

TECHNICAL MEMORANDUM

Corrected

To: THE DEPARTMENT OF DEVELOPMENT, CITY OF COLUMBUS
AND THE FRANKLIN COUNTY REGIONAL PLANNING
COMMISSION

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From: MARCOU, O'LEARY AND ASSOCIATES
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Subject: PRINCIPLES OF TRANSPORTATION PLANNING
FOR THE REGIONAL CENTER

Date: SEPTEMBER, 1967



REGIONAL CENTER PLAN AND RENEWAL PROGRAM
COLUMBUS, OHIO

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PART 2: BACKGROUND DATA

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TRANSPORTATION PLANNING PRINCIPLES

PART 1

TRANSPORTATION PLANNING PRINCIPLES

I. Traffic Circulation System

A. Principles

1. In the center of the business community, primary consideration should be given to the circulation of pedestrians, transit vehicles, taxicabs, and other possible pedestrian conveyances (such as minibuses). To achieve this condition the primary traffic carriers, including the streets which give access to parking facilities, should be located at the edges of the core or most intensely developed areas.
2. The primary traffic carriers should form a ring around the most intensely developed core, this ring serving as a vehicular distributor.
3. The city-wide street and freeway system should contain facilities which will divert cross-town or through traffic away from the downtown area, leaving the streets within the area free to serve its needs.

4. The street system of the central area should provide sufficient capacity to accommodate the following activities:

- movement of transit vehicles.

TRANSPORTATION PLANNING PRINCIPLES

- movement of trucks, service vehicles and emergency vehicles.

- movement for direct access to buildings which require direct access to streets, schools, medical buildings.

I. Traffic Circulation System

A. Principles

- automobiles moving to and from parking facilities.

1. In the center of the business community, primary consideration should be given to the circulation of pedestrians, transit vehicles, taxicabs, and other possible pedestrian conveyances (such as minibuses). To achieve this condition the primary traffic carriers, including the streets which give access to parking facilities, should be located at the edges of the core or most intensely developed areas.

2. The primary traffic carriers should form a ring around the most intensely developed core, this ring serving as a vehicular distributor.

3. The city-wide street and freeway system should contain facilities which will divert crosstown or through traffic away from the downtown area, leaving the streets within the area free to serve its needs.

a. Reasonably equal ramp capacity should be provided on the four sides of the freeway ring, with emphasis on ramp capacity on the east side.

b. The ramp capacity providing movement to and movement from the downtown from each side of the freeway ring should be reasonably equal.

4. The street system of the central area should provide sufficient capacity to accommodate the following activities:
 - movement of transit vehicles.
 - movement of taxicabs.
 - movement of trucks, service vehicles and emergency vehicles.
 - movement for direct access to buildings which require such access, i.e., hotels, medical buildings, convention facilities.
 - automobiles moving to and from parking facilities.
5. Streets not required for general circulation or direct property access may be deemphasized or closed in order to create more ample sites for land development or to provide a more suitable environment for pedestrians.
6. The land developments which are strongly auto-oriented, such as drive-in facilities, should not be permitted within the core area.
7. The function and usage of the downtown street system and the major routes of access to the core area are strongly influenced, if not controlled, by the location and configuration of freeway ramps serving the "ring" area. Some specific ramp improvements and changes will be recommended. Criteria involved in making these recommendations are:
 - a. Reasonably equal? ramp capacity should be provided on the four sides of the freeway ring, with emphasis on ramp capacity on the east side. *RAMP CAP. SHOULD RELATE TO VOLUME DEMAND AND TO CAP. OF THROUGH LANES.*
 - b. The ramp capacity providing movement to and movement from the downtown from each side of the freeway ring should be reasonably equal.?

Notably on the east side of the ring, access capacity to the CBD is significantly greater than the capacity from the CBD.

- c. Although it compounds the design problems on the west leg of the freeway ring, CBD access requirements dictate that a ramp system of adequate capacity be provided.
- d. Routings from the ramp system to the core area should clearly emphasize and encourage use of streets designated at the major rather than minor arterials. Although the latter routes cannot be closed, their use is to be deemphasized insofar as possible.

B. Application of Circulation Principles

1. The freeway system will serve effectively to bypass through traffic. By 1985, no more than 15 percent of the traffic entering the area bordered by the freeway ring will be of a type that has no destination within the area.
2. The pattern of access to the Regional Center and the pattern of circulation within it is to a great extent established by the design of the freeways, the location of their ramps, and the existence of bridges. *AND ONE WAY STREET PATTERNS.*
3. High and Broad Streets are centered in the core, and they increasingly are becoming the primary spines of the Regional Center. Pedestrian movement along them should be facilitated as fully as possible. No driveways leading to parking, truck service areas or similar off-street activity should lead into High or Broad Street. The continuity of pedestrian circulation along these two streets should be uninterrupted, and vehicular movement should be discouraged on the streets by the exclusion of driveways leading to off-street facilities.

VERY GOOD -

4. The primary circulation system ringing the core should take the form of four pairs of one-way streets. Along the north edge of the district, the pair would be Spring and Long; the east side of the ring would be provided by 3rd and 4th Streets; Main and Rich would form the south side of the ring; Front Street and Civic Center Drive would be improved to form the west side of the ring. *TOWN W. BOUND, MAIN S. BOUND, BRIDGES ARE EXISTING BOTH OVER RIVER AND S. LEG OF INNERBELT.*

Spring and Long operate as a one-way couplet now. Their present pavement width is adequate, but curb parking should be prohibited. *PROHIBITED AS VOLUMES DEMAND.*

To make 3rd and 4th fully effective, the pavement on 4th Street should be widened to 54 feet between Town and Rich. Curb parking should be prohibited. Certain modifications in freeway ramps should be made at the southern end of the system. *3RD & 4TH STS. ARE 52' BETWEEN BROAD AND FULTON.*

Main and Rich should operate as a one-way pair between Grant and Civic Center Drive. This will require an improved connection from Rich to Main Streets west of Front Street. As funds are available and the traffic volumes increase, a new bridge could be built at Rich Street, feed traffic into a widened Main Street between the river and the freeway. *RICH*

Civic Center Drive and Front Street should operate as a one-way pair from Mound to Spring Street. This will necessitate the realignment of Civic Center Drive between Town and Mound Streets. *SOME OPERATIONAL PROBLEMS.*

5. The primary traffic circulation needs in the central area will not be fully met by the distributor ring just described. To aid in relieving High Street, Cleveland and Grant Avenues should be developed as a two-way route. This will entail a direct connection between Cleveland and Grant at a point north of ~~Broadway~~. To the south, Grant should be improved as the renewal process permits, to provide four lanes for through movement, a median, and turn lanes on a 100-foot right-of-way. To enhance its efficiency

as a traffic carrier, minor cross-streets should be closed or movement confined to right turns.

To handle traffic movement in the east-west direction, Town Street should be considered a primary two-way carrier. In addition, Broad Street must continue to be a dominant east-west traffic artery.

ONE-WAY
?

6. Among the streets which may be deemphasized because of their minor traffic significance are:

- Marconi---Spring to Civic Center Drive *CONNECTION BETWEEN SPRING & GAY FOR ONE-WAY OPERATION OF C.C. DRIVE.*
- Gay---Civic Center Drive to 4th Street *O.K.*
- Mound Street from Grant eastward to the freeway *O.K.*
- Washington---Main to Fulton *CONNECTION OF RICH TO TOWN OR MAIN FOR ONE-WAY OPERATION.*
- State Streets~~---~~sections of the street may be used for local access only

7. Revisions in the design of ramps and freeway access require a whole series of investigations before they can seriously be considered for implementation. These investigations include availability of rights-of-way, workability of grades, methods of financing, etc. Therefore, the following suggested revisions are only preliminary proposals which would help solve the access needs for the downtown area. TRUE TRUE

a. South Freeway Ring

A serious restriction in capacity on the freeway mainlines is now apparent in the easterly portion of the South Ring. Heavy volumes and restricted distance for weaving of westbound traffic approaching the 4th Street off-ramp are creating excessive conflicts. It is proposed that the equivalent of a collector-distributor road be provided to eliminate the weaving movement. The only restriction imposed on traffic would be to physically block the movement to the 4th Street off-ramp from the southbound East

Ring freeway.

A schematic layout of the proposal is attached. Although a more complex solution involving more bridges might be possible, the proposed collector-distributor can resolve the capacity problem using a minimum of additional right-of-way.

b. West Ring Freeway

To provide improved access to downtown, a split diamond interchange and connecting one-way frontage roads should be provided at Town and ~~Main~~ *RICH* Streets. Such a design is well adapted to the present street pattern west of the Scioto River and retains the flexibility of complementing a revised pattern whereby ~~Main~~ *RICH* Street west of the river might ultimately be upgraded to serve as the primary arterial between the freeway and the river. *PRESENT PLANS CALL FOR ONE-WAY PAIR WEST OF RIVER. TOWN ST. W. BOUND - RICH ST. E. BOUND*

Limitations on geometrics in the design have necessitated ramp closures or restriction of their use. Possible changes in the connection from the interchange in the southwest corner of the freeway ring are shown on an attached layout. If possible, the ramp connection should be revised to give more freeway legs access to the south ramps at ~~Main~~ *RICH* and eliminate weaving movements.

c. East Ring Freeway

Specific proposals to alter the ramp section on the East Ring Freeway are of less value than attempting to get agreement on the intent of the design. Some criteria which, if acceptable, would provide several options in the revision of ramps are:

- 1) Less emphasis can be placed on providing CBD access for eastbound traffic on the North Ring to the downtown area via ramps at Broad.

- 2) Through changes in ramp connection, weaving on the freeway mainlines may be greatly reduced.
- 3) Dual connections for East Ring traffic to the northbound extension of the freeway north of the North Ring are not mandatory.
- 4) The interchange at the East Ring and Main could be revised to act as a half cloverleaf or folded diamond interchange for some interim period if Main is designated two-way east of reconstructed Grant Street.

d. North Ring Freeway

The changes to ramps on the North Ring should be based on an analysis of the effect of deleting the dual connections from ramps to serve local access. The bulk of these secondary connections require tight turning radii and, therefore, necessitate rapid deceleration on the ramp itself.

Although deletion of the secondary connections will require some extra circuitry of travel, the improved capacity and smoother operation under heavy traffic loadings merit consideration of deleting the facilities.

II. Public Transportation

A. Principles

Public transportation can contribute materially to the success of the Regional Center. The extent and nature of this contribution may be expanded sharply in the years ahead as a result of technological developments which are almost certain to emerge from the extensive research and development now being initiated by the federal government. It appears nearly certain that a city the size of Columbus will find in this new technology an opportunity to enhance greatly the accessibility of its central business district. Further, with the growing interest in public transportation at all levels of government, the funds to develop this type of system will be far more available in the coming decades than it has been for many years.

An active and growing regional center will offer one of the best opportunities for public transportation to provide a useful service. For public transportation to achieve its full potential, there need to be concentrated areas of intense activity attracting large numbers of people. These requirements will be met as downtown Columbus becomes the focal point for intense land development of various types.

In the central business district perhaps more than in any other segment of the urban area, it is vital that the physical arrangement of land-uses and the physical arrangement of the transportation system be planned and developed together. When the land-uses are organized in a fashion which makes them readily servable by public transportation, the potential contribution to the success of the transit system is distinctly enhanced.

Not only will the public transportation system play a vital role in transporting the daily worker and visitor, but it also can bring to the downtown area

a group of citizens which cannot be served by private transportation. These are the people who, by virtue of their age or physical condition, are precluded from driving an automobile, as well as those who do not have an automobile available at the time when they desire to make their shopping, business or cultural trips.

Public transportation further can contribute to the continuing workability of the Regional Center during the decades ahead by limiting the magnitude of the system required at the downtown area to accommodate the private automobile. In the central area, a prime objective is to create an environment conducive to maximum circulation of people between activities contained in the area. A restraint is exerted upon this form of communication by the existence of excessive vehicular volumes on the downtown street system. As public transportation reduces the need for continually growing vehicular volumes, it will contribute to the functional efficiency of the Regional Center.

In the absence of an agreed public transportation plan for the Columbus area, it is not possible now to deal specifically with all elements of the system which should be considered in planning for the Regional Center. A number of assumptions can be made for planning purposes, however, with reasonable confidence:

1. Within the foreseeable future, the system will not include traditional rail transit as it now exists in the largest metropolitan cities.
2. Initially, express service to the Regional Center probably will take the form of buses operating on freeways and/or on exclusive rights-of-way. In addition, local bus service will continue to play an important role throughout the central part of the city which is within a three to four mile radius of the Center. When new transit technology has emerged from the current research and development program, it probably

will include a new type of vehicle operating with a high degree of automation and requiring its own right-of-way at least through the central business district.

The most compelling requirement in the planning for the public transportation system in the Regional Center is an adequate distribution system. This system must be primarily of the type which will allow the vehicle which carries people to the Center to distribute them throughout the Center without the necessity for a transfer. In view of the assumption that the initial step toward expanded transit service will take the form of new bus operations, the distribution system in the central area will necessarily consist of buses operating on surface streets. Such a system, further, will accommodate local buses.

As more sophisticated transit technology is applied in Columbus, an adequate distribution system will require an exclusive right-of-way either on the surface, at a level above, or at a level below. The physical form of downtown Columbus probably precludes the creation of an exclusive transit right-of-way on ground level through the heart of the most intense activity, where it must be placed. Similarly, existing buildings and planned development present an arrangement which offers little opportunity for a transit distributor above the ground level. By the elimination of alternatives, the conclusion is reached that the distributor must be placed below the ground level.

If it is correct to assume that transit distribution 7, 10, or 15 years hence will be at a level below street grade, two correlated inferences are to be drawn. First, pedestrian circulation facilities planned for the Regional Center should include provisions for below-ground circulation for pedestrians as they move to and from the transit distributor. Second, in the construction of utilities, building footings and other facilities below the ground, the opportunities should be preserved for the future construction of the transit distributor.

It is essential that the future location of the transit distributing facility be determined now in order that new buildings can be placed in proper relationship to it, and current transportation service placed in these locations to serve as fully as possible the buildings existing or to be built soon in these locations.

B. Application of Public Transportation Principles

1. The emerging physical plan for the Regional Center is establishing High Street as its dominant spine. Activity will assume the form of an elongated development extending from the new office development near Gay, Long, and Spring Streets southward past municipal and state government buildings, primary retail stores, new offices, the convention-entertainment center, and terminating at the south end with the county government complex. A secondary spine will extend along Broad Street.
2. The total High Street spine will be a long one; it is roughly a mile from the county area at the south to the planned office development at the northern terminus. The area of most intense development will extend approximately one-half mile. These distances are beyond pedestrian scale, and necessitate facilities for internal circulation along High Street.
3. There are two functions for public transportation to perform along the High Street spine. First, the line-haul equipment which carries people to the Regional Center should also distribute them along the length of High Street. Second, transportation should carry people up and down the High Street spine, an entirely internal movement. Both of these functions may be performed by buses operating along High Street. This will be particularly true if the transit fare structure offers a special rate for trips that start and end entirely in the CBD. Special shuttle operations such as a minibus can be tested and/or added as

necessary.

4. Ideally, High Street should be exclusively reserved for use by pedestrians, transit vehicles and taxicabs. This treatment would dictate a two-lane pavement plus loading bays and widened sidewalks.

Practically, land development is to extend in a relatively narrow band for roughly a mile in a north-south direction. This being true, there are a limited number of north-south streets that can serve development. Projections of vehicular movement cannot be accommodated without substantial volumes using High Street. In fact, these volumes will be high enough to require four moving traffic lanes, in addition to the lanes for transit operation.

To permit as efficient bus movement as possible, steps should be taken to divert vehicular traffic to streets paralleling High Street. Actions recommended to achieve this objective are described in the section dealing with the circulation plan.

For the near future, the present pavement on High Street must be retained. It should be used for four moving traffic lanes and two exclusive bus lanes, with curb parking prohibited. Later, when this roadway has been relieved of much of its transit distribution function, it may consist of a 44-foot pavement on the present 100-foot right-of-way.

5. Circumstances dictate that Broad Street perform several traffic and transportation functions. It has already been noted that Broad Street should be classed as a transit spine secondary only to High Street. In addition, because of the placement of freeway ramps and the intensive use of Broad as a traffic carrier outside the central area, Broad Street must continue to carry substantial volumes within the Regional Center. Steps should be taken to relieve Broad as far as

possible of vehicular traffic loadings. These steps are discussed in the section on circulation.

For the foreseeable future, Broad Street should consist of two 33-foot roadways separated by a 14-foot planted median, with turn refuges. With its 120-foot right-of-way, sidewalks will be 20 feet wide. Curb lanes should be kept clear of parking to facilitate transit movement.

6. The placement of buildings existing and planned, in combination with the wide rights-of-way available in High and Broad Streets dictate that these two streets be accepted as the proper location for a below-ground transit distribution system when the need for such a facility arises in the future. The two rights-of-way are wide enough to accommodate a two-way system, plus stations. Henceforth, care should be used in the placement of building footings, utilities, and other ground facilities to preserve the future opportunity for constructing the transit facility. Particular attention may be required at the intersection of Broad and High Streets. Especially construction at the southwest and southeast corners should consider turning radii which may be needed for an efficient transit operation.

BOTH HIGH ST. AND BROAD ST. HAVE RETAIL OUTLETS WITHOUT ACCESS TO REAR LOADING FACILITIES. LOADING ACTIVITIES IN ALLEYS BEHIND HIGH ST. PRESENTLY EXCEED CAPACITY. THIS CONDITION MAKES SOME PROPOSALS QUESTIONABLE UNLESS LOADING ACTIVITIES ARE ACCOMPLISHED AFTER MIDNIGHT.

III. Parking in the Regional Center

A. Principles

1. The size, location, and design of parking facilities should be controlled within the core area. (For this purpose the core may be considered as the area bounded by Front, Long, 4th and Town). The objectives to be achieved through this control are as follows:
 - to avoid interference with pedestrian circulation
 - to minimize vehicular circulation within the core
 - to maintain compactness and continuity of activity
 - to preserve the urban design qualities of the area
2. Within the core area, parking structures will, as a rule, be acceptable only as a part of major planned developments. With such large scale development, vehicular access will be possible from several streets, avoiding the necessity for access to primary pedestrian streets such as High Street. Such developments also have additional values. First, they do not present the interruption to the interchange between downtown activities which result from the intrusion of a structure solely used for parking. Second, the multiple use of the land not only reduces the direct cost of the parking service, but tends to achieve compactness in activity. Third, the existence of a limited number of major and efficient entries and exits can have materially less impact on pedestrian flow than would result from large numbers of smaller parking facilities, each with its own entry-exit system.
3. Major parking facilities allowed in or adjacent to the core should be designed and regulated so as to

be used primarily by the patrons of downtown establishments, visitors, professionals requiring an auto during the course of their daily business, and a limited number of executives.

4. Long-term parking---essentially central area employees---should be placed outside the center of the core, along streets designated as major traffic carriers, with as direct access as possible from the freeways. In this position, they will be able to intercept the peak-hour movement of employees and minimize movement through the center.
5. The major parking facilities placed in or near the core should be located in a manner which will facilitate their use, not alone by daytime visitors, but also for evening cultural, entertainment, and recreational activities.
6. There is a direct relationship between parking policy and policy toward public transportation. A successful public transportation operation can reduce the need for parking in the central area. Conversely, the quality and pricing of the parking service in the central area can influence the usage of public transportation.
7. In the most intensively developed section of the Regional Center, the curb lanes on the streets will be required for necessary loading and unloading and for traffic movement. This dictates the elimination of curb parking, except on streets of the most minor traffic significance. AGREED!

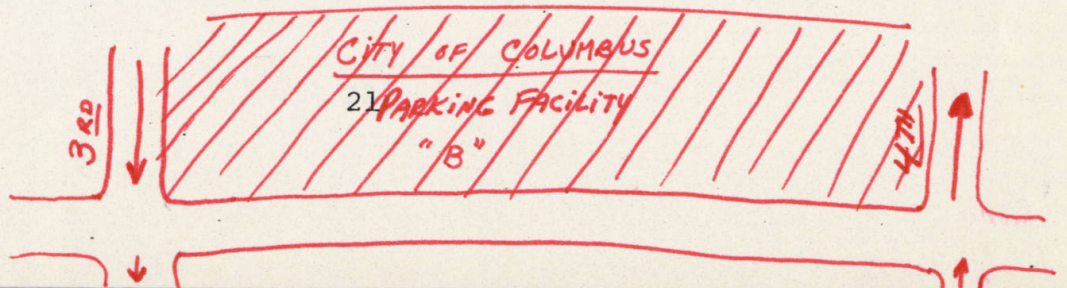
B. Application of Parking Principles

1. With the land development contemplated by 1985 in the area generally bounded by Spring, Rich, 4th, and Civic Center Drive, there will be a need for 15,000 to 16,000 parking spaces in addition to those which now exist. A portion of these parking facilities, especially those for long-term users, may be placed outside the limits

of this area. This quantity of parking will compensate for the elimination of parking at the curb. It presumes a continuation of the current level of transit riding. If the extent of transit usage is materially increased, the amount of parking, especially for central area employees, may be reduced.

2. Much of the long-term parking should be placed between the one-way streets forming the downtown distributor ring. Where possible, these facilities should have both an entrance and an exit on each of the streets forming the one-way couplet.
3. Driveways for parking facilities should not enter High or Broad Streets within the core area. *O.K.*
4. As a rule, any parking facility with the capacity of more than 500 stalls should have entry-exit on two streets, except when located on streets of extremely low traffic usage or those having direct contacts with freeway ramps. Individual parking facilities should not have capacity greater than 1,200 stalls. A facility of this size normally should be served by entry-exits on three streets.
5. With the exceptions of the two development projects which will use public parking as the medium for obtaining land--Key Block West and the Convention Center--and the parking to be provided for city employees, the parking required for future development in the Regional Center will be provided by private enterprise. The parking facilities specifically planned for new development in the immediate-action areas include the following:

FITS OUR PROPOSAL FOR PARKING FACILITY IN THE MARKET-MOHAWK AREA ON MOUND ST. BETWEEN 3RD & 4TH.



Project

Planned Spaces

Convention Center	1,200
Key Block South	600
Key Block West	800
Key Block North	2,500
Civic Center	1,100

I AM NOT FAMILIAR WITH THESE LOCATIONS. ?

6. It is assumed that further development of parking facilities will occur mostly along the distribution streets surrounding the core.

In view of the elongated pattern, pedestrian circulation is especially important along High Street and parallel to it, with extensions from this main spine to important centers of activity to the east and west.

The extent of development along the High Street spine is so great that much of the north-south circulation will be beyond normal pedestrian scale. This dictates that there be transportation to supplement walking along the street. Under the section on transportation, it has been recommended that transit buses be concentrated on High Street, supplemented as necessary by special shuttle service.

Since the vast majority of streets in the core area must be retained for vehicular circulation, there is a limit to the pedestrian amenities that can be provided on ground level. As a consequence, facilities for pedestrians should be developed above and below the street level. Facilities for pedestrian circulation below street level will gain in significance if

IV. Pedestrian Circulation

A. Principles

One of the primary reasons for the existence of a central business district is that it allows ready intercommunication between the various activities occurring in the area. The most effective method for achieving face-to-face communication is by people walking between buildings. For this reason, pedestrian amenities are paramount in the core of the Regional Center.

Since the Regional Center in Columbus is taking the form of an elongated development in a band paralleling High Street, there is little opportunity for street closures to aid pedestrians since the limited number of streets existing in this band is required for the circulation of vehicles of various types.

In view of the elongated pattern, pedestrian circulation is especially important along High Street and parallel to it, with extensions from this main spine to important centers of activity to the east and west.

The extent of development along the High Street spine is so great that much of the north-south circulation will be beyond normal pedestrian scale. This dictates that there be transportation to supplement walking along the street. Under the section on transportation, it has been recommended that transit buses be concentrated on High Street, supplemented as necessary by special shuttle service.

Since the vast majority of streets in the core area must be retained for vehicular circulation, there is a limit to the pedestrian amenities that can be provided on ground level. As a consequence, facilities for pedestrians should be developed above and below the street level. Facilities for pedestrian circulation below street level will gain in significance if

mended that the canopies be constructed independently from the buildings to avoid construction problems and to permit some signs to remain. The beautification should include the blocks from Spring Street south to the State House West development. It should be noted that this will restore High Street to its condition at the turn of the century when large arches were placed across the street for lighting and beautification.

NO COMMENT

Broad Street: This street is broad enough to permit restoring the tree-shaded boulevard treatment of the center which was present until after World War I. Three lanes of traffic in each direction will be retained. This should be extended from the river east at least to 4th Street to provide an attractive edge to the State House Square. The center park strip should be simple and direct: large trees and a ground cover.

SAME

Gay Street: As the major focus of office development, Gay Street is important and will become more so. We recommend that Gay Street be narrowed to two lanes of traffic to provide wide sidewalks which can be attractively landscaped. This treatment should reach from the proposed Civic Center plaza to 3rd Street.

IMPOSSIBLE TO ENFORCE PARKING OR STOPPING HERE. —

State Street: This street should become an attractive mall-like connection between the City Library and the State House, ending at High Street. We recommend that a wide park strip be established on one side of the street by narrowing the street to two lanes.

SERVES UNDERGROUND PARKING FACILITY.

V. Facilities for Commercial Vehicles

A. Principles

1. In view of the magnitude of the future traffic loads foreseen on the primary streets of the Regional Center and the attendant necessity for facilitating the movement of transit vehicles, curb lanes cannot be used by trucks for the loading and unloading of cargo. While commercial vehicles engaged in express operations, which require but a brief stop at the curb, will necessarily continue to operate at the curb, all other service vehicle activity should be conducted off the street. For this to become possible, off-street trucking facilities should be created during the course of building construction and reconstruction during the coming years. O.K.
2. The off-street trucking facilities should not have access to High or Broad Streets.
3. Activity which attracts large quantities of truck movement, such as for metropolitan distribution, should not be included in the Regional Center unless placed in close proximity to the freeway ramp system.

STREET ACCESS AND PARKING REQUIREMENTS

The 1964 and 1985 estimates of gross floor area by relatively small segments of the downtown area were used to develop both the total trip end and parking estimates for the study. The following definitions of terms are used throughout to identify specific variables:

PART 2

BACKGROUND DATA

Development of Street Access and Parking Requirements Estimates for the Regional Center

- The area of central Columbus bounded by the Scioto River, Livingston Avenue, Parsons Avenue, and the Pennsylvania Railroad. The area was designated to permit comparison and expansion of 1964 traffic count data by direction.
- Either a trip origin or destination within a zone inside the freeway routes circling the downtown.
- The area of central Columbus bounded by the Scioto River, Livingston Avenue, Parsons Avenue, and the Pennsylvania Railroad. The area was designated to permit comparison and expansion of 1964 traffic count data by direction.
- A trip which is a movement from one zone to another in the study area or having an origin and destination within the same zone.
- Average daily traffic or the 24-hour volume estimated or counted on a route.
- Vehicles per hour or the hourly volume estimated or counted on a route.
- The estimated or counted hourly traffic volume between 7-9 AM or 4-5 PM, which controls the capacity requirements for street design.
- The parking required is the estimated number of

STREET ACCESS AND PARKING REQUIREMENTS

The 1964 and 1985 estimates of gross floor area by relatively small segments of the downtown area were used to develop both the total trip end and parking estimates for the plan. The following definitions of terms are used throughout to identify specific variables:

- CBD - The area of the Regional Center bounded by the Scioto River, Livingston Avenue, Fourth Street, and the Pennsylvania Railroad. This area was designated to permit comparisons with the 1959 travel data.
- Ring - The area of central Columbus bounded by the Scioto River, Livingston Avenue, Parsons Avenue, and the Pennsylvania Railroad. The area was designated to permit comparison and expansion of 1964 traffic count data by direction.
- Trip End - Either a trip origin or destination within a zone inside the freeway routes circling the downtown.
- Intra CBD
or Intra
Ring Trip - A trip which is a movement from one zone to another in the study area or having an origin and destination within the same zone.
- ADT - Average daily traffic or the 24-hour volume estimated or counted on a route.
- VPH - Vehicles per hour or the hourly volume estimated or counted on a route.
- Peak Hour
Volume - The estimated or counted hourly traffic volume between 7-8 AM or 4-5 PM, which controls the capacity requirements for street design.
- Parking
Required - The parking required is the estimated number of

spaces which would be required during the maximum accumulation hour. Long and short duration parking were not estimated separately.

The sections of this data report are arranged in the sequence used to develop the 1985 travel and parking estimates. 1985 was selected as the design year since the recommended plan of development should be entirely developed prior to that year. 1985 estimates are also in general conformance to the usual road design criteria that street and highway planning should include a time period of roughly 20 years.

The sections of the data report are:

1. Trip generation rates
2. Parking requirement criteria
3. Summary of 1959 travel data
4. Summary of 1964 and 1985 travel estimates
5. Estimate of required 1985 street capacity by direction of approach
6. Preliminary thoroughfare street plan
7. Critique of street plan and critical requirements

TRIP GENERATION RATES

The 1959 travel data are thoroughly summarized in the Department of Highways report on the origin-destination survey. However, land-use data for the CBD are not available to develop trip generation rates. Similarly, land-use data are available for 1964 but the related travel demands are not. Therefore, the estimated trip generation for the proposed renewal were based on the 1964 and 1985 land-use estimates and the available 1959 travel data used only for checking for reasonableness.

The assumed trip generation rates (trip destinations per day) are shown in Table 1. Although a considerable range in

values have been observed in these rates, the figures shown are for a number of midwestern CBD's and should be applicable in Columbus.

The values used should be liberal estimates of trip generation so that their use includes a reasonable but not excessive factor of safety.

Table 1
 CBD LAND-USE TRIP GENERATION RATES (TRIP DESTINATIONS/1000 SQUARE FEET OF GROSS FLOOR AREA).

Land-Use	Trip Destinations/Day/1000 Sq. Ft.
Public Offices	10.0
Private Offices	3.2
Retail Shopping	10.0
Retail Other	15.0
Retail Services and Lodging	8.0
Manufacturing	3.0
Non-Manufacturing Industrial	3.0

The trip generation rate for office space incorporates the following assumptions which are felt to be realistic:

One employee per 200 square feet of office space

Five percent employee absenteeism

Twenty percent of employees arrive by transit

1.3 persons per vehicle as the work trip auto occupancy rate

Ten percent of office trip generation by visitors or those on personal business

When new data become available, the trip generation by zone in the downtown area can quite easily be recalculated as a double check.

The use of the abovedescribed generation rates resulted in the 1964 and 1985 trip ends estimates shown in Table 2.

Table 2

DOWNTOWN TRAVEL ESTIMATES (ADT), 1964 and 1985

Zone No.	1964 Trip Ends (ADT)	1985 Trip Ends (ADT)
<u>CBD Zones</u>		
151	8,000	12,400
152	22,000	31,500
153	35,000	57,500
154	9,700	18,000
155	20,000	23,500
156	25,000	52,400
157	32,000	44,100
158	11,000	13,100
<u>Ring Zones</u>		
161	7,000	18,250
162	13,000	18,250
341	14,000	22,500
342	4,000	10,000
343	12,000	21,500
344	21,000	32,000
401	20,000	20,500
402	13,000	15,500
403	7,900	10,000
404	7,900	8,200
<u>Other Zones</u>		
262	5,600	6,100
263	11,000	11,000
272	11,000	11,000

The total trip ends for 1964 and 1985 are shown in Table 3. These are total trip ends and should not be confused with the number of vehicles per day which must enter from the freeways circling the downtown area. All estimates in the report are vehicular trip estimates as opposed to being person trip values.

Table 3
SUMMARY OF 1964 AND 1985 TRIP ENDS

Area	1964 Trip Ends	1985 Trip Ends
CBD	163,000/Day	252,500/Day
Ring	285,000/Day	429,200/Day
Within Freeways	312,600/Day	457,300/Day

PARKING REQUIREMENT CRITERIA

Similar to the trip generation rates, the number of parking spaces required during periods of maximum accumulation were developed from studies of similar CBD land-uses rather than standards.

Each parking requirement is projected from the estimates of floor area by seven classes of land-use. It should be noted that residential land requirements are not included. It is assumed the residential spaces would be developed by applying the local zoning standards at the fringes of the downtown area. The assumed rates are shown in Table 4 and the estimated spaces required in Table 5.

* Although the results of the current Blue Plan parking analysis are not immediately available, the 1985 estimates should be recomputed before the final plan is prepared. The

Table 4
RATES OF PARKING REQUIREMENTS FOR MAXIMUM ACCUMULATION HOURS

Land-Use	Original-Square Feet		Parking Spaces/1,000 Sq. Feet of Floor Area	
	Original 1964	Revised 1965	Original 1964	Revised 1965
Public Offices			3	
Private Offices	151	1,500	2	2,320
Retail Shopping	152	3,500	3	5,500
Retail Other	153	10,000	3	10,970
Retail Service and Lodging	154	2,200	3	2,710
Manufacturing	155	4,000	3	3,750
Non-Manufacturing Industrial	156	700	1.5	9,570
		1,900		8,640
		2,500		3,420
		1,000		3,100
		32,530		47,110
A (70%)	161	6,000	3	7,500
B	341	5,400	3	5,400
C	342	250	1,500	1,500
D	343	1,200	2,000	2,000
E	344	2,400	4,400	4,360
K	401	1,800	2,700	2,560
L	402	1,400	1,400	1,400
M	403	600	900	900
N	404	1,400	1,400	1,400
Sub Total:		60,850		65,900
R	262	750	1,350	1,330
O (60%)	263	1,900	2,500	2,460
S (40%)	272	1,900	2,500	2,420
Within Freeway Total:		65,400		92,290
				87,750

Table 5

SUMMARY OF PARKING SPACE NEEDS

Revised=Original-Square Feet Public Office Per Space
(in Thousands) x 1

Anal. Sect.	Zone No.	Number of Spaces			
		Original 1964	Revised 1964	Original 1985	Revised 1985
F (40%)	151	1,500	1,500	1,700	2,320
H	152	3,600	3,330	7,500	5,600
I	153	10,000	9,270	12,000	10,970
P	154	2,200	2,160	3,000	2,710
O	155	4,000	3,580	4,000	3,760
J	156	4,700	4,470	10,000	9,690
G	157	5,900	5,720	10,000	8,640
F (60%)	158	2,500	2,500	2,900	3,420
CBD Total:		34,400	32,530	51,100	47,110
A (70%)	161	6,000	5,960	7,500	7,460
A (30%)	162	6,000	5,980	7,500	7,480
B	341	5,400	5,370	5,400	5,370
C	342	250	250	1,500	1,500
D	343	1,200	1,200	2,000	2,000
E	344	2,400	2,360	4,400	4,360
K	401	1,800	1,660	2,700	2,560
L	402	1,400	1,200	1,400	1,400
M	403	600	600	900	900
N	404	1,400	1,400	1,500	1,400
Ring Total:		60,850	58,510	85,900	81,540
R	262	750	730	1,350	1,330
Q (60%)	263	1,900	1,860	2,500	2,460
S (40%)	272	1,900	1,820	2,500	2,420
Within Freeway Total:		65,400	62,920	92,250	87,750

values shown in Table 5 are intended to show the general magnitude of parking needs; especially in the CBD.

If the proposed plan is implemented, a total of 47,000 parking spaces should be available. This estimate tends to be quite liberal, especially in zones 152 and 157, because of special types of land-use such as the arena and convention facilities.

The current supply of off-street parking in the CBD totals less than 24,000 spaces. This is a decline from the spaces available in 1964 and 1965.

The on-street parking in the CBD is significantly reduced by bus stops (13%) and parking prohibitions and curb cuts (41%). The number of on-street spaces available total 1,710 in the CBD only. Therefore, roughly 21,000 new spaces are needed to serve the CBD demand although they obviously do not have to be within the CBD itself.

The projected parking requirements can be accommodated by any combination of on- and off-street parking. The later analysis of street capacity needs, however, indicates reliance on street parking on the major thoroughfares will be undesirable if the access requirements are to be met.

SUMMARY OF 1959 TRAVEL DATA

In 1959, the comprehensive origin-destination survey recorded 147,450 trip ends in the CBD, and 260,700 trip ends within the ring. These may be compared to the 1964 and 1985 estimates shown in Table 3. The trip end growth within the ring from 1959 or 1964 to 1985 is 65 percent of the 1959 value and 51 percent of the 1964 figure, assuming the proposed plan for the downtown area is implemented.

In 1959, the CBD generated 12.5 percent of the daily trips in the Study Area. Of the 147,450 trip ends in the CBD per day in 1959, 11,450 involved trips from outside the Study Area (external trips) and 7,200 trip ends were intra-zonal. These represent 8 percent and 5 percent of the total CBD trip ends respectively.

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In 1959, the CBD generated 12.5 percent of the daily trips in the Study Area. Of the 147,450 trip ends in the CBD per day in 1959, 11,450 involved trips from outside the Study Area (external trips) and 7,200 trip ends were intra-zonal. These represent 8 percent and 5 percent of the total CBD trip ends respectively.

The detailed breakdown of intrazonal trips in the CBD and ring is summarized in Table 6. The total trip ends summary is shown in Table 7. The details of these trip interchanges are of considerable value in evaluating the adequacy of the local street system as well as the final plan of thoroughfares.

SUMMARY OF 1964 AND 1985 TRAVEL ESTIMATES

As previously pointed out, the 1964 travel destinations in the downtown had to be estimated since this is the base year of the land-use inventory. The downtown trip destinations can then be compared to traffic counts of ADT traffic entering the ring to develop an estimate of the proportion downtown through traffic is of the total thoroughfare volumes. The calculated values of trip destinations in the CBD, the traffic volumes related to intrazonal and through trips, and, finally, the estimated 1985 traffic volumes which must be accommodated on the thoroughfares at the fringes of the ring are all shown in Table 8.

Table 7
 SUMMARY OF 1959 DOWNTOWN TRIP ENDS

Zone No.	Internal Trip Ends	Intrazonal Trip Ends	External Trip Ends	Total Trip Ends
151	7,154	81	628	7,863
152	19,219	260	1,678	21,157
153	26,015	249	3,204	29,468
154	8,444	116	716	9,276
155	13,887	177	604	14,668
156	22,470	365	2,386	25,221
157	25,292	418	1,612	27,322
158	11,836	22	618	12,476
CBD				
Total	134,317	1,688	11,446	147,451
161	4,778	39	332	6,149
162	8,380	43	306	8,729
341	8,804	79	942	9,825
343	14,332	270	598	15,200
344	18,675	598	1,060	20,333
401	18,680	261	966	19,907
402	16,296	204	774	17,274
403	7,307	305	304	7,916
404	7,507	169	264	7,940
Ring				
Total	239,076	3,656	16,992	260,724

The intrazonal trips do not, of course, cross the ring boundaries. Therefore, from Table 8, the 1964 entering volumes at the fringe of the ring total 160,000 vehicles per day. It is estimated the 1985 total will be 260,000 per day. The thoroughfare volume increase from 1964 to 1985 is 63 percent, which is slightly greater than the percent increase in trip ends in the downtown zones.

Table 8

SUMMARY OF CBD AND RING TRAVEL VOLUMES

Year	Type Trip Entering	ADT Volume
1959	CBD Destination	73,800
	CBD Intrazonal	4,500
	Through Trips	<u>18,500</u>
	Total Entering	96,800 Veh./Day
1964	CBD Destination	77,700
	CBD Intrazonal	4,800
	Through Trips	<u>19,500</u>
	Total Entering	102,000 Veh./Day
1985	CBD Destination	118,000
	CBD Intrazonal	7,200
	Through Trips	<u>25,000</u>
	Total Entering	150,200 Veh./Day
1964	Ring Destinations	128,000
	Ring Intrazonal	16,000
	Through Trips	<u>32,000</u>
	Total Entering	176,000 Veh./Day
1985	Ring Destinations	215,000
	Ring Intrazonal	21,500
	Through Trips	<u>45,000</u>
	Total Entering	281,500 Veh./Day

The proportion of through trips in the total daily traffic entering the ring in 1964 was roughly 20 percent. With completion of additional freeway connections to serve as bypass routes, the 1985 proportion of through trips becomes 15 percent. These values indicate the street system in Columbus is very effective in diverting traffic from heavily loaded downtown arterials. In most instances, the proportion of through traffic is expressed as the percent of the total

90
see
attached

cordon line volumes which have neither origin nor destination in the downtown. This is somewhat misleading and always is a higher value than the figures quoted for Columbus in that only through-trip volumes are counted twice at the cordon line, since each trip both enters and leaves the downtown area. Whereas in most medium-sized metropolitan areas, the percent through traffic is of a CBD cordon count varies from 30 to 50 percent, the comparable value for the ring in Columbus is 33 percent in 1964 and 26 percent in 1985. Therefore, it may be concluded that an effective job of bypassing traffic is already planned and that the development of additional bypasses within the ring is not mandatory.

REQUIRED 1985 STREET CAPACITIES

The estimates of total daily travel demand to the ring area are of limited value until they have been assigned a direction of approach and factored to simulate an hourly volume which can be converted to a capacity requirement.

With completion of additional freeway legs in the Columbus area, some shifts in direction of approach to the downtown may be expected. It is anticipated, however, that the directions of approach will not be drastically different from the traffic distributions noted from volume counts in 1964-1965. The reasons for this are:

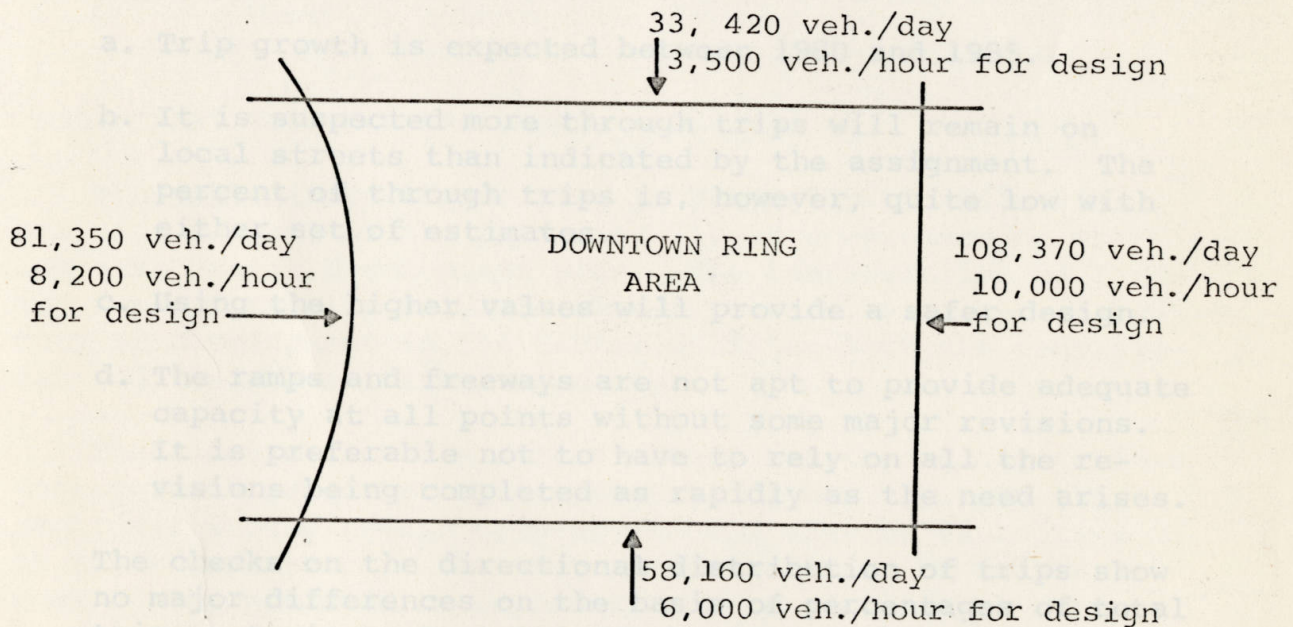
1. A significant portion of the freeway ring was already operating in 1965.
2. The recorded volumes appear to be distributed in an approximate ratio to the number of access streets and available capacity already present or anticipated.
3. The directions of approach to the downtown as indicated by the counts are roughly proportional to the distribution of population and activities in the metropolitan area.
4. The freeway ring will serve as a primary distributor, with drivers tending to remain on the freeway until they can use the higher capacity ramps nearest their destination. It appears this pattern is already reflected in

the 1964-1965 count data.

5. The freeway ramp design does not provide any sector where excess ramp capacity, which would tend to distort the access pattern, is available.

Assuming the 1964-1965 access pattern is a good first approximation of the ultimate thoroughfare routings, the 1985 ADT and peak-hour volume estimates are as shown below.

TRAFFIC VOLUME PATTERN



The State's trip end and traffic information for 1980 based on the 1959 studies was made available for review. Comparisons between these data and the initial 1985 estimates of parking and access needs were made. The general conclusions drawn include:

1. The 1985 land-use and the related number of trip destinations in the CBD are now 20 percent higher than the original estimates for 1980.
2. The 1980 and 1985 estimates of trips entering the ring are:

From	1980		1985		Difference 1985 to 1980	
	Peak Hour (VPH)	%	Peak Hour (VPH)	%	(VPH)	%
North	2,860	14	3,500	13	+ 640	- 1
East	6,810	34	10,000	36	+3190	+ 2
South	4,640	23	6,000	22	+1360	- 1
West	5,700	29	8,200	29	+2500	± 0
Total	20,010	100	27,700	100	+7690	

Although the peak hour trips for 1985 are roughly 30 percent higher than for 1980, it is recommended they be used, for the following reasons:

- a. Trip growth is expected between 1980 and 1985.
- b. It is suspected more through trips will remain on local streets than indicated by the assignment. The percent of through trips is, however, quite low with either set of estimates.
- c. Using the higher values will provide a safer design.
- d. The ramps and freeways are not apt to provide adequate capacity at all points without some major revisions. It is preferable not to have to rely on all the revisions being completed as rapidly as the need arises.

The checks on the directional distribution of trips show no major differences on the basis of percentages of total trips entering. In terms of absolute numbers, however, the volumes entering from the east are significantly larger.

3. The original lane needs at the "Ring" boundaries should not be altered for planning of the access routes. The volumes on individual streets merit some redistribution.
4. Based on both the 1980 traffic assignments and the earlier 1985 estimates, the freeway ramp system is the most critical element in providing adequate downtown access.
5. The assigned peak hour volumes indicate approximately 50 percent of the traffic entering the "Ring" use the freeways for access. The proportion of through traffic drawn

off the downtown streets by the freeway routes circling the downtown is quite high, as is most desirable.

The vehicular volumes per hour can be converted into estimated lane requirements by assuming a typical vehicles per lane per hour capacity of 500 vehicles. The numbers of lanes required by direction of approach to the ring area are:

400 VEH/HR/LANE
WOULD BE MORE REALISTIC

<u>From</u>	<u>No. of Lanes (1985)</u>
North	7
East	20
South	12
West	17

9
25
12
17

I THINK THE GUESS FOR NORTH IS A LITTLE LOW, DON'T YOU?

PRELIMINARY THOROUGHFARE STREET PLAN

The preliminary street plan is basically the Blue Plan proposal as well as the preferred layout complementing the Regional Center development plan. The configuration of freeway ramps virtually sets the street pattern, assuming the density of development in the Center will tax both the ramp system and the access street capacity.

The closure of State Street should not impose any serious restrictions into the street pattern. Other downtown thoroughfares should remain open but should also be classified as to their importance. The principal advantages of corner access can be achieved by emphasizing movement on such streets as Third, Fourth, Spring, and Long and using other routes such as Front and High primarily for access-to-parking routes.?

The evening peak hour counts indicate a relatively high proportion of through traffic (especially east-west travel) on downtown streets even though the Interstate construction is well advanced. Such trips should be encouraged to use the "primary" CBD arterials and shunted off the "secondaries."

An inner traffic distribution system of a design below freeway, but above that of local arterials, having free driveway access should be developed to discourage through traffic in the heart of the downtown and to give more circulation flexibility from the freeway ramps.

A driver approaching the central ring on the freeways or on major arterial streets should have the option of bypassing the heaviest traffic area of the CBD via the distributor. He can then stay on the higher type route until he gets as close to his parking destination as possible. Such a basic principle of access can significantly reduce the required vehicle-miles of travel on the main routes penetrating the core.

The component parts of the distributor ring are Spring and Long Streets as a major one-way pair on the north, Main (or Main and Rich Streets) on the south, the route paralleling the river on the west, and an improved two-way route west of Cleveland on the east.

The preliminary thoroughfare plan is illustrated on the attached sketches. The numbers of lanes in one direction required on each street are summarized in Table 9.

To meet the desirable standard of the number of lanes, substantial street improvements will be required. The only completely new route required, however, is an extension of Cleveland Avenue south of Broad Street. The primary justification of the extension is to provide a distributor for volumes entering the eastern edge of the ring area. The extension is needed from Broad Street to Main Street to provide drivers with optional routings to their CBD destinations and to make it possible to take advantage of some of the secondary thoroughfare arterials running east-west through the ring area.

It appears impractical to attempt to provide 20 lanes of capacity on the arterials which cross the east freeway of the downtown. The recommended cross section of the new street is two lanes in each direction with provision for a median and turn slots. This will give an effective cross section of three lanes in each direction. At intersections, the basic cross section should be two 36-foot roadways, including the turn slots, and a six-foot minimum width raised median.

Other streets requiring new street construction to provide the necessary number of lanes should hold a dimension of 11-foot lanes with one or two feet of reaction distance along the curb lane.

Table 9

STREET LANES REQUIRED FOR 1985 PEAK-HOUR CAPACITY

Direction of Approach	Street Name	Number of Lanes (One Direction)
North	Front	2
	High	2
	Third	3
		7
East	Naughten	1
	Spring	4
	Broad	3
	Cleveland (Extended)*	3
	Oak	2
	Town	2
	Rich	1
	Main	2
Mound	1	
	Fulton	1
		20
*Cleveland acts as a distributor.		
South	Front	4
	High	2
	Fourth	4
	Grant	2
		12
West	Main	2
	Rich	1
	Town	2
	Broad	3
	Gay	2
	Civic Center	3
	Long	4
		17

CRITIQUE OF STREET PLAN AND CRITICAL REQUIREMENTS

The proposed density of development in the downtown area will create some traffic capacity problems at the fringes of the ring area. With reasonable improvements, the arterial street system can be expanded to resolve the capacity problems. A more difficult deficiency may well occur on the freeway ramp system and its arterial terminals.

The present capacity of ramp by direction of approach to the downtown are:

North - 3,160 veh./hour (adequate)

East - 4,800-5,900 veh./hour (probably inadequate)

South - 2,200-3,200 veh./hour (probably inadequate)

West - 5,400 veh./hour (probably adequate)

A firm conclusion on the adequacy of the ramp capacities is not possible since an assumed split between freeway and arterial street use for access is not readily available. The split would have to be 40 percent arterial access from the east and roughly 50 percent arterial access from the south if the terminals are not to become the capacity control.

Although the heaviest volumes to the downtown enter from the east, the most critical freeway problems may well be the south circumferential of the ring area.

A new distributor route near Grant Avenue on the east side of the downtown will provide very desirable routing flexibility in the heaviest volume corridor. If the area north of Spring Street and west of Cleveland Avenue is partially redeveloped, a new arterial having good continuity should be part of the plan. Its function would be to serve industrial service and work trips. The north distributor one-way couplet of Spring and Long will be heavily loaded and too far removed to effectively serve this new area of development in the rail yards.

Although further one-way designations in the downtown area would be beneficial to increasing traffic capacities without

street widening, the imbalance in present cross sections, ramp configurations, and discontinuity of routes makes such changes inappropriate. As the land-use plan is developed, however, the feasibility of incorporating more one-ways and route switchbacks should be investigated further.

APPENDIX OF FIGURES

1. Street Classifications
2. One-way and Two-way Street Designations
3. Core, Parking and Special Use Areas
4. Possible Freeway Changes
5. Possible Freeway Revisions, Location 1
6. Possible Freeway Revisions, Location 2
7. Possible Freeway Revisions, Location 3

COLUMBUS REGIONAL CENTER
STREET
CLASSIFICATIONS

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COLUMBUS REGIONAL CENTER STREET CLASSIFICATIONS

- FREEWAYS and ACCESS ROUTES
- - - MAJOR ARTERIALS
- · - · - SECONDARY ARTERIALS
- · · · · SPECIAL TRANSIT ARTERIALS
- · · · · LOCAL ACCESS STREETS

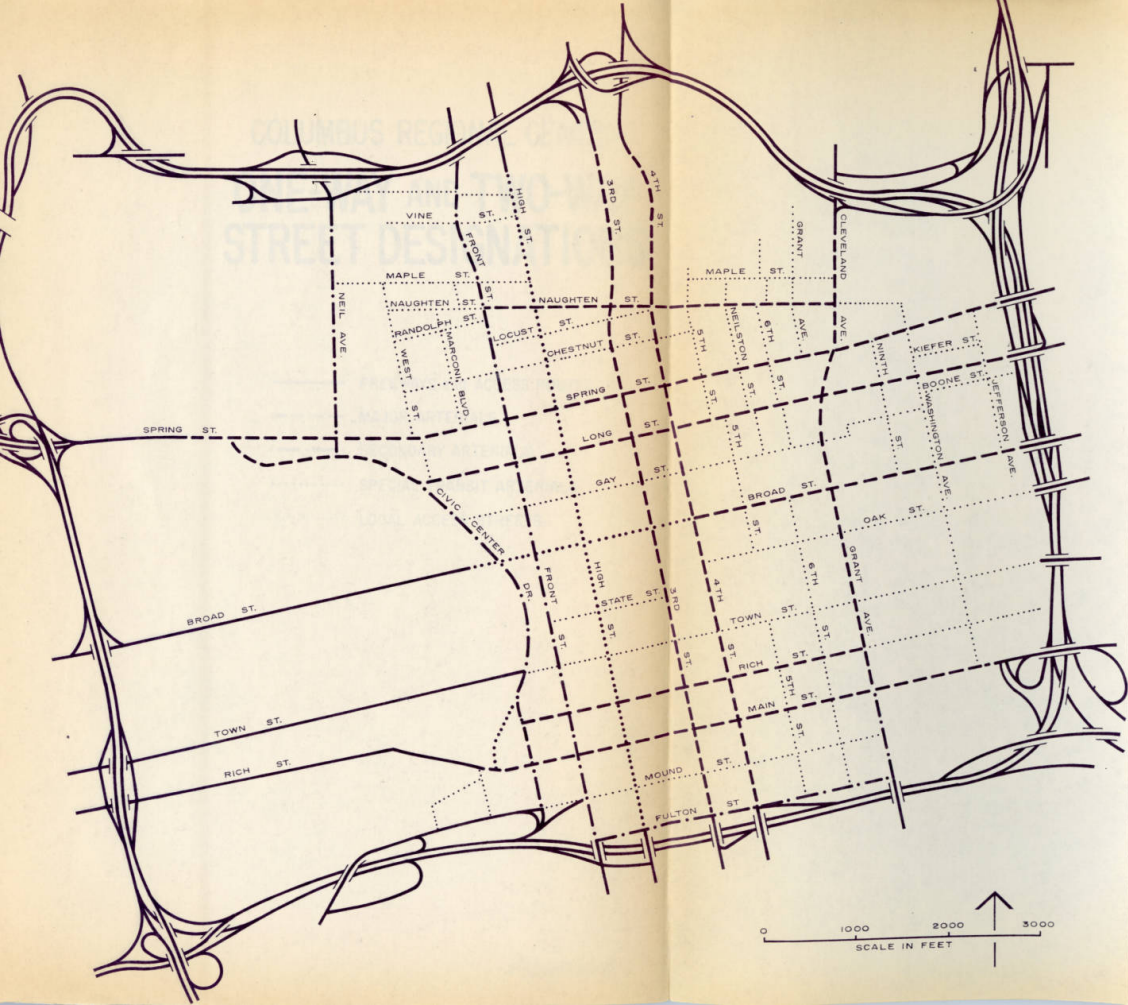


FIGURE 1

COLUMBUS REGIONAL CENTER ONE-WAY AND TWO-WAY STREET DESIGNATIONS

- FREEWAYS and ACCESS ROUTES
- - - MAJOR ARTERIALS
- · - · - SECONDARY ARTERIALS
- · · · · SPECIAL TRANSIT ARTERIALS
- · · · · LOCAL ACCESS STREETS

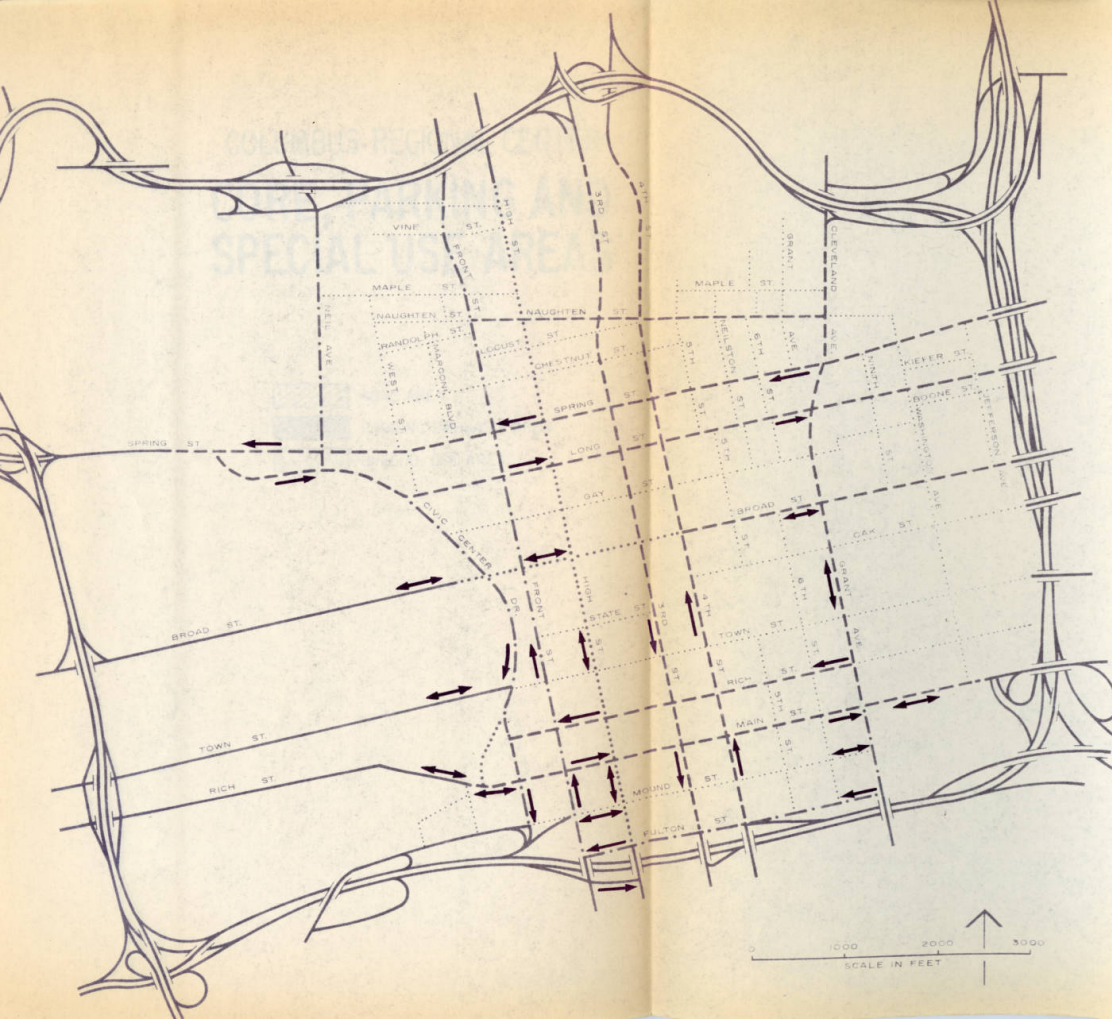
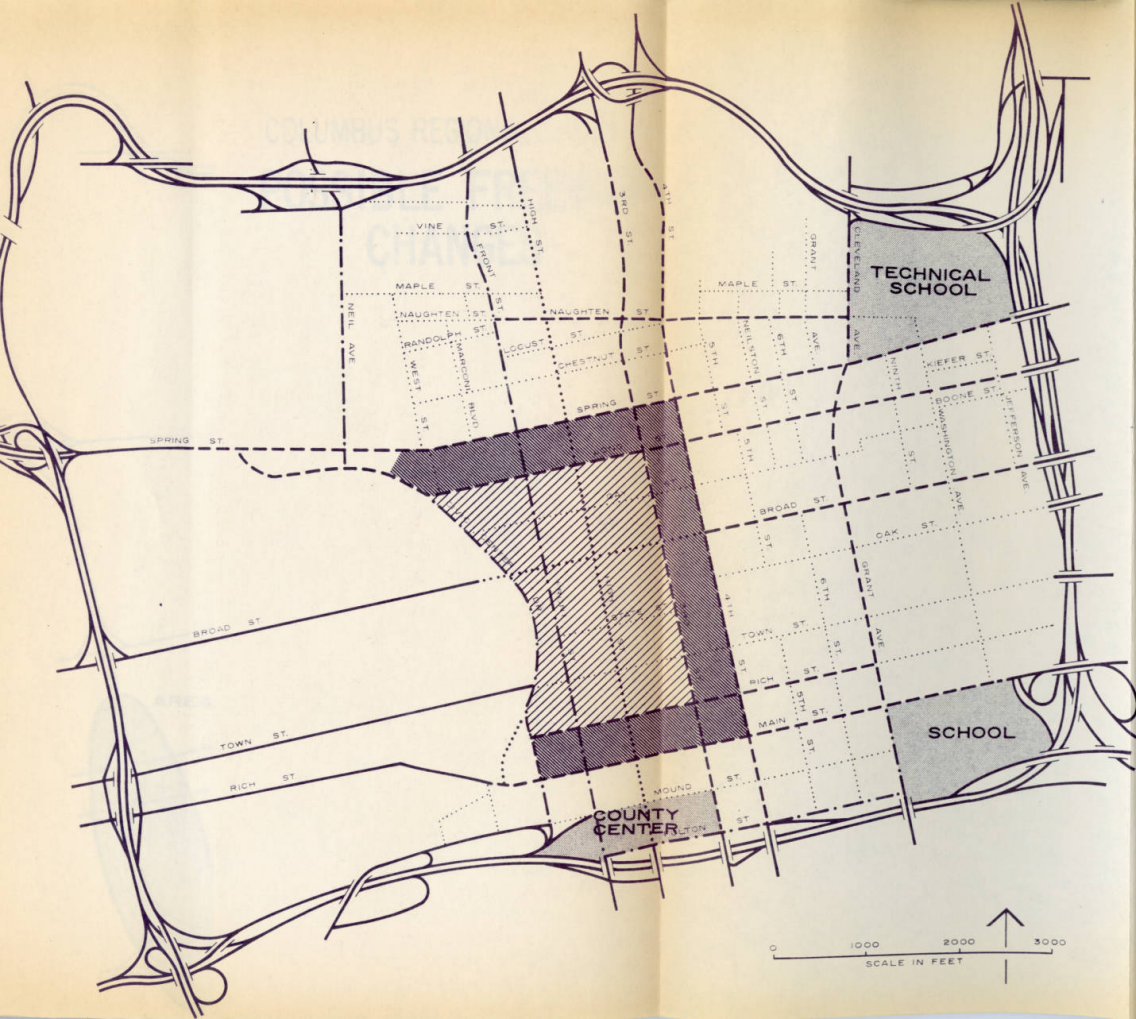





FIGURE 2

COLUMBUS REGIONAL CENTER CORE, PARKING AND SPECIAL USE AREAS



-  CORE AREA
-  PARKING EMPHASIS AREA
-  SPECIAL USE AREA

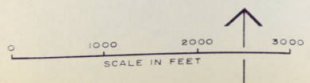


FIGURE 3

COLUMBUS REGIONAL CENTER POSSIBLE FREEWAY CHANGES

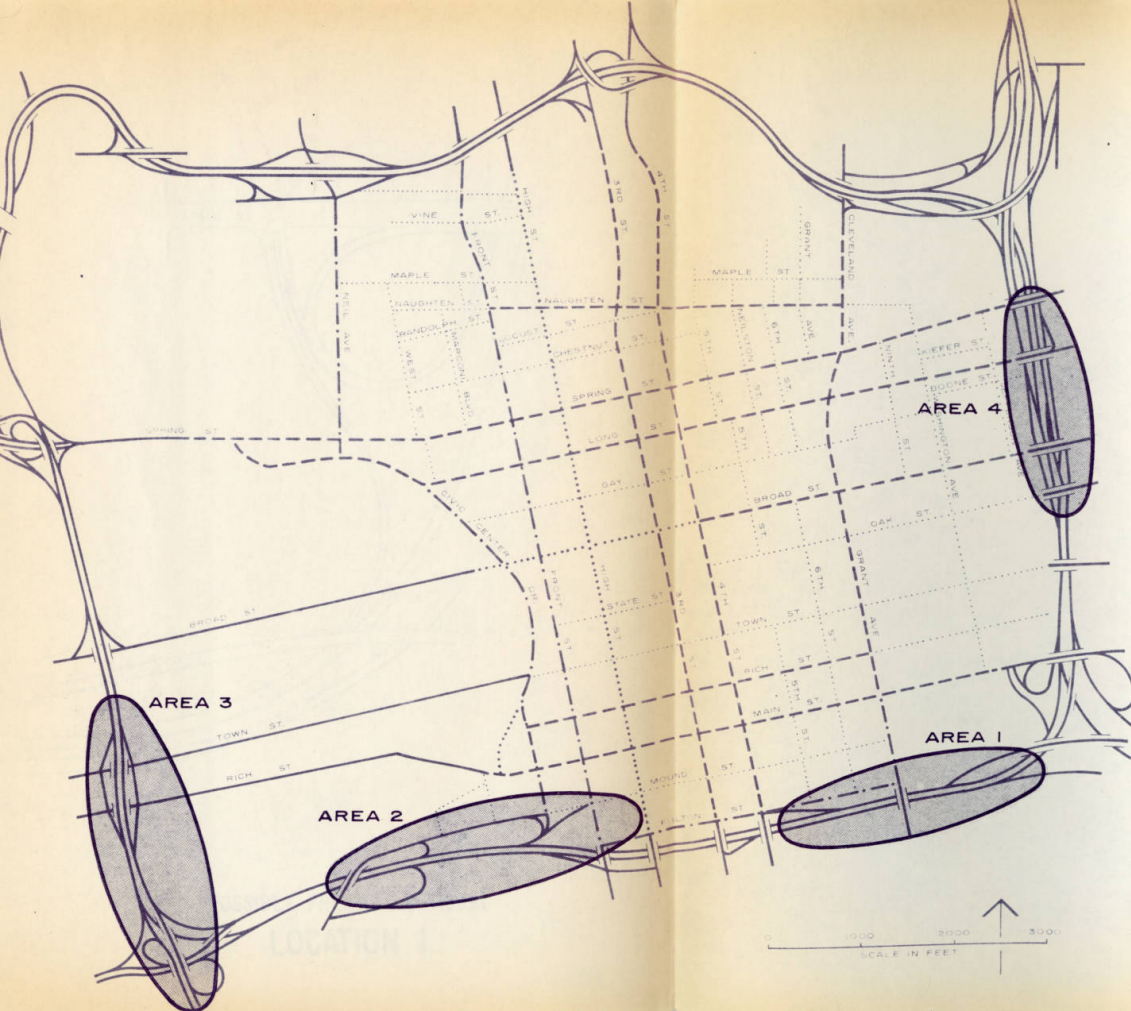
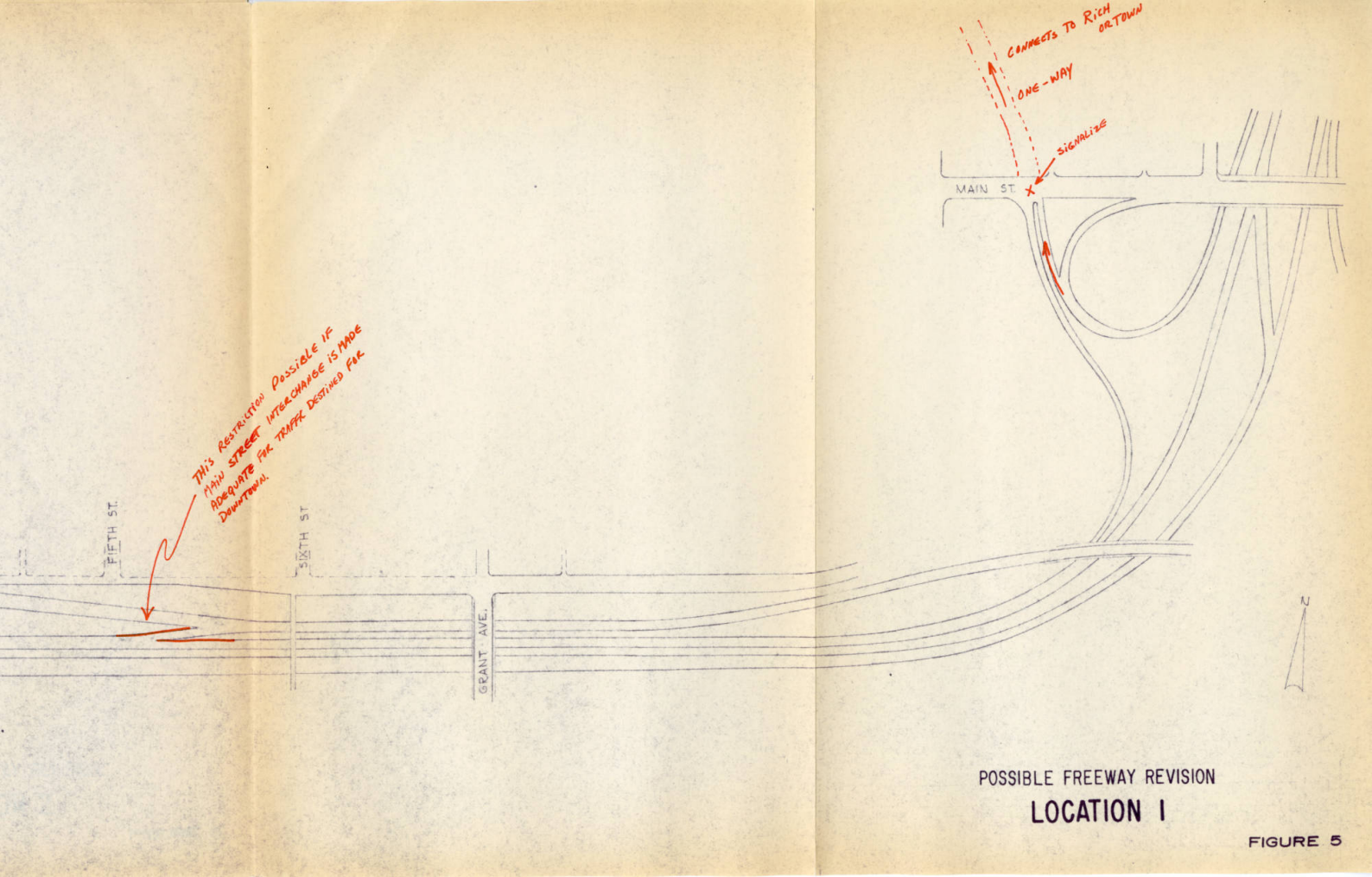


FIGURE 4



THIS RESTRICTION POSSIBLE IF
 MAIN STREET INTERCHANGE IS MADE
 ADEQUATE FOR TRAFFIC DESTINED FOR
 DOWNTOWN.

FIFTH ST.

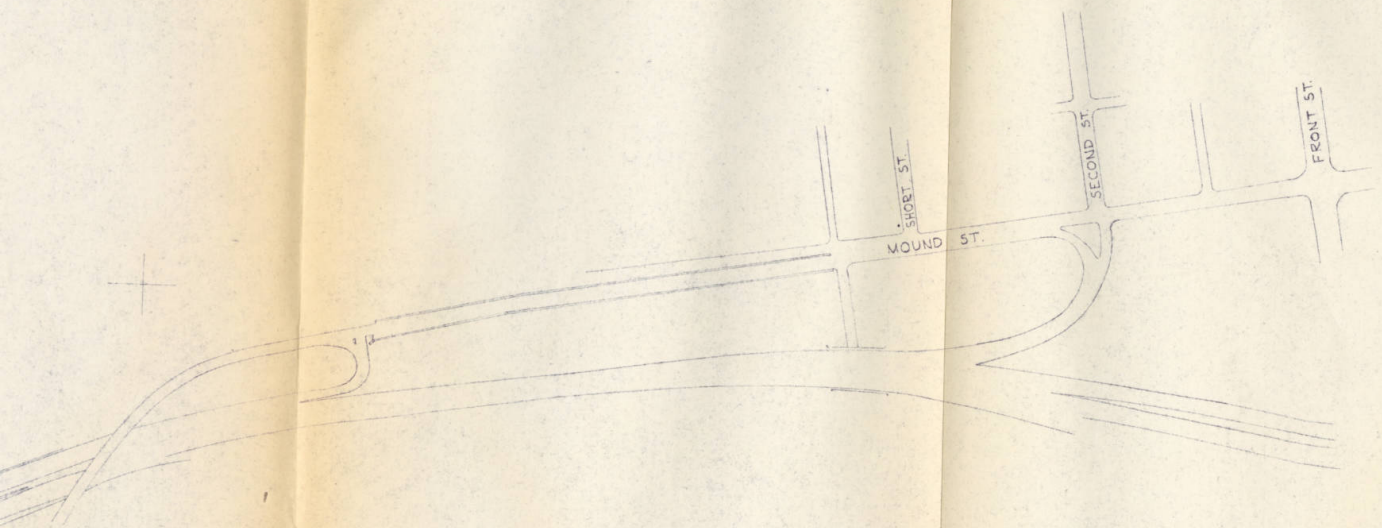
FIFTH ST.

GRANT AVE.

MAIN ST.

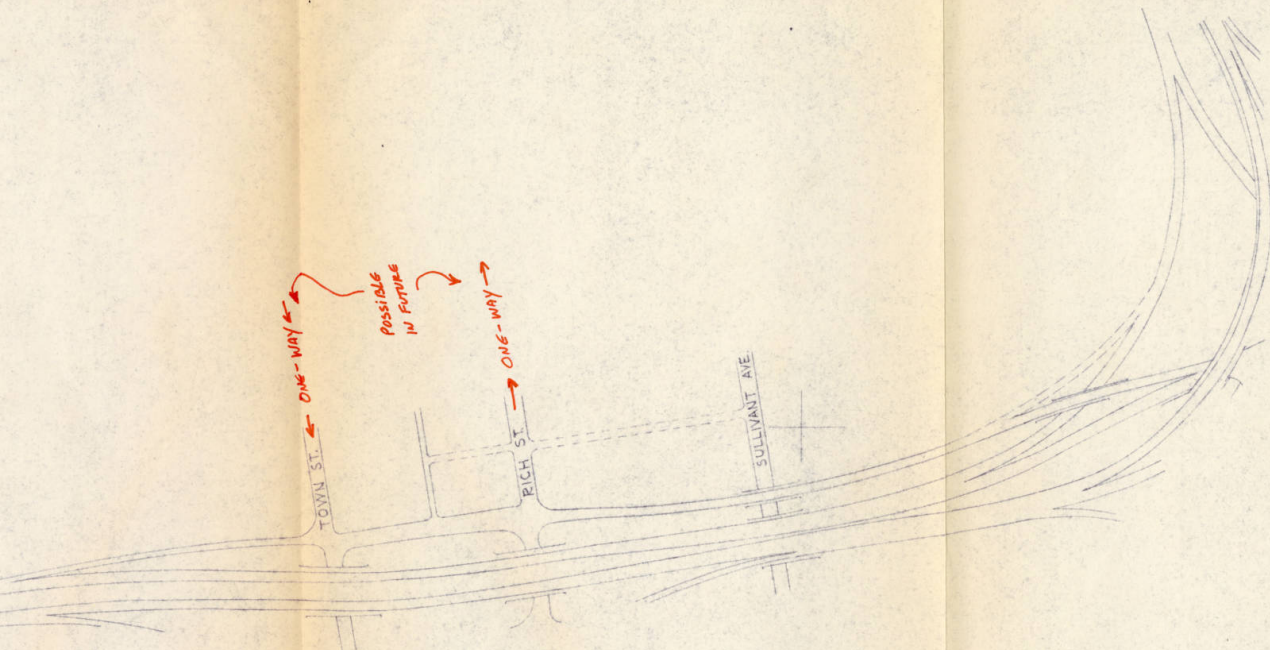
POSSIBLE FREEWAY REVISION
LOCATION 1

FIGURE 5



POSSIBLE FREEWAY REVISION
LOCATION 2

FIGURE 6



POSSIBLE FREEWAY REVISION
LOCATION 3

FIGURE 7