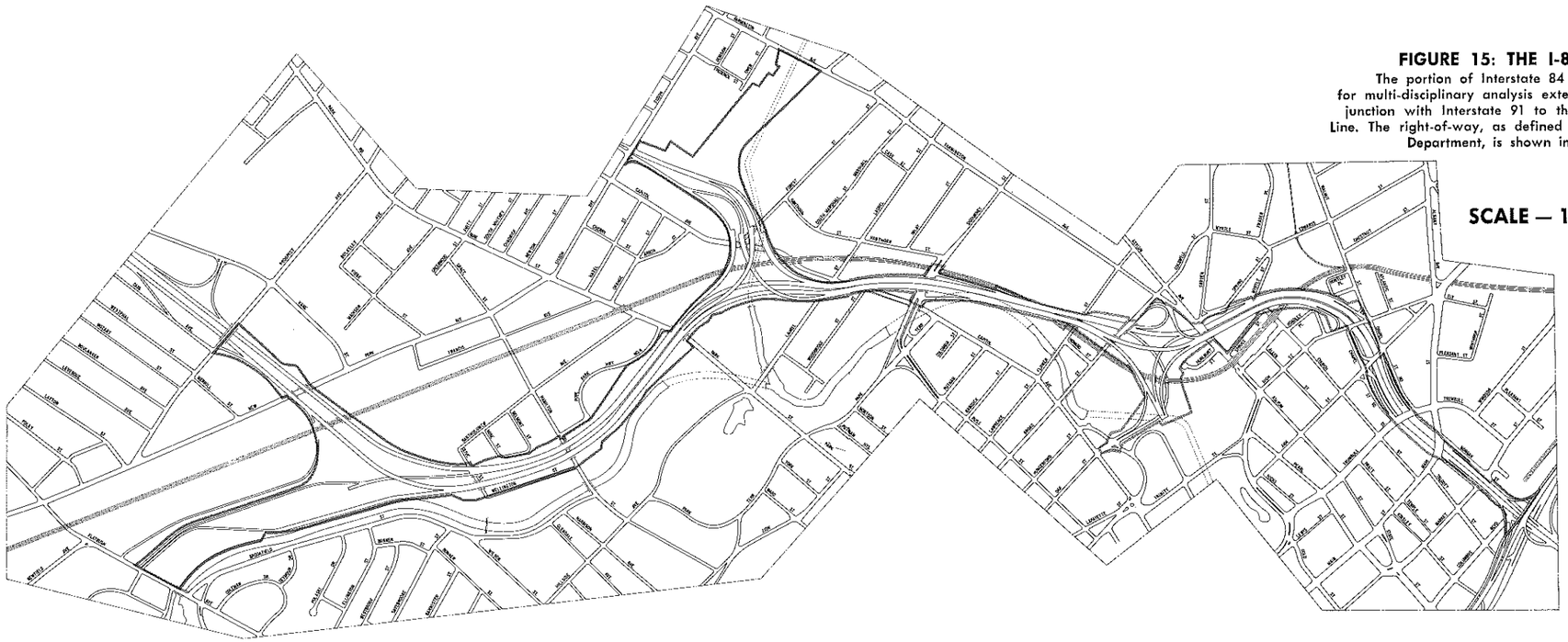


FIGURE 15: THE I-84 RIGHT-OF-WAY
The portion of Interstate 84 that has been selected for multi-disciplinary analysis extends westward from its junction with Interstate 91 to the West Hartford Town Line. The right-of-way, as defined by the State Highway Department, is shown in the figure to the left.

SCALE — 1" = 1600'-00"

The portion of Interstate Route 84 (I-84) that has been selected for multidisciplinary analysis of joint development opportunities extends westward from its junction with Interstate 91 (I-91) on the west bank of the Connecticut River (Hartford's eastern Town Line) to Prospect Avenue at the West Hartford Town Line. Included are all connecting ramps and interchange areas, with the specific exception of ramps to the proposed Bushnell Park Connector (Interstate 484). The general alignment of the freeway in Hartford is illustrated in Figure 15. The relation of I-84 to other freeways and major highways in the Capitol Region of Connecticut is shown in Figure 16.

HISTORY OF I-84 IN THE CAPITOL REGION

Nearly a quarter-century elapsed between the 1945 publication of an engineering report by the Connecticut Highway Department entitled "Expressways in the Hartford Metropolitan Area," and the opening of the last segment of I-84 in Hartford, late in 1969. The 1945 report contained a general description of expressway routes which the Highway Department proposed should be built to serve the Hartford-New Britain area. Among the roads recommended was an east-west route which would link downtown Hartford with population centers in West Hartford and beyond. Within Hartford it was proposed that the new highway follow the general alignment of the New Haven Railroad to the vicinity of the Aetna Life and Casualty Insurance Company's main office building, and thence follow a route parallel to, and about midway between, Farmington and Capitol Avenue, continuing into West Hartford to Trout Brook Drive. In subsequent studies, this route became known as "Line A".

Planning for I-84 — The 1945 report was followed by a succession of surveys and studies that explored the advantages and disadvantages of numerous alternative routings for the expressway. All of these analyses concurred in the need for a major new thoroughfare to meet the increasing volumes of traffic in the corridor. Among the special investigations of the proposed route were the following:

1945 — By Connecticut Highway Department
"Hartford Metropolitan Area Expressways;"

1946 — By Hartford Flood Commission (informal study);

1947 — By Hartford Engineering Department (informal study);

1949 — Jointly by the Engineering Departments of Hartford and West Hartford (informal study, revised 1950);

1949 — By Robert Moses,
"Arterial Plan for Hartford";

1954 — By Connecticut Highway Department,
"Alternate Locations for the East-West Highway, from Broad Street, Hartford, to Overbrook Road, West Hartford";

1954 — By Wilbur Smith and Associates,
"Study of East-West Expressway Lines in Hartford and West Hartford";

1955 — By Metropolitan Traffic Committee,
"Report to Governor";

1957 — By Alfred Kaehrle Associates,
"Report on Alternate Locations for the East-West Expressway and U.S. 6 Relocation (Interstate Highway System) in West Hartford and Adjacent Towns";

1958 — By Wilbur Smith and Associates,
"An Interim Report on Alternate Locations for East-West Expressway in West Hartford, Connecticut".

While several studies of later date were made to establish costs, to detail design, and for various other purposes, the final alignment established for the expressway was worked out during the years covered by the foregoing series of reports. Public concern was very great throughout and following this period, because of the disruptive potential and great cost of all the alternatives.

It is interesting to note that the concept of multiple-use of a transportation right-of-way was employed in the initial planning of I-84. In defining suitable alignments for the expressway, right-of-way constraints dictated the "joint-use" (by highway, river, and railroad), of railroad properties along the Park River bed between Broad and Sigourney Streets, a distance of about 2,200 feet. The Park River is accommodated in conduit through much of this length, and conduit walls are integral with bridge supports for portions of the highway viaduct. Thus, a variety of installations already occupy portions of the highway alignment as a condition of its construction.

In reviewing the early studies for I-84, it was apparent to the Study Team that the outlook of highway engineers and urban planners has undergone much change in the past quarter-century, particularly with regard to the future of urban development. At the time of the State's "Expressways" report in 1945, and for some years thereafter, there was serious question among many planners and transportation people concerning the further centralization of activities at the urban core. Several factors contributed to this uncertainty:

- There had been little growth in urban central areas for fifteen years, due to the depression, followed by war. Many persons questioned whether the era of high-density core cities had not come to an end.
- The decentralization of retail activity, focused on "regional shopping centers," was beginning and seemed to have caught the public fancy in a big way. Traditional central city activities of many types — grocery stores, all kinds of service outlets, theaters, etc. — were rapidly deserting the central business district, as were the industrial establishments, large and small, which had located at the core to take advantage of access provided by the public transport media used by most workers prior to this period;
- The attitude of the Federal government was ambiguous and inconsistent; some agencies insisted that the vital functions of business and government **must** decentralize, based on fears spurred by the rapid increase in nuclear armaments and the demonstrated helplessness of cities subject to nuclear attack. At the time, there was a great deal said and written about the need for wide dispersion of government, business, industry, and record-keeping. Viewed from this perspective, the future of the central business district did not look good.

Partly as a consequence of such confusion and uncertainty, early projections of travel demands on I-84 tended to diminish the importance of growth in the central business district and to focus on the need for expressways which would speed traffic between the homes of residents and widely decentralized places of work, shopping, and other activities. Within the latter half of the post-war era, however, the fears of nuclear holocaust seem to have been forgotten or sublimated, and revitalization of the central city is proceeding apace. The central business district is recapturing some of the functions it appeared to be losing — retailing and amusement for instance — and has multiplied its white-collar employment base to more than make up for the losses of industrial employment. Under the spur of central city redevelopment, land values and land use intensities in the center are steadily increasing. All these events are reflected today in growing demands for traffic access to the center.

(1) **A Study of the Social, Economic and Environmental Impact of Highway Transportation Facilities on Urban Communities,** Highway Research Section, Engineering Research Division, Washington State University, Pullman, Washington, 1968. p. 2.

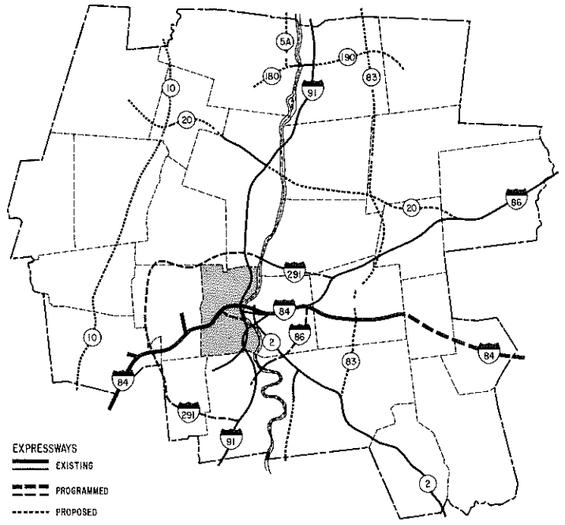


FIGURE 16: EXISTING AND PLANNED HIGHWAYS IN THE CAPITOL REGION

I-84 is part of a large system of freeways serving the Capitol Region. When completed, Hartford will be served by a system of radial freeways, supplemented by a major circumferential route.

Construction of I-84 — During the years when the expressway alignment was being argued, there was never serious doubt about the necessity for a major highway to handle traffic moving in the east-west service corridor. In fact, studies showed that the new highway would not be able to accommodate all the traffic potential to it unless it were built to at least a six-lane standard, and it was also recognized that the adequacy of a six-lane facility could not be expected to last forever.

Aside from the wearisome problem of where to locate the road for least damage and maximum return, there was the unanswered problem of how to finance it. The State's resources were spread far too thin, with real doubt that effective solutions to meet all urgent needs would soon be found. The Federal Highway Act of 1956 gave life to the plan by designating and underwriting 90 per cent of the construction cost of a 41,000-mile National System of Interstate and Defense Highways. The East-West Expressway was approved as a portion of this network in that same year.

Detailed planning and design of I-84 was begun in March, 1959. Construction of the freeway within the City of Hartford commenced in August, 1959, at the Morgan Street interchange and portions of the route from the I-91 interchange to Ann and High Streets were opened to traffic in July, 1967. The last section of route within the City was opened in November, 1969, completing the highway from I-91 westward to New Britain. The New Britain-Plainville section was opened on December 16, 1969, opening the highway all the way across Connecticut to the New York State Line.

DESCRIPTION OF THE I-84 TRAVEL CORRIDOR

As an interstate highway, designed to meet national and regional travel needs as well as those local to the service corridor in the City of Hartford, I-84 is part of a large system of freeways serving the Hartford Capital Region. Figure 16, a regional map of the Hartford area, shows existing and planned freeways and the other major traffic facilities that serve this area.

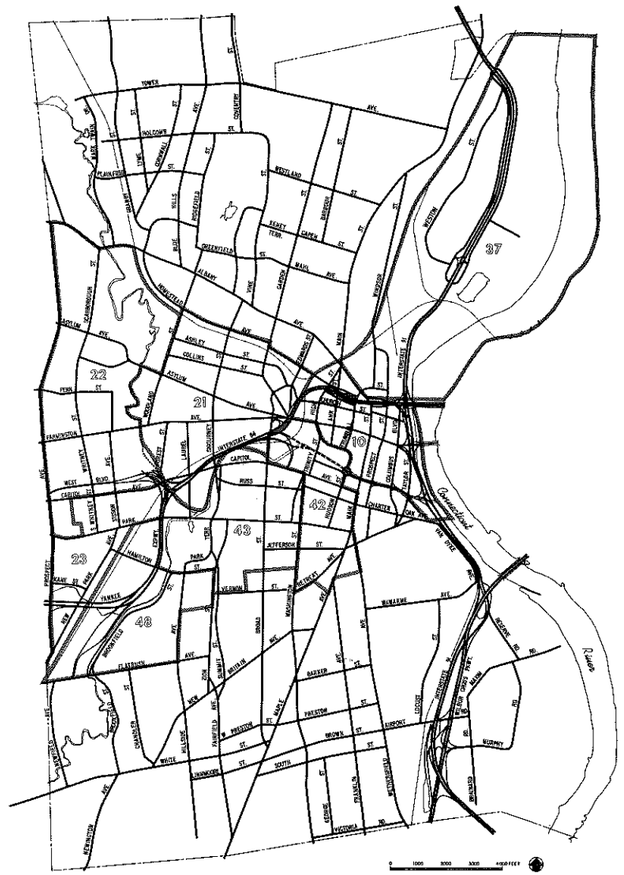
The portion of I-84 in Hartford that has been designated for the Joint Development Studies measures approximately 17,500 feet in length (a little over 3.3 miles) and is constructed within a right-of-way that averages about 180 feet in width over most of the route, with additional width at interchanges. About 40 per cent of the right-of-way is occupied by the physical structure of the highway; remaining highway properties are taken up in side yards (some steeply graded), median areas, and intra-ramp open space. The route map in Figure 17 shows the planning units and districts affected by Interstate 84 as it passes through Hartford.

The freeway follows the general course of the Park River and its South Branch throughout much of its length, although portions of the River are presently in conduit; conduit to enclose the remainder is planned. The river route has also been the long-established alignment of the Penn Central Railroad's mainline tracks (formerly the New York, New Haven and Hartford), and the highway has been built over or adjacent to the railroad along much of its length.

About a quarter (4,000 feet) of the mainline roadway is depressed below natural grade level, with many streets overpassing it. Most of the depressed section occurs immediately adjacent to the Hartford central business district, from I-91 to the vicinity of the Union Station.

The "through" lanes of I-84 are built on elevated structures for about half their overall length, with three principal sections accounting for the largest share. At critical points the eastbound and westbound roadways are separated vertically, to better meet site limitations and access needs.

Topography along the route of the freeway is gently rolling and the water course winding. While the road follows the general path of the stream, grade changes are frequent because of the need to cross city streets and railroad tracks as well as several changes from elevated to depressed sections.



PLANNING UNITS AND DISTRICTS

10 CENTRAL DISTRICT
21 ASYLUM HILL PLANNING UNIT
22 WEST END PLANNING UNIT
23 PARKVILLE PLANNING UNIT
37 WINDSOR ST. PLANNING UNIT
42 SOUTH GREEN PLANNING UNIT
43 PARK ST. PLANNING UNIT
48 BROOKFIELD PLANNING UNIT

FIGURE 17: THE RELATIONSHIP OF I-84 TO HARTFORD'S NEIGHBORHOODS
The route map in this figure shows the planning units and districts (as defined by the Commission on the City Plan) which are affected by I-84 as it passes through Hartford.

FIGURE 18: TOPOGRAPHY IN THE I-84 CORRIDOR
As seen in the photo below, the topography along the route of the freeway is gently rolling and the water course winding. While the road follows the general path of the stream, grade changes are frequent because of the need to cross city streets and railroad tracks as well as several changes from elevated to depressed sections.

LAND USE IN THE CORRIDOR

Figure 19 shows the general boundaries of areas within the I-84 service corridor that have been directly impacted or affected by the freeway, according to the Study Team's definitions. In general, the width of this band varies inversely with the intensity of land uses adjacent to the highway. Areas within this boundary have been subdivided into seven sectors which have been identified according to the sub-headings shown below. The seven areas and their boundaries are shown in Figure 19.

The lands traversed by the freeway are devoted to highly variable uses. A generalized land-use map for the I-84 corridor is shown in Figure 20. While predominant land uses in the corridor are industrial, reflecting the corridor's historic function as a manufacturing area associated with rail transport, the variety of land-use along the highway alignment covers the spectrum of urban uses found in central cities of Hartford's size and age.

Downtown Area — Near its junction with Interstate 91, the highway lies immediately adjacent to the principal retail establishments in downtown Hartford and skirts close by the proposed new Civic Center at Trumbull Plaza. The route is below street grade through most of the central business district, and all north-south city streets west of Market Street have been carried over it.

Union Station Area — Immediately west of the central business district, I-84 emerges from depressed section and rises to overpass the Penn Central Railroad tracks in the immediate vicinity of the Union Station. Land use in this area is generally characterized by the type of transient activities that are commonly located near old railroad stations in central cities, interspersed with a good deal of vacant land. Proceeding to the west, the eastbound lanes of I-84 are elevated sections, while the westbound roadway descends to pass under Asylum Street to accommodate the access ramps and other interchange components that connect with the proposed Bushnell Park Connector (I-484) in the foreground of the State Capitol building; except for one structure very close to the eastbound lanes of I-84 on Asylum Street (the Channel 18 building) there is a degree of openness in land use in this portion of the corridor. This is reinforced by the openness created by Bushnell Park southeast of the highway.

Aetna-Capitol Avenue Area — West of the I-484 interchange, both mainline roadways are elevated, over or adjacent to the Penn Central tracks. The highway bisects a major employment area formed by Aetna Life and Casualty Insurance Company on the north and an aggregation of old loft manufacturing buildings fronting on Capitol Avenue on the south. West of Aetna, the main land use is industrial with most of the installations located near or adjacent to the westbound roadway.

Hartford Public High School Area — Ramps for two major interchanges have been partially constructed in this section of the corridor. The first of these was intended to serve a freeway connector in a corridor alignment generally following the course of the north branch of the Park River (construction of the connector has been indefinitely deferred). The ramps branch north and west of the freeway, passing over the Penn Central Railroad tracks and Capitol Avenue, to connect with West Boulevard at Sisson Avenue. Hartford Public High School is the principal land user in this area.

Underwood-Pope Park Area — South of Hartford Public High School and the interchange just described, a massive red brick structure that formerly housed the Underwood Typewriter factory dominated the area until recently, when demolition of the building was undertaken. Beyond the High School, the highway makes a sweeping curve southward and passes close by Pope Park on the west. South of Pope Park the land use is predominantly single-family residential.

Parkville Industrial Area — To the west, across I-84 and the south branch of the Park River, lies the Parkville neighborhood. The portion of Parkville within the I-84 corridor is predominantly industrial, with pockets of mixed residential and commercial uses. The area contains two major employment centers, Royal Typewriter and Emhart Corporation. The freeway is built on low embankment through this area and parallels a channelized section of the south branch of the Park River.

From the southwestern edge of Pope Park, the highway curves toward the west, recrosses the Penn Central tracks, and enters the Town of West Hartford. Much of the eastbound roadway, from the edge of Pope Park to the West Hartford line, is on elevated structure to accommodate the Penn Central crossing and to allow a southbound interchange ramp to pass under the structure.

Brookfield Flood Plain Area — A second partially completed interchange is located in this area. This interchange was to have served a southwestern freeway extension, the Cedar Ridge Connector, in the drainage area of the south branch of the Park River. The Cedar Ridge Connector has now been abandoned and evidence of the proposed interchange consists of ramps leading to Flatbush Avenue to and from I-84, east, and "stubbed" turnoff lanes on the main through lanes of I-84 where takeoff would have been developed to and from I-84, west.

Two major industrial users are located in this section: Suisman and Blumenthal, and Heublein Foods. Other land in the area is primarily open, consisting mainly of the Park River Flood Plain and vacant land near the West Hartford Town Line.

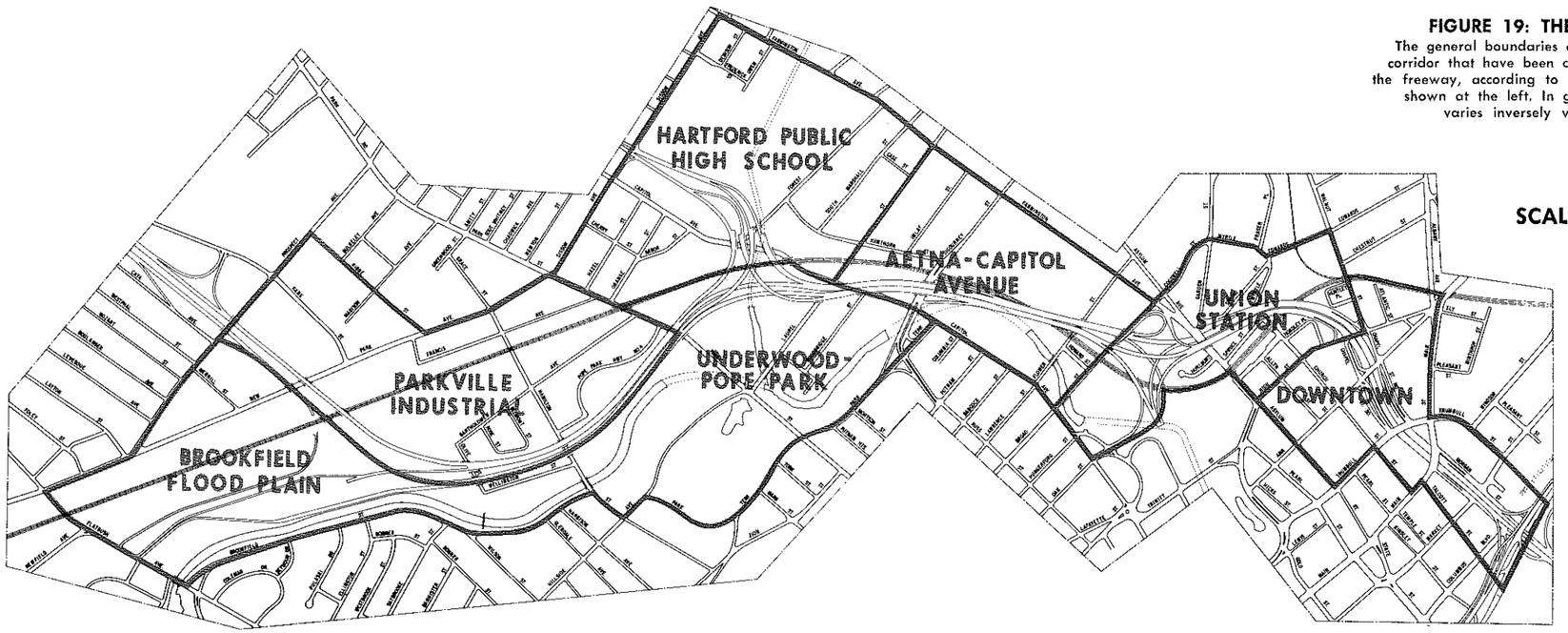


FIGURE 19: THE STUDY AREA DEFINED
The general boundaries of areas within the I-84 service corridor that have been directly impacted or affected by the freeway, according to the Study Team's definition, is shown at the left. In general, the width of this band varies inversely with the intensity of land uses adjacent to the freeway.

SCALE — 1" = 1600'-00"

POPULATION IN THE CORRIDOR

The defined service corridor for I-84 is not a heavily populated one, as there are few residential uses within it. The relationship of population in the corridor to overall City population is indicated in Figure 21 which shows, by means of a population dot map, the relative distribution of population within the City. As shown, there are only about 10,900 persons living within the defined corridor. The most important residential area in the corridor is that north of I-84, between Hartford Public High School on the west and Aetna Life and Casualty Insurance Company on the east. About 4,000 persons live in this medium-density area, predominantly in apartments.

EMPLOYMENT IN THE CORRIDOR

Because of its industrial nature and its location adjacent to the historic manufacturing sites in Hartford along the Penn Central Railroad, the I-84 corridor is an employment area of major proportion. The importance of the corridor for employment is demonstrated in Figure 22 which shows, on a dot map, the general distribution of manufacturing and other employment throughout the City of Hartford. As indicated, the corridor accounts for approximately 30,700 jobs, or 24 per cent of all employment in the City. The concentration of workers within the corridor is increasing in some areas and decreasing in others. Significant recent shifts have been the addition of jobs in the Aetna Life and Casualty area, and closing of the Underwood Typewriter Factory plant which formerly employed 2,300 persons.

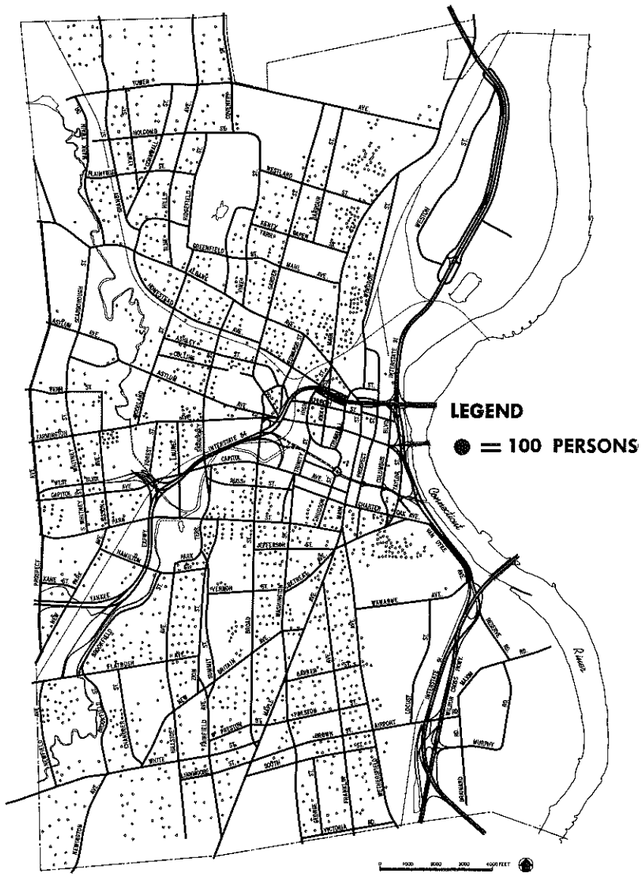


FIGURE 21: POPULATION IN THE CORRIDOR
As shown in the figure to the right, the I-84 service corridor is not heavily populated as there are few residential uses within it. About 4,000 of the 10,900 residents in the defined study area live in the residential district between the Aetna's offices and Hartford Public High School.

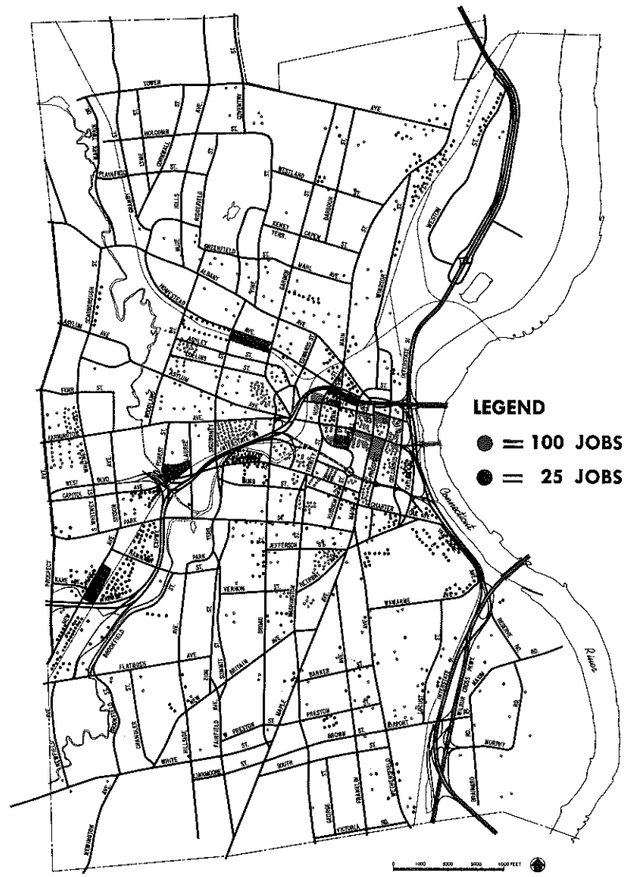
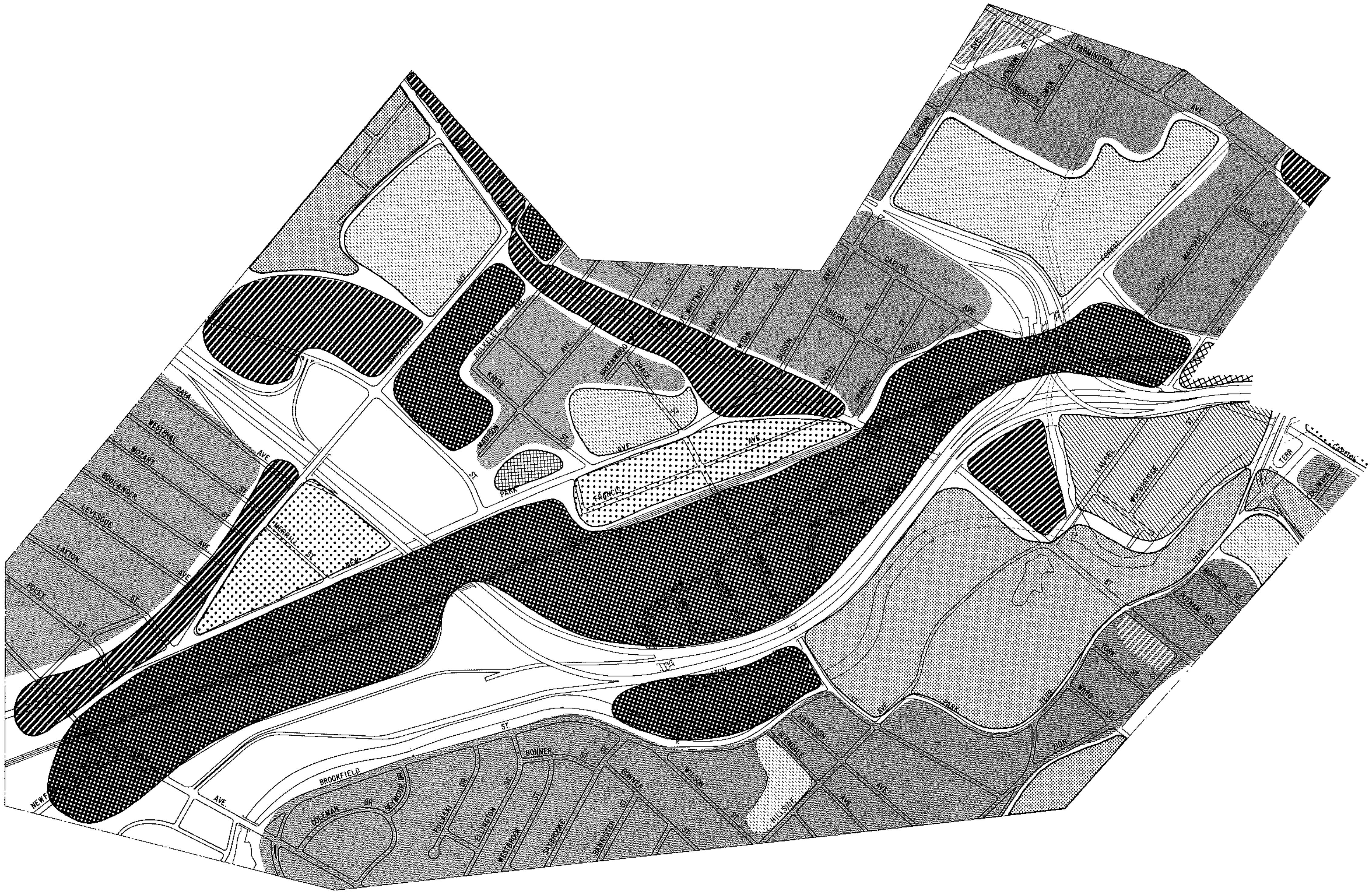


FIGURE 22: EMPLOYMENT IN THE CORRIDOR
The I-84 corridor is an employment area of major proportions, accounting for 30,700 jobs, or almost one-quarter of all employment in the City. Manufacturing employment is indicated by black dots, one for every 25 jobs; other employment is indicated by grey dots, one for every 100 jobs.



CAYA
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BULKELEY
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KIBBE
MADISON
GREENWOOD
GRACE
FRANCIS
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WHITNEY
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YORK
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HARBISON
GLENDALE
HILLSIDE
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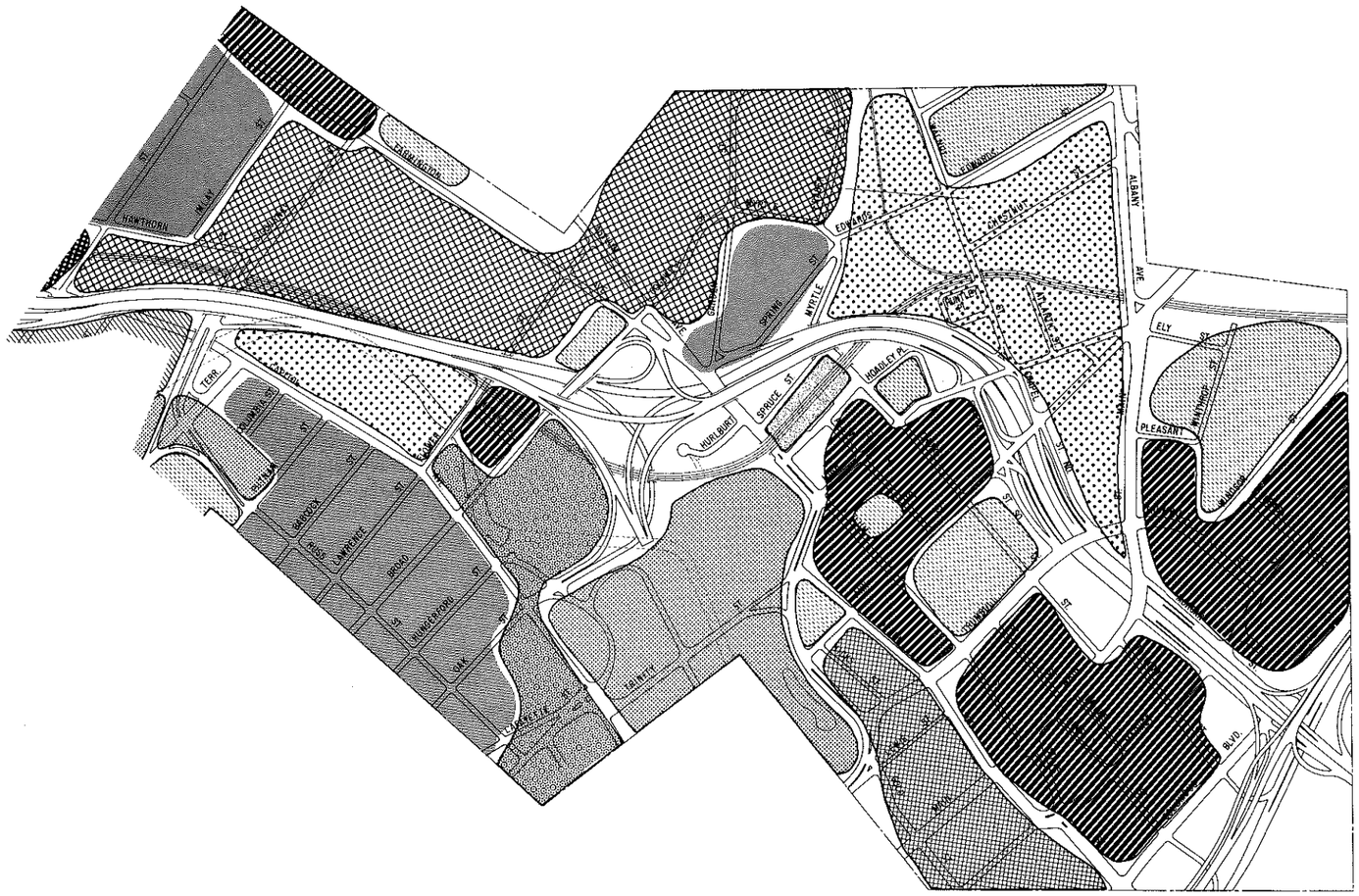


FIGURE 20: LAND USE IN THE CORRIDOR

The predominance of industrial land uses in the corridor reflect its historic function as a manufacturing area associated with rail transport. The variety of land use along the highway alignment covers the spectrum of urban uses found in central cities of Hartford's size and age.

- RESIDENTIAL
- INDUSTRIAL
- COMMERCIAL
- GOVERNMENT COMPLEX
- RECREATION
- INSURANCE
- OFFICE
- TRANSPORTATION
- URBAN RENEWAL
- INSTITUTIONAL
- MIXED USAGE

SCALE — 1" = 800'-00"

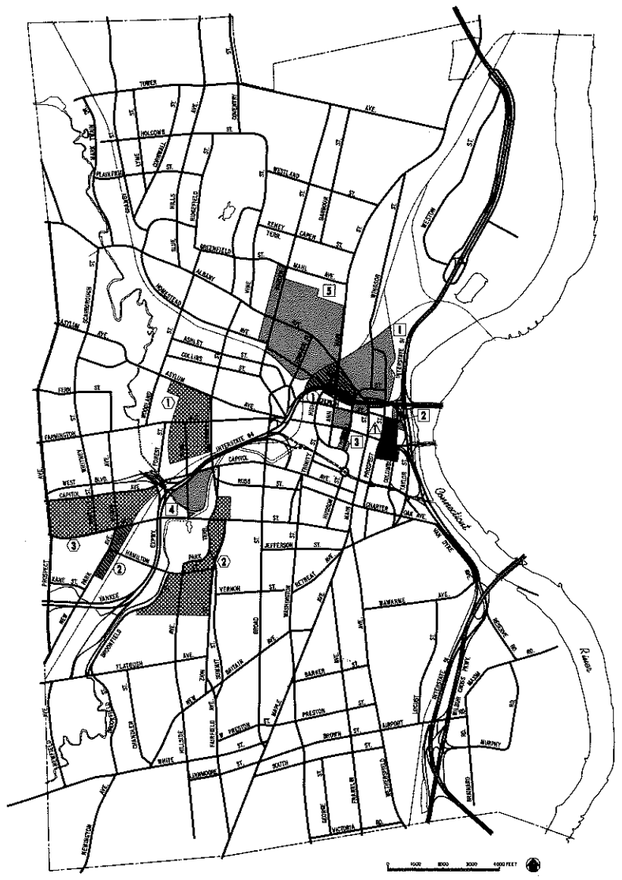


FIGURE 23: REDEVELOPMENT IN THE CORRIDOR
A major element in the recent history of the city of Hartford has been the revitalization of older, run-down neighborhoods or districts through means of renewal, rehabilitation, and code enforcement projects. Redevelopment in some project areas proceeded concurrently with construction of I-84.

REDEVELOPMENT IN THE CORRIDOR

A major element in the recent history of the City of Hartford has been the revitalization of older, run-down neighborhoods or districts by means of urban renewal programs. Several renewal areas lie near or adjacent to I-84, as shown in Figure 23.

Redevelopment in some project areas proceeded concurrently with construction of I-84 and, together with the highway, has contributed very substantially to a resurgence of economic growth in downtown Hartford during the past decade.

The most intensive urban renewal activities presently undergoing development in the vicinity of the I-84 corridor are in the central business district. The highway right-of-way is immediately adjacent to the Windsor Street Urban Renewal Area and passes through a portion of the Trumbull Street Urban Renewal Area. West of Trumbull Street, the corridor forms the southern boundary of the Ann-High General Neighborhood Renewal Area.

West of Sigourney Street, there is an active urban renewal project, three code enforcement areas and one future renewal project area, all of which are near or immediately adjacent to I-84. The Underwood Area is the active urban renewal project, while code enforcement areas include Brookfield Park, Parkville and Asylum Hill. The future urban renewal project area is just west of the Parkville Industrial Sector.

Although not related to urban renewal, there are two public housing projects which immediately abut the I-84 corridor. These are Rice Heights, north of Flatbush Avenue and east of Brookfield Street, and Charter Oak Terrace south of Flatbush Avenue.

Parkville Industrial Area — At the present time there are no active urban renewal projects in either the Parkville Industrial area or the South Park River Flood Plain area. Urban renewal could provide the means for relocating the small enclaves of residential and commercial uses in both areas and for the realignment of roads in the Parkville Sector to better organize access, parking and interior circulation. Urban renewal acquisition of certain properties could also provide a means of assuring that there is adequate room for expansion of some existing industries.

Underwood Urban Renewal Project — I-84 joint-use proposals for parcels adjoining the Underwood Urban Renewal Project reflect Urban Renewal plans developed for this area. Industrial renewal was the use initially suggested for this area by the Hartford Redevelopment Agency. With the closure of the Underwood Typewriter factory, however, attention has shifted from industrial reuse to residential development.

Windsor and Trumbull Urban Renewal Projects — Suggested development plans for joint uses in the I-84 corridor are directly related to urban renewal plans for these two areas. The Windsor Street Urban Renewal Project is in advanced stages of execution and very little land remains available for development. It is significant, however, that the most important vacant lands in this renewal project are immediately adjacent to the I-84 right-of-way.

A connection (direct or indirect) between Trumbull Street north of I-84 with Interstate I-91 to and from the North would have an important impact on the Windsor Street Urban Renewal Project area by providing better access to and from I-91.

The Trumbull Street Urban Renewal Project includes the entire block bounded by Trumbull Street on the west, I-84 on the north, Main Street on the east, and Church Street on the south. Thus, potential for an air-rights project and its associated development, east of Main Street and south of I-84, exists entirely on urban renewal land. The other significant portion of the Trumbull Street Urban Renewal Project includes the two blocks on which the Hartford Civic Center is planned.

Constitution Plaza — The Plaza, illustrated in Figures 24 to 26, was the first of the renewal projects to be completed. Finished in 1964, the development has been an outstanding success, generating new investment estimated at $55 million.

CITY OF HARTFORD: POLICIES AND OBJECTIVES

In many respects the City of Hartford is the principal client for the I-84 Joint-Use Study, for it is the City that will be most affected by the ultimate outcome of further development in the I-84 corridor.

The Hartford Commission on the City Plan is the civic agency directly concerned with formulating recommendations for future city growth policies. The I-84 study team devoted much attention to published materials prepared by the Commission and spent many hours with the Commission Staff and other City officials to insure full understanding of established City planning goals. Basically, the I-84 Joint Development Plan is in concert with present City planning policies.

The most significant relationships between the I-84 investigations and the City planning objectives occurs in the central business district, for which a draft report entitled **Downtown Hartford — The 70's** was presented to the Commission by the Commission Staff in February, 1970. The stated goals of future central business district development, as set forth in this document are:

- Improved pedestrian circulation and movement systems featuring malls, semi-malls, elevated sidewalks, landscaped rest areas, eating and meeting places.
- More intensive use of land within the central business district.
- Improved support systems for the movement of people (i.e. bus transit, rail transit, "people movers").

FIGURE 24 to 26: THREE VIEWS OF CONSTITUTION PLAZA

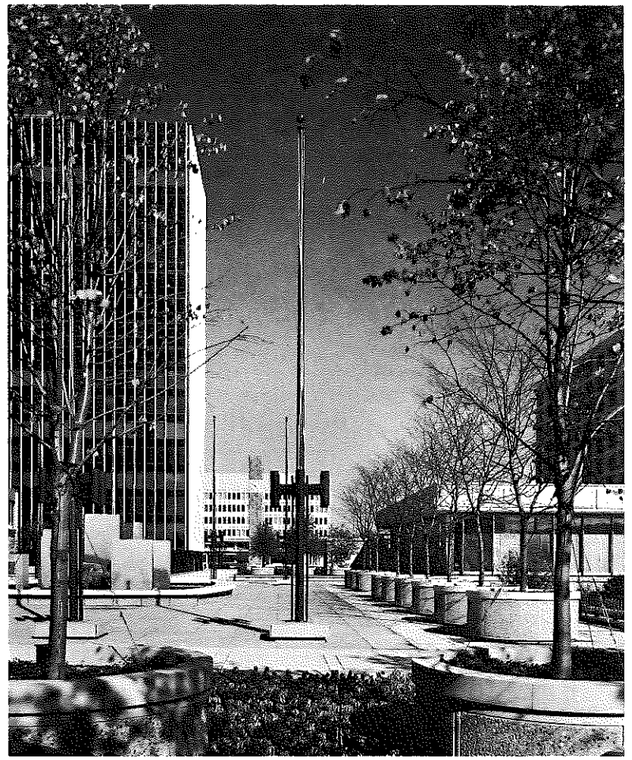
The three views of the plaza shown here — an air view with I-84 in the foreground; the view from the Phoenix Tower with I-84 in the background, and a view on the plaza — show the first of Hartford's renewal projects completed. Finished in 1964, the development has been an outstanding success, generating new investment estimated at $55 million.

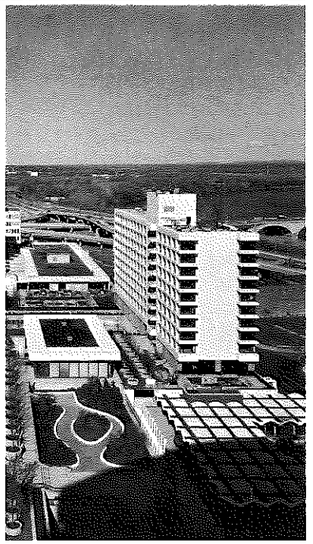
The Commission Staff identified sixteen future development projects within the central business district. Six of these projects are within the defined I-84 corridor and have been considered in this study:

- **Hartford Police Station:** The staff report suggests either expanding the Police Station on its present site or relocating police operations and using this site for central business district office use expansion.
- **Church Street Municipal Garage.** The Commission Staff suggest expansion of the garage.
- **Ann-High Street Area.** The Commission Staff has called this area "Rensselaer Green" and has recommended a residential redevelopment program for the area together with commercial and public facilities.
- **Union Station Area.** The Commission Staff advocate the use of this area as a future multi-mode transportation center.
- **High-Rise Apartments Adjacent to Union Station.** The Commission Staff suggests that this area has good potential for intensive use as a high-rise residential area.

Basically, the I-84 Joint Development Plan is in concert with present City Planning policies in the central business district. Also, because the Interstate 84 corridor traverses a central area of Hartford that contains some of its oldest structures, it follows that the corridor incorporates a number of areas outside the Downtown Area in which the Hartford Redevelopment Agency has an active interest. The Joint Development Plan takes proposed redevelopment uses into account in proposals for adjacent portions of the freeway rights-of-way.

In the next chapter, several aspects of I-84 are examined for the effects they have had and are having on abutting properties and some implications for the future.





CHAPTER THREE

BOTH CAUSE AND EFFECT OF THE "NEW CITY"

As prelude to the examination of joint development and multiple use possibilities for the I-84 right-of-way and its service corridor in the City of Hartford an effort should be made to understand the impact that the highway has had and is having on the City and its citizens. In fact, however, the freeway has been in use so short a time, and so many other fundamental changes are taking place in the corridor — such as the several urban renewal projects mentioned in the previous chapter — that it is virtually impossible to measure the component of change that could logically be attributed to the new highway. However, dramatic shifts in traffic patterns can be traced; and many changes in land use and land values, the attitudes of people directly and indirectly affected by the freeway, and some of the aesthetic and cultural elements that have been introduced into the corridor can be described or enumerated to convey some sense of the scale of change that is taking place and a feeling for the significant part that the highway has contributed and will likely continue to have in further development of the City.

LAND-USE IMPACTS OF I-84

Compared with many urban freeways constructed in fully developed cities in the United States, Interstate 84 in Hartford has had a relatively minor impact on land use in the City. The principal reason for this is the fact that I-84 follows an existing transportation corridor through much of its length in the City — the mainline right-of-way of the Penn Central Railroad (New England Division).

The most significant changes in corridor land-uses occurred where the highway departed from the railroad alignment and disrupted adjacent neighborhoods. Three areas, in particular, were affected by highway intrusion beyond the rail corridor. These were the central business district (Downtown Area), the Hartford Public High School Area, and the Parkville Area.

In the central business district, I-84 cut a major swath through the northern fringe of the area. Even here though, the principal dislocations and influences on land-use were caused, not by the highway, but by the urban renewal activities taking place concurrently with development of the highway. The Windsor Street and Trumbull Redevelopment Project areas included much of the right-of-way for I-84 in the eastern part of the central business district. West of Trumbull Street, however, the highway was responsible for the relocation of homes and businesses in a relatively short two-block section.

In the Hartford Public High School Area, development of the large Capitol Avenue interchange for connections to Sisson and Farmington Avenues required removal of numerous structures, mostly residential, with some disruption of manufacturing facilities.

In the Parkville area, the new freeway bisected a small residential area, severed a portion of Pope Park from the main body of the park, and caused more residential relocations than anywhere else in the corridor.

Since the completion of I-84, the effect of the highway on land-use has been reflected in changing land values and demand patterns. In the central business district, redevelopment activities continue to move ahead and the presence of the new freeway, with the improved mobility and enlarged market radius that it implies, is doubtless a stimulating factor. The additional stimulus also has important implications for other new development that is taking place or being planned in the corridor.

In locations where the deterioration of market values had resulted in abandonment of activities prior to advent of the freeway — such as the Underwood Typewriter factory — construction of the highway did not stop a deteriorating process from continuing. However, the highway is expected to be a very important positive influence on redevelopment of the area.

The effect of I-84 on the Hartford Public High School area is also hard to sort out because of the concurrent development of the new High School and pressures on adjacent and nearby areas for conversion of low-density residential uses to high-density apartment structures or to non-residential uses (the new Sisson Avenue fire station is one example; expansion of Aetna's employee parking fields into residential blocks is another).

The Parkville Industrial area seems to have been little affected by I-84, except for those properties acquired for highway rights-of-way. Land uses are mixed and have remained stable. The whole area was rezoned from residential to industrial about three years ago, but there has been no rush to eliminate nonconforming uses, nor any apparent letdown in the up-keep of such establishments.

Throughout the I-84 corridor, land-use impacts of the freeway have not been clearly established. Generally speaking, at least five years are required before the full impact of a freeway is felt on adjoining land areas. During that period consolidation of properties takes place, land exchanges and assemblies are made, and plans are formulated for future use or redevelopment. An example of this is the Union Station area in which redevelopment plans are being discussed but where no visable evidence of land-use change has occurred in the last several years.

I-84 has doubtless brought numerous secondary land-use benefits to the corridor. Because it is continuous, the freeway has helped to unify portions of its environment and ease transitions between dissimilar land uses adjacent to it. As already noted, it has become a firm and permanent boundary between some of the different activity areas that it borders or skirts.

The "corridor of influence" is described, sector by sector, in Chapters 7 through 13 of this report. The description incorporates items of information specified in the Terms of Agreement for this study, as well as other relevant facts and observations. Kinds and intensities of land use are described; general traffic flow information and historical trends are discussed; and long-range plans for city development are related to recent development experience in each neighborhood.

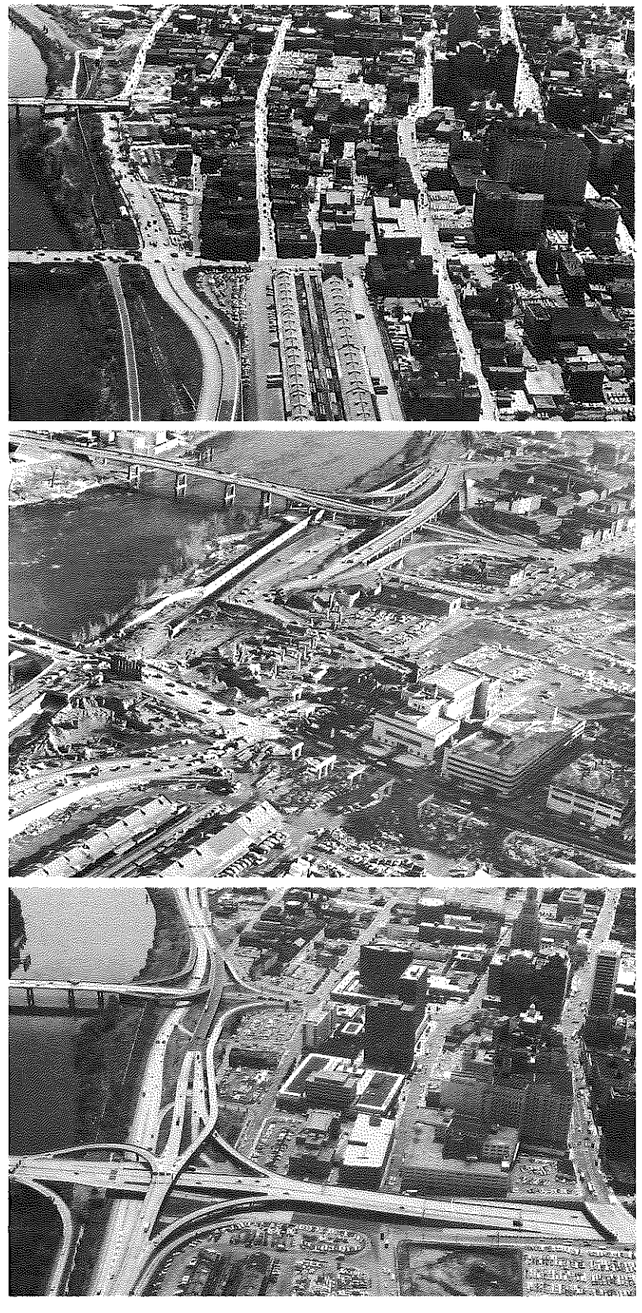


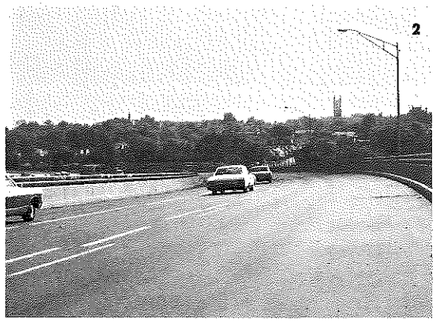
FIGURE 27: THREE VIEWS OF I-84 DOWNTOWN
The three views adjacent, taken at the location of Interstate 84 before, during, and after construction, show the principal dislocation and influences on land-use were caused, not by the highway, but by concurrent urban renewal activities.

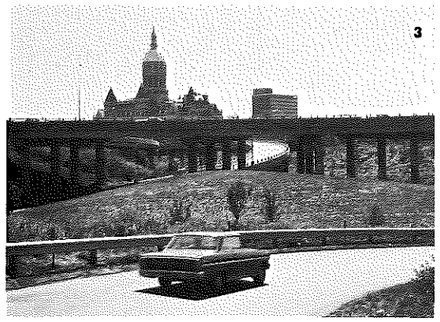
ECONOMIC IMPACT OF I-84

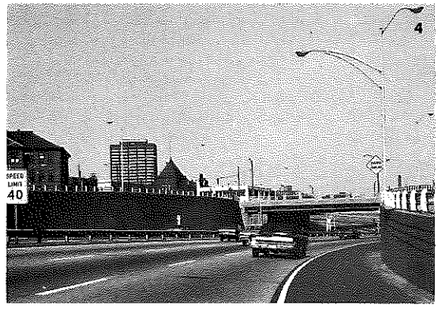
Like the land-use impacts considered above, the economic impact of the freeway cannot be accurately judged at this time. A study more detailed in scope then the present one would be needed to fully assess the economic impact of the freeway in the city. However, certain observations about these economic factors can be made. First, it is apparent that sizable amounts of real estate were removed from the tax roles for the construction of I-84. The immediate results tended to be negative, at least as far as city revenues were concerned. In the longer range, however, most signs point to positive economic effects in the corridor. Land values, especially in the vicinity of interchange locations, have increased due to improved site suitability for business and commercial uses. Also adding to the tax base are the values that accrue to commercial or business structures which are located to receive maximum exposure to users of the highway (i.e., the values that derive from advertising).

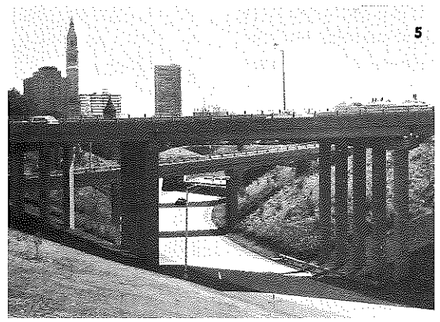
Nor is it possible to separate the economic effects of redevelopment from those due to opening the new freeway. Redevelopment activity has been going on for a number of years and has doubtless been a major factor in the new vitality of Downtown Hartford; it is also true, however, that the freeway has been under construction for a long time and some increment of the new growth has likely been due to anticipation of a completed highway.

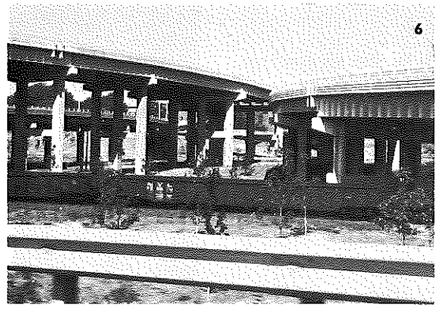
There are visible signs of economic growth in the eastern extreme of the corridor (the central business district) where much building activity is presently underway and more is planned. In the Asylum Hill and Aetna area, the improved accessibility afforded by I-84 has no doubt been a factor in the decision of several insurance companies to expand their facilities in the present location. West of the insurance area, where redevelopment has not been experienced, economic benefits to the corridor resulting from construction of the freeway are not yet in evidence; it is too soon to reach any conclusions concerning this area.

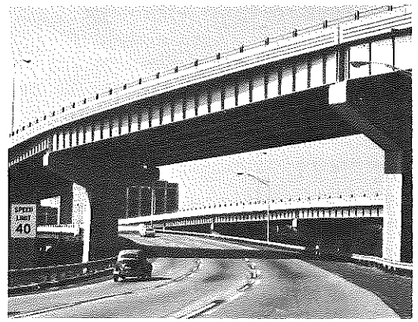












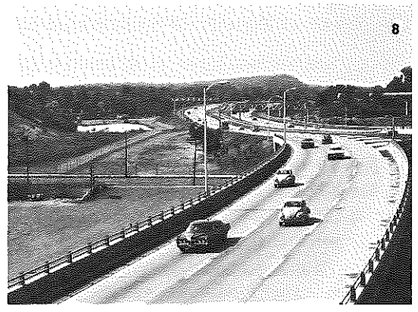


FIGURE 28: VIEWS FROM THE ROAD
The road user does not see a great deal of detail in the neighborhoods through which he passes; he is exposed to a series of panoramic impressions such as those shown here — views of great variety, of constantly changing land use as the highway rises and falls, turns left and turns right.

The views shown are:
1. Westbound, west of High Street entrance, Hartford Insurance Group Tower in background.
2. Eastbound, on viaduct over Penn Central tracks, Trinity College tower in background.
3. Westbound, Broad-Asylum-Farmington interchange, Connecticut State Capitol in rear.
4. Westbound, Ann-Trumbull interchange, Ann St. overpass in the background.
5. Eastbound, I-484 Connector and Capitol Avenue exit ramp, central business district in the background.
6. Westbound, Capitol Avennue overpass to Sisson Avenue ramps, Penn-Central railroad in the foreground.
7. Westbound, Capitol Avenue overpass west of Underwood renewal area, ramps to and from Sisson Avenue in foreground and background, respectively.
8. View of I-84, from Capitol Avenue overpass, along western boundary of Pope Park, Park Street in foreground.

AESTHETIC AND ENVIRONMENTAL IMPACTS OF I-84

The impact of the I-84 freeway upon the physical environments into which it was introduced has been both dramatic and overwhelming. Adjacent land users must adjust to the presence of the highway — they simply cannot ignore it for very long, for it dominates its neighbors. Key points of interest and emphasis in the original setting may no longer be valid — they must be reoriented (if possible) or replaced (more likely).

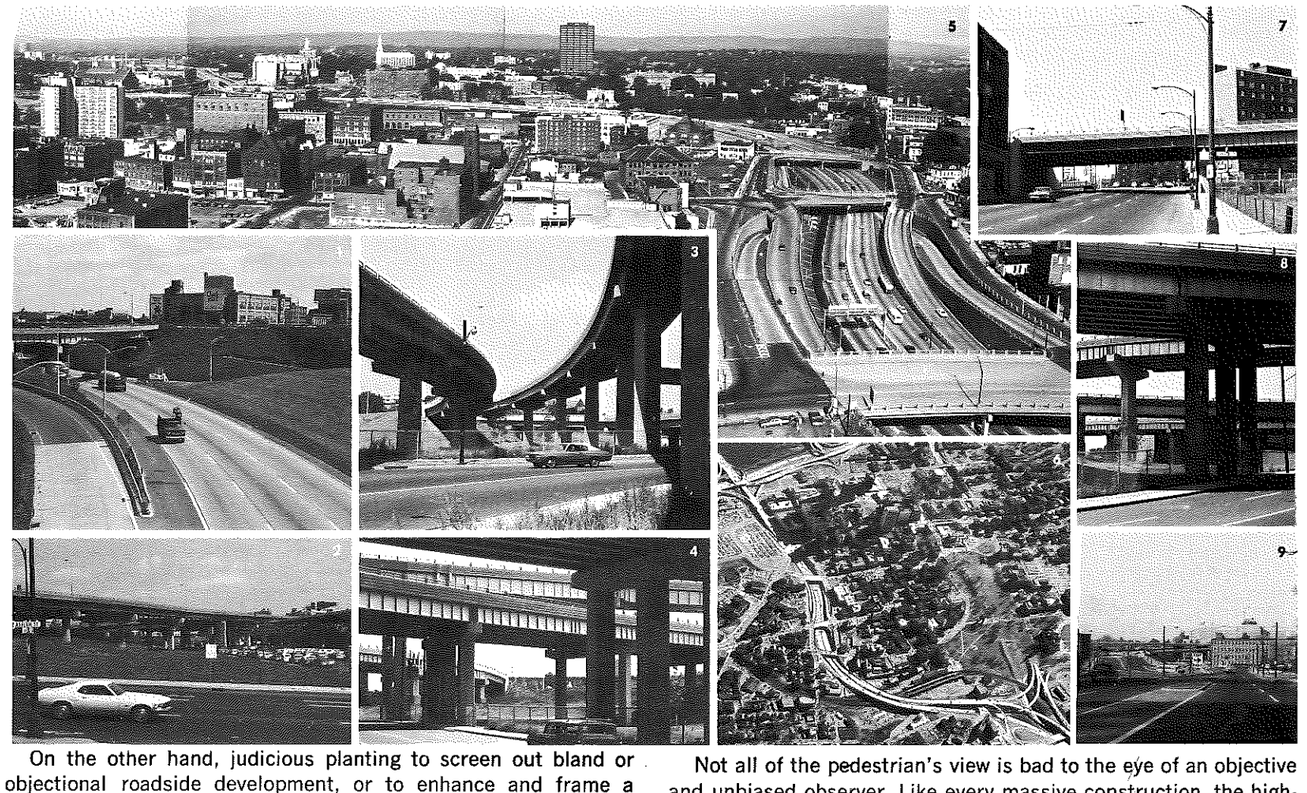
The I-84 environment includes buildings, streets, parks, bridges, streams, the railroad, and an infinity of other elements, many of them in private ownership or extensively used by local residents. So that the freeway may become an organic part of these neighborhoods, further efforts must be made to integrate it into this environment. Such measures will require full cooperation between the Connecticut Highway Department, public agencies in the City of Hartford, and private owners of the adjoining properties. A crucial aspect of this problem is the need to convince private owners that the highway administrators are sincerely dedicated to the improvement of areas under their control. The joint-uses program is, itself, evidence of this sincerity; in addition, the state has prepared extensive plans for landscaping the entire I-84 right-of-way through the City of Hartford and results of the planting program are already becoming evident.

In general, the aesthetic treatments that might be worked into the I-84 environment, now that the road is complete, are essentially superficial and cosmetic. The basic massing of structural elements, determination of scale, proportion, and development of details have been accomplished. The incorporation of major joint-use structures, such as parking garages, office buildings, pedestrian plazas over the highway, and so on, represent exceptional opportunities, and economically feasible projects of such scale are likely to be few in number within the immediate future.

The most profund environmental effect of I-84 on Hartford, aside from the relief of traffic congestion, has been its visual impact. The highway has been imposed upon the City as a massive piece of architectual sculpture which differs from other architectural forms in radical ways. Its visual impact can be considered from three alternative viewpoints: that of the **highway user;** the **pedestrian viewer** of the highway from some other vantage point; and the **occupants of neighboring** property. In short, these are the "view from the road", the "view of the road", and the "view by the road".

FIGURE 29: VIEWS OF THE ROAD
The highway often assumes the character of sculpture. Unlike a conciously designed sculpture, however, the play of light and shadow is unplanned, the occasionally impressive effect fortuitious, but careful reconnaissance of the corridor may disclose opportunities to frame and emphasize interesting aspects.

The views shown at right are:
1. Broad-Asylum-Farmington interchange, from Broad Street looking east.
2. Intersection of Asylum and Hurlburt Streets, looking north towards Union Station and I-84.
3. Forest Street, Sisson Avenue ramps overhead.
4. Capitol Avenue, opposite Forest Street, Sisson Avenue ramp overhead.
5. Panoramic view of I-84, looking west from Main-Trumbull-Church superblock.
6. Air view of the central business district, interchange between I-91 and I-84 at upper left, and Broad-Asylum-Farmington interchange at lower right.
7. Intersection of Asylum and Spruce Streets, looking west towards I-84 overpass.
8. Sisson Avenue ramps from intersection of Forest Street and Capitol Avenue.
9. Park Terrace and Russ Street, looking north to Aetna complex, I-84 and Sigourney Street at midpoint of photo.



View from the Road — The highway user is aware, consciously or subconsciously, of the structure's infinite length, which has neither beginning nor ending in the sense of a building or bridge or monument. In the perspective of the viewer, the highway appears at the threshold of visibility — over a hill, around a curve, or simply out of the horizon — and it disappears behind the viewer in much the same way. It does not have a perceptible terminus. The driver takes the highway's continuity for granted, and fully expects to be able to avoid or proceed through and beyond the mountains, streams and cities that appear in his path, and to gain access to the places that attract him.

With seldom a critical or detailed look at how the freeway is built or of what materials it is comprised, the road user is aware of the freeway structure in only the most general terms. This is doubtless a desirable condition most of the time, for the highway merely provides a path that people use to realize their ends, and the more successfully it suits this function, the less obtrusive it is likely to be. From the standpoint of the road user, then, the urban freeway is attractive and enormously important for what he is able to do by driving over it; he is probably not aware of its appearance. His physical contact with the traffic on it is not as a human being consorting with other humans, but as a specialized machine impersonally involved with a horde of similar machines.

Traveling fast and devoting his principal attention to traffic, the driver does not see a great deal of detail in the neighborhoods through which he passes. He is exposed to a series of panoramic impressions, which may be partly controlled or conditioned by the care with which the road is laid out. The driver's attention may deliberately (or accidentally) be focused on selected features. The tall buildings in the city center, for example, are natural targets for driver attention and they require no special emphasis by the highway designer other than to keep the view open.

On the other hand, judicious planting to screen out bland or objectional roadside development, or to enhance and frame a perspective, may unify and simplify the view from the road and make the driver's experience a little more pleasant.

In Hartford, the view from I-84 is one of great variety, of constantly changing land use as the highway rises and falls, turns left and turns right.

View of the Road — Urban freeway structures are often the object of sharp criticism, deserved or not, based on the perspective of a pedestrian clambering about in its shadows. As seen by a person on foot, especially from beneath a bridge or viaduct, the expressway is a massive monolith, dominating the urban "streetscape". Usually monochromatic, it is largely devoid of texture and often undistinguished or baffling in terms of aesthetic expression. Located and designed to achieve the least feasible interference with existing neighborhoods, the urban freeway sometimes lacks the sweep and majesty that characterizes rural highways (which are usually observed from better distance and perspective). It is the most difficult of highways to design, saddled with a multitude of constraints and having little area and space in which to resolve them.

Not all of the pedestrian's view is bad to the eye of an objective and unbiased observer. Like every massive construction, the highway often assumes the character of sculpture — some of it good and some not so good. It can and will be viewed from all sides, and from above and below. Unlike a consciously designed sculpture, the play of light and shadow is unplanned; the occasionally impressive effect is fortuitous. Careful reconnaissance of the freeway may disclose opportunities to frame and emphasize interesting aspects — a curving, arching structure in a particularly fortunate light, a glimpse of highway from an overpassing street or a birdseye view from the top of a tall building that takes advantage of little known or seldom recognized features. In general, "distance lends enchantment" and the freeway usually presents a better appearance when the viewer is not too close to it.

Several structural elements of I-84, when viewed from points either near the highway or quite far from it make strong visual impressions. The massive quality of elevated sections is certainly one of the strongest. The three dominant interchanges (the Bushnell Park Connector, Capitol Avenue and Flatbush Avenue), are also major visual features.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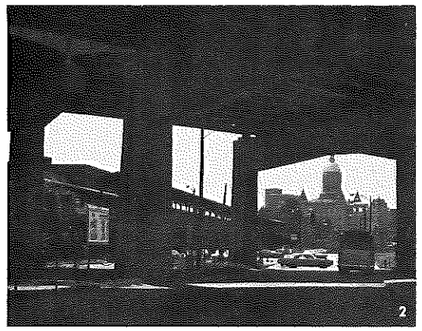
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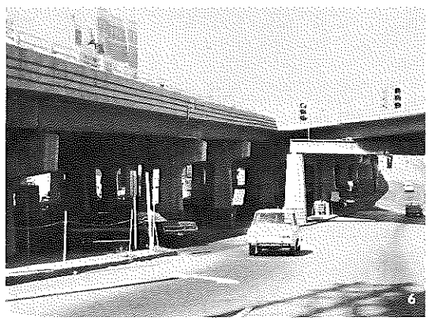
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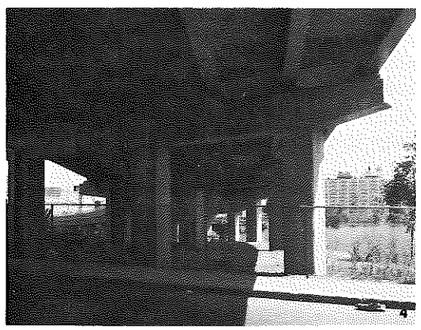
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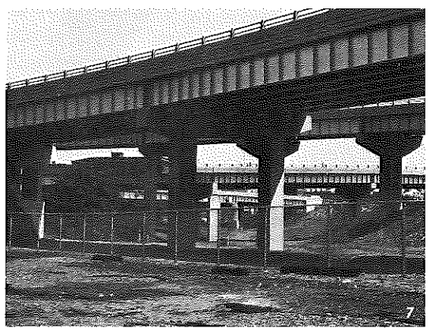
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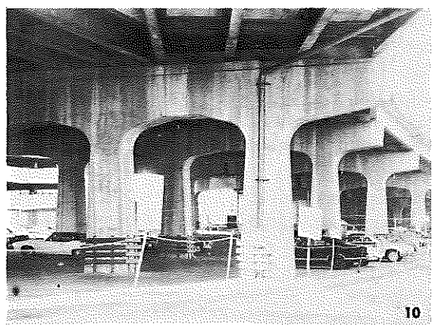
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FIGURE 30: VIEWS BY THE ROAD

The perspective of the road from adjacent property can be a crucial factor in decisions of property owners to remain in the corridor. Air-rights and joint-use structures, as well as landscaping, may provide aesthetically agreeable transition between the freeway and some of its neighbors.

1. Broad Street, I-84 viaduct overhead, State Capitol to the right.
2. Looking south on Spruce Street, I-84 viaduct overhead, Union Station and the Capitol in the background.
3. Flatbush interchange on-ramp viaduct, South Branch of Park River below, Rice Heights housing project in the background.
4. Broad Street, I-84 viaduct overhead, Hilton Hotel in background.
5. I-84 understructure, Broad Street — Sigourney Street viaduct section.
6. Morgan Street — Columbus Boulevard intersection, looking west.
7. Sisson Avenue interchange.
8. I-84 viaduct understructure, just east of Sigourney Street.
9. Laurel Street and Capitol Avenue, looking east towards Sigourney Street.
10. Municipal car pound, east of Market Street, beneath I-84 viaduct.

View by the Road — The view of the road from adjoining or nearby property can be a crucial factor in the decisions of property owners to remain in the corridor, relocate, expand, or develop an entirely new structure or complex of structures. The land owner's perspective varies according to the particular type of use. For example, to occupants of an office building or a high rise luxury apartment structure that has been soundproofed against freeway noise, the view of the nearby highway can be interesting — even stimulating. To those in more modest housing, the freeway might constitute a source of never ending noise.

Most attempts to improve the view of the road have been done through landscaping and in some cases the results have been successful in adding beauty to the roadway. But even with extensive planting, the view from beside the roadway is not always attractive. The Capitol Avenue overpass, rising to sixty feet or more above street level, the numerous ramps and main roadways in the vicinity of the Union Station at Asylum Street, and the long viaduct sections over the Penn Central tracks, present especially difficult problems. New air-rights and joint-use structures within and adjacent to the freeway can be designed to incorporate architectural elements that will provide aesthetically agreeable transition between the freeway and some of its neighbors.

SOCIOLOGICAL IMPACTS OF I-84

At the outset of these studies, it was recognized that too little was known about the acceptability of I-84 by minority population groups in the City, how they might preceive its effects on them, and how they would view efforts to modify and "improve" neighborhoods by introducing uses of various types into freeway reservations in the neighborhoods through which the road passes. At an early stage in the study, Dr. George Schermer, special consultant on urban sociology, undertook to obtain some general answers to these questions.

Dr. Schermer's approach was to meet with directors and managers of social agencies throughout the City of Hartford, with the heads of City and State departments which deal with community relationships, and with other community leaders, to outline to them, very broadly, the scope and intent of the Joint-Uses Study, and obtain immediate reactions to the likely effects or impacts of the Study on various sectors of the community. Since most of the social agencies deal with the situations and problems of underprivileged, low-income, and racial minority groups, both the freeway and the idea of joint uses tend to be viewed as impersonal institutions which are not very responsive to the problems of central-city neighborhoods. Since most of the people interviewed were unaware of the joint-uses study, and had given little or no thought to possible community gains that might grow out of such an analysis, first impressions were cautious and doubtful about the intent or underlying purpose of the study.

As respondents considered the subject, it was found that they really were not clear about I-84's impact upon the community. Some who spoke of the new highway in terms of neighborhood disruptions and displacement of people probably were thinking of the Windsor renewal area. In that area at least 90 per cent of the population displacement was caused by the renewal program. Had the highway never gone through, urban renewal would have taken the entire area. If the renewal program had not been undertaken, the displacement by the highway would have been nominal. The area was so critically deteriorated that some type of renewal program would have been necessary. Except in that area, there have been relatively few families dislocated by the highway.

FIGURE 31: THE NORTH-SOUTH DIVISION OF HARTFORD

The north-south division of Hartford prevailed long before the expressway went through. The railroad, Park River and industrial belt constituted a very real barrier. It is possible that the expressway aggravates the division somewhat, but, due to the industrial nature of the corridor, and the proximity of retail and commercial activity along the eastern borders of I-84 in the City of Hartford, the freeway is a barrier between non-residential neighborhoods.

The observation was also made that I-84, on its wide right-of-way, is a barrier, separating neighborhoods on either side from one another. Hartford is, in fact, divided between North and South. The division prevailed before the expressway went through. The railroad, the Park River, and the industrial belt constituted a very real barrier. It is possible that the expressway aggravates the division somewhat. However, due to the industrial nature of the corridor, and the proximity of retail and commercial activity along the eastern borders of I-84 in the City of Hartford, the freeway is a barrier between non-residential neighborhoods.

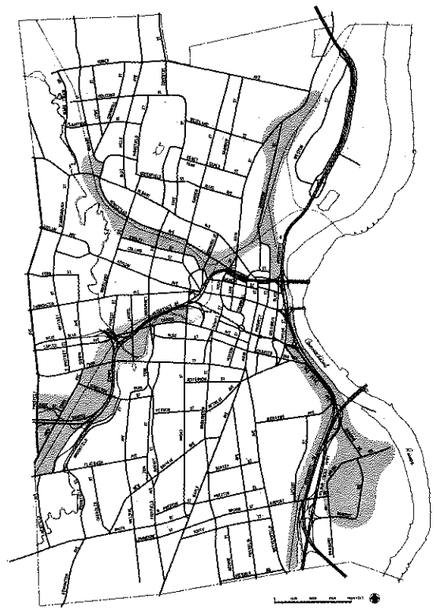
A third argument raised by the leaders of inner-city residents is that the freeway is merely another mechanism by which middle-class and upper-class whites are siphoned back and forth from suburb to central city job locations and benefits the inner-city resident very little. This is true, of course, of all systems for moving people in and out of cities in large numbers, and the argument would apply with equal force to rapid transit systems and to most auto traffic on surface streets.

All of these general allegations are quite worthy of consideration in planning for future systems for traffic and transportation. In considering whether expressways are needed and where they are to be located each of these arguments should be weighed with care.

LOOKING TO THE FUTURE

In the instance of I-84 it must be recognized that the highway is now built and that it is not likely to be removed from the scene. Dwelling upon the injury it may or may not have dealt is rather academic. In this study, the focus is upon the positive social benefits that can be derived from it.

The first step has been to determine on the one hand whether the Black and Puerto Rican communities have any strong negative feelings toward the highway as a barrier that encloses them and, on the other, whether any group had any thoughts about utilizing portions of the corridor air rights for housing, community facilities, or employment-generating activities.



As far as could be determined from the interviews, the highway is not a source of irritation or unrest among the people who have strong grievances toward the city and the white establishment. Poverty, poor housing and environmental conditions, and clashes with the police have generated the unrest.

There is critical need for land space for the development of low and moderate income housing. The proposal to utilize the Underwood Typewriter factory site for a major self-contained development, including moderate income housing, has elicited some interest. Other than that, it appears, there might be a negative response to building low-income housing near the highway corridor because of the negative effects of the highway and the probable lack of adequate play areas and other community facilities. While not ruling out the possibility, it would be necessary to deal with the negative feelings that have resulted from past practice (in other cities — not necessarily Hartford). Too often, low-income housing has been located in what were undesirable sites near railroads, municipal utilities, or industrial plants. Any proposal to develop along the corridor would have to be sold on its merits or it would be vigorously opposed.

The idea that air rights or other space in the corridor might be utilized for such community uses as training facilities, day-care centers, or recreation is so new to people that the initial response tends to be dubious. It is not likely that a good scheme would be opposed, however, and it might eventually generate support.

CHAPTER FOUR

TRAFFIC IN THE I-84 CORRIDOR

According to the terms of the Agreement between the Connecticut Department of Transportation and the consultants for this study, it is proposed that an important phase of the work will be to ". . . determine likely traffic increases due to proposed joint uses, for both I-84 and the local streets, and evaluate the effects of such new travel on the traffic circulation system."

In the course of these investigations, as will be seen in the chapters which follow, a great variety of joint uses were examined. All suggestions, whether wholly on highway rights-of-way or coordinated with adjacent land development, were examined with an eye to the overall goals of the study — the improvement of aesthetic, economic and social aspects of the neighborhoods that the highway traverses. In the course of review, the vast majority of possible joint uses failed to meet one or more of the necessary criteria. Among the candidates which remained, some of the most attractive possibilities will be realized only if their worth can be proven in the marketplace. In other words, no proposal can be regarded as valid unless there is a good chance that it can attract sponsorship by persons or agencies that have the financial capability as well as the desire to undertake the development.

Among the joint-use proposals are several potential developments of very large scale; most of these represent projects that would have to be done on an impressive scale if they were to become economically self-supporting. Large scale projects tend to create high-intensity uses which, in turn, generate large amounts of traffic. Thus, the requirements stated in the Study Agreement take on great significance, and the effects of traffic increases due to proposed improvements must be given careful study, both for their impacts on I-84 and on city streets.

FREEWAY ACCESS

Access to and/or from city streets in Hartford is provided at eight locations, all but three of them full interchanges:

Market Street	**Full Access**
Trumbull Street	**To and From West**
Ann-High Streets	**Full Access**
Asylum-Capitol Ave-Broad St. (Union Station)	**Full Access**
Sigourney St.-Park Terrace	**To and From East**
West Boulevard-Sisson Avenue	**Full Access**
Flatbush Avenue	**To and From East**
Prospect Avenue	**Full Access**

The areas served by the I-84 access systems within the City of Hartford are shown in Figure 32. The definition of "area served" in this illustration includes areas within three minutes driving time of the freeway.

TRAFFIC IMPACTS OF I-84

The section of I-84 in the City of Hartford is one of the most critical links in an elaborate network of freeways that has been planned to expedite the flows of traffic to, from and within the Hartford Capitol Region. I-84 is located in a corridor that was seriously congested 25 years ago, and provides traffic relief to several of the arterial streets that parallel it, including Farmington and Capitol Avenues, Park Street, Asylum Avenue, and many streets within Downtown Hartford. A measure of the relief provided is shown by the fact that the highway near its junction with I-91 carries a daily volume (seasonally adjusted to Annual Average Daily Traffic) of more than 84,000 vehicles on the Bulkeley Bridge, with one-way peak-hour volumes regularly exceeding 4,400 vehicles in the two main lanes. At the other end of the study segment, near the West Hartford Town Line, daily volumes presently average about 70,200 vehicles, with one-directional peak-hour volumes ranging from 3,200 to 3,900 vehicles. Relatively little of the traffic that crosses either end of the route segment actually traverses the whole 3.3-mile section in the City; most vehicles leave or enter the freeway at one of the eight intermediate interchanges. A corridor traffic flow map, representing average daily traffic, is shown in Figure 33.

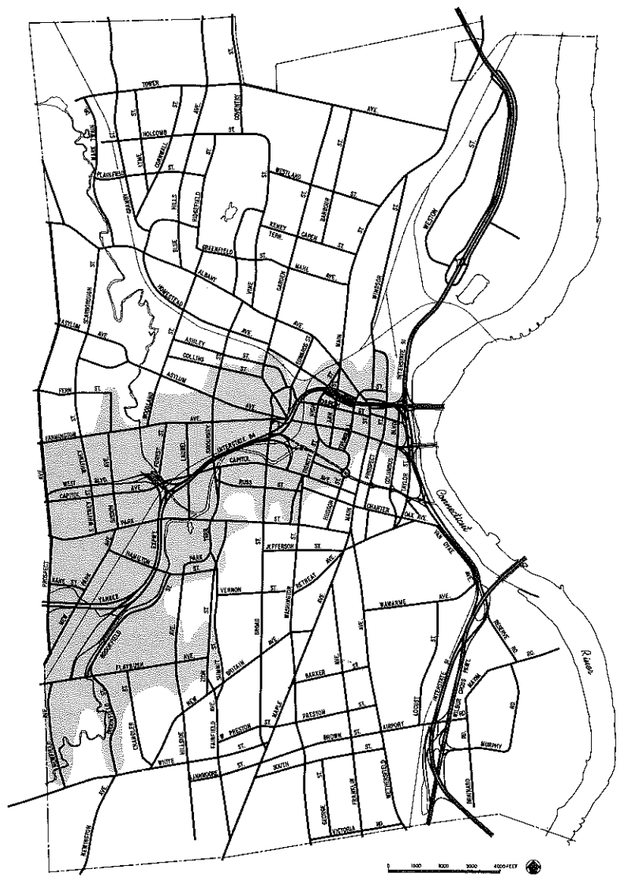
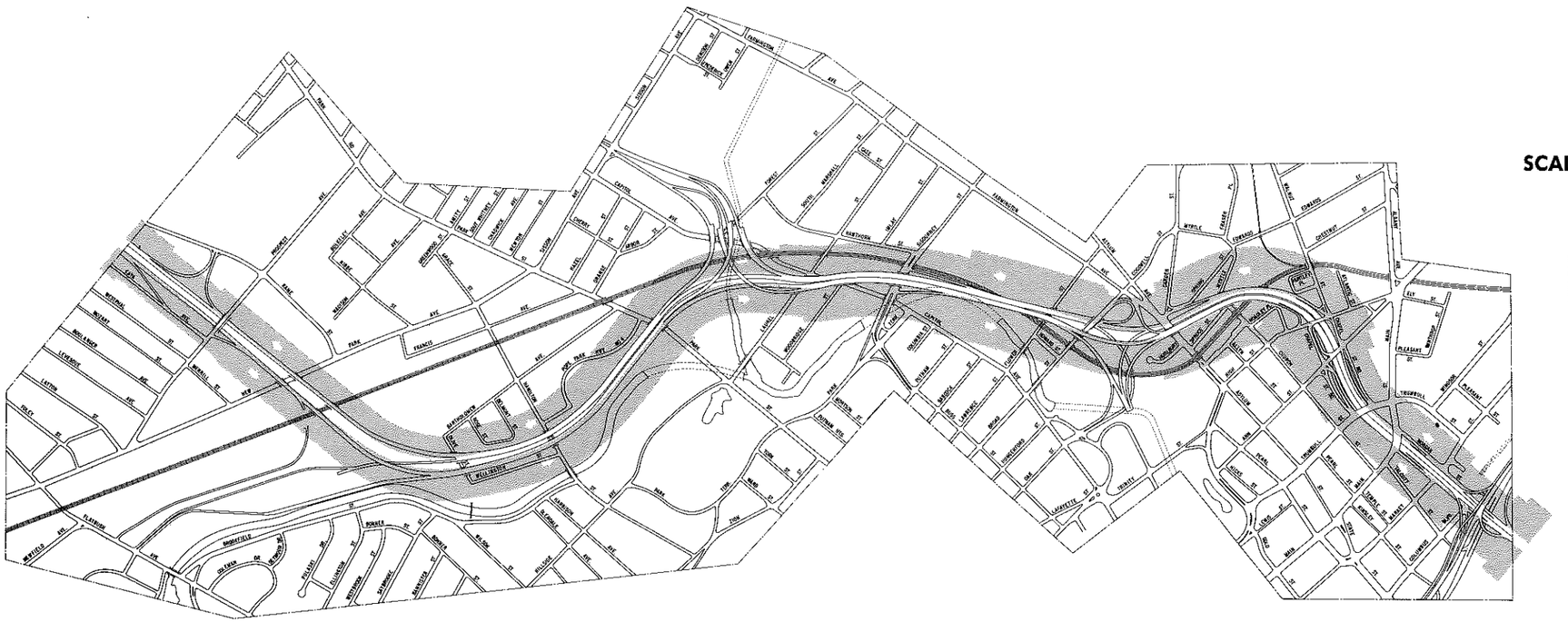


FIGURE 32: THE I-84 SERVICE AREA
The Service Area of the highway in Hartford has been arbitrarily defined to include all lands within three minutes off-peak driving time of a freeway access point.

FIGURE 33: HARTFORD I-84 ANNUAL AVERAGE DAILY TRAFFIC
The daily volumes (seasonally adjusted to Annual Average Daily Traffic) of 84,000 vehicles at the eastern end of corridor, on the Bulkeley Bridge, and 70,200 at the West Hartford Town Line are a measurement of the relief provided by the freeway.



While the primary purpose of the highway was for the improvement of traffic service, its impact has been very mixed. The patterns of traffic flow on streets that parallel or cross the freeway have experienced changes in volume, direction, and composition. Although most parallel arterial streets have received significant traffic relief, streets that give access to the freeway have, in several instances, been transformed into heavily-traveled routes. Increases in turning movements at selected street interchanges have required the modification of traffic regulations and controls, and the increased volumes of street use have brought about requests for changes in adjacent land zoning to accommodate uses other than those presently designated. The latter condition is especially significant in regard to requests for the rezoning of residential areas to business or commercial uses. An example of the pressures for rezoning is evident near the Sisson Avenue ramps in West Central Hartford, where a marked apartment construction effort is underway in a predominately single and two-family residential area.

During the years when the freeway was being planned, traffic congestion became very real in many parts of the I-84 corridor. The fact that the road had been needed for many years before it was made available, while traffic continued its inexorable annual growth, meant that a large fraction of the freeway's capacity would be put into use immediately when the roadway was opened to travel.

As expected, the improved access provided by I-84 has resulted in faster travel by persons diverted from parallel streets, possibly with a narrowing and sharpening of peak-hour activity. The backlog of traffic divertible to the new highway was, indeed, sufficient in volume to use a large proportion of the peak-hour highway capacity, as measures of current freeway use show.

Prior to opening of the freeway, five arterial streets — Asylum, Farmington, and Capitol Avenues; Park Street; and Flatbush Avenue — were the principal access routes between Hartford and West Hartford within the I-84 corridor. A screenline count made by the Connecticut Highway Department near the Town Line in 1968-69 found that the Annual Average Daily Traffic (AADT) entering and leaving Hartford amounted to about 100,000 vehicles.

Recent traffic counts, made since I-84 was completed and opened to traffic throughout its length, show that the 1970 AADT on the West Hartford Screenline is slightly in excess of 150,000 vehicles. The present flow is thus about fifty per cent greater than the volume of vehicles using this corridor across the West Hartford Town Line just prior to opening of the freeway. While traffic volumes have been reduced on several of the parallel arterial streets, bringing relief to peak-hour travel particularly, a large number of drivers new to the corridor have found the I-84 route convenient for their travels.

TRAFFIC OPERATIONAL CONSIDERATIONS AND CONSTRAINTS

As a brand new addition to the Capitol Region freeway network, I-84 has its share of operational problems. In general, the experience has been remarkably good when compared with similar facilities in other areas. Figure 34 illustrates the locations and types of operational problems that have occurred thus far on I-84. Some of the problems relate to outdated design features (i.e., left lane entrance ramps to through lanes) and some relate to short weaving sections that occur where access points are not sufficiently far apart, or are a result of the "left lane on — right lane off" designs sometimes used in tight situations.

OPERATING SPEEDS

The opening of I-84 has permitted many people to shorten the time needed to make their trips. Evidence of improved speeds was recently compiled by Hartford's Traffic Engineering Department, which has made peak-hour speed-delay trips through the central business district, from Asylum Hill (Aetna Insurance headquarters) to the Connecticut River, using various street routings, for comparison with similar trips on I-84. Even under the worst average daily peak conditions encountered on the freeway, travel using that route needs only half, or less, travel time than is used on the best alternative street route.

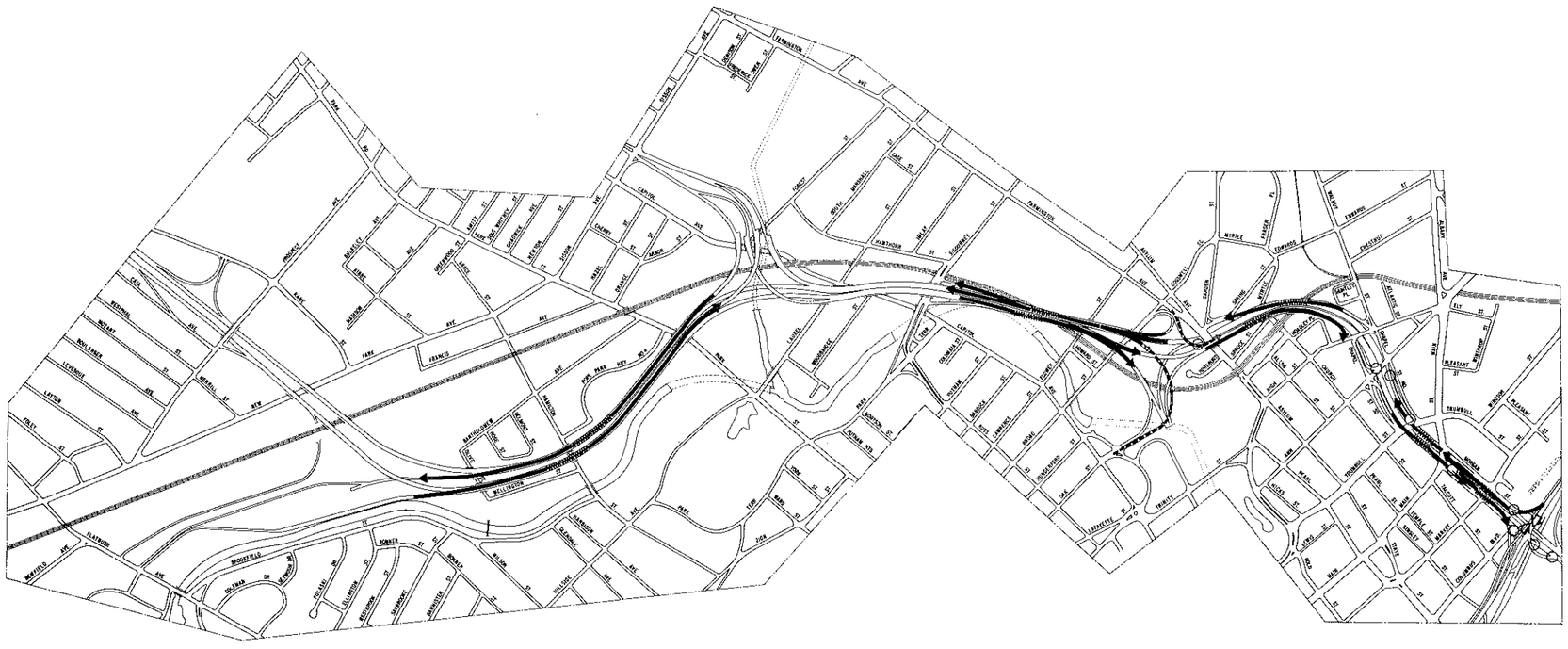


FIGURE 34: OPERATION CONSTRAINTS
When compared with similar facilities elsewhere, the experience with operational problems on I-84 has been remarkably good.

Similarly, historical data in the City Traffic Engineer's files show that speed runs on Farmington Avenue, between the Asylum-Ford-High intersection and the West Hartford Town Line, a distance of about 1.95 miles, were performed at speeds ranging between 14 and 17 miles per hour in 1962; performance today is about the same, except for short periods in the afternoon peak, when eastbound traffic attempting to enter I-84 from Farmington Avenue at Broad Street may block traffic through two or more cycles of the traffic signals at Flower and Broad Streets. Travelers on the freeway, however, regularly traverse the distance between the West Hartford Town Line and the Asylum Street[1] interchange at average speeds in excess of 40 mph during the morning and evening peaks; peak-hour traffic occasionally drops below 40 mph in the short five-lane weaving section between Sigourney Street and the turnoff to the Bushnell Park Connector (I-484).

CAPACITY RELATED TO PEAK-HOUR USE

Figures 35 and 36, and Table 1, show how traffic is currently using the I-84 freeway in Hartford, in relation to the calculated capacity of the route (computed for service Level "D", according to the **Highway Capacity Manual,**[2]

Perhaps the most impressive feature of these data is the consistency with which actual use matches calculated capacities. The highway was designed more than a decade before it was opened, and before many of the new traffic generators served by the route had been built; furthermore, travel data used in developing the tentative assignments upon which designs were based represented combined travel from relatively large traffic zones so that considerable subjective judgment had to be used in establishing likely travel demands, peak-hour values, interchange patterns, and other operational parameters.

As the highway, in its course from West Hartford to I-91, picks up and drops off lanes through successive interchange areas, highway capacity tends to fluctuate over a wide range. In computing traffic capacities on each route section, allowance has been made for decreased traffic handling potentials where entering and exiting lanes weave across one another within very short distances. Traffic use at peak hours is currently approaching capacities on some segments of the highway, based on the "Service Level D" values noted above.

During the **morning peak hour** (Figure 35) which occurs between 7:00 and 8:00 A.M. **eastbound traffic** exceeds 80 per cent of the computed capacity of the highway over most the distance from the West Hartford Town Line to the Trumbull Street exit in the central business district; over route sections eastward from the Sisson Avenue access ramps, volumes consistently exceed 90 per cent of capacity and rise to 98 per cent in the four-lane section between Asylum and High Street access points. Eastward from the Trumbull Street ramp, volume drops well below capacity levels as central business district oriented vehicles reach their destinations.

The volume of travel entering Hartford from East Hartford in a westbound direction on I-84 is also very heavy during the morning peak hour. The two-lane sections through the I-91 interchange and between Main and Trumbull Streets carry volumes which exceed the "Service Level D" capacity of the highway. Traffic remains heavy toward the west as far as the Asylum Street exit, but beyond this point morning volumes decrease to well under capacity.

Figure 36 shows that at the afternoon peak hour, between 4:00 and 5:00 P.M., traffic flows tend to duplicate the morning picture on opposite lanes of the highway. However, the eastbound flows in the evening are somewhat heavier than corresponding westbound flows in the morning on portions of the route west of Ann Street, with some sections using ten to fifteen per cent more of the highway capacity on portions of the route with relatively low morning use; from Ann Street east, there is little difference in use, morning and evening; several sections operate at the computed capacity of the highway. Afternoon traffic westbound appears to stay well below capacity throughout the route, ranging between 91 and 62 per cent of calculated capacity values.

On the western approaches to the central business district, in the area from Asylum Street to Ann Street, traffic volumes are roughly in balance at both morning and evening peaks, using 85 to 95 per cent of capacity in most sections.

(1) Asylum Street in the central business district changes to Asylum Avenue in the vicinity of I-84 underpass.

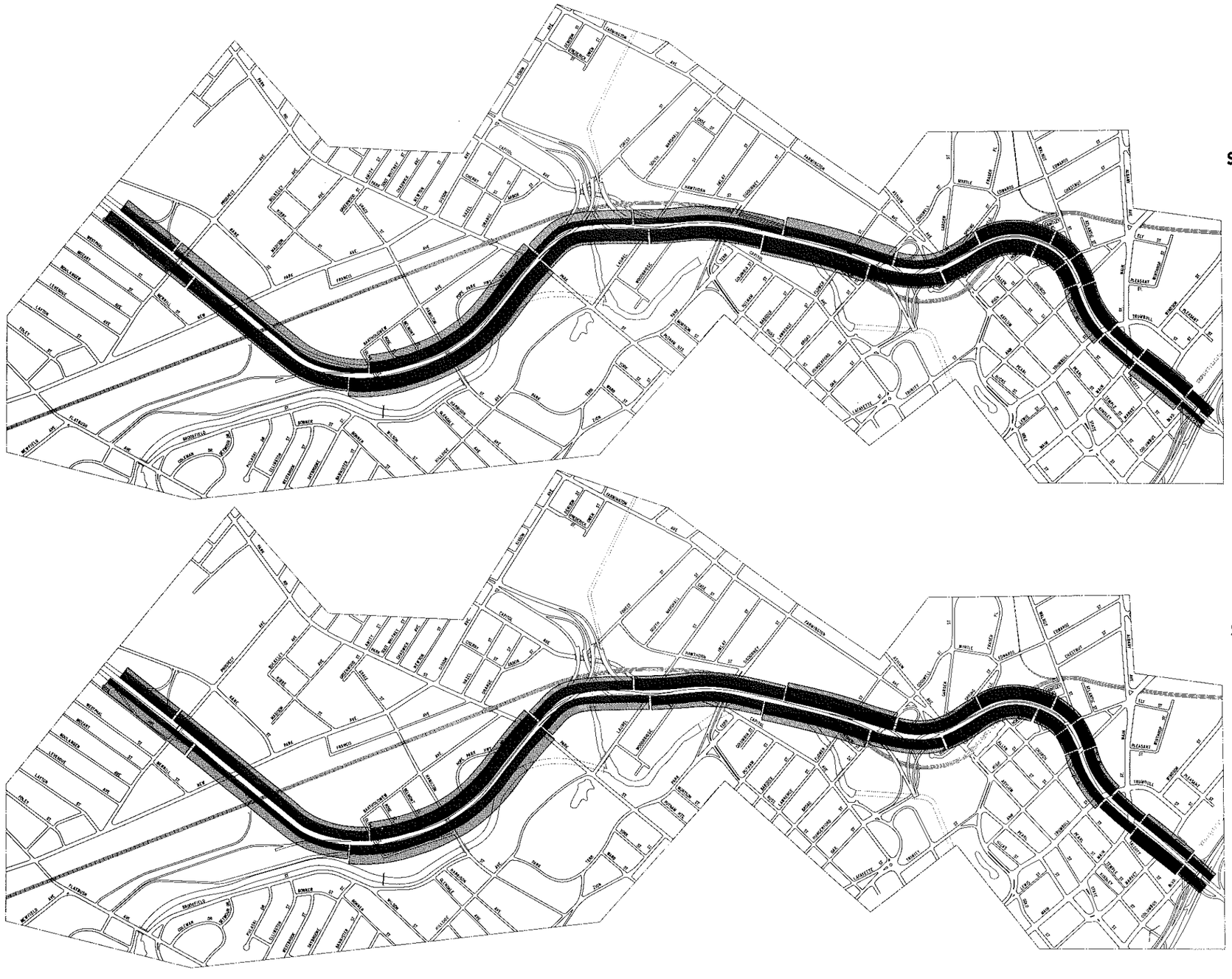
(2) **Highway Capacity Manual,** Highway Research Board Special Report 87, Wash., D.C., 1966, p. 250: "In Level D, which is in the lower range of stable flow with volumes higher than in Level C, traffic operation approaches instability and becomes very susceptible to changing operating conditions. Operating speeds generally are in the neighborhood of 40 mph. . ."

TABLE 1: RATIO OF PEAK–HOUR VOLUMES TO SERVICE VOLUMES, LEVEL "D", FEBRUARY 1970

	EASTBOUND						WESTBOUND					
Name of Segment	No. of Lanes	Service Vol Level "D"	Vehicle Capacity	P.M. Volume	A.M. Ratio	P.M. Ratio	No. of Lanes	Service Vol. Level "D"	A.M. Volume	P.M. Volume	A.M. Ratio	P.M. Ratio
Prospect St. Interchange	3	4,800	3,900	1,800	.81	.38	3	4,800	1,250	3,200	.26	.67
Prospect to Flatbush	3	4,800	4,190	2,165	.88	.45	3	4,800	1,545	3,535	.32	.74
Flatbush to Sisson Avenue Ramps	5	6,400	4,690	2,765	.74	.44	5	6,400	1,945	3,945	.31	.62
Sisson Interchange	3	4,800	4,170	2,565	.87	.54	3	4,800	1,850	3,345	.39	.70
Sisson Avenue Ramps to Sigourney	4	5,000	4,650	2,965	.93	.60	4	5,000	2,150	3,950	.43	.79
Sigourney to I-484	5	6,400	5,360	4,065	.84	.64	5	6,400	3,250	4,800	.51	.75
I-484 to Asylum	3	4,800	4,330	3,555	.91	.74	3	4,800	3,070	3,900	.64	.81
Asylum to High Street	4	5,000	4,870	4,655	.98	.93	4	5,000	4,270	4,550	.86	.91
High St. Interchange	4	5,000	4,640	4,525	.93	.91	3	4,800	4,120	4,150	.86	.87
High to Ann	3	4,800	4,475	4,300	.93	.90	3	4,800	4,120	4,150	.86	.87
Ann to Trumbull	3	4,800	3,150	3,960	.66	.83	3	4,800	4,020	3,625	.84	.76
Trumbull to Main[1]	2	3,200	2,350	3,200	.74	1.00	2	3,200	3,400	2,575	1.07	.81
Main to I-91[1]	3	4,400	2,800	4.400	.64	1.00	3	4,400	4,200	2,900	.96	.66
I-91 Interchange[1]	2	3,200	1,800	3,400	.57	1.07	2	3,200	3,200	2,200	1.00	.69

(1) The machine counts made by the Connecticut Department of Highways in February, 1970 show hourly volumes on some days which exceed the "balanced" counts listed here by as much as 10 to 15 per cent.

SOURCE: Connecticut Department of Highways and Wilbur Smith Associates.


SCALE — 1" = 1600'-00"
EXCESS CAPACITY
PRESENT VOLUMES
10000
8000
6000
4000
2000
1970 A.D.T
VEHICLE SCALE

SCALE — 1" = 1600'-00"
EXCESS CAPACITY
PRESENT VOLUMES
10000
8000
6000
4000
2000
1970 ADT
VEHICLE SCALE

FIGURE 35: A.M. PEAK-HOUR USE RELATIVE TO CAPACITY
Traffic use in the A.M. peak hour (7:00 to 8:00 A.M.) is currently approaching capacities on some segments of the highway in the Downtown Area in both eastbound and westbound directions.

FIGURE 36: P.M. PEAK-HOUR USE RELATIVE TO CAPACITY
The afternoon peak hour, (between 4:00 and 5:00 P.M.), tends to duplicate the morning picture on opposite lanes of the freeway.

TRAFFIC AT ACCESS POINTS

At several points of access and egress, one-way ramp volumes to or from the freeway exceed 1,000 vehicles during peak hours. Thus, traffic **enters** I-84 from the I-91 southbound access ramp at very high rates during peak conditions; similar volumes occur at the slip ramp to I-84 under Main Street and at Sigourney Street. Traffic also **leaves** the freeway at comparable rates into Trumbull Street, into Capitol Avenue (at the I-484 interchange), into Asylum Avenue, and into Sigourney Street during the morning peak.

According to local traffic authorities, the general impact of I-84 has been to reduce traffic problems at locations where congestions and delay had been chronic and severe — as noted earlier, travel-time studies before and after the freeway opened have generally shown speeds on main city streets either to be improved or no worse than they were prior to the opening.

The principal exception to this statement seems to be the interchange area at Asylum and Farmington Avenues, where peak-hour traffic from the east delivers about 1,200 cars in the morning, with a nearly equal volume entering the freeway toward the east in the afternoon. Congestion occurs on streets leading into the Asylum-Farmington Intersection in the morning, and on Farmington Avenue at the I-84 ramp approach in the evening. Most of the problem is due to large numbers of drivers going to and from work in the Asylum Hill insurance offices.

Heavy traffic currently enters and leaves the freeway at Sigourney Street, with peak-hour use close to practical traffic signal capacity where the two-lane off-ramp intersects Sigourney Street; ramp capacity is the control on the entering flow from Sigourney, where two lanes reduce to one before merging with main lanes on the freeway. The onbound ramp (towards the east) adds a fifth lane to the roadway, which continues, as a merge and weaving lane, to the I-484 turn-off; the weaving function reduces calculated lane capacity to about the levels of traffic flow now using it.

Similarly, the offbound ramp from the east consists of a weaving lane into which westbound traffic from Broad Street must merge and I-484 traffic destined to the Sigourney exit must weave. The exit accommodates about 1,100 cars during the morning peak hour. The two lane exit to Sigourney Street provides storage for vehicles stopped at the signal at that location.

Traffic at Sigourney Street is delayed by traffic signals, whether entering or leaving the intersection. The interchange caters primarily to workers with destinations in the immediate vicinity. A large parking lot used by Aetna workers is entered within the block, so that vehicles stored awaiting access to I-84 do not impede cross streets. The intersection experiences congestion at peak hours. Future problems might occur on the freeway if demands of exiting traffic exceed ramp storage capacity at the Sigourney traffic light. Since the off-ramp at Asylum Street, which services the same general employment centers, is also operating near capacity in the morning peak, future relief will be dependent upon transfer of traffic increases to other locations. Construction of Farmington Avenue ramps at the Sisson Avenue interchange would provide for some overflow traffic by enabling vehicles to enter the Asylum Hill employment area from the west.

In downtown Hartford, the Trumbull Street ramp delivers more than 1,300 cars from the west at the morning peak hour, with traffic at the Trumbull intersection further increased by a small number of vehicles (about 80) on Chapel Street South. This is a "T" intersection, with most traffic turning south on Trumbull.

Another point of heavy concentration occurs where the South Service Road and Morgan Street merge at their intersection with Market Street. In the morning peak, combined volumes exceed 1,200 vehicles, while even more cars (about 1,350) enter the intersection from the merged streets in the afternoon rush. Similar volumes occur on the North Frontage Road as it leaves the Market Street intersection. About half of the westbound traffic in the morning continues on the frontage road, with the remainder exiting to Main Street. Westbound traffic **entering** the Market Street intersection amounts to more than 2,000 vehicles at the peak hour, much of it turning north to all-day parking. Each of the frontage roads consists of four one-way lanes, so that lane volumes are relatively low; cross traffic on Market is light. The intersection operates well, with only minor delays during the hours of heaviest use.

Traffic entering Ann Street from the east, off the westbound lanes of the North Service Road, exceeds 1,000 vehicles in the morning peak hour. This traffic is delivered at the Ann Street intersection in two lanes which parallel two westbound lanes of Chapel Street North at the point of intersection. Chapel Street volumes are very low, so that the number of vehicles entering (and crossing) Ann Street is handled very well under present conditions.

South of the freeway, a ramp from Ann Street leads eastbound traffic into the South Frontage Road, with peak evening volumes exceeding 1,200 vehicles per hour in two lanes. Some of this traffic mixes and weaves across a third lane of vehicles from the freeway, while a portion continues on the frontage road to Market Street or beyond. Although the Ann Street intersection appears complex, all intersecting streets operate in only one direction and traffic is handled effectively at peak hours.

At other points of access along the I-84 route, traffic volumes during peak conditions are well below critical levels and pose no unusual problems of traffic operation.

Measures which might be taken to accommodate future traffic increases in the I-84 corridor are discussed in Chapter 14.

CHAPTER FIVE

THE ECONOMIC BASE FOR MAJOR JOINT-USE DEVELOPMENT

An evaluation of the economic feasibility of any major joint-use development involving air-rights on lands partly or wholly occupied by the I-84 expressway must take into account overall development potentials in the Hartford-Springfield corridor. The time-frame under consideration is complex and long-lasting; the air rights are available for immediate development — in fact, some parcels of land are under short-term lease for a variety of non-highway uses at the present time — but their potential for development can also respond to evolving market patterns so as to better suit community needs over the longer range.

The following brief study provides a statement on the general economic background of the Hartford-Springfield corridor and the City of Hartford. Following that, each market segment has been treated separately on a city-wide basis to provide the necessary background for further testing of alternative development concepts within and adjacent to the I-84 right-of-way.

ECONOMIC BACKGROUND

Hartford, Connecticut, the state capital and a major insurance center, has grown steadily and rapidly over the last decade. Although best known as a service-oriented economy, Hartford has attracted substantial research and development and other industry in recent years.

Essential to understanding the growth potential of Hartford is an awareness of its role within the Hartford-Springfield corridor. In total, the combined Hartford-Springfield economies generate an imposing growth potential, focused on the transportation and land-use corridors lying between the two urban centers.

Although the traditional linkages between the two economies are not particularly strong, it is clear that the market tends to evaluate the potential generated by both as one cumulative consumer for goods, one labor market and one complex of the required supporting commercial and industrial services. Additional reinforcing elements are the presence of Bradley International Field in the interstitial area and the linkage provided by I-91 and other existing and planned routes not only to Springfield but to the broader New England and East Coast urban markets.

TABLE 2: GROWTH IN EMPLOYMENT HARTFORD-SPRINGFIELD CORRIDOR, 1960-1980

	1960	1968	1975	1980	1968-80 GROWTH
TOTAL EMPLOYMENT (000)					
Corridor Total	(449.5)	(562.5)	(664.0)	(750.0)	(187.5)
Springfield SMSA	172.6	197.5	229.0	255.0	57.5
Hartford Area[1]	276.9	365.0	435.0	495.0	130.0
Hartford City	115.8	130.2	139.8	149.1	18.9
INDUSTRIAL EMPLOYMENT (000)					
Corridor Total	(205.0)	(246.5)	(286.5)	(320.0)	(73.5)
Springfield SMSA	82.2	90.7	103.4	114.0	23.3
Hartford Area[1]	122.8	155.8	183.1	206.0	50.2
Hartford City	26.2	24.7	25.7	27.4	2.7

[1] Hartford portion of corridor includes Hartford SMSA, New Britain SMSA, and the towns of Bristol and Burlington.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics and Hammer, Greene, Siler Associates.

TABLE 3: GROWTH IN POPULATION AND HOUSEHOLDS HARTFORD-SPRINGFIELD CORRIDOR 1960-1980

	1960	1968	1975	1980	1968-1980 GROWTH
POPULATION (000)					
Corridor Total	(1,222.6)	(1,369.1)	(1,507.8)	(1,618.0)	(248.9)
Springfield SMSA	532.6	560.7	590.8	613.0	52.3
Hartford Area[1]	690.0	808.4	917.0	1,005.0	196.6
Hartford City	162.2	163.5	169.6	172.2	8.7
HOUSEHOLDS (000)					
Corridor Total	(365.6)	(411.9)	(455.8)	(491.0)	(79.1)
Springfield SMSA	159.0	168.4	179.6	188.0	19.6
Hartford Area[1]	206.6	243.5	276.2	303.0	59.5
Hartford City	54.6	58.3	60.9	63.0	4.7

[1] Hartford portion of Corridor includes Hartford SMSA, New Britain SMSA, and the towns of Bristol and Burlington.

SOURCE: U.S. Census of Population, 1960; U.S. Bureau of Census Population Projections for SMSA's (p. 25 and 415); Hammer, Greene, Siler Associates.

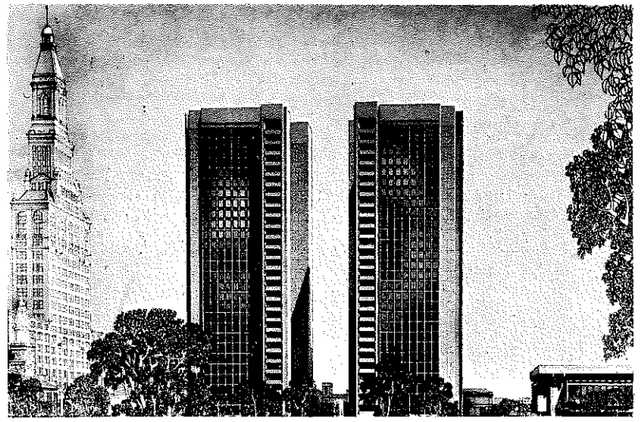


FIGURE 37: BUSHNELL PLAZA TOWERS
Bushnell Plaza, one of Hartford's few downtown-oriented luxury apartment complexes, is located in a housing market characterized by an ample supply of easily accessible vacant suburban land which has siphoned off single-family home development and most of the existing luxury housing market.

Employment Growth — Employment growth in the Hartford-Springfield corridor is expected to continue to be strong over the next ten years. Past, present and estimated future employment levels in the Hartford-Springfield corridor and Hartford City are presented in Table 2.

Population Growth and Household Growth — The substantial growth in the supply of jobs in the corridor over the forecast period will generate equally rapid growth in population and households. There will be substantial commuting by residents of the two major cities, both to each other and to the emerging central corridor industrial complex. Table 3 shows past, present and future population and household growth in the corridor and Hartford City.

In the following sections the basic market framework for each broad category of potential land use in the corridor is set forth for the City of Hartford.

Housing Market — The Hartford housing market absorbed some 4,589 private multi-family units during the period 1960 to 1968, for an average annual rate of 574 units. Most of these units were in small, low-rise buildings of from 15 to 50 units and almost all were concentrated in two basic areas — in the vicinity of Asylum Hill and the area to the west centered along Farmington Avenue, and in the south-central part of the city roughly in the area between Pope and Colt Parks and bounded on the north by Park Street and the south by Barker Street and Maple and New Britain Avenues. They were typically one and two bedroom units, renting from $100 to $150 per month. A fair scattering of efficiency units were included but few units of three bedrooms or larger.

Few high-rise apartments have been built and even fewer downtown-oriented luxury apartments. Bushnell Plaza is the most recent example embracing both of these characteristics, and while its initial rental experience was not unsatisfactory, neither was it spectacular or indicative of large pent-up demand for this type of facility.

Of the total of 7,110 building permits issued from 1960 to 1968, only 143 were for single-family units, reflecting in part the suburban dominance of the single-family market and the largely built-up nature of Hartford and resulting high land values.

In very simplified terms, the Hartford housing market is characterized by an ample supply of easily accessible vacant suburban land which has siphoned off single-family home development and most of the existing luxury housing and by a central city with little available land, a large inventory of older multi-family homes, and which provides the major resource for medium-density, moderate income apartments.

Both these trends are firmly established and there is little reason to anticipate any sharp reversal in the near future which might trigger a wave of high-rise development or a sharp increase in the demand for luxury downtown apartments.

The previously presented forecasts of household growth trends in the Hartford SMSA are further broken down in Table 4, based on recent trends and known development factors. A key assumption with respect to the City of Hartford is the acceptance of the 1984 population level of 174,500 projected by the Commission on the City Plan.

Based on current development patterns and the tenure and composition of area households, it is likely that more than 40 per cent of all housing demand will be met in multi-family structures. Multi-family demands will absorb 2,090 new competitive units annually and single-family sales demands approximately 2,770 units a year from 1968 to 1980. Table 5 presents a detailed distribution of the forecast housing demand for various submarkets of the SMSA by type of structure, excluding demand for subsidized housing units created by planned demolition programs to eliminate substandard housing. The forecast average annual demand of 400 units for the City of Hartford during the period is expected to consist entirely of multi-family units.

TABLE 4: HOUSEHOLD GROWTH TRENDS, HARTFORD SMSA 1960-1980

AREA	NUMBER OF HOUSEHOLDS			
	1960	1968	1975	1980
City of Hartford	54,600	58,300	60,900	63,000
East Suburban	42,300	55,000	66,200	75,000
South Suburban	12,300	17,100	22,500	28,600
North Suburban	12,100	15,000	16,800	17,600
West Suburban	30,900	39,600	46,300	51,300
Rest of SMSA	10,500	13,500	17,700	21,100
TOTAL	162,800	198,500	230,400	256,600

SOURCE: 1960 Censuses of Population and Housing and estimates by Hammer, Greene, Siler Associates.

TABLE 5: ANNUAL HOUSING DEMAND, HARTFORD SMSA 1968-1980

SUBMARKET	UNITS IN STRUCTURE		TOTAL UNITS	
	Single-Family	Multi-Family	Number	Per-Cent
City of Hartford	—	400	400	8.2
East Suburban	1,070	600	1,670	34.4
South Suburban	520	440	960	19.8
North Suburban	120	100	220	4.5
West Suburban	610	370	980	20.2
Rest of SMSA	450	180	630	12.9
SMSA TOTAL[1]	2,770	2,090	4,860	100.0

[1] Totals do not agree with previous table due to rounding.
SOURCE: Estimates by Hammer, Greene, Siler Associates.

TABLE 6: ESTIMATED ONE-YEAR OCCUPANCY POTENTIAL FOR SUBSIDIZED HOUSING, HARTFORD HOUSING MARKET, AUGUST 1969 — AUGUST 1971

Sales Housing — Section 235	990 units
Rent-supplement	735 Units
Rental — Section 236	1,255 Units
TOTAL[1]	1,750 - 2,000 Units

[1] Category totals are not additive due to potential overlap among the various programs. The FHA analysis indicates the total potential will be within this range.

SOURCE: Federal Housing Administration — "Analysis of the Hartford, Connecticut Housing Market as of August 1, 1969."

TABLE 7: INDUSTRIAL LAND ABSORPTION HARTFORD-SPRINGFIELD CORRIDOR, 1960-1980

	ACTUAL	PROJECTED GROWTH	
CORRIDOR TOTAL	1960-68	1969-75	1975-80
Industrial Employment	41,500	40,000	33,500
Industrial Land (Acres)	1,799	2,145	2,235
Employees Per Acre	23.1	18.6	15.0
Annual Growth (Acres)	224	357	447

SOURCE: Hammer, Greene, Siler Associates.

The Hartford average of 400 units per year represents a tapering off over the period from the higher present levels, recently estimated by the Federal Housing Administration at nearly 800 units per year. However, this figure is a **net demand** based on assumed population levels **to which must be added replacement for demolition and** does not account for two additional potential sources which are likely to contribute substantially over the period — urban renewal projects and subsidized housing programs. Since both of these sources are primarily governed by political and not market considerations, the extent, location, and timing of their contributions cannot be readily estimated. However, Table 6, showing the estimated one-year occupancy potential for subsidized housing in the Hartford housing market area developed by the Federal Housing Administration, is indicative of the potential magnitude of these programs.

Accordingly, by including demolitions and subsidized housing, the demand for housing in the City of Hartford could conceivably sustain an annual rate of 1,000 units or more over the near term, but will become constrained during the projection period by the lack of available land for market rate housing, and increasingly dependent upon urban renewal and subsidized housing programs.

Industrial Market — as noted previously, during the period 1960-1969, industrial employment increased markedly in the Hartford-Springfield corridor. To accommodate this industrial employment growth, nearly 1,800 acres of industrial land were absorbed by the market. Part of the land utilized was simply to accommodate the new employees but a substantial amount of the employment growth accrued to existing firms for which no additional land was required. Many of the new firms locating in the area, on the other hand, are beginning operations at very low densities. Overall, there was a net increase of 41,600 industrial jobs resulting in an average gross density of 23.2 employees per acre.

The trend toward large land purchases and low resulting employee density is expected to continue during the forecast period. It is estimated that gross density will decrease to 18.6 workers per acre during the 1969-1975 period and 15.0 employees per acre during the 1975-1980 period.

Industrial land absorption and average employee density forecasts for the Hartford-Springfield corridor are presented in Table 7. The City of Hartford industrial uses cannot and will not share in full measure in this trend to lessening density. Existing central city industries, due partly to the nature of their operations and partly to the higher cost of land, will remain at densities substantially higher than the forecast average.

Directly comparable absorption data for the City of Hartford are not available and would in any case tend to be somewhat misleading. Little industrial land was available in the city and further, much of the industrial movement in the city occurred in shifts among the large stock of existing industrial structures and did not involve raw land. Finally, industrial employment suffered a decline in the City due to demolitions and relocations, so that a direct extension of existing trends would lead to a diminishing need for industrial land in the City.

There are numerous immediate causes for the decline in industrial employment — the closing of the Underwood Plant, demolition of plants for urban renewal and highway improvements, removal from the active market of obsolete and dilapidated structures which lie vacant or become converted to other uses, and the aforementioned "shake out" of the City's industries from the opportunity to decentralize afforded by construction of the Interstate Highway. However, the most critical ingredient has been the lack of available land or suitably located modern first-quality space within the City.

In the preceding forecast of industrial employment for the City of Hartford it has been assumed that suitable sites would be made available over the forecast period, presumably by the Windsor Street, South Arsenal, North Meadows and South Meadows Urban Renewal Projects during the early period and through other similar projects including the I-84 corridor in later years. Thus, one of the major constraints on industrial growth in the City of Hartford will have been removed. Nonetheless, it is likely that the industrial sector will continue to diminish in importance as a share of Hartford's employment base, although modest growth is anticipated.

An increase of 2,700 industrial jobs are forecast by 1980; at an average density of 15 employees per acre the indicated demand is 180 acres. However, the general decrease in employment density evidenced throughout the corridor will also be experienced to some degree in the City of Hartford and it is estimated that this will account for an additional 200 acres of expansion land during the period. Thus, the absorption of industrial land for the City of Hartford is forecast at 380 acres, or roughly 35 acres per annum.

Based on analysis of existing industrial park development and the characteristics of Hartford industry, the typical 5-year absorption experience, at this level of demand, would require new sites in the following size ranges.

Less than 2 acres	(50.0%)	75-100 acres
2 to 4 acres	(25.0%)	35- 50 acres
4 to 6 acres	(12.5%)	20- 25 acres
More than 6 acres	(12.5%)	20- 25 acres

An additional source of industrial demand is present in the central city's so-called "incubator" function. Newly formed and marginal industries tend to seek small amounts of inexpensive space close to customers and suppliers and convenient to needed business services and specialized operations which they lack the size and resources to perform "in house". The central city is the logical location for this type of activity and it is an important city function since the successful firms expand and move, forming an indigenous market for prime industrial space and providing an expanding employment base.

Hartford abounds in marginally improved industrial properties and loft buildings; however, most are obsolete or functionally inadequate for even the incubator industries without some renovation or remodeling. Also, by their very nature, there is great mutual advantage for such firms to be clustered together in a single suitable location.

Even assuming the availability of such space, suitably located, or the assembly of land for industrial purposes, the economics of satisfying these demands is critical and generally involves some sort of public subsidy. The assembly of land for an industrial park in the City will likely cost $1.00 to $2.50 per square foot for vacant industrial land and will involve some older marginal improved industrial properties which are trading at $3.00 to $5.00 per square foot, yet prime industrial park land outside the City can command only $0.60 to $0.80 per square foot. It is mainly for this reason that recent industrial projects in the city have been limited to urban renewal activities.

Loft or incubator space faces a similar problem. Necessary renovation costs, of course, vary widely from building to building, but the high initial space cost, renovation cost, and higher operating cost combine to require rental rates which are 50 per cent to 75 per cent of new space rates and often well beyond the capability of the marginal firm. Renovating a given area for this purpose compounds the problem since some structures will undoubtedly be included which are not amenable to this treatment at current market rates.

Office Space Market — Since 1960 some 2,182,000 square feet of office space has been constructed in Hartford, an average annual rate of increase of 242,000 square feet. Approximately 735,000 square feet of this space, or over one-third, was included in the Constitution Plaza Complex. Of the total, slightly more than one-half was located in the central business district (54.0 per cent) and about one-third in the Asylum Hill and Farmington Avenue area (34.1 per cent). Of the remainder, most (10.7 per cent) was accounted for by two new buildings on Washington Street just south of the Capitol and the rest (0.6 per cent) were isolated buildings not part of any complex.

The rapid pace of this build-up becomes even more impressive when it is considered that this is the first major office-building boom since 1930. Since it started in 1957, space has been added at an average rate of nearly 200,000 square feet per year. Of course, the year by year pace has been uneven, as shown in Table 8, with spurts occurring in 1958, 1960, 1963, and 1966, reflecting the periods of market adjustment.

Present vacancy rates are reportedly low and the rate structure exhibits the widespread characteristics of a firm market, but one without severe shortages and/or over-building.

Average annual rates are presently running about $3.00 to $4.00 per square foot for old office space, rising to $5.00 to $5.50 for off-location new space or renovated older buildings, while premium prestige space in new buildings is at $6.00 to $7.00 per square foot.

Since the economy of Hartford is heavily dependent upon two categories of major office space users — insurance and government — and these sectors are growing, a continued strong increase in office space is forecast. However, the amount of office space needed in a central city is also related to the metropolitan area population which it serves. During the period 1960-1968 the population of the Hartford SMSA increased by roughly 100,000 while 2,222,000 square feet of office space was added, resulting in a per capita rate of 22 square feet per person. This is far in excess of the sustainable rate and greater than the per capita ratio for any other city for which we have comparable data, including New York.

A sustainable rate for the City of Hartford, with due allowance for its high proportion of government and insurance functions, would be about 8 square feet per capita. Referring to previous population projections, an increase in the Hartford SMSA population of 196,600 persons has been forecast which, at 8 square feet per person, would result in a demand for 1,573,000 additional square feet of office space.

TABLE 8: NEW CONSTRUCTION, PRIVATE OFFICE SPACE HARTFORD, CONNECTICUT, 1957-1969

YEAR BUILT	SQUARE FEET
1957	89,000
1958	219,000
1959	54,000
1960	471,000
1961	NA
1962	132,000
1963	997,000
1964	6,000
1965	8,000
1966	412,000
1967	——
1968	——
1969	196,000
TOTAL	2,584,000

SOURCE: Hartford CRP-1964, and Hammer, Greene, Siler Associates.

TABLE 9: OFFICE SPACE FORECAST HARTFORD CITY, 1970-1980

YEAR	REQUIRED SQUARE FEET	AVERAGE ANNUAL RATE
1970	125,000	125,000
1975	650,000	130,000
1980	825,000	165,000
TOTAL	1,600,000	150,000

SOURCE: Hammer, Greene, Siler Associates.

During the 1968 to 1980 period, forecasts call for an increase of 14,400 Hartford City jobs in the major office-space-using categories — finance, insurance and real estate; business services; and government. If, after allowing for non-office employees and growth accommodated in existing space, it is assumed that 80 per cent, or 10,720, would require new space at an average of 150 square feet per employee, the result is a demand for office space by 1980 of 1,728,000 square feet.

Accordingly, in Table 9, an average annual rate of 150,000 square feet per year has been assumed to prevail, for a total demand of 1,600,000 square feet by 1980 modified by employment and population growth.

TABLE 10: RETAIL SALES TRENDS
HARTFORD SMSA, 1958-1967

	HARTFORD SMSA		HARTFORD CITY		HARTFORD CITY SHARE	
YEAR	Number of Establishments	Sales (000's)	Number of Establishments	Sales (000's)	Number of Establishments	(000's) Sales
1967	4,728	$1,215,042	1,534	$384,894	32.4%	31.7%
1963	4,504	$ 918,971	1,644	$337,239	36.5%	36.7%
1958	4,916	$ 724,626	2,338	$349,008	47.6%	48.2%

SOURCE: Hammer, Greene, Siler Associates.

Retail Space Demand — Hartford, as is common with most United States cities, has experienced a decline in its dominance of the area's retail market. The phenomena is too well known to bear elaborating herein, but the important point is that Hartford has proceeded rather less far along this road than most comparable cities and has started later. Table 10 depicts the familiar process.

However, largely because of the excellent accessibility of the downtown area and the dominance of its major retail units (particularly G. Fox Department Store) the Hartford area has been slow to develop the concentric rings of major shopping centers more typical of other cities. The combination of great competitive strength on the part of existing downtown stores, which discouraged new entries downtown, and a relatively compact urban area, which limited the travel time/distance advantage for new entries in the suburban market, contributed to this retarding effect.

As previously noted, however, the Hartford area is rapidly becoming the Hartford-Springfield corridor and the continued suburbanization of population that has been projected will permit, and indeed compel, the development of major retail centers outside the central business district to serve the growing populace and likely force a decentralization policy upon the existing downtown merchants. This does not necessarily mean a major contraction of downtown retail facilities, but that the downtown will likely continue to merely hold its own, with most of the retail growth occurring in the suburbs.

Three significant exceptions to this overall trend are apparent:

- The entry of major new retailers made possible by the growth of the suburban market may also lead, when they become established in the Hartford area, to a desire to be represented downtown to achieve better market coverage and representation.
- The increased number of office worker/shoppers located in the city will provide a growing market, particularly for specialized goods and services not obtainable in suburban shopping centers.
- New convenience goods facilities will be needed to accommodate population growth and, perhaps more importantly, some realignment of facilities will be required to properly serve the community as occasioned by shifts in transportation, employment and resident patterns emerging over the period.

Future additions to retail space will thus be in large measure determined by the yet-to-emerge competitive alignment. However, the probable magnitude in broad terms can be approximated by extension of past retail sales and employment trends. We have also examined the several projections developed for the Hartford Community Renewal Program and planning studies have also been examined. Based on these data an additional 360,000 to 390,000 square feet of retail space and 400,000 to 450,000 square feet of service space will be required by 1980 in the City of Hartford.

Of more critical importance to I-84 corridor development will be the extent to which cumulative attraction can be generated and the incomes and trade areas served by concentrating such development in particular nodes and appropriate treatment of the reinforcing elements of traffic exposure (both vehicular and pedestrian) and proximity to employment and residential concentrations.

ECONOMIC CONSIDERATIONS IN THE I-84 CORRIDOR

The I-84 corridor does not function as an entity except for transportation purposes. There is no economy of the corridor except as sum of the individual micro-economies at the neighborhood level. These become the basic economic units of the corridor. The corridor neighborhoods are rather loosely-defined, but palpable, geographic units within which there is a high degree of homogeneity, usually in function or purpose, land use patterns, age, or by virtue of some other unifying characteristic.

In general, the creation of I-84 did little violence to the corridor neighborhoods because they had, for the most part, long been similarly bounded by the pre-existing railroad corridor.

The advent of I-84, did, however, make the following basic changes:

- Generally widened, added mass and in some cases a vertical dimension to the pre-existing railroad corridor.
- Greatly improved area-wide highway service to and from the corridor neighborhoods.
- Created new points of access or portals for some neighborhoods and altered local service traffic patterns, particularly cross-corridor movements and movements to and from the CBD.

As a result of these changes, both the strength and character of the corridor was altered. For most neighborhoods (except industrial) the railroad corridor had formed the back boundary and the neighborhood tended to "face" the arterial streets and generally away from the rails. Also the neighborhoods along the corridor tended to be linked more strongly with adjacent neighborhoods on the same side of the tracks, and linkage across the tracks was tenuous. Further, it had no local service role and although technically a transportation corridor by virtue of its railroad use, neighborhood linkage with the rest of the metropolitan area was via local arterials and neighborhoods in the corridor possessed no special locational advantage over immediate neighbors also served by these arterials.

I-84 has had a profound effect on these aspects by changing the corridor into a major local-service facility and vastly improving the time/distance accessibilities of these neighborhoods with the rest of the metropolitan area. They now enjoy a distinct advantage over their immediate interior neighbors in this regard. The interchanges along the route in most cases become "portals" to the neighborhoods and hence will tend to shift the focus of neighborhood development and may, in some cases, be strong enough to cause the entire neighborhood to "face" in a direction entirely opposite to its historic development. Finally, the corridor neighborhoods will tend to become more strongly linked to adjacent neighbors, particularly those directly across the corridor at major interchanges.

Thus the basic economic changes to be examined are those made possible by the growth of the city, the expanded functional role of which these neighborhoods are now capable due to their improved regional access and strong link to downtown, the directional shift in development emphasis within each neighborhood occasioned by the highway, and the altered relationship of each neighborhood with its adjacent neighbors, particularly at their I-84 interface.

The next phase of the study process considers the above-derived market demands and economic linkages in relation to the development economics of plans proposed for the corridor, with particular emphasis on the feasibility of using I-84 air rights to accomplish these ends. Normally, a feasibility test involves a very detailed site-by-site process and is heavily dependent upon the timing involved with respect to both the length of the development process and the operative market forces at the time.

In the present study, a broader, more general treatment is needed due to the large area covered, the large number of parcels involved, the multitude of potential uses, and the long time-span covered by the study. To this end an approach has been adopted by deriving broadly-based feasibility criteria which may be used to quick-test proposed major alternatives along the corridor and permit early focus on the most reasonable approach(es).

INTENSITY OF LAND USE AND JOINT DEVELOPMENT FEASIBILITY

The intensity of land use in the immediate vicinity has a direct effect on land values and the amount of land cost that can be justified for joint-use development of highway properties. In Downtown areas where very intensive land development has taken place, the cost of prime land is such that it might be economically sound to install expensive platforms over portions of the highway upon which to construct large commercial buildings for offices, stores, and other central city uses.

With increasing distance from the downtown core area, the cost of such platforms soon becomes greater than the cost for acquisition and preparation of fully equivalent sites on other lands immediately adjacent to the freeway, so that use of air-rights over the highway is no longer economically sound. Less ambitious uses of the highway lands may still prove feasible if land costs and land use intensities are still relatively high, as in business and apartment districts not far from the city center, and if the costs to purchase or lease highway properties for joint-use are sufficiently attractive that they offset the added cost of building in the somewhat awkward working space afforded by many highway properties (such as under-areas between piers that support elevated portions of the roadway).

At the other end of the scale, where the freeway passes through neighborhoods of free-standing homes or other low-density development, sharing of freeway properties by private developers may cease to be economically attractive for any use that requires more than the superficial type of development need for car parking or open goods storage.

LAND RESIDUAL ANALYSES OF CORRIDOR DEVELOPMENT

Previous sections of this chapter dealt with the rationale for defining selected portions of the I-84 corridor for development and the market support which will be available for such development during the study period. In the chapters which follow the basic feasibility of selected report recommendations is explored to determine the likelihood of attracting private investment capital to projects and provide some preliminary guidance on the supportable value of air-rights and excess highway land which has been assumed to be made available for several of these projects.

Detailed feasibility testing necessarily rests on more definitive plans than the conceptualized development programs envisioned for the I-84 corridor. Nevertheless, it is useful to explore the potential returns likely from the recommended projects, assuming average or typical operating experience for these uses. A modified land residual format has been adopted since the principal constraint under consideration is the ability of the recommended uses to effectively utilize highway air-rights and surplus right-of-way parcels which would otherwise remain unproductive.

Consequently, only those projects specifically recommended for the general market and employing some highway right-of-way were tested. Special purpose and wholly private projects were excluded.

Because of the generalized nature of the recommended development program, a number of key assumptions have been employed in the pro-forma analyses:

- Projects are assumed above average in quality and capable of achieving top rates and rental incomes for their respective categories.
- Costs and expenses are derived from representative averages for each use.
- Real estate taxes and debt service requirements are included at current very high rates with a consequent adverse effect on the potential income flow.
- Certain uses which are quasi-public in nature (transportation center and parking garages) are presumed to be operated at break-even rates or independently developed.
- Pedestrian Plazas were considered as common elements, the costs of which are chargeable to the entire project as a site development cost.

Specific development proposals are examined in Chapters 7, 8, 10 and 12.

CHAPTER SIX

POSSIBLE JOINT USES IN THE I-84 CORRIDOR

The Interstate Route 84 right-of-way is wide, averaging about 180 feet, with greater width at some complex interchanges. Over most of its length, one half or less of the right-of-way is paved for use by vehicles; the remainder is mostly open space, much of it planted and landscaped. The paved surface accommodates traffic on a single plane and the full width of the freeway is open to the sky except where bridges and viaducts cross.

Of some 276 acres within the freeway right-of-way in the City of Hartford, about a third have been designated as lands that might be used at higher intensities by incorporating non-highway uses into them, provided such activities would have no adverse effects on traffic uses for which the road was built. The experience gained in past joint-use undertakings has demonstrated that nearly any type of land use can be successfully incorporated into a highway right-of-way if careful attention is paid to the requirements of both the traffic stream and the added activity.

The opportunities for joint-use evaluation of the I-84 corridor must be explored in the context of some very practical constraints, not the least of them being problems of economic viability. The initial phase of the study was an exploration of community needs in the freeway corridor and the extent that these might be met by making better or more intensive use of portions of the highway rights-of-way. At an early stage in the study, the land holders abutting the highway were identified and a list developed naming owners, agents and business managers who might be interested in expanding into the highway areas, or who might have useful suggestions for the development of excess parcels by others. Added to this list were City department heads and their counterparts in various branches of State government, representatives of the greater Hartford Chamber of Commerce, and the administrative directors of several religious and secular organizations with interest in community development.

Since highway properties are public lands, there has been a strong inclination for State and City officials to propose additional public uses for them. It is easy to understand why this is so, since the transfer of property from one branch of government to another is simply done, and often entails little exchange of money; the propriety of land condemnation is not in question.

Virtually all of the requested or suggested public uses for I-84 properties were found to be reasonable and clearly in the public interest. Parcels identified for specific uses include several that are needed for street widening; difficult remnants of land that might best be landscaped and maintained to improve neighborhood appearance; pieces of land that abut upon and enlarge public parks, schools and other activities; lands that lie adjacent to tracts undergoing redevelopment; and so on. The fact that the suggested public uses are "reasonable" has not inhibited the Study Team from investigating other possible uses in order that the potential uses for properties in the I-84 alignment be fully analyzed and the relative benefits of alternate uses thereby determined.

FIGURE 38: I-84 PARCELS IN DOWNTOWN HARTFORD

The highway parcels in Downtown Hartford represent open buildable sites where little land is unoccupied or available at an attractive price. The extra costs for preparing and developing the site may be offset by locational advantages, provided the foundation areas can be obtained at a low enough cost to overcome the inconveniences associated with adopting them to use.

LANDS AVAILABLE FOR JOINT DEVELOPMENT AND MULTIPLE USE

Within the freeway route and interchange areas, nearly 90 parcels of land in the right-of-way have been identified as constituting (a) "excess" lands, not needed for the permanent highway preserve and therefore available for sale or lease for other uses, or (b) portions of land within the freeway boundaries which may be suitable for "joint uses" so long as these uses do not adversely affect the use, operation or appearance of the freeway itself.

Figure 40 illustrates the general distribution of land parcels that were specifically identified for study under terms of the I-84 Research Agreement. Land parcels have been grouped within the seven sectors described earlier, and following chapters consider each sector and parcel in detail.

Many of the excess parcels are small and irregular in shape, and some are cut off from access to city streets. Most of the latter do not appear to have commercial value except to owners of adjacent properties, and the value to those owners may not be immediately perceived. Parcels within the final lines of the expressway may be land-locked, or without access to streets, and many of them incorporate highway-related functions (side slopes, bridge piers, abutments, and various hardware items). In general, an "excess" or joint-development parcel of a given size is very likely to present more development difficulties to a prospective tenant than another piece of land of the same size but without the special constraints imposed by presence of the highway. However, such conditions may be overcome by site advantages and/or favorable acquisition costs, especially in areas where land is scarce and demand is high.

Some of the special conditions that help to make specific I-84 properties attractive for joint uses include the following:

- **Scarcity — there is a deficiency of unused land in the immediate environment.** A highway parcel in the central business district may represent an open buildable site, where no other land is unoccupied or available at an attractive price. The extra costs for preparing and developing the site may be offset by locational advantages, provided the foundation areas can be obtained at a low enough cost to overcome the inconveniences associated with adapting them to use.

- **Proximity — highway properties may be adjacent to an existing use that needs land for expansion** and is a feasible site for that purpose. Cost of development would be viewed in context with the overall cost of the next best alternative, which might be to move the parent activity to a new site.

- **Suitability — a highway site can be developed with a minimum of effort, to house ancillary uses,** such as parking or the dead storage of materials. Again, if combined cost for site (rental, lease or purchase) and construction are competitive, the parcel may prove attractive.

- **Economy — land can be made available at low cost** and/or site acquisition entails minimum difficulty for potential user (public agencies, in particular).

- **Aesthetic and community advantages — public agencies see opportunities for improving the appearance of the roadway** and are prepared to undertake development of small parks, playgrounds, ball courts, and similar activities within the right-of-way, as sociologically suitable and potentially more advantageous to abutting neighborhoods than landscape treatment.

JOINT-USE AREAS SUMMARIZED BY SECTOR

The 89 parcels under study have a gross area exceeding 86 acres, but there is great variation in parcel size, ranging from less than 500 square feet (parcels 7 and 9, Downtown) to more than ten acres (parcel 76 in the Flood Plain near Flatbush Avenue). Table 11 lists the gross area contained in the study parcels in each of the seven sectors. Lands owned by the State Highway Department and regarded as available for joint uses range from about 2.6 acres in the Downtown sector to nearly 20 acres in the Hartford Public High School area and more than 27 acres in the Flood Plain sector near Flatbush Avenue.

The parcels of land that form the base for the study do not stand isolated in their environments, of course, so that very much larger areas have been encompassed in the analysis of potential joint uses. Within the central business district, for instance, where the main "through" roadways of the freeway are largely in structure depressed below street level, the studies have given serious consideration to bridging the highway itself; a bridged area would truly represent use of air-rights over the freeway, and would create acreage in excess of that included in the parcels specifically designated for study. In the future, similar potentialities may also be found at other locations along the route.

Not all of the parcels under study are available for immediate conversion to suggested uses. A few have recently been sold to private individuals or groups (about 4.4 acres) and other parcels are currently under short-term lease to abutting property owners. As indicated in Table 11, another group of parcels representing about 50 acres, or 58 per cent of the land under study, has been identified by the City of Hartford (Department of Public Works, Parks, Redevelopment, and others) as potentially useful to the City, or that might best be reserved by the State for non-highway public uses. Several small parcels, for instance, are needed for street widening; the Department of Parks has indicated its desire or willingness to take over some parcels for incorporation in existing parks, or to improve or screen the roadside; some have been requested as sites for equipment storage areas, warehouses or other structures. Some parcels might be effectively joined with adjacent redevelopment areas in the interests of consistent and unified treatment. These requests have been given full consideration in the evaluation of possible and desirable joint uses throughout the length of the study section of I-84.

Kinds of Joint Uses — The types of activity that might be expected to develop around the I-84 expressway depend on many factors. Compatibility with the highway and the traffic using it, as well as with the character of adjacent neighborhoods, are very important considerations. Most impelling, however, from the standpoint of private investment, are the economic limitations imposed by community need for specific types of activities, particularly on the larger sites, including the relative costs of site development and the special business advantages which might accrue to users of air-rights as such.

With these considerations in mind, an economic study of the Hartford-Springfield "corridor" was carried out preliminary to the designation of likely uses at the larger or more significant freeway locations. Chapter 5 of this report contains a discussion on that study, with conclusions as to the types and amounts of land use improvements that the Hartford area will likely require over the next decade. The general categories of development and the portions of the I-84 route in Hartford to which they might apply, are as follows:

Housing. Although limited amounts of housing could, if appropriately designed, be accommodated at many points along the corridor, areas with the greatest potential are those in the Underwood-Pope Park sector, Asylum Hill area, and the Central Business District. The Underwood area has the best potential at present. The site is of sufficient size to permit design flexibility, can be readily assembled, and has the advantage of proximity to both Pope Park and a large employment pool. Low-moderate rent or subsidized housing would be particularly appropriate. "Walk-to-work" high-rise apartments oriented to the Asylum Hill insurance complex and the central business district are another strong potential, later in the projection period, due to the present slow acceptance of this form of living in Hartford. These developments would likely be geared to the middle-income market, with a relatively small proportion subsidized for low income occupancy.

Office Space. Logical areas for this use are dependent on continued growth of the central business district and Asylum Hill insurance activities. Strong additional potential could be generated in conjunction with the transportation center concept in the vicinity of the existing railroad station, and possibly as part of a service center in the Prospect Avenue area of the corridor near the West Hartford Town Line.

Industrial. Major possibilities include redevelopment of the Bartholomew Avenue area. More limited treatment might also occur at a number of points in existing industrial portions of the corridor, such as the Royal-Heublein area, and through development of "incubator" industrial loft space, perhaps as an outgrowth of recent renovations along Capitol Avenue.

Retail-Commercial. Growth into the corridor of the central business district core, centered on the G. Fox Department Store, is the most obvious opportunity. Other potentialities exist for a specialty shopping and visitor-service complex as part of a possible transportation center and in conjunction with the suggested service center in the vicinity of Prospect Street.

A service center could accommodate many of the uses now found in strip commercial areas along the major arterial streets. Convenience shopping facilities will also be required to serve major developments for the primary uses outlined above. For example, development of the magnitude envisioned at the Underwood residential project would need an enlarged convenience goods center to adequately serve the residents; the large amounts of additional office space proposed in the corridor would also generate demand for complementary retail facilities.

The opportunities described above are based on existing development patterns and represent judgements as to "naturally" emerging development. They are not an exclusive listing of areas with development potential nor are the specified uses inevitable. Rather, this discussion is intended as an overview of potential linkages against which to examine alternative development concepts as they emerge during the planning process.

In the next seven chapters, the existing environments and potentials for joint uses are considered at length for each principal sector of the I-84 corridor.

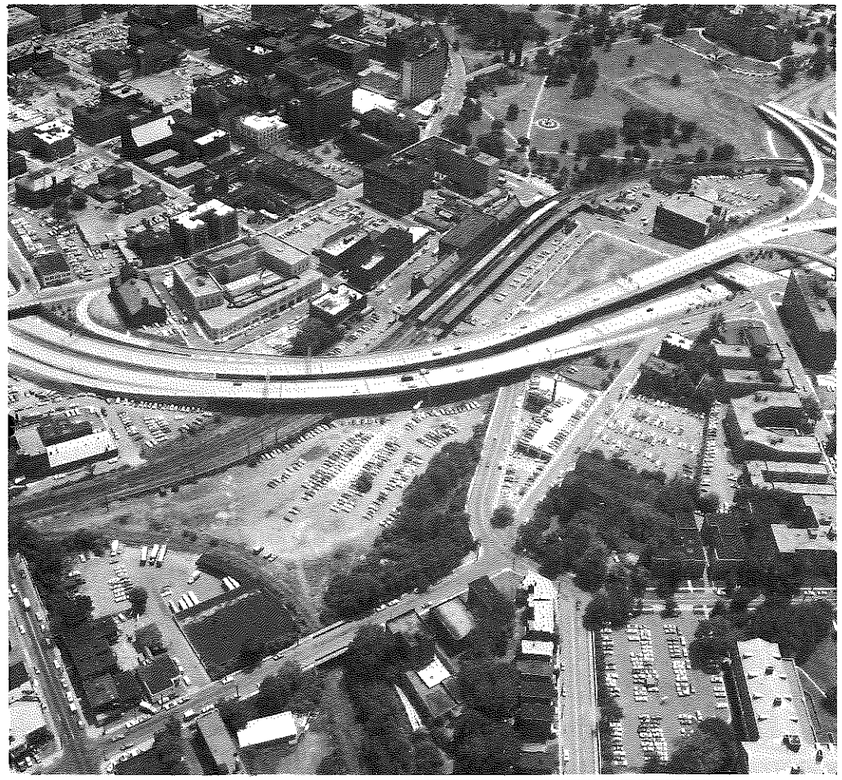


FIGURE 39: POTENTIAL JOINT-USE AREAS
The Union Station and Brookfield Flood Plain areas in the photos to the right present major opportunities for joint-use development on State Highway Department lands.

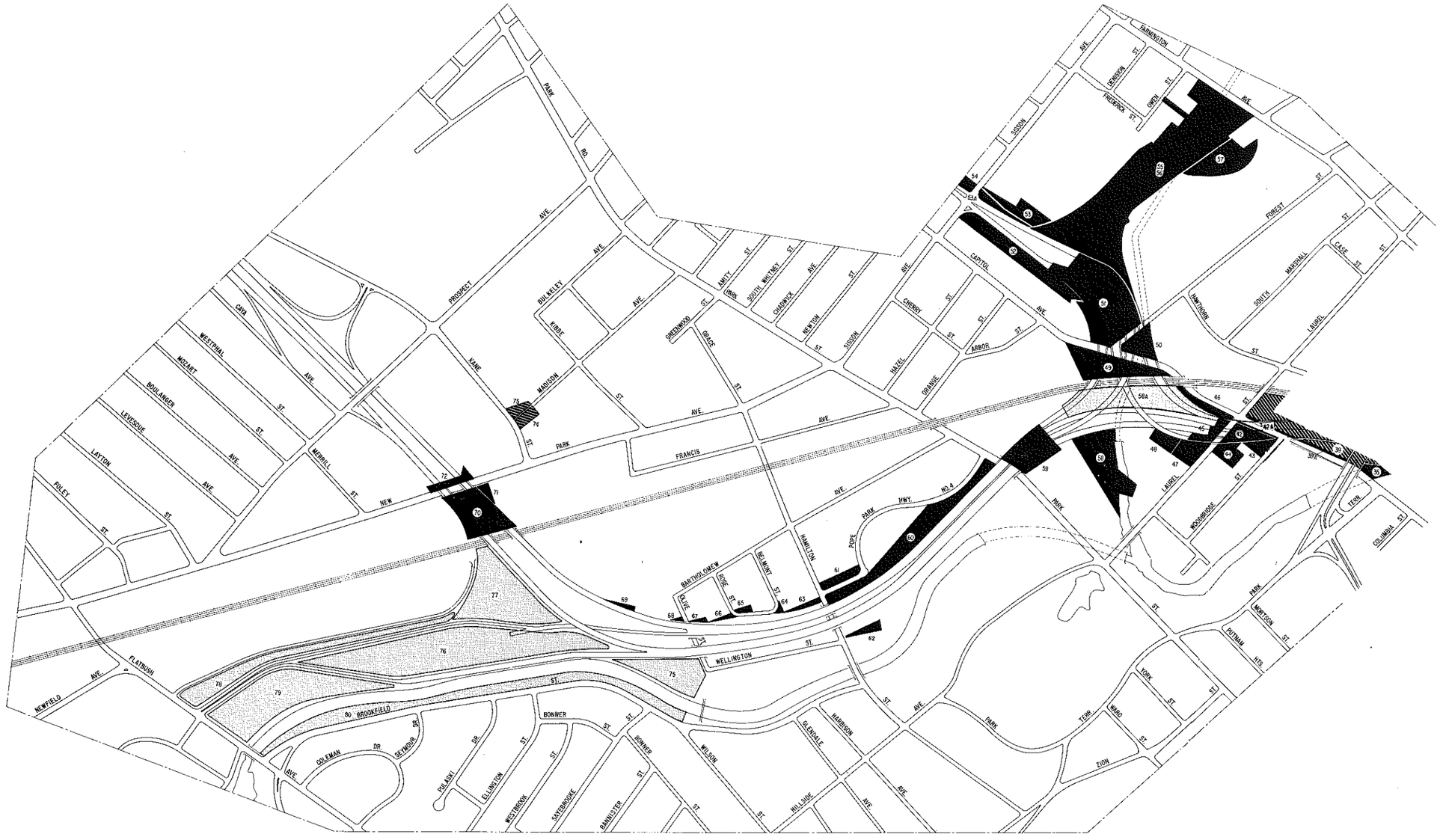
TABLE 11: NUMBER AND AREA OF PARCELS AVAILABLE FOR JOINT USES

	STATUS OF PARCELS						PARCELS PROPOSED FOR	
	TOTAL COUNT		SOLD/LEASED		AVAILABLE		CITY OR STATE USE[1]	
SECTOR	No.	Acres	No.	Acres	No.	Acres	No.	Acres
Downtown	10	2.6	—	—	10	2.6	6	1.9
Transportation Center	24	9.8	3	1.3	22	8.6	9	2.1
Insurance	12	13.8	4	2.7	8	11.1	—	—
Underwood	13	10.6	1	0.4	12	10.2	4	3.2
High School	10	19.7	—	—	10	19.7	8	17.7
Parkville	14	8.7	1	0.1	13	8.6	1	0.6
Flood Plain	6	27.5	—	—	6	27.5	6	27.5
TOTAL	89	96.7	9	4.5	81	88.3	34	53.0

[1] City or State use does **not** include proposed sales to Redevelopment Agency.
[1] Present status of parcels not contemplated for permanent use by State or City.

Downtown Area: About an acre of land is available for development in two parcels on opposite sides of I-84, between Main and Trumbull Streets. These might form the foundations for a privately financed structure that would bridge the freeway.
Transportation Center Area: About 6.5 acres could be made available as sites for private development, provided that land-locked areas can be made accessible. Much of this area is vacant or used informally for parking.
Aetna Insurance Area: All parcels in this area are owned or leased to Aetna, or used by others for parking.
Underwood-Pope Park Area: All accessible parcels in the Highway ROW adjacent to the Underwood Redevelopment Area are used for parking.
Hartford Public High School Area: All areas are presently unused.
Parkville Industrial Area: About two acres are currently used for informal parking. The rest of the area is unused.
Brookfield Flood Plain Area: Currently unused.

SOURCE: Connecticut Department of Highways and Wilbur Smith Associates.


PARK RD
PROSPECT AVE
BULKELEY AVE
KANE ST
MADISON
GREENWOOD ST
GRACE AVE
AMITY ST
PARK ST
SOUTH WHITNEY ST
CHURCH AVE
NEWTON ST
SIGSBEE
CAPITOL AVE
CHERRY ST
HAZEL
ORANGE ST
ARBOR ST
FARMINGTON AVE
SIGSBEE ST
FREDERICK ST
OGDEN ST
FOREST ST
WHITNEY ST
CASE ST
HAMILTON
SOUTH MARSHALL ST
LAUREL ST
WOODBRIDGE ST
TERR
COLUMBIA ST
PARK
MORTSON ST
PUTNAM MTS
YORK ST
WARD ST
ZION
PARK TERR
AVE
HARRISON
GLENDALE
WILLSIDE
WILSON ST
BONNER ST
BARNISTER ST
WESTBROOK
ELLINGTON ST
PILGRIM DR
SEYMOUR DR
COLEMAN DR
BROOKFIELD ST
NEWFIELD AVE
FLATBUSH AVE
WELLINGTON ST
BARTHOLOMEW
OLIVE ST
BASSE ST
BELMONT ST
HAMILTON
POPE
PARK HWY NO 4
PARK
MERRILL ST
NEW
FRANCIS
LAYTON ST
POLET ST
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BOULANGER AVE
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FIGURE 40: LANDS AVAILABLE FOR JOINT DEVELOPMENT AND MULTIPLE USE

Nearly ninety parcels of land have been identified as constituting excess lands not needed for highway purposes, or as portions of land within the freeway boundaries which may be suitable for joint uses.

SCALE — 1" = 1600'-00"

LEGEND

- PARCELS AVAILABLE
- PARCELS PREVIOUSLY SOLD OR LEASED
- ADDITIONAL PARCELS AVAILABLE

CHAPTER SEVEN

THE DOWNTOWN AREA: SECTOR 1

A segment of I-84 from the freeway junction with I-91 at the eastern edge of the central business district westward to High Street has been designated the "Downtown" sector of the freeway. An "area of influence" has been defined on either side of the freeway, extending north to Main and Trumbull Streets, and south to Asylum Street (between High and Trumbull Streets), Church Street (between Trumbull and Main Streets) and Talcott Street (between Main Street and I-91). These boundaries are shown on the aerial photo in Figure 41 and the land-use map in Figure 42.

Approximately 14 acres of land in Sector 1 are devoted to highway rights-of-way. Ten parcels totaling 2.6 acres have been designated for possible joint-use development in the area, including an acre of land in two parcels on opposite sides of I-84 between Main and Trumbull Streets, and two parcels used by the City of Hartford as a car pound.

Within this sector the only areas that have not recently undergone extensive renewal or are not presently being redeveloped are the blocks west of Ann Street. Population and employment have declined with the demolition of many buildings for the Trumbull and Windsor Street urban renewal projects, but reconstruction of these Project Areas should see major revitalization of employment opportunities. West of Trumbull Street and north of I-84 future residential redevelopment is anticipated.

FIGURE 41: DOWNTOWN SECTOR BOUNDARY

This portion of the study corridor forms the northern boundary of the central business district core. Only the blocks west of Ann Streets have not undergone extensive renewal or are not presently being redeveloped.

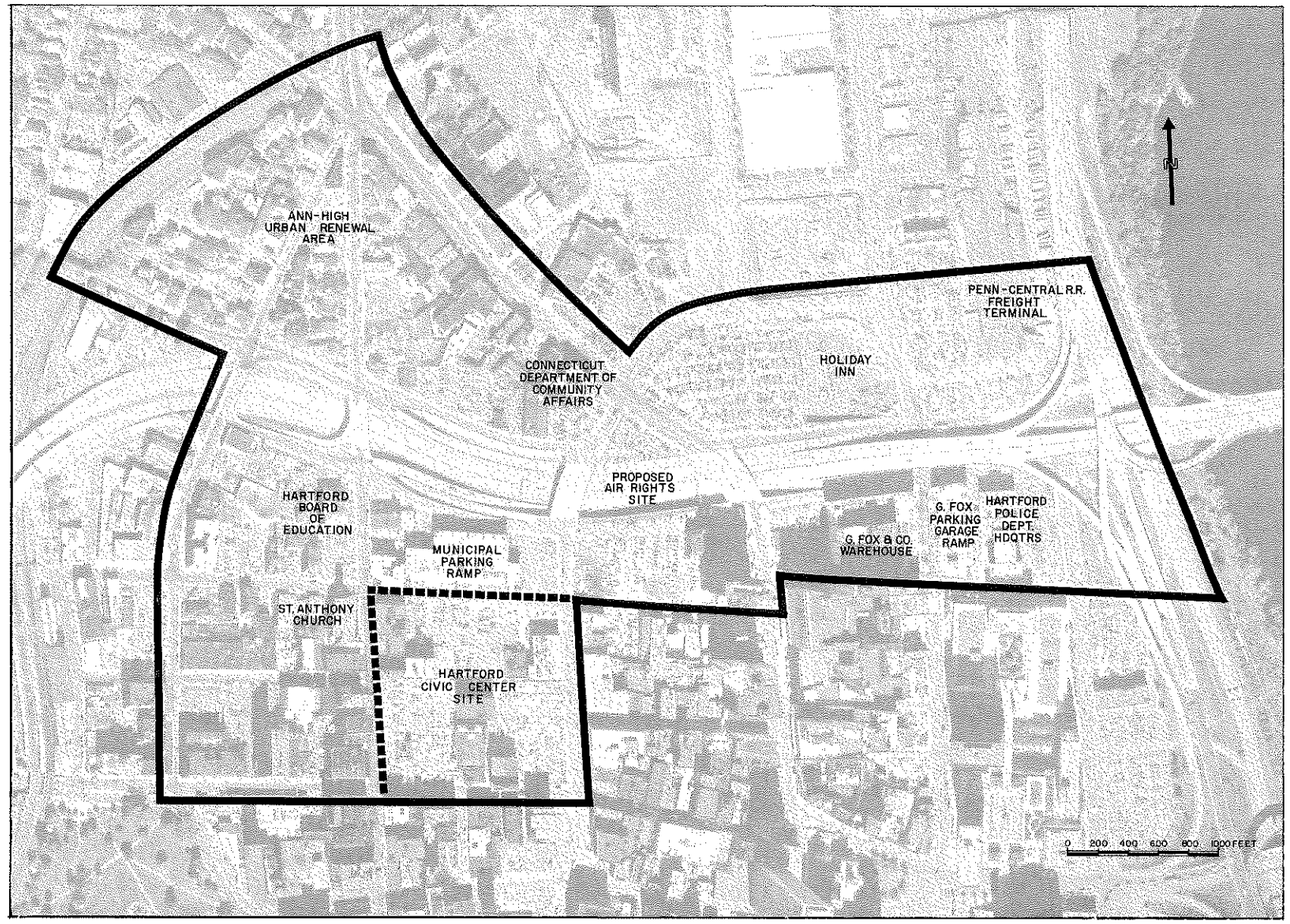
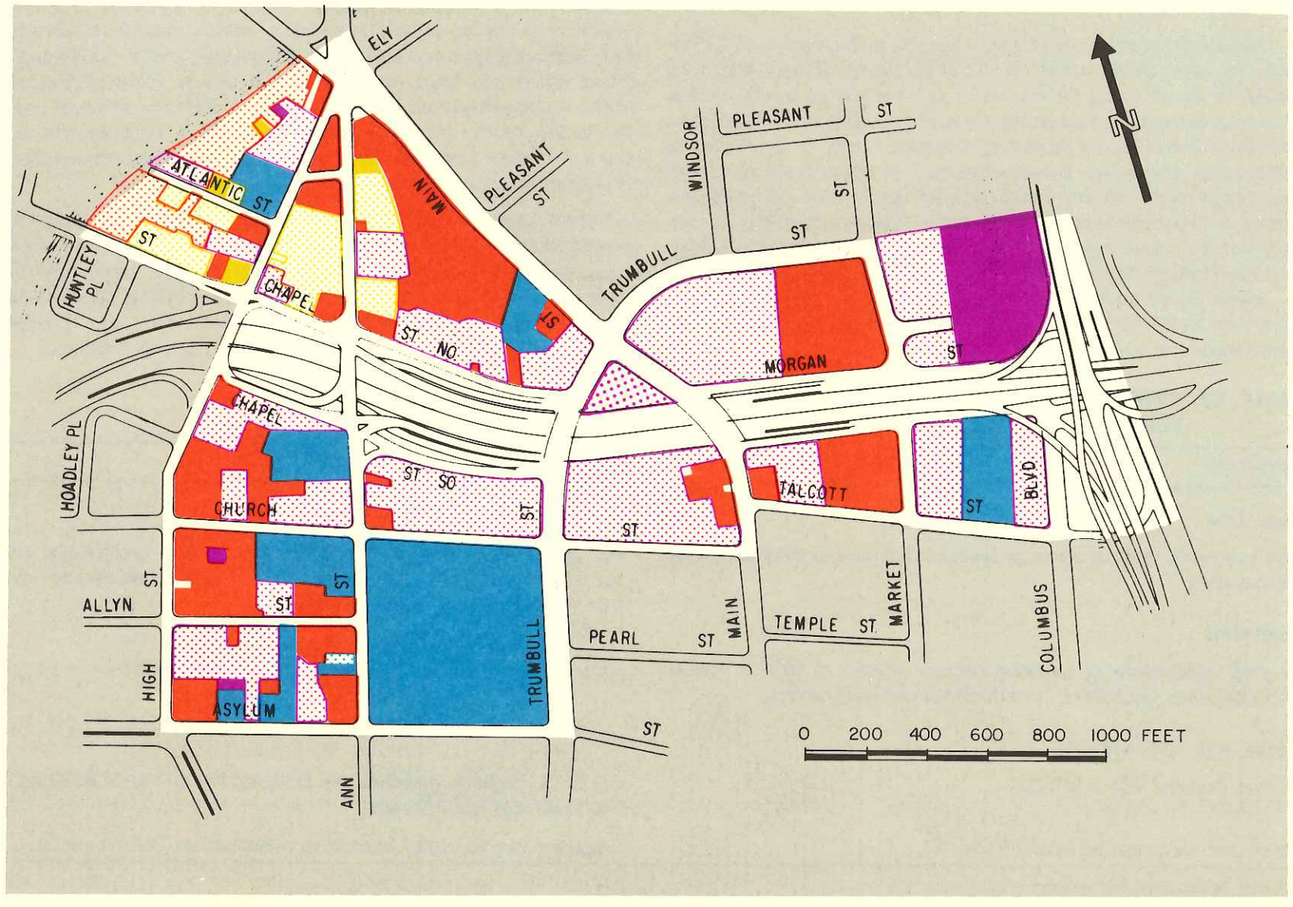


FIGURE 42: DOWNTOWN SECTOR LAND USE

Private and public redevelopment activities in Downtown Hartford are generally resulting in much higher intensities of land use than previously prevailed. The rapid change in the character of the area will evolve still further with the completion of the Civic Center and the proposed redevelopment of the Ann-High urban renewal area north of I-84 and west of Trumbull Street.



The Windsor Street Renewal area north of the highway is becoming a service area of the central business district, while the Trumbull Renewal Project is expected to house high intensity office use and the proposed Civic Center. Policies recommended by the Commission on the City Plan in **Downtown Hartford, the 70's** suggest emphasis on residential development.[1] In accordance with these policies the proposed renewal project in the Ann-High area may be expected to house a mixture of office and residential uses.

Demolition of existing buildings in the Trumbull and Windsor Street Urban Renewal areas accounted for declines in both population (from 2,000 to 1,400) and employment (from 5,000 to 4,500) in the Sector during the 1960-1970 decade but both population and jobs are expected to rise sharply with the completion of renewal activities.

The median income of $7,600 (versus $4,700 in 1960) declined relative to the corridor median. However, by 1980 the completion of scheduled renewal activities should result in increased median income levels relative to corridor and city-wide figures.

All of the streets that cross I-84 have entrance and/or exit connections to the freeway, and all streets in the Sector constitute important components of the downtown circulation system. Traffic reaches critical volumes at peak hours on some freeway ramps and elsewhere within the central business district. Approximately 5,000 parking spaces exist in the Sector, fewer than half of them in permanent garage structures. New garages are planned as part of the Trumbull Plaza (Civic Center) development and other new construction.

Private and public redevelopment activities in Downtown Hartford are generally resulting in much higher intensities of land use than previously prevailed. The character of the area is changing rapidly and will evolve still further with proposed residential redevelopment north of I-84 and west of Trumbull Street.

Several major changes in circulation within the Sector are contemplated during the planning period. Trumbull Street from Main to Jewell Streets is scheduled to be widened to a four-lane divided arterial as part of the Trumbull Redevelopment project. **Downtown Hartford** proposes closing of Church Street from Main Street to a point several hundred feet west of Main Street; while Main Street from Morgan Street south to Asylum Street and Asylum Street from Market Street to Trumbull Street have been proposed as exclusive busways.[2] Extension of Chapel Street South from Trumbull Street eastward to Main Street has also been recommended.

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[1] **Downtown Hartford, The 70's,** discussion draft; Commission on the City Plan, City of Hartford, Connecticut, March, 1970.

OPPORTUNITIES FOR JOINT DEVELOPMENT

If I-84 and the traffic using it are viewed objectively, a variety of interrelationships can be identified between the freeway and Downtown Hartford through which it passes. Introduction of the new freeway has produced some new conflicts or frictions in the central city; each of these may be looked upon as an **opportunity** for improvement. Table 12 lists some of the "problems" and "opportunities" and these are discussed at greater length below.

Land Use — Although I-84 through Downtown Hartford was designed to the most economical standards practical for a facility of its type and traffic requirements, the right-of-way is nevertheless wide and occupies much valuable real estate. While providing better access to Downtown, the freeway has used up land upon which new structures might have been erected in the future.

The opportunities that result from the fact of a wide right-of-way arise from the likelihood that land values in the Downtown area have been so enhanced by redevelopment activities and construction of the freeway that it is now reasonable to think of erecting buildings **over** the highway.

Aesthetics — Building the freeway in a depressed section with vertical masonry walls to minimize land-taking has resulted in a structure of rather plain and unrelieved appearance in parts of the highway corridor. This is particularly apparent to observers on ramps and streets that pass beneath portions of the freeway.

Opportunities exist for the introduction of color and texture to relieve dark corners and under-areas and to eliminate unused pockets of dead space. A principal constraint on such applications may be the costs of maintaining some types of treatment, such as paint and plantings; the introduction of textured screenwalls in contrasting ceramic materials and use of hardy groundcovers keyed to low maintenance costs could overcome these difficulties.

Social and Environmental — Some environmental conditions associated with major highways are universal problems. A heavily-traveled highway always constitutes a barrier between uses that flank either side, and the barrier or "moat" effect is increased if the highway is elevated (especially on fill section) or is depressed below the average grade of areas it passes through. The wastes produced by traffic — fumes and other combustion products, noise, dust, stray light, vibration — and the need to contain them also present special problems.

Most of these social and environmental "negatives" would be reduced or eliminated if practical ways were found to screen, baffle, enclose, ventilate, or bridge the freeway.

Traffic Operations — Functional problems also complicate the use of the freeway for the purpose it is basically intended to serve in Downtown Hartford. The interchange of I-84 with I-91 is presently quite indirect for eastbound traffic seeking to go north; frontage roads are discontinuous on both sides of the freeway; peak-hour use of some ramps and portions of the through lanes on the freeway are already reaching roadway capacities; and some portions of the highway are experiencing higher accident frequencies than they should.

Opportunities exist within and adjacent to the highway right-of-way for overcoming some of these problems. Means might be found to divert some of the traffic gaining access to the central business district via overloaded ramps by routing some vehicles to less-used facilities, by extending frontage roads, or by providing reasonable alternative points of access to city streets. Accident frequency might be controlled through application of additional traffic engineering measures, by better advance warning of hazards, and/or other means. Traffic overloads on main freeway lanes offer a challenge that has to be met by reducing peak-hour demand — either by spreading traffic peaks over longer periods of time, diverting traffic to other routes, or persuading motorists to use other modes of travel.

Parking and Terminals — Because it introduces very large volumes of traffic into the central business district within short time-periods, the freeway tends to concentrate parking demand into shorter time-intervals, thereby congesting travel on city streets and in parking facilities. The historic patterns of traffic access into the downtown area via a limited number of streets with relatively low peak-hour capacities has had a "metering" effect which has been radically altered by the more contracted traffic loads introduced via the freeway. If the intensities of land use in the central business district continue to increase, the demand for more terminal capacity and for faster accommodation of visitors will likewise increase.

Solutions to these problems lie in more efficient use of transport facilities, such as diversion of tripmakers to buses and other mass carriers; development of additional garages convenient to access points; and innovative methods of combining private and public modes of central-city transportation, such as "people movers" serving Downtown from peripheral parking facilities.

TABLE 12: OPPORTUNITIES FOR JOINT DEVELOPMENT DOWNTOWN SECTOR

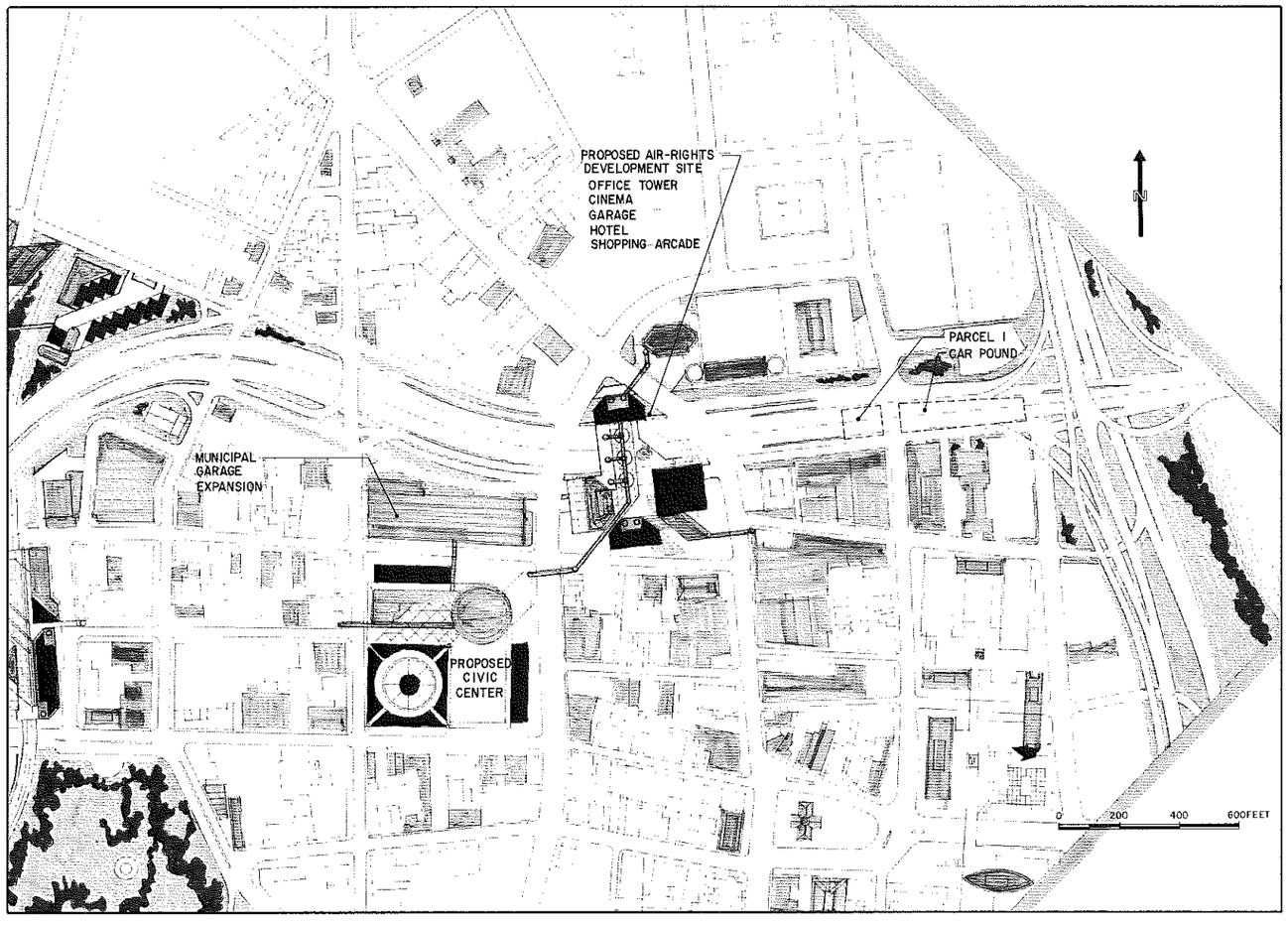
PROBLEM	OPPORTUNITY
Land Use	
I-84 has converted 14 acres of land from former central business district uses.	I-84 has created new and improved access and opened new area for central business district growth; air-rights development over I-84 at Main Street is practical.
Aesthetics	
Neutral appearance of elevated section of I-84 at Market Street and Columbus Boulevard; heavily shadowed under-areas.	Ground level planting of shade loving plants.
Social and Environmental	
Barrier or moat effect of I-84.	Could be partially overcome by bridging for air-rights building at Trumbull and Main Streets.
Noise and air pollution from I-84 traffic.	Consider use of sound absorbing materials on I-84 sidewalls.

SOURCE: Wilbur Smith and Associates.

(2) Ibid.

FIGURE 43: DOWNTOWN SECTOR JOINT-USES PLAN

The most stimulating possibility for joint development in the Downtown Sector occurs in the block bounded by Main, Trumbull, and Church Streets, where a large multi-use structure is suggested. An integral part of the plan is the extension of Chapel Street South from Trumbull to Main Street, providing a continuous street from High Street to Columbus Boulevard.



JOINT-USE POTENTIALS IN THE I-84 RIGHT-OF-WAY

There are several unique opportunities for joint-use development of the Interstate 84 right-of-way as it joins the northern boundary of the central business district core. The possibilities discussed below are based on the premise that Interstate 84 should not, and will not, form a permanent northern boundary of the central business district. Among other things the plan would facilitate growth of the central business district across the I-84 corridor in the vicinity of Main Street.

The central business district Sector of the I-84 corridor has been divided into three smaller segments and specific recommendations apply to each of these segments. The corridor development plan for the entire Downtown Sector is shown in Figure 43.

Main-Trumbull Street Development — The most stimulating possibilities for joint development in the Downtown area occur in the vicinity of Main and Trumbull Streets, where a large multi-use structure is suggested. A building at this location would feature an air-rights development spanning Interstate 84.

Parcels 2 and 3, shown in Figure 44, on opposite sides of the freeway between Main and Trumbull Streets, could, together, provide a site for the foundations of a major downtown building complex. Portions of Parcel 3, south of I-84, could also be used for an extension of the Chapel Street South frontage road, connecting through to Morgan Street at Main. Figure 45, a section through the proposed development, shows how a service road might be incorporated into a building plan that would include a deck over the freeway upon which to construct a tower or shopping arcade.

The purpose of this approach would be to capitalize on the generative power of the retail core now centered at G. Fox Department Store, one block south of I-84, and the very strong portal to downtown which has been created at the Main Street I-84 interchange. These two factors alone are enough to insure early development interest in this portion of the corridor.

However, the opportunity now exists to accomplish considerably more than the simple addition of new revenue-producing space in this area by carefully handling growth to produce an interface which will benefit the three (or possibly four) neighborhoods which have a vital stake in the function of this portal. In addition to extending the retail core toward the north, development can draw on the potential created by the proposed civic and convention center one block to the southwest, tie directly into the emerging Windsor Street urban renewal project with its central business district service functions and educational development (Rensselaer Polytechnic Institute) northeast of the site, and promote expansion of the central business district along Main Street to the northwest.

TABLE 13: BUILDINGS SIZES AND COSTS USED IN I-84 PRO FORMAS DOWNTOWN SECTOR AIR RIGHTS COMPLEX

COMPONENT	SIZE AND COST PER UNIT	TOTAL COST
Department Store	150,000 Square Feet @ $ 22.00	$3,300,000
Office Building	200,000 Square Feet @ 28.00	5,600,000
Hotel	150 units @ 13,300.00	2,000,000
Retail Arcade	20,000 Square Feet @ 22.00	440,000
Theatre	17,000 Square Feet @ 25.00	425,000
Parking	1,000 Spaces @ 4,000.00	4,000,000
Public Plaza	20,000 Square Feet @ 10.00	200,000

SOURCE: Hammer, Greene, Siler Associates.

TABLE 14: LAND RESIDUAL ANALYSIS DOWNTOWN SECTOR AIR RIGHTS COMPLEX (IN CONSTANT 1970 DOLLARS)

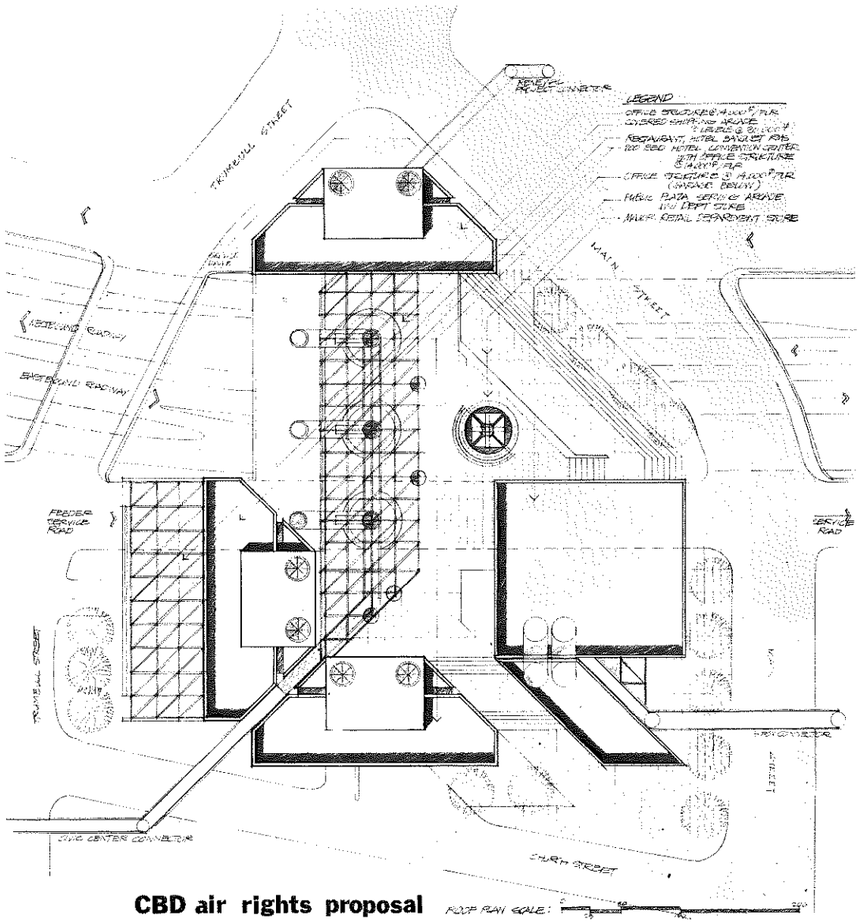
	DEPARTMENT STORE	BUILDING OFFICE	HOTEL	RETAIL ARCADE	THEATER	PARKING	PUBLIC PLAZA	TOTAL
Estimated Construction Cost	$3,300,000	$5,600,000	$2,000,000	$440,000	$425,000	$4,000,000	$200,000	$15,965,000
Estimated Gross Income	525,000	1,140,000	1,315,400	139,500	85,000	915,400	——	4,120,300
Estimated Annual Expense								
Operation, Maintenance, etcetera	——	233,000	954,200	20,000	——	274,600	——	1,481,800
Taxes and Insurance at 5%	165,000	280,000	100,000	22,000	21,250	200,000	——	788,250
Estimated Net Income to Real Estate	360,000	627,000	261,200	97,500	63,750	440,800	——	1,850,250
Net Income Required by Improvements Financing: 70% at 9.5% for 25 years Equity: 30% at 12% return	364,000	617,000	220,400	49,000	55,925	440,800	——	1,747,125
Income Available to Land	(4,000)	10,000	40,800	48,000	7,825	——	——	102,625
TOTAL AVAILABLE FOR SITE CAPITALIZED AT 9.5 PER CENT	($42,100)	$ 105,300	$ 429,500	$505,300	$ 82,400	——	($200,000)	$ 880,400

SOURCE: Hammer, Greene, Siler Associates.

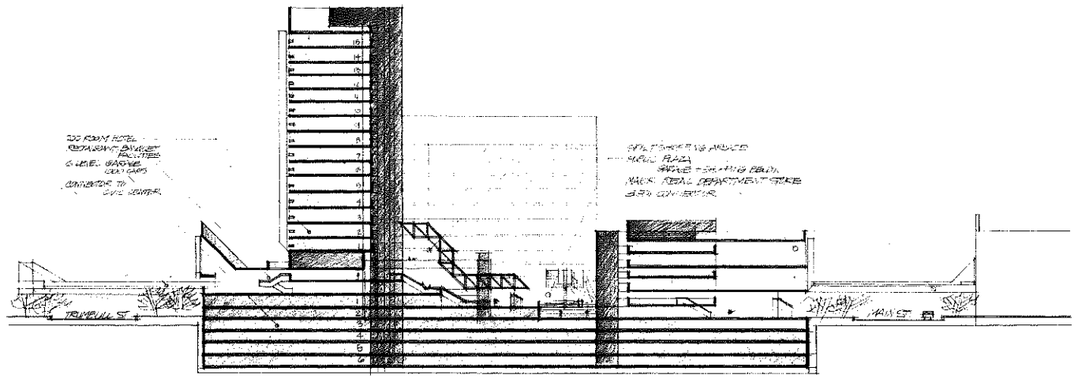
FIGURE 44: DOWNTOWN AIR-RIGHTS DEVELOPMENT — PLAN

FIGURE 45: DOWNTOWN AIR-RIGHTS DEVELOPMENT — SECTIONS

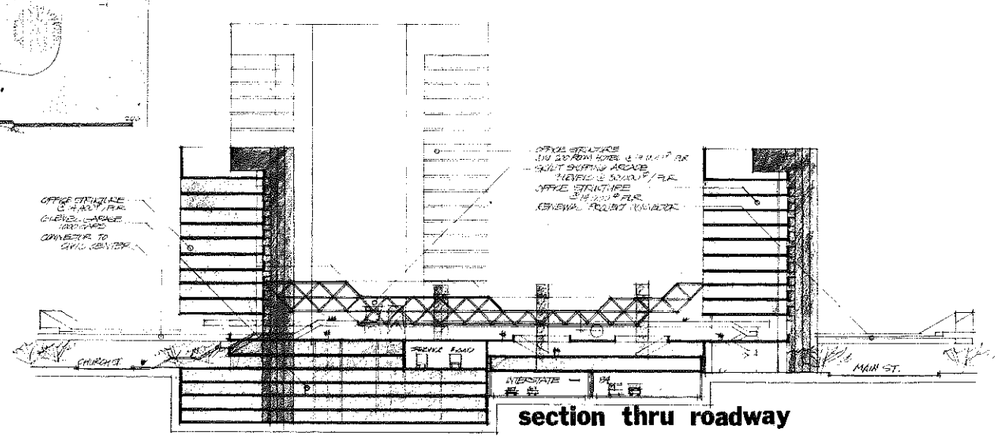
The development of a major downtown building complex on the Main-Trumbull Church street block would produce an interface which will benefit several neighborhoods. The recommended site employs air-rights over I-84 both as a functional necessity and to create a location for a major structure with an element of prestige otherwise unobtainable. A structure at this location would quickly achieve land-mark status and can logically tackle several markets at once to serve as a transitional area linking the more homogeneous land uses in the several neighborhoods.
The sections through the proposed development show how a service road might be incorporated into a building plan that would include a deck over the freeway upon which to construct a tower or shopping arcade.



CBD air rights proposal



longitudinal section



section thru roadway

The recommended site employs air rights over I-84 both as a functional necessity for effectively linking these markets and to create a location for a major structure with an element of prestige otherwise unobtainable. An air-rights structure at this location downtown would quickly achieve landmark status not merely because of its portal character and visual prominence from I-84 but because its placement at the bend of Main Street would also dominate the approach for a considerable distance in both directions along that principal thoroughfare. Such a structure would thus be visually linked with downtown in a compelling manner and provide a physical link across the gap created by the highway, both structurally, through a continuity of intensive development, and functionally, by providing a strong pedestrian linkage through the inclusion of malls and shopping arcades.

The importance of achieving this degree of prominence and prestige arise from the need to obtain premium rentals to offset the added construction costs associated with the air-rights site and the desirability of obtaining action on such a project somewhat in advance of market pressures due to the ready availability of the site and the opportunity to shape and strengthen emerging development patterns.

Treated as an interface, development in this area can logically tackle several markets at once to serve as a transitional area linking the more homogeneous land uses in the individual neighborhoods. Typical transitional or interface uses would include hotels, theaters and restaurants. These uses in the study area are particularly strengthened by proximity to the large pedestrian volumes generated by the retail core (particularly G. Fox), their natural affinity with the activities at the civic center, and exposure to large volumes of traffic at I-84 and on Main Street.

Project Feasibility: Land Residual Analysis of Air-Rights Structure — Detailed feasibility testing necessarily rests on more definitive information than the conceptualized development program envisioned for the air-rights site. Nevertheless, it is useful to explore the potential returns likely from the recommended project, assuming average or typical operating experience for the suggested uses. A modified land residual format has been adopted since the constraint of greatest concern is the ability of the recommended uses to effectively utilize highway air-rights and surplus rights-of-way which would otherwise remain unproductive. Key assumptions upon which these calculations are based were discussed at the end of Chapter Five.

Based upon alternative studies and sketches prepared by the architectural consultants, an arbitrary set of assumptions was made regarding the kind and amount of uses that might reasonably be incorporated into an air-rights building constructed within the Main-Trumbull block. These dimensions have been used as the basis for the Land Residual Analysis set forth in Tables 13 and 14.

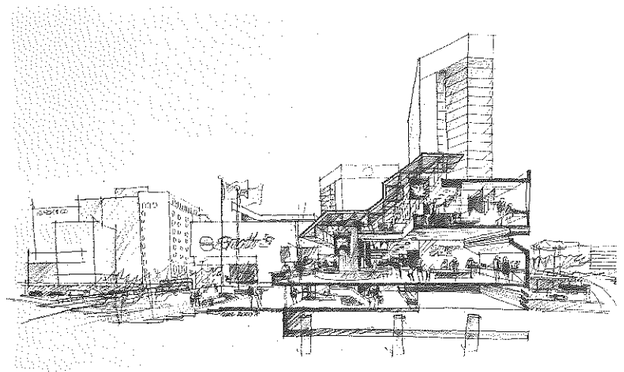
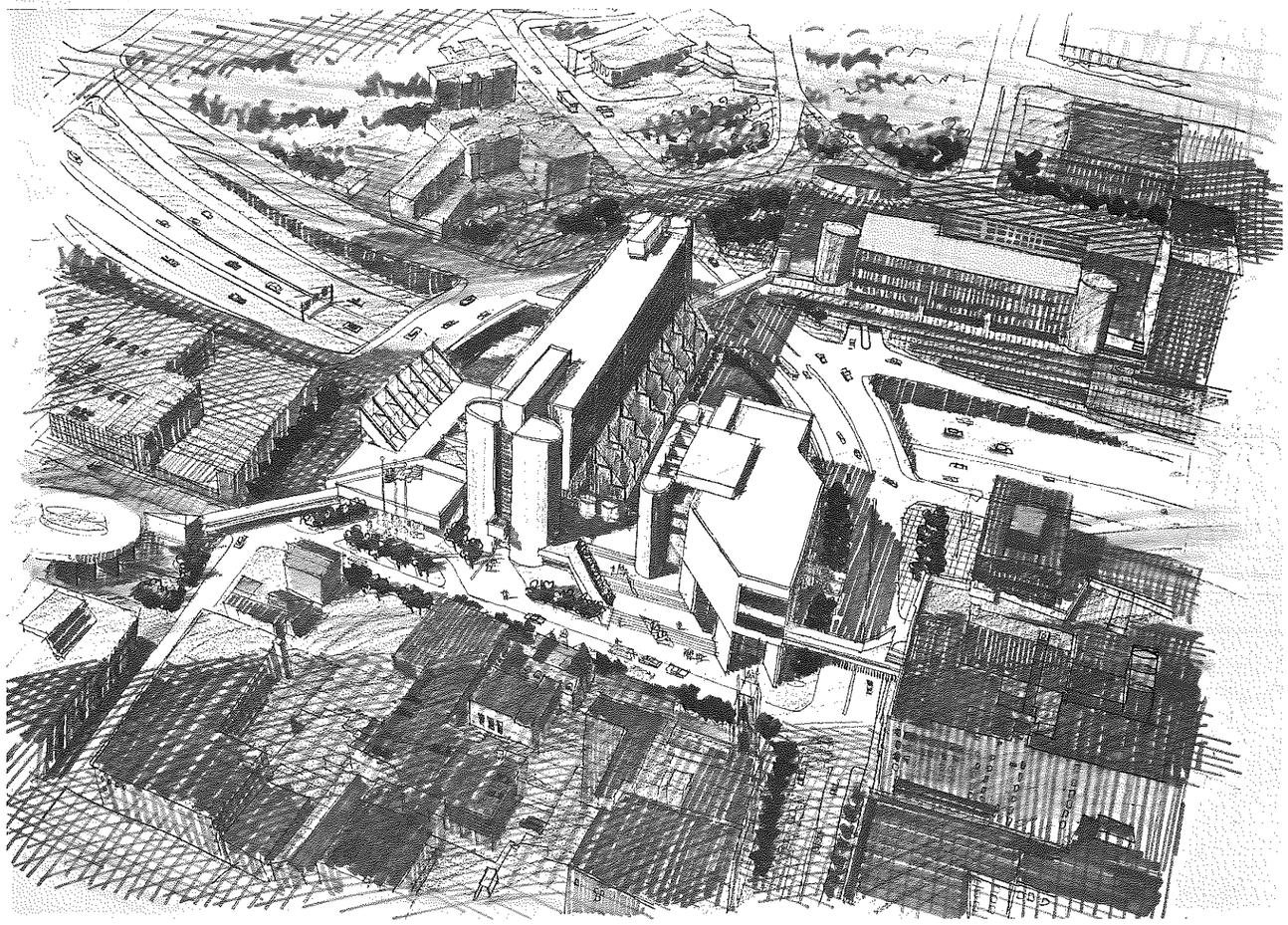


FIGURE 46: DOWNTOWN AIR-RIGHTS DEVELOPMENT — PERSPECTIVE SECTION AND AIR VIEW

The use of a relatively small, light-weight structure — such as the plaza and arcade in Figure 2 and to the right — would minimize the cost of spanning the freeway. Alternatively, a more massive approach, such as that visualized below, and in Figure 47, could be used if the market for space warrants.



If developed as assumed, the Downtown air-rights project would generate about $102,625 in annual income available for land purchase. Capitalized at an annual interest rate of 9.5 per cent, this income would support a land cost of $880,400 at this location; at lower rates of interest, the amount of income available for land purchase would, of course, be larger, and the amount of purchase that each dollar of income would support would also be greater. Although the analysis indicates the typical department store could not afford the required rentals for space in the project, the implied deficit might well be offset by the store becoming an equity participant in the project simply through its role as a catalyst in enhancing the marketing of the other elements of the project.

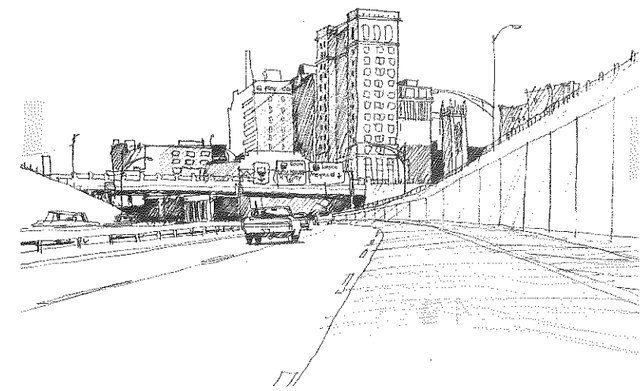
The illustrative sketches in Figures 2 and 46 show how structures of different design might be made to look in this location. A driver's view of such a structure is shown in Figure 47.

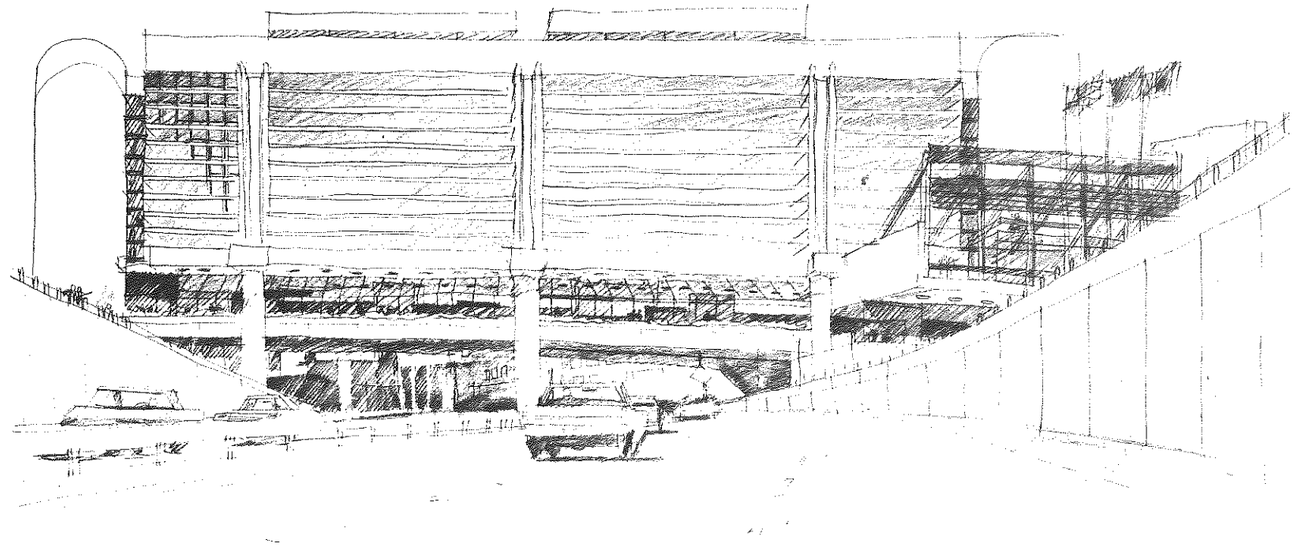
Important components of the air-rights plan include completion of the south frontage road, Chapel Street South; certain pedestrian bridges suggested for crossings of Main, Trumbull, and Church Streets; and perhaps some elements of the required parking. The entire project would have to be carefully coordinated with public agencies to insure that the span over the freeway could be constructed without impairing the traffic-carrying function of I-84; that such elements as proper lighting and signing were provided at the highest standards consistent with traffic safety; and that the project was fully compatible with other development proposals and goals in the central business district.

As demand for space in Downtown Hartford continues to grow, the feasibility of other "air-rights" platforms over I-84 in other blocks of the central business district can be expected to develop. However, the practical likelihood of development in blocks other than the one just discussed appears to be several years away.

FIGURE 47: DOWNTOWN AIR-RIGHTS DEVELOPMENT A DRIVER'S VIEW

The landmark status of an air-rights development, such as that visualized on the facing page is evident from the contrasting driver's vista today and as it might be if an air-rights development were constructed on the recommended site.





Connecticut River to Market Street — Development in this portion of the corridor is primarily dependent upon plans for the reconstruction of the interchange between I-91 and I-84. Plans in preparation call for reconstruction of the southbound direct-off ramp from I-91 to I-84 and elimination of the southbound off-ramp to Morgan Street. The net effect of this plan would be to make I-91 access to the central business district via I-84 more difficult.

In order to overcome the deletion of the Morgan Street ramp from I-91 into the Hartford Central Business District, an improved connection might be provided between Interstate 91 and the northern portion of the central business district. This might be achieved by routing traffic over one or more north-south streets from I-91 interchange north of I-84 into Trumbull Street, thus taking advantage of underutilized capacities on that thoroughfare.

South of Interstate 85 and east of Columbus Boulevard, it is recommended that land now utilized for interchange ramps be kept in an open, landscaped condition.

Table 15 lists land in ten parcels of I-84 right-of-way that should be considered for joint uses. Of these, six areas have been requested by the City of Hartford for incorporation in redevelopment use, street extensions, or other purposes. Such uses are not mandatory, however, and other possibilities for some parcels have been considered. Location of parcels is shown on the map in Figure 40.

Parcel 1 is currently used by the Hartford Police Department for parking and impoundment of recovered vehicles. The plan of development prepared for the central business district by the Hartford Commission on the City Plan has recommended that the Police Department headquarters west of Columbus Boulevard be retained in its present location. Therefore, it is recommended that the right-of-way immediately under I-84, adjacent to the Police Department headquarters, be retained for its present use as a storage area for impounded vehicles.

The parcel, in two pieces separated by Market Street, is located beneath the through lanes of I-84 in a median area between frontage roads (Morgan Streets North and South) that are very heavily traveled at peak-hours in morning and evening. At such times, access to the car pound is somewhat difficult and hazardous. Both areas are enclosed with chain-link mesh fencing; little has been done to relieve the stark appearance of the facility, but if the present use is to continue, masonry screens (brick or tile) and possibly some paint and planting (ivy or other shade-loving plant materials) could greatly improve the car pound's appearance without impairing its basic function.

Over the long term, Parcel 1 might better accommodate static uses that require infrequent attention, such as these:

Record Storage for City of Hartford or others (to replace the car pound); suggested because the median between service roads that are heavily traveled much of the day results in hazardous access to the parcel. An example of a structure that could be constructed beneath I-84 at this location is shown in Figure 48.

Power sub-station; water or sewerage pumping sub-station; (these uses would depend upon the need for additional services; there is no evidence that such need presently exists).

Parcel 1 A consists of more than half an acre just north of the westbound off-ramps from I-84 and I-91 northbound. The area is presently used for car parking, and is slated to be incorporated into future redevelopment of the Penn Central Freight Terminal area to the north. The interchange of I-91 and I-84 is presently being re-designed and a portion of the parcel may be used in the reconstruction. The remainder may continue to be best suited for off-street parking, inasmuch as the demand for such use is bound to increase and the parcel will continue to have excellent access to both I-84 and I-91.

TABLE 15: EXCESS RIGHT-OF-WAY PARCELS DOWNTOWN SECTOR

PARCEL NUMBER	PARCEL DESCRIPTION	AREA IN SQ. FT.[1]	STREET ACCESS	PRESENT USE
1	Median under thru lanes	25,000	Hazardous	Police car pound
1A	Parcel north of freeway	25,000	Yes	Parking
2	Main to Trumbull, south of I-84	21,000	Yes	Trumbull Street renewal
3	Main to Trumbull, north of I-84	22,400	Yes	Parking
4	Trumbull to Ann, south of I-84	13,200	Via garage	City garage access
5	East corner Ann, south of I-84	3,500	Yes	Unused triangle
6	East corner Ann, north of I-84	980	Yes	Unused triangle
7	West corner Ann, north of I-84	460	Yes	Unused
8	Strip southwest of Ann, south of Chapel	2,320	Yes	Unused
9	Chapel Street North, east of High	480	Yes	Unused

[1] 1 Acre = 43,560 Square Feet.
SOURCE: Connecticut Department of Highways and Wilbur Smith and Associates.

TABLE 16: SHORT-RANGE AND LONG-RANGE POTENTIALS FOR JOINT-USE DEVELOPMENT DOWNTOWN SECTOR

PARCEL NUMBER	AREA IN SQ. FT.[1]	LIKELY OR POSSIBLE USES			
		SHORT-RANGE	PROBABILITY[2]	LONG-RANGE	PROBABILITY[2]
1	25,000	Police car pound and parking	G	City record storage or warehouse sub-station (elec., water, sewerage)	P
1A	25,000	Parking lot	G	Parking garage; or incorporate with adjacent redevelopment	F
2	21,000	Extension of frontage road	G	Parcels 2 and 3, foundations for major air-rights building spanning I-84	G
3	22,400	Parking, extension of frontage road			
4	16,700	Expansion of Church Street Municipal Garage	G	Same	
5					
6	1,920	Pave or landscape	G	Incorporate in redevelopment of adjacent lands	G
7					
8					
9	2,320	Use to widen street	G	Same	

[1] One Acre = 43,560 Square Feet.
[2] Probability: G = Good, F = Fair, P = Poor.
SOURCE: Wilbur Smith and Associates.

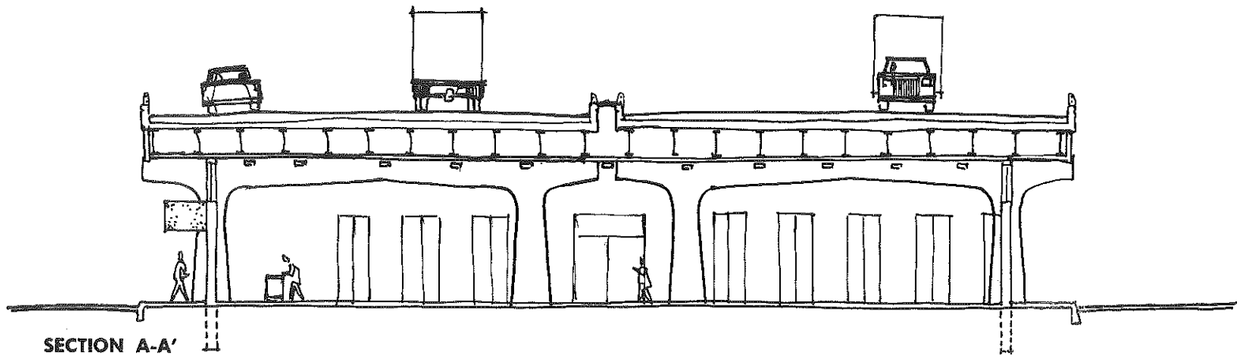
Highway Corridor West of Market Street — Another element of the suggested joint-use development plan for this Sector would be for expansion of the Church Street Municipal Garage from its present 1,050 spaces to 2,000. A principal function of the garage would be to serve the proposed Civic Center and convention facilities to the south.

Parcels 4, 5 could be used for expansion and access to the municipal garage. The City of Hartford would like to use these parcels for that purpose and no other use appeared to be as desirable for land in this location.

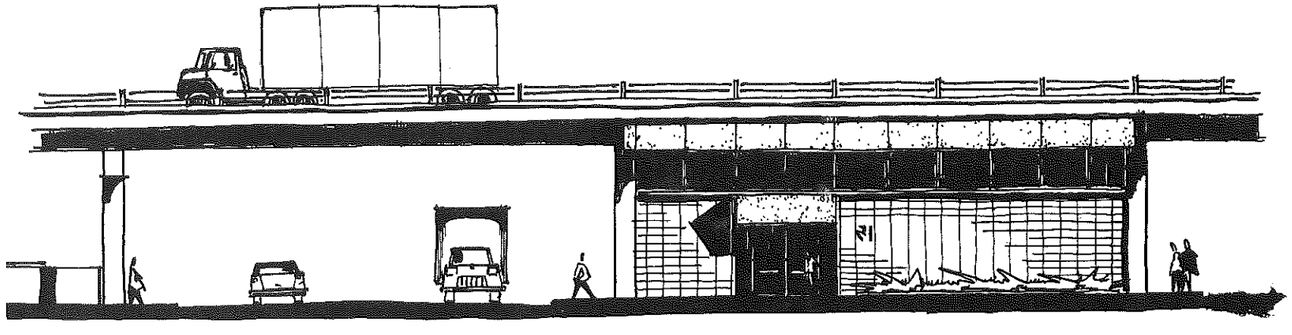
Parcels 6, 7, and 9, all on the north side of I-84 as shown in Figure 40, are tiny remnants of excess land which should be consolidated with adjoining properties when they are purchased for redevelopment; the parcels are not large enough to warrant any interim use other than paving or landscaping.

South Frontage Road. An integral part of the Joint-Uses plan in the Downtown Sector is the extension of the south frontage road, Chapel Street South, from Trumbull to Main Street. The extension would provide a continuous street from High Street to Columbus Boulevard. This portion of the joint-use plan reinforces the goals of the central business district plan developed by the Commission on the City Plan, in that it emphasizes an increased traffic-carrying role for Trumbull Street in the future and allows de-emphasis of that role for Main Street. Thus, the opportunity exists to decrease the amount of vehicular traffic on Main Street and thereby encourage greater pedestrian movement along it.

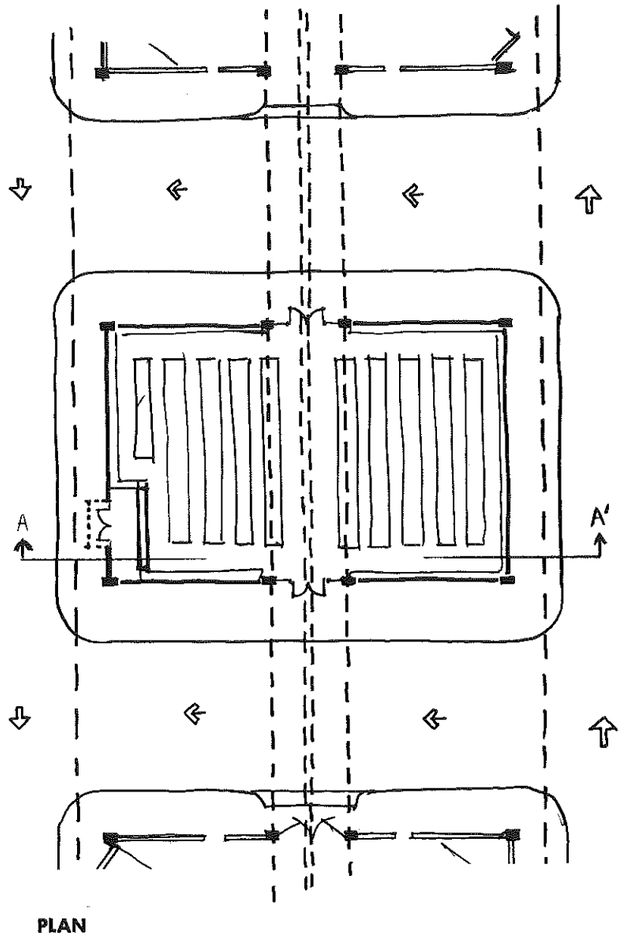
Parcel 8, a long narrow strip of land on Chapel Street South, west of Ann Street, might best be used for widening the street. The small size of the parcel precludes many practical alternative uses and would provide added capacity to the frontage road.



SECTION A-A'



ELEVATION



PLAN

FIGURE 48: DOWNTOWN JOINT-USE DEVELOPMENT

The plan, elevation, and section to the right illustrate possible use of an area under the freeway, such as Parcel 1, for storage, a power sub-station, or other use requiring infreqent attention.

OTHER JOINT-USE POSSIBILITIES

Besides the uses suggested above, specifically oriented toward particular parcels of land, there are overall development potentials that might be considered for utilization of I-84 air rights in the central business district. Over the longer range, the research and development efforts currently underway to find new forms of downtown transportation for large numbers of people on foot can be expected to result in the introduction of a practical form of "people mover" for quick and effortless travel over relatively short distances. An essential condition of all of the many systems under study or development is the requirement for an exclusive right-of-way, grade separated from all other forms of transport.

Any of the probable forms will need open access routes throughout their service areas, and these will likely be developed at either the second-story level or underground. The alignment of I-84 might be suitable for a segment of a new people-mover system that would traverse the downtown area and serve employment concentrations in the central business district, the State Capitol, and Asylum Hill areas through a common center or hub in the vicinity of Union Station. A structure cantilevered over the highway, at about the second-story level of adjacent buildings, might be an appropriate long-range joint-use of the freeway.

Far more speculative than the uses just suggested would be the application of modern technology to reduce vehicular air pollution in Downtown Hartford by devising a means to trap and remove gases and particulate matter released in the exhaust from internal combustion motors. One possibility might be to enclose the depressed route section of the freeway and ventilate it, passing the exhaust gases through a compressor where the products of incomplete combustion could be heated and burned to an inert state. The installation of a single, large electrically driven air compressor, such as one of the jet motors used on large commercial aircraft, properly adapted to the purpose, could effectively change the air in the tunnel section many times an hour and compress the exhausted gases sufficiently to heat them for spontaneous combustion of the hydrocarbons they contain. The final product would consist of CO_2 and water, plus heat, which might be used for heating and/or air conditioning adjacent buildings. Parking facilities adjacent to the freeway might also be enclosed and vented through the system to eliminate some of the most important contributors to downtown air pollution; the wastes from idling motors, warming up in long queues in parking lots and garages, are far richer in unburned fuel than are the exhausts from vehicles moving fast on the freeway. A sufficiently extensive ventilating system could materially reduce pollution in the downtown area, although the costs to enclose and collect the wastes might be high. While exhaust clean-up appears to be technically feasible, the suggestion has not attracted a great deal of interest, possibly because only a fraction of the pollutants produced in downtown Hartford could be processed in such a scheme, and also because of efforts in the vehicle manufacturing industry to develop motors which generate only small amounts of noxious wastes.

SUMMARY OF JOINT-USE POSSIBILITIES: DOWNTOWN SECTOR

Most of the uses suggested for the Downtown Sector are in the public interest and will likely be carried out. Table 16 lists the short-term and long-term uses that might logically occupy the different plots of land available for joint-use in the I-84 right-of-way. Uses that would incorporate other portions of the highway and non-highway lands are indicated. Uses are rated, subjectively, as having "good", "fair", or "poor" chances of being realized within the foreseeable future.

Principal Uses — The most significant of the suggested joint-uses would be the large structure on air-rights over the freeway in the block between Main and Trumbull Streets. The unique advantages of the site should make it a candidate for development within the next few years. I-84 provides a facility to continue the dynamic development of Hartford and the Capitol Region. It represents but a segment of a larger regional freeway system and, because the system continues to grow and change, the demands on this portion of it can be expected to change too. Its presence, in fact, is a strong element in fostering change in the corridor it traverses. Nowhere is it more effective in this regard than in its impact on Downtown Hartford, the central core of the Capitol Region. This fact is reflected in the choice of joint-uses that have been recommended for further consideration by responsible authorities and individuals who have the power to see that they are realized.

Development of space over the freeway would add to the amount of highway acreage under consideration for joint-uses. Because provision of this extra area would be an expensive undertaking, there is presently no thought that public bodies might want to justify this means of acquiring new building space in Downtown Hartford, but economic studies have found that private capital might soon be able to bear the expense of a platform over the highway upon which to erect a major building.

Other Uses — The police car pound presently exists (Parcel 1) and alternative uses for the parcel are not particularly compelling, at least, not for the time being. Use of land for service road extensions (Parcels 2, 3, 7, and 8) will depend on a policy decision whether or not to develop such extensions. The possibility of public use of the freeway rights-of-way (probably at the second floor level of abutting developments) for a "people-mover" system of public transport or a pedestrian plaza spanning or cantilevered partly over the freeway are valid considerations for the future.

THE UNION STATION AREA: SECTOR 2

Sector 2 contains the stretch of I-84 from High Street on the east to Broad Street on the west. Adjacent blocks on the north to Walnut, Edwards, and Cogswell Streets are within the immediate influence area of the freeway, as is the area to the south bounded by the Penn Central tracks from Broad to Asylum Street. Figures 49 and 50 show the outline of Sector 2 imposed on an aerial photo and a land-use map.

Twenty-four acres of land in the Sector are occupied by the freeway right-of-way. Twenty-four parcels listed in Table 17, with a gross area of 9.8 acres are available for possible joint-use development. About 6.5 acres can be made available as sites for private development if land-locked areas can be made accessible. Two of the parcels are major open-land resources available for immediate development. Much of the remaining area is presently vacant or used informally for parking.

Except for the freeway, land uses in this sector have experienced little enhancement for many years; there has been substantial deterioration, however, and large portions of the Sector now await rejuvenation and possible changes in function. Population and employment in the area remained at essentially constant levels throughout the decade of the 1960's.

FIGURE 49: UNION STATION SECTOR BOUNDARY

Section 2 contains the stretch of I-84 from High Street on the east to Broad on the west. The boundaries of the area, as well as some of its major occupants, are superimposed on the aerial photo below.

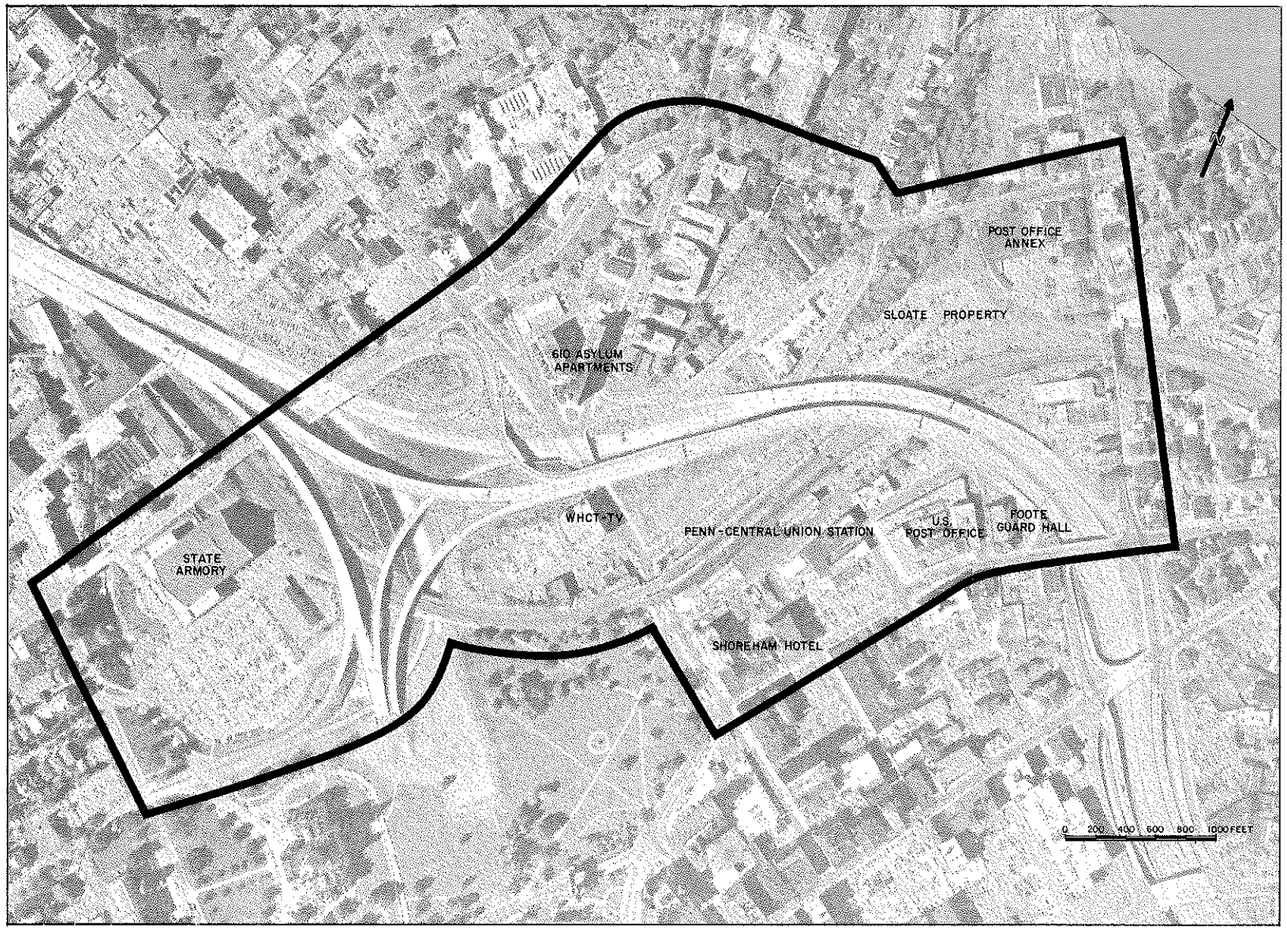
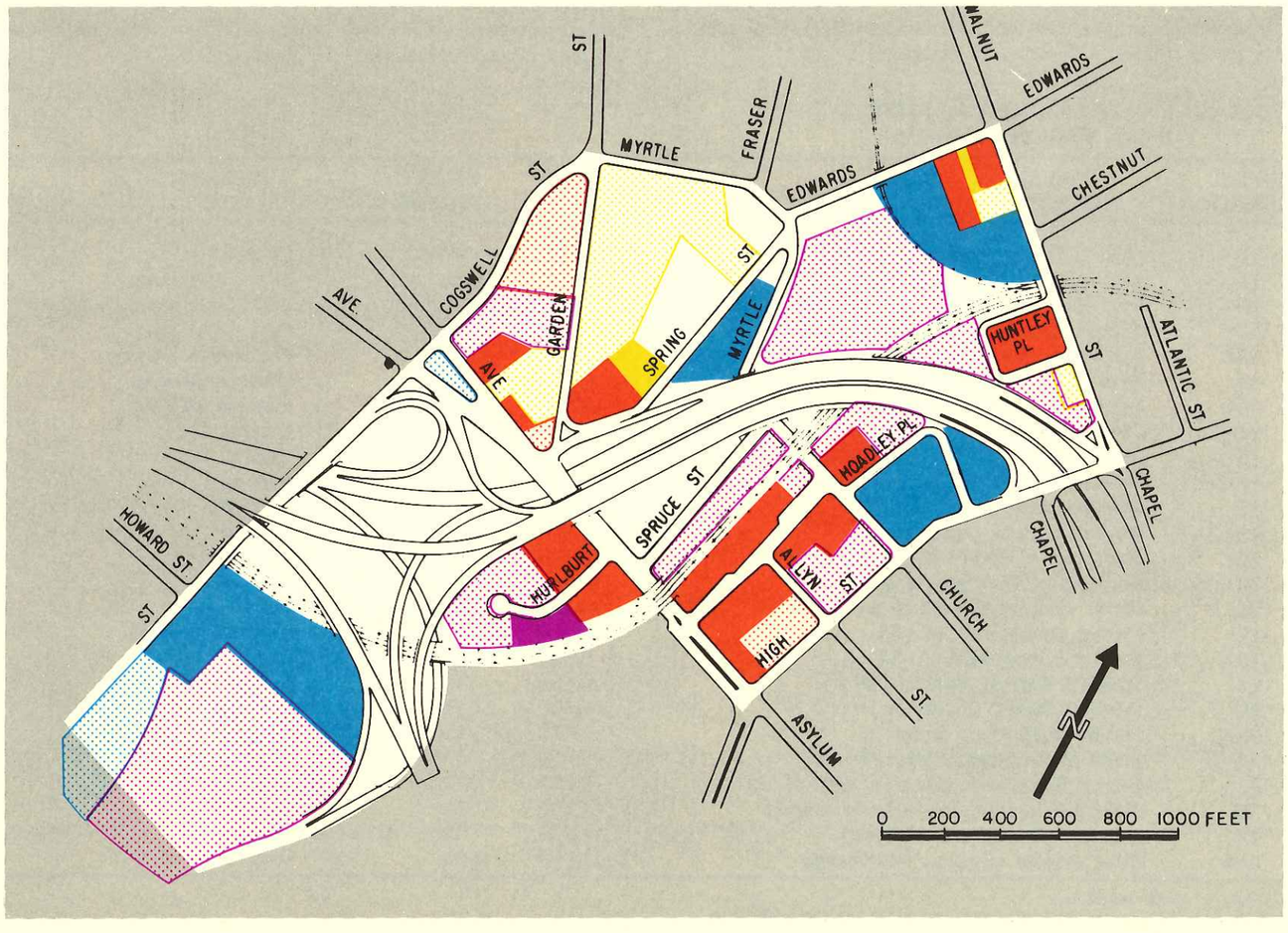


FIGURE 50: UNION STATION SECTOR LAND USE

Except for the freeway, land uses in this sector have experienced little enhancement for many years; there has been substantial deterioration, however, and large portions of the area now await rejuvenation and possible changes in function.



High Street, with Asylum Street (which branches into Asylum and Farmington Avenues), represent the principal arterial streets serving the Sector. Most of the remaining streets provide circulation within the Sector and access to I-84. The Union Station and intercity bus depots provide contact with public transportation by rail and street, and a relatively small amount of surface parking space is available to motorists. The Sector serves more as a corridor for motorists passing through the area than as an attractor of trips.

North of the freeway, the block of property bounded by Walnut, Edwards, and Myrtle Streets and the freeway itself, is occupied by tracks of the Penn Central railroad, including the Bloomfield spur line, and by very little else. A post office warehouse, some small retail establishments, a few units of housing, casual off-street parking, and several acres of vacant land account for remaining portions of the block. Other areas north of the freeway and west of Myrtle Street are predominantly residential (mostly apartment houses, some of them quite large).

A wide range of land uses occupies the blocks south of I-84, including the Central Post Office at the corner of Church and High, the Union Station, some recently-built hotel facilities, Footguard Hall, and a number of small office and retail or service establishments. All these uses are interspersed with car parks on vacant lots.

Long-range development potentials in the area appear to be excellent. The Union Station itself is situated almost precisely at the midpoint of an expanded central city area that contains three of the major concentrations of office employment in the City of Hartford. The three centers include the downtown retail and commercial core, the State Capitol and its associated office complex, and a major portion of the insurance industry housed in the Asylum Hill area.

Over the long term, as the populations tributary to Downtown Hartford increase and greater intensities of central business district land uses are generated, the Union Station area will likely experience demands for new sites upon which to locate activities that can exploit the Sector's unique accessibility.

OPPORTUNITIES FOR JOINT DEVELOPMENT

Table 18 lists five classes of problems commonly encountered in the urban environment and identifies specific conditions in the Union Station Area which relate to them. Listed opposite the problems are "opportunities" suggested for further investigation:

Land Use — Much of the Union Station Area consists of deteriorating structures and vacant or cleared land. The exterior of Union Station is sadly in need of repair and sprucing up.

A portion of the area north of I-84 lies within an Urban Renewal area and during the 1970's will likely undergo redevelopment and upgrading. Some of the area south of the freeway might be incorporated into public or private redevelopment undertakings, although the area is not currently within an Urban Renewal area. Both the City Government and private businessmen have shown interest in developing a multi-mode Transportation Center which would incorporate the Union Station and other nearby lands, including portions of the I-84 properties.

Aesthetics — The area is deteriorated and shabby in appearance through much of the Sector.

Some of the land areas under and around the freeway are being landscaped to improve its appearance and soften the contrast of light and shadow under highway viaduct sections. Large-scale renewal of the Union Station or other tracts would encourage further improvement of neighboring properties and would have the potential for transforming the area into an attractive complement to adjacent Bushnell Park.

Social and Environmental — The Sector contains little residential use and is dominated by transportation related uses: the rail tracks and rights-of-way, the railroad station and bus depots, streets, parking lots, hotels, and truck loading facilities. Office and retail uses are few and small-scale, except for the Post Office building.

Upgrading of the area is not much in evidence, but the long-range likelihood appears to be for major revitalization of the entire Sector as the metropolitan area grows in population and central-city uses continue to intensify. The likely increase in office space demands in the downtown area will naturally tend to attract attention to this area as the most accessible under-utilized space in the central area.

Traffic — The freeway and arterial streets and interchange ramps that traverse and provide access to the Union Station Area are heavily-trafficked during several hours of each day. Congestion and traffic delay occurs at the Asylum-Farmington-Spring-Garden traffic signal complex and at other signalized intersections in the Sector.

Traffic engineering improvements and relatively minor reconstruction of bottleneck areas would improve traffic operations in the Sector. More extensive use of work-hour scheduling at the insurance company offices on Asylum Hill may help spread peak-hour traffic loadings. Development of a practical alternative to driving may eventually prove feasible for large numbers of centrally-oriented trip makers if an efficient express transit service could be initiated to serve the downtown area; introduction of a practical "people mover" system to distribute "pedestrians" to and from a transportation "interface" area in the vicinity of Union Station would greatly enhance the potentials for an alternative to the private automobile for downtown travel.

Parking — About 1,400 parking spaces on open lots are currently in use in the Sector. Much of this use is casual, unorganized and inefficient. Parking uses are likely to continue as a major function in the area, even as major rejuvenation occurs, and would augment a successful Transportation Center with offices, apartments, and other new uses.

Development of attractive and efficient parking structures will become necessary as the area generates higher intensities of use and land values appreciate.

TABLE 17: EXCESS RIGHT-OF-WAY PARCELS UNION STATION SECTOR

PARCEL NUMBER	PARCEL DESCRIPTION	AREA IN SQ. FT.[1]	STREET ACCESS	PRESENT USE
10	High to Hoadley on Walnut	5,300	Yes	Unused
11	East of Huntley, north of I-84	5,825	Yes	Informal Parking
12	High Street exit ramp, south of I-84	2,850	Yes	**Sold;** Governor's Footguard
13	South of Huntley, north of I-84	11,030	Yes	Post office parking
13A	Landlocked parcel south of parcel 13	4,230	No	Post office parking
14	West of Hoadley Place, south of I-84	2,520	Yes	Informal parking
14A	Landlocked, north of parcel 14	4,080	No	Informal parking
14B	Landlocked, north of parcel 14	1,200	No	Unused
15	Landlocked, east of RR, under I-84	11,650	No	Unused
16	Church, between RR & Spruce	17,440	Yes	Parking
17	Triangle, south of parcel 16	880	Yes	Parking
18	West of Spruce, under I-84	13,650	Yes	Parking
19	Southwest of Spruce & Church, under I-84	35,700	Yes	Unused
20	Northwest corner Spruce & Asylum	58,760	Yes	Unused
21	Under viaduct adjacent to parcel 20	36,100	Yes	Unused
22	East of Spring, west of I-84	4,100	Yes	Informal Parking
23	West of Spring, west of I-84	8,050	Yes	Unused
24	Spring & Garden, west of I-84	5,600	Yes	Unused
25	Hurlburt Street, Cul-de-sac	44,800	Yes	**Sold;** parking
25A	Portion of Hurlburt Street	7,470	Yes	**Sold;** parking
26	South of Farmington, west of I-84	15,000	Yes	Unused
27	East of Broad at Farmington, west of I-84	6,000	No	Unused
28	Cloverleaf interior, Broad & Farmington	42,500	No	Unused
29	Interchange area east of Broad	82,325	Yes	Unused
29A	Other interior of above interchange	115,000	No	Unused

[1] 1 Acre = 43,560 Square Feet.
SOURCE: Connecticut Department of Highways and Wilbur Smith and Associates.

TRANSPORTATION CENTER

Perhaps the most appealing joint-use potential in the I-84 corridor is that for the development of a new Transportation Center to serve as a "hub" for an enlarged central business district. The forces of increasing urban area growth, a redeveloped and revitalized central business district, and a large underdeveloped tract of land at the centroid of central city employment, are compelling arguments for a Transportation Center.

The City of Hartford has suggested that a Transportation Center could logically be constructed around a new or rebuilt Union Station.[1] The new Center should be designed to incorporate facilities for the whole variety of transportation modes that serve the metropolitan area. Special emphasis would be placed on the long-range possibilities for a public transit service utilizing the private rail rights-of-way which radiate from the Union Station area; the access afforded by the freeway network via I-84 for intercity buses, intra-urban express buses, cars, and commercial vehicles; the eventual development of a "pedestrian" transport system within and between the employment districts and retail activities that comprise the extended central business district; and an interface with air transportation via airport limousines and taxis, as well as helicopter services when market conditions warrant.

TABLE 18: OPPORTUNITIES FOR JOINT DEVELOPMENT UNION STATION SECTOR

PROBLEM	OPPORTUNITY
Land Use	
Railroad Station obsolete, inefficient. Deteriorating general neighborhood.	Modern transportation center may be feasible at this site.
Large amount of vacant land.	Urban renewal action possible. Vacant land can be readily assembled for development; state owned land available.
Aesthetics	
Shabby appearance of much of this area.	Redevelopment and rehabilitation needed.
Complex interchange ramps.	Can be softened by landscaping; air-rights construction. Could partially overcome neutral appearance of highway.
Social and Environmental	
Transportation facilities dominate the area (rail, highway, trucking).	Introduce new economic activities into area.
Traffic	
Heavy peak hour use of Asylum Street ramps.	Development of effective public transit system; use of ramp metering; stagger work hours for insurance industry.
Parking	
Lack of order or organization of existing parking facilities.	Consolidate parking; construct parking garages.

SOURCE: Wilbur Smith and Associates.

Parcels 19, 20 and 21 lie south of Church Street and west of Spruce; Parcels 19 and 21 are beneath the freeway. They are all presently unused, with a combined surface area of nearly three acres. These areas, in conjunction with the privately owned block containing the Union Station, would form the nucleus of the proposed Transportation Center.

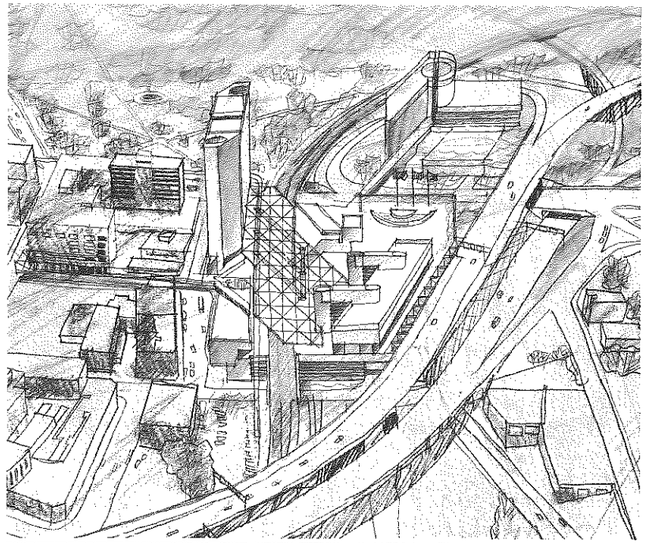
The form and dimensions that a Transportation Center might take, and the variety of uses that might reasonably be incorporated in it, are bounded only by the imagination of its developers, the time frame within which to build, and the financial resources available. The latter element is crucial to any feasible development plan, and a practical plan will depend on the full and thoughtful cooperation of public and private resources and incentives. Figures 51 and 52 indicate some of the alternatives that have been considered in attempting to visualize a Transportation Center on the Union Station site.

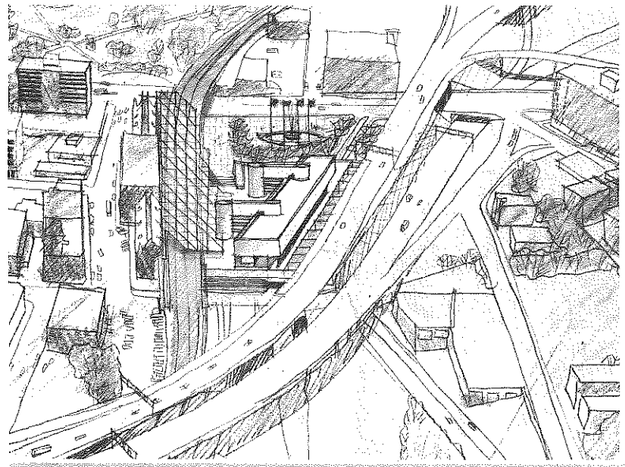
Environmental Justification — Although development pressure from the expanding employment centers (the central business district, Capitol, and insurance areas) has yet to reach the Union Station area, and may be some time in doing so, it can be expected to become increasingly important as a suitable location for general service facilities with markets in all three functional centers. Already marked as an area in transition, the advent of I-84 did not alter the essential character or development prospects of the Union Station sector but merely moved up the timetable by providing greatly improved highway accessibility in addition to its other transportation advantages.

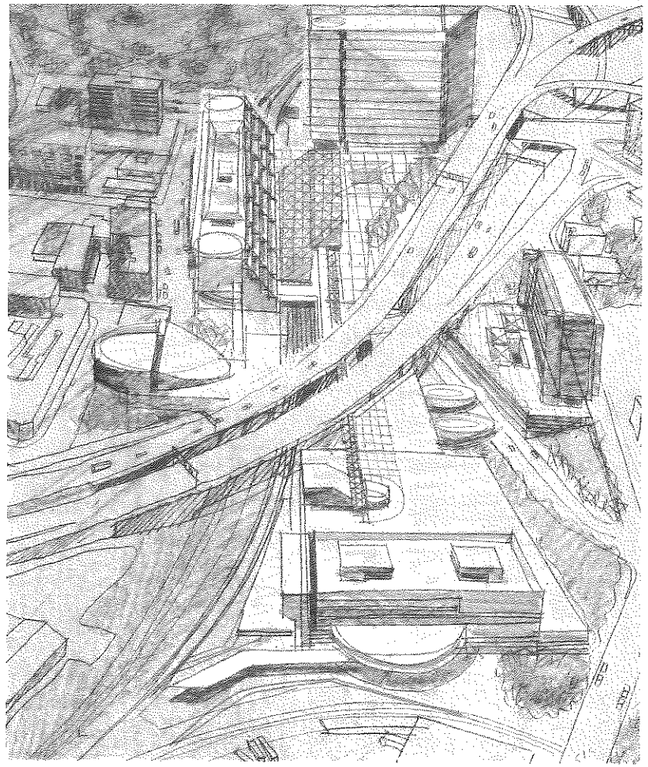
Of more immediate influence is the proposed Civic Center located two blocks east which, through its meeting and convention schedule, will tend to generate support for additional nearby hotel rooms, restaurants and entertainment facilities. Such uses can logically be accommodated within this general area while remaining readily accessible to the existing major employment and activity centers.

Although not directly a development impetus, the creation of an intermodal transportation center in this area, in conjunction with its other locational advantages, would provide a landmark or locus for new development and exposure to a large volume of traffic, particularly important to new commercial activities.

[1] Hartford Development Commission, **Proposed Specifications and Work Program for Feasibility and Design Study: Transportation Center,** Hartford, Connecticut, March 1970.







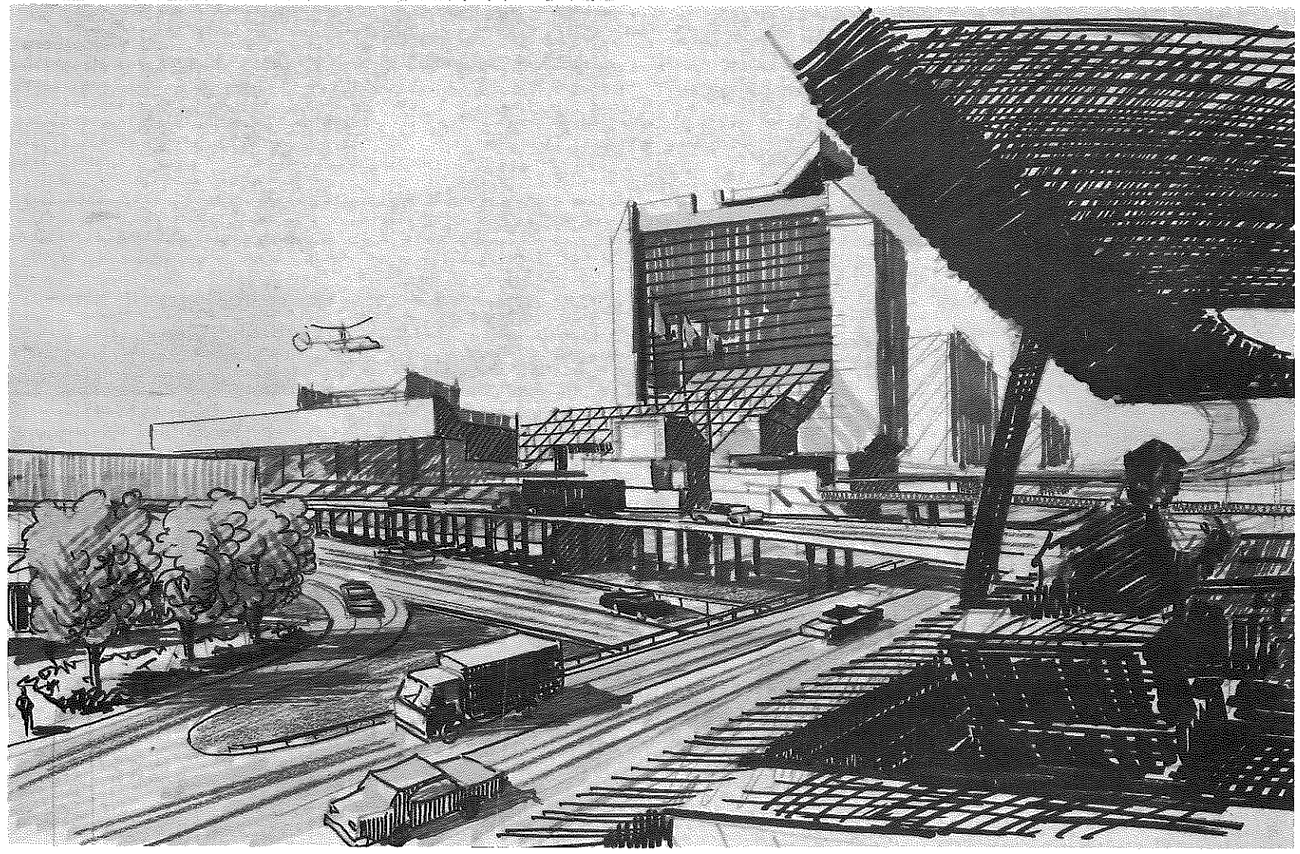


FIGURE 51: UNION STATION SECTOR TRANSPORTATION CENTER

The sketches on this page, starting counterclockwise with the rendering directly left, indicate some of the alternatives that have been considered in attempting to visualize a transportation center on the Union Station site.

While the sequence and type of uses could develop as demand arises, the scale and design concepts will be important determinants in attracting early development interest and creating an attractive environment. If it is assumed that early demand for hotel facilities will be accommodated in the vicinity of the Civic Center and that private office demand will largely be accommodated at the stronger central business district node, Constitution Plaza area and the Asylum Hill insurance area, then the residual space demands available for development early in the period would be modest. Under these circumstances attention should concentrate on enhancing the attractiveness of the area and establishing it as an activity center, particularly for pedestrian traffic. By concentrating parking and transportation facilities here to bring people to the area and establishing an attractive setting to encourage pedestrian traffic, private redevelopment forces would be encouraged to act. A public or quasi-public agency locating a major office structure here early in the development period would help establish the new character of the area. It should be a favorable location for most such agencies, due to superior access by the public.

The recommended site and development program for the Transportation Center, in addition to taking maximum advantage of the transportation network, provides for great flexibility in the pace and form of development in this area. Activities in a Transportation Center are transitional uses, in the linear sense, and are particularly suited for a location at the interface of two neighborhoods embodying vastly different and largely incompatible activities. The proposed Center would not, of itself, generate extensive new development, but as presently planned, would tend to insulate the apartment and campus-type insurance development in the Asylum Hill neighborhood from the commercial development to the east while, hopefully, serving as a catalyst or focus to hasten the redevelopment of its immediate area as opportunities occur. Since this is and will continue to be an area of mixed uses and the Transportation Center is compatible with most of them, there is no compelling choice for subsequent types or sequence of development: among the appropriate uses would be office, hotel, commercial (particularly specialty and craft shops), restaurants and entertainment facilities.

Elements of the Transportation Center — Components of a typical transportation center are shown in Figure 53. As indicated, the heart of the Transportation Center would be a terminal to provide facilities for inter-city bus and commuter express bus ticketing and transfer operations. Included in the Center would be passenger platforms and waiting areas, ticket offices, bus stations for intra-regional and inter-city express and local buses, taxi and limousine stands, car rental agencies and car storage, parcel and baggage handling facilities. A heliport for helicopter services could be an integral part of the overall Transportation Center in the long-range future, as might provisions for central business district shuttle services or "people mover" systems.

Adjoining the Transportation Center terminal itself might be an extensive plaza development including an office building, retail stores and other commercial facilities — restaurant, theatre, service shops, etc. — and a parking garage for about 500 cars. A major hotel with approximately 300 rooms might be constructed as part of the total Center development.[2]

Longitudinal and transverse cross-sections of such a Transportation Center development proposal are shown in Figure 53.

Transportation Services at the Transportation Center — It is suggested that the Penn Central railroad tracks could be reconstructed on essentially the same alignment and elevation as present. This would include a new, longer span and an aesthetically pleasing railroad overpass across Asylum Street. Tracks of the Bloomfield Line might also be extended on an elevated structure to the Transportation Center platform. Thus, long-distance rail service and local commuter service could be provided from at least three important quadrants of the Hartford region: the northwest via the Bloomfield line, the northeast and the southwest via the main Penn Central tracks.

Inter-city and intra-city bus terminal facilities would be provided at the ground level of the Transportation Center. Buses would circulate clockwise around the Transportation Center on Spruce and Union Streets with slight modifications in street alignment. This street access would also facilitate express bus movement to and from Interstate 84.

In the long-range future, provision should be made for some form of "people mover" public transit service for moving "pedestrians" to and from local destinations within greater Downtown Hartford. The sketch on Figure 54 indicates a monorail concept for this function. This is not a recommendation for a specific type of mechanism but, rather, is a symbolic indication of the need for some type of local passenger delivery service.

Implementing the Transportation Center — implementation of the suggested development plan for a Transportation Center in the vicinity of Hartford's Union Station will be an intricate process in which the staging of various elements must be carefully coordinated in order to assure the Center's ultimate success. The construction of a Transportation Center will undoubtedly be a long-term undertaking, and the ultimate development could span a 15-20 year period.

The catalyst for overall development in this area would be expected to be the actual Transportation Center terminal itself, a new facility replacing Union Station. Construction of the Transportation Center plaza, with office building, shops, restaurants, theaters, etc., would be a private undertaking. The parking garage associated with the plaza would also be built with private capital. The office building could be a public undertaking, however, since the site is convenient to the Capitol building and other state offices.

A land residual analysis has been prepared for an assumed set of uses at the Transportation Center location as set forth in Tables 19 and 20. The assumptions set forth in Chapter 5, regarding conditions upon which analyses for the air-rights development are based, also apply in preparing the land residual analysis for a Transportation Center.

The complex of structures and functions would generate approximately $1,400,000 for land acquisition and site improvements, based on the conditions assumed. In addition, funds presumably would be made available as part of the Transportation Center and parking garage developments which are proposed in this analysis to be non-market oriented and requiring some form of subsidy.

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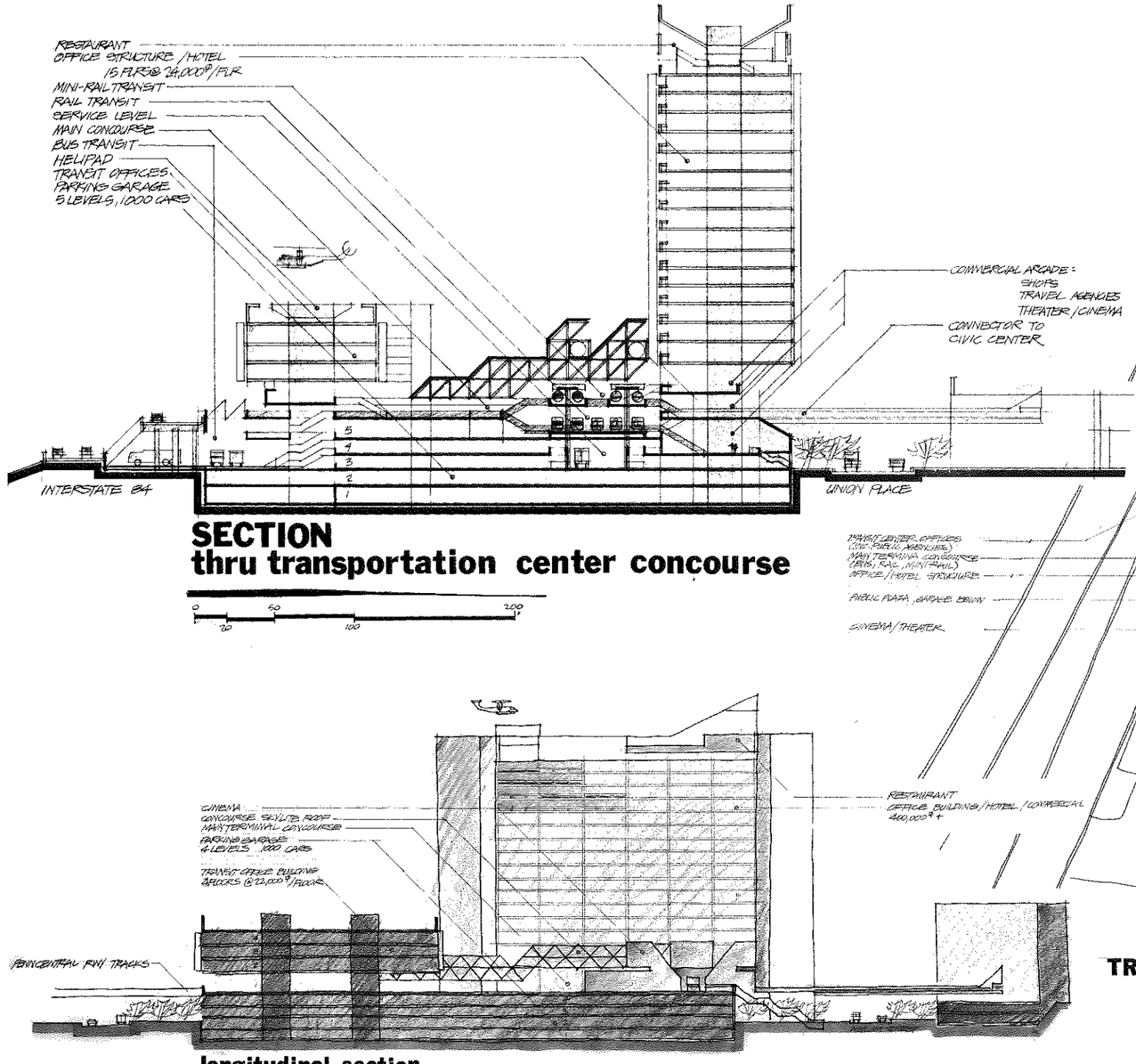
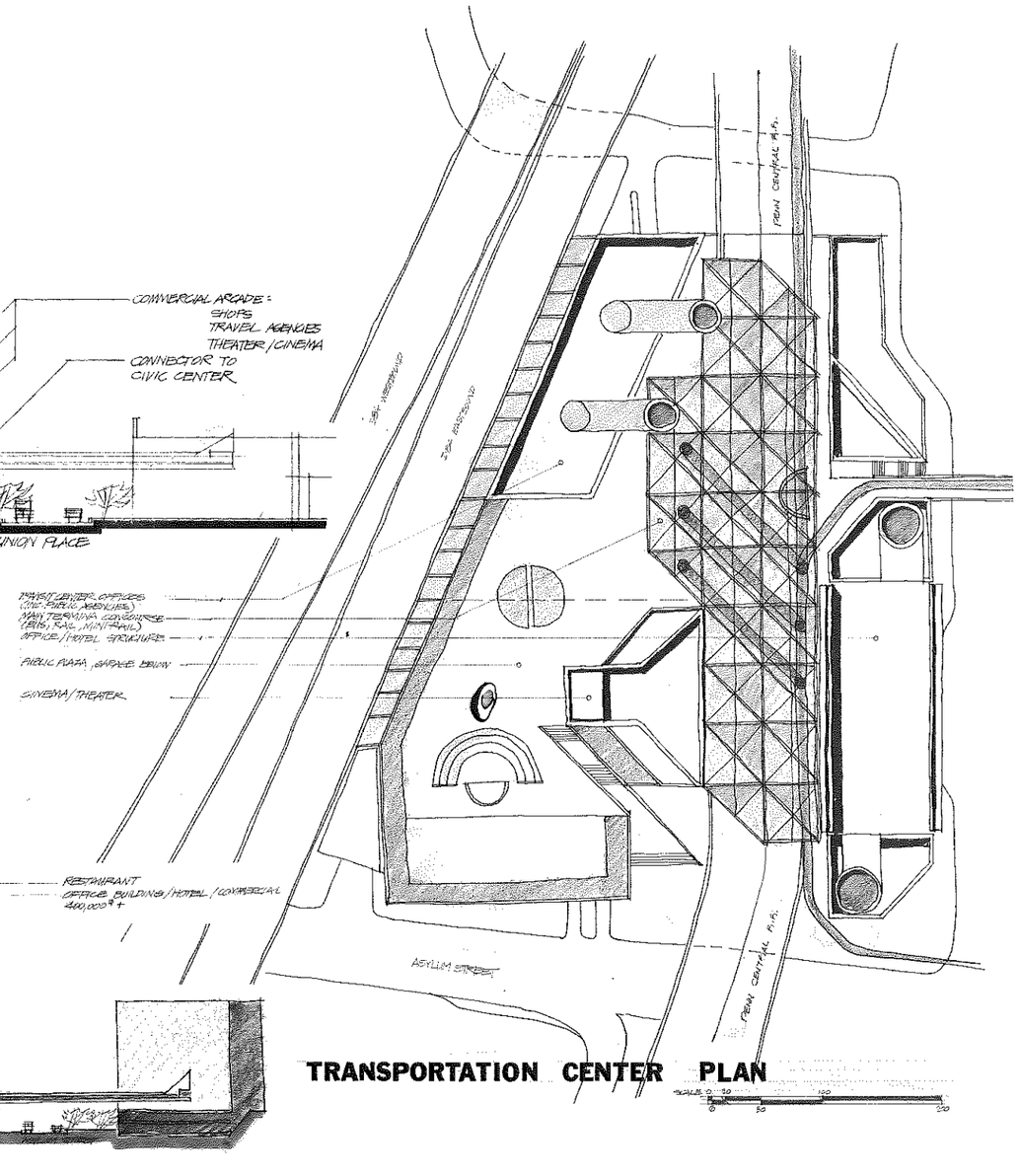
[2] The Transportation Center is strongly endorsed by the Hartford Development Commission and owners of the Union Station, and a variety of tentative studies have been made to evaluate the potentials of the site. A proposed Transportation Center Feasibility and Design Study now in preparation by the City of Hartford will include studies of possible patterns of land-use and development in the Transportation Center area. The schemes proposed for study are likely to differ in numerous respects from those described here, reflecting different assumptions (1) as to eventual use of the Bloomfield Branch rail rights-of-way and other rail lines, and (2) as to potential transportation center functions which might involve the use of the area northwest of I-84, and elsewhere in the vicinity. Various combinations of uses are likely to be investigated in searching for the most viable combination.



SECTION
thru transportation center concourse

0 50 200
20 100

longitudinal section



TRANSPORTATION CENTER PLAN

SCALE 0 50 100
0 50 200

FIGURE 52 AND 53: TRANSPORTATION CENTER — PLAN VIEW & SECTIONS

The form and dimensions that a transportation center might take, and the variety of uses that might reasonably be incorporated in it, are bounded only by the imagination of its developers, the time frame within which to build, and the financial resources available. A plan view of possible first phase development is shown on the facing page. The section through the concourse shows possible elements of such a center.

FIGURE 54: TRANSPORTATION CENTER PERSPECTIVE

In the long-range future the transportation center should make provision for some form of "people mover" public transit service for moving "pedestrians" to and from local destinations within greater downtown Hartford. The sketch indicates a monorail concept for this function. This is not a recommendation for a specific type of mechanism but, rather, is a symbolic indication of the need for some type of local passenger delivery service.

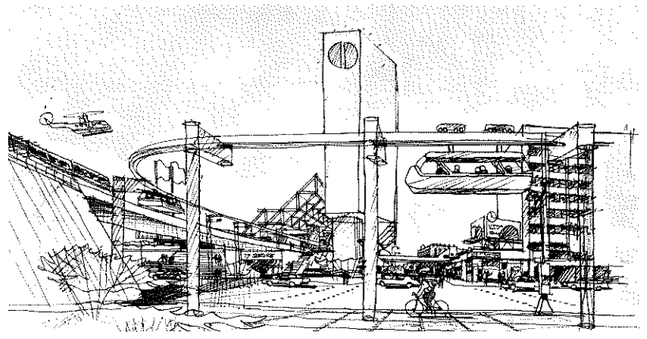


TABLE 19: BUILDING SIZES AND COSTS USED IN I-84 PRO FORMAS UNION STATION SECTOR TRANSPORTATION CENTER

COMPONENT	SIZE AND COST PER UNIT	TOTAL COST
Office Building	100,000 Square Feet @ $ 28.00	$2,800,000
Hotel	300 units @ 16,600.00	5,000,000
Retail Plaza	20,000 Square Feet @ 22.00	440,000
Parking	500 Spaces @ 4,000.00	2,000,000
Public Plaza	20,000 Square Feet @ $ 10.00	$ 200,000

SOURCE: Hammer, Greene, Siler Associates.

TABLE 20: LAND RESIDUAL ANALYSIS UNION STATION SECTOR TRANSPORTATION CENTER (IN CONSTANT 1970 DOLLARS)

	OFFICE BUILDING	HOTEL	RETAIL PLAZA	PARKING	PUBLIC PLAZA	TOTAL
Estimated Construction Cost	$2,800,000	$5,000,000	$440,000	$2,000,000	$200,000	$10,440,000
Estimated Gross Income	570,000	3,052,000	139,500	458,000	——	4,219,500
Estimated Annual Expense						
Operation, Maintenance, etcetera	116,000	2,152,000	20,000	137,000	——	2,425,000
Taxes and Insurance at 5%	140,000	250,000	22,000	100,000	——	512,000
Estimated Net Income to Real Estate	313,500	650,000	97,500	221,000	——	1,282,000
Net Income Required by Improvements Financing 70% at 9.5% for 25 years Equity 30% at 12.0% return	308,600	551,000	49,000	221,000	——	1,129,600
Income Available to Land	4,900	99,000	48,000	——	——	151,900
TOTAL AVAILABLE FOR SITE CAPITALIZED AT 9.5 PER CENT	$ 51,600	$1.042,100	$505,300	——	($200,000)	$ 1,400,000

SOURCE: Hammer, Greene, Siler Associates.

OTHER JOINT-USE POTENTIALS

Table 21 lists the parcels of highway properties that have been studied for joint-use potentialities in the Union Station Area. Shown are area size, suggested uses, and likelihood that those uses will be realized. Most parcels have possibilities that relate to Transportation Center development, since that use would dominate activity in the Sector.

Below are listed some of the needs and joint uses suggested for Sector 2. Figure 40 shows the location of the parcels to which the activities could be attracted.

Parcels 10, 11, 13 and 13A are excess lands or freeway side-lot areas that border I-84 on the north, in a block bounded by Walnut Street, the mainline Penn Central tracks and I-84. The block is slated for redevelopment as part of the Ann-High Urban Renewal program and these parcels should logically be incorporated into redevelopment plans. Because of its proximity to the central business district and the proposed Transportation Center, a non-residential function might be considered (office tower) or, since other central business district locations may compete effectively for all the needed new office space, other uses such as a hotel or dormitory, might be found practical. Any use on the site should provide parking to accommodate the new activity; the lower levels of any structure might also be devoted to off-street parking to serve central business district functions, or to complement uses developed on the privately owned Sloate properties just across the Penn Central tracks.

Parcel 12 has been sold to the Governor's Footguard for parking at the adjacent Footguard Hall. The use seems appropriate until such time as the Hall may cease to be used for its present purpose, no change is recommended from the current use. Landscaping and screening might be incorporated to improve appearances.

Parcels 14, 14A, 14B, and 15 are situated under or immediately adjacent to the freeway. An unused spur siding of the Penn Central railroad separates Parcel 15 from the others. Development of this area should be done in close collaboration with the proposed Transportation Center. Currently, these parcels are used for informal parking or lie idle due to their land-locked condition. Long-range, the railroad siding that separates parcel 15 from the others should probably be removed, along with the old Swift Company building it once served, and the several parcels joined for development as part of the Transportation Center complex. It could serve a variety of functions such as bus storage area, taxi and rental-car waiting area, "people mover" transfer platforms, or other transportation-related activity. A portion of the area might be used for access to a major parking terminal on the north side of I-84; perhaps the parking facility would extend under the highway to incorporate parts of the area.

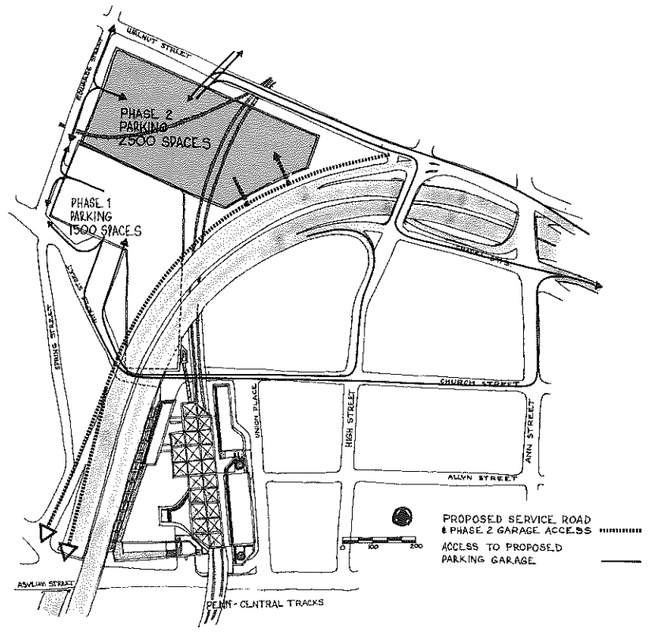
TABLE 21: SHORT-RANGE AND LONG-RANGE POTENTIALS FOR JOINT-USE DEVELOPMENT UNION STATION SECTOR

PARCEL NUMBER	AREA IN SQ. FT.[1]	LIKELY OR POSSIBLE USES			
		SHORT-RANGE	PROBABILITY[2]	LONG-RANGE	PROBABILITY[2]
10 11 13 13A	26,385	Part of Ann-High urban renewal area; develop block S. of Walnut	F	Same — use for major building site in block S. of Walnut	G
12	2,850	Sold to Footguard for parking; most likely use	F	Same	
14 14A 14B 15	19,450	Parking under Freeway (lease to private operator)	G	Develop with Transportation Center	F
16 17 18	31,970	Parking under Freeway (lease to private operator)	G	Develop with Transportation Center	F
19 20 21	130,560	Develop as nucleus of Transportation Center, with offices, hotel, shops, etc.	G	Same; expand Center as demand gains; develop interface "people mover"	F
22 23 24	17,750	Maintain as open space	G	Possible extension of adjacent residential use (high-rise)	F
25 25A	52,270	Might combine with rest of block for major new bldg. site	P	Develop component of an enlarged Transportation Center complex	F
26 27 29	63,500	Lease to Hartford Parks Dept. for open space	G	Ultimately might develop air-rights structure over highway	P
28 29A	197,325	Lease for parking under and adjacent to freeway	G	Develop as part of residential high-rise complex on air-rights	F

[1] One Acre = 43,560 Square Feet.
[2] Probability: G = Good, F = Fair, P = Poor.
SOURCE: Wilbur Smith and Associates.

FIGURE 55: TRANSPORTATION CENTER GARAGE

A possible configuration of this parking garage, and the access and egress routes associated with it, is shown in the figure to the right. It is considered that 1,500 cars at this location can be adequately accommodated by existing streets and the ramps serving I-84.



Parking Garages — Consideration of joint-uses in the Union Station area should extend to other blocks of privately owned properties. The lands that adjoin Parcels 16 and 18 are presently vacant and under consideration for private development which ought to be coordinated with other new uses in the Union Station Sector. A large off-street parking development might be incorporated here, to serve the central business district and the Transportation Center; included would be all of the area south of Walnut and east of Edwards and Myrtle Streets. Besides housing a major parking facility, other important uses might consist of a housing development (high-rise apartments or housing for the elderly are possibilities); a community college; and/or expansion area for offices of an insurance company or agency of State Government.

Possible later stage enlargement of the parking garage in this location would probably require structural and operational modifications to Interstate 84 in order to accommodate the additional traffic loads. A major increase in garage capacity might also require clearance of the northwest corner of the property to Edwards Street, west of the Penn Central tracks, and property east of the railroad tracks. Such a parking garage would, in effect, occupy the entire site shown in Figure 55. Over 4,000 parking spaces could be provided through full utilization of the site, provided that access and circulation facilities in the area were not overloaded by peak hour activity at so large a garage. Careful planning, with full participation by the Highway Department, should precede commitment to expansion of parking on this site beyond the 1,500 spaces recommended for the first stage. Costs to rebuilt ramps, retaining walls, and other construction might be considered chargeable to the garage expansion project, in the event that such reconstruction would be needed to meet access requirements for the garage. Several possible alternative uses for the area over a garage on this site have appeal. A high-rise residential building, utilizing the roof of the parking structure as the plaza level for apartments, could be developed here, if the market warrants. The site would also be suitable, from the standpoint of the surrounding community and geographic location, for a community college serving greater Hartford. Alternatively, the garage roof might be developed as a heliport, in conjunction with other Transportation Center activities.

Parcels 16, 17 and 18, west of the Penn Central tracks and north and east of Church and Myrtle Streets, are separated by an unpaved right-of-way for the extension of Spruce Street. Most of the area (¾ acre) is under the I-84 viaduct and is currently used for informal parking. Near-term, the parking uses should continue until planning for the Transportation Center is completed or some other broad-scale use of the Union Station area has been decided upon. The State will retain title, in any case, since the lands are within the highway right-of-way. Long-range, the parcels could be enlarged to include the Spruce Street right-of-way preserve, and the frontage then developed for retail shops in structures under the freeway. More likely, the area could be combined with land to the north for the development of a large parking structure or a large residential-commercial development with associated parking. Alternative uses for portions of the area might include a day-care center for working mothers; a branch library; a police sub-station; service shops (barbers, cleaners, etc.); food stores; or other activities oriented to serve nearby residents of apartments and the YWCA.

The construction of structures at this location might be accomplished by stages over a period of 12 to 15 years, with the possibility of an important non-parking use taking place on the super-structure of the parking facility itself. The first stage might call for a 1,500-space parking garage, west of the Penn Central tracks and south of the Bloomfield Line tracks. This development could make use of five to six acres of land and might consist of three levels of parking. The parking garage would have direct access to Walnut, Edwards, and Church Streets and would be readily accessible from existing ramps serving Interstate 84. A possible configuration of this parking garage, and the access and egress routes associated with it, is shown in Figure 55. It is considered that 1,500 cars at this location can be adequately accommodated by existing streets and the ramps serving I-84.

The medium for development of a parking facility could be a public or a combination public and private venture. A garage of 1,500 parking spaces, as a single purpose use, would be a suitable public project. Any superstructure use, such as housing or offices or a use in the public sector such as a vocational training school or community college, might be a combined public and private project.

HIGH-RISE APARTMENTS

It is suggested that a major new residential area be developed south of Asylum Street, directly across from the proposed Transportation Center. Consideration should be given to construction of about 400 units of medium-to-high income housing in this vicinity. Associated developments could include a parking deck with space for approximately 1,000 cars and a plaza level extending over the entire development including a portion of the Penn Central railroad tracks adjoining Bushnell Park. The parking deck could serve not only the residential development but the government center to the south. Principal access to the area would be from Broad Street via the deck structure with some minor access to Asylum Street.

Parcels 25, 29, and 29A, along with the land currently occupied by a structure housing Channel 18 broadcasting facilities, a wholesale firm and a restaurant, would form the site for the development. The development would also utilize air-rights over a portion of the interchange between Interstate Highways 84 and 484 (Parcels 29 and 29A). It would also use some air-rights over the Penn Central railroad tracks adjoining Bushnell Park. A possible scheme for this type of development is shown in Figure 56.

An alternative use for these parcels might be off-street parking to serve both the Transportation Center development north of Asylum Street, and the office activities on Asylum Hill. Maintenance areas, truck and taxi garages, loading docks, and similar service uses might be provided beneath the freeway.

Parcels 22, 23, and 24 are small lots fronting on Spring Street with little potential for development unless associated with uses abutting them. Near-term, it might be logical to encourage the City Park Department to landscape and maintain them. Long-range demand might develop for some or all of the areas for expansion of adjacent residential uses.

Parcels 26, 27 and 28 occupy remnant portions of a block that incorporates entrance ramps to I-84 from Broad and Farmington Streets. These areas are presently unused and have been landscaped by the Highway Department. It is suggested that, at least for the near-term, the Department continue responsibility for improving and maintaining them. The City has proposed that a memorial to the Hartford Public High School which once occupied this block might be erected here.

An alternate that has been given some consideration would be to use the entire block for an "air-rights" building constructed over the access ramps. The project would not be economically sound at present: if the ramps could be relocated, the cost of such a structure would be reduced and might become feasible at an early date. A luxury apartment house, a residential hotel, or possibly, an insurance company office expansion might be accommodated at this location, which offers an excellent view of the State Capitol, Bushnell Park and the central business district.

FIGURE 56: UNION STATION SECTOR HIGH RISE APARTMENT COMPLEX

It is suggested that a major new residential area be developed south of Asylum Street directly across from the proposed transportation center. About 400 units of medium-to-high income housing could be accomplished on the site, which would utilize air-rights over a portion of the interchange between Interstate Highways 84 and 484.

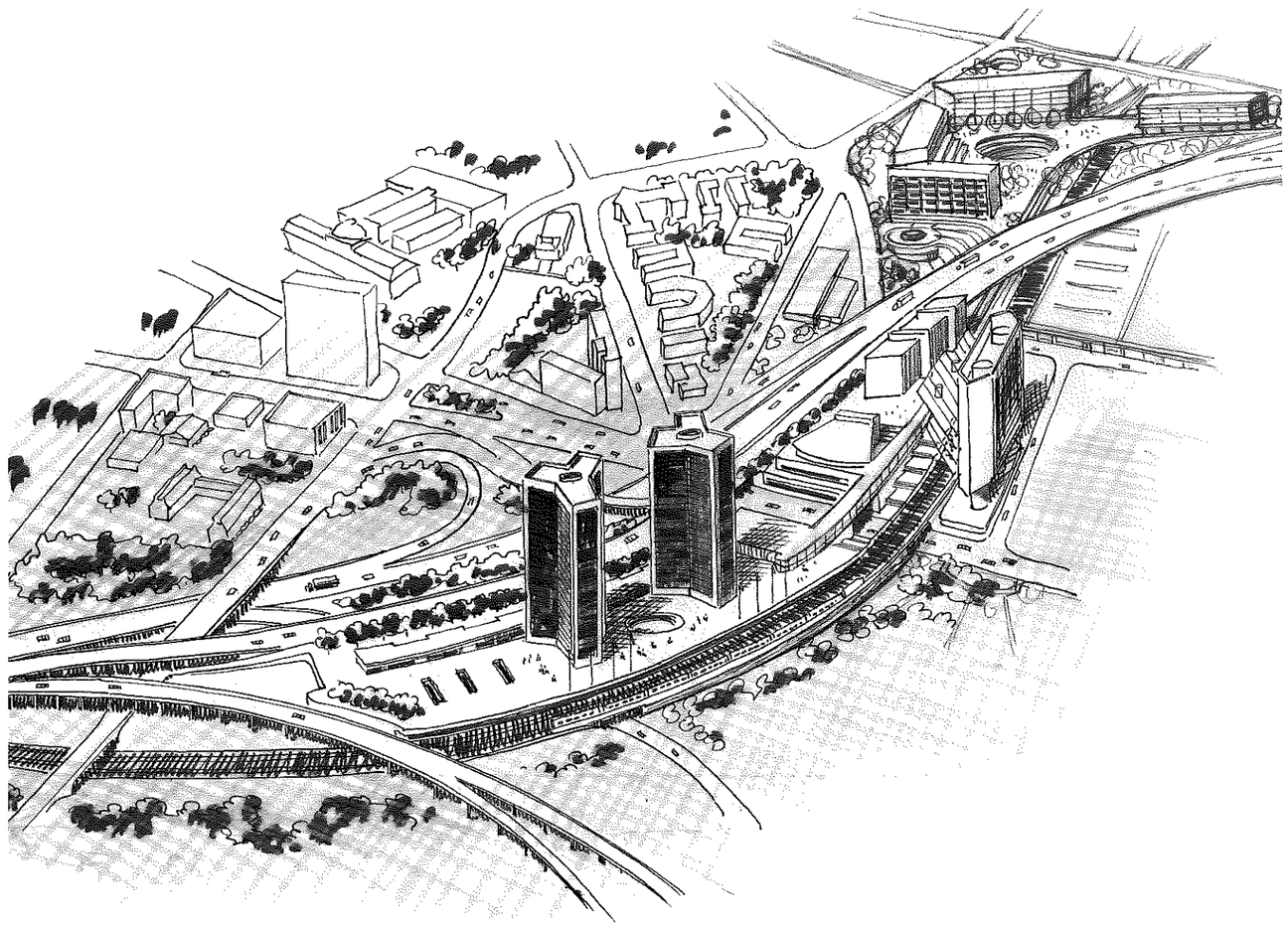
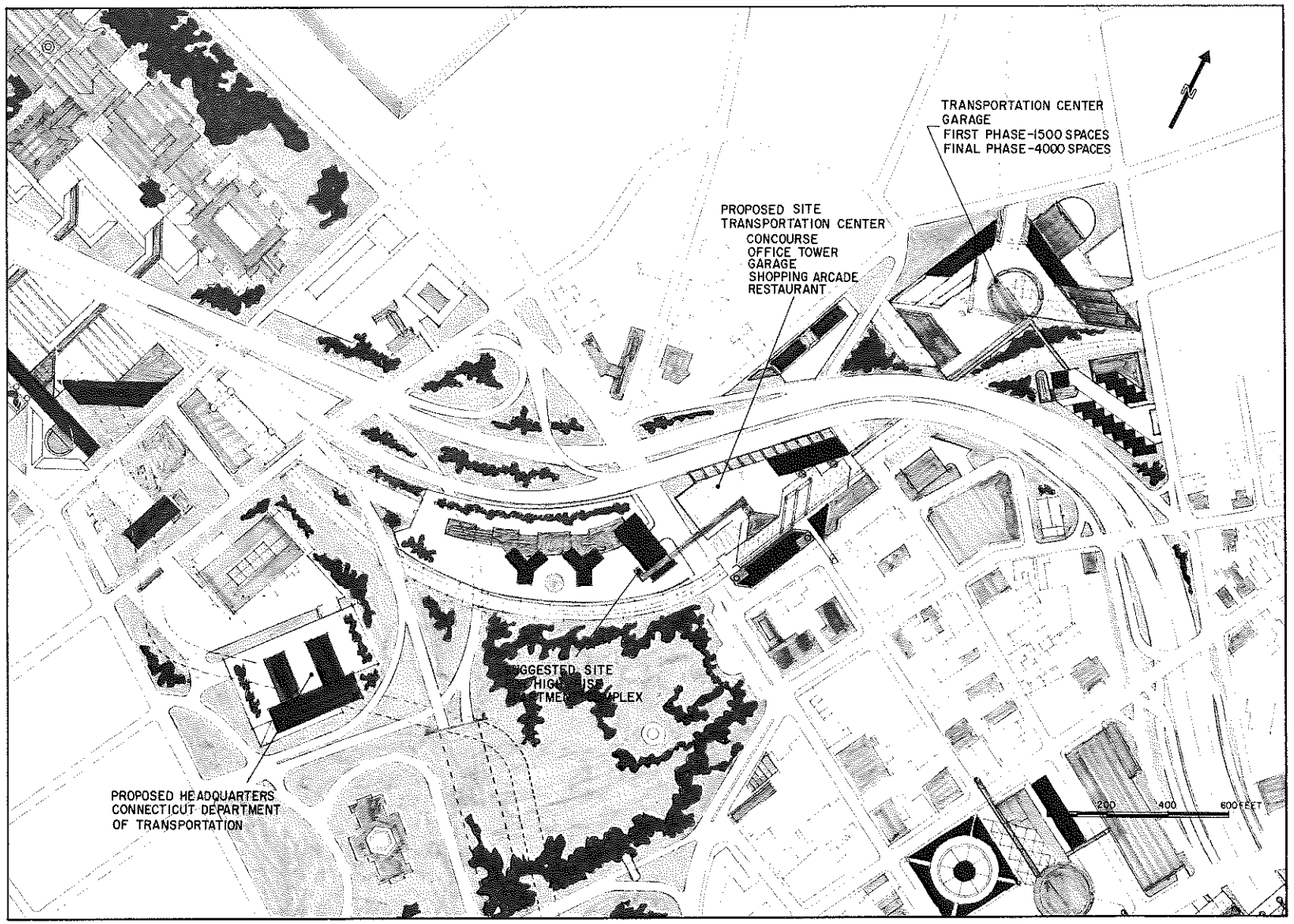


FIGURE 57: UNION STATION SECTOR JOINT USE PLAN

The long-range development plan for the sector contains three significant components, illustrated in the figure below. A large parking facility is proposed for the "Sloate Property" northwest of the Highway, a Transportation Center straddling I-84, and a major middle-to-high income residential high-rise development adjoining Bushnell Park.



The possible relocation and reconstruction of the ramps that serve I-84 in this block has been investigated in conjunction with other alternatives. As a very long-range possibility, it might someday be beneficial to relocate the Farmington Avenue on-ramp to Asylum Street, east of I-84, thereby eliminating a left-hand entrance ramp. The westbound ramp from Broad Street might also be eliminated, since its function is largely duplicated by the ramp from Capitol Avenue. However, unless other advantages are found to justify the expense of ramp removal, the cost of relocation and removal would not be warranted.

SUMMARY OF JOINT-USE POSSIBILITIES: UNION STATION SECTOR

Joint-use and corridor development proposals have been formulated for three specific sub-areas within the Union Station Sector. These are:

- The area bounded by Walnut Street on the north, by I-84 and Hoadley Place on the east, Church Street on the south, and Edwards Street on the west.
- The area surrounding Hartford's Union Station, bounded by Church Street on the north, Union Street on the east, Asylum Street on the south, and I-84 on the west.
- The I-84 — I-484 interchange area which is bounded by Asylum Street on the north, by Bushnell Park on the east, by Interstate 484 on the south, and Interstate 84 on the west.

The long-range development plan for the Union Station Sector, indicating proposals for joint-use development of the I-84 right-of-way and other parts of the corridor, is shown in Figure 57. Significant components of the corridor plan include a large parking facility, proposed for Area No. 1; a Transportation Center development with an accompanying multi-structure plaza development for Area No. 2; and a major middle-to-high residential high-rise development in Area 3 adjoining Bushnell Park.

CHAPTER NINE

THE AETNA-CAPITOL AVENUE AREA: SECTOR 3

Sector 3 incorporates the portion of I-84 between Broad Street on the east and Laurel Street on the west. Its area of influence has been defined to extend to Farmington Avenue on the north and to Capitol Avenue on the south. Most of the blocks north of the freeway are occupied by Aetna Life and Casualty Insurance Company, whose home office is located here. Figure 58 shows the boundary of this Sector, laid out on an aerial photo; Figure 59 illustrates the general pattern of land uses within the Sector's boundary.

The twelve parcels of land listed in Table 22, containing nearly fourteen acres owned by the Highway Department, have been studied for possible joint-use development in Sector 3. Four parcels range in size from about two acres to over three acres, each incorporating a portion of highway that is built on structure, with possible development areas extending under the viaduct.

The YWCA occupies about half of the block bounded by Broad, Farmington, Flower, and I-84. Plans for a new 300-room residential structure have been prepared for expansion of the "Y" on a vacant portion of its property. Commercial uses and off-street parking occupy the remainder of the block. The "superblock" of land on Farmington Avenue between Flower and Sigourney Streets houses the Aetna offices, while the remaining blocks along Farmington to Laurel Street are principally devoted to residential uses, mostly apartments, and off-street parking lots for Aetna employees.

Areas in the block fronting Capitol Avenue, south of the freeway between Sigourney and Flower Streets, contain a large concentration of three-and four-story loft factory buildings that are vacant or used for low-intensity warehousing and light industry. The block bounded by Capitol Avenue, Flower, Howard, and Broad Streets is partially occupied by a State Office building, while one of the City's principal newspaper offices, the Hartford Courant, occupies land between I-84 and Howard Street.

Access to I-84 is gained by way of the Sigourney Street interchange (to and from the east), which is presently operating near capacity at brief periods of the morning and evening, and at Broad and Asylum Streets. The ramp from Asylum Street toward the east is saturated during the afternoon peak hour. Off-street parking uses occupy lands under and adjacent to the freeway and Penn Central tracks throughout the Sector.

Activities on land in this Sector north of the freeway are well established for the long term, with the exception of residential structures in the block between Sigourney and Imlay Streets, where housing is rapidly being replaced by parking for Aetna's workers.

South of the freeway, long-range development will likely see a transition from the out-of-date loft buildings presently on the site to functions more in keeping with the apparent evolution of the area toward office use, most likely associated with government or insurance activities.

A slight population decrease (from 1,450 to 1,300) in this area during the 1960-1970 period, due to a shift from residential to office land-use, was balanced by an increase of major proportions in employment (from 8,500 to 10,100). While future population levels in this area will likely remain fairly constant, major increases in employment are to be expected.

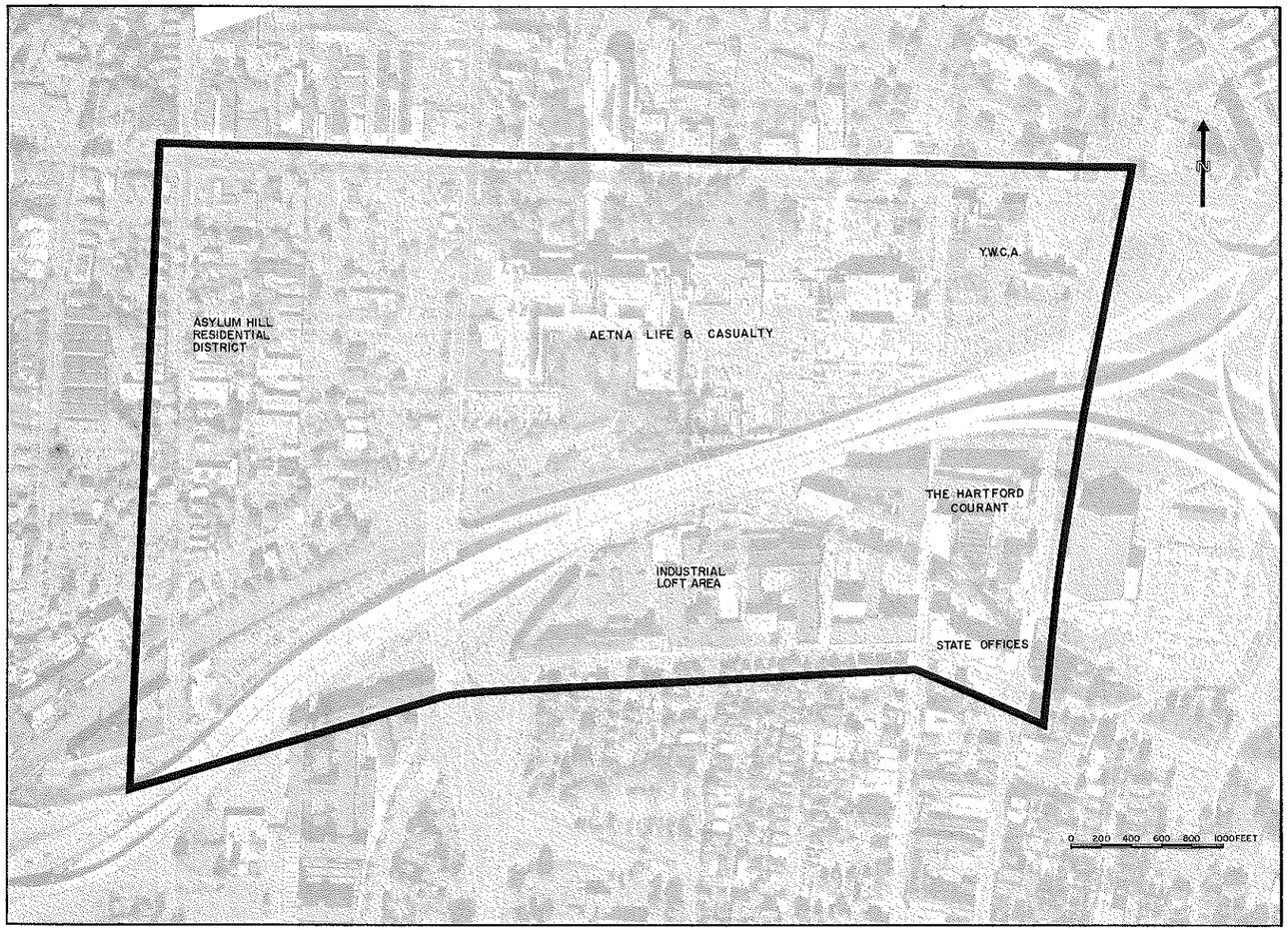
TABLE 22: EXCESS RIGHT-OF-WAY PARCELS AETNA-CAPITOL AVENUE SECTOR

PARCEL NUMBER	PARCEL DESCRIPTION	AREA IN SQ. FT.[1]	STREET ACCESS	PRESENT USE
30	Broad to Flower, under I-84	53,965	Yes	Tax Department parking
31	West of Flower, under I-84	37,500	Yes	Informal parking
32	Landlocked, west of Flower, north of I-84	10,990	No	**Sold;** Aetna
33	Landlocked, west of Flower, north of I-84		No	**Sold;** Aetna
34	On Park River conduit, under I-84	142,580	No	Aetna parking
35	North of Capitol Ave., south of I-84	18,100	Yes	Leased; Aetna
36	Under I-84, between RR & conduit	109,800	Yes	Leased; Aetna
37	Old Sigourney, under viaduct	19,750	Yes	Leased; Aetna
39	North of Capitol, west of Sigourney	23,660	Yes	**Sold;** Aetna
39A	North of Capitol, west of Sigourney		Yes	**Sold;** Aetna
40	Sigourney to Laurel, I-84 to RR	83,530	Yes	**Sold;** Aetna
40A	South of parcel 40 along Capitol		Yes	Street widening
41	Sigourney to Capitol, under I-84	112,050	Yes	Leased; Aetna
41A	South of parcel 41 along Capitol		Yes	Street widening

[1] 1 Acre = 43,560 Square Feet.
SOURCE: Connecticut Department of Highways and Wilbur Smith and Associates.

FIGURE 58: AETNA-CAPITOL AVENUE SECTOR BOUNDARY

This portion of the I-84 corridor, stretching from Broad Street on the east to Laurel Street on the west, is dominated by the Aetna Life and Casualty Insurance Company offices which occupy most of the blocks north of the freeway. The boundary of the sector is laid out on the photograph below.



OPPORTUNITIES FOR JOINT DEVELOPMENT

Typical of "problems", and the "opportunities" they represent, are the conditions listed in Table 23. These have been classed in five categories:

Land use — Portions of the Capitol Avenue frontage under study are at a transitional stage in land use. Several very large structures once used for manufacturing have been largely vacated by such activities and are only partly occupied; some of them are presently being razed. Those that remain offer opportunities for exploitation by "embryonic" industries just getting started and seeking low-cost working space. Eventually, as economic conditions warrant, the Capitol Avenue block is likely to be redeveloped to accommodate new office space for State Government and/or the insurance industry.

At the western end of the Sector, north of I-84, residential properties are giving way to car parks for Aetna and other offices in the neighborhood. Use of freeway properties for structured parking would reduce pressure for the conversion of dwelling areas to parking lots, and afford an opportunity to consolidate remaining areas for high-rise apartment space.

Another difficulty imposed by the freeway-railroad transportation facilities is the barrier that they have created between properties facing on Capitol and Farmington Avenues. This impedance would be largely overcome by constructing pedestrian passageways at intervals in the superblock that extends from Sigourney Street on the west to Flower Street on the east.

Aesthetics — The freeway is on elevated structure throughout Sector 3, much of it over the mainline tracks of the Penn Central railroad, and the viaduct section dominates the visual prospect along the back lot lines of properties facing Capitol and Farmington Avenues. Historically, developers of the adjoining properties had turned their backs on the railroad; little effort has been made to screen or improve the backyard areas, although appropriate treatment could be expected to greatly diminish the adverse appearance of highway and rail structures, while intensifying the utility of backlot areas. The construction of parking garages or other structures beneath portions of the elevated structure, or on land areas that border the transportation rights-of-way, would not only gain advantage from the development of underutilized areas but would also afford opportunities to introduce architectural accents and contrasts to relieve the strong horizontal effect of the highway viaduct.

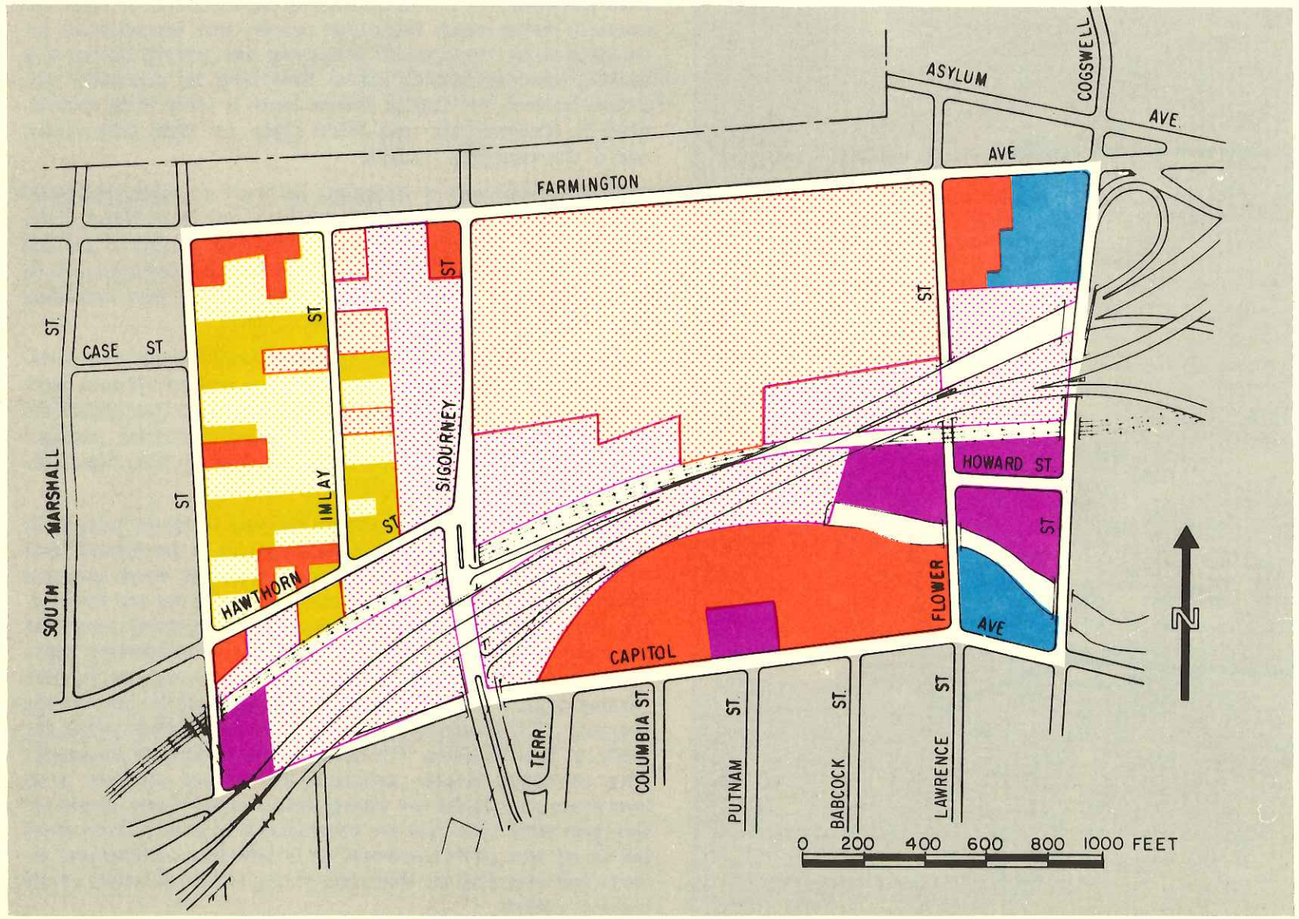


FIGURE 59: AETNA-CAPITOL AVENUE SECTOR LAND USE

The general pattern of land uses illustrated here shows the great variety of uses present in the sector. North of the highway the Aetna offices dominate, with institutional and commercial uses to the east and residential uses to the west. South of the highway state government and private offices occupy the block east of Flower Street, and three- and four-story loft buildings used for warehousing and light industry (or vacant) occupy the land between Flower and Sigourney Streets.

LEGEND

- COMMERCIAL
- OFFICE
- LOW AND MEDIUM DENSITY RESIDENTIAL
- HIGH DENSITY RESIDENTIAL
- GOVERNMENT AND INSTITUTIONAL
- MANUFACTURING AND INDUSTRIAL
- PARKING
- OPEN SPACES AND CEMETERIES

Social and Environmental — The insurance complex to the north of I-84 and the loft buildings to the south represent important resources which provide a reservoir of economic opportunity to residents of the nearby neighborhoods and to the City at large. Proposals to preserve and strengthen these activities would serve a needed and valid social purpose.

The encroachment of Aetna parking upon the residential areas to the west of Sigourney Street has created a strained social environment which might be relieved by the proposed construction of parking garages as a joint-use activity and by development of space on top of parking decks for tennis, shuffleboard, swimming, etc. The vast number of people employed in the insurance complex, together with the nearby residential population, also suggest the need and market for a health center, meeting rooms, recreation, and restaurant facilities. A plaza for some of these purposes, to accommodate both employees and local area residents, might be developed in the space bordering the expressway in the block occupied by Aetna.

TABLE 23: OPPORTUNITIES FOR JOINT DEVELOPMENT
AETNA — CAPITOL AVENUE SECTOR

PROBLEM	OPPORTUNITY
Land Use	
Vacancies and general obsolesence of structures on Capitol Avenue.	In the short range, these buildings are ideal for "embryonic" industries; long-range, redevelopment.
Highway reinforces barrier between uses on Farmington Avenue and those on Capitol Avenue.	Construct pedestrian under-overpass through highway-rail road right-of-way.
Encroachment of parking lots for office employees into residential neighborhoods.	Encourage consolidation of parking; encourage parking structures on the land for apartment construction.
Aesthetics	
The view from the road is of neglected "back yards," a common practice of properties bordering the railroad.	Create new "front yards" facing I-84 through terracing and landscaping
Long viaduct section of I-84; inopportune spacing of viaduct columns, heavy shadows.	Same as above; some construction of parking under viaduct.
Social and Environmental	
Aetna and Asylum Hill employee parking strains the adjoining residential neighborhood.	By ending the encroachment of surface parking lots, the residential neighborhood could be stabilized and improved.
Traffic	
High peak hour traffic loads on I-84 and ramps serving area.	Greater reliance on public transportation; staggered work hours.
Difficult traffic patterns imposed by westbound on-ramp from Broad Street.	Eliminate ramp (its purpose is served by Capitol Avenue ramp) and develop excess land.
Parking	
Lack of concentrated parking.	Consolidate Aetna parking close to I-84; greater restriction of on-street parking.

SOURCE: Wilbur Smith and Associates.

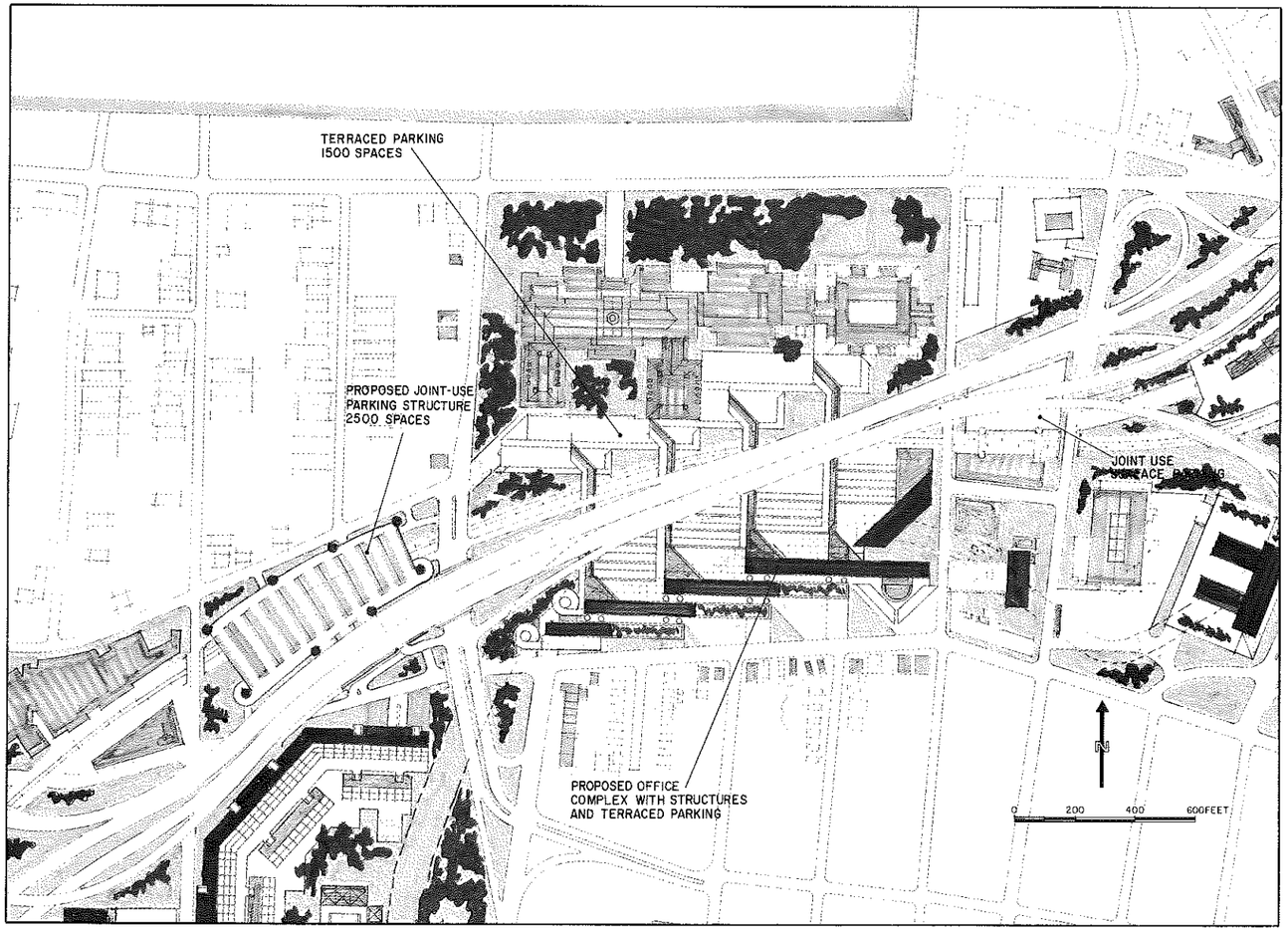
Traffic — Peak-hour traffic demands at the Sigourney Street and Asylum Avenue-Broad Street interchanges frequently reach congested levels and the additional workers to be introduced upon opening of the new building in the Aetna block will add to the daily volume of activity. Despite work-hour staggering by several large employers on Asylum Hill, arterial streets that serve the area experience congestion as large numbers of workers arrive and depart from numerous parking fields. Some immediate relief may be found by further refinement of the staggered-hours scheme to spread peak demands over longer time periods. The possibilities for innovative use of buses, especially for accommodation of persons who live in the high-density residential districts of the City of Hartford, should be seriously explored as a means of reducing the number of vehicles that enter and leave the Sector.

Traffic entering the westbound flow of I-84 at the Broad Street ramp must follow a very tortuous path to gain access from Asylum Hill parking lots. The ramp is little used because of this, and consideration could be given to closing it, thereby simplifying traffic flows and conflicts where the westbound ramp from I-484 joins I-84, opposite the entrance from Broad Street. Closing of the ramp would also make the block that it occupies more attractive as a possible site for a high-rise residential or commercial structure.

Parking — As noted, demand for parking space continues to grow as the number of employees in Sector 3 increases. Most parking is now accommodated in open lots or on the street. Better use of space would be made by concentrating parking in garages, located carefully for efficient access to the freeway and principal arterial streets. More efficient use of arterial streets would result if on-street parking were eliminated from them throughout the working day.

FIGURE 60: AETNA-CAPITOL AVENUE SECTOR JOINT USES PLAN

The development plan for the sector suggests that a "superblock" be created in the area bounded by Farmington Avenue, Flower Street, Capitol Avenue, and Sigourney Street. This superblock would feature a campus-like development with pedestrian walkways linking the Aetna complex north of the highway and a redeveloped office-parking complex south of the highway.



AETNA "SUPERBLOCK"

Joint-use proposals for Sector 3 are closely related to the continued growth of the Aetna Life and Casualty Insurance Company, the dominant land user in this portion of the corridor. Recommendations relate to the principal problem in the Sector — shortage of available land to accommodate the rapid growth of both insurance office space, with its accompanying parking space demands, and residential apartments. A possible development plan for the Sector is shown in Figure 60. The plan suggests that a "superblock" be created in the area bounded by Farmington Avenue, Flower Street, Capitol Avenue and Sigourney Street. This superblock would feature a campus-like development, including the Aetna complex on the north and a redeveloped office-parking complex on the south along Capitol Avenue.

Table 24 contains a description of each parcel in Sector 3 and lists some of the possible uses that were considered. Since the highway is bounded throughout this Sector by private uses, most applications would be in conjunction with adjacent owners.

Parcels 34, 35, 36 and 37 constitute a combined area of more than six and a half acres, most of it under the main through lanes of I-84 and the Sigourney Street interchange ramps. Included in the transportation right-of-way are the mainline tracks of the Penn Central railroad and a conduit that encloses the Park River. The freeway is on structure throughout this segment of route, elevated high to clear the railroad. The difficulties that would be experienced in attempting to develop an additional joint-use for this portion of right-of-way are illustrated in Figure 62, showing the three transport facilities that have been juxtaposed in this confined space and the constraints they impose on any additional use.

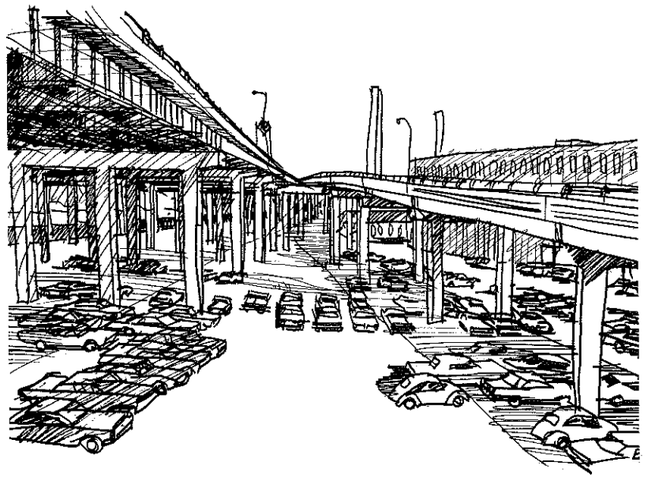
Aetna presently leases the usable portions of this property for off-street parking by employees. All parking is on open lots, including that over the cover of the Park River conduit. Parking space is in very short supply in this area, so that continuation of this use is the most likely course over the next several years.

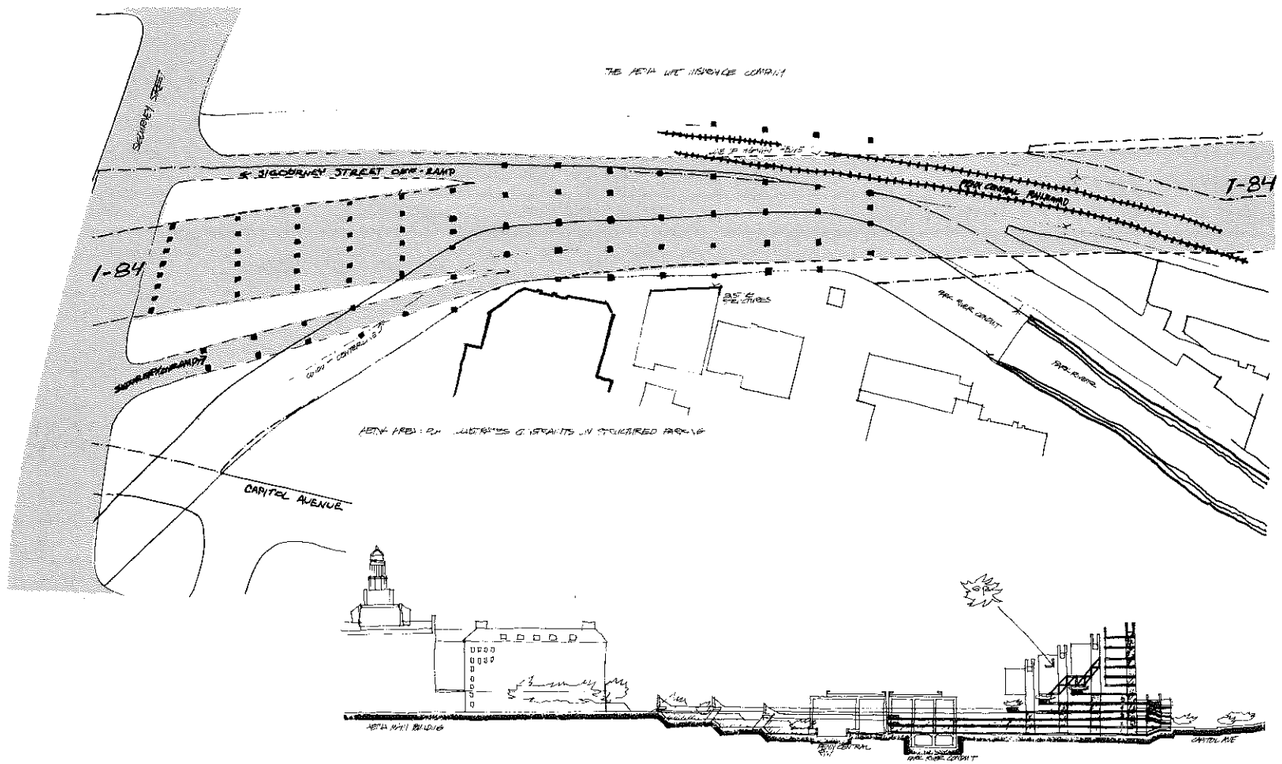
The appearance of the freeway could be enhanced by landscaping within the back lots of adjoining properties and by discrete use of screening under the freeway. Removal of obsolescent warehousing, loft buildings and other uses that presently occupy the Capitol Avenue frontage of this "superblock", and replacement by new office structures, would likely be accompanied by demand for freeway space for uses other than parking. The Capitol Avenue frontage might be developed in association with Aetna or another insurance company, or for the expansion of State office facilities. Pedestrian walkways could be provided at one or more points in the superblock to connect uses on opposite sides of the freeway; there is sufficient highway clearance to permit construction of pedestrian crossings beneath the freeway and over the railroad tracks, thus giving better access to parking spaces under the freeway from Aetna buildings and, possibly, providing for pedestrian movements between office structures facing on Farmington and Capitol Avenues. A sketch plan for such development is shown in Figure 60, the development plan for the sector.

Redevelopment of the Capitol Avenue frontage might incorporate major rearrangement of backyards, with parking for office structures occupying lower floors of the new buildings and extending behind them. The high clearance under the freeway suggests that several levels of parking space could be developed in structures there. The economics of such parking would be based on relative site costs under the freeway vs. other possible locations, and the special construction difficulties and inefficiencies likely to be encountered in such a project. Uses other than parking might also be introduced under the roadway — much office space could be developed there, storage for files and records, maintenance shops, warehousing, and other functions including cafeterias, specialty shops, credit bureau, health center, and so on.

FIGURE 61 AND 62: DEVELOPMENT CONSTRAINTS

The three transport facilities juxtaposed in the confined space of the highway right-of-way (the mainline tracks of the Penn Central Railroad, the conduit that encloses the Park River, and the highway itself) present constraints on any additional joint-use proposed for this portion of the right-of-way. The sketch to the right shows the complexity of the highway, which is on structure through this segment of route, elevated high to clear the railroad. The diagram illustrates the constraints on additional development.





The plan suggests phased or staged development of the area along Capitol Avenue. In other words, incremental development of the office and parking facilities could be carried out over several years, as demand permitted. It is conceivable that some of the present office and small manufacturing or service uses now located in the old loft buildings could continue and be phased out gradually.

It should be emphasized that the success of this plan is not dependent on development of the areas fronting on Capitol Avenue by the Aetna Life and Casualty Company. Although the plan provides an opportunity for expansion by Aetna, it is quite reasonable and conceivable for the development of this area to be accomplished by others.

A major goal of the Joint-Use Plan would be to achieve a "facing in" of development along I-84 so that the highway traverses a visually attractive development and becomes a central feature of that development rather than orienting new development so that the backs of the buildings adjoin the highway right-of-way and isolate it in an alley.

TABLE 24: SHORT-RANGE AND LONG-RANGE POTENTIALS FOR JOINT-USE DEVELOPMENT AETNA-CAPITOL AVENUE SECTOR

PARCEL NUMBER	AREA IN SQ. FT.[1]	LIKELY OR POSSIBLE USES			
		SHORT-RANGE	PROBABILITY[2]	LONG-RANGE	PROBABILITY[2]
30	53,965	Parking, street under freeway, Flower to Broad Streets	G	Same as short range	G
31	37,500	Lease for parking	G	Same	G
32	10,990	Sold to Aetna	G	Same	G
33 34 35 36 37	290,230	Leased to Aetna for parking; develop pedestrian access, landscape	G	Construct maintenance shops, storage, etc.; garage structure	F
39 40 41	219,240	Develop major parking structure	G	Same	G
39A 40A 41A	19,400	Widening of Capitol Avenue	G	Same	G

[1] One Acre = 43,560 Square Feet.
[2] Probability: G = Good, F = Fair, P = Poor.
SOURCE: Wilbur Smith and Associates.

The plan also acknowledges in realistic fashion the constraints on development due to the elevated I-84 structure itself and the additional limitations imposed by the Penn Central tracks and the enclosed Park River conduit.

A perspective aerial view of the suggested development is shown in Figure 63. The terrace effect, in which development gradually rises from the I-84 right-of-way, is a conscious effort to achieve openness in the center of the superblock. Landscaped parking facilities might constitute the main space user in this central area. A section through the superblock is shown in Figure 64. The terraced effect is especially prominent in this drawing.

FIGURE 63: AETNA-CAPITOL AVENUE JOINT-USE DEVELOPMENT PERSPECTIVE

A perspective aerial view of the suggested development is shown on the facing page. The terrace effect, in which development gradually rises from the I-84 right-of-way, is a conscious effort to achieve openness in the center of the block. Landscaped parking facilities constitute the main space user in this central area. The development of the office and parking facilities could be carried out over several years, as demand permitted.

SIGOURNEY STREET PARKING GARAGE

Parcels 39, 40 and 41 have even better potentials for construction of an all-day parking garage than the areas mentioned in the foregoing section. Except for small portions that were retained for street widening, Parcels 39 and 40 have already been sold to Aetna as remnants not required by the Highway Department, and Parcel 41, within the right-of-way, has been leased to them. Together, the three parcels amount to a little more than five acres of area, all of it presently used for parking. Since future development of this area seems likely to intensify the parking use, a multi-level garage covering all or most of the area might be the most feasible use for the property. Such a structure might even include air rights over the Penn Central railroad tracks and create, in effect, a total block for this use between Capitol Avenue and Hawthorn Street. The frontage on Capitol Avenue and Sigourney Street might be used for non-parking functions (shops and service activities, perhaps), and other portions of a structure could be allocated to loading docks and warehousing in association with activities in neighboring areas, such as the Aetna Company, the Underwood Redevelopment area, or other users. The roof of the parking deck might be developed with a swimming pool, ball courts, cafeteria, and so on for neighborhood residents and employees of firms using the garage.

The prime function of the parking garage would be to further meet parking requirements of the Aetna Life and Casualty Company. A facility such as that pictured in Figure 65 would also fulfill some of the parking requirements of the large residential complex proposed to the south, since the peak parking demands of the two uses occur at different hours. The structure could also meet some of the parking needs of the Arrow-Hart, Inc. manufacturing facility located west of Laurel. Thus, some of the land-area in the immediate vicinity, now utilized for surface parking, could be converted to higher use, and the integrity of the residential area between Aetna and Hartford Public High School would be better protected. The latter is an important goal of the City of Hartford.

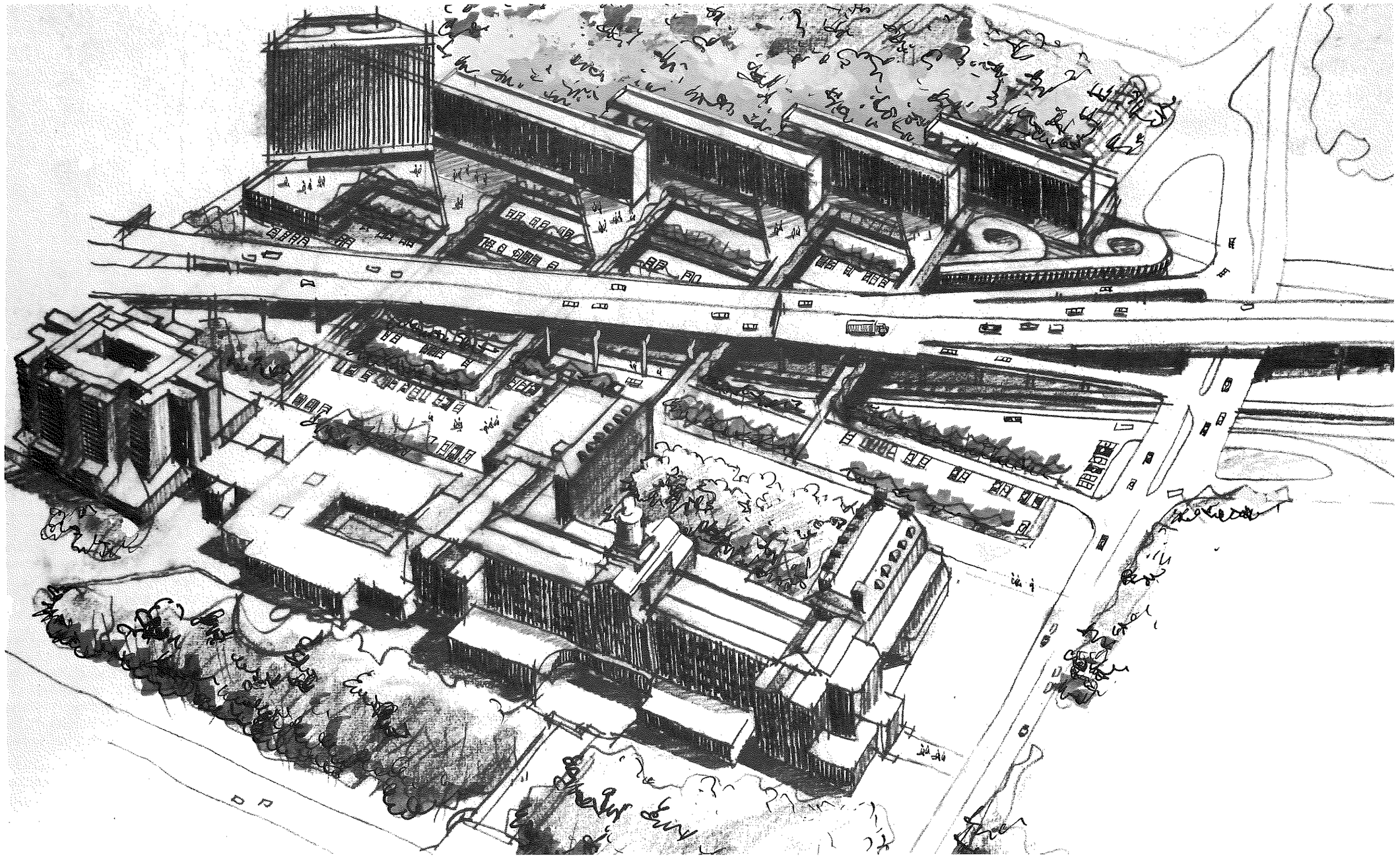
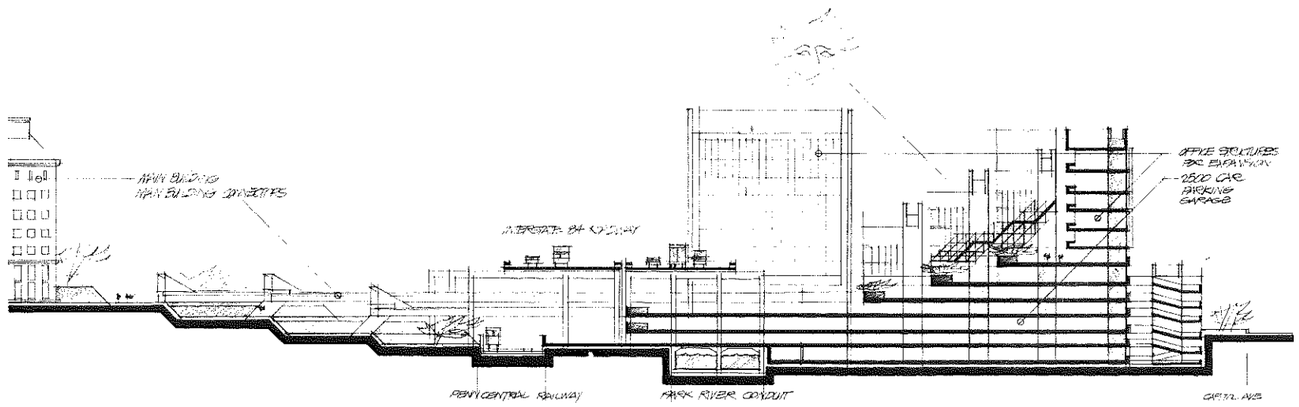


FIGURE 64: AETNA-CAPITOL AVENUE JOINT-USE DEVELOPMENT SECTION

The section through the suggested development shows the highway as a central feature of a visually attractive complex. The terraced effect is especially prominent in the drawing.



AETNA AREA PROPOSAL

SECTION THRU ROADWAY

The suggested parking structure could be planned to accommodate as many as 2,000 cars on at least three levels of parking. Access and egress ramps to serve the garage could be installed immediately opposite the I-84 on- and off-ramps at Sigourney Street. It should be possible to achieve proper phasing of the traffic signals at the ramp intersections to accommodate this garage function. Additional access and egress points could also be located on the three streets on other sides of the site.

The public concern, or investment, in this area would relate primarily to air-rights structures spanning the railroad tracks and contained beneath I-84. Some modifications to streets in the area may also be required to facilitate the functioning of a parking structure.

The construction of a Sigourney Street Parking Garage would undoubtedly be a private project. While construction of a parking garage at this location would be an expensive undertaking, there are several factors which enhance its feasibility. Only minor demolition would be required to clear the site of other structures; the column spacing under I-84 is regular enough to allow circulation and parking of cars in the underarea; and, there appear to be no major obstacles to negotiation for use of air-rights under I-84 and over the Penn Central railroad tracks.

Of the many public benefits accruing from such a plan, the principal one is the removal or forestalling of surface parking lots from an area which has good potential for further development of housing.

OTHER USES

The remaining parcels of land suggested for joint development in Sector 3 are very small and appear to have limited potential for commercially viable uses.

Parcels 30 and 31 are presently used for informal parking by employees of the State Tax Department. Short-range development for Parcel 30 might include a new street beneath eastbound lanes of I-84, connecting Flower Street to Broad Street north of the railroad tracks so that cars using Flower and Howard Streets to reach the Broad Street access ramps into I-84 would not encounter the railroad grade crossing at Flower Street. The geometrics of this environment are very tight, and appear to require considerable ingenuity if an acceptable plan is to be worked out.

The remainder of the parcel is likely to continue in parking use in lieu of a more feasible alternative, possibly under lease to the Hartford Courant or other nearby employers. Parking should also be continued as a near-term use on Parcel 31. Long-range, this parcel could be incorporated into a larger development utilizing adjoining land both north and south of the freeway, and its use might then depend on the kind of activity with which it was joined.

Parcels 32 and 33 are tiny excess remnants of land that have been bought by Aetna, owner of the adjacent lands. No other use is foreseen.

Parcels 39A, 40A and 41A represent slivers of land taken off the parcels listed above, to be used for the widening of Capitol Avenue as planned by the City of Hartford.

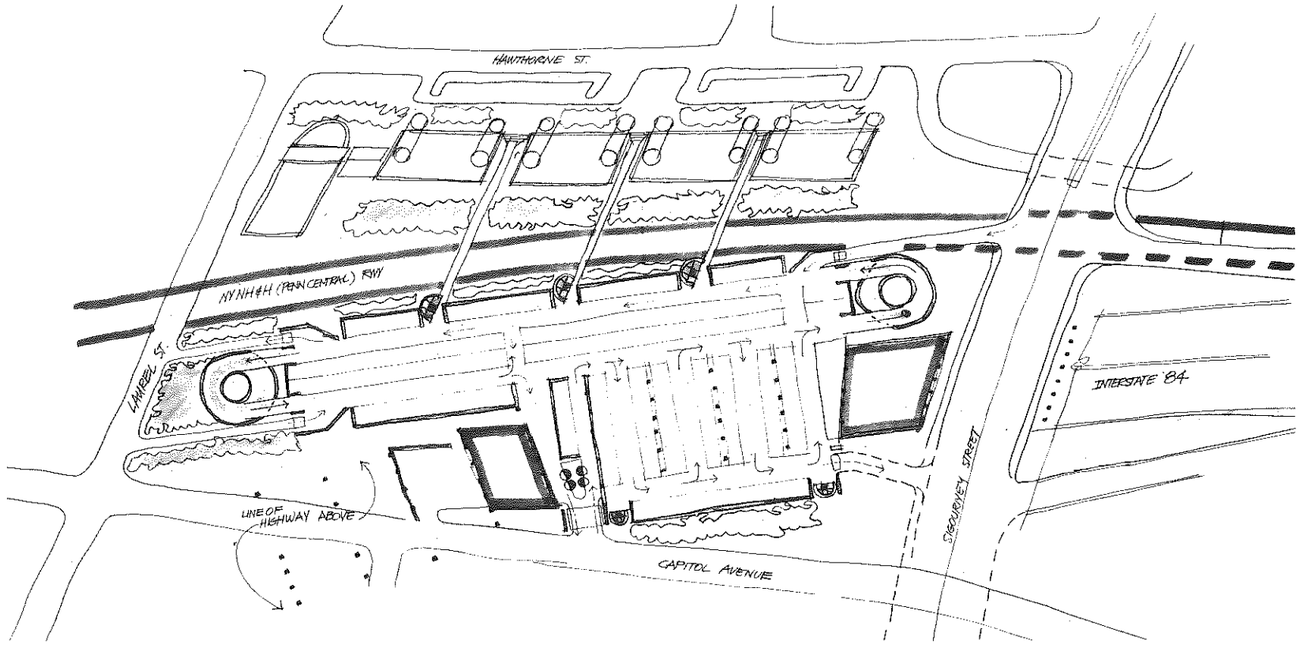
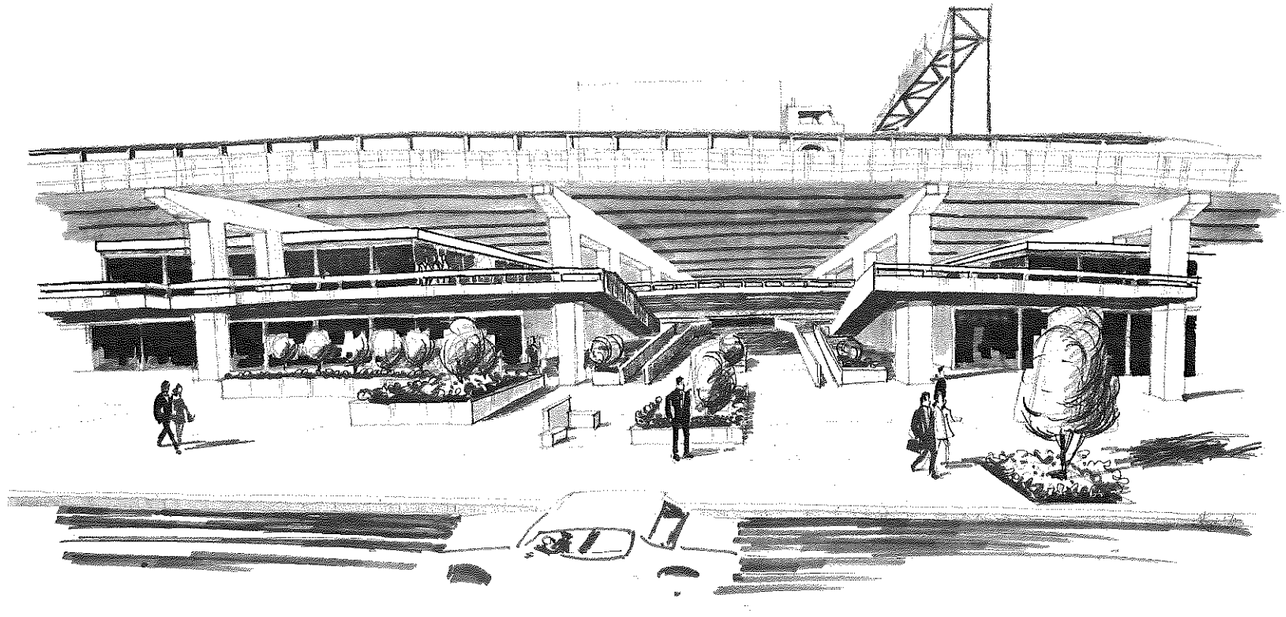


FIGURE 65: AETNA-CAPITOL AVENUE JOINT-USE PARKING GARAGE

Since future development of this area seems likely to intensify the parking use, a multi-level parking garage covering all or part of the Sigourney-Capitol-Laurel-Hawthorn block, now used for surface parking, seems to be the most feasible use for the property. As visualized, such a structure might include air-rights over the Penn Central tracks; the Capitol Avenue frontage might be used for non-parking functions, as shown in the rendering below.



SUMMARY OF JOINT-USE POSSIBILITIES: AETNA-CAPITOL AVENUE SECTOR

Land-use needs and the economics of private land development costs are prime considerations in Sector 3. The rapid expansion of employment at the Aetna site, coupled with the rising proportion of workers who use cars to reach their places of employment have resulted in a shortage of parking space within easy walking distance of work places. The need is sufficiently urgent that major employers, such as Aetna, are prepared to lease and develop suitable parcels for employee parking.

Replacement activity is expected to continue through the planning period and will be heavily shaped by the analyses, policies and needs of the Aetna Life and Casualty Insurance Company. Further high-density replacement activity may be expected within the residential community west of Sigourney Street as the desirability of this residential area increases.

The suggested joint-use plan for this section of the corridor would be primarily a private undertaking. Public investment in the area would be required to complete the Park River conduit and to provide the air-rights necessary for pedestrian bridges linking the north and south halves of the total development.

CHAPTER TEN

THE UNDERWOOD-POPE PARK AREA: SECTOR 4

Sector 4 includes the portion of I-84 that extends from Sigourney Street on the east to Park Street on the west, and borders the freeway on the south from Park Street to Hamilton Street. The Sector is about equally divided between a portion of Pope Park bounded by the freeway, Hamilton Street, Hillside Avenue and Park Street, and the Underwood Redevelopment Area bounded by the freeway, Park Street, Park Terrace, and Capitol Avenue. These boundaries are shown superimposed on an aerial photo in Figure 66 and a land-use map in Figure 67.

The 13 parcels studied for joint-use in the Underwood-Pope Park Sector comprise about 10.6 acres of highway-owned lands. These areas, listed in Table 25, include about 4.25 acres that are outside the highway itself, constituting remnants within the Underwood Redevelopment Area that are available for sale. The remaining Highway Department lands include about two acres under the access ramps to Sisson Avenue, located between the Penn Central tracks and the "through" lanes of I-84 just north of the freeway. Three small parcels, amounting to only 0.6 acre, have been dedicated to streets (widening Capitol Avenue), leaving three parcels with a gross area of nearly four acres under the freeway abutting the Underwood Redevelopment Area, with good access to it.

Existing uses in Sector 4 lie in the shadow of the large interchange structure that gives access to Sisson Avenue and West Boulevard. All accessible lands within the interchange area are presently used, informally, for off-street parking by persons employed nearby. The lands bordering Pope Park contain the realigned stream of the South Park River, in concrete lined channel and box culvert. Pope Park represents a permanent land use and provides an attractive boundary and buffer between the freeway and residential uses to the south.

The Underwood area is separated from surrounding neighborhoods by Interstate 84 and Pope Park. The highway is above grade on berm or structure, effectively partitioning the area from industrial uses west and north of the highway. Pope Park forms the southern and eastern boundary of Sector 4 and provides an interspace between the redevelopment area and the older medium-density residential community which overlooks the park from the south and east. Surrounding land uses will probably remain residential with an increase in density as high-rise apartments replace three story walk-ups.

Demolition of the abandoned Underwood Typewriter factory is presently in progress as a first step toward the physical redevelopment of the area bounded by Park Street and Park Terrace. Remaining small industrial plants in this area are also scheduled for demolition in the near future. About the only existing uses expected to remain when the site has been cleared for reconstruction are those in the community shopping center on Park Street near the freeway.

TABLE 25: EXCESS RIGHT-OF-WAY PARCELS UNDERWOOD-POPE PARK SECTOR

PARCEL NUMBER	PARCEL DESCRIPTION	AREA IN SQ. FT.[1]	STREET ACCESS	PRESENT USE
38	South of Capitol, under Sigourney	4,070	Yes	Access to Underwood
42	Woodbine to Laurel, under I-84	48,600	Yes	Informal parking
42A	Woodbine to Laurel, under I-84	3,970	Yes	Street widening
43	Woodbine to Laurel, south of I-84	10,500	Yes	Unused
44	Woodbine to Laurel, south of I-84	21,000	Yes	Unused
45	West of Laurel, under I-84	40,000	Yes	Informal parking
46	South of Capitol, Laurel to RR	18,000	Yes	Street widening
47	Laurel to Willow, south of I-84	18,000	Yes	Unused
48	Laurel to Willow, south of I-84	14,000	Yes	Unused
58	Former Park-River branches	75,000	Yes	Unused
58A	West of Willow, between RR & I-84	84,000	Difficult	Unused
59	North of Park Street, under I-84	79,140	Yes	Unused
62	North of Hamilton, east of I-84	46,560	Yes	Unused

[1] 1 Acre = 43,560 Square Feet.
SOURCE: Connecticut Department of Highways and Wilbur Smith and Associates.

The removal of major employment centers coupled with urban renewal and highway construction activities account for a sharp decline in population (1,900 to 1,000) and employment (3,800 to 400) during the 1960-1970 period. The only work category that showed growth was the retail component of employment, due to the opening of a shopping center in later 1969. Future population and employment levels are difficult to forecast in this Sector because of the uncertainty of development plans.

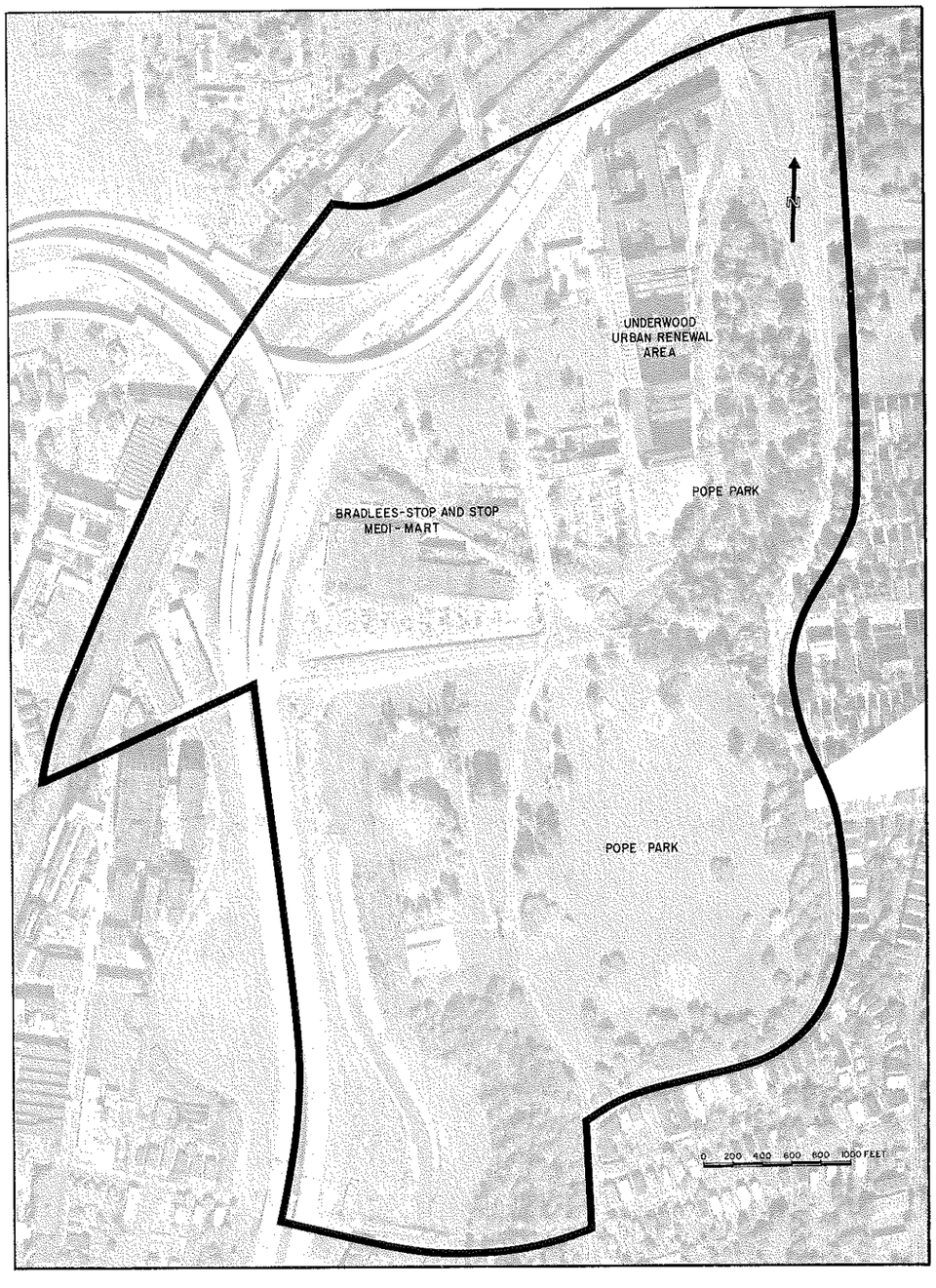


FIGURE 66: UNDERWOOD-POPE PARK SECTOR — BOUNDARY

Sector 4 is about equally divided between a portion of Pope Park bounded by the freeway, Hamilton Street, Hillside Avenue and Park Street, and the Underwood Redevelopment Area bounded by the freeway, Park Street, Park Terrace, and Capitol Avenue, as shown in the adjoining figure.

Principal traffic access to the area is provided by Capitol Avenue and Laurel Street, supplemented by Park Street and the other collector facilities. Entry to I-84, eastbound, is gained at Sigourney Street but access toward the west must be made via Capitol Avenue at the Sisson Avenue ramps on the west, or at an access ramp at Board Street on the east.

Access to the shopping center located at the intersection of Park and Laurel Streets is somewhat awkward because of a change in grade that made construction of a retaining wall along most of the Park Street frontage necessary, placing the major access on Laurel Street. This situation may be improved when the remaining open portion of the Park River is enclosed in conduit and the Underwood Renewal project is completed. The development of the Underwood Urban Renewal project will probably involve modification or closure of Riverside and Woodbine Streets, in addition to the previous termination of Willow Street as a result of construction of I-84.

Future use of the Underwood Redevelopment Area has not been positively determined, although most indications presently point to medium to high density housing as the likely form that redevelopment will take. The kind and extent of joint-use opportunities that can be exploited there will depend somewhat on final determination of uses in the redevelopment area.

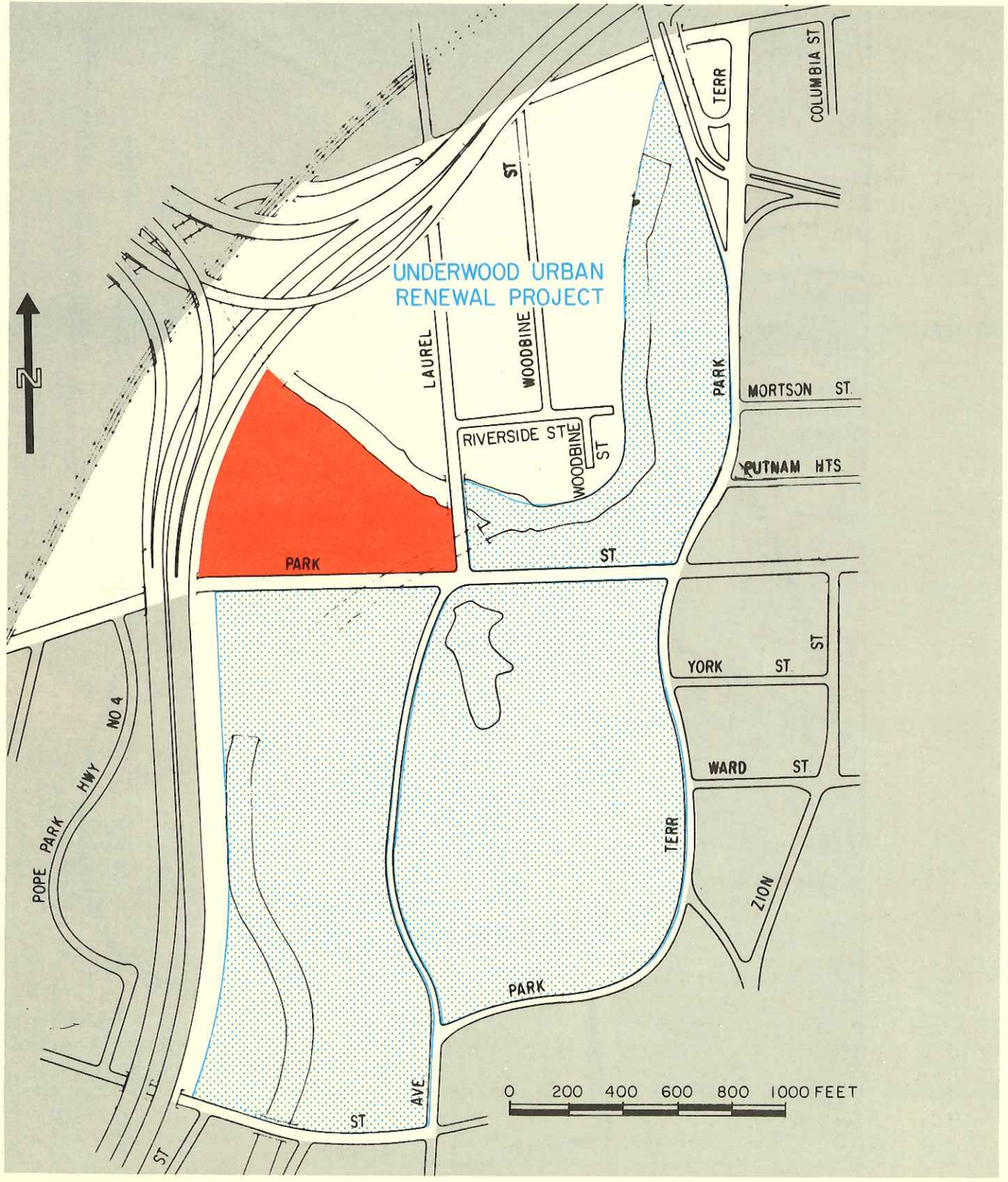


FIGURE 67: UNDERWOOD-POPE PARK SECTOR LAND USE

Pope Park and the Underwood Renewal Area dominate this sector of the corridor. Several isolated industrial structures remain in the renewal area, but are scheduled to be removed, and a recently completed shopping center occupies the Park Street Frontage.

LEGEND

COMMERCIAL
OPEN SPACES AND CEMETERIES

OPPORTUNITIES FOR JOINT DEVELOPMENT

Examples of the five classes of "problems" considered in earlier discussions are listed for Sector 4 in Table 26. Some of the "opportunities" that come to mind as possible solutions to problems are described briefly in the table.

Land Use — The predominant use of privately held lands adjacent to I-84 has been for industrial activities, dominated by the Underwood Typewriter factory. That structure is now being demolished with the intent of redeveloping the area to a use more fitting present economic conditions and needs in the City of Hartford.

Aesthetics — A visual challenge is presented by the complex Capitol Avenue overpass and interchange to Sisson Avenue. The structure has been designed as a point of merger for I-84 and a planned freeway spur oriented northerly along the general alignment of a branch of the Park River. Portions of the overpass structure tower some 60 feet above the railroad tracks. Inasmuch as the overpass cannot easily be screened or landscaped, the most likely means of softening its impact would be to incorporate other large-scale uses into the highway properties and ajoining areas. The construction of high-rise apartments on the Underwood site, and integration of parking structures, retail stores, and other activities into space beneath the viaduct and overpass sections would seem to be appropriate.

Less overwhelming than the overpass is the viaduct section of highway which continues through the Aetna "superblock" considered in the discussion of Sector 3. The proposal for a Sigourney Street Parking Garage would use some of the area immediately opposite the present Underwood factory location. Parking, warehousing or storage, maintenance and utility structures, and other uses that supplement and augment adjacent installations are the logical possibilities. Architectural treatments and landscaping will go a long way in providing attractive relief to the void that presently exists beneath the viaduct and overpass section of Highway.

The short open section of the Park River is also a problem and should either be landscaped to feature the flow of water, or be enclosed in conduit; the latter seems the more likely choice, since the flow is intermittent, and the water is of dubious quality and aesthetic value.

Social and Environmental — Very little residential use was displaced by I-84 in Sector 4, nor has the highway been accused of hastening the decline of the Underwood factory and satellite industries; nevertheless, the departure of Underwood, with extensive loss of employment, have had negative impacts throughout the City. The prospects of redevelopment, whether for housing or other activity, promise substantial improvement in the social and environmental climate, and can have very favorable and dramatic effects if well done.

Equally serious, from the standpoint of many Hartford residents, was the loss of considerable acreage of Pope Park to the freeway. The opportunity is now presented to restore the park and extend it by landscaping and providing foot-and-cycle paths and other amenities linearly along the southern boundary of the highway, incorporating the open channel of the Park River.

TABLE 26: OPPORTUNITIES FOR JOINT DEVELOPMENT UNDERWOOD-POPE PARK SECTOR

PROBLEM	OPPORTUNITY
Land Use	
Vacant land.	An active urban renewal area; suitable for redevelopment as a residential area.
Aesthetics	
Complexity and visual confusion to viewers of I-84 Interchange at Sisson and Farmington Avenues.	Soften through landscaping.
Viaduct section of I-84, with numerous support piers, heavy shadows.	Develop joint use functions for space under viaduct; landscape.
Severe, artificial constraint of channelized section of South Branch Park River.	Completely enclose river, enlarge Pope Park to Hamilton Street.
Social and Environmental	
Highway construction and closing of Underwood disruptive to neighborhood.	Establish community and neighborhood center facilities in vicinity of Laurel and Park Streets as part of renewal project.
Western third of Pope Park infringed upon by Highway.	Create linear park along Park River.
Traffic	
Lack of access to sector from the west.	Create new uses that are not dependent upon this access (i.e., residential).
Parking	
Present parking is disorganized and unattractive.	Opportunities to construct parking structures as a joint right-of-way use.

SOURCE: Wilbur Smith and Associates.

Traffic — I-84 provides access, via Sigourney Street, for traffic generated in Sector 4 with origins and destinations toward the east. The freeway does not have direct access toward the west but requires circuitous travel, either east via the Asylum-Broad Street interchange, or west along Capitol Avenue to the Sisson Avenue interchange. However, the transition of this area from a primary work center to residential use would greatly diminish demand for peak-hour access to and from West Hartford and other residential suburbs.

Parking — Except for parking at the existing shopping center off Park Street in the southwest corner of the Sector, there is no organized use of land for parking, and overflow of all-day parkers from Aetna and other employers nearby occupies the area in a disorganized manner. This condition will be overcome as new uses are constructed and casual parkers constrained from using these spaces. Adequate parking supply should be developed in garages and paved lots by forthcoming new land uses; some of the parking space can likely be provided through joint-use of highway properties.

UNDERWOOD REDEVELOPMENT AREA

The likely uses for most parcels in this Sector will be for incorporation into the overall Underwood Area Redevelopment plan presently being prepared by the Hartford Redevelopment Agency. As indicated in Table 27, only Parcels 58A and 62 are not located immediately adjacent to the redevelopment area. Among uses considered for various parcels in Sector 4 are the following:

Parcel 38 consists of a small area beneath the Sigourney Street overpass that is currently used for access to the redevelopment area. This use will likely continue.

Parcels 42, 43 and 44 are located south of Capitol Avenue, with 42 under the freeway and the others bordering it. The areas lie adjacent to the properties acquired for redevelopment in the Underwood area and should be incorporated with them. A portion of 42 has been reserved for the widening of Capitol Avenue.

Parcel 46, on the south side of Capitol Avenue between the freeway and the Penn Central tracks also should be wholly devoted to widening and landscaping of Capitol Avenue.

Parcels 45, 47 and 48, also contiguous with the redevelopment area, lie just west of Laurel Street and the areas mentioned in the paragraph second above. Like them, these parcels should be incorporated in the redevelopment plans.

Parcel 58 should be developed for uses that have a close association with the existing community shopping center on this block. Parcel 58 is an excess area of more than one and one-half acres, formerly an open area at the confluence of the North and South Branches of the Park River. Enclosing of the river within the next few years, placing all portions of it in conduit through the Underwood redevelopment area, will make the entire parcel usable for more intensive development. Since this parcel is immediately adjacent to and back of the existing shopping center, it might logically be an area for expansion of the center. Depending on redevelopment layout, however, it could be used for housing or other use in conjunction with the central theme of the redevelopment project.

Parcel 59, nearly two acres in extent, is wholly within the highway right-of-way and under the I-84 viaduct section. The area is north of, and bounded by, Park Street within the I-84 right-of-way. There is sufficient clear space under the freeway for construction of a low building that might be used to house any of a variety of activities appropriate to the area. Likely uses would be for a cleaning shop or other service; retail activity such as a bakery, delicatessen, grocer, etc.; light industrial use; business office, blueprint, computer sales or service, etc., or related type of use. Alternatively, there is room for shops and offices of the City Traffic Engineer or other Department of City Government.

The possibilities for a commercial structure in the air space beneath I-84 in Parcel 59 are illustrated in Figure 68. The feasibility of such an undertaking with private capital has been further explored in a Land Residual Analysis presented in Table 28, based on development of a structure containing approximately 13,000 square feet of area at a cost of $23.00 per square foot. If it can be undertaken within limits imposed by these assumptions, the project could be expected to generate approximately $4,000 income annually for use in site lease or purchase.

TABLE 27: SHORT-RANGE AND LONG-RANGE POTENTIALS FOR JOINT-USE DEVELOPMENT UNDERWOOD-POPE PARK SECTOR

PARCEL NUMBER	AREA IN SQ. FT.[1]	LIKELY OR POSSIBLE USES			
		SHORT-RANGE	PROBABILITY[2]	LONG-RANGE	PROBABILITY[2]
38	4,070	Access road to Underwood area	G	Same as short range	
42 43 44	80,100	Parking; coordinate use with Underwood Redevelopment	G	Parking, storage structure, similar use	G
42A	3,970	Widening of Capitol Avenue	G	Same	
45 47 48	72,000	Sale or lease for Underwood Redevelopment	G	Parking and residential planned unit development in redevelopment area	G
46	18,000	Widening of Capitol Avenue	G	Same	
58	75,000	Sale to Redevelopment; expand shopping center	F	Same; develop offices, apartments over retail shops	F
58A	84,000	Possible storage; landscape and screen	P G	Same	
59	79,140	Lease for parking; lease for commercial or light industry	G	Same	
62	46,560	Return to Pope Park for park	G	Same	

[1] One Acre = 43,560 Square Feet.
[2] Probability: G = Good, F = Fair, P = Poor.
SOURCE: Wilbur Smith and Associates.

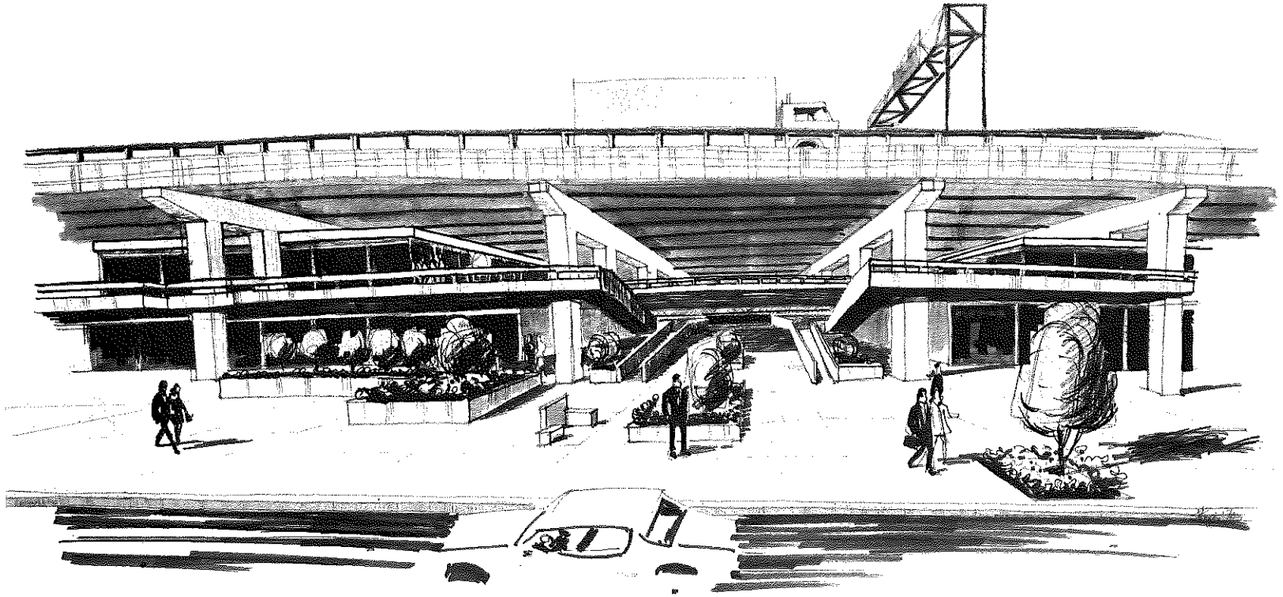
All of the parcels described above, with the exception of Parcels 58A, 59 and 62 will likely be incorporated in the Underwood Development Project. The Underwood-Pope Park area is significant in the I-84 Joint-Use Study because it presents a unique opportunity to combine urban renewal planning for a sizable vacant and partially-vacant tract of land with a plan for joint-use development of highway rights-of-way. The suggested plan for the Underwood area, shown in Figure 69, includes related land-use proposals for two distinct areas. The most significant is the concept of a large residential development on land formerly occupied by the Underwood Typewriter factory, including joint-use development of a portion of the land under the elevated I-84 highway. A second area, west of Laurel Street, might be used for development of an integrated commercial-residential-public neighborhood center. The area north of Capitol Avenue, suggested as a site for a major parking structure utilizing air-rights under I-84 and over the Penn Central Railroad tracks (discussed earlier in connection with the Sigourney Street Garage in Sector 3) would fulfill some of the parking requirements of the proposed Underwood Residential project.

TABLE 28: LAND RESIDUAL ANALYSIS UNDERWOOD SECTOR JOINT USE COMMERCIAL BUILDING (IN CONSTANT 1970 DOLLARS)

ITEM	TOTAL COST
Estimated Construction Cost 13,000 square feet @ $23,00/sq. ft.	$300,000
Estimated Gross Income	59,000
Estimated Annual Expense	
Operation, Maintenance, etcetera	7,000
Taxes and Insurance at 5%	15,000
Estimated Net Income to Real Estate	37,000
Net Income Required by Improvements Financing 70% at 9.5% for 25 years Equity 30% at 12.0% return	33,000
Income Available to Land	4,000
TOTAL AVAILABLE FOR SITE CAPITALIZED AT 9.5%	$ 42,000

SOURCE: Hammer, Greene, Siler Associates.

FIGURE 68: JOINT USE COMMERCIAL STRUCTURE
A two acre parcel wholly within the highway right-of-way and under the I-84 viaduct section just north of, and facing, Park Street is a potential location for a commercial structure such as an auto service center. A sketch showing such a development as shown below.



RESIDENTIAL PLANNED UNIT DEVELOPMENT

As noted, the principal feature of the Underwood joint-use plan is the major residential "planned unit development", occupying about 16 acres of the Underwood Urban Renewal Project Area. This proposal is in accord with the planned disposition of land in the area as suggested by the Hartford Redevelopment Agency. A rendering of the suggested improvement is shown in Figure 70. The plan envisions medium-to-high density multi-family construction of approximately 1,200 units. As indicated, the apartments would face Pope Park, an important open space and recreational resource which makes the Underwood area so ideally suited for residential establishments. The main structure, in turn, would face away from I-84 in order to overcome problems of noise and other adverse effects associated with the freeway.

The development further envisions the provision of structured parking in the northern portion of the tract along Capitol Avenue. Parking would be designed to use air space under I-84 near Capitol Avenue and Laurel Street. Parking might also be made available in a Sigourney Street Parking Garage, as suggested in the discussion of Sector 3.

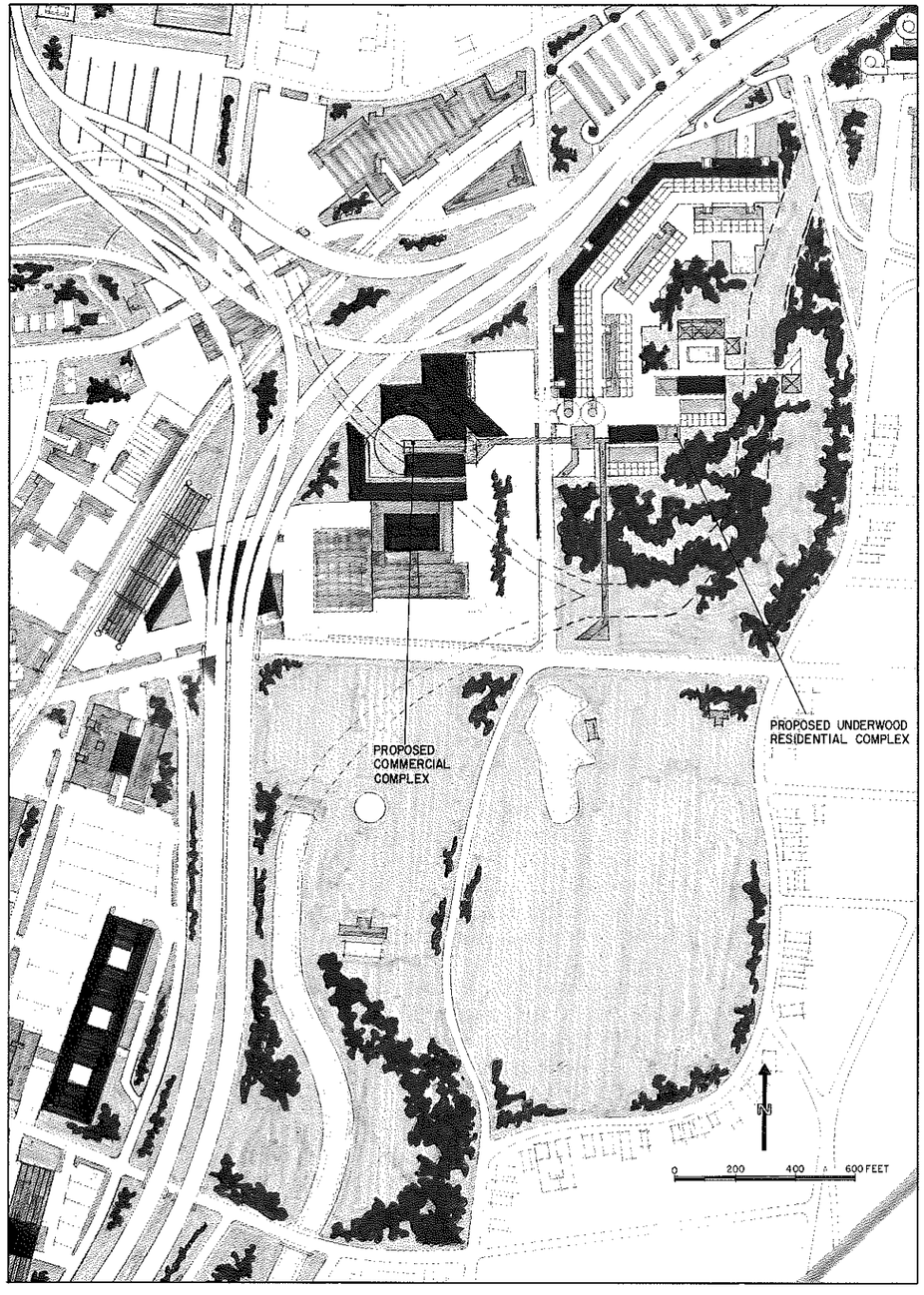


FIGURE 69: UNDERWOOD-POPE PARK SECTOR JOINT-USE PLAN

The suggested plan for the Underwood area includes related land-use proposals for two distinct areas. The most significant is the concept of a large residential development on land formerly occupied by the Underwood Typewriter factory, including joint-use development of a portion of land under the elevated I-84 highway. A second area, west of Laurel Street might be used for development of an integrated commercial-residential-public neighborhood center.

FIGURE 70: UNDERWOOD RESIDENTIAL COMPLEX PERSPECTIVE AND SECTION

The suggested plan envisions a 1,200 unit apartment complex facing Pope Park, an important open space and recreational resource which makes the Underwood area so ideally suited for residential purposes. The section indicates how structured parking would maximize utilization of the site while providing a barrier from noise and other adverse effects associated with the freeway. Parking would be designed to use air space under I-84 near Capitol Avenue and Laurel Street.

NEIGHBORHOOD CENTER

The third feature of the plan for the Underwood Area is a proposal to develop a planned residential-commercial-public-use complex or neighborhood center on about 15 acres of land bounded by I-84, Laurel Street and Park Street. A community shopping center containing over 100,000 square feet of floor area currently occupies the southern portion of this site. The joint-use plan suggests that the remainder of the site, including land reclaimed through the complete enclosure of the North Branch of the Park River, be devoted to a multi-use complex including approximately 50 apartment units, additional commercial outlets, public and community installations (such as a library, recreational facilities and meeting space), and parking space for up to 400 cars.

As previously pointed out, the Underwood Area could meet most of the criteria of a self contained environment. Because of the large assembly of close-in land with few developmental constraints, considerable design freedom exists to create a nearly self sufficient community. Thus, the proposed center could become the core of the surrounding neighborhood.

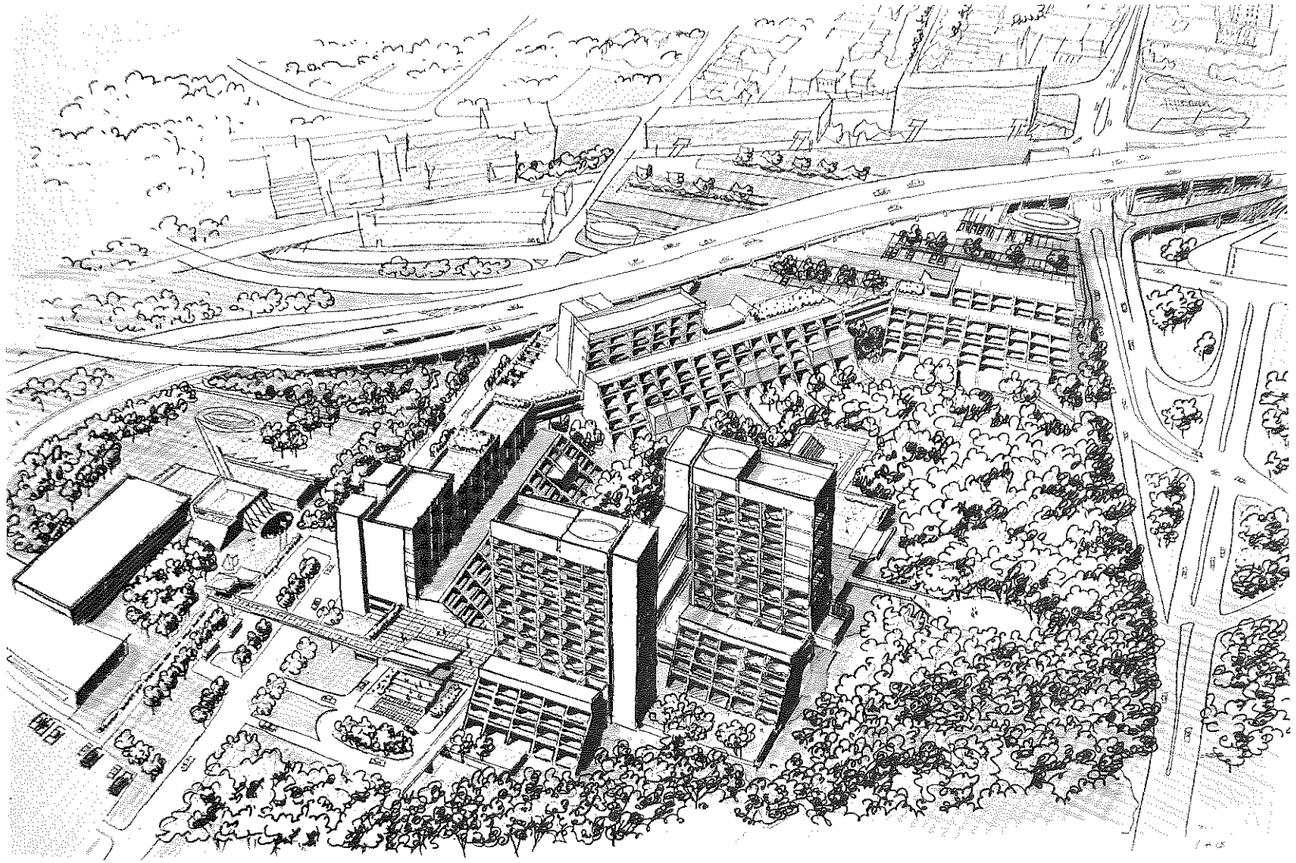
IMPLEMENTATION OF UNDERWOOD REDEVELOPMENT PROJECT

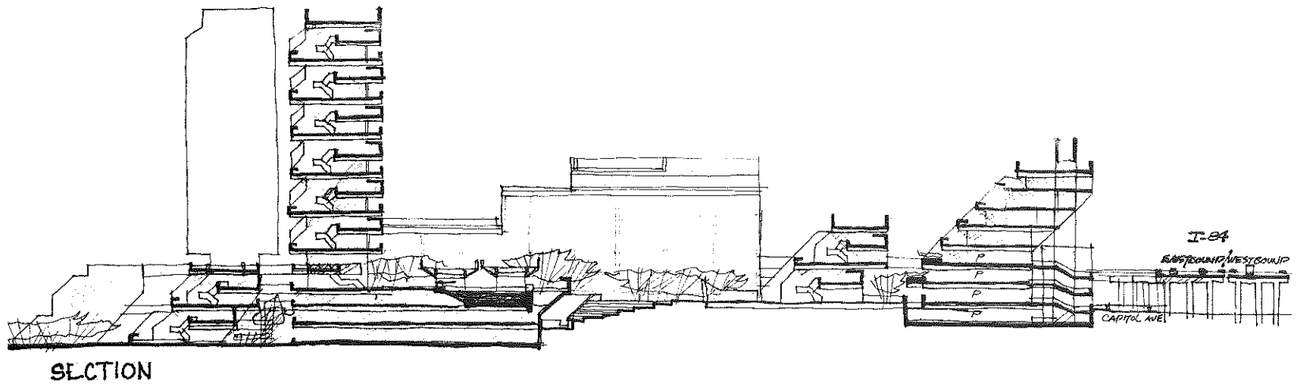
Most of the highway lands under study are presently included within the boundaries of the Underwood Urban Renewal project. The most significant structure in the area, however, the Underwood Typewriter Factory, is owned privately and is currently being demolished. The owners of this property have cooperated closely with the Hartford Redevelopment Authority in the past and continued cooperation in the future is likely. It is probable that the planned development of residential units on this site will be a private undertaking, most likely with some financial assistance under a federal housing program. Substantial public investment is also probable because of the urban renewal credit derived from such public expenditures and because of the public facility requirements of the redevelopment plans. These include the completion of the Park River conduit, some street reconstruction and realignment, the provision of water and sewer utilities and needed community facilities in the area. The latter may include schools, a library, recreational facilities, and a neighborhood center housing police and other minor city hall or public works functions.

OTHER USES

Parcel 62, physically remote from other parcels in the redevelopment area, is an excess piece of land left over from construction of the South Branch conduit and is located southeast of the freeway just north of Hamilton Street. This parcel, consisting of a little over an acre, is bordered by Pope Park on the northeast and southeast and should logically be integrated with it to continue the lineal park along the southern side of the freeway.

Parcel 58A, a large area in the middle of the ramp interchange to Sisson Avenue, is not appropriate for inclusion in the Underwood Redevelopment project. It lies between the northern (westbound) lanes of I-84 and the Penn Central tracks, entirely beneath the interchange ramps. Access is possible from Park Street but is not good at the present time, and any use other than landscaping would likely be undesirable from the standpoint of road users.

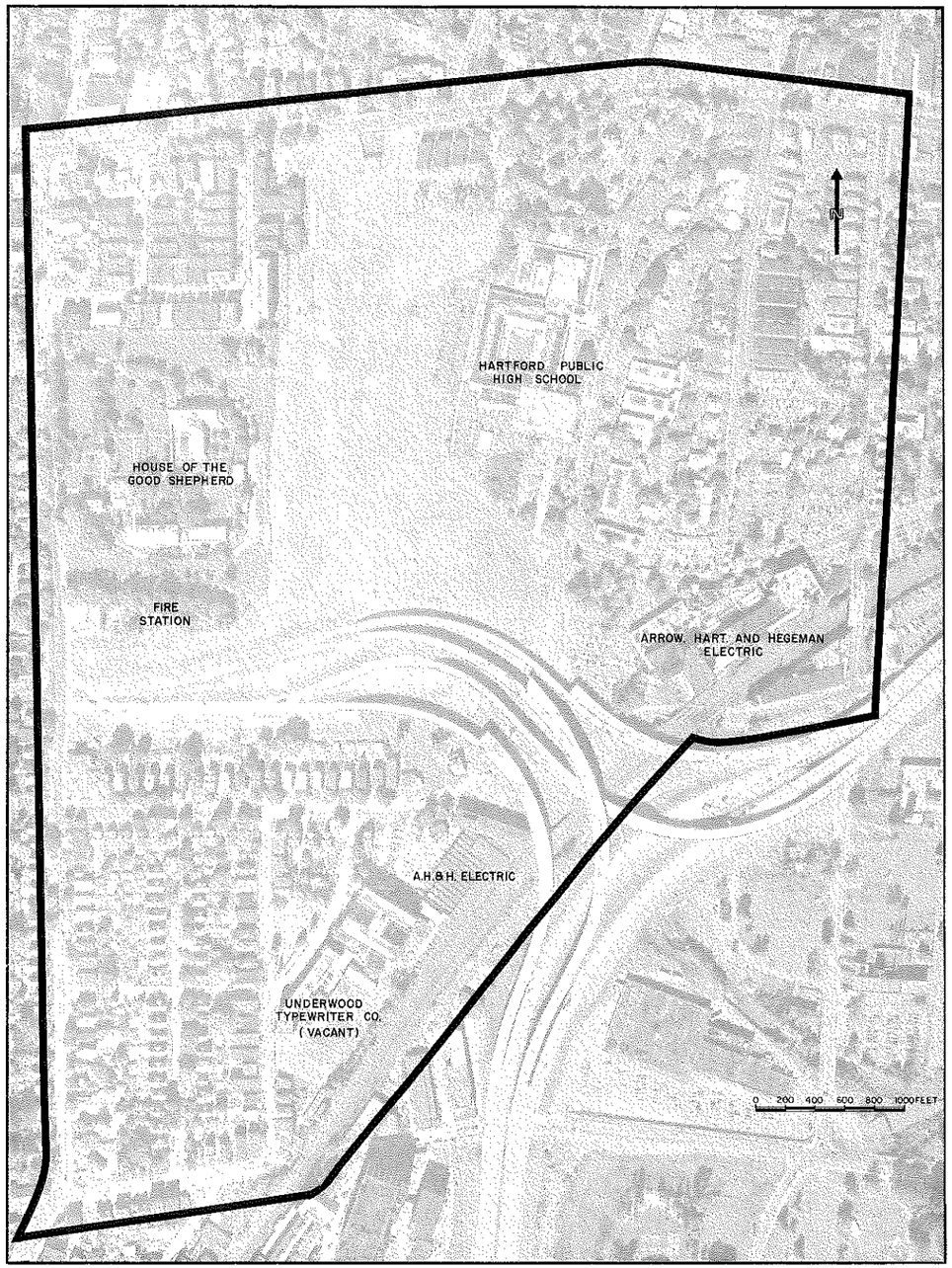




SECTION

CHAPTER ELEVEN

THE HARTFORD PUBLIC HIGH SCHOOL AREA: SECTOR 5



Named after the dominant land user in the area, the Hartford Public High School Sector contains a large amount of highway lands dedicated to the Capitol Avenue overpass and access connections to West Boulevard and Sisson Avenue and to proposed ramps to Farmington Avenue. The through lanes of I-84 pass south of the sector without encroaching on it. The area of influence immediately adjacent to highway properties has been defined as extending along Farmington Avenue from Laurel Street to Sisson Avenue, south along Sisson Avenue to Park Street, east on Park to the Penn Central tracks, east along the tracks to Capitol Avenue and east from there to the intersection of Capitol and Laurel. These boundaries are indicated on the air photo and land-use maps of the Sector (Figures 71 and 72, respectively).

FIGURE 71: HARTFORD PUBLIC HIGH SCHOOL SECTOR BOUNDARY

Named after the dominant land user in the area, this sector contains a large amount of lands dedicated to the Capitol Avenue overpass and ramps to Sisson Avenue. The through lanes of I-84 pass south of the sector without encroaching on it.

FIGURE 72: HARTFORD PUBLIC HIGH SCHOOL SECTOR LAND USE

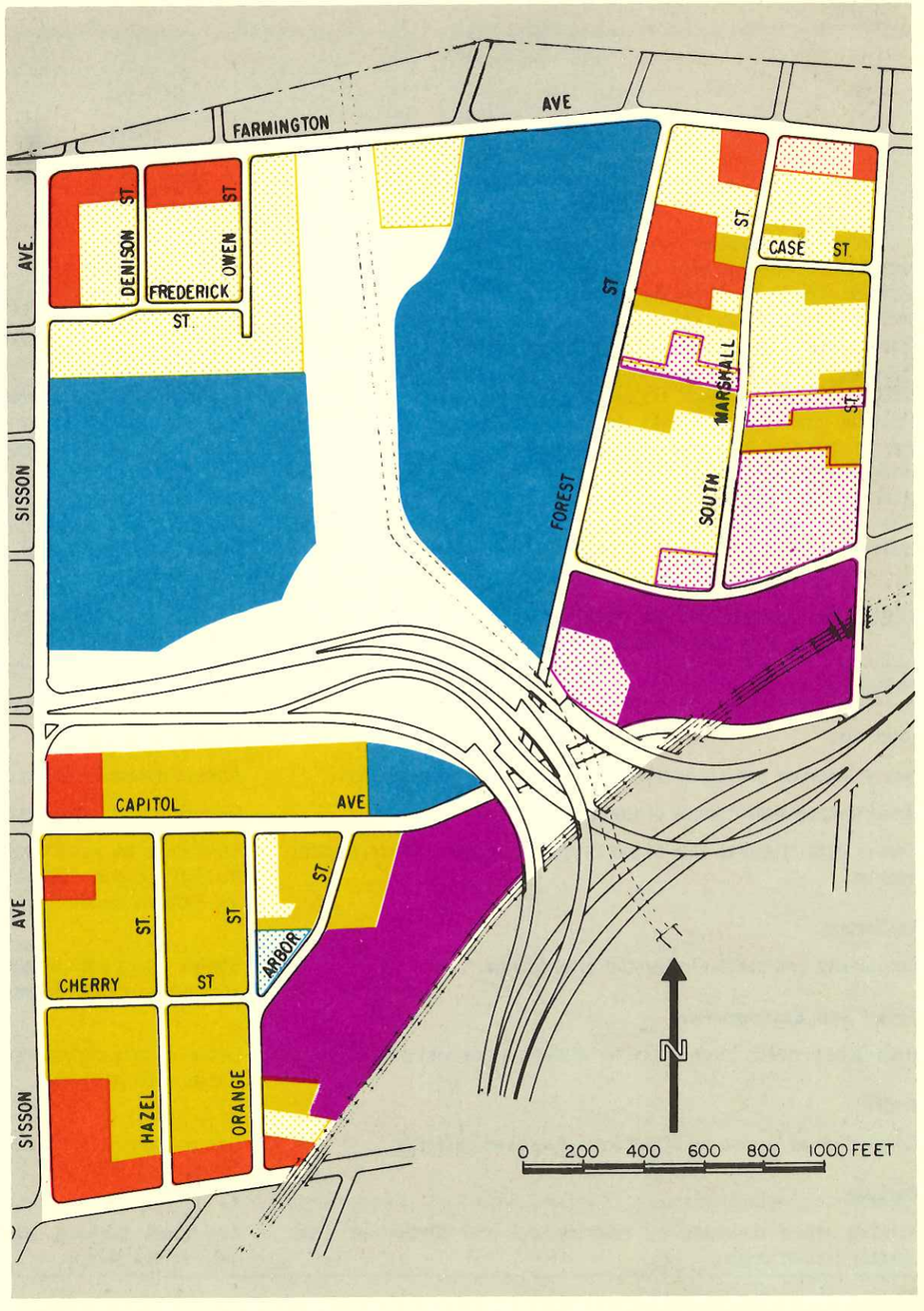
The area is dominated by two institutional uses, Hartford Public High School and the House of the Good Shepard, although it contains a wide variety of land uses, as seen in the land use map below. The blocks between Laurel and Forest Street are mostly devoted to residential apartments, as is the area west of Orange and Arbor Streets, while the area bordering the Penn-Central tracks houses several industrial establishments.

LEGEND

- COMMERCIAL
- OFFICE
- LOW AND MEDIUM DENSITY RESIDENTIAL
- HIGH DENSITY RESIDENTIAL
- GOVERNMENT AND INSTITUTIONAL
- MANUFACTURING AND INDUSTRIAL
- PARKING
- OPEN SPACES AND CEMETERIES

Nearly 20 acres of Highway Department lands might be made available for joint-use activities in the Hartford Public High School area. The main roadways of I-84 do not pass through the Sector, but an elaborate interchange has been developed here in conjunction with the design of a "connector" freeway along the North Branch of the Park River. Inasmuch as construction of the connector has been indefinitely postponed, there are opportunities to divert some of the reserved lands to other types of use on a temporary basis. The possibility that the connector highway may some day be authorized is, however, an important constraint on the kinds of joint uses that can be incorporated into the highway properties.

Hartford Public High School occupies much of the block west of Forest Street and north of the freeway ramps. The highway lands reserved for Farmington Avenue ramps and the North Branch connector are viewed with great interest by High School officials who would like to use any excess land for expansion of playfields and recreational areas. Portions of the interchange underarea immediately south of the High School are already being planned for incorporation into a parking lot for school employees and students.



The blocks between Laurel and Forest Streets are mostly devoted to residential apartments, as is the majority of Farmington Avenue. The block bounded by Farmington and Sisson Avenues, the I-84 freeway to Sisson Avenue, and land reserved for the Farmington Avenue ramps, contains The House of the Good Shepard, a Roman Catholic home for girls, other residential uses, and public lands which house a new fire station (with excess land for other City facilities). South of the Sisson Avenue freeway ramps, the area bounded by Sisson, Park, Orange, Arbor, Capitol, and the freeway ramps, is devoted to older housing in generally good repair, plus a strip of State property bordering the ramps. The rest of the sector contains an industrial establishment occupied by Arrow-Hart, Inc., with related parking and warehouses.

Farmington and Capitol Avenues are the two principal arterials that complement the role of I-84 for east-west traffic flow in this area. Access to I-84 is gained at Sisson Avenue (east and west) and at the Sigourney Street interchange (to and from the east). Other streets in the Sector provide collector service and internal circulation. Off-street parking lots are situated adjacent to the High School, the Fire Station, and the Arrow-Hart plant.

TABLE 29: OPPORTUNITIES FOR JOINT DEVELOPMENT HARTFORD PUBLIC HIGH SCHOOL SECTOR

PROBLEM	OPPORTUNITY
Land Use	
Heavy rezoning pressures because of improved accessibility.	Area is dynamic; needs firm controls and guidance.
Underutilized land (House of Good Shepard).	Opportunity to plan new use in conjunction with highway.
Excess right-of-way to rear of old 2- and 3-family homes on Capitol Avenue.	Landscape for screening purposes; create playground with walkway to High School; Combine excess right-of-way land and redevelop for modern residential.
Aesthetics	
Complexity and scale of elevated interchange.	Soften effect with intensive landscaping; modifyscale by building structures under ramps.
Social and Environmental	
High School needs more space for athletic areas and playfields.	Lease excess right-of-way lands to school; develop areas under ramps with joint-uses.
Traffic	
Congestion at Sigourney Street interchange in Sector 3.	Ramps should provide tie to Woodland Street at Farmington Avenue.
Parking	
Parking space demands by High School and Arrow-Hart (and others) exceed supply.	Additional parking space can be made available under the interchange ramps.

SOURCE: Wilbur Smith and Associates.

Sector 5 is dominated by two structures — the Sisson Avenue ramps to I-84 and Hartford Public High School. The ramps to Farmington Avenue, if built, will add to the dominance of the highway and development will be significantly affected by the service provided to and from Interstate 84.

A loss of population due to the construction of I-84 and the new Hartford Public High School was balanced by residential growth in the South Marshall Street area during the 1960-1970 period. As a result, population and employment within the sector remained stable from 1960 to 1970 at the 3,700 and 4,300 levels, respectively. The future employment level in the sector is expected to remain constant, while high-density residential growth is expected to add over 2,000 residential units to the area.

Over the past decade, freeway and High School construction have usurped a large amount of land in the Sector, but only minor portions of this were in residential use. Replacement of single-family and small multi-unit structures with larger apartments has proceeded at a rapid pace in parts of the sector so that there has been a net gain in population, with potential for about 2,000 more residential units over the next few years, if The House of the Good Shepard were to be converted to residential use. Replacement of older, lower-density residential construction with high-density middle income apartment complexes has already commenced in areas east and west of the Sector and may be expected to the south as well. The area is bordered by recently-built, high-density, low and high-rise apartment and office developments on the north and by older three- and four-story wood and brick frame apartment structures on the west. The area on the west is now experiencing a major replacement trend. The areas to the east, southeast and south are part of the study area and are covered in detail elsewhere in the report.

OPPORTUNITIES FOR JOINT DEVELOPMENT

As with other sectors under study, numerous ideas have been put forth for possible joint-use of the highway lands. Many of these are in response to conditions or "problems" peculiar to the area in question and represent "opportunities" both to reduce and to gain economic or other advantages from the joint-development activity. Table 29 identifies some of these problems and the opportunities that they suggest.

Land Use — The advent of I-84, giving greatly increased accessibility to the City and suburbs, has resulted in demand for land-use intensification and land-zoning changes in the Sector. Some changes are probably justified, but modification of existing zoning should take place only after careful study, with firm retention of land-use controls to make sure that inconsistent or incompatible exploitation does not occur.

TABLE 30: EXCESS RIGHT-OF-WAY PARCELS HARTFORD PUBLIC HIGH SCHOOL SECTOR

PARCEL NUMBER	PARCEL DESCRIPTION	AREA IN SQ. FT.[1]	STREET ACCESS	PRESENT USE
49	South of Capitol, west of RR, under I-84	56,140	Yes	Unused
50	Southeast corner Capitol & Forest, under I-84	32,770	Yes	Unused
51	Northwest of Capitol, west of Forest, under I-84	343,300	Yes	Unused
52	Forest to Sisson, south of Sisson ramp	100,680	Yes	Unused
53	East of Sisson, north of I-84 at Fire Station	45,400	Yes	Unused
53A	In I-84 ramp right-of-way, adjacent to parcel 53	23,300	Yes	Unused
54	West of Sisson, north of West Blvd.	10,460	Hazardous	Unused
55	Vacant right-of-way, west of HPHS	75,890	Yes	Unused
56	Vacant right-of-way, west of HPHS	71,490	Yes	Unused
57	Vacant right-of-way, west of HPHS	100,000	Yes	Unused

[1] 1 Acre = 43,560 Square Feet.
SOURCE: Connecticut Department of Highways and Wilbur Smith and Associates.

Higher-density residential uses are among those for which there is need, and which are generally suitable for the area. Under-utilized areas, such as the House of the Good Shepard, may offer opportunities for residential development, especially if portions of the highway properties are made available to enlarge the scope for such an undertaking.

Construction of access ramps past the back lots of homes fronting Capitol Avenue has created a condition of over-exposure to traffic and loss of personal privacy. In this area, heavy screen planting within the roadway boundaries would effectively landscape the back lots and block exposure to traffic.

Aesthetics — The overpass and interchange structures that dominate the southeastern portion of Sector 5 present a special problem which cannot be fully resolved by any treatment proposed for the area. As suggested in the discussion of Sector 4, screening of parts of the underareas to reduce the heavy blocks of shadow, intensive landscaping and tree-planting, and the construction of buildings within the column spacing beneath the structure would tend to break up the horizontal effect and, if well done, would help bring the highway into scale with its surroundings.

Social and Environmental — The site occupied by the Public High School lacks area for all of the playfields, parking areas, and other open space desired for a facility of its type and size. The presently unused portions of right-of-way that are reserved for the future Connector highway toward the north might well be used for the expansion of playfields and car parks until such time as they are required for highway construction.

Traffic — Although I-84 has diverted much traffic from the principal arterial streets in Sector 5, notably on Capitol and Farmington Avenues, access to and from the freeway for activities within the Sector tends to be circuitous and awkward. Traffic on Farmington Avenue would be better served, as would access to and from the north along Woodland Street, if the planned ramps from the Capitol Avenue overpass to Farmington Avenue were built. This would also relieve some of the pressures on the Sigourney Street interchange and tend to reduce travel on Farmington Avenue; access to the High School would also be improved.

HARTFORD PUBLIC HIGH SCHOOL

The spaces available for many of the activities suggested for Sector 5 are listed in Table 30. The table lists the parcels by number, as shown in Figure 40, and indicates their area and accessibility; all parcels are presently unused by other than the highway. In the text that follows, the uses for those parcels not directly associated with the High School development have been described and discussed. Table 31 summarizes near-term and long-range uses that might be developed jointly with the highway throughout Sector 5.

The major user of excess right-of-way land and other lands available for joint uses would be Hartford Public High School. The Hartford Board of Education has expressed interest in this area as a site for additional athletic facilities for the school.

Parking — The High School is a major generator of parking demand, introduced into an area alerady in short supply for residential and all-day car storage space. The expected intensification of land uses — apartment buildings and industrial expansion as well as new offices — can only make on-street parking conditions worse unless steps are taken to provide major new off-street lots and garages. The under-area lot proposed for the High School, and opportunities for lots, garages, and truck storage elsewhere in the Sector can supply realistic answers to space needs for this type of activity.

Parcel 51, situated beneath the Sisson Avenue ramps north of Capitol Avenue and Forest Street, will accommodate a portion of a 600-700 car parking lot for the Hartford Public High School designed to extend under part of the ramp structure. Other uses that migh be developed in cooperation with the High School would be ball courts (handball, volleyball, badminton, etc.); locker rooms; storage and maintenance facilities; repair shops for school equipment; and so on. The Capitol and Forest Street frontage might be used for some commercial development. An adjacent property owner on Capitol Avenue, the Connecticut State Employees Association, would like to use a portion of this parcel for parking about 100 cars. A pedestrian way, under the Sisson Avenue ramps, connecting the High School with Parcel 52 has also been suggested.

TABLE 31: SHORT-RANGE AND LONG-RANGE POTENTIALS FOR JOINT-USE DEVELOPMENT HARTFORD PUBLIC HIGH SCHOOL SECTOR

PARCEL NUMBER	AREA IN SQ. FT.[1]	LIKELY OR POSSIBLE USES			
		SHORT-RANGE	PROBABILITY[2]	LONG-RANGE	PROBABILITY[2]
49	56,140	Lease to Arrow-Hart for parking, storage, service facility	G	Same as short range; or lease to others for commercial and service development	F
50	32,770	Sale or lease to Arrow-Hart, Inc. for parking	G	Same; or development as secondary service or commercial area	F
51	343,400	Parking for Hartford Public High School, ball courts and storage for HPHS	G	Same	
52	100,680	Landscape buffer behind dwellings on Capitol Avenue; also, playlots	G	Same; pedestrian connection to HPHS	G
53 53A	68,700	Sell or lease to City for expansion of Public Works facility	G	Same	
54	10,460	Street widening and landscaping by Highway Department	F	Same	
55 56 57	247,380	Develop play fields for HPHS; use for housing	G	Same; or use portion for joint development of major housing project	G

[1] One Acre = 43,560 Square Feet.
[2] Probability: G = Good, F = Fair, P = Poor.
SOURCE: Wilbur Smith and Associates.

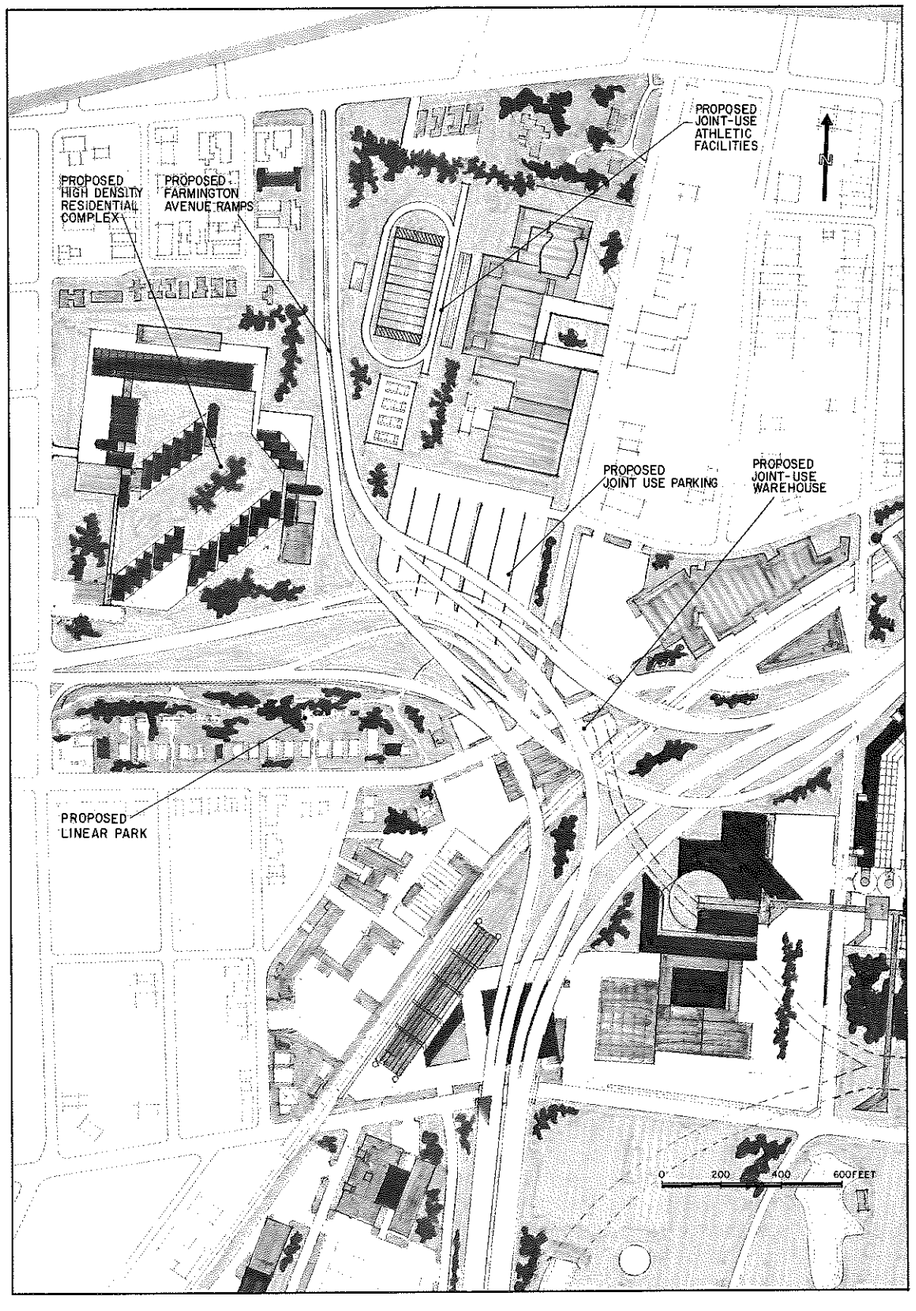


FIGURE 73: HARTFORD PUBLIC HIGH SCHOOL SECTOR JOINT-USES PLAN

The major user of excess right-of-way land and other lands available for joint uses would be Hartford Public High School. As seen on the plan, lands beneath the Sisson Avenue ramps would accommodate a portion of the 600-700 car parking lot for the school, and lands east of the proposed Farmington Avenue ramps would house additional athletic facilities. In addition, a pedestrian way and linear park are proposed for the area south of the Sisson Avenue ramps, and housing and public works facilities in the area adjoining the fire station and House of the Good Shepard.

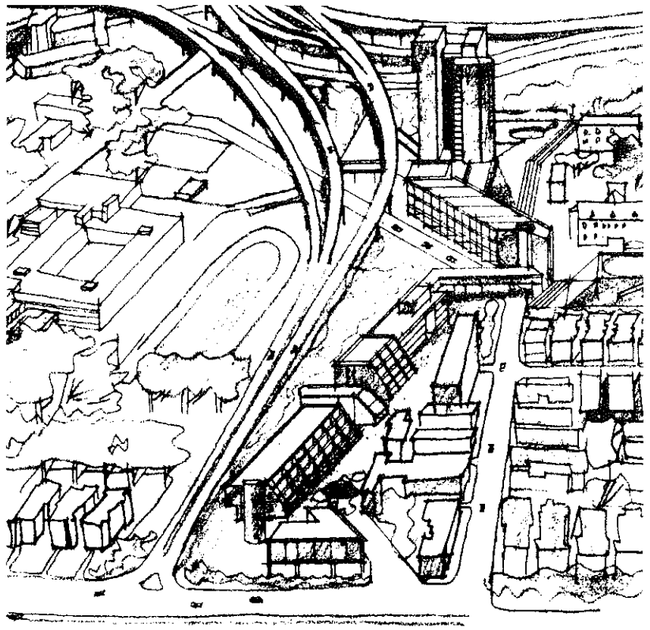


FIGURE 74: HARTFORD PUBLIC HIGH SCHOOL SECTOR HIGH-DENSITY RESIDENTIAL COMPLEX

Because of development pressures some sort of public action seems essential to preserve the House of the Good Shepard site for residential development. The adjoining figure shows how a development in the area might look.

OTHER JOINT-USE POTENTIALS

Parcel 49 is situated south of Capitol Avenue and north of the Penn Central tracks, a narrow wedge of land overpassed by the ramps that lead to Sisson Avenue. Most of the area is under viaduct. The street frontage on Capitol Avenue could conceivably be used to advantage for commercial or service establishments. Alternatively, the parcel could be used by the adjacent industrial establishment of Arrow-Hart, Inc., who might use it for employee parking or other plant-related needs. A portion of the parcel is underlain by conduit for the North Branch of the Park River.

Parcel 50, north of Capitol Avenue, is across the street from the above parcel and almost entirely under the overpass structures. Joint-use possibilities are roughly the same as those mentioned above, although parking is the more likely use because the area is adjacent to present Arrow-Hart parking facilities.

Parcel 52 lies south of the Sisson Avenue ramps, extending from Capitol Avenue to Sisson Avenue in a long, narrow strip behind residences fronting on Capitol Avenue. The two-acre area might best be used as a landscaped buffer strip between the freeway ramps and the adjacent residential uses. The buffer strip could be designed to include play equipment or other devices to make the area more useful to the residents. A very good use, if well maintained, would be a pedestrian path connecting beneath the freeway to Hartford Public High School grounds for access by students and other pedestrians going to and from the school building. A more remote alternative would be to create a metered parking lot in this parcel for use by express bus commuters to the Hartford central business district. (This possibility would have to be examined carefully — it may prove very difficult to persuade motorists to use a park-and-ride lot located so close to the central business district.) At least 200 cars could be accommodated in this parcel.

Athletic Fields — Nearly six acres of unused land have been reserved for the extension of a freeway north along the North Branch of the Park River, with access ramps to Farmington Avenue. Because the freeway extension is currently being held in abeyance and no immediate plans have been made to construct the Farmington Avenue access ramps, use of this land by the Hartford Public High School appears to be eminently reasonable.

Parcels 55, 56 and 57—The High School is in need of additional space for athletic fields and has requested access to as much of this area as can be spared. These uses seem appropriate. A suggested joint-use plan for the Hartford Public High School Sector, shown in Figure 73, is contingent upon the Connecticut Department of Transportation's plans for the major interchange structure now partially complete in the immediate vicinity of the Hartford Public High School. The suggested plan is premised upon the assumption that the Farmington Avenue ramps will be constructed. It is assumed that the new ramps would be placed toward the western edge of the highway property, near the House of the Good Shepard. This solution derives from the stated need of Hartford Public High School for additional land for athletic facilities adjoining the school and from the need for improved north-south route continuity, especially with Woodland Street. The joint-use plan shows how High School athletic facilities could make use of the excess highway right-of-way.

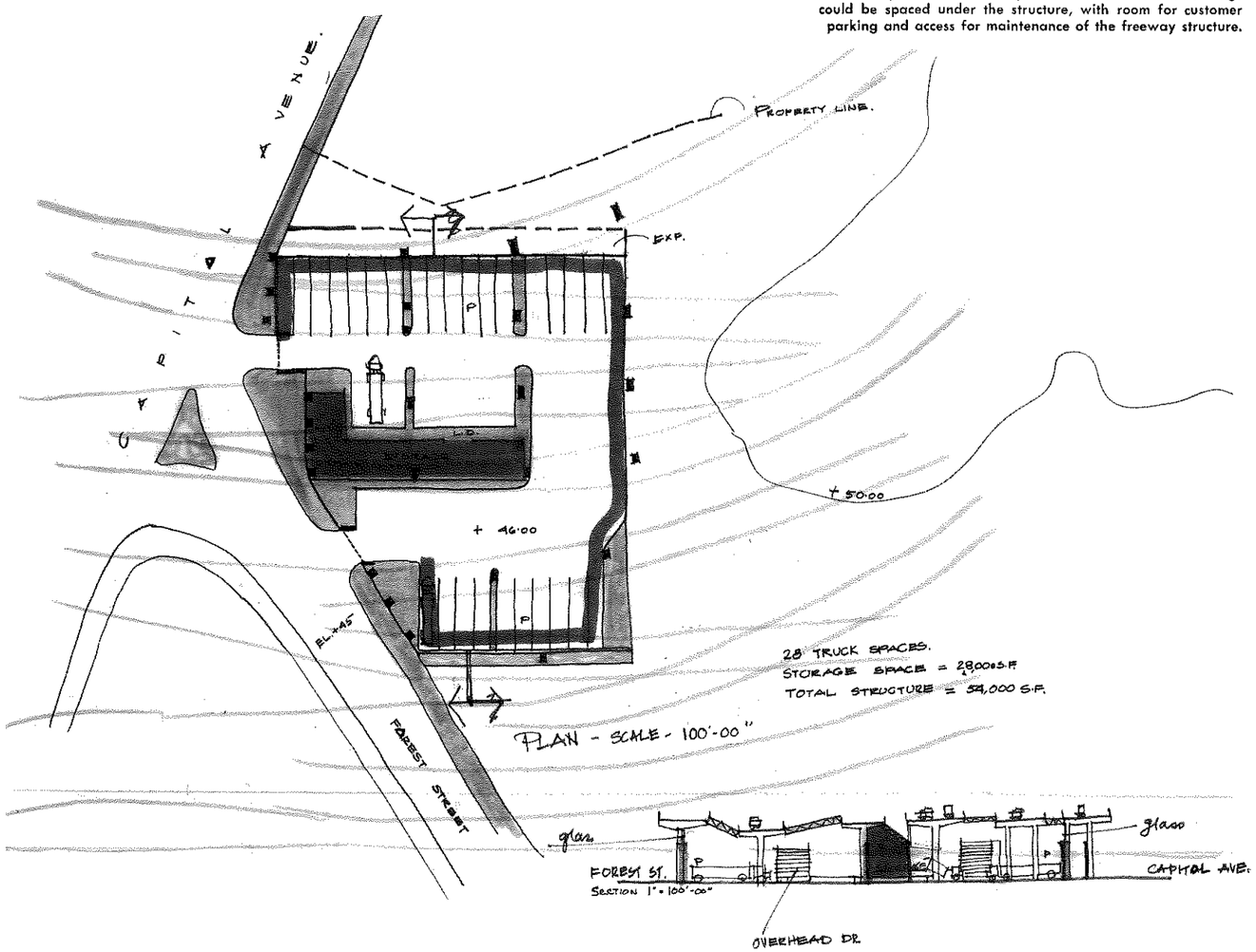
Parcels 53 and 53A lie directly north of the freeway ramps at Sisson Avenue and abut the new fire station. About an acre and a half of space is available here for further expansion of the City's public works facilities, and such use is quite appropriate for the site. The ramp area should be landscaped to maintain an atmosphere appropriate to residential neighborhoods.

Parcel 54 is a small remnant of land that lies west of Sisson Avenue and north of West Boulevard. The quarter-acre area is located on the corner of a heavily-used intersection and should not be developed for uses that generate pedestrian traffic. It is suggested that the area be landscaped or sold to the abutting neighbor.

Housing — While it is not directly affected by the I-84 right-of-way, the land now occupied by the House of the Good Shepard is an important element of an overall plan for this sector. Because of reasons previously mentioned, there are sure to be pressures for a change in land use on this site. In order to preserve this land for residential development — the most appropriate use as far as overall planning objectives are concerned — some form of public action seems essential. Such a change in land use has been considered previously and has been studied in limited detail by the Hartford Commission on the City Plan. Figure 74 shows how this might be accomplished. Maximum housing space could be obtained by routing lanes of the Farmington Avenue ramps further east then presently planned, to make room for a major residential planned unit development.

FIGURE 75: HARTFORD PUBLIC HIGH SCHOOL SECTOR JOINT-USE COMMERCIAL DEVELOPMENT

A possible development scheme for the area along Capitol Avenue, immediately under the interchange ramps, is shown below. The plan shows how representative commercial buildings could be spaced under the structure, with room for customer parking and access for maintenance of the freeway structure.



SUMMARY OF JOINT-USE POSSIBILITIES:

Hartford Public High School Sector — With the exception of Hartford Public High School, development in Sector 5 was essentially complete in the 1920's. Recent replacement activity has resulted in more intensive use of this highly accessible area. Giving due consideration to the possibilities mentioned above and the pressures for more intensive development in Sector 5, the following joint-use potentials are recommended for development.

Areas West and South of Hartford Public High School — The joint-use plan proposes that this area be devoted to athletic fields for Hartford Public High School. These would include football, soccer, and baseball fields, and basketball and tennis courts. Approximately 18 acres would be included in this athletic plan. A small area of about one acre, fronting on Farmington Avenue, could be reserved for residential use. Along Forest Street, south of the high school, a plan for surface parking has been prepared by the Commission of the City Plan, utilizing some space under the interchange ramps. The land area available for parking would provide space for 500 to 700 cars.

Uses for Other Excess Right-of-Way Parcels — A small playground should be developed along the strip of land between the Sisson Avenue ramps and the line of two- and three-family homes on Capitol Avenue. This space could also be utilized as a pedestrian way for students walking to and from Hartford Public High School.

Along Capitol Avenue, immediately under the interchange ramps, there is space for some commercial frontage. A possible development scheme for this area is shown in Figure 75. This sketch illustrates how representative commercial buildings could be spaced under the structure, with room for customer parking and access for maintenance of I-84.

The commercial frontage would be a private undertaking. The specific site layout and orientation of the structures and parking facilities planned in conjunction with the commercial uses would have to be carefully coordinated with the Department of Transportation to insure that adequate access is provided for maintenance of I-84.

Roadway Changes — It is recommended that direct ramps from Farmington Avenue to the interchange be constructed. Ideally it would be desirable for this arterial to have continuity with Woodland Street.

CHAPTER TWELVE

THE PARKVILLE INDUSTRIAL AREA: SECTOR 6

This sector lies west and north of I-84, extending along the freeway from Park Street on the north to Prospect Avenue at the Hartford-West Hartford Town Line. Areas directly adjacent to I-84 are bounded by the freeway on the east and south, by Kibbe Street, Prospect and New Park Avenues on the west and Park Street on the north as shown in Figures 76 and 77.

Fourteen parcels of land in highway ownership, with an aggregate area of 8.7 acres, have been designated for possible joint-use development. About two acres of this land are currently used for informal parking; the rest of the area is unused. The sector currently has about 2,500 spaces of surface parking, a large proportion of which are arranged haphazardly around their respective functions.

Land uses in Sector 6 are very mixed, ranging from a portion of Pope Park, cut off from the main body of the park by construction of I-84, to residential, commercial and industrial uses of many kinds. Between the railroad tracks and I-84, most uses are for warehousing or manufacturing, except for the portion of Pope Park just mentioned, and three small blocks of residential structures bounded by Hamilton, Bartholomew and Olive Streets. Small-scale warehousing and industrial activities also occur in the residential blocks. Many structures show signs of deterioration and some are vacant.

North and west of the Penn Central tracks, uses are also mixed. Residential buildings dominate the block bounded by Francis Avenue, Park Street and New Park Avenue, interspersed with commercial and small industrial uses. The Royal Typewriter factory and offices occupy a large tract on New Park Avenue near the freeway; a large piece of vacant land lies between the freeway and Kane Street, extending from New Park Avenue to Prospect Avenue, while mixed residential, commercial and industrial activities are found throughout the remainder of the Sector.

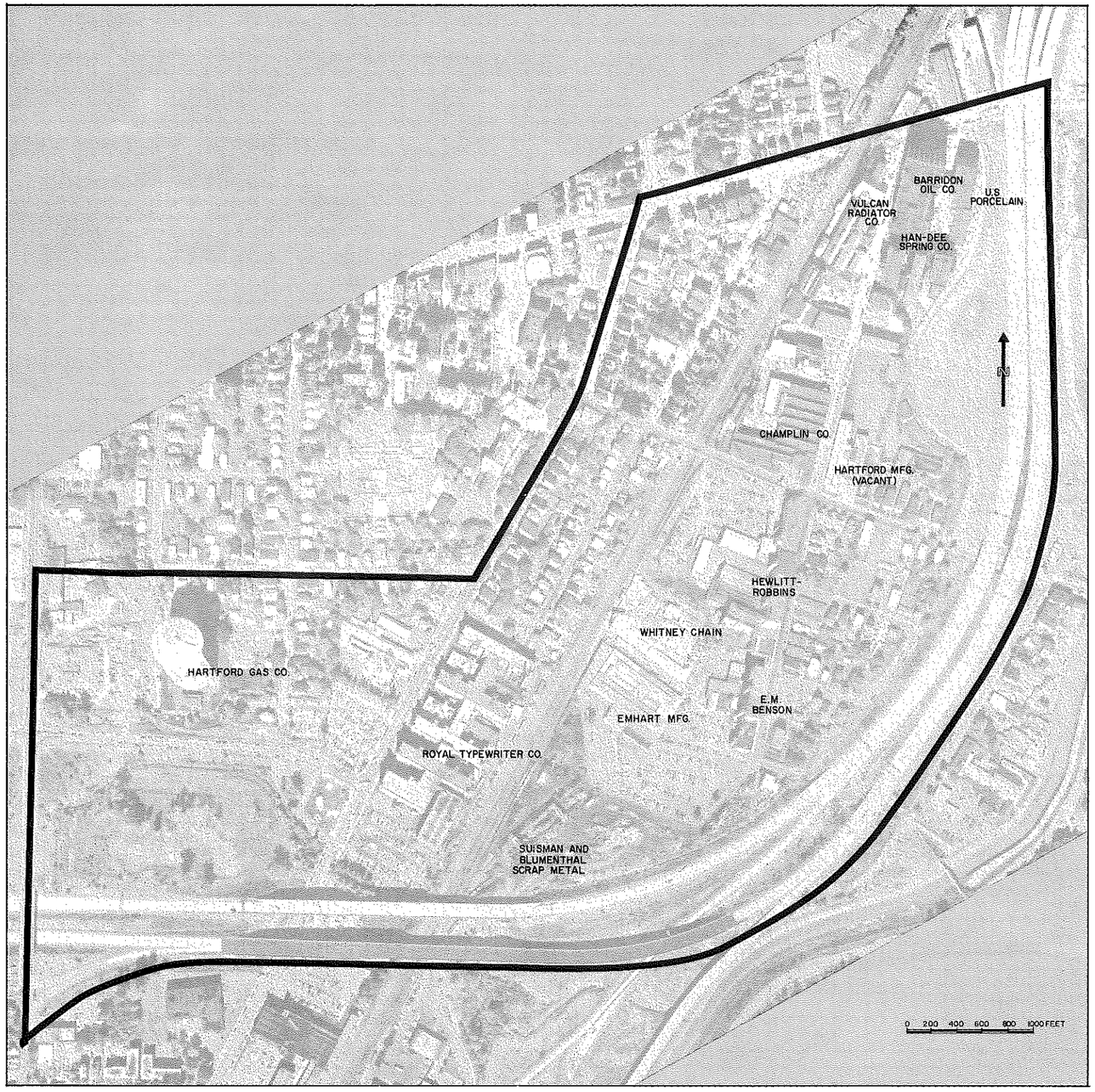


FIGURE 76 AND 77: PARKVILLE INDUSTRIAL SECTOR BOUNDARY AND LAND USE

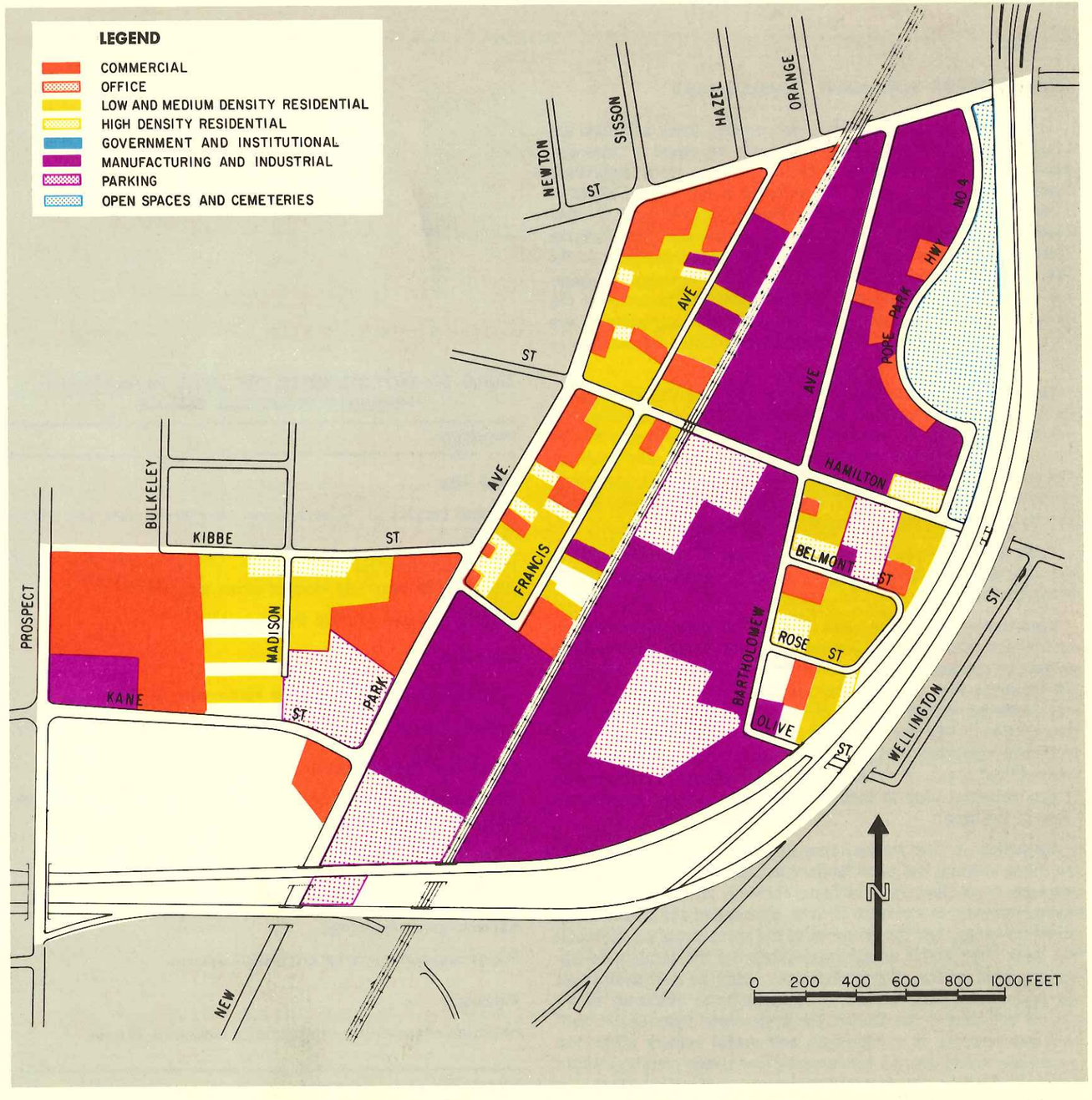
This sector lies west and north of I-84, extending along the freeway from Park Street on the north to Prospect Avenue at the Hartford-West Hartford Town Line. Areas directly adjacent to I-84 are bounded by the freeway on the east and south, by Kibbe Street, Prospect, and New Park Avenues on the west and Park Street on the north. Land uses are very mixed, ranging from a portion of Pope Park, cut off from the main body of the park by construction of I-84, to residential, commercial, and industrial uses of many kinds. Between I-84 and the railroad tracks, most uses are for manufacturing and warehousing, except for an enclave of deteriorating residential structures.

Increasing functional obsolescence of industrial plants in the sector, along with planned Parkville Urban Renewal in the northwest portion may significantly alter land use within the area. The area is bounded by the recently constructed Kane Plaza, a medium-sized shopping center west of Prospect Avenue in West Hartford; residential and institutional uses to the north and northwest; and the industrial community and flood plain east and south of Interstate 84.

In addition to I-84, traffic generated in Sector 6 is served by Prospect Avenue, giving access north and south along the western edge of the area, and by New Park Avenue which provides continuity with Sisson Avenue and Park Street. Spur tracks from the Penn Central railroad provide sidings for freight car deliveries at the several large industrial establishments in the area. Off-street parking is limited for both large and small industries, but the area is well served by public transportation.

Population in the Sector has remained almost constant over the past decade, as early right-of-way acquisition for I-84 minimized displacement. Portions of the area — particularly those blocks between the railroad tracks and the freeway — have recently been rezoned for industrial use and further transition out of the area by residential and other non-conforming uses is to be expected. A number of obsolete loft buildings may give way to modernized industrial activities. Employment should increase in this Sector as more intensive industrial uses develop.

The relative isolation of the Parkville industrial community, already cut off from the west by the Penn Central right-of-way, was reinforced by the construction of I-84. Such isolation may be regarded as both asset and defect — it minimizes conflicting uses, but access to the area is constrained. Although located directly adjacent to I-84, the industrial area is afforded relatively poor access to and from the highway. This, combined with increasing functional obsolescence of industrial structures in the area, makes future growth unpredictable.



OPPORTUNITIES FOR JOINT DEVELOPMENT

In the Parkville Sector of the I-84 corridor, there exists an unusual opportunity to complete what might be called a "true corridor plan". As mentioned in Chapter 1, the most significant characteristic of the entire I-84 corridor in the City of Hartford is the predominant industrial use. Figure 22 in Chapter 2 illustrated the employment concentration in the corridor. The Parkville Sector includes the most extensive industrial development in the I-84 service area within the City of Hartford. The suggested joint-use plan, therefore, builds upon the industrial character of the Parkville area and constitutes a proposal for the upgrading of this area to become one of the most significant industrial districts in the Hartford Region.

The suggested development plan for the area shown in Figure 78, indicates that the entire area between I-84 and the Penn Central railroad tracks — approximately 65 acres — would be devoted to industrial use. In addition, the area generally south of Kibbe Street, including the Royal Typewriter factory, installations of the Hartford Gas Company, and some residential uses, could also be part of the overall industrial district.

Table 32 lists some of the "problems" and "opportunities" in this area with special attention to the overall industrial character of the Sector.

Land Use — Except for a few relatively large and flourishing industrial activities, land use in Sector 6 is very mixed, with isolated pockets of residential and commercial activities, vacant industrial loft buildings that have become obsolete for their original uses, and scattered vacant parcels of land, including remnants from construction of I-84 and a severed fraction of Pope Park. The most promising opportunity is for the reorganization of unused and underutilized areas, removal of obsolete structures, the conversion of non-industrial uses to industrial development, and general renewal of the area.

Aesthetics — The freeway through much of this Sector is on low, filled section, has been landscaped, and presents a good appearance — in fact, is a unifying element. Within the adjacent blocks, however, the mixture of uses, abandoned and poorly maintained buildings, and the presence of the scrap-metal yards, result in a quite unattractive appearance. Except for the scrap-metal operation, most of the other deficiencies could be overcome in an aggressive renewal effort designed to optimize efficiency of industrial activities in the Sector. The scrap-metal operation is well-run, and certainly is a legitimate and useful activity within the industrially zoned district. Landscaping and screen plantings would help to develop a tidier appearance.

TABLE 32: OPPORTUNITIES FOR JOINT DEVELOPMENT PARKVILLE INDUSTRIAL SECTOR

PROBLEM	OPPORTUNITY
Land Use	
Isolated pockets of residential and commercial uses east and west of I-84.	Reorganize and renew area west of I-84 for industrial district; enlarge Pope Park east of I-84.
Vacant industrial buildings.	Replace obsolete structures; redevelop area.
Unused land near I-84 viaduct structure.	Provide drainage; site grading; joint use of I-84 land.
Severed remnant of Pope Park.	Convert to industrial use; possible exchange for land parcel south of Wellington Street.
Aesthetics	
Disorganized and deteriorating appearance of area.	General rehabilitation and renewal of area.
Rusted piles of scrap metal in reclamation area along highway.	Screen area; better "housekeeping".
Social and Environmental	
Residential portions of area isolated by I-84. Economic health of area is declining.	Relocate remaining residential areas east of Penn Central tracks for enlarged, renewed industrial district.
Traffic	
Less than ideal access to and from I-84.	Develop new ground access to Flatbush Avenue.
Railroad grade crossings.	Same as above.
Poorly organized interior circulation system.	Develop frontage road along west side of I-84.
Parking	
Shortage of parking for some major industries in area.	Reorganize street system; phase out non-industrial uses to create new parking areas.

SOURCE: Wilbur Smith and Associates.

FIGURE 78: PARKVILLE INDUSTRIAL SECTOR DEVELOPMENT PLAN

The suggested development plan for the area indicates that the entire area between I-84 and the railroad tracks — approximately 65 acres — be devoted to industrial use. In addition, the area generally south of Kibbe Street, including the Royal Typewriter Company, might be part of the overall industrial district. The plan builds upon the industrial character of the area and constitutes a proposal for the upgrading of this area to become one of the most significant industrial districts in the Hartford Region.

Social and Environmental — Residential uses in this area have declined and the area east of the Penn Central tracks has recently been re-zoned for exclusively industrial use. The existing housing is likely to be phased out as efforts are made to reassemble larger blocks of land for industrial use; initiation of a government-sponsored renewal program would expedite these changes.

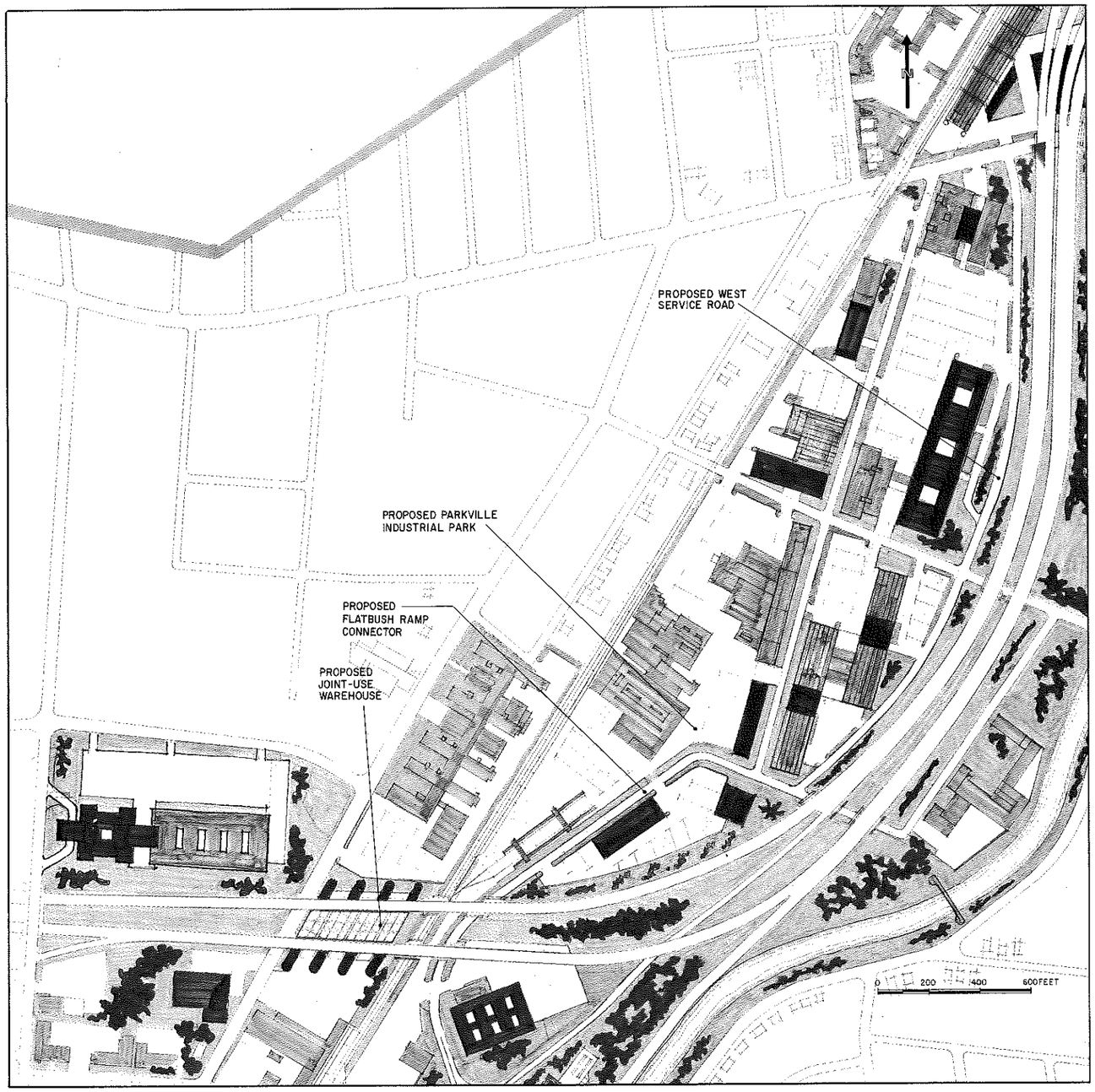
A special problem is created by the presence of the severed portion of Pope Park. Since residential activities are disappearing, the use of the park properties for recreational purposes can be expected to decline. It seems reasonable to propose that this fragment be merged with other industrial lands in the renewal of the Sector.

Traffic — I-84 has constructed a permanent barrier along the south and east of the privately-owned lands in this Sector. A large portion of the Sector is bounded by the Highway on one side and the Penn Central mainline tracks on the other, reached only by grade crossings over the tracks. Streets within the area are poorly organized, especially with regard to the consolidation of properties and development of access for industrial renewal.

Access between this area and I-84 is somewhat circuitous via any of the options available (Sisson, Prospect or Flatbush interchanges) and choice of any of them involves traversing a residential community and/or an at-grade railroad crossing.

Traffic circulation within the Parkville area could be corrected by reorganizing the street pattern, with a new frontage road along the west side of I-84, and constructing a new street beneath the I-84 viaduct just east of, and parallel to, the Penn Central tracks. with connection to the Flatbush Avenue ramps in the flood plain area of Sector 7.

Parking — There is currently some shortage of parking space for workers in Sector 6, and this problem will become more acute as industrial renewal is accomplished unless provision is made for an adequate supply of off-street car storage as conversion and land improvement proceeds.



INDUSTRIAL REDEVELOPMENT OF AREA BETWEEN PENN CENTRAL TRACKS AND I-84

The suggested plan for this area, shown in perspective in Figure 79, is designed to accomplish better organization of industrial facilities within the area, conversion of one small commercial-residential enclave to industrial use, and much greater organization of interior streets and surface parking spaces. It is anticipated that approximately 18 acres of non-industrial land could be converted to industrial use, and up to 20 per cent more floor area might be added to existing floor space in the district. The plan proposes a more intensively used industrial district than might be justified in a more suburban location; but this is in keeping with the urban character of the proposed "Parkville Industrial District." It further reflects the fact that the site is easily accessible via existing public bus routes, and the need for large parking areas is decreased accordingly. The proposal also shows several important roadway modifications, discussed separately below.

The following parcels of land shown in Figure 40 as properties of the Highway Department would be incorporated in the redevelopment of this area:

Parcel 60 was separated from Pope Park to provide space for a westbound access ramp from Park Street to I-84. The ramp was eliminated in final design of the freeway and the parcel has become excess property. Since the parcel was severed from the main body of Pope Park, it is proposed that it be dedicated to industrial redevelopment, especially if other more suitable lands can be found for compensating enlargement of the Park.

Parcel 61 is the remnant of a series of house lots purchased for construction of relocated Pope Park Highway No. 4. As with Parcel 60, it is proposed that the parcel be dedicated to industrial redevelopment of the Parkville area.

Parcels 63 to 69 constitute a series of small remnants of house lots purchased for freeway construction. They have little use, individually, and should be incorporated into the overall redevelopment plan for the Parkville area.

Alternative joint-uses for excess parcels in this Sector generally relate to land uses that might be considered for all of Parkville. If, in the long-range future, continued industrial use of this area is not considered practical, an institutional use such as a college or hospital might be considered.

Street Improvements — The joint-use plan also indicates suggested roadway modifications in the Parkville area. The plan suggests, at an early stage, the development of a west frontage road paralleling I-84 from Park Street south to Olive Street. At Olive, a new street would be built beneath the viaduct section of the freeway, connecting the industrial area with the Flood Plain area south of I-84, permitting access to the Flatbush Avenue interchange ramps. The connection would require a minimum of new land taking and would permit a more direct routing of traffic for origins and destinations served by I-84 toward the east.

OTHER JOINT-USE POSSIBILITIES

Tables 33 and 34 list the parcels assigned for study and evaluation in this Sector, with the size of each and some of the possible uses that have been discussed. Among others, the following activities and applications have been considered for available parcels, in addition to those already discussed.

Area South of Kibbe Street — Figure 78 also shows a possible land utilization plan for the area south of Kibbe Street. The principal feature is a proposal for utilizing the vacant land south of Kane Street, fronting on I-84. This 13-acre parcel would provide an ideal location for a major new manufacturing facility or for expansion of an industrial use already located in the area.

Parcels 70 and 71 offer an opportunity to develop a joint-use activity under the elevated portion of I-84 immediately east of New Park Avenue. This could be a warehouse for either Royal Typewriter to the north or Heublein Foods to the south. Representative sketches of a plan view and cross-section of this type of structure are shown in Figure 80. These sketches indicate how the column spacing under I-84 could be accommodated in the design of a warehouse, allowing adequate room for maneuvering in aisles between storage rows. The warehouse could be built up to the underside of the I-84 elevated section, leaving space between the roof and underside of the roadway for inspection and maintenance of bridge columns and girders.

Warehouse Feasibility — The Land Residual Analysis set forth in Table 35 is based on assumptions more fully detailed in Chapter 5 of the report. For computational purposes, the proposed warehouse was assumed to contain 75,000 square feet, and cost $12.00 per square foot. As conceived, the project would generate about $6,000 annually for land lease or purchase.

The amount of land or air-rights required for construction of the project would, of course, vary widely with the design of the structure and components of the project as ultimately conceived. Design "trade-offs" in terms of the amount and cost of available land, versus the amount and cost of air-rights structures to be employed, would exert great leverage on the configuration adopted.

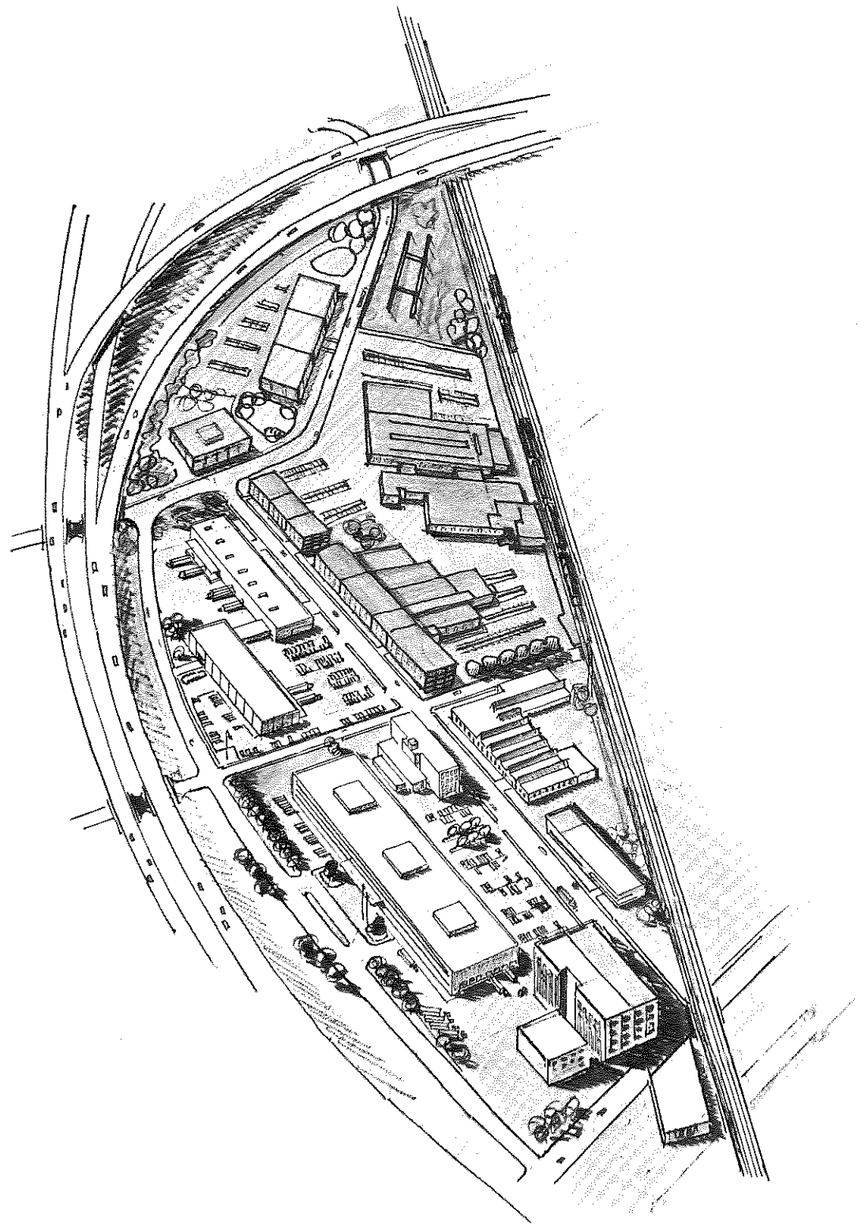


FIGURE 79: PARKVILLE INDUSTRIAL SECTOR PERSPECTIVE

The suggested plan for the area is designed to accomplish better organization of activities within the area, conversion of one small commercial-residential enclave to residential use, and much greater organization of interior streets and surface parking spaces. The plan proposes a more intensively used industrial district than might be justified in a more suburban location, reflecting the easy accessibility of the site via existing public transportation. The proposal also suggests several important roadway modifications.

MISCELLANEOUS PARCELS

Parcel 72 lies across New Park Avenue from Parcel 70, above. The freeway under-area is shallow at this point, allowing little room for a commercial use of any kind. The most appropriate treatment would be to screen and landscape the under area so that it fit more attractively into this environment.

Parcels 73 and 74 are small fragments of property, isolated from the rest of I-84. Both pieces have been sold to a private owner who plans to incorporate them with other lands for future development.

TABLE 33: EXCESS I-84 RIGHT-OF-WAY PARCELS
PARKVILLE INDUSTRIAL SECTOR

PARCEL NUMBER	PARCEL DESCRIPTION	AREA IN SQ. FT.[1]	STREET ACCESS	PRESENT USE
60	Part of Pope Park, north of I-84	207,000	Yes	Unused
61	West side Highway #4, north of Hamilton	12,000	Yes	Unused
63	West side I-84, Hamilton-Belmont	8,570	Yes	Unused
64	West side I-84, Hamilton-Belmont	1,000	Yes	Unused
65	West of Rose, west of I-84	2,100	Yes	Unused
66	South of Rose, west of I-84	2,520	Yes	Unused
67	North of Olive, west of I-84	580	No	Unused
68	South of Olive, west of I-84	3,000	Yes	Unused
69	South of Olive, northwest of I-84	6,780	No	Unused
70	East of New Park, under I-84	91,650	Yes	Informal Parking
71	East of New Park, under I-84	8,250	Yes	Informal Parking
72	West of New Park, under I-84	24,000	Yes	Unused
73	East of Madison, north of Kane	6,090	Yes	**Sold;** Developer
74	West of Madison, north of Kane	3,000	Yes	**Sold;** Developer

[1] 1 Acre = 43,560 Square Feet.
SOURCE: Connecticut Department of Highways and Wilbur Smith and Associates.

FIGURE 80: PARKVILLE INDUSTRIAL SECTOR JOINT-USE WAREHOUSE

Two of the available parcels offer the opportunity to develop a joint-use activity under the elevated portion of I-84 immediately east of New Park Avenue. Representative sketches of a plan view, elevation and section of such a warehouse structure are shown in the figure to the right. These sketches indicate how column spacing could allow adequate room for maneuvering in aisles between storage rows. The warehouse could be built up to the underside of the I-84 elevated section, leaving space between the roof and underside of the roadway for inspection and maintenance of the freeway structure.

TABLE 34: SHORT-RANGE AND LONG-RANGE POTENTIALS FOR JOINT-USE DEVELOPMENT
PARKVILLE INDUSTRIAL SECTOR

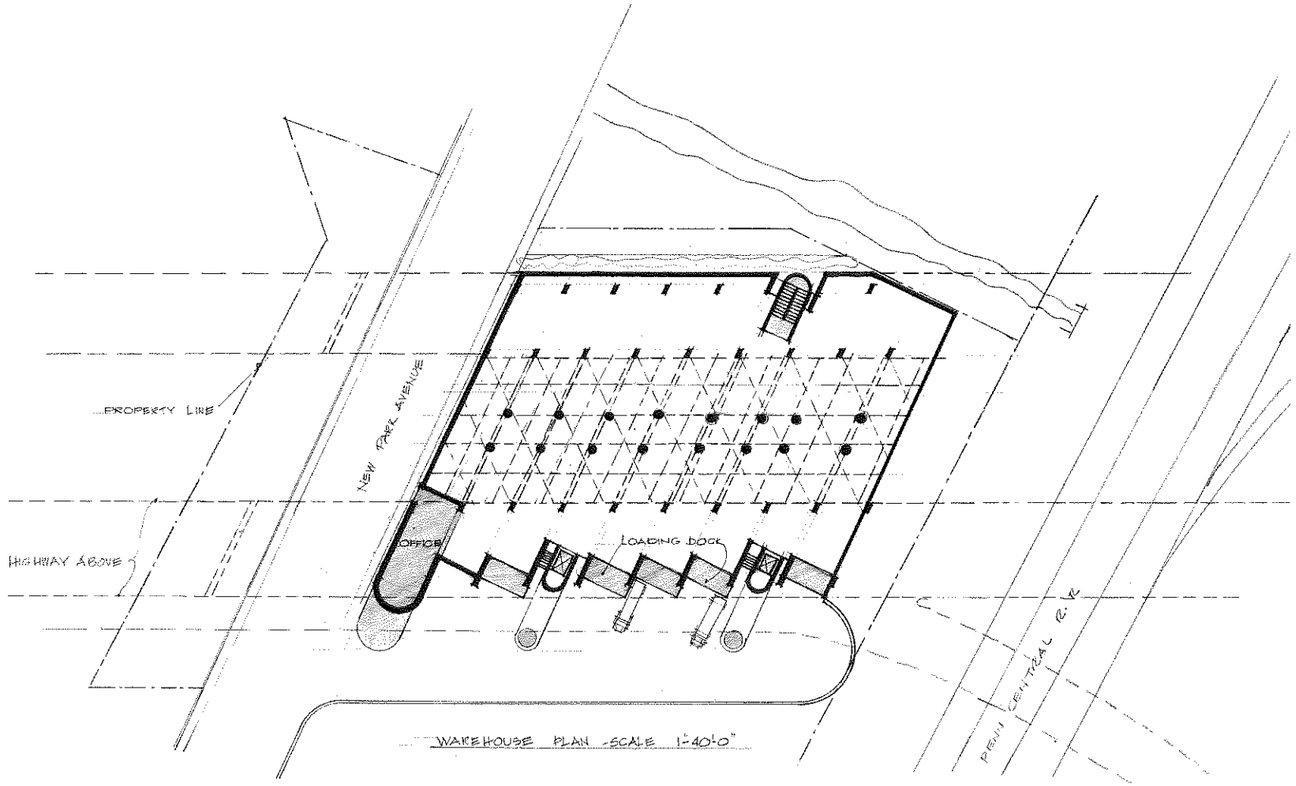
PARCEL NUMBER	AREA IN SQ. FT.[1]	LIKELY OR POSSIBLE USES			
		SHORT-RANGE	PROBABILITY[2]	LONG-RANGE	PROBABILITY[2]
60 61	219,000	Convert to industrial development; new frontage road	F	Same as short range	G
63 69	25,550	Landscape; transfer to City	G	Use for road widening, consolidate with industrial redevelopment	F
70 71	99,900	Lease to Heublein or Royal Typewriter for parking	G	Same; or develop warehouse and truck terminal	G
72	24,000	Landscape	G	Same	
73 74	9,090	Sold for private use (housing or industry)	G	Same	

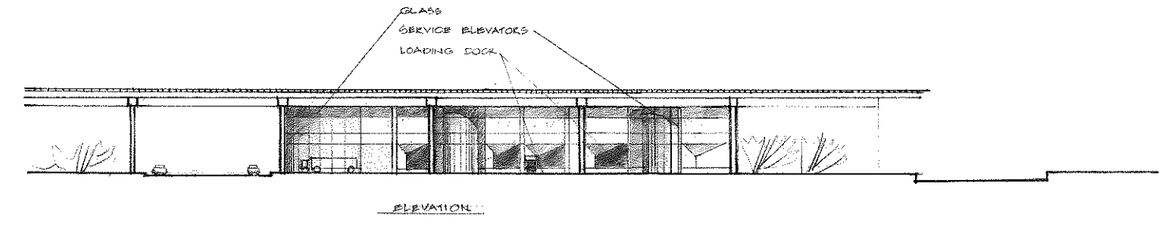
[1] One Acre = 43,560 Square Feet.
[2] Probability: G = Good, F = Fair, P = Poor.
SOURCE: Wilbur Smith and Associates.

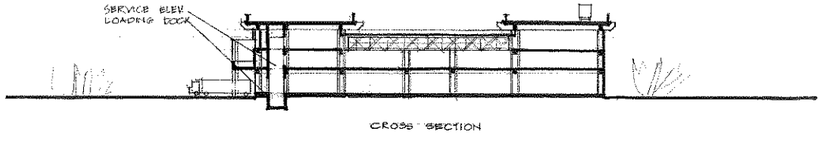
TABLE 35: LAND RESIDUAL ANALYSIS
PARKVILLE SECTOR WAREHOUSE
(IN CONSTANT 1970 DOLLARS)

ITEM	TOTAL COST
Estimated Construction Cost 75,000 square feet @ $12.00/sq. ft.	$900,000
Estimated Gross Income	150,000
Estimated Annual Expense Operation, Maintenance, etcetera Taxes and Insurance at 5%	—— 45,000
Estimated Net Income to Real Estate	105,000
Net Income Required by Improvements Financing 70% at 9.5% for 25 years Equity 30% at 12.0% return	99,000
Income Available to Land	6,000
TOTAL AVAILABLE FOR SITE CAPITALIZED AT 9.5%	$ 63,200

SOURCE: Hammer, Greene, Siler Associates.







PLAN IMPLEMENTATION: PARKVILLE INDUSTRIAL SECTOR

The suggested plan for renewing and redeveloping the Parkville Industrial area so that it may become a modern, organized industrial district seems reasonable in light of existing land uses in the area, the Sector's central location in the Hartford region, its good accessibility and the excellent transport facilities available. However, the implementation of this plan will be difficult. Often the development of a modern industrial district or industrial park is the work of skilled professional industrial developers who own or at least have some ownership rights over the entire parcel. This is not so in the Parkville area; the realization of a redevelopment plan must be carefully developed and coordinated among the many land owners. The opportunity exists for a public agency in the City of Hartford to assume a leadership role in this plan. This is because an essential element of the plan is redevelopment of an existing pocket of commercial-residential uses, and realignment of several streets in the area. The sizable area of land now in public ownership, represented by the remnant of Pope Park on the west side of I-84, also presents an opportunity for beneficial public participation in the project.

The most appropriate vehicle for implementing the plan would appear to be through the urban renewal process in which appropriate parcels are assembled for renewal, and a comprehensive development plan is prepared for the entire renewal area. Execution of the plan would then have the benefit of public funds, and through the cooperation of private landowners in the area, the realization of a modern industrial district could take place.

Another crucial element in implementation of the plan is to convince several major manufacturers who are located in Parkville that their best interests lie in redeveloping this area. This means that they must be convinced that adequate room for expansion exists in the area and that it would be profitable for them to remain rather than move to a new site in a suburban location.

The proposal to develop a joint-use structure under Interstate 84 at New Park Avenue is one that should have ready acceptance from either of the neighboring properties, the Royal Typewriter Company or the Heublein Foods Company. Both of these concerns have expressed an interest in a warehouse facility located on this site.

CHAPTER THIRTEEN

THE BROOKFIELD FLOOD PLAIN AREA: SECTOR 7

Ramps of the Flatbush Avenue interchange traverse a large parcel of land on the South Branch of the Park River Flood Plain. The I-84 freeway and interchange ramps directly affect properties within the area bounded by Flatbush Avenue on the south, Brookfield Street on the east, I-84 on the north, and Prospect Avenue and New Park Avenue on the west. The aerial photo in Figure 81 and the land-use map in Figure 82 illustrate the relation of freeway and ramps to activities within this area.

Sector 7 contains the smallest number of highway parcels of the seven sectors; these six parcels, however, comprise the largest amounts of State-owned lands, amounting to about twenty-seven and a half acres, or nearly a third of all the lands designated for "joint-use" evaluation, as shown in Table 36.

Developed lands in Sector 7 are devoted mainly to two major industrial uses — the Heublein plant, located between New Park Avenue and the Penn Central tracks, and the Suisman and Blumenthal, Inc. scrap-metal yards east of the railroad. Smaller-scale industries occupy the mixed-use area between Brookfield Street and the freeway southeast of Hamilton Street, and a somewhat similar mixture of residential, commercial and industrial activities occupies the blocks between Prospect and New Park Avenues. Some remaining residential uses adjacent to the Heublein properties in the block between the rail tracks and New Park Avenue are gradually being acquired by Heublein for expansion of plant facilities and parking areas.

About half of the land in Sector 7 is devoid of buildings, consisting of the Flood Plain of the South Branch of the Park River, which has now been relocated in an open channel. Except for the Flatbush Avenue ramps, most of the remaining land is available for possible joint-use activities.

There are two major public housing areas, Rice Heights and Charter Oak Terrace, immediately east and south of the Sector. The future of these developments — particularly Charter Oak Terrace, built as World War II emergency housing — will influence the character and needs of this area.

Construction of moderate-density buildings along Prospect Avenue, balanced by removal of land from residential use has maintained population at an almost constant level of 575 residents from 1960-1970. However, little or no future residential growth is expected, as all lands presently zoned for residential use have been built upon. Employment during the 1960-1970 period increased somewhat within the Sector, from 1,300 to 1,600 largely due to an increase of 200 jobs following expansion of the Suisman and Blumenthal scrap-metal operation.

Long-range prospects are for slow growth in employment, principally at Heublein. Population in the area has experienced little change during recent years and future residential development will depend on policies of land development, particularly in the mixed-use areas, and policies relating to the existing public housing areas.

Access to Sector 7 is excellent, with arterial street service from Flatbush Avenue, Prospect-New Park Avenue and Brookfield Street, plus the Flatbush and Prospect Street interchanges with I-84. Railroad sidings provide rail freight service to the principal industries in the area. Parking and truck terminal facilities are located off-street throughout the sector.

FIGURE 81: BROOKFIELD FLOOD PLAIN SECTOR BOUNDARY

Ramps of the Flatbush Avenue interchange traverse a large parcel of land on the Flood Plain of the South Branch of the Park River. The I-84 freeway and interchange ramps directly affect properties within the area bounded by Flatbush Avenue on the south, Brookfield Street on the east, I-84 on the north, and Prospect and New Park Avenue on the west, as illustrated in the adjoining aerial photo.

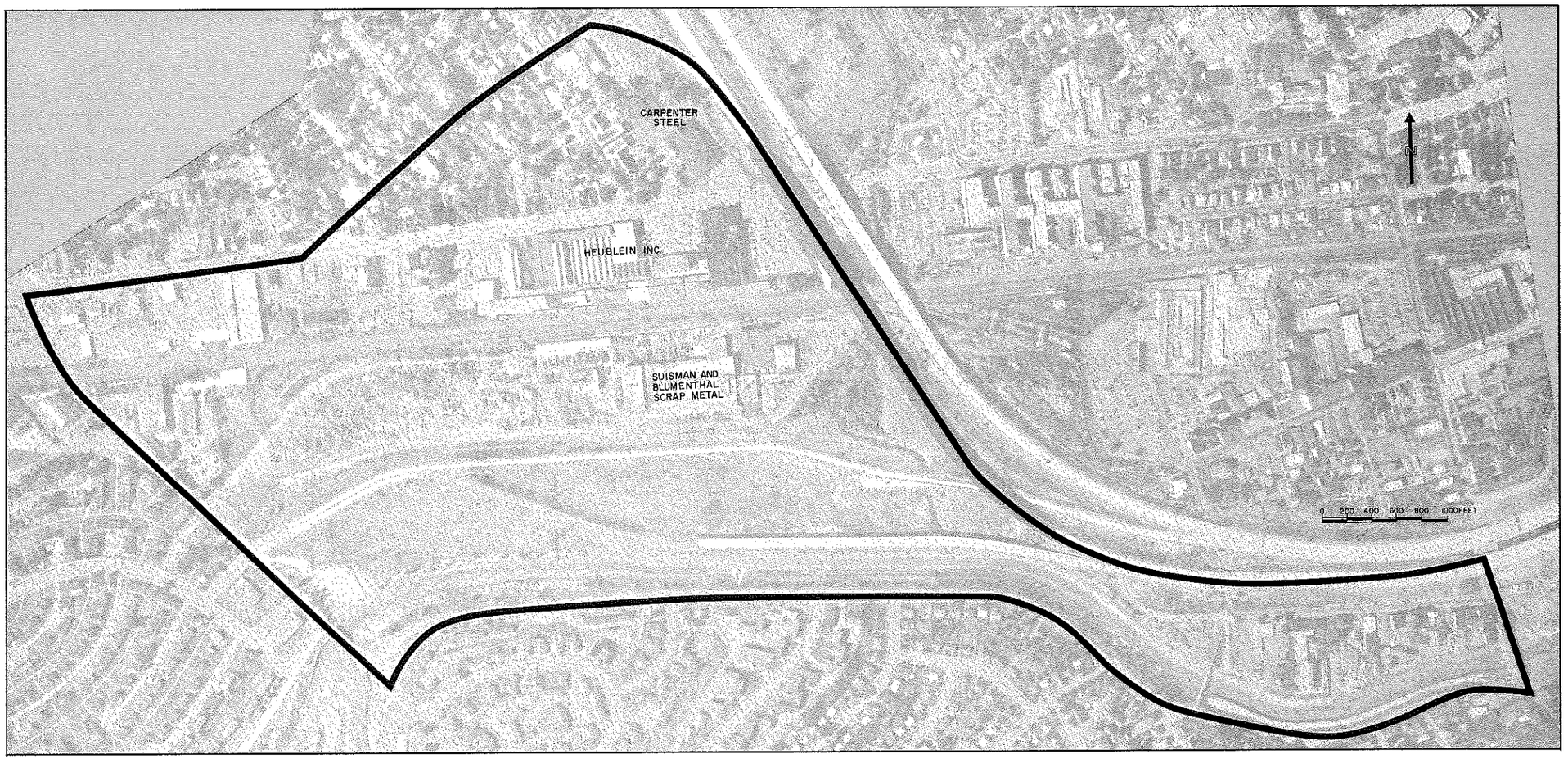
With the opening of I-84, much of the traffic that formerly used Flatbush and New Park Avenues as the major access routes between Hartford and communities to the west was diverted to the Prospect and Flatbush Avenue interchanges. As a result, traffic on Flatbush Avenue to the east of the I-84 ramps and on New Park Avenue to the south of Flatbush has been materially reduced.

The ramp system to and from Flatbush Avenue was designed as part of a planned "Cedar Ridge Connector" to Connecticut Route 15 (Berlin Turnpike) in Newington. Current plans no longer contemplate this extension. The westbound off-ramp is on permanent pavement for about 200 feet south of the I-84 mainline and then becomes a "temporary" pavement to Flatbush Avenue. The eastbound on-ramp consists of "temporary" pavement for several hundred feet north of Flatbush Avenue, crossing the Flood Plain diagonally to join a 1,200-foot-long elevated structure that parallels the South Branch Park River channel. This ramp, on 12 to 16-foot columns at the approximate elevation of Brookfield Street, visually and physically reinforces the isolation of the Flood Plain from the adjacent residential community.

TABLE 36: EXCESS RIGHT-OF-WAY PARCELS BROOKFIELD FLOOD PLAIN SECTOR

PARCEL NUMBER	PARCEL DESCRIPTION	AREA IN SQ. FT.(1)	STREET ACCESS	PRESENT USE
75	South of Olive, west of Wellington, east of I-84	73,000	Yes	Unused; flood plain
76	Area between Flatbush ramps	465,000	No	Unused; flood plain
77	Between RR & Flatbush off ramp, south of I-84	187,500	Yes	Unused
78	Non-access along Flatbush ramp	40,000	No	Unused
79	North of Flatbush ramp to river channel	332,000	Yes	Unused
80	Flatbush-Saybrook, between river and street	100,000	No	Unused

(1) 1 Acre = 43,560 Square Feet.
SOURCE: Connecticut Department of Highways and Wilbur Smith and Associates.

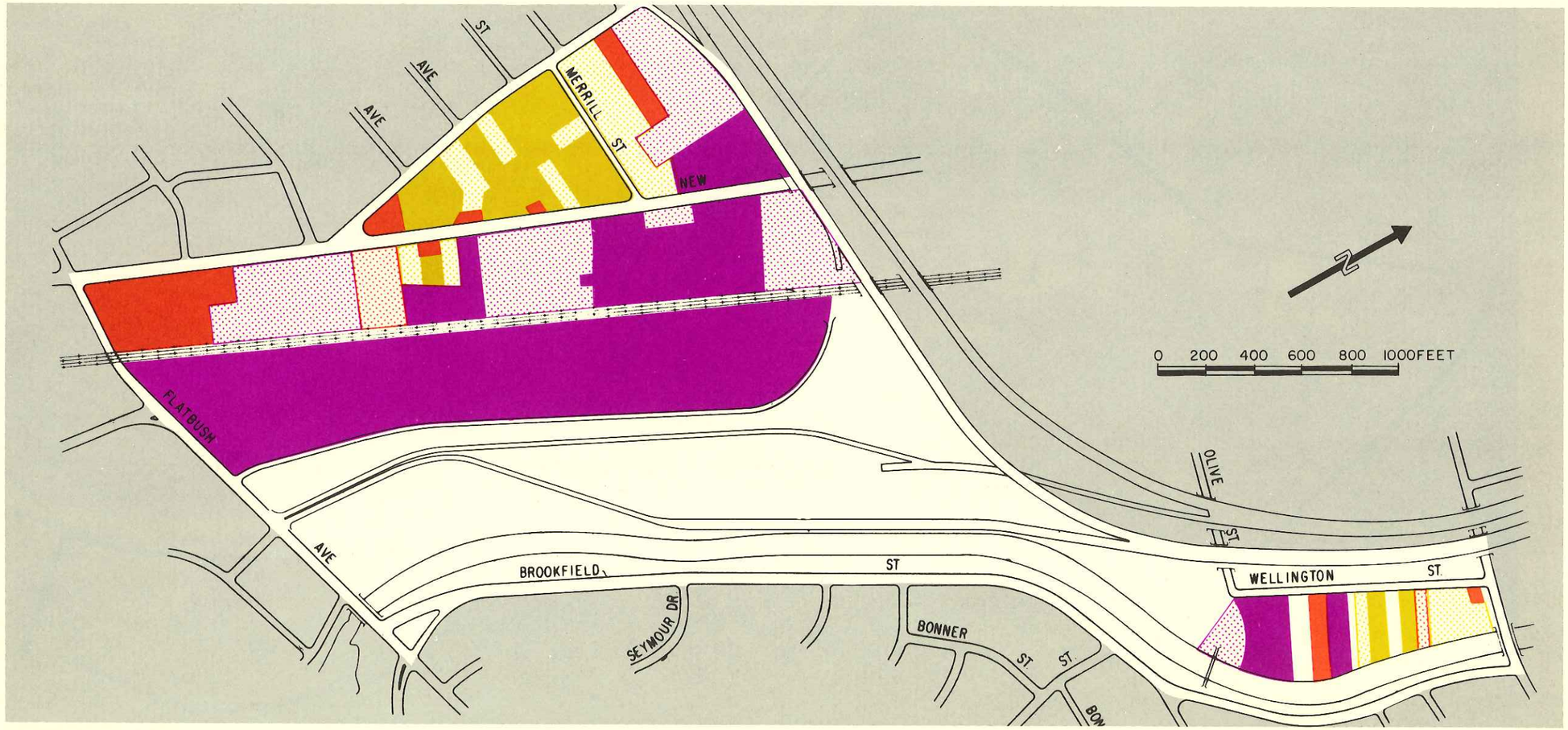

CARPENTER STEEL
HEUBLEIN INC.
SUISMAN AND BLUMENTHAL SCRAP METAL
N
0 200 400 600 800 1000 FEET

LEGEND

- COMMERCIAL
- OFFICE
- LOW AND MEDIUM DENSITY RESIDENTIAL
- HIGH DENSITY RESIDENTIAL
- GOVERNMENT AND INSTITUTIONAL
- MANUFACTURING AND INDUSTRIAL
- PARKING
- OPEN SPACES AND CEMETERIES

FIGURE 82: BROOKFIELD FLOOD PLAIN SECTOR LAND USE

Developed lands in the sector are devoted mainly to two major industrial users — the Heublein plant, located between New Park Avenue and the Penn-Central Tracks, and the Suisman and Blumenthal scrap metal yeards east of the railroad. Smaller scale industries occupy the mixed-use area between Brookfield Street and the freeway southeast of Hamilton Street, and a somewhat similar mixture of residential, commercial and industrial activities occupies the blocks between New Park and Prospect Avenues. About half of the land, however, is devoid of buildings, consisting of the Flood Plain of the South Branch of the Park River, which has been relocated in an open channel.



OPPORTUNITIES FOR JOINT DEVELOPMENT

Because the State-owned portions of Sector 7 represent vacant lands in the Flood Plain of the South Park River, joint-use possibilities suggested for study have ranged from extension of the proposed Parkville Industrial Area, to preservation and landscaping for park and recreational purposes. Some of the "problems" encountered in the study of proposed joint-uses, and the "opportunities" that these suggest to the investigators, are listed in Table 37 and discussed below:

Land Use — Over 25 acres of land are available in one large block, divided only by the freeway ramps and the Park River channel; these, however, are spaced apart, possibly reducing the attractiveness of the site for users who prefer a fully-consolidated parcel.

Among the alternatives considered for this site were these:

- Sale or lease for industrial use;
- Development as part of a Pope Park extension; (alternatively, develop as a neighborhood park and playground for residents of Charter Oak Terrace, Rice Heights and other nearby communities);
- Use a portion of the site for an express-bus commuter terminal for workers in Downtown Hartford. A thousand or more cars could easily be accommodated at a convenient location between ramps. (Disadvantage of the site, however, may be that it is too near the city center; a commuter lot might be more effective if located farther away from downtown.)

Aesthetics — The Flood Plain area is not an attractive space at present due to its barren condition, lack of elevation, and the presence of unscreened scrap-metal yards, highway ramps, and an open conduit. Adjacent housing areas are also drab and unattractive. None of these problems would be particularly difficult to remedy with planting and maintenance, except that the scrap-metal yard would be difficult to screen completely — especially the equipment used to load and unload vehicles.

Social and Environmental — High-density residential developments in Rice Heights and Charter Oak Terrace are very crowded and lack adequate outdoor recreational facilities and other environmental amenities, including landscaping and general maintenance. There should be good opportunities here to provide additional recreational space and equipment, perhaps including clubhouses and pools, in some of the excess parcels of highway property fronting on Flatbush Avenue.

Traffic — As noted above, traffic on heavily-travelled arterial streets in the vicinity of Sector 7 has been substantially relieved by opening of the I-84 freeway. Access ramps to Flatbush Avenue carry large volumes at peak hours and would have to be carefully fenced if pedestrian-generating uses were introduced into the Flood Plain area. Within the Flood Plain area the "on" and "off" ramps are spaced wide apart. If a contemplated user of the excess highway properties required consolidation of the several available parcels, he would have to stand considerable expense in relocating one or both of the ramps toward one side of the parcel. A variety of different uses could easily be introduced into the area without undue difficulty, however.

TABLE 37: OPPORTUNITIES FOR JOINT DEVELOPMENT BROOKFIELD FLOOD PLAIN SECTOR

PROBLEM	OPPORTUNITY
Land Use	
Large unused, open flood plain area.	Park and recreation use seems ideal; but problems of access to play areas; hazards of river and highway traffic.
Unused area adjacent to and between freeway lanes.	Industrial development in conjunction with adjoining uses.
Aesthetics	
Barren flood plain, lack of aesthetic interest; proximity to machinery and piles of scrap metal does not help appearance.	Whole area need rehabilitation and beautification.
Social and Environmental	
General state of the environment is poor: semi-complete appearance of channelization; sparse landscaping; poor public housing maintenance; nearby scrap metal yards; etc.	See above.
Traffic	
Ramps to Flatbush diagonally bisect large rectangular land area.	Relocate ramp at land developer's expense to create larger, more usable area.

SOURCE: Wilbur Smith and Associates.

PLAN FOR THE FLOOD PLAIN

One of the most appealing uses of this area is for extension of a park-like character from the West Hartford Town Line to the western boundary of Pope Park along the South Branch of the Park River. Such treatment would provide a parkway environment along a major portion of the southern boundary of the freeway in Hartford, extending to the vicinity of the Aetna headquarters. Besides providing an attractive setting for the highway user, the landscaped park would be an ideal buffer for residential uses that lie beyond it to the south.

Parcels 75 to 80 — It is suggested that the major portion of vacant land available in the Park River Flood Plain be converted to use as a recreation park. Components of the plan include the definition of a linear park along the entire length of the South Branch of the Park River n this Sector, the redevelopment of a small industrial enclave in the northern portion of the Sector, and minor modifications of the Flatbush Avenue ramps, as described in the discussion on development of the Parkville Industrial Area. A portion of such a park is illustrated in Figure 83.

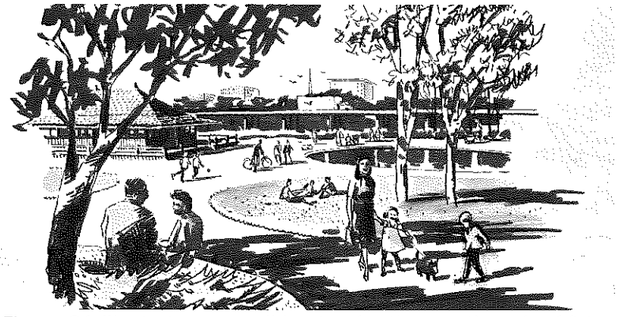


Figure 84 illustrates a possible plan for the creation of a 12 to 15-acre recreational park north of Flatbush Avenue and west of Brookfield Street. The plan features a recreational building on Flatbush Avenue which could house a gymnasium and other athletic facilities for a Boys Club, YMCA branch, or similar public use, a swimming pool in conjunction with the recreational building, and athletic fields and ball courts north of the recreational building.

The plan responds to an indicated neighborhood need for additional recreational facilities. The Rice Heights and Charter Oak Terrace housing projects were built under World War II emergency housing criteria and lack adequate recreational space. In addition, the proposal offers further suggestions for general upgrading of the environment in this location, such as screening of the scrap-metal processing yard immediately to the west.

OTHER JOINT-USE POSSIBILITIES

The introduction of a linear park, suggested above, would pose a problem of how to accommodate existing uses in the area. It would be highly desirable to incorporate most of the privately-owned properties abutting Wellington Street, south of Hamilton, into the linear park. Perhaps the industrial plant could remain, if carefully screened and landscaped to fit the park-like character proposed for the area. The linear park should probably be brought under the supervision of the City Park Department. It might be possible to negotiate a trade between this land and the remnant of Pope Park west of I-84.

Parcel 77 could continue the linear park mentioned above, and could also provide convenient access to the Parkville Industrial area north of I-84. There is adequate clearance for construction of a roadway under the freeway, and this road could be brought to a connection with the Flatbush Avenue ramps for improved interchange service to and from the east. Such access could be undertaken by the city and private developers if the Parkville area is redeveloped as a modern industrial district. As shown on the plan, it would also be desirable to enclose Kane Brook to reclaim additional land for an industrial site immediately north of Suisman and Blumenthal, on Parcel 77.

The several near-term and long-range development possibilities discussed above are listed, by parcel number, in Table 37.

FIGURE 83: THE LINEAR PARK — PERSPECTIVE
Besides providing an attractive setting for the highway user, the proposed linear park would be an ideal buffer for residential uses that lie beyond it to the south. The view here shows the Flatbush ramp viaduct in the background and a portion of the linear park in the foreground.

IMPLEMENTATION OF THE PLAN

Implementation of the suggested joint-use plan for this sector of the I-84 corridor will require very close cooperation between the Connecticut Department of Transportation and the Hartford Parks Department, the YMCA and/or the Boys Club, of Hartford and other agencies. It will also require close cooperation with the Greater Hartford Flood Plain Commission which controls development on the Flood Plain of the channelized South Brand of the Park River.

The costs required to undertake any modification of the Flatbush Avenue ramps would probably be a local responsibility, although approval of both the Connecticut Department of Transportation and the National Secretary of Transportation would be required.

The Hartford YMCA and the Boys Club of Hartford have both expressed interest in the possibility of developing facilities in this southwestern section of the City. The proposal suggests the construction of a building and adjacent swimming pool near Flatbush Avenue. There is also adequate space for the development of several playfields which could be an appropriate undertaking for the Hartford Park Department. The Greater Hartford Flood Plain Commission might consider slight modifications of the channelized section of the South Branch in order to allow a more aesthetically pleasing design while maintaining carrying capacity for storm water.

Just north of the suggested connection between the Flatbush Avenue ramps and a new Parkville access road, there is land that might be used for industrial purposes. The principal expenditure required to realize this suggestion would be to provide a fully enclosed storm sewer conduit for Kane Creek as it flows through this area.

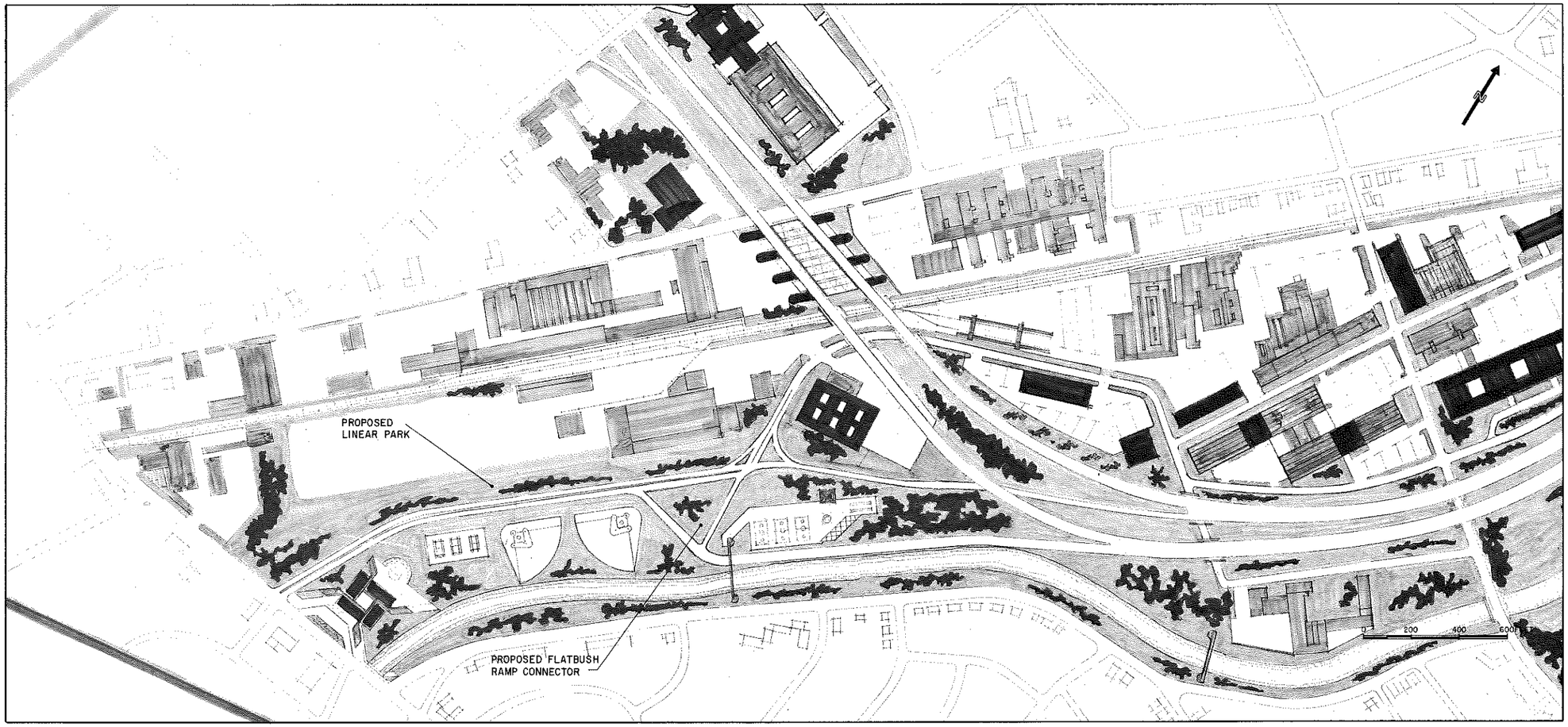
TABLE 38: SHORT-RANGE AND LONG-RANGE POTENTIALS FOR JOINT-USE DEVELOPMENT BROOKFIELD FLOOD PLAIN SECTOR

PARCEL NUMBER	AREA IN SQ. FT.[1]	LIKELY OR POSSIBLE USES			
		SHORT-RANGE	PROBABILITY[2]	LONG-RANGE	PROBABILITY[2]
75	73,000	Landscape as part of linear park on south side of I-84	G	Same; adjacent private lands should transition to park use (perhaps excepting the printing plant)	F
76	1,124,500	Develop as public park and playground; some lands near Flatbush might be used for Boy's Club (YMCA, other) landscape, develop pedestrian paths, bridges, along the water channel in Parcel 80	G	Same; might develop for industrial use on portion of Parcel 77; develop access road to Parkville area to connect with I-84 access ramps in Parcels 76 and 77; possible truck terminal; space for snow dump	
77					F
78					F
79					
80			G		P

SOURCE: Wilbur Smith and Associates.
[1] One Acre = 43,560 Square Feet.
[2] Probability: G = Good, F = Fair, P = Poor.

FIGURE 84: BROOKFIELD FLOOD PLAIN SECTOR JOINT USES PLAN

The sketch below illustrates a possible plan for the creation of a 12 to 15-acre recreational park north of Flatbush Avenue and west of Brookfield Street. The plan features a recreational building and athletic fields and ball courts. The plan responds to an indicated neighborhood need for recreational facilities, and offers suggestions for general upgrading of the environment in the area.



CHAPTER FOURTEEN

IMPROVING FREEWAY EFFICIENCY AND ACCEPTABILITY

The foregoing chapters have considered auxiliary uses and activities that might be introduced into highway properties along the route of the freeway in Hartford, with the aim of improving the general economy and appearance of the highway in the City and making it a better and more acceptable neighbor to the persons who work and live beside it. In the course of this study the efficiency of the freeway as a transporter of people was also explored and a number of suggestions examined for possible improvement of this basic function. The more promising of these are considered here:

IMPROVED PUBLIC TRANSPORTATION

Portions of several freeways in the Capitol Region are presently overloaded at peak hours. Completion of I-484 and other approved links in the regional freeway network can be expected to relieve some of these conditions, but such relief is likely to prove short-lived as population and employment densities continue to grow. What are the possibilities for an improved public transit service to absorb some of the load?

This question cannot be answered in detail within the limitations of the current study. However, some general observations can be made about the Hartford Region as a transit market, and the potentials for improved transit service operating on I-84 and other freeways that serve the City.

The 29-town Capitol Region has a 1970 population of 663,000 and may, by 1980, contain 800,000 or more persons. It is generally conceded among transit specialists that the "threshold" population needed to initiate rail rapid transit is often three or more times this level, so that efforts to develop a public transit alternative in the Hartford area, sufficiently attractive to divert drivers from their cars, would logically focus on express buses.[1]

THE FUNDAMENTALS OF FREEWAY EXPRESS BUS OPERATIONS

The main reasons for instituting an express bus service on an urban freeway system, other than to provide better service to existing customers, are for relief of congestion on the freeway and in downtown areas where people work, and to increase the total number of persons who can be served by the freeway. These are reasonable goals, but they may be hard to attain. Several marketing and operational problems should be solved to develop an express bus service that can successfully divert a substantial number of drivers from their cars:

- **A market must be defined** — a heavy, cyclical flow of persons with concentrated origins and destinations. The peak-hour travel market in Hartford consists of persons who commute each day to work in an extended downtown area that includes Asylum Hill insurance offices, the Capitol campus and nearby state offices, and the central business district. Of more than 130,000 persons who work in the City of Hartford, over 60,000 are currently employed in the downtown area, and this number is expected to grow at least 15 per cent by 1980.

  Persons attracted to the downtown area in a particular travel corridor, such as I-84, must be identified according to:

  Volume of one-way traffic in the freeway corridor at peak hours and the rest of the day;

  Proportion of drivers with downtown destinations or origins (by hour);

  Proportion of these who might be diverted to buses.

- **A feasible method of customer assembly must be devised** — the conventional methods of routing buses through main residential streets and stopping at pick-up locations in each block will have to be improved if a competitive level of bus service is to be provided. One way would be to use an assembly area where drivers would park their cars and transfer to express buses:

  Determine freeway access patterns of drivers in the market area;

  Identify potential park-and-ride lots at convenient intercept locations;

  Determine capacity requirements of parking lots and consider alternatives (one lot or several).

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(1) **The Potential for Bus Rapid Transit,** prepared by Wilbur Smith and Associates under commission from the Automobile Manufacturers Association, 1970, p. 26.

- **"Competition" must be defined and bus operating criteria established to meet it** — for example, it might be assumed that buses should provide a level of service so good that half of the persons in the "market" would find the express bus **at least** as attractive as driving into the central business district. Door-to-door trip time and out-of-pocket trip cost are especially important criteria, along with comfort, convenience, and safety:

  How to achieve door-to-door trip time via express bus equal to time needed to drive and park at destination;

  How to define the fraction of out-of-pocket cost (including parking cost) that motorists would compare to the express-bus portion of trip;

  What bus frequencies (headways) at peak-hour conditions are necessary to achieve competitive door-to-door travel time for the average rider;

  What hours of operation are necessary to assure motorists of return service to retrieve car (especially important to workers with irregular hours, unpredictable return times);

  What ancillary facilities are necessary (shelters at transfer stop; air conditioning; guaranteed seat)?

- **Define terms for bus accommodation on the freeway to optimize service** — favored treatment might be justified because buses have the potential to increase both capacity and use of the freeway, and to reduce congestion by displacing many cars with a single bus:

  How to prevent freeway overloading while favoring buses through "ramp metering" and priority over-ride by buses;
  Possibilities of exclusive bus lane reservation (on freeway or on private rights-of-way).

- **Establish criteria and procedures for rapid downtown terminal delivery of riders** — of equal importance with fast car-to-bus transfer, very frequent headways, express operation on freeway:
  On-street delivery at a few carefully selected bus stops, or, alternatively;

  Transfer to a downtown passenger delivery system ("people mover") at a central transportation terminal.

FIGURE 85: THE CAPITOL REGION
The 29 town Capitol Region has a 1970 population of 663,000 and may, by 1980, contain 800,000 or more persons. It is generally conceded among transit specialists that the "threshold" population needed to initiate rail rapid transit is often three or more times this level, so that efforts to develop public transit in the Hartford area sufficiently attractive to divert drivers from their cars would logically focus on express buses.

Some of the conditions identified above can be roughly quantified on the basis of information obtained in the course of this study. Buses, like other forms of public transport, are most efficient when passenger demand is heavy, so that buses can fill quickly and headways between successive vehicles can be kept short. Few situations meet this condition in a city like Hartford — they occur primarily at places of heavy employment, such as those in the central business district and nearby work centers, and at perhaps one or two of the large industries, such as Pratt and Whitney in East Hartford or Connecticut General in Bloomfield. Thus, in the I-84 corridor, downtown workers constitute the only large potential for peak-hour accommodation by buses. Traffic flow patterns on I-84 and at access and exit points to it suggest that about 2,000 cars from the west are discharged onto city streets in the core area during the morning hour of heaviest travel, with a like or greater number entering the freeway in a westbound direction at the afternoon peak hour. These volumes represent about 40 per cent of the vehicles using the freeway through the downtown area. Parallel arterial highways also carry vehicles destined to the center, although the number of longer trips (from adjacent towns) is probably not very large.

Assuming that car occupancies average about 1.25 commuters, including drivers, during peak hours, the peak volume of persons entering the business district by way of I-84 from the west would number about 2,500. During the hours immediately preceding and following the peak, at least an equal number of persons would arrive downtown with similar destinations. Under the most optimistic conditions, no more than half of these commuters could likely be considered as candidates for park-and-ride service.

Suppose, however, that drivers of 1,000 cars were persuaded to use a park-and-ride service to the central business district at the peak hour. This is only 20 to 25 per cent of the one-way traffic presently using I-84 in the Downtown Sector; effective traffic relief of the freeway would hardly be realized unless volumes of this magnitude could be diverted.

What kind of bus service would be needed to accommodate passengers diverted from 1,000 cars (1,250 riders) during a single hour? Assuming that all of them assemble at a single pick-up point in a large parking lot and ride from there, express to downtown destinations, the whole assemblage could easily be delivered in 30 buses, departing at two-minute headways, at an average loading of about 41 passengers per bus. Similar headways and lighter loadings would probably have to be maintained in periods before and after the maximum peak hour to assure an attractive service to all downtown commuters; less frequent service would not be likely to meet the minimum time-loss condition needed to achieve a truly competitive express bus service.

The size and location of parking fields at the transfer point is a matter that requires thoughtful study. There are at least two I-84 parcels among those assigned for study that might be used for parking the cars of drivers who would then commute to the Hartford Central Business District via bus. Such a lot could be located in the Flood Plain area on the South Branch of the Park River near Flatbush Avenue. Parking space could be provided in this area to park at least 750 cars. Another area for possible commuter parking would be near the Hartford Public High School area at the Sisson Avenue ramps. Parking for approximately 200 cars might be provided in the strip of excess right-of-way immediately south of the Sisson Avenue ramps.

A possible third area might be in the general vicinity of the Shopping Center at Prospect Avenue near the West Hartford Town Line, (just beyond the area investigated in the Joint-Uses Study). Although no excess rights-of-way land would be involved at this location, the area is immediately adjacent to the highway, ramps are ideally situated for bus transit service, and as many as 1,500 cars could be accommodated on presently vacant land.

Assuming that the occupants from 1,000 cars might be induced to transfer to buses at the peak hour, and that at least twice this many would be expected to seek parking space at the transfer lot during the course of commutation every morning, it is clear that a very large parking area would be needed. If divided into two or more separate lots, service frequency at each lot would have to be reduced (thereby increasing average door-to-door trip time) or more buses with smaller loads would have to be operated. Alternatively, a system might be inaugurated whereby high-frequency service would be transferred from one main lot to another midway during the demand period, with lower levels of service maintained at the alternative lot to accommodate stragglers. Other schemes would, of course, have to be examined, but the dimensions of the problem are such that complications would surely ensue unless details such as these were carefully thought out.

Another critical consideration has to do with daily hours of sustained transit service between the park-and-ride lot and Downtown. Realistically, such a bus service must operate throughout the day and well into the evening if it is to realize its full potential. While off-peak service frequencies might be less than during the peaks, a very good level of service would have to be maintained. Many commuters do not wish to return directly to their cars at the end of the working day, but may delay departure for several hours; others will want to return to their cars during the mid-day interval before the usual evening exodus to the suburbs. Any uncertainty about the availability of a return bus when one is wanted, such as the discontinuance of service too early in the evening, would certainly discourage patronage by persons whose hours are irregular or unpredictable.

Ramp Metering and Exclusive Bus Lanes — Preferential treatment might be given to express buses operating on I-84 in the peak hours. "Ramp metering" of access lanes into freeways has long been advocated as a means of expediting bus use of freeways so that they are not subject to the ordinary traffic delays that occur when traffic volumes approach or exceed nominal capacity levels. Ramp metering requires that access ramps to the freeway be signalized (perhaps with automatic barrier gates, also) so that drivers can be restricted from entering the freeway when volumes on the facility approach levels that are likely to result in congestion or extreme slowing of traffic movement. Freeway volumes would be monitored automatically, with signals (and gates) going into operation on instruction from a centralized control system. Buses, because they carry more passengers than cars, would be exempt from the restraint and would enter the traffic stream at will. If many buses desired entry, the level of traffic volume required to actuate the restraining devices would be adjusted accordingly, so that the addition of buses would not itself create congestion. Entrance by buses could be controlled in several ways — most commonly by use of barrier treadles which would be depressed by the weight of the bus to open the gates, but which would not respond to lighter passenger cars, or by special signal pre-emption devices on-board buses which would give the driver a green light on request.

Another way to favor buses on the freeway would be to designate an "exclusive bus lane" from which cars would be prohibited. The possibilities of doing this are currently being researched in the United States and elsewhere. One of the principal considerations is the fact that a single freeway lane can accommodate 1,000 or more buses per hour,[2] while the level of demand discussed above has given consideration to a situation in which only 30 buses per hour could easily accommodate all park-and-ride patronage that might be developed under very favorable circumstances in the I-84 corridor west of Downtown Hartford. Far more buses would have to be assigned to the freeway to justify reservation of a bus lane; a ramp-metering scheme that maintained peak-hour volumes below congested levels would, of course, preclude need for a bus lane since no advantage would be gained if traffic was able to flow freely in all lanes.

An alternative to an exclusive bus lane on the freeway might be the development of a private bus lane on an unused or little used railroad right-of-way or other private easement. The possibilities for this type of service (in corridors other than I-84) are presently under investigation in Hartford and other cities in Connecticut.[3]

Downtown Trip Termini — Research conducted elsewhere[4] has shown that workers who park in the downtown area experience more terminal delay (time spent parking and walking to work place) than do those who arrive downtown by bus and are discharged within a block or two of the work place. However, if time lost in the park-and-ride transfer amounted to more than four or five minutes, the advantage of downtown delivery by bus would almost certainly be wiped out.

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[2] **The Potential for Bus Rapid Transit,** Op. cit., p. 42.

[3] **Hartford-Bloomfield Rail-Bus Feasibility Study,** Connecticut Highway Department, 1968; **Route 10 — Canal Line Urban Corridor Demonstration Project,** New Haven, Connecticut, study in progress, sponsored by Connecticut DOT, Reg. Council Elected Officials, South Central Connecticut.

[4] **Evaluation of Bus Transit Demand in Middle Sized Urban Areas,** prepared by Wilbur by Smith and Associates for U.S. DOT, BPR, 1966; "Appendix G — Portal-to-Portal Travel Times, By Mode."

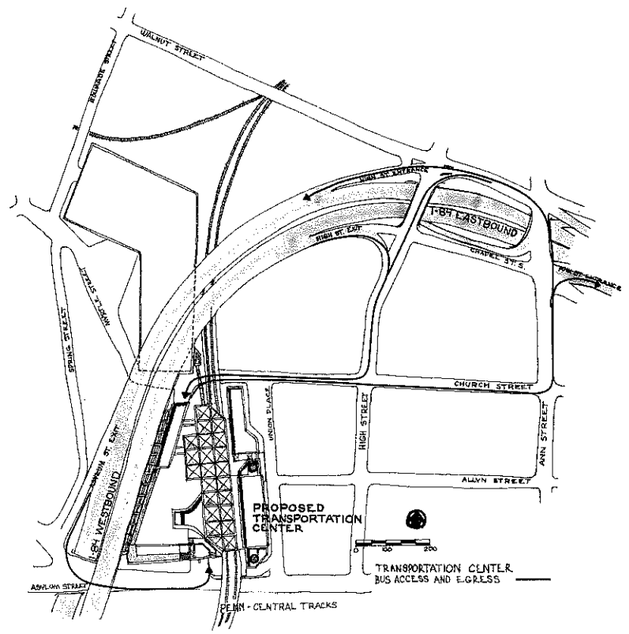
An express bus service would have to operate non-stop and without delay on the freeway, from park-and-ride lot to downtown terminal points. The latter might consist of very few (three or four) carefully selected loading stations on downtown streets, easily accessible from the freeway; or buses might operate into a central transportation terminal where patrons could transfer "across the platform" to a local, automatic pedestrian delivery system serving all major concentrations of employment in the greater downtown area — when and if such a service is developed.

The Transportation Center, which has been proposed for Sector 2, would have the configuration and ability to become a terminal for the discharge and pickup of commuters using express buses. Figure 86 shows how access and egress routes could be followed by express buses operating on I-84. The operation would allow a minimum turn-around time, and minimum distance of operation on surface streets.

At present, the delivery of express bus riders to the Union Station area would not be attractive due to the lack of sufficient jobs or other destinations in the immediate vicinity of Union Station. The long-range prospects for express bus service would be greatly heightened by implementing the Transportation Center, with a "people mover" or micro-system operating within Hartford's greater central business district area.

FIGURE 86: TRANSPORTATION CENTER ACCESS AND EGRESS

The Transportation Center, which has been proposed for Sector 2, would have the configuration and ability to become a terminal for the discharge and pickup of commuters using express buses. This figure shows how access and egress routes could be followed by express buses operating on I-84. The operation would allow a minimum turn-around time, and minimum distance of operation on surface streets.



Cost of Park-and-Ride Service to Bus Patrons — The discussion to this point has touched very briefly on some of the major conditions to be considered in the **operation** of an express bus service designed to compete with private cars in terms of door-to-door commuter travel time to and from the central business district. The other principal factor, insofar as the riders are concerned, is the **cost** of service to the consumer.

Unless the park-and-ride lot is located several miles away from the driver's downtown destination, savings in vehicle operating costs are not likely to be of great concern to the driver. The cost of fuel is the most apparent **extra** expense of car operation, and this cost is small if the lot is only three or four miles from the destination; the driver has already committed his car for the work trip and may have traversed most of the distance before he arrives at the lot. The other main item of cost associated with driving to the city center is that of parking. However, studies of commuter parking in downtown areas (even such large cities as Boston and Philadelphia)[5] have found that half or more of those who drive do not pay out of their own pockets for the privilege of storing their cars near their destinations — either their employers supply parking space without charge, or the driver has an arrangement whereby he can charge the cost of parking to the job he is working on or otherwise receive reimbursement, or he is able to find a free curb space or other informal parking area in which to leave his car without cost. The remaining commuters who do have to pay for parking usually occupy the lowest-cost spaces in the vicinity of their destinations, paying well below the "average" all-day parking charges that apply to downtown parking as a whole. From this, it is probably safe to conclude that substantial diversion of drivers to express bus transit can only be achieved if the cost of that service is kept very low. Put another way, most commuters pay relatively little for the fuel and parking costs associated with the last few miles of their trips to work; so little, in fact, that even free parking and a free bus ride at the service levels discussed above would not likely cause a stampede to the transfer station.

While the conditions outlined above are difficult, an express bus operation designed to meet the performance criteria for "competitive" service could probably be developed, given the full cooperation of all agencies and individuals concerned; whether income from the fare box would cover the costs of service is likely to be something else again. It may be argued that benefits to the community, through relief of congestion on the freeway, postponement or abandonment of future freeway construction planned to relieve growing overloads, reduction of congestion and air pollution on streets in the downtown area, and similar advantages that derive from moving people in and out of the center via transit would more than offset the costs of an express bus service; and that means should be found whereby those who receive such benefits would underwrite the excess costs of service. This is a subject that is likely to undergo much debate as the dimensions of the problem become more clearly defined.

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(5) **A Method for Estimating the Impact of Travel Time or Cost Changes on Diversion of Car Drivers to Transit: Work Travel to Central Business District,** Wilbur Smith and Associates for U.S. DOT, BPR, 1968, p. 52.

CORRIDOR PARKING PLAN

Another principal concern in the I-84 corridor is where to park the car. A parking space is a necessary complement to every driver trip, and the parking space supply must be in reasonable proximity to the driver's destination. Everyone interviewed in the course of this study made mention of this fact, and gave the provision of parking space high-priority in discussing potential uses for lands in and adjacent to the freeway rights-of-way.

Extensive use is presently made of I-84 rights-of-way for parking facilities both within the highway ROW and on excess parcels adjacent to it. Nevertheless, parking remains in short supply throughout most of the corridor, and to some of the businessmen interviewed it is an important factor in their plans to stay in the city or relocate elsewhere. Figure 87 shows parking facilities currently available in the study area and the corridor parking plan, shown in Figure 88 summarizes the parking proposals that have been made in the several sector plans presented in this study.

Plans for the seven sectors call for redesign or upgrading of parking for about 3,200 cars within freeway properties and suggest the need of additional space for over 15,000 cars. Of the latter, up to 9,000 spaces would be within the greater central business district (possibly as many as 4,500 in the ultimately developed Transportation Center if problems of access can be resolved), 4,000 spaces in conjunction with Aetna expansion, and 3,000 spaces associated with suggested residential development.

SCALE — 1" = 1600'-00"

LEGEND

- SURFACE PARKING
- PARKING UNDER HIGHWAY R.O.W
- STRUCTURED PARKING

FIGURE 87 AND 88: PARKING FACILITIES IN THE I-84 CORRIDOR PRESENT AND PROPOSED

The facing page shows parking facilities currently available in the study area; and the corridor parking plan below summarizes the parking proposals that have been made in the several sector plans presented in the study.

Proposed Parking Structures — Proposed parking structures shown in Figure 88 are enumerated below, proceeding from the Connecticut River westward:

- Parking facilities in structures incorporated with the Trumbull-Main air-rights development: 2,000 spaces.
- Expansion of the Church Street Parking Garage: 950 spaces.
- Transportation Center Plaza Parking Garage: 800 spaces.
- Transportation Center Main Parking Garage: Phase I, 1,500 spaces; (ultimate development of 2,500 additional spaces, contingent upon appropriate access roads and freeway capacity).
- High Rise Apartments adjacent to Transportation Center; 1,000 spaces.
- Aetna-Capitol Avenue Complex parking facilities; 2,500 spaces.
- Underwood Area Phase I (north of Capitol Avenue): 3,000 spaces; Phase II (south of Capitol Avenue): 1,000 spaces.

The following is a summary of additional or modified surface parking facilities proposed for the I-84 corridor:

- YWCA and Hartford Courant Parking area, off Broad Street: 325 spaces.
- Aetna Insurance Complex surface parking: 1,500 spaces.
- Underwood Area, parking west of Laurel Street: 250 spaces.
- Hartford Public High School, south of high school: 500 spaces; west of Arrow-Hart Manufacturing: 60 spaces.
- Parkville Industrial area: 900 additional or improved spaces.

SCALE — 1" = 1600'-00"

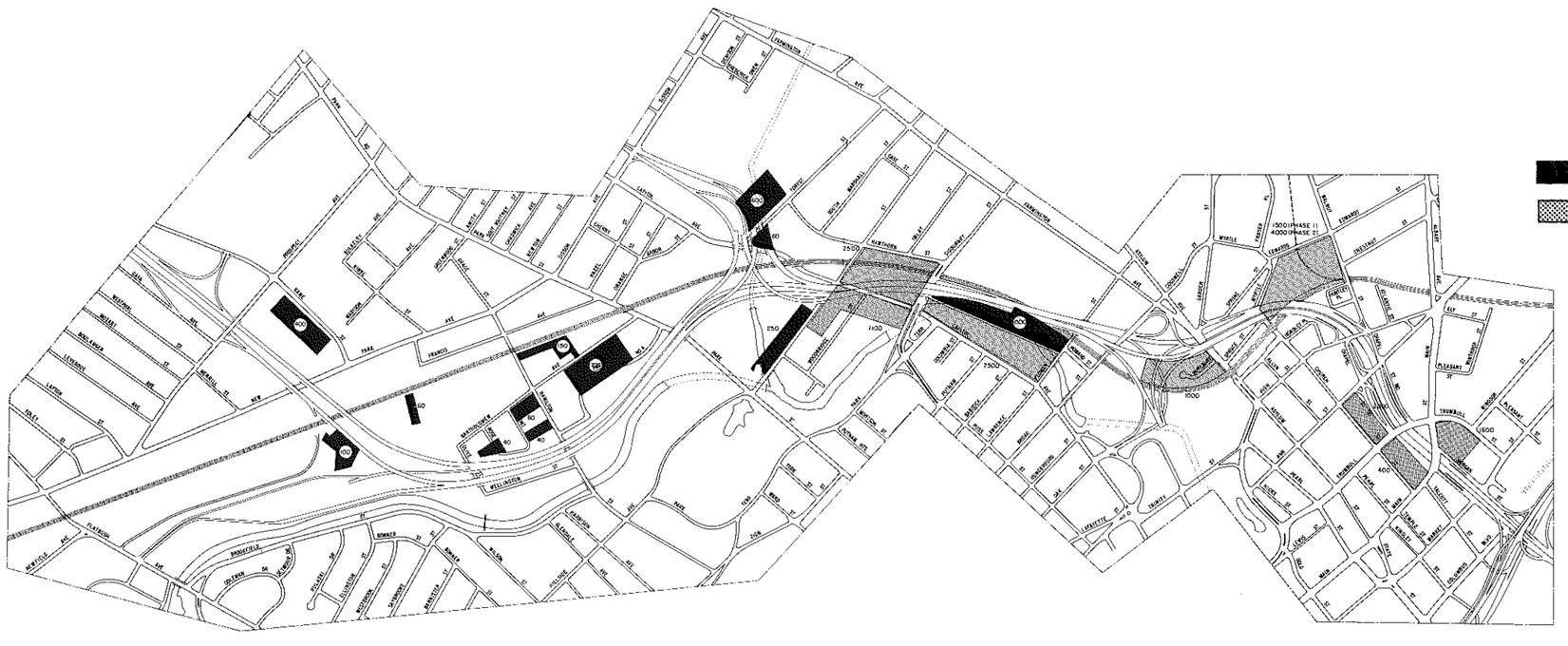

TABLE 39: TRIP GENERATION
MAJOR I-84 JOINT-USE PROJECTS

PROJECT NAME AND COMPONENTS	UNITS	VISITATIONS					TRAFFIC VOLUMES			
		Person Destinations Per Day	Per Cent By Car	Persons Per Car	Cars Per Day		A.M. Peak In	A.M. Peak Out	P.M. Peak In	P.M. Peak Out
MAIN-TRUMBULL AIR RIGHTS DEVELOPMENT										
HOTEL	150 Units	300	80	1.20	200		20	50	25	20
DEPARTMENT STORE	150,000 Sq. Ft.	3,750	30	1.25	900		30	—	100	200
OFFICE BUILDING #1	300,000 Sq. Ft.	1,500	60	1.40	640		480	10	20	450
PLAZA AND RETAIL ARCADE	70,000 Sq. Ft.	1,500	20	1.50	200		5	—	40	80
RESTAURANT	300 Seats	900	30	2.00	140		5	—	40	5
OFFICE BUILDING #2	200,000 Sq. Ft.	1,200	60	1.40	510		375	10	20	350
THEATER #1	300 Seats	600	50	2.00	150		—	—	9	8
THEATER #2	500 Seats	1,000	50	2.00	250		—	—	16	27
		10,750			2,990	PROJECT TOTALS	915	70	270	1,140
CHURCH STREET GARAGE EXPANSION[1]	950 Spaces	950			1,900	PROJECT TOTALS	700	20	100	700
TRANSPORTATION CENTER										
HOTEL	300 Rooms	900	50	1.20	375		40	75	50	40
OFFICE BUILDING #1	100,000 Sq. Ft.	600	60	1.40	255		125	10	10	120
RETAIL AND PLAZA	50,000 Sq. Ft.	1,000	10	1.50	65		10	—	10	20
RESTAURANT	325 Seats	1,000	10	1.00	100		—	—	20	10
TRANSPORTATION CENTER	——	20,000	5	1.25	800		100	75	75	100
PUBLIC PARKING GARAGES	1,500 Spaces	——	—	——	3,000		750	50	250	900
PUBLIC FACILITIES	20,000 Sq. Ft.	1,000	10	1.00	100		—	—	20	20
		24,500			4,695	PROJECT TOTALS	1,025	210	435	1,210
RESIDENTIAL TOWERS										
APARTMENTS	400 Units	880			800		50	200	200	50
PARKING DECK[2]	500 Spaces	750			750		400	20	40	400
		1,630			1,550	PROJECT TOTALS	450	220	240	450
AETNA-CAPITOL AVENUE COMPLEX										
CAPITOL AVENUE OFFICES[3]	500,000 Sq. Ft.	2,000	70	1.40	300		850	20	30	850
SURFACE PARKING[4]	1,500 Spaces	2,000			1,500		800	—	—	800
SIGOURNEY STREET GARAGE[4]	2,000 Spaces	2,600			3,300		1,250	200	300	1,250
		6,600			5,100	PROJECT TOTALS	2,900	220	330	2,900
UNDERWOOD RESIDENTIAL COMPLEX										
APARTMENTS	1,600 Units	3,520			4,000		120	800	800	200
COMMERCIAL AND PUBLIC	58,000 Sq. Ft.	2,900	30	1.20	720		30	10	80	60
		6,420			4,720	PROJECT TOTALS	150	810	880	260
PARKVILLE INDUSTRIAL DEVELOPMENT										
AREA A — INDUSTRIAL	400,000 Sq. Ft.	1,000	80	1.20	670		670	50	70	600
AREA B — INDUSTRIAL	200,000 Sq. Ft.	800	80	1.20	540		540	40	60	420
		1,800			1,210	PROJECT TOTALS	1,210	90	130	1,020
TOTAL TRIP GENERATION		52,650			22,165		7,350	1,640	2,385	7,680

(1) 950 spaces added to existing 1,050 spaces.
(2) 1,000 spaces total, less 500 spaces for residential use.
(3) 1,000,000 square feet; 500,000 square feet increment.
(4) Increment over existing spaces.
SOURCE: Wilbur Smith and Associates.

HIGHWAY MODIFICATIONS AND IMPROVEMENTS

Study has been made of the operation of I-84 as a traffic facility and to improvements which might be made to optimize its basic function. The task of evaluating likely increases in traffic on I-84 and the adjacent local street system involves two basic steps:

- Preparing estimates of likely traffic generation resulting from completion of recommended joint-uses in the corridor.
- Distributing estimated traffic on route segments of I-84, on the access ramp system and on adjacent streets.

The trip-generating potential of the various installations proposed in the plan are set forth in Table 39. This table indicates an assumed "midpoint" unit size of each development component and an estimated daily number of "person-destinations" generated by the use. Person-trips have been converted to auto trips and these have been reduced to peak-hour values for "trips in" and "trips out" of each joint-use development. Estimates of trip generation have been prepared for all significant projects proposed as part of the suggested development plan. A number of peripheral development projects or proposals in the planning stages are not included because they lie outside the study corridor. These include the Windsor Street Urban Renewal Project, the Hartford Civic Center Project, the Ann-High Urban Renewal area, and development schemes suggested or considered in the Hartford Public High School area.

Where an integrated parking system has been suggested as a component of a development project, the generation of traffic to and from the parking garage has not been considered separately but has been included with traffic generated by other components of the complex. Where a parking garage is proposed, to provide parking benefits to a facility that is not otherwise related to joint-use development, each space in the garage has been considered to be a trip generating unit.

The total number of auto driver trips attracted to all of the joint-use development projects suggested in this study would exceed 22,000 per day. Due to the high proportion of trips that would be made by persons going to work, it is expected that the number made in the peak morning hour would amount to nearly 7,200 driver trips.

Diversion of Traffic from I-84 Due to Completion of I-484 (The Bushnell Park Connector — When I-484, the Bushnell Park Connector, is completed between its terminals at I-84 and I-91, a considerable volume of traffic will be diverted from I-84 east of Broad Street. The amounts of potential diversion have been estimated, based upon existing ramp volumes to and from I-84 east of Broad Street, and time-savings potential to users of the new route who have origins and destinations south of the I-484 junction with I-91.

At the present time, about 63 per cent of eastbound I-84 traffic near Broad Street is destined for the central business district during the morning peak hour. Approximately 8 per cent is destined for locations on I-91 to the north; 10 per cent for I-91 to the south; while about 19 per cent of all traffic on I-84 eastbound continues across the Connecticut River. Of the 81 per cent of all traffic that does not cross the River, some would be divertible to the new I-484. Local traffic continuing to use the section of I-84 between Broad Street and I-91 would likely be reduced to the range of 63 to 68 per cent of current traffic levels, with overall morning peak-hour volumes reduced by 13 to 18 per cent. A breakdown of the estimated diversions is shown in Table 40.

TABLE 40: POTENTIAL TRAFFIC DIVERSION I-84 TO PROPOSED I-484 CONNECTOR

	PER CENT OF EASTBOUND TRAFFIC DIVERTIBLE TO COMPLETED I-484			
	Present Traffic		Future Traffic	
DESTINATION	I-84	Connector	I-84	Connector
Morning Peak Hour Traffic				
CBD	48	15	44-46	17-19
Northbound on I-91	6	2	0- 1	7- 8
Southbound on I-91	8	2	0- 2	8-10
Thru on I-84	19	0	19	0
TOTAL DIVERSION 13 to 19 per cent	81	19	63-68	32-37
Afternoon Peak Hour Traffic				
CBD	32	6	30-32	6- 8
Northbound on I-91	10	2	0- 1	11-12
Southbound on I-91	13	4	0- 2	15-17
Thru on I-84	33	0	33	0
TOTAL DIVERSION 20 to 25 PER CENT	88	12	63-68	32-37

SOURCE: Wilbur Smith and Associates.

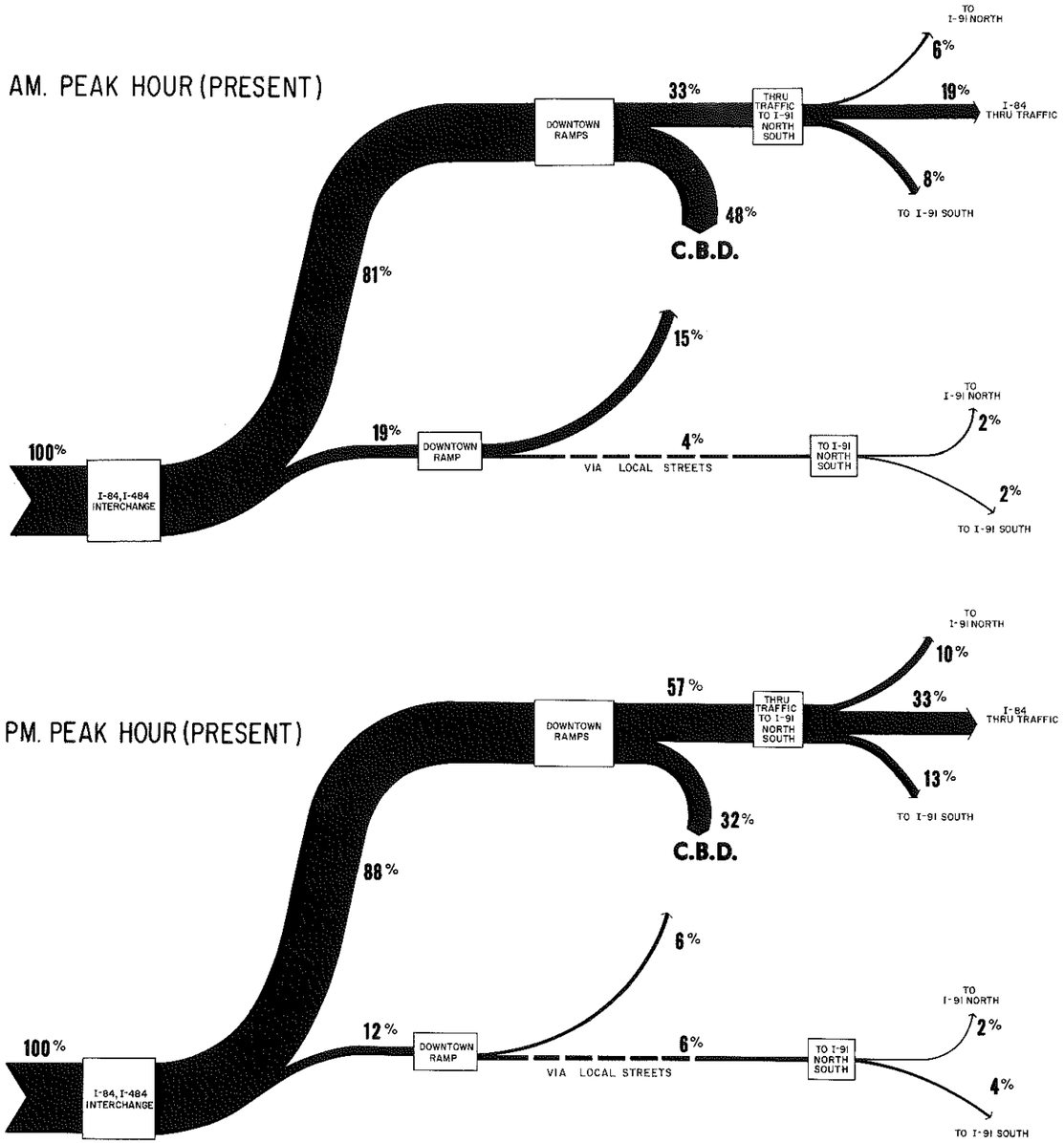

FIGURE 89 AND 90: EXISTING TRAFFIC DISTRIBUTION — FUTURE TRAFFIC DISTRIBUTION

At the present time 63 per cent of the eastbound I-84 traffic near Broad Street is destined for the central business district during the morning peak peak. Approximately 8 per cent is destined for locations on I-91 to the north; 10 per cent for I-91 to the south; while 19 per cent of all traffic on I-84 east-bound continues across the Connecticut River. In the afternoon peak hour, eastbound trips with central business district destinations account for only 38 per cent of I-84 traffic; the largest component of vehicles traveling east represents "through" traffic destined to East Hartford and points beyond. Divertible traffic thus would consist largely of trips destined north or south on I-91, for either condition trips using the I-84 connector would achieve better continuity by switching to I-484. The distribution of trips at present, and upon completion of I-484, is shown in Figures 89, and 90 respectively.

In the afternoon peak hour, the potential diversion of eastbound traffic would be even greater because a much smaller proportion of these trips are destined for the central business district. As shown in Table 40, eastbound trips with central business district destinations account for only 38 per cent of I-84 traffic in the P.M. peak hour; the largest component of vehicles traveling east represents "through" traffic destined to East Hartford and points beyond. Divertible traffic would consist largely of trips destined north or south on I-91 — for either condition, trips using the I-84 connector would achieve better continuity and shorter travel time by switching to I-484. The likely magnitude of peak-hour diversions resulting from the completion of I-484 is seen in Figures 89 and 90, which show present and future peak-hour volumes on both routes. The diversions thus calculated have been used as a basis for estimating future travel demands on I-84, adjusted for new traffic generated by completed "joint-use" corridor projects.

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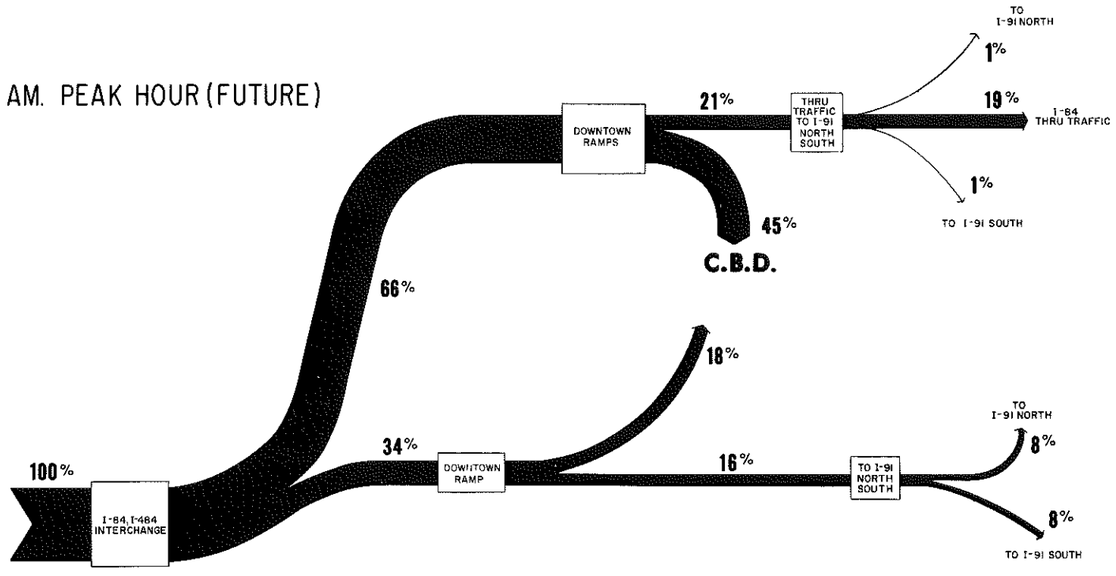
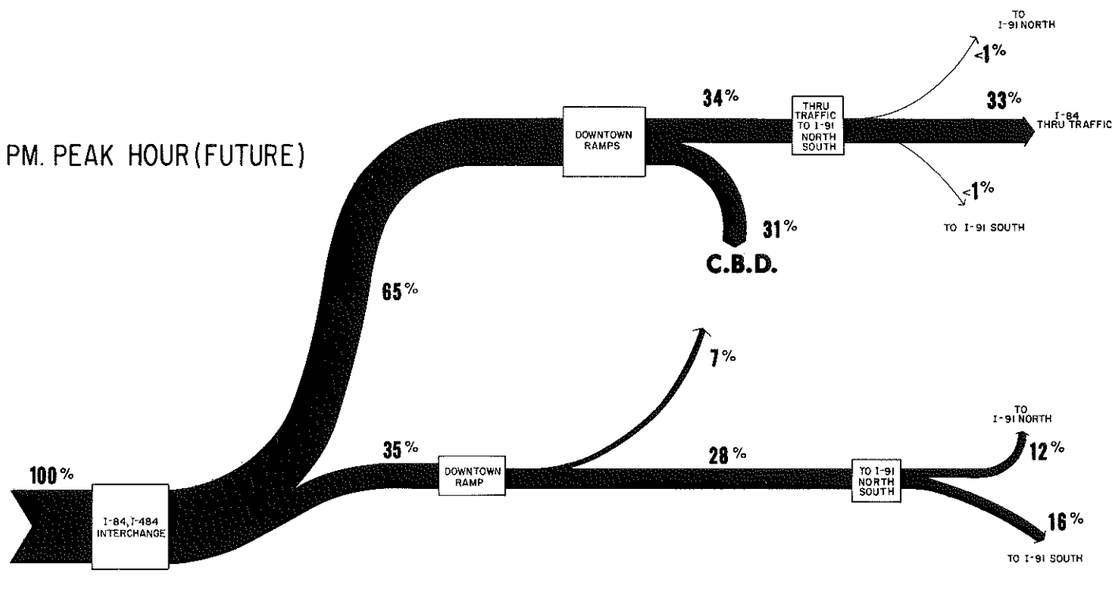
(6) **Highway Capacity Manual**, Highway Research Board Special Report 87, Wash., D.C., 1966, p. 250: "In Level D, which is in the lower range of stable flow with volumes higher than in Level C, traffic operation approaches instability and becomes very susceptible to changing operating conditions. Operating speeds generally are in the neighborhood of 40 mph. . ."





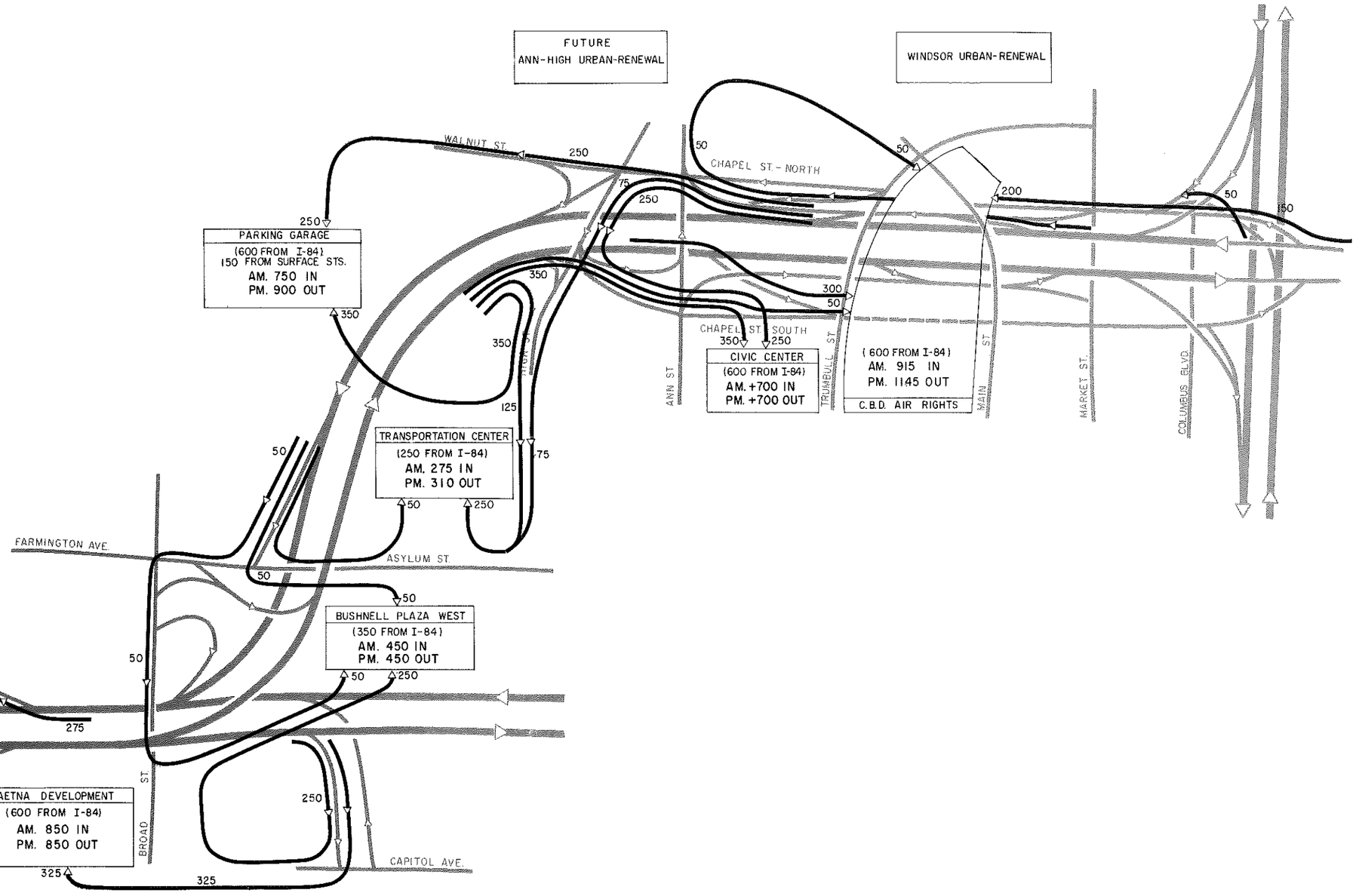
Distribution of Project-Generated Trips on Interstate 84 — The distribution of future trips that are likely to be generated by I-84 corridor development projects is shown in Figure 91. This diagram shows the morning peak-hour volumes that would occur on the freeway at the present time if I-484 were finished and the suggested projects for the corridor were complete.

Major operational problems occur in the downtown area and are primarily associated with traffic traveling from east to west. This is a reversal of the present situation when the greatest problems are experienced by eastbound vehicles. Traffic volumes on the main through lanes of I-84 would exceed the Service Volume for Level of Service "D", (SVD)[41] on only one short section of I-84 in the westbound direction, between Market and Trumbull Streets, downtown. In this section, the main lines would be operating at about 120 per cent of SVD. Throughout the remainder of I-84 in the City, westbound traffic would be operating at less than SVD.

At least two off ramps in the westbound direction would also exceed SVD with the assumed additional loads. The first of these would be the westbound slip ramp near Main Street which carries traffic from the through lanes to the parallel collector distributor lanes; the second would be the Ann Street off-ramp which would operate at about 105 per cent of SVD while the off-ramp to Asylum Street, carrying approximately 1,350 vehicles per hour, would be called on to accommodate about 125 per cent of SVD. The Trumbull Street off ramp would carry approximately 1,400 vehicles in the peak hour, or nearly 90 per cent of SVD.

In the eastbound direction, the through lanes operate near or under SVD in all sections of I-84 except the short link between the Asylum Street on-ramp and the High Street off-ramp. In this section, the through lanes would operate at about 105 per cent of SVD. The major benefit to be achieved by the proposed plan for a continuous south frontage road, from High Street to Columbus Boulevard, is illustrated in Figure 78. The significant increase in usage of the High Street off ramp is both the result of this improvement and the projected increase in trips attracted to the Transportation Center, the Church Street Municipal Garage, and the Trumbull-Main Air Rights Project. Peak-hour use of this ramp would increase from approximately 230 vehicles at present to about 1,100 vehicles with the projected development and the frontage road improvement. Likewise, the section of Chapel Street South between Ann and Trumbull Streets would increase from about 80 vehicles to 730 vehicles in the peak hour.

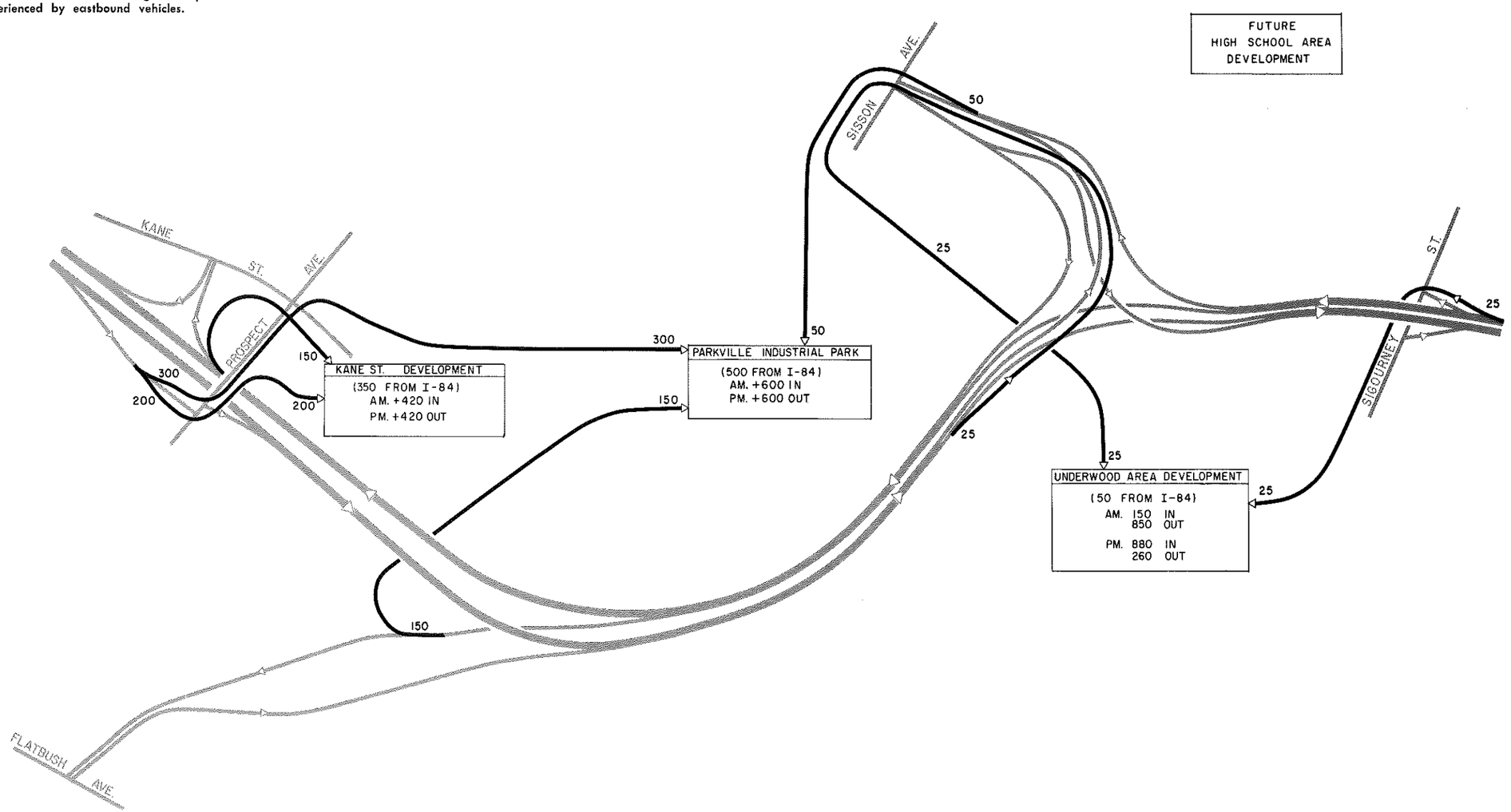
The heavy use of the westbound Market Street and Ann Street off ramps illustrates the importance of an improved connector between I-91 and the northern parts of the central business district. Traffic on these ramp lanes could be significantly decreased through the greater use of Trumbull Street and the Frontage Road between Trumbull Street and High Street on the north side of I-84.


FUTURE
ANN-HIGH URBAN-RENEWAL
WINDSOR URBAN-RENEWAL
WALNUT ST.
CHAPEL ST. - NORTH
CHAPEL ST. - SOUTH
PARKING GARAGE
(600 FROM I-84)
150 FROM SURFACE STS.
AM. 750 IN
PM. 900 OUT
CIVIC CENTER
(600 FROM I-84)
AM. +700 IN
PM. +700 OUT
(600 FROM I-84)
AM. 915 IN
PM. 1145 OUT
C.B.D. AIR RIGHTS
TRANSPORTATION CENTER
(250 FROM I-84)
AM. 275 IN
PM. 310 OUT
BUSHNELL PLAZA WEST
(350 FROM I-84)
AM. 450 IN
PM. 450 OUT
AETNA DEVELOPMENT
(600 FROM I-84)
AM. 850 IN
PM. 850 OUT
ANN ST.
TRUMBULL ST.
MAIN ST.
MARKET ST.
COLUMBUS BLVD.
FARMINGTON AVE.
ASYLUM ST.
SIGOURNEY ST.
BROAD ST.
CAPITOL AVE.

NOT TO SCALE

FIGURE 91: DISTRIBUTION OF PROJECT — GENERATED TRIPS ON INTERSTATE 84

This diagram shows the morning and evening peak-hour volumes that would occur on the freeway at the present time if I-484 were finished and the suggested projects for the corridor were complete. Major operational problems occur in the downtown area and are primarily associated with traffic traveling from east to west; a reversal of the present situation when the greatest problems are experienced by eastbound vehicles.



NOT TO SCALE

SUGGESTIONS FOR HIGHWAY MODIFICATIONS AND IMPROVEMENTS

In spite of the excellent performance record turned in by the new freeway, two conditions which were not in force when the road was under design now have significant bearing in considering the future use of the facility. First, traffic use already approaches design capacity (SVD) during peak hours, making it possible to identify variations from the anticipated (projected) traffic volumes upon which the design was based; fortunately, the forecasts were remarkably good. Second, changes in planning and design criteria allow incorporation of joint-uses into the right-of-way itself and organization of traffic access to best meet these needs.

The operation of I-84 will undergo basic modification from time to time in the future, when new routes and route-segments of the Capitol Region freeway system are completed and placed in service. The connection to I-484 will, when finished, divert a substantial amount of traffic from the downtown segment of I-84, and assure better peak-hour balance between capacity and demand throughout the length of I-84 in the City of Hartford. Completion of I-291 will doubtless have a somewhat similar effect, although likely of less magnitude, proportionate to total volumes carried on I-84.

In considering the traffic requirements of new uses that are likely to develop in the I-84 corridor — especially, those large-scale undertakings that are suggested as possible joint-use developments in and near the central business district — several modifications of freeway access facilities are suggested.

Some of the modifications and improvements proposed for consideration are shown in Figure 1. Included are three short-range projects of nominal cost and two major long-range projects that might be expensive but could likely promote major benefits to travel in the corridor. The three short-range proposals are:

- An extension of the south frontage road in the central business district, Chapel Street South, between Main and Trumbull Streets, and slight modifications to the I-84 exit ramp at High Street;
- Completion of ramps near Hartford Public High School, to Farmington Avenue;
- Modification of access to the Flatbush Avenue ramps to allow entry of traffic from the Parkville Sector of the corridor.

Extension of Chapel Street South — The proposal to extend Chapel Street South, the south frontage road between Trumbull and Main Street eastbound, would provide a number of significant benefits to traffic movement in downtown Hartford and traffic operations on Interstate 84. First, it would serve to emphasize the south frontage road and encourage a more uniform distribution of traffic flow on this facility. At the present time, some sections of the frontage road are seriously under-utilized and carry only about 1,200 to 1,500 vehicles per day. Second, modification of the eastbound High Street exit ramp to allow traffic to use the frontage road all the way from High Street to Columbus Avenue would improve operations on I-84 by encouraging greater use of the High Street ramp.

A major benefit to the proposed air rights structure at Main and Trumbull Streets would be achieved through the continuance of Chapel Street South through this block. The frontage road would allow direct vehicular access to truck loading docks at the proposed site and to parking facilities provided in conjunction with the air rights construction. Because of the greater emphasis that will be placed on Trumbull Street when the new Civic Center and other plans are completed, the frontage road extension between Trumbull and Main can make an important contribution to better traffic flow in the Hartford central business district.

Another advantage of the south frontage road extension would be improved accessibility to the Church Street Garage. At the present time, garage access cannot be gained from Chapel Street South. Proposed enlargement of the Church Street facility would create additional need for garage access and egress on Chapel Street South.

Farmington Avenue Access From I-84 — The construction of a freeway from the Capitol Avenue overpass along the northern branch of the Park River has been indefinitely deferred with the result that a considerable amount of land area is available for at least temporary use by non-highway activities. A portion of this property was acquired for Farmington Avenue access ramps, in association with the freeway extension. The construction of such access is still under consideration, and would provide improved movement to and from I-84 for traffic generated in the areas served by Woodland Street.

Ramps connecting to Farmington Avenue in the vicinity of Woodland Street should, if built, be located so that they occupy as little of the right-of-way areas as practicable, leaving the maximum amount of useful land for occupancy by the Hartford Public High School; for new residential apartments on Farmington Avenue; and, possibly, to accommodate an enlarged housing development on the site of The House of the Good Shepard, as described in earlier analyses of joint-use potentials for this area.

Flatbush Avenue Interchange Access from Parkville — The 1967 rezoning of Parkville to industrial use and suggestions made in this report for redevelopment to create a Parkville Industrial Park within the entire area bounded by the Penn Central tracks, I-84 and Park Street could, if carried out, result in substantial pressure for better accessibility between the area and the I-84 freeway. This need might be met by reconstructing the streets within Parkville as shown in Figure 78 and developing a new street under I-84, to connect with the Flatbush Avenue ramps, as shown in Figure 83. There is sufficient clearance under I-84 to permit a new roadway connection without reconstructing any portion of I-84. Development of the underpassing street with connections to the Flatbush Avenue ramps would have to be worked out jointly by State, City and private interests concerned with the improved access. Costs for such connection might logically be borne by developers of the industrial district.

Longer-range land-use developments in the Flood Plain (not associated with the connection to Parkville) might result in further modifications of Flatbush Avenue ramps if intensive development of the flood-plain area becomes feasible and consolidation of Parcels 76 and 79 would make for more efficient development. Such consolidation might be achieved by relocating the eastbound access ramp so that it is adjacent to the exit ramp. Again, the costs for such reconstruction would likely be borne by persons or agencies benefiting directly from the change.

Long-Range Roadway Modifications — Two long-range and rather large-scale highway improvements also deserve thoughtful review. The first of these relates to the future reconstruction of the I-91 interchange with I-84. The proposed new design for this interchange would eliminate the present direct connection with I-84 service roads for traffic to and from the north on I-91. Since Downtown Hartford is a principal attractor and generator of travel oriented along I-91 to the north, the deletion of this access will pose a real problem. Without a means of turning directly off I-91 into the central business district, or onto a service road which gives access to central business district streets, traffic desiring to enter the downtown area from the north would turn into I-84 and exit at the Ann Street ramp beyond the central business district core, or remain on I-91 past the I-84 interchange and enter the central business district by way of the State Street interchange. Traffic leaving the downtown area toward the north can use the State Street entrance to I-91 or, alternatively, use the Talcott Street entrance which may be reached from the south frontage road of I-84 (Morgan Street) in a rather indirect fashion.

As traffic continues to build up at peak hours, particularly in response to new traffic generators being built in the Windsor urban renewal area, the need for additional access to I-91 north will become increasingly clear. It is suggested that a way be found to channel traffic to and from the central business district via Trumbull Street to I-91 access points north of the I-84 interchange. Several possibilities exist for extending Trumbull Street beyond its present terminus at Market, or of tying into a Market Street extension to I-91, so that traffic can be channelled into and out of the central business district along Trumbull Street. At present, Trumbull Street receives relatively little use, yet gives access to the very heart of the central business district. Future widening south of I-84 is planned to improve access to the Civic Center and to the Government Center south of Bushnell Park. More use of this street might reduce the volume of indirect vehicular circulation within the downtown area, particularly if vehicles using Trumbull Street can gain direct access to parking garages.

The second situation that should be kept under surveillance, with possible long-range modifications in mind, is in the vicinity of the proposed Transportation Center. While the ramps at Ann and High Streets that presently provide access to and from this area are now under-utilized, this condition will change quickly when major development takes place in the area. The demand for freeway access will become particularly intense during peak hours if a large, all-day parking garage is provided in the area, as has been suggested in several of the alternatives now being considered for lands near the Union Station.

While it appears that the present access configuration would suffice to meet the needs of the proposed Transportation Center and a parking garage of about 1,500 car spaces north of I-84, there is plenty of space in the vicinity for a much larger parking structure — say of 3,500 to 4,000 spaces; the larger facility might be contemplated as a second-stage expansion of a 1,500-car garage, or might consist of other free-standing garages.

Although peak traffic demands on I-84 are already heavy, traffic from a 1,500-car facility in the Union Station area should be able to make effective use of the freeway via the Ann and High Street ramps. Expansion of parking facilities beyond this number, in areas depending on Ann and High Street ramps for access, should be viewed with caution. Not only is it likely that larger facilities would tend to develop traffic demands that exceed ramp capacities at peak hours, but the same could be true of mainline capacities on the freeway.

Figure 92 illustrates how access into I-84 might be redesigned for westbound traffic entering at High Street, to achieve greater ramp capacity and safer operation. As indicated, the major feature would be a westbound frontage road paralleling I-84 between High Street and Asylum Street. This structure, removed from direct contact with the through lanes of I-84, could be built in conjunction with an adjacent garage and would provide safe, direct access from the garage into the freeway. The proposed modification would entail redesign of entrance and exit ramps in the link of I-84 between Trumbull Street and Asylum Street.

Clearly, the cost of an undertaking such as that illustrated would be very large and, if done primarily to achieve more lane capacity for users of the garage, ought to be met as part of the cost of expanding the parking facilities. The reconstruction probably should not be done at all if traffic on the freeway has reached such high volumes that only very limited advantages would be gained from the improved ramp capacities, unless traffic safety and operational improvements alone can be shown to justify the expense.

THE CORRIDOR LANDSCAPING PLAN

The acceptability of I-84 relates to a great deal more than its ability to meet traffic requirements in the service corridor. The appearance of the highway and its structures, as viewed both on the highway and from beside it, has much to do with how well it is received by users and neighbors, as has been pointed out throughout this study.

There is no continuous land-use theme for the I-84 corridor in Hartford; land uses are varied and changes from one to another are abrupt. However, there is the potential for a corridor landscape theme that would help unite many of the diverse elements and vistas of I-84, both as seen from the highway and as viewed from the surrounding terrain.

As part of the joint-use plan for the I-84 corridor, further refinement of the Department of Transportation's landscape plan has been proposed. The new plan is shown in Figure 1. As illustrated, it is possible to develop an almost continuous "linear" park along most of the length of I-84 through the City of Hartford. Beginning at the West Hartford Town Line and proceeding east along the Park River Flood Plain, the freeway alignment follows the South Branch of the Park River to the western edge of Pope Park. Through most of this length, lands in the immediate corridor could be developed for a linear park. At Pope Park, the open space development expands and continues northeastward to the Underwood project, sweeps around it, and terminates at the Sigourney Street interchange.

Along the mainline of Interstate 84, modifications and additions can be made to existing landscaping to provide an even more attractive environment. Some emphasis can be placed on the development of facilities for pedestrians along the frontage roads and bridges that cross I-84 between Broad Street and the Connecticut River. Some of the excess rights-of-way in this area can be used for additional landscaping, especially in the vicinity of the Asylum Street interchange. At street intersections and along the bridges crossing I-84, there are opportunities for additional small but pleasant landscaped "accents" in unused remnants of land.

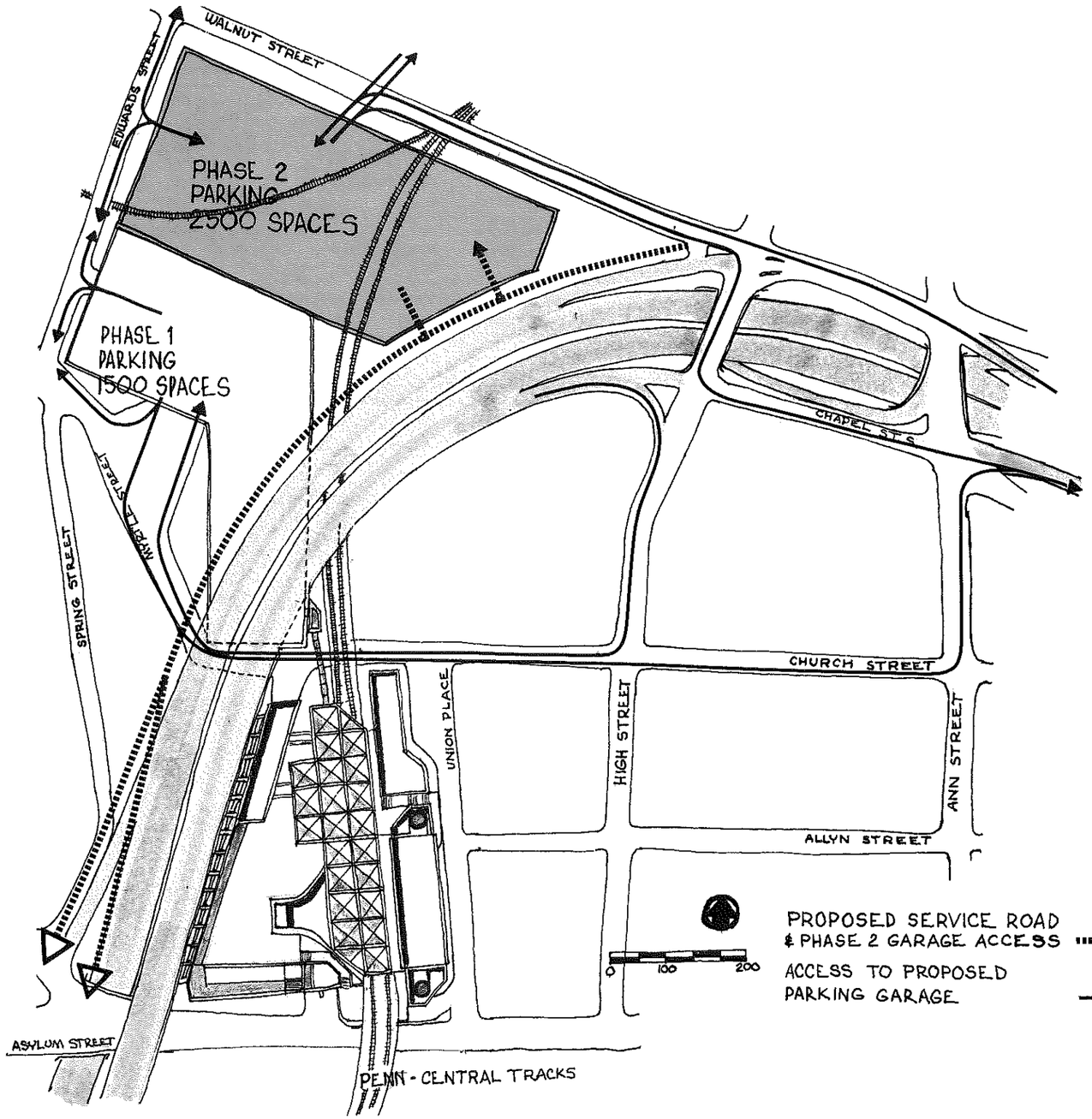
East of Sigourney Street, the continuity of the landscaped corridor could be extended by following the suggested proposal for a landscaped, terraced development of parking facilities to accommodate Aetna Life and Casualty Company workers. East of Broad Street, the park theme is picked up and continued through the State Capitol grounds and Bushnell Park to the Hartford Central Business District.

At the interchange of I-84 with I-91, effort should be made to exploit the great natural beauty and recreational resources of the Connecticut River, including an open access to this area for additional pedestrian travel.

It should be emphasized that landscaping to unify and beautify the freeway corridor ought not be limited to the freeway roadside as seen from the travelled lanes alone. Throughout the length of the road there are bridges, overpasses, and viaduct sections that loom large and tend to dominate their surroundings, as seen by pedestrians and motorists off the freeway. In many situations, the highway can be brought into a more compatible relationship with its surroundings by the use of plant materials and minor construction — fences, masonry screenwalls, graded slopes, perhaps a little paint — by eliminating "dead" areas where trash and windblown papers can accumulate, by softening the contrast between sunlighted and shaded areas at underareas, and by otherwise providing a neat and "finished" setting for the highway. Special attention must, of course, be given to treatments that will maintain a good appearance with little or infrequent maintenance effort.

FIGURE 92: LONG-RANGE HIGHWAY MODIFICATION NORTH SERVICE ROAD

This diagram shows the morning and evening peak-hour for westbound traffic entering at High Street; to achieve greater ramp capacity and safer operation. As indicated, the major feature would be a westbound frontage road paralleling I-84 between High and Asylum Street. This structure, removed from direct contact with the through lanes of I-84, could be built in conjuction with an adjacent garage and would provide safe, direct access from the garage into the freeway. The proposed modification would entail redesign of entrance and exit ramps in the link of I-84 between Trumbull and Asylum Streets.



CONCLUSION

The outcome of extensive investigations and analyses made in the course of the I-84 study is an optimistic appraisal of the potentials for further social and economic advantages to the City and citizens of Hartford to be gained by more fully exploiting highway properties and the lands that lie beside them. This is not a particularly astonishing conclusion, inasmuch as nearly 100 acres of land, occupied almost exclusively by the I-84 freeway within the heavily urbanized heart of the City, have been examined for further development possibilities and have been found to possess many attractions. Perhaps the most revealing aspect of the study is the realization that a very large acreage of public lands throughout the nation are occupied mainly by urban freeways and their appur-tenances, and that recognition of the potentialities for joint-utilization of these areas for other urban activities and functions has been so long in coming.

A variety of legal and political obstacles have been erected over the years to protect highway investments and functions; these will need to be modified and adjusted to gain full advantage of the economic promise disclosed by these studies.

This study has shown how the selective application of joint development can improve the amenity of a major freeway passing through the center of a large urban area. The principles and potentials provide a framework for coordinated highway and land development planning for other key components of Metropolitan Hartford's freeway system. The task ahead is to preserve the necessary movement corridors, incorporate joint development into the route selection and highway design process, and establish the needed institutional arrangements for implementing proposals. In this way, "mobility with amenity" will come to characterize I-84 and Hartford's other urban motorways.

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