



## High - Accessibility Corridors in Metropolitan Areas – by Robert B. Teska

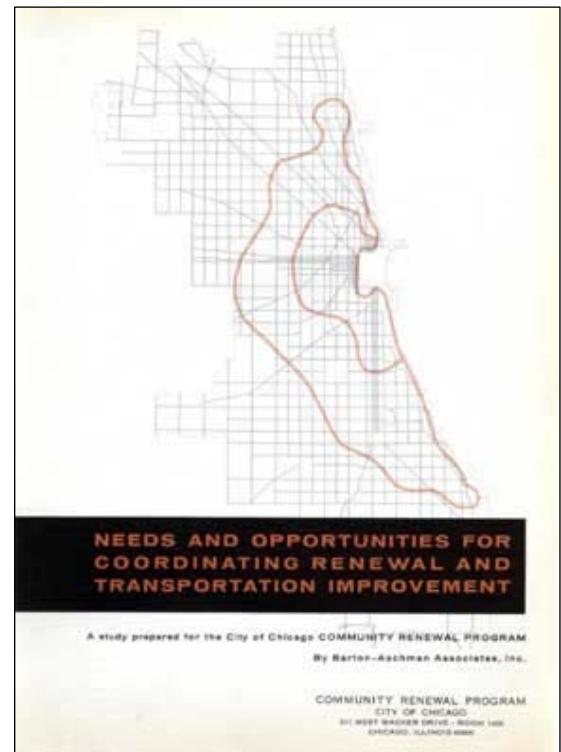
The concept of "high-accessibility corridors," which relates transportation systems and land development by the factor of accessibility, is applicable to most major cities on the American continents. It is especially pertinent to those that have systems of rapid transit and freeways or are planning such systems. The application of the concept will have the greatest impact on improving the quality of life for individuals who are unable to take advantage of urban opportunities. The concept also has great potential for enhancing economic development in central cities.

The 1966 Comprehensive Plan of the City of Chicago established three basic principles upon which all the elements of metropolitan structure are based: accessibility, opportunity, and concentration. More specifically, the plan recommended "a system of corridors of high accessibility." These included various kinds of high-speed, high capacity, ground transportation, which would provide a framework for high-intensity land-uses. The corridors would increase the range of choice of home and work locations for all Chicago area residents, make available more sites from which business and institutions could serve the entire city or area, and make the central area more accessible.

In 1967, the City of Chicago designated Barton-Aschman Associates, Inc., as its consultant in a study directed toward the development and evaluation of the concept of "high-accessibility corridors." This study was an integral part of the continuing comprehensive

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The Sociedad granted its first prize for theoretical work to the Chicago corridor study which this paper describes.



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planning program of the City of Chicago aimed at implementing the 1966 Comprehensive Plan. It had three primary purposes:

1. To define the concept of "high-accessibility corridors" as it applies specifically to Chicago.
2. To apply the concept in three prototype corridor segments in order to illustrate its potentials.
3. To evaluate the potentials of applying the concept to the city as a whole, including its impact on the six strategic objectives of Chicago's Comprehensive Plan.

The scope of this assignment encompassed primarily the physical planning and programming of land development and transportation.

### **Background of the Corridor Concept**

The term "corridor" and similar terms such as "finger" and "sector" are being applied to a wide range of development forms throughout the United States and the rest of the world. They all have one common characteristic: they are linear.

Corridors are not new to Chicago. The growth of the city in the first half of the twentieth century closely followed the streetcar, elevated rapid transit, and railroad routes. As a result, a number of clearly defined strips of high-density development were created along these routes prior to widespread use of the private motor vehicle for transportation. These formed "corridors" in which industrial employment and business activity were clustered. Very often, other development such as apartments, hospitals, high schools, and universities, which generate high volumes of traffic, also were attracted to those strips. Despite the tremendous impact of the private motor vehicle in the past two decades, the basic form of Chicago is still characterized by these strips, or "corridors," even though many exhibit substantial deterioration and congestion.

In 1961, a report prepared for the Chicago Bureau of Street Traffic highlighted this historic trend toward strips or "corridors" and stated that "it might be wise to examine the potential of actually attempting to design and develop streets and high traffic generation land-uses in a strip or corridor form. This would require the conception of an ideal or desired relationship between 'corridor' streets and 'corridor' land-uses and the application of this ideal to existing or potential new corridor areas."

In 1963, another report prepared for the Department of Development and Planning as a part of the Community Renewal Program emphasized the point that there are many opportunities to undertake coordinated renewal and transportation improvement in elongated, ribbon-like projects. Hence, the idea of the corridor as a programming device and as a planning unit was advanced.

### **Description of High-Accessibility Corridors**

A high-accessibility corridor is a strip-like concentration of land-uses which require accessibility to all (or most) other sections of the metropolitan area. It is organized along one or more high-speed, high-capacity transportation routes. It may be created largely by chance through a series

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of loosely related events, or it may be created through conscious effort based on the official policies of the Comprehensive Plan.

If policies established by the City of Chicago are to be achieved by corridor concept, it must also satisfy the following criteria:

- The corridor must contain high-speed, high-capacity transportation facilities both for private motor vehicles and for public transit. It also may contain railways, waterways, or other forms of ground transportation.
- Land-use within the corridor must require a level of accessibility (to other city areas) compatible with the level of accessibility provided by the transportation facilities and must be of such intensity as to support, but not hinder, the efficient operation of these facilities.
- The corridor must be planned and programmed to maximize desirable relationships between transportation facilities and land-uses.
- The corridor must function as a part of a total metropolitan system of high-accessibility corridors.

Not all high-accessibility corridors or corridor segments in the Chicago system are alike, nor should they be. Each may be classified in a variety of ways:

- By its location in the corridor system – crosstown (grid), radial, or a combination of both.
- By the type of area served by corridor land-uses and transportation facilities – regional (inter-metropolitan), metropolitan, or sub-metropolitan.
- By trip-generating characteristics – trip production (predominantly residential), trip attraction (predominantly nonresidential), through trip, internal trips, or a combination of these.
- By predominant land-use: residential, commercial, industrial, institutional, or recreational.
- By distance from the central business district. That is, it may be situated in a surface bus lane (up to three-to-four-mile radius from the CBD), rapid transit lane (up to 10 to 12-mile radius), commuter rail lane (beyond 10-mile radius), or in a transition area between lanes.

The combination of classifications applicable to each corridor or corridor segment will influence its overall function in the system of corridors and its physical form.

## Measurement of Accessibility

It is possible to develop systems for measuring the accessibility of intersections of corridors or points within corridors. One example is simply a rating based on the hierarchy of intersecting corridors, e.g., to regional corridors, a regional and a metropolitan corridor. This is of general, but limited, value.

A second example is to develop mathematically an index of accessibility for all intersections or, in fact, for any point in the system. A primary purpose of this theoretical exercise is to investigate a technique for identifying relative development potentials of various points in the network based solely on accessibility. This was first based on the assumption that all links in the network provide identical transportation service, i.e., the same mode or modes and travel speed.

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Of course, this does not truly represent all existing or proposed conditions, but it is a simple, easily comprehended, starting point.

The conclusion is not surprising; in theory, the most accessible location (represented by the lowest number) is at the center of the grid. In Chicago, this is not coterminous with the central business district. Historically, however, the Loop has more varied transportation service than any other point in the system and this must be taken into consideration. Therefore, the next step in the analysis process would be to build in constraints such as travel speeds, number of different modes serving a corridor, and concentration of trip productions and attractions. The process can, therefore, be of significant value when expanded.

### Principles of Corridor Planning

In Chicago, each corridor plays a different role in the function of the city and exhibits a different set of physical characteristics. A number of principles are applicable throughout the system of corridors, however, and these are essential to the fulfillment of the concept:

1. The function of the system of high-accessibility corridors is to provide optimum accessibility for people and goods to areas within the city and to destinations within corridors. It must accommodate large volumes of trips to, from, through, and between corridors.
2. The basic system of corridors within the city should be a "grid" pattern system; radial corridors, however, may be superimposed on the basic grid to link the central city to the suburbs.
3. The system should encourage coordination of all appropriate modes of transportation, including the integration of public rapid transit with intercity passenger transportation, with suburban commuter railroads and feeder buses, and with park-n-ride terminals. City feeder bus routes should focus either on the central area or on high-accessibility corridors.
4. Corridors that lie in the basic grid system should be developed continuously throughout with activities that require a high level of accessibility; development within radial corridors not in the grid system should be concentrated in nodes of varying size and intensity at intervals of not less than one mile. Radial corridors that also fall in the basic grid may exhibit a combination of continuous and nodal development.

Individual land-use activities within corridors should be located in immediate proximity to the predominant type of transportation providing the required level of accessibility; in general, the highest trip-generating activities should be located closest to public rapid transportation to enhance direct pedestrian connections and discourage use of motor vehicles.

1. Within all corridors there should be separate but coordinated systems of express and distributor facilities for both motor vehicles and public transportation: In continuous (grid) corridors it is preferable to have express and distribution systems paralleling one another; in nodal (radial) corridors it is preferable to have distributor systems follow the basic city grid of secondary arterials at an angle to express facilities.
2. First priority at the intersections of corridors must be given to the interchange of traffic; ways should be found to encourage and permit high-development intersections and access to sites without jeopardizing the traffic operation characteristics of the intersection. It is

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preferable to develop areas of high intensity in only one or two quadrants of an intersection of corridors, separating interchange areas for motor vehicles and public rapid transit by one-eighth to one-fourth mile.

3. (Missing)

### Evaluation of Typical Corridor Forms

The application of these principles to corridors in Chicago results in three general categories of typical corridor forms:

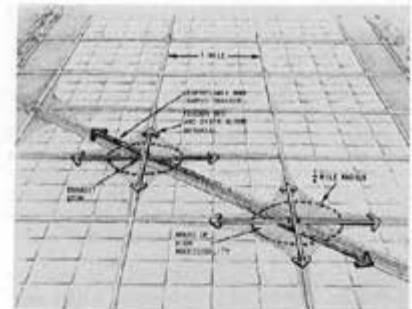
1. Expressway and rapid transit superimposed.
2. Expressway and rapid transit separated.
3. Divided expressway with variations of rapid transit.

The first typical form is characterized by rapid transit in the median strip of an expressway and is best suited to radial corridors. It has two variations. The first is suited to a pure radial corridor with reliance on distributor facilities at an angle to the corridor and associated land development. The second is suited to a combination radial and grid corridor and relies on an extensive system of parallel and perpendicular distributor facilities on both sides of the express right-of-way.

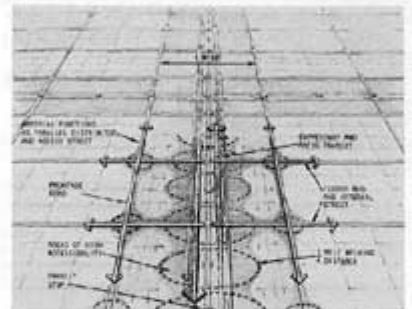
Corridor intersections of these two variations offer exceptionally high accessibility in a theoretical sense, but are so complex as to severely restrict practical accessibility in their immediate vicinity. Special design solutions for intersections, such as separation of expressway and rapid transit, must be sought if a high degree of accessibility is to be realized.

The second typical form is characterized by rapid transit separated from the expressway by a distance of approximately one-quarter mile. This form is best suited to grid corridors, especially to predominantly residential or institutional corridors, because transportation facilities complement rather than disrupt desirable neighborhood patterns and institutional environments. There are advantages to the separation of modes, so that vehicular access is obtained from the periphery and rapid transit access from the interior. The location of rapid transit stations at one-half mile intervals permits virtually the entire corridor to be accessible within a one-quarter mile walking distance from rapid transit.

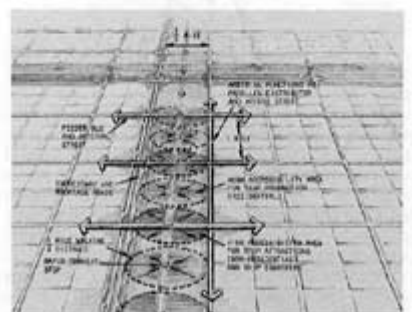
Intersections of these corridors naturally provide a high degree of accessibility in fact as well as in theory.



EXPRESSWAY AND TRANSIT SUPERIMPOSED, VARIATION "A": TYPICAL RADIAL CORRIDOR



EXPRESSWAY AND TRANSIT SUPERIMPOSED, VARIATION "B": TYPICAL GRID CORRIDOR

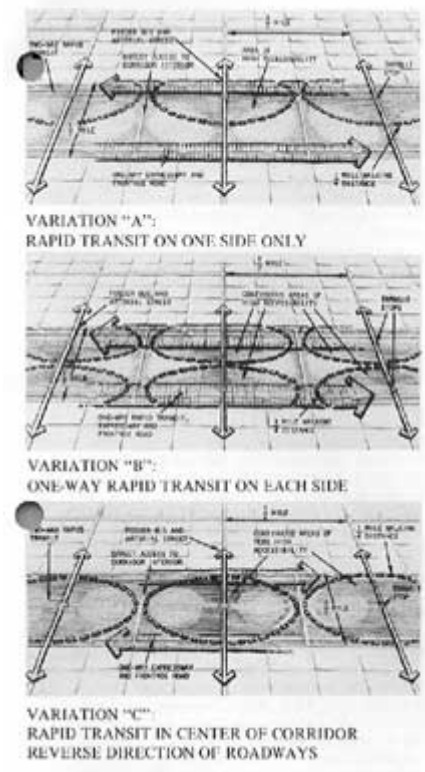


TYPICAL CORRIDOR: EXPRESSWAY AND TRANSIT SEPARATED

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The third typical form is characterized by splitting the expressway into two, one-way expressways separated by an interval of one-half mile or less. It has three variations, two of which emphasize distributor streets either outside or inside the corridor formed by conventional express roadways. The third variation reverses the direction of express roadways, allowing access ramps to and from interior distributor streets to be located on the right side of traffic flow.

Rapid transit should be located in the center of the corridor, but also may be located as a pair of one-way routes, one in each expressway right-of-way, or as a single two-way route superimposed on one of the expressways. Advantages of all the variations of this form are increased vehicular capacity and improved accessibility at frequent intervals to destinations within the corridor. This type of corridor is especially efficient at intersections of corridors where it may accommodate up to 30 percent more trip ends per unit of time than other corridor types. This form is well suited to grid corridors of nonresidential land-uses.



## Corridors as a Means of Achieving City Policies

The overall goal of the City of Chicago is expressed in its Comprehensive Plan as "an improved quality of life for all Chicagoans, derived from a wide range of actions directed toward both human welfare and physical order."

High-accessibility corridors can make a major contribution toward this goal. In fact, the potentials of the corridor concept may be the single most important means of achieving the many city policies contained in the Comprehensive Plan.

The Comprehensive Plan has established six strategic objectives and a simple procedure for evaluating the effect of any proposal on each of them. It ranks the positive influence of each proposal according to whether it is important (greatest influence), substantial, or moderate. The results of this study indicate that a system of high-accessibility corridors would have the following positive influences:

Goals	Positive Influence
Family life and environment	Moderate
Opportunities for the disadvantaged	Substantial
Economic development and jobs	Substantial
Moving people and goods	Important
The proper allocation of land	Substantial
Unified city development	Important

### Conclusions

Conclusions of this study were of two types: those relating to an evaluation of the concept and those relating to subsequent steps designed to fulfill the concept.

The usefulness of the concept for urban planning in general is that it represents major steps toward four contemporary planning goals.

1. First, "balanced transportation" is fostered by the requirement of public as well as private express transportation facilities in every corridor.
2. Second, the concept introduces a relatively sophisticated rationale for land-use control, based on the level of accessibility provided by transportation facilities.
3. Third, the concept is a complete system in that it provides crosstown corridors as well as CBD-oriented corridors.
4. Fourth, it is a bold expression of urban form in contrast to urban sprawl.

For the City of Chicago, the concept appears to be naturally appropriate. The size and density of the city is adequate, and it is characterized by a grid system of development. Because the city is located on the shore of Lake Michigan, that grid is asymmetrical, and this may be to Chicago's advantage. It enhances the attractiveness of intercepting positions (or points along the corridors) between outlying areas and the Loop, and concentrates potentials in approximately one-half the number of corridors which would characterize a concentric grid. The findings of this study confirmed the appropriateness of high-accessibility corridors established by the City of Chicago. In addition, it was suggested that a high-accessibility corridor near 87th and 95th Streets extending from the lakefront to Cicero Avenue be designated. All north-south corridors should be extended to intersect with this new corridor.

Successful implementation of the corridor concept requires steps not unlike those involved in any other planning concept. A few of the most important for Chicago are these:

- Encouragement of a widespread understanding among all agencies of the implications of policies established in the Chicago 1966 Comprehensive Plan and the principles identified in this study.
- Amendment of Chicago's mandatory referral process to include conformance with corridor policies and principles as an added requirement.
- Full utilization of "joint projects" for conceiving, planning, and executing a combination of developmental activities in a unified project involving the cooperative effort of two or more public agencies.
- Consideration of a "transit first" policy which will permit and encourage public rapid transit to be constructed in corridors to induce the proper allocation of land and development densities prior to the time when development intensities will guarantee immediate financial success.

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- Finally, the study concluded by outlining a program of continuing research which will provide detailed information and analyses of certain aspects of implementing the high-accessibility corridor concept.

### Projects Completed or Underway

Since completion of the study early in 1968, several major public works projects in the City of Chicago have been constructed or are underway in accordance with the high-accessibility corridor concept.

In 1969, the Chicago Transit Authority opened a new, five-mile rapid transit extension built on the median strip of the Kennedy Expressway on the city's northwest side. The extension included transfer points with surface express buses to O'Hare International Airport and with commuter railroads – effectively extending the corridor into the suburbs as far as 30 miles from the city limits.

On the Southside, the 10-mile rapid transit extension in the median strip of the Dan Ryan Expressway also opened in 1969. It provides increased mobility and opportunity for tens of thousands of low-income families living in the corridor and terminates at the new Chicago State College (now under construction).

Chicago is further along than any other United States city in carrying out "joint development" expressway projects designed by interdisciplinary design teams. The 22-mile Crosstown Expressway had been designed during 1968-70 utilizing in large part the "divided expressway" alternative<sup>1</sup>. Already a three and one-quarter mile segment has won approval from community groups, city officials, the State of Illinois Division of Highways, and the U.S. Department of Transportation. Construction is scheduled for the near future as funds become available. The final design has two, four-lane, single-direction roadways separated by four city blocks. It incorporates the development of schools, recreation facilities, new housing, and industry within the corridor formed by the two roadways. The Federal Highway Administrator, Lowell K. Bridwell, has called it "a historic milestone in urban highway planning and design."

Throughout the metropolitan area, the concept also is being applied to new public and private developments in the suburbs as well as in the city. Among these are the National Accelerator Laboratory at Weston, Illinois, and a new community in northwestern Indiana. It has proven to be an effective system for guiding metropolitan growth as well as central city development.

<sup>1</sup>Because of a broad reduction in transportation funding, this expressway was not constructed.

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