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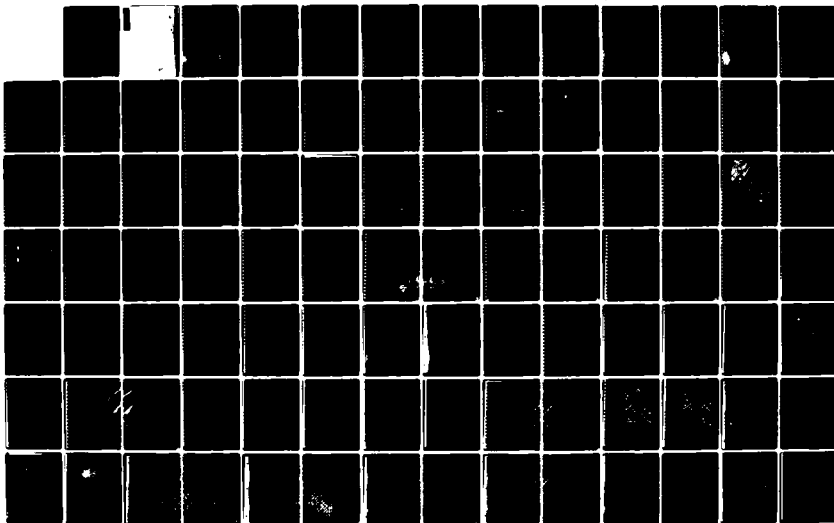
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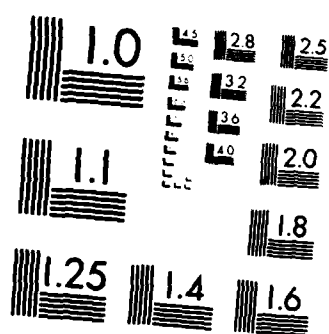
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RAILROAD REDEVELOPMENT PLANNING

UNIVERSITY OF COLORADO AT DENVER
COLLEGE OF ENVIRONMENTAL DESIGN

MPCD 790

FALL 1981

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M. S. KEMPER

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EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

With the decline of passenger rail service many cities are looking for ways to redevelop and make use of abandoned and under utilized railroad stations and land. There are two main reasons such redevelopment is taking place. First, redevelopment is a valid way of preserving historical railroad structures and maintaining a connection with the past of the city. The second reason for redevelopment in many cities is that railroad stations and land are located within or adjacent to the Central Business District and are extremely valuable properties for development.

In August, 1981, The Denver Union Terminal Railway Company requested proposals for the development of an 18.5 acre tract of land in Lower Downtown Denver which includes Denver's Union Station.

It was the intent of this report to investigate past railroad redevelopments in order to determine if any patterns of programming become evident and if so, to develop a planning program which could be applied to proposed development at Denver Union Station. Evaluation would then be performed on the resulting development plan to test the program.

Research began with analysis of 14 different railroad redevelopment projects ranging in scope from converting the 3,750 square foot Chicago, Rock Island and Pacific Station in Lincoln, Nebraska into a branch bank, to the development of air rights over 83 acres of railroad yards on the edge of Chicago's Loop. A Department of Transportation study and an article by the Urban Land Institute indicated the positions of those respective organizations towards planning railroad redevelopment.

The Department of Transportation has identified the following nine components for planning a successful railroad station reuse:

1. Adaptive Reuse Process: An explanation of the new uses for the station and how and why they were chosen.
2. Historical and Architectural Description: A description of the architectural composition and the station's history.
3. Rehabilitation and Design Analysis: An evaluation of the preservation and design treatments undertaken.
4. Market and Economic Analysis: Local conditions which affected the selection of the new uses.
5. Funding Strategy and Alternatives: What financing techniques were used and what alternative methods were available.
6. Transportation Components: A discussion of available transportation services plus what changes are required.
7. Urban Revitalization: An evaluation of the project as a catalyst for further revitalization in the area.

8. Community Involvement: The involvement of local citizens and the local government in response to the project.
9. Other Preservation Considerations: Other factors which may be influential on the acceptance or rejection of the project.

Among problems uncovered by the Department of Transportation were the difficulty of obtaining reasonable financing, the inability of some projects to generate revenue sufficient to cover operating costs, and the inability of some to design and accomodate transportation needs, especially parking.

The Urban Land Institute addressed the questions of what type of facilities are likely to locate in intercity rail station areas and how can specific cities plan for the development associated with rail station improvements. Basically, the Urban Land Institute said the development was dependent on the city type (major regional center, satellite cities, independent markets) and the local market (weak, strong, unproved). The basic land uses considered were: offices, hotels, retailing, exhibition hall/convention center, and parking.

Based on the above information, a program was developed for Denvers Union Station. Attempts to quantify important criteria proved difficult except for either positive or negative impacts. The result was the development of a redevelopment guide versus a redevelopment program. Based on this guide and the existing conditions in Denver, development alternatives were prepared. Three basic alternatives were prepared based on the same program but different scales. A low-rise, mid-rise, and high-rise solution were explored and as a result of their evaluations, a high rise/high intensity solution was also prepared.

Evaluations of each development alternative were prepared based on previously stated criteria. Good and bad features of each solution were discussed in relation to Denver. Results indicated that a higher intensity use should be explored than was previously considered desirable.

The basic importance of the study in relation to the existing literature was the discovery that no definitive theory exists as a program for planning railroad redevelopment. What does exist can be prepared as a guide for the direction redevelopment should take. The literature provides numerous criteria which affect the success of railroad rehabilitation projects and when developed as a guide, these criteria can give early indications of a projects' success of failure and what redevelopments have taken place in similar situations.

The relationship of the study to development in Lower Downtown Denver is important in that it indicates a project of higher scale and higher density may be feasible/desirable than

previously thought. The redevelopment guide allows one to compare a proposed project with results obtained in similar conditions and make assumptions as to the projects viability.

INTRODUCTION

INTRODUCTION

Abandoned and underutilized railroad stations and railroad yards have become focal points, in urban planning, for revitalization/redevelopment projects in many cities. In August, 1981, the Denver Union Terminal Railway Company solicited development proposals for the 18.5 acre tract of land in Denver which includes Union Station.

It is the intent of this report to investigate other railroad redevelopment projects in order to determine what programming patterns, if any, emerge as constants in planning for such redevelopment. When a program has been determined, a test case, using the Denver Union Terminal, will be prepared to evaluate the project.

This report is organized into seven sections, the first of which is this Introduction. Section II is concerned with the program hypothesis. It includes research into specific projects as well as publications by the Department of Transportation and the Urban Land Institute on railroad redevelopment planning. A sample program will be established along with criteria for evaluating any projects developed.

The specific factors applicable to the Denver Union Station project will be discussed in Section III with supporting graphics.

Section IV consists of development alternatives for Denver Union Station, consistent with the generated program and local conditions. Evaluations of the alternatives follows in Section V, including comments on how well the alternatives matched the program.

The findings and their impacts on both the researched literature and Denver downtown development are discussed in Sections VI and VII respectively.

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PROGRAM HYPOTHESIS

PROGRAM HYPOTHESIS

theories

The United States Department of Transportation and the Urban Land Institute have been involved with railroad redevelopment planning for a number of years. In Recycling Historic Railroad Stations the Department of Transportation reviews eight railroad station redevelopment projects and evaluates each according to major components for planning a successful railroad station reuse.

The nine components are:

1. Adaptive Reuse Process - an explanation of the new uses of the station, why they were selected, and how the project was carried out. (This import of this for redevelopment planning is to be sure the new use(s) is compatible with the area and station before attempting the project.)
2. Historical and Architectural Description - a description of the architectural composition and a discussion of the stations history and development. (A knowledge of the stations history and development is important so that decisions affecting the structure/character of the building can be carefully weighed during the programming design.)
3. Rehabilitation and Design Analysis - an evaluation of the preservation and design treatments undertaken during the reuse process to adapt the station to its new uses. (Realization that certian design treatments and construction techniques can be harmful and/or not applicable to the existing situation.)
4. Market and Economic Analysis - local market and economic conditions which affected the selection of the new uses along with a discussion of rehabilitation and operating costs. (A detailed market analysis is important both to insure project feasibility/success and also to help with financing.)
5. Funding Strategy and Alternatives - which financing techniques were used, what alternative financing methods were available, and the prospects for future federal funding for future aspects of the rehabilitation process. (In cases of a static or depressed economic situation, knowledge of financing alternatives and potential public funding can help assure the success of the project.)
6. Transportation Components - a diacussion of the existing transportation services available at the station and the future development potential including the development of intermodal transportation facilities. (This component appears to be one of the most important of all. Poor access (pedestrian, auto, mass transit) can kill an

successful project while good circulation patterns can enhance a mediocre project and make it highly successful.

7. Urban Revitalization - an evaluation of the project as a catalyst for other public and private improvements in the area, and of secondary impacts or benefits on housing, retail, employment, and environment in the area. (A successful project tends to encourage surrounding development and redevelopment of a station in an area of existing growth and preservation is generally successful.)
8. Community Involvement - a discussion of the involvement of local citizens (private groups) in response to the project and the local governments role in implementing the project or coordination of programs with the development plan of the station. (Approval by local citizen groups and favorable local government opinion can assist in project success.)
9. Other Preservation Considerations - other factors which may or may not have contributed to the projects success, including the need for state or local legislation, incentives for private development of the project, energy conservation measures and provisions for the access of the handicapped. (Delays while waiting for necessary legislation or inability to meet accessibility requirements can cause the failure of a renovation project. This is especially true where public funds are involved.)

While all nine components, as listed by the Department of Transportation are valid considerations for railroad redevelopment planning, some have seemed to have more impact on the success of a project than others. The transportation/circulation component, the reuse selected, and a combination of the market/economic conditions with revitalization effects in the area seem to be the most important for project success. Among the major problems uncovered by the Department of Transportation study were: difficulty of obtaining reasonable financing, the inability of some projects to generate adequate income to cover operating expenses, and the inability of some projects to design and accomodate transportation needs, especially parking.

The Urban Land Institute(ULI) was asked by the Federal Railroad Administration(FRA), upon the creation of the Northeast Corridor Improvement Project(NECIP) in 1976, to address the following two questions: (1) what types of land uses/facilities are likely to locate in intercity rail station areas and, (2) how can specific cities plan for the development associated to rail and station improvements? In order to answer those questions the Urban Land Institute conducted interviews with persons associated with the real estate location process and reviewed literature and research on transportation and business locations. Also, the ULI conducted a review in depth of a weak real estate market (Newark, New Jersey) a strong marketplace (Stamford, Connecticut) and an unproved market area (Providence, Rhode Island) in order to respond to the second question.

Each station area was recognized as having its own advantages and disadvantages which would influence its development potential. However, the ULI felt it was possible to identify common elements to station sites which must be considered in assessing the appropriate use patterns.

In the Northeast Corridor(NEC) rail passenger stations are generally located in downtown areas. Firms continue to locate in downtown areas because of amenities available, such as efficient transportation, proximity to clients and service firms, and the presence of hotels, restaurants, etc. However, in poor markets the amenities of downtown may not be enough to overcome the increased costs of locating downtown.

Two basic competitive relationships are associated with downtown environments. The first is competition which occurs between downtowns Manhattan and Stamford or Newark for example. The second competitive situation exists between downtowns and suburban locations - such as the case of Denver.

Isolation of the rail station from the vigorous downtown market usually hinders station development. Stations in Baltimore and Washington D.C. for example, are located quite a distance from CBD areas and lack in a vibrant, growing environment. Station development potential can not be viewed separate from local market conditions. The attraction of a rail station area cannot be viewed in isolation from local market conditions. While certain uses appear appropriate for a station area, they will not appear in the face of a poor market.

The attractiveness of rail station areas for development greatly depends upon the physical conditions of surrounding structures and the nature of their uses. Traditionally, rail stations create situations not conducive to first class uses such as office space or retailing (noise, barriers, unsightliness, etc.). Some cities have overcome the negative aspects of a rail station environment by a predominance of other activities (air rights developments and high quality developments.)

Improvements to a rail system are more likely to result in changes around the station than in the station itself. Identifying appropriate uses for the station area must include an analysis of how different uses enhance or interfere with rail operation and other land uses. As an example, while parking garages or lots provide the auto access essential for station operation and commercial development, ill-designed parking can repel commercial activity by creating a sterile and dangerous environment.

In studying the Northeast Corridor the ULI categorized cities into three traditional types:

Major Regional Centers - The historical, financial, administrative, and cultural centers of their region. Major banks, financial companies, government offices, universities, and utility companies as well as headquarters of major industrial and service firms tend to locate here.

Satellite Cities - Cities close to major regional centers, to permit commuting and/or easy business travel.

Independent Markets - Smaller cities which serve a small regional market and are too far from major regional centers to become satellite cities.

The Urban Land Institute examined potential development in the station areas of each of the three categories of cities. The analysis concentrated on activity within a quarter mile radius around the station. The major land uses investigated were: office, hotels, retailing, exhibition hall/convention center, and parking.

The most appropriate use around station areas was determined to be office space. Offices probably offer the best support to rail stations in terms of passenger patronage and improvement of rail station areas. Only parking might provide greater support but its economic and tax multiplier benefit to the city and station area would be minimal. Headquarters and corporate offices are most likely in major retail centers. Satellite cities may attract corporate headquarters under certain conditions. Major retail centers are logical locations for service firms which depend on headquarters and government agencies for clients. Eventually, when a critical mass of clients establish in satellite cities, major service firms will establish permanent offices in satellite cities. Backroom office firms (accountants, etc.) have generally chosen satellite cities for a location because of cheaper costs while improved data communication systems have allowed them to maintain contacts with clients in major regional centers. Major regional centers are prime locations for government offices. Satellite and independent markets should be attractive to backroom operations connected with many state and federal operations.

Hotels rely on four groups of travelers for patronage. For downtown hotels, the major market is the business traveler who is visiting nearby offices or other facilities. A second major source of business is conventioners. Transients comprise a third market but not a significant one for downtown hotels. The fourth type of business is resorts or entertainment. Rail location will be favorable only if business and/or government offices are all ready located there. A hotel isolated from business destinations would survive only in an extremely tight market as a hotel of last resort.

Central place theory states that speciality retailing dependent on the entire regional market will locate in the center of a region to be most accessible to all customers. Retailing feasibility for the rail station area depends upon atmosphere in the area and accessibility by several transportation modes. Satellite cities would operate as above but independent market stations would have little retailing potential beyond that related to traveler needs and essential services.

If a market exists for an exhibition hall/convention center, the rail station should be considered as a potential location because of the attributes of the station in relation to access.

Parking should be designed and located so that it does not inhibit development potential in the future. Structured parking can form a barrier between the station and surrounding developable parcels of land. The optimal approach would be to provide parking within adjacent commercial or other structures, if possible. Parking garages could be built to accomodate future air rights development on either public or private property.

It is important, at this time, to recognize a basic difference among the stations analyzed. The projects reviewed by the Department of Transportation involved stations which were either abandoned or underutilized by the railroads while those under discussion by the ULI were highly used transportation facilities located in the northeast United States. It is expected that this difference highly affects the types of uses which would be successful.

The following pages contain brief reviews of fourteen different railroad redevelopment projects. Two charts follow comparing certain aspects of the projects which are felt to be important in railroad redevelopment planning.

The 100,000 square foot Little Rock Union Station was built in 1921 to replace an earlier station which burned down in 1920.

The adaptive reuse is the result of two separate efforts; the first begun in 1972, and the second in 1977, which is still in progress. The early efforts were under the direction of a local architectural firm but the later work was without benefit of an architect. The present developers relied on engineers and contractors drawings for changes. As a result there was a lack of coordination and no master plan was developed for the proposed renovation.

The station has been renovated into restaurants and offices and also serves as the local Amtrak station.

Financing caused major problems in the development but were overcome although construction proceeded at a slower rate than desired..

Little Rock Station is located approximately one-half mile from the State Capital grounds and one mile from the Central Business District of the city, however due to topography and street configuration the station appears remote from both areas. Bus service is within walking distance but because of the configuration people are more likely to use taxis.

Parking is also a problem with this development in that location, not quantity is poor.

The project has had some positive impact on revitalizing the surrounding neighborhood and helped boost the local commercial market for other small shops in the area.

This project shows the problems encountered when visual connection and circulation between the project and existing activity centers is poor. It also shows the need for advanced detailed planning and the effects of the lack of planning.

Constructed in 1894, the San Juan Capistrano Depot was recycled in 1975 into a restaurant, gift shop, and train station. The success of the restaurant is based on three factors: 1) the location is ideal (heart of a tourist area); 2) the operation is well managed and closely supervised; 3) and a design concept which utilized the historic buildings contrasted with new modern construction. The station platform connects to railroad cars, which forms part of the restaurant, and maintains the railroad character of the area.

Rail service continues to the station, and is expanding, with information provided by restaurant personnel since Amtrak operated no facilities on site.

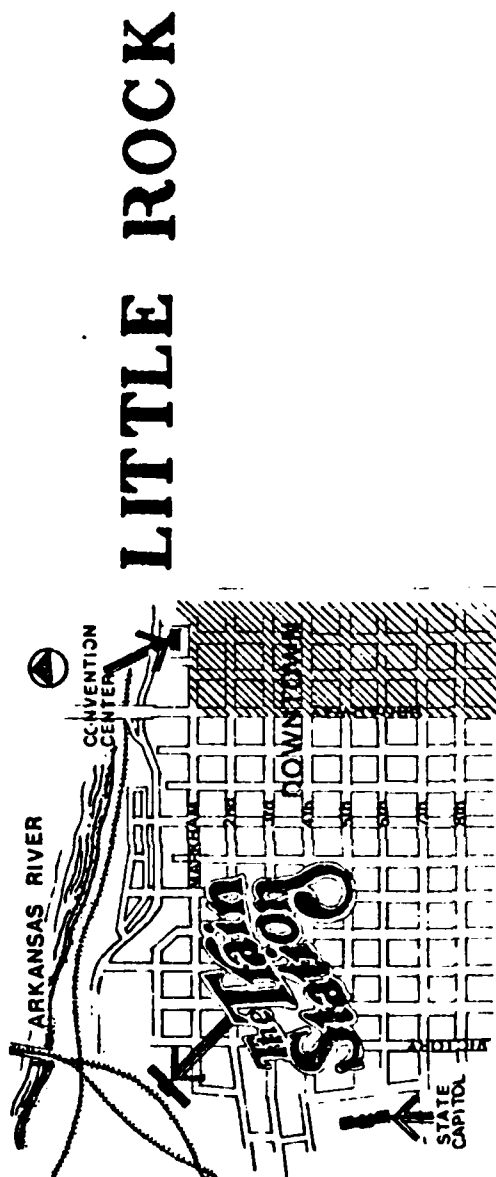
The new use of the depot includes a 150 seat restaurant, a 130 seat lounge, patio and party facilities, and a gift shop. To accommodate these uses the depot was combined with nine period railroad cars to form the entire complex. The image of two trains is provided along the station platform, which serves as the circulation corridor.

The renovation, one of the first in the city, served as a major impetus for further revitalization in the area and a major local attraction.

There has been considerable interest in the business community in revitalization in the area around the Mission San Juan Capistrano. When asked why this is needed, the answer is that it is "in defense".

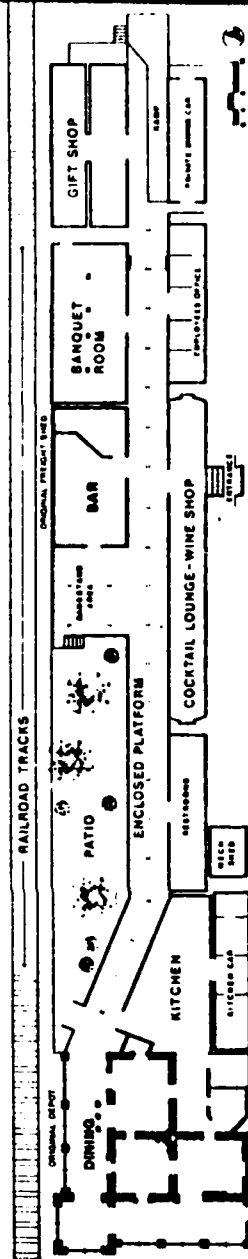
The Capistrano Depot is located approximately 600 feet from the main commercial and retail area of the city. The success of the revitalization has created an incentive for the city to fund two development studies on parking and circulation in the downtown.

This project has been extremely successful both economically and in a preservation sense.



Map of station area.

SAN JUAN CAPISTRANO



Floor plan showing existing depot and freight house, new platform and railcars.

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The New London Union Station built in 1886 was scheduled for demolition in the early 1970's. As a result, a local non-profit group was formed in 1973 to push for the preservation and adaptive reuse of what was considered a nationally significant building (listed in the National Register of Historic Places in 1971). A preservation architect was hired with the intent of finding a new use which would save the station.

The feasibility study clearly justified the economic viability of renovating the station as a multi-use facility. The study (which was subsequently executed) included maintaining Amtrak rail facilities while developing additional areas for rental income that would justify restoration of the entire building.

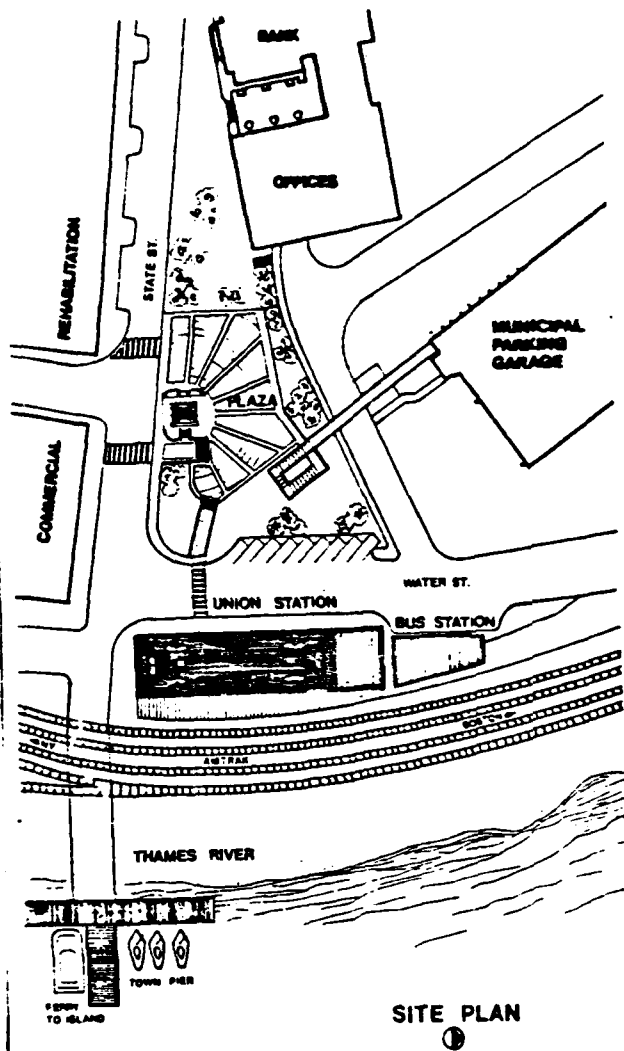
Studies indicated a market for a good restaurant in the downtown area and also a requirement for additional office space.

When no developers come forward in response to the studies, the preservation group requested the architect to act as developer, which he did.

Redevelopment occurred along the lines of the original study, but over a longer time frame than expected as a result of financing difficulties.

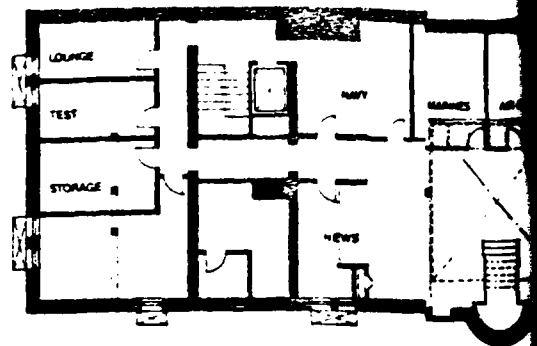
Amtrak's commitment to the station was a major factor in the project's success. It created the basis for developing an intermodal transportation center at the site.

The revitalization of Union Station has stimulated new office building and other rehabilitation in the general neighborhood. It is a focal point of the revitalized portion of the CBD. The restaurant has brought an influx of people and retail business to the area and is regarded as an excellent attraction. Union Station has set an example of successful adaptive reuse which changed the opinion of the city government from desiring demolition (for a period of 13 years) to desiring additional renovation in the area.

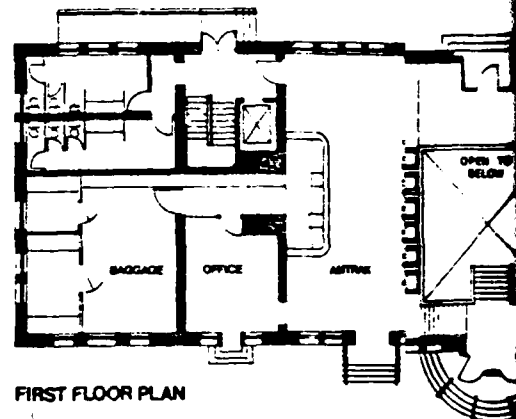


SITE PLAN

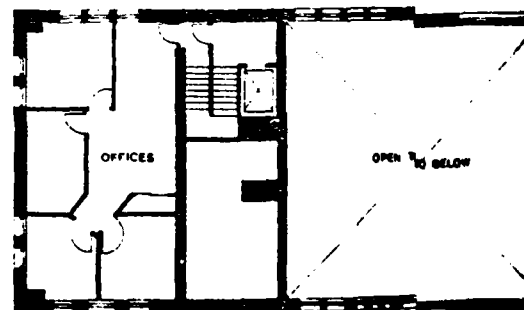
NEW LONDON



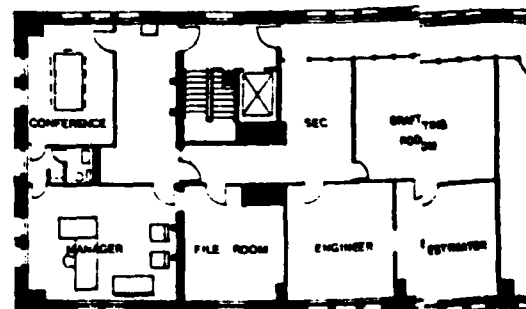
LOWER LEVEL PLAN



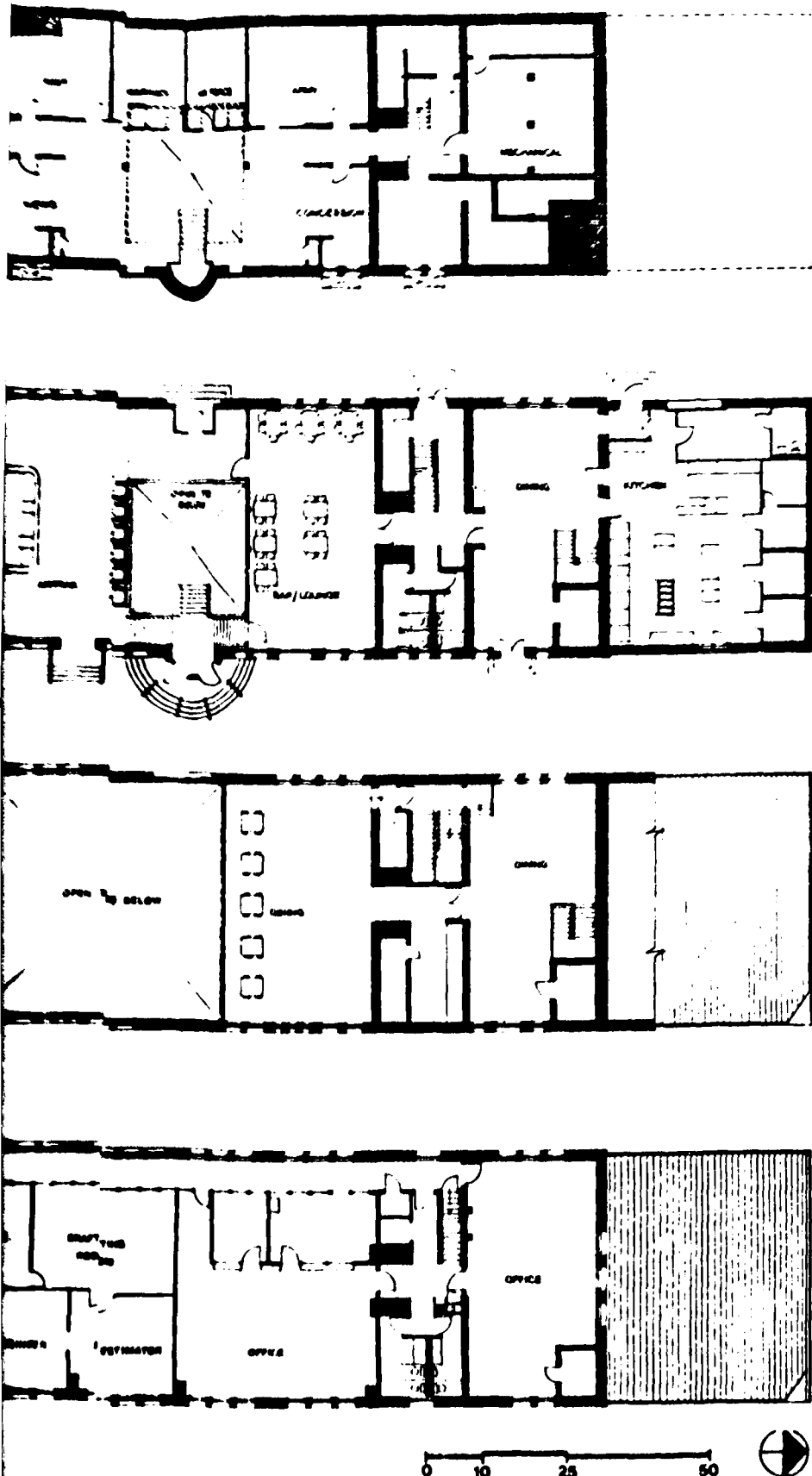
FIRST FLOOR PLAN



FIRST FLOOR MEZZANINE



SECOND FLOOR



RAILROAD REDEVELOPMENT PLANNING

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COLLEGE OF ENVIRONMENTAL DESIGN
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The development of the Stamford, Connecticut Station takes place in a very healthy economy. In the last decade 5.5 million square feet of office space has been constructed with another 7 million square feet planned for construction by 1985.

In this case the Urban Land Institute was asked to focus on appropriate land uses in the station area, linkages with the rail station, and means of mitigating growing traffic congestion.

Improvements to the Stamford Station total \$48 million and will include a new station built over the tracks, a 800 car parking garage, and intermodal transportation services.

The station is located in the southern portion of the city, separated from the central business district by railroad tracks and the Connecticut Turnpike.

Reviewing the market and location, ULI recommended that mixed uses should be encouraged in the railroad area. The most appropriate uses would be complementary to the existing office area north of the tracks, yet would not generate excess traffic.

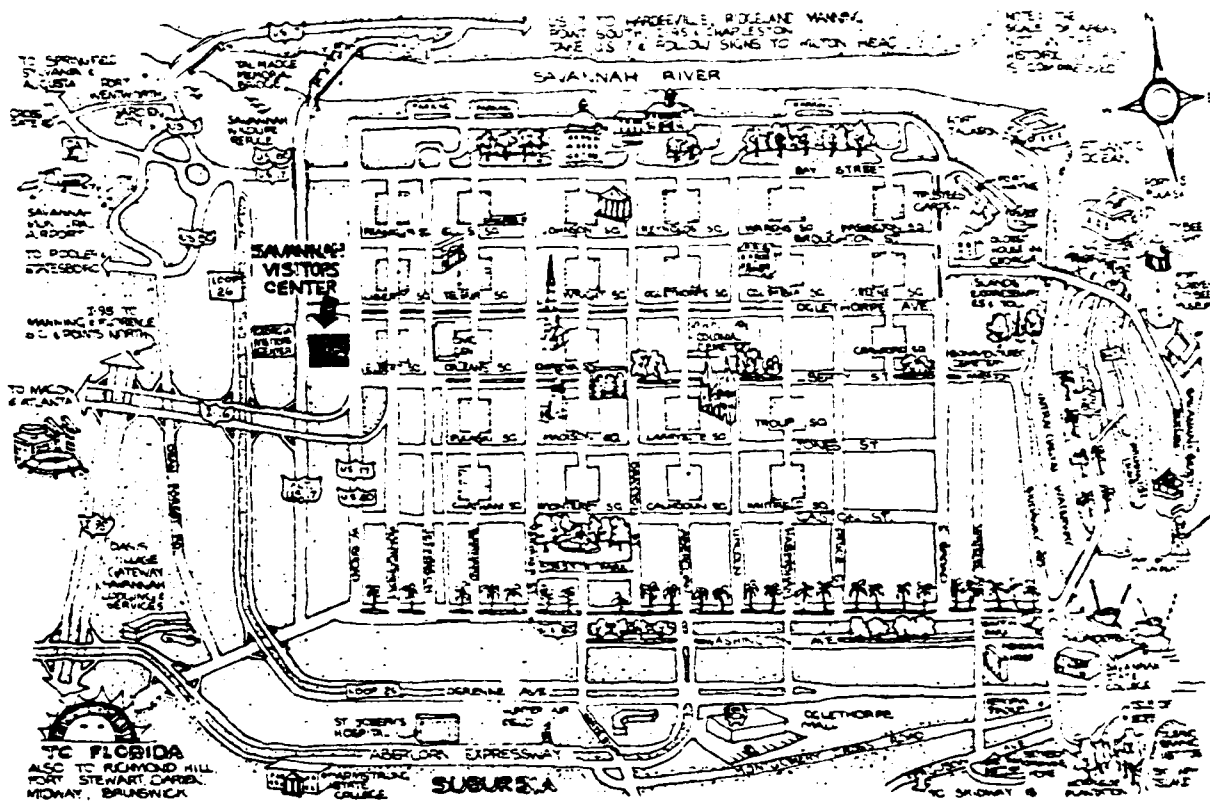
The ULI team viewed the tracks and turnpike as a buffer not a barrier which could provide benefits to the city (protecting residential neighborhoods and minimizing traffic loads).

In 1974 the Chamber of Commerce in Savannah, Georgia began the renovation of the 100 year old (1874) Central of Georgia Passenger Station into a new visitors center for the city. The tourist industry underwent a dramatic increase in the early 1970's and the Chamber wanted a building with adequate parking in a location close to major highway access to the city. The Passenger Depot met these criteria and was envisioned by the Chamber of Commerce as an impetus to upgrade the commercial area in which it was located.

The city of Savannah independently acquired and developed an adjacent parking lot which is partially utilized by the visitors center. It was largely due to the willingness of the Mayor and the City Council to lease the building under reasonable terms that the project was achieved.

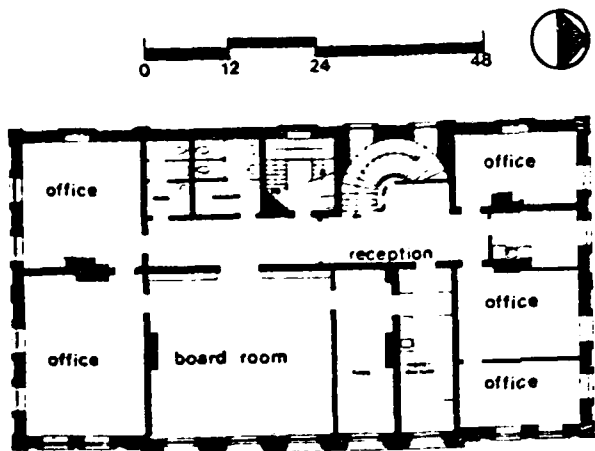
The new visitors center houses an information booth, exhibit area, lounge, and small theatre with offices and a board room for the Chamber on the second floor.

The railroad station has been credited with stabilizing the western edge of the Savannah Historic District and has stimulated interest in nearby restoration projects.

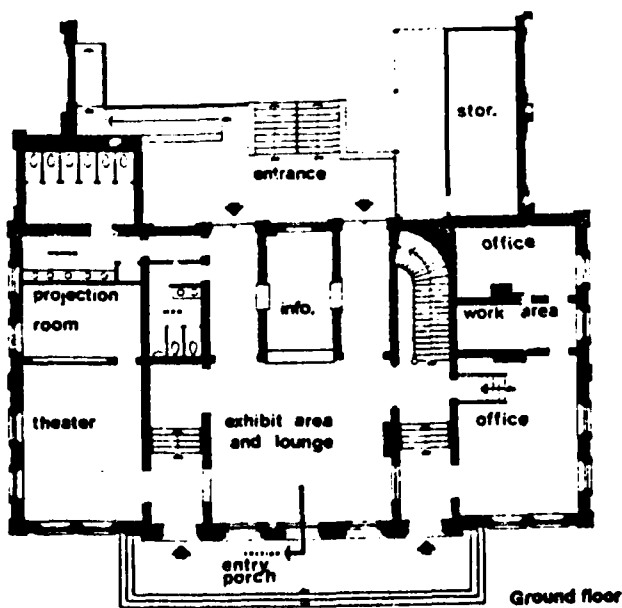


Map of downtown Savannah showing station at gateway to city.

SAVANNAH



Upper floor



Ground floor

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The redevelopment of 83 acres of obsolete railroad yards at the edge of Chicago's Loop, Illinois Center, is an air rights project of such complexity that the master plan is only an open-ended development strategy to link all buildings and facilities via a three-layer circulation system.

The first phase of building is now being completed with two more phases to be completed within the next 15 years.

At present, One and Two Illinois Center, buildings by the office of Miel Van Der Rohe, The Standard Oil of Indiana Headquarters by Edward Durell Stone, The Chicago Hyatt House, and an 800 unit condominium on Lake Shore Drive constitute phase I of the project.

The Illinois Central Railroad had first contemplated air rights development over the parcel as early as 1929. The first development built over the yards, the Prudential Building, occurred in the early 1950's. In the early 1960's, Outer Drive East, a 900 unit apartment building was built on air rights but neither of these buildings was thought to be part of any large scale development.

When the railroad first sought to sale these air rights the city sued claiming the railroad had the right only to the use of the land and not to the air rights. The Supreme Court of Illinois gave the air rights to the railroad and by the mid 1960's, three separate developers held options for air rights over various pieces of land. The city officials began work on a set of guidelines in order to have some form of planned development versus a piecemeal approach.

According to a city statute a Plan Development Ordinance had to be approved by the City Council and the Department of Planning and Development before development could take place. The city worked closely with various developers and their architects on the guidelines and the resulting ordinance was generally acceptable to all parties concerned. The ordinance sets up maximum land coverage, maximum square footage of specific types of uses, the distribution of these uses throughout the site, and outlines the responsibilities of the various parties involved for public improvements.

The master plan for the 83 acre site was developed as a joint effort of the remaining two developers and the city. The master plan exists as generalized land use and maximum square footage diagrams. Due to the nature of the development, lease agreements for land acquisition, and the time span of development an alternative to predetermined development was chosen by the firm of Solomon, Cordwell and Buenz Inc. and the Office of Miel Van Der Rohe, joint planners. Development was broken into three phases to correspond realistically to the construction of on-site utilities and necessary access roads.

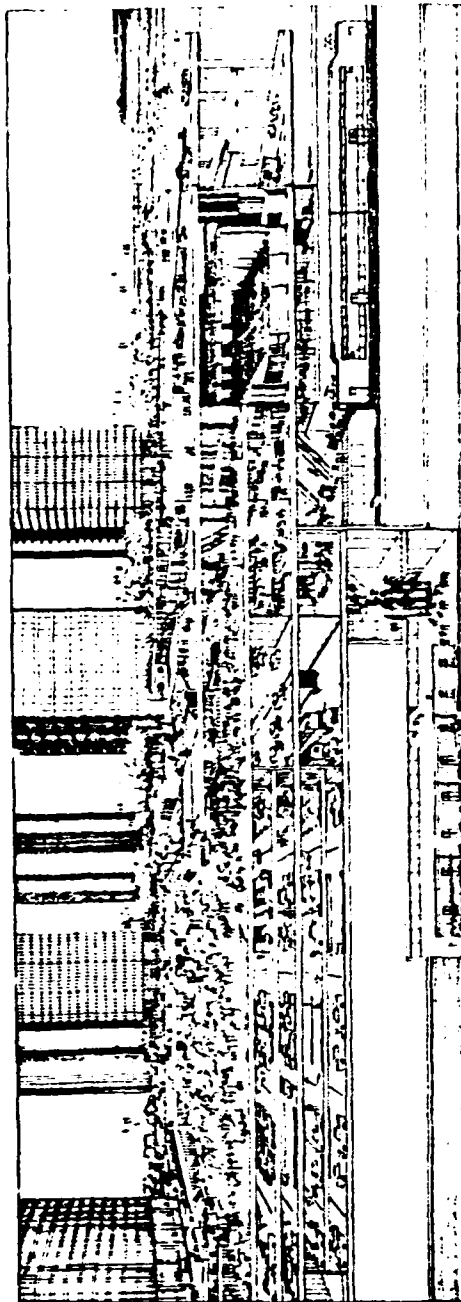
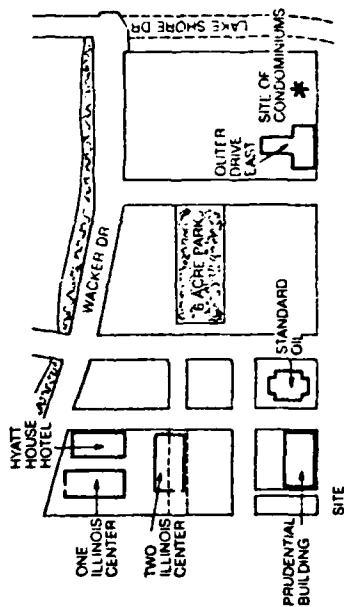
The master plan was conceived as a three-layer circulation network connecting all development. The lowest level(ground) is a truck and service link; the intermediate level is for through traffic; the upper level is for local access into the project. The railroad is responsible for construction of the on-grade service level, the city is responsible for the intermediate street level, and the developers are responsible for the local access.

Inserted into the intermediate level is a pedestrian walkway along which most retail development would take place. This level also connects into building lobbies, suburban commuter station at the edge of the site, and into a proposed subway extension in the middle of the site. The remainder of the three levels - where no access roads exist - will be parking, accessible from both the intermediate and upper levels. The only portion that exists so far is that which is located under buildings which have been built.

The developers see a potential for a mix of uses that goes beyond the residential/commercial/office relationship. They hope to draw people from other parts of the city by encouraging cultural and recreational development in the area. Only recreational portions were originally planned.

This project is on a larger one than most reviewed and shows planning on a large scale which allows for changes in market demands over a period of time. Being on such a large scale the planners were content to establish parameters for the development, without specific areas required or located on the site.

CHICAGO



Drawing shows how the various levels of traffic tie into the buildings

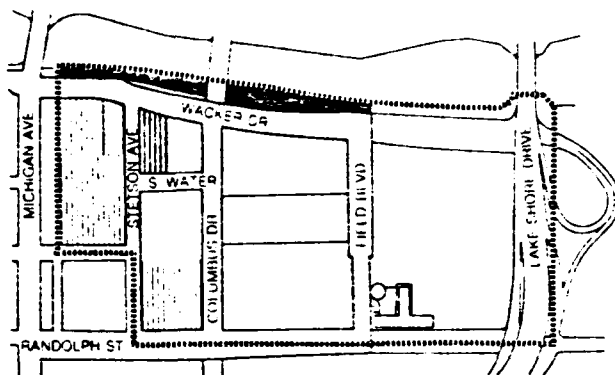
RAILROAD REDEVELOPMENT PLANNING

4

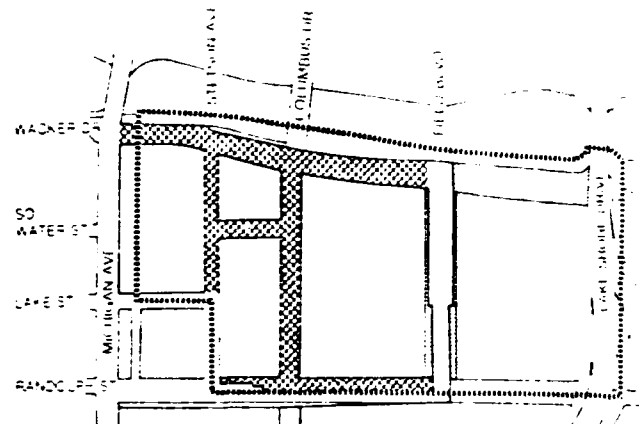
REDEVELOPMENTS

UNIVERSITY OF COLORADO AT DENVER
MPCD 790 FALL 1981

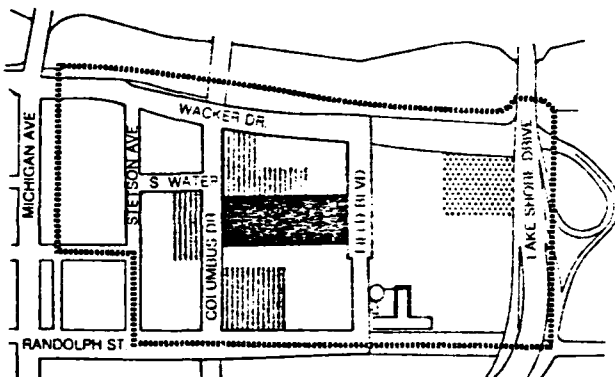
COLLEGE OF ENVIRONMENTAL DESIGN
M S KEMPER



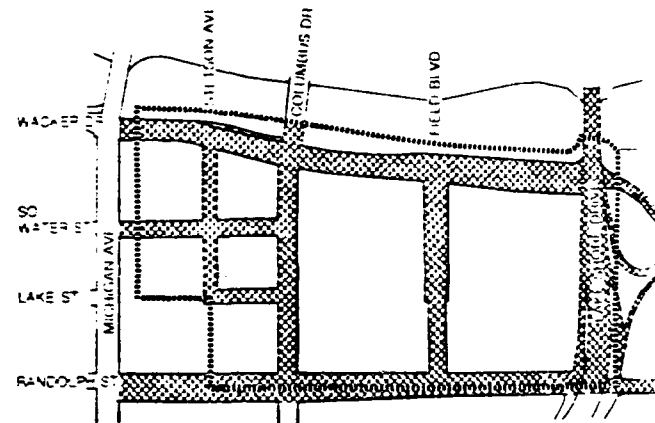
STAGE 1



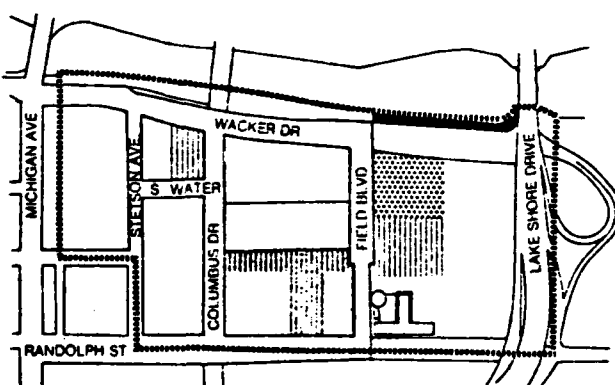
UPPER LEVEL



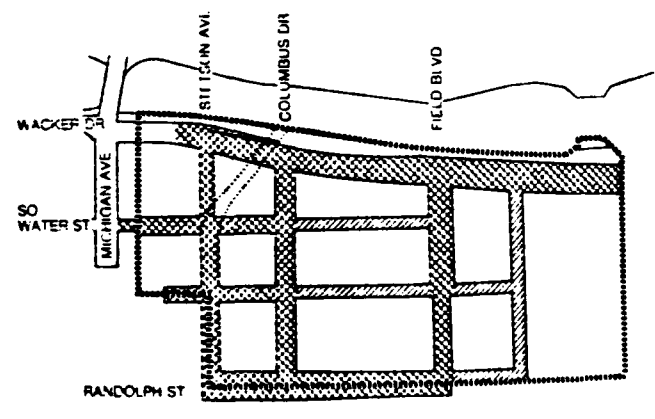
STAGE 2



INTERMEDIATE LEVEL

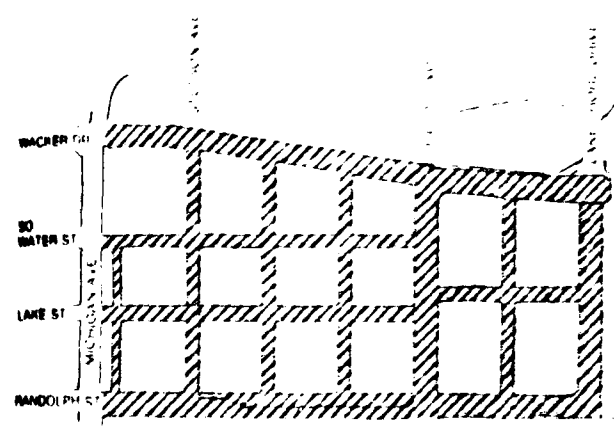
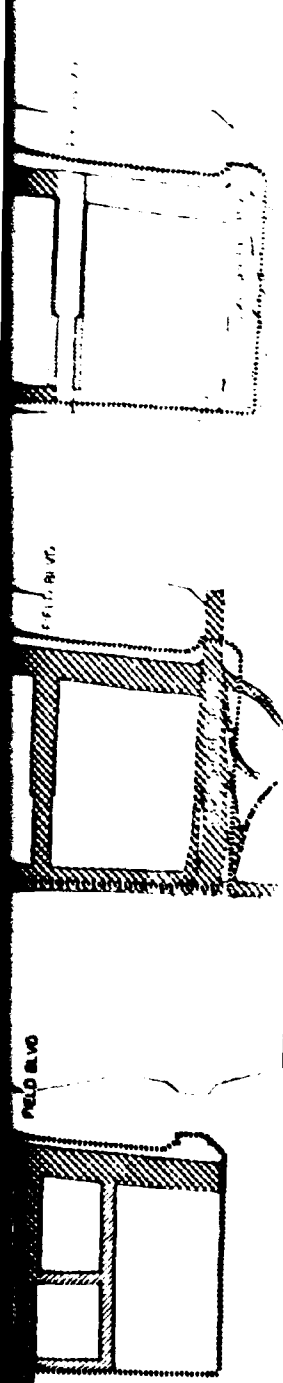


STAGE 3
LAND USE PLAN



LOWER LEVEL

0 60' N



- SITE BOUNDARY
- EASEMENT FROM CORNER
- REDEVELOPMENT AREA (SEE PLAN FOR EXISTING AREA)
- APARTMENTS, MIXED USE, DETAIL
- ▨ APARTMENTS, DETAIL, DETAIL, DETAIL
- ▩ OFFICE, DETAIL, DETAIL, DETAIL
- ▧ APARTMENTS, DETAIL, DETAIL, DETAIL
- ▦ VACATED RIGHTS OF WAY
- ▤ EXISTING RIGHTS OF WAY
- ▥ PROPOSED RIGHTS OF WAY
- ▧ PUBLIC UTILITIES
- ▩ EXISTING, RIGHT OF WAY

CHICAGO

RAILROAD REDEVELOPMENT PLANNING

REDEVELOPMENTS

5

UNIVERSITY OF COLORADO AT DENVER
MPCD 790 FALL 1981

COLLEGE OF ENVIRONMENTAL DESIGN
M & MEMBER

The Michigan Central Railroad Depot built in 1886 and located in Ann Arbor, Michigan was recycled by a private developer into a successful sea food restaurant. The Depot also continues to provide service for Amtrak.

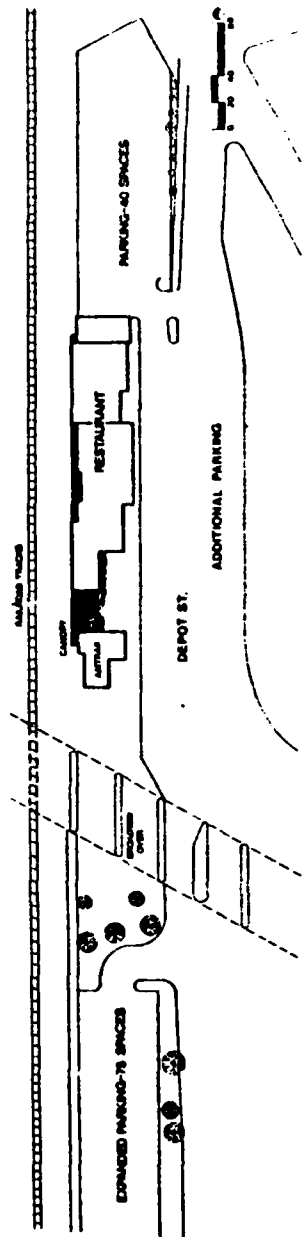
The building contains 13,750 square feet with a net floor area of 8,000 square feet. It was redeveloped at a cost of \$1,357,000 or an average cost of \$100 per square foot. The cost of new restaurant construction was averaging \$60 to \$70 per square foot.

The station is located outside of the central community and university areas of town but remains economically viable in that it attracts a clientele willing to travel farther in less trafficked areas for occasional "special event" activities. The factor stresses that only certain types of uses can function in a relatively inconvenient location.

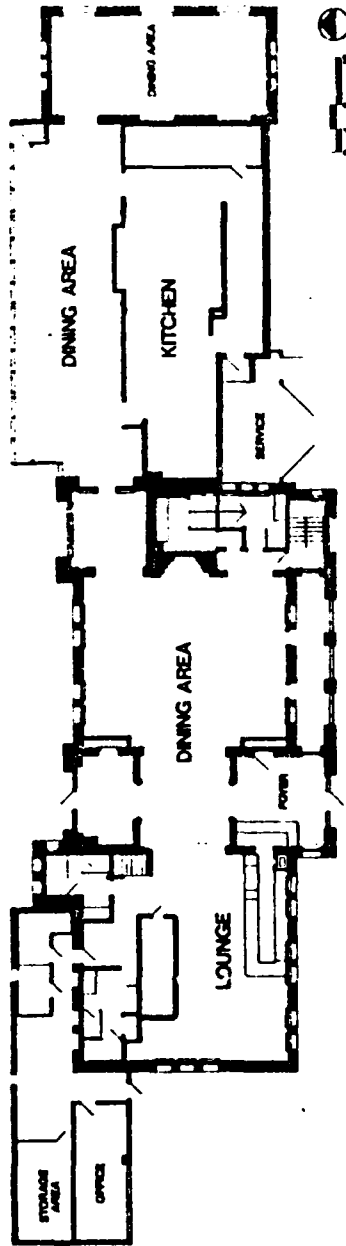
This project clearly shows that proposed uses for a station must be carefully analyzed for their market demand in the given location to determine if the project is viable.

One of the major problems with this project was a lack of parking on site. It was solved by joint procurement of new parking by the developer and Amtrak. It is interesting to note that parking is generally a major problem with railroad station rehabilitation no matter the scale since the stations were built before the oil, rubber, tire explosion and there was no need for parking.

The joint use of the station offers opportunities and constraints. It offers increased exposure for both but there are conflicts in parking requirements. Even with this conflict additional transportation modes (bus service) have been recommended to increase usage at the station. (also increasing parking requirements)



Site plan showing station and new parking areas.



Floor plan after Phase II of development.

ANN AIRBOR

RAILROAD REDEVELOPMENT PLANNING

6

REDEVELOPMENTS

UNIVERSITY OF COLORADO AT DENVER
MPGD 700 FALL 1981

COLLEGE OF ENVIRONMENTAL DESIGN
M S KEMPER

From 1973 to 1977 eight city and regional cultural groups acted as developers and transformed the 1892 Duluth Union Depot into a County Heritage and Arts Center. The facility includes museum and exhibition space in the original depot, a transportation museum in a new trainshed behind the depot, and a theater/performing arts center in a new addition to the west of the depot.

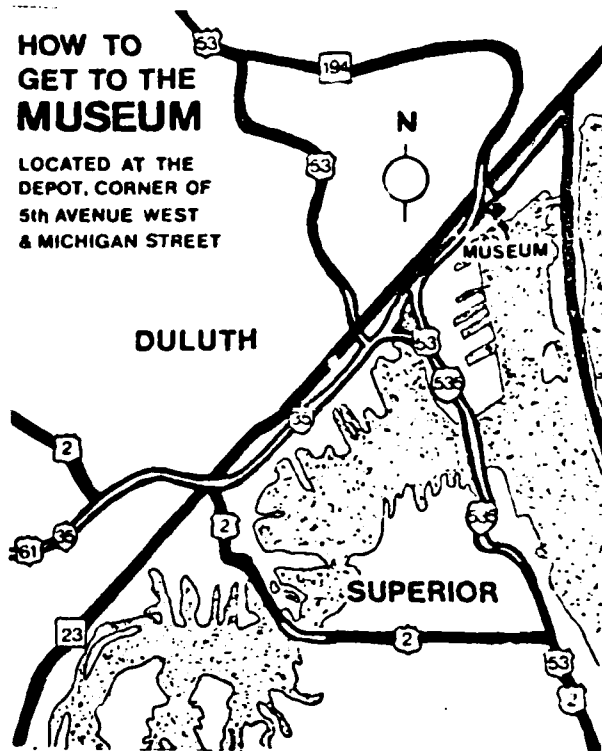
The station reuse has had a significant impact on revitalizing that particular area of downtown Duluth and has helped expand the tourist industry. There have been several renovations in the area since the project including a new library and hotel. The site is close to local bus routes and Amtrak service has started up adjacent to the site.

The Duluth Union Depot is located on the edge of the Duluth central business district which is important for the functions served by the present facility, which are dependent on the general accessibility of the site. For most facilities there isn't a better site in Duluth to be located.

DULUTH

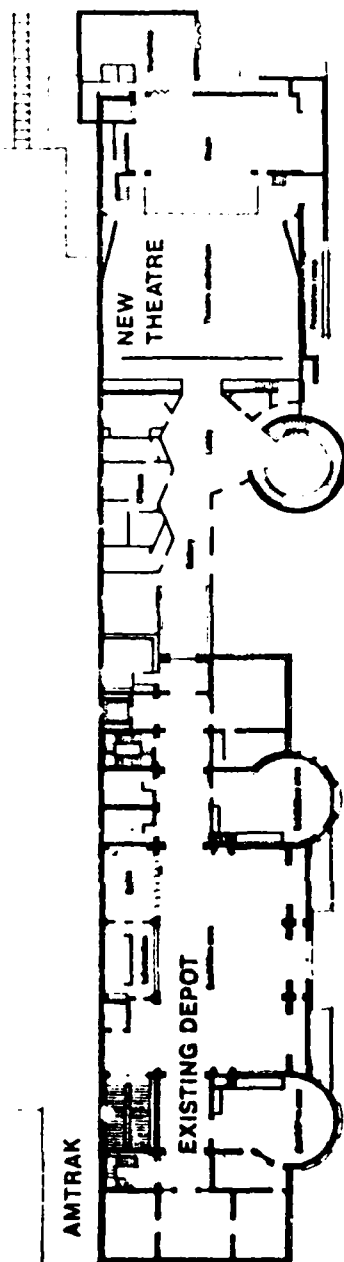
HOW TO GET TO THE MUSEUM

LOCATED AT THE
DEPOT, CORNER OF
5th AVENUE WEST
& MICHIGAN STREET



Map showing regional highway access.

TRANSPORTATION MUSEUM



RAILROAD REDEVELOPMENT PLANNING

7

REDEVELOPMENTS

UNIVERSITY OF COLORADO AT DENVER
MPCD 700 FALL 1981

COLLEGE OF ENVIRONMENTAL DESIGN
M S KEMPER

The Depot Park Development Team is one of a group of developers who submitted proposals for the development of the 10 acre Milwaukee Road Depot in Minneapolis.

This group of developers expressed concern for a development proposal which would take advantage of the nature of existing structure and site. As states "Its location between the burgeoning Central Business District, the Industry Square Riverfront, and the new stadium make it a corridor through which we may begin to rediscover the Mississippi and the birth-place of Minneapolis." There are some obvious similarities with the situation in Denver which will be discussed in more detail later.

Among the desires of the developers was to preserve the existing structures; return the depot to an active use which reflects the culture and lifestyle of the Minneapolis community; to integrate the development into a 24 hour city; and to encourage and stimulate redevelopment in the surrounding area.

The property is highly accessible, located at the intersection of two major downtown arteries, one of which is also a major bus route. A new bus transfer facility is planned for construction across the street which will include a 1200 car parking garage.

There is the desire to create new markets by bringing stadium visitors into downtown before and after games, drawing office tenants back into the city from suburbs, and creating a commercial core and public amenity that will generate new sources of tourist traffic.

The preliminary program for the 10 acre Phase I site includes the following:

Housing: 200 condominium units aimed for "second generation" condominium buyers, empty nester couples, professionals and downtown oriented retired persons.

Unit Mix:

15% studio	600-640 sf
25% 1 bedroom	740-780sf
20% 1 bedroom/den	900-940 sf (standard)
20% 1 bedroom/den	960-1000 sf (split)
10% 2 bedroom	1200-1250 sf (standard)
10% 2 bedroom/den	1400-1600 sf (penthouse)

Concept: Maximize views of river and city. Connected to rest of development to take advantage of facilities in entire development.

Est. Cost: \$25,000,000

Commercial Office: 400,00 square feet to be constructed in one or two stages of 150,000 to 200,000 square feet each.

Concept: Two tower complex to allow for both large and small tenants with river and city views. Offices integrated with shops, restaurants, and amenities of indoor/outdoor park and hotel meeting room facilities.

Est. Cost: \$38,000,000

Hotel: 250 rooms with conference facilities and restaurants. Market is expected to be commercial travelers, tourists, sports spectators and participants, convention/group visitors desiring lodging near business contacts, entertainment and sports facilities. Local business users of meeting and party rooms are a secondary market.

Concept: A luxury hotel for travelers desiring proximity to the central business district. Meeting rooms and conference facilities to attract small and medium conferences and can also be used for private parties. Three restaurants are to be included in the facilities.

Est. Cost: \$21,000,000

Health and Recreational Facilities: 30,000 square feet to include 1/8 mile running track; 8-lane swimming pool; racket-ball and handball courts; exercise facilities; steam/suana facilities; and a pro shop.

Concept: An integral part of Depot Park to serve both the housing component and office tenants with availability to hotel guests on a day to day basis.

Est. Cost: \$3,250,000

Retail: Approximately 100,000 square feet of retail and restaurants to serve metropolitan area residents and visitors, office workers in the central business district, downtown residents, sports spectators, and hotel guests.

Concept: The retail/restaurant component will represent at one time: the primary public entrance to the facilities, a destination entertainment shopping area, a gathering place, and the connecting link between elements of the development. Six sitdown restaurants (formal to casual) and 30 specialty food kiosks are planned to occupy approximately one half of the available area. Twenty to twenty-five specialty retail stores with 10-12 convenience stores are to be included in facilities provided.

Est. Cost: \$10,000,000

Parking: A preliminary determination of 1600 spaces based on the following breakdown:

Housing:	1 space/unit	(200)
Office:	2 spaces/1000 sf of leasable area	(690)
Hotel:	1 space/3 rooms	(84)
Health Cl	0	
Retail:	4 spaces/1000 sf of leasable area	(400)
Warehse:	2 spaces/1000 sf of leasable area	(160)
		<u>1534</u>

Parking to be in two major clusters; one to be near condominiums and the other near the hotel and offices.

Est. Cost: \$15,000,000

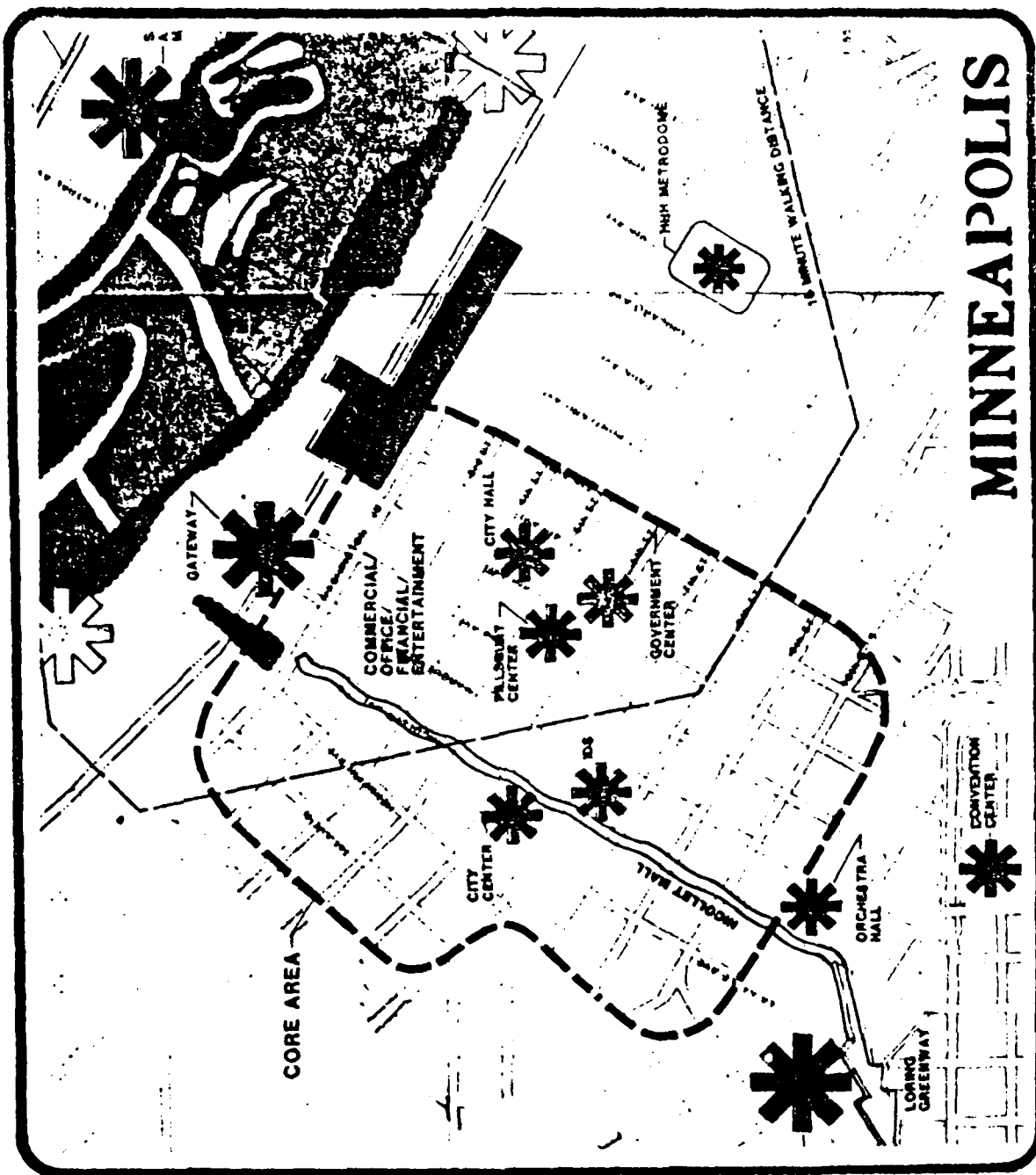
The design concept for Depot Park Phase I evolves around the creation of an indoor/outdoor urban park. The two acre park will be the key feature and integrating element of Depot Park. The park will be surrounded by renovated historic structures and new structures providing the facilities previously mentioned. The historic portion of the development will serve as the "front door" of the project both because of location and to set the flavor of the development. The greatest density of retail establishments will be occurring in the historic structures. Energy efficiency will be a major concern both in renovation and new construction.

The new 250 room luxury hotel will be a seven story low-rise to maintain area height characteristics and be constructed with materials similar to those used in the historic area.

The two office towers will have sloped roofs and be stepped back at their bases to create a common scale with that of the existing depot, etc.

The twenty-two story condominiums will be designed to reflect the form and verticality of nearby mills.

The proposed Depot Park Development shows a mix of uses for economic vitality while making good use of existing facilities to establish a character (theme) to make an exciting "place" of continued interest.



RAILROAD REDEVELOPMENT PLANNING

8

REDEVELOPMENTS

UNIVERSITY OF COLORADO AT DENVER

COLLEGE OF ENVIRONMENTAL DESIGN

MPGD 700 FALL 1981

M S KEMPER

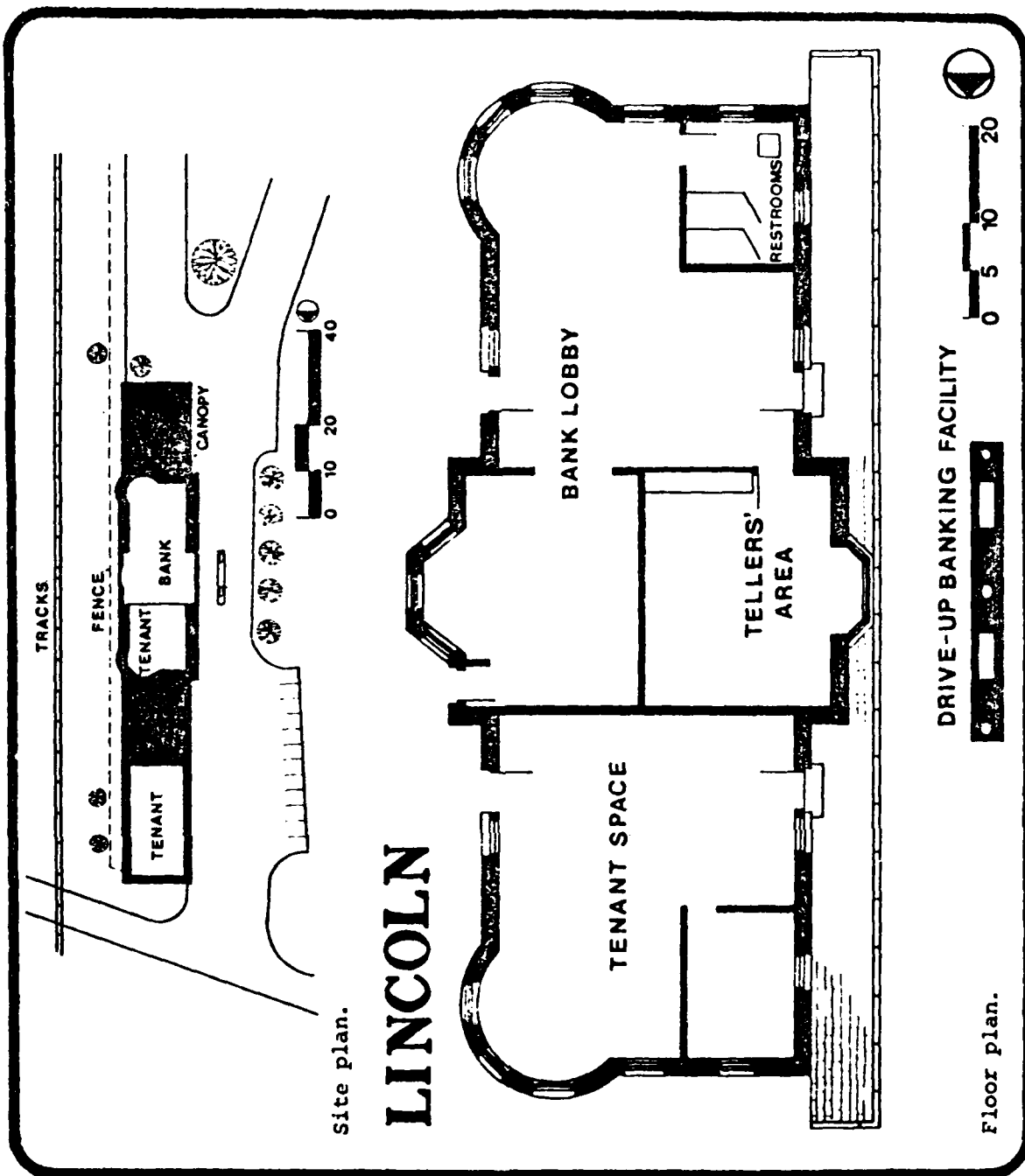
In 1969, the Chicago, Rock Island and Pacific Depot, in Lincoln, Nebraska, was recycled into a branch bank. This project was an early adaptive reuse project initiated by the bank presidents' interest in the building and Nebraska banking laws which required branch banks to be within a certain distance of main offices. The Depot was one of the few available buildings within range which appeared suitable for the banks use.

When banking laws were changed, removing the distance requirements, the bank desired to locate in a better market, and placed the building up for sale.

The project was an early adaptive reuse in the region and has received extensive publicity and recognition. It had major impacts on surrounding commercial properties which have been upgraded and improved.

Many interior changes were made to the building which may be attributed to the facts that the original use (railroad station) and the new use (bank) call for different spaces which may be incompatible and that the conversion took place in 1969, when many current preservation techniques were just being formulated.

The Depot is located adjacent to the poorest economic section of Lincoln (generally east of the station). The commercial businesses surrounding the railroad station have apparently benefited from the rehabilitation and conversion to a branch bank. Merchants have indicated the station has increased the sense of identity of the neighborhood. The rehabilitation has also provided a sense of identity to the bank itself.



RAILROAD REDEVELOPMENT PLANNING

9

REDEVELOPMENTS

UNIVERSITY OF COLORADO AT DENVER
MPCD 788 FALL 1981

COLLEGE OF ENVIRONMENTAL DESIGN
M S KEMPER

Renovation of Newark's Pennsylvania Station is viewed by local citizens as an essential part of the revitalization of downtown Newark. The station has become the transportation hub of Newark, serving as the main terminal for Amtrak and Conrail service intercity and intracity bus service, the city subway, and airport transfer services.

The station is located approximately two blocks from a main commercial area. The city has long recommended development of a spine from the station to the commercial area. A hotel/office park development across the street from the station is the first evidence of the development of this spine.

The land available for development between Penn Station and the CBD is approximately equal to 22 acres.

A non-profit organization whose objective is to encourage development in the area requested assistance from the Urban Land Institute to develop marketing and development strategy issues related to the land.

The ULI technical assistance team concluded that office development offered the greatest potential in the station area. The team also felt that retail and hotel development was feasible in the station area but the extent of such development is dependent on the success of attracting new office development.

Image problems of security and appearance in downtown Newark threaten the success of any new development. Marketing campaigns were devised to show how these problems would be overcome.

Since an estimated \$20 million in investments is expected the ULI team recommended the station be operated as a real estate project, not as a railroad station. The retail operations should pay market rents and the income should be used to maintain the station.

The Cincinnati Union Terminal was constructed in 1933 and has been the focus of repeated development proposals since falling into disuse in the 1960's. In 1972 the 450 foot long grand arrival and departure concourse, at the rear of the rotunda, was demolished to make way for a rail alignment which never took place. In 1973 the building was placed on the National Register of Historic Places.

New York architects Hardy Holzman Pfeiffer Associates focused on adaptive reuse proposals in the early 1970's for the station and finally proposed an arts school and transit office development which was not adopted.

As late as November, 1977, the fate of the building was up in the air. However, in August, 1980 the Union Terminal reopened with a new use - a shopping mall.

The developer, The Joseph Skilken Organization, looked for a concept for redevelopment, toying with an "OZ" type recreational environment, but finally choosing a fanciful retail idea.

The development program calls for renovating the existing building for 400,000 square feet of retail space and 55,000 square feet of office space. The existing building has nine levels with 115,545 square feet on the main level and 10 acres of land, all outside the downtown core.

A \$1.75 million federal grant (UDAG) plus a \$1 a year building lease from the city for 30 years aided in the \$20 million renovation. The developer also obtained property tax abatement on capital improvements above the \$16,000 annual tax paid now. Revenues are expected to be in the range of \$50 million.

Phase I of the development as now completed includes 155,000 square feet of retail space and 10,000 square feet of office space. The renovation designed by the architects, Schofield and Schofield of Columbus, Ohio, required a new mechanical system into all parts of the building, installing a new electrical system, and bringing the building into compliance with building codes.

The developer lacked a major ingredient of a commercial enterprise - location. The station is located outside of the Central Business District, somewhat remote from the downtown of "Fountain Square". To compensate for this the developer only charges \$3.50 per square foot instead of the normal \$15 per square foot. A theme of 1890's railroading has been adopted throughout the project for signage and graphics.

A major problem in the project has been stated that the

design of the shops does not respond to the architecture of the building. However, the project appears well liked by the public and is widely used.

The location proved to be a major factor in the project determination because of the economic factors imposed. Rental rates had to be low, which influenced those uses which could be considered economical. Since the site was outside of the Central Business District/Fountain Square area it could not make use of the multitude of downtown facilities for support of a more intense mixed use development.

The development project in Providence, Rhode Island is concerned with the development of 60 acres of land between the CBD and Union Station and the restoration of Providence's Union Station (the current Amtrak station) upon relocation of elevated tracks running through the site.

The Capital Center Project, proposed for the site, has 3.5 million square feet of planned office space for the next 20 years.

Upon reviewing the plans and time frame the ULI recommended single ownership control (by the Capital Center Commission) to maintain the plan over the years.

Special design considerations were recognized as being needed because of the historic nature of the State House, Union Station, and the central business district.

Project planners established development criteria which were of a general nature. The Urban Land Institute agreed that fundamental guidelines are essential and should not be compromised. It believes that the best design product will come from an imaginative developer and designer that are given a certain degree of freedom and flexibility.

Excessive standards established to guide development may in effect, act to suppress creativity. Flexibility is needed to attract top-notch developers and designers.

The renovation of Ogden Union Terminal was undertaken by local citizens groups and predicated on the city's interest in acquiring the building for use as a civic center. The renovation work has been carried out under the direction of a non-profit organization.

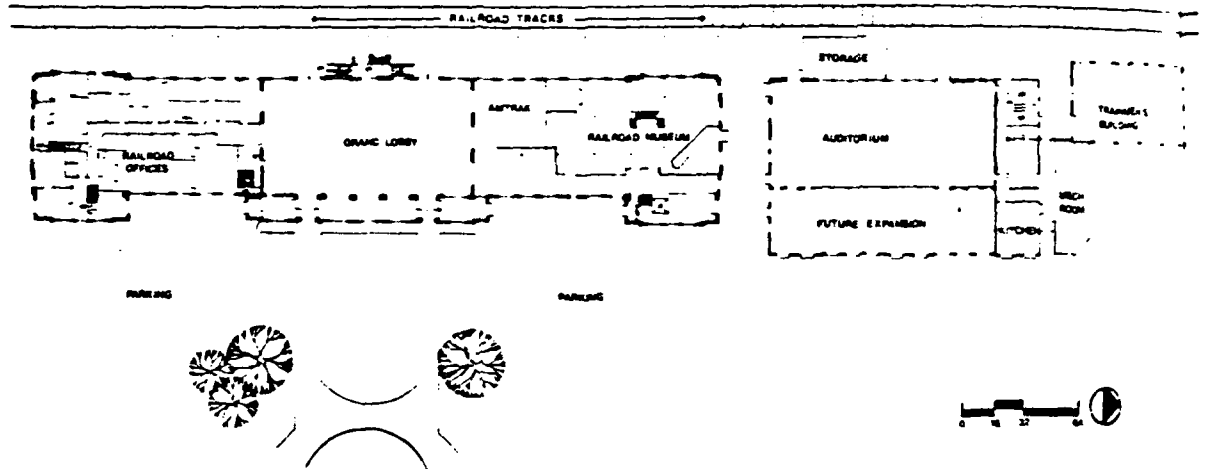
The revitalization project has converted the three building complex into a multiple cultural and civic center, two museums, a train station, and railroad offices.

Union Station is located on the western edge of the Ogden Central Business District and the edge of the former "red light" district. The site is highly accessible from all points of the city.

At the time of review the project was not complete so reinvestment in surrounding commercial buildings had not taken place. The station has, however, focused attention on the historic importance and development potential of the area. The city has recently completed a revitalization plan for the area and undertaken a study for a new hotel and convention center in the immediate area. A new in town shopping mall was planned within four blocks of the station.

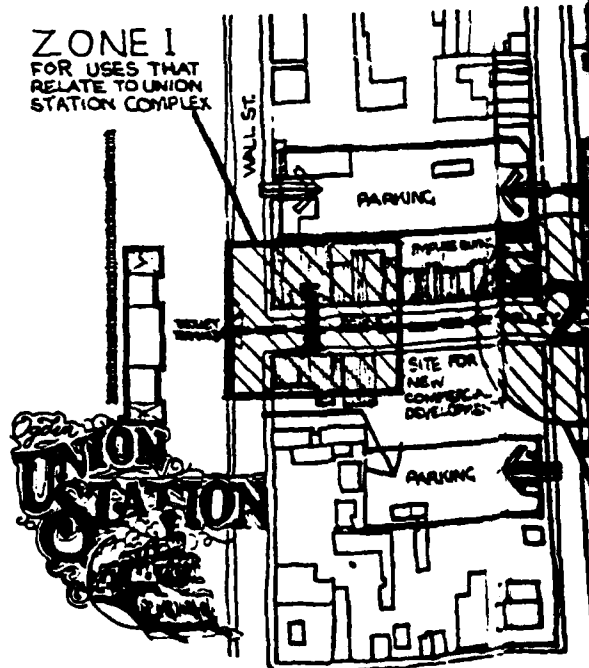


SECOND FLOOR PLAN

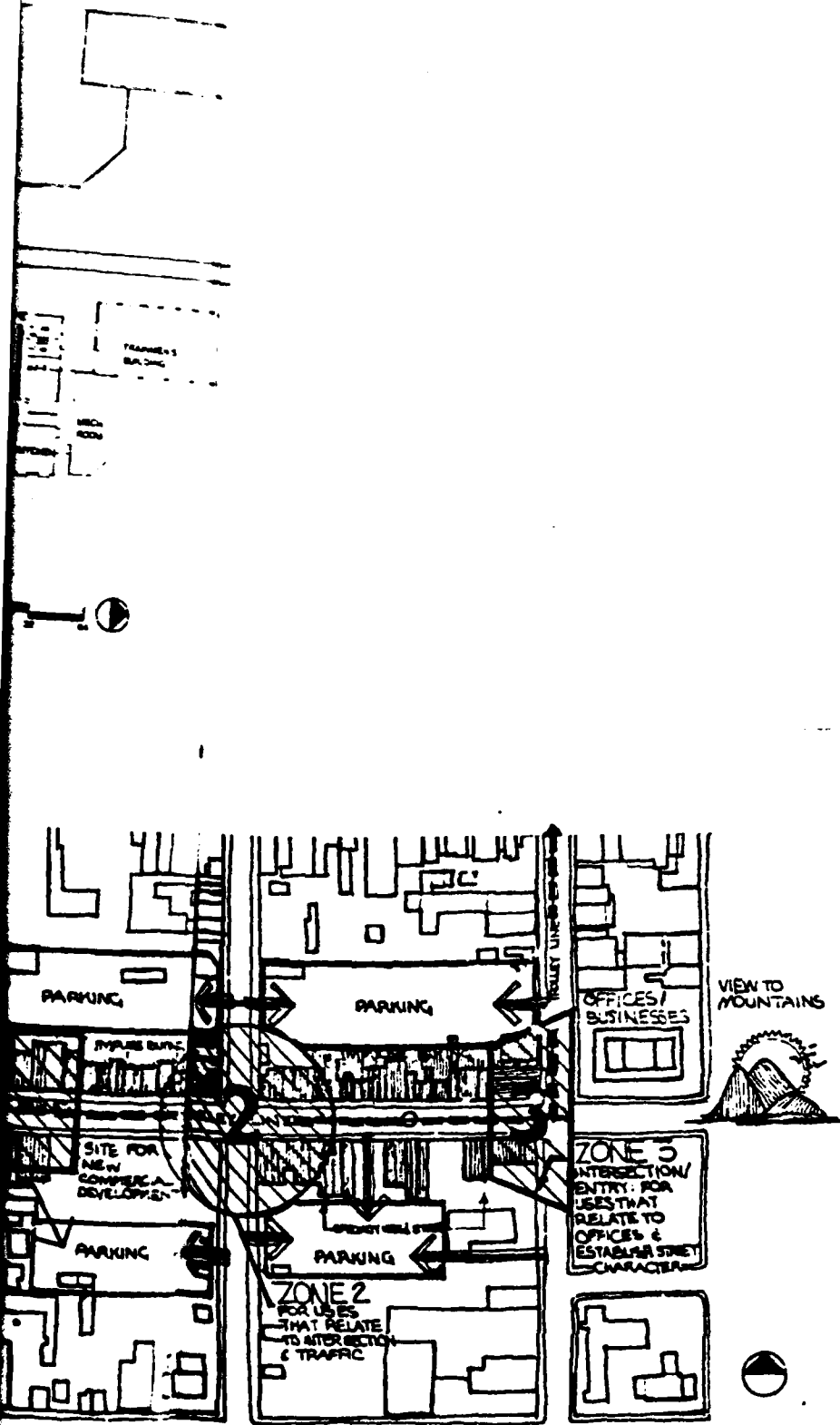


FIRST FLOOR PLAN

OGDEN



City Master Plan for revitalization of u



Vitalization of Union Station/25th Street district.

RAILROAD REDEVELOPMENT PLANNING

10

REDEVELOPMENTS

UNIVERSITY OF COLORADO AT DENVER

COLLEGE OF ENVIRONMENTAL DESIGN

MPGD 790 FALL 1981

M S KEMPER

RAILROAD STATION	LITTLE ROCK UNION STATION	SAN JUAN CAPIS-TRANO DEPOT	NEW LONDON, UNION STATION	STAMFORD, STATION	CENTRAL OF GEORGIA STATION
CITY/STATE	LITTLE ROCK, ARKANSAS	SAN JUAN CAPIS-TRANO, CA	NEW LONDON, CONNECTICUT	STAMFORD, CONNECTICUT	SAVANNAH, GEORGIA
CITY SIZE	132,500	16,000	31,650	175,000	118,350
RELATION TO CBD	OUTSIDE	IN TOURIST AREA	WITHIN	WITHIN	EDGE
SITE SIZE	N/I	N/I	N/I	~ 15 ACRES	N/I
BUILDING SIZE	100,000 SF	11,000 SF	22,000 SF	N/A	10,000 SF
BUILDING AGE	60 (1921)	81 (1894)	95 (1886)	N/A	81 (1894)
NATIONAL REGISTER	1976	HISTORIC DIST.	1971	N/A	N/I
REUSE	RESTAURANT, OFFICE, TRAIN	RESTAURANT, GIFT SHOP, TRAINS	RESTAURANT, OFFICE, TRAINS	INTERMODAL TRANSFER FC.	VISITOR CENTER
PROJECT COST \$	2,550,000	650,000	835,236	48,000,000	283,400
CIRCULATION FACTORS					
EXISTING CONDITIONS					
INTERSTATE	FAIR	EXCELLENT	GOOD	EXCELLENT	EXCELLENT
ARTERIAL STREETS	FAIR	EXCELLENT	GOOD	EXCELLENT	EXCELLENT
INTERCITY BUS	FAIR	FAIR	EXCELLENT	EXCELLENT	GOOD
LOCAL BUS	FAIR	FAIR	EXCELLENT	EXCELLENT	GOOD
RAILROADS	FAIR	GOOD	FAIR	EXCELLENT	NONE
AUTO ACCESS	POOR	GOOD	EXCELLENT	EXCELLENT	GOOD
BUS PASSENGER	POOR	POOR	EXCELLENT	EXCELLENT	GOOD
PEDESTRIAN ACCESS	POOR	EXCELLENT	FAIR	FAIR	GOOD
PARKING	FAIR	GOOD	GOOD	GOOD	POOR
FUTURE CONDITIONS	NO MAJOR IMPROVEMENTS ARE PLANNED	CONTINUED GROWTH OF CITY AND TOURIST INDUSTRY EXPECTED	MORE TRANSIT PLANNED AS RESULT OF STATION SUCCESS	POSSIBLY CULTURAL, RESTAURANT, RETAIL PROPOSED PROJECT	POTENTIAL INTERMODAL TRANSFER FACILITY
COMMENTS:	POOR STREET ORIENTATION HINDERS ACCESS / VISIBILITY	EXCELLENT SITE, ECONOMICALLY SOUND	REUSE HAS BEEN HIGHLY SUCCESSFUL	EXPECTED TO GENERATE MUCH REDEVELOPMENT	HIGHLY VISIBLE AND ACCESSIBLE ACCESS MAY CONTRIBUTE SUCCESS

RAILROAD REDEVELOPMENT PLANNING

REDEVELOPMENT COMPARISON

COLLEGE OF ENVIRONMENTAL DESIGN

M. S. KEMPER

UNIVERSITY OF COLORADO AT DENVER

MPCD 790 FALL 1981

	CENTRAL OF GEORGIA STATION	PL. ROAD 1250'S	N. & C. CENTRAL PL. ROAD DEPOT	SOUTHERN UNION DEPOT
LOCATION	SAVANNAH, GEORGIA	CHICAGO, ILLINOIS	ANN ARBOR, MICHIGAN	DULUTH, MINNESOTA
AREA	118, 550	3,500, 1000	100, 000	140, 500
TYPE	EDGE	CONCENT	NEAR	EDGE
RES.	N/I	83 ACRES	N/I	N/I
	10, 000 SF	N/A	8, 000 SF	48, 000 SF
	07 (1874)	N/A	75 (1886)	89 (1892)
	N/I	N/A	HISTORIC DIST.	N/I
USE	VISITOR CENTER	OFFICES, APTS., RECEPTION	RESTAURANT, AIRTRAK	MUSEUM, CULTURE CENTER
POP.	283, 400	N/I	1, 357, 000	3, 500, 000
	EXCELLENT	GOOD	N/I	EXCELLENT
	EXCELLENT	EXCELLENT	POOR	EXCELLENT
	GOOD	GOOD	BAD	EXCELLENT
	GOOD	EXCELLENT	TAXI ONLY	EXCELLENT
	NONE	FAIR	GOOD	GOOD
	GOOD	GOOD	POOR	GOOD
	GOOD	FAIR	BAD	GOOD
	GOOD	FAIR	POOR	EXCELLENT
	POOR	GOOD	POOR	GOOD
	POTENTIAL FOR INTERMODAL TRANSFER FACILITY	SUCCESS MAY DEPEND ON FUTURE PLANNED GROWTH	RAIL SERVICE EXPANDING FUTURE BUS SERVICE	MANY EXPANSIONS AND RENOVATIONS ARE PLANNED
	HIGHLY VISIBLE AND ACCESSIBLE ACCESS HAS CONTRIBUTED TO SUCCESS	PLANNING GUIDE-LINES, NOT A PHYSICAL PLAN.	UNIVERSITY TOWN AND TRAM EXPOSURE CONTRIBUTE TO SUCCESS	HIGHLY SUCCESSFUL BECAUSE OF ACCESSIBILITY

RAILROAD STATION	DEPOT PARK (PROPOSAL)	CHICAGO, ROCK ISLAND + PACIFIC	PENNSYLVANIA STATION	CINCINNATI UNION TERMINAL	PROVIDENCE UNION STATION
CITY/STATE	MINNEAPOLIS, MINNESOTA	LINCOLN, NEBRASKA	NEWARK, NEW JERSEY	CINCINNATI, OHIO	PROVIDENCE, RHODE ISLAND
CITY SIZE	500,000	180,000	450,000	500,000	200,000
RELATION TO CBD	WITHIN	BAD	ADJACENT	REMOTE	ADJACENT
SITE SIZE	10 ACRES	0	22 ACRES	10 ACRES	60 ACRES
BUILDING SIZE	N/I	3750 SF	N/I	500,000 SF	N/I
BUILDING AGE	84 (1897)	88 (1893)	N/I	48 (1933)	N/I
NATIONAL REGISTER	YES	1971	N/I	1973	N/I
REUSE	HOTEL, OFFICES, RESIDENTIAL, REC.	BANK, COMMERCIAL	OFFICE, HOTEL, RETAIL	SHOPPING MALL, OFFICES	OFFICE, COM MERCIAL
PROJECT COST \$	200,000,000	200,000	20,000,000	20,000,000	N/I
CIRCULATION FACTORS					
EXISTING CONDITIONS					
INTERSTATE	EXCELLENT	N/A	EXCELLENT	FAIR	GOOD
ARTERIAL STREETS	EXCELLENT	FAIR	EXCELLENT	FAIR	EXCELLENT
INTERCITY BUS	GOOD	N/I	EXCELLENT	POOR	N/I
LOCAL BUS	EXCELLENT	N/I	EXCELLENT	FAIR	GOOD
RAILROADS	N/I	NONE	EXCELLENT	NONE	EXCELLENT
AUTO ACCESS	EXCELLENT	FAIR	EXCELLENT	FAIR	GOOD
BUS PASSENGER	EXCELLENT	N/I	EXCELLENT	EXCELLENT	N/I
PEDESTRIAN ACCESS	GOOD	N/I	FAIR	BAD	GOOD
PARKING	EXCELLENT	POOR	GOOD	GOOD	GOOD
FUTURE CONDITIONS	PROPOSED PROJECT ON EXCELLENT SITE.	NO CHANGES EXPECTED.	PROPOSED DEVELOPMENT FOR AN EXCELLENT SITE.	PHASE II OF REDEVELOPMENT PLANNED.	DEVELOPMENT GUIDELINES NEW URBAN INFILL.
COMMENTS:	SHOWS HOW GOOD SITE COULD BE DEVELOPED	POOR SUCCESS, NOW FOR SALE. BAD LOCATION.	HIGH QUALITY DEVELOPMENT EXPECTED	POOR LOCATION TO OTHER ACTIVITIES WHICH COULD PROVIDE SUPPORT.	NO SPECIFIC PLANS. DEVELOPMENT GUIDELINES

NATI TERMINAL	PROVIDENCE UNION STATION	OGDEN UNION STATION		DENVER UNION STATION
NATI,	PROVIDENCE, RHODE ISLAND	OGDEN, UTAH		DENVER, COLORADO
XXXX	2000,000	69,500		5000,000 1,300,000
ITE	ADJACENT	EDGE		ADJACENT
RES	60 ACRES	N/I		18.5 ACRES
XXXX SF	N/I	80,000 SF		130,000 SF
(1933)	N/I	57 (1924)		99/67 (1880 1914)
3	N/I	1971		YES
4 MALL, D	OFFICE, COM- MERCIAL	CIVIC, CULTURAL CTR, MUSEUMS		—
0,000	N/I	1,431,581		—
	GOOD	FAIR		FAIR
	EXCELLENT	GOOD		FAIR
	N/I	GOOD		POOR
	GOOD	GOOD		EXCELLENT
	EXCELLENT	POOR		EXCELLENT
	GOOD	EXCELLENT		FAIR
ENT	N/I	GOOD		EXCELLENT
	GOOD	GOOD		GOOD
	GOOD	FAIR		
OF MENT	DEVELOPMENT GUIDELINES FOR NEW URBAN INFILL.	CITY STARTING REVITALIZATION PROJECT. SOME PLANNED EXPANSION.		NEXT TO AREA WHICH IS DESIRED TO BE PRESERVED
ATION D	NO SPECIFIC PLANS. DEVELOPMENT GUIDELINES.	SUCCESSFUL DEVELOPMENT WHICH HAS INSPIRED MORE REVITALIZATION.		MANY OPPORTUNITIES

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RAILROAD REDEVELOPMENT PLANNING

REDEVELOPMENT COMPARISON

COLLEGE OF ENVIRONMENTAL DESIGN

M & KEMPER

UNIVERSITY OF COLORADO AT DENVER

MPCD 790 FALL 1981

program hypothesis

Reviewing the railroad redevelopment projects, both successful and unsuccessful, and the studies done by the U.S. Department of Transportation and the Urban Land Institute leads to certain conclusions about railroad redevelopment planning. Certain factors are considered to be highly influential upon the success or failure of a potential railroad development. The following list is an attempt to define those major factors.

RELATION TO CENTRAL BUSINESS DISTRICT - One of the most important factors in railroad redevelopment planning is the relationship of the railroad site to the cities' CBD. It is apparent from the studies that a location within or immediately adjacent to the CBD positively affects the prospects for a successful redevelopment while a location remote from (or with poor access within) the CBD requires extra preparation and diligence in planning, design and execution. A remote location has to generate its own market while development within the CBD can take advantage of the existing market draw. The development in a remote location almost must be a one of a kind so as to draw business while this is not as important in a CBD location (the one of a kind is even more successful in the CBD).

CITY SIZE - It is obvious that the larger the city, the more resources are available both for developing a project and for supporting the final results. In comparing the reviewed projects, the potentials and results in the larger cities for funding availability and economic support are much greater.

SITE SIZE - As obvious as city size, the size of the site available for redevelopment is a major determining factor in potential uses. If the site is limited to the building itself then uses which could beneficially occupy the railroad station are limited. If additional space, other than the building, is available then redevelopment possibilities are expanded and the chances for mixed use projects increase.

BUILDING SIZE - When limited to redeveloping only the railroad station, the size of the building takes on tremendous import. The smaller buildings are limited to one use which hurts financing possibilities, and limits potential uses for the building. The larger buildings can have mixed use redevelopment which have greater chances for success (with built in flexibility) by allowing more response to the market and market changes.

TRANSPORTATION/CIRCULATION PATTERNS - Efficient transportation systems which service the redevelopment parcel can almost insure success while inefficient systems can harm what would normally be a good location (Little Rock Union Station).

INTERSTATE ROAD SYSTEM - Locations near interstate highways can take advantage of passing motorists for business. Essentially the impact of interstates is to increase the market area of the development and provide good access to the sites.

ARTERIAL STREETS - The pattern of arterial streets seems more important to the site than the distance from interstates. A good interstate/poor arterial scenario seems more negative than a poor interstate/good arterial. The reason is that arterial streets are the main method of access for automobiles.

LOCAL BUS - A site which is located along an intracity bus route has the added benefits of bus riders as potential users. A local bus route increases market area and is another important access form.

RAILROADS - Active passenger railroad service to the site is an added bonus. Out of town rail service lets the site serve as a focal/entry point with specialized services, while in town commuter rail service can take advantage of the high number of people passing through the site.

PEDESTRIAN ACCESS - Good access from other nearby activity centers increases the viability of a site. This of course implies there are methods for pedestrians to arrive in the area and that there are other activity centers nearby.

PARKING - A factor of major importance is parking. Adequate parking must be provided (can be shared) in a way not to hinder access to the site or to other nearby facilities.

OTHER FACTORS - Other major factors in railroad redevelopment planning are local market economy (depressed vs. upswing) and the local community's/governments attitude toward preservation redevelopment. The first is obvious in importance. The second is important as a judgement factor in determining the scope of a project.

On the following page is an attempt to quantify the above factors into a program for railroad redevelopment planning. This program is based on the previously mentioned research done on railroad stations.

program components

Relation to CBD:

- Within: Almost any land use applicable. Offices and support facilities for offices desirable. (+ factor)
- Adjacent: Most any land use compatible with CBD. Can act as focal point. (+ factor)
- Remote: Special land uses/activities to serve as a regional activity. (- factor)

City Size:

- <50,000: Usually single use activity (restaurants, shops, etc.)
- 50,000-100,000: One to two uses in building (restaurants, offices, museums, visitors centers)
- 100,000-500,000: Multi-use facilities (offices, retail/commercial centers, recreation)
- >500,000: Multiple use/multiple facilities (office buildings, hotels, commercial centers, mass transit facilities, government centers, convention centers, recreation)

Site Size:

- <1 acre: Single use of two small size facilities
- 1-5 acres: Multiple use/facility (office, residential, commercial)
- 5-10 acres: Multiple use/facility (combination of uses - office, commercial, residential)
- >10 acres: High intensity uses - multiple structures with many facilities (commercial, offices, hotels, convention, government, etc.) large scale development

Building Size:

- <5000 sf: Single use (office retail)
- 5000-10000: One or two uses (office, retail, visitor center)
- 10,000-25,000: One or multiple small uses (office, retail, museum)
- 25,000-50,000: Multiple uses (office, retail)
- >50,000: Multiple uses (retail, office, specialty, museums, etc.)

Transportation/Circulation:

- Interstate: Good: + factor (increase development)
Bad: - factor (limit development)
- Arterial: Good: + factor (increase development)
Bad: - factor (limit development)
- Local bus: On Route: + factor (increase development)
Off Route: - factor (limit development)
- Railroads: Yes: + factor (increase development)
No: no weighting + or -
- Pedestrian Access: Good: + factor (increase development, promote pedestrian activity)
Bad: - factor (limit development)
- Parking: Good: + factor (increase development, promote shared parking use)
Bad: - factor (increase parking assets)

Other: Economy: Good: increase development size and quality
Poor: many market studies required - difficult
to finance

Local Govt: Preservation minded: + factor
Non-preservation: increase public relations
to educate community

The attempt to quantify the information obtained from existing literature into a planning program for redeveloping railroad stations/yards has not proven to be as specific as previously hoped. What is possible, as indicated by the previous program is a guide to planning the redevelopment. Instead of a program which states what facilities, and what amounts of development should occur, it is possible to prepare a guide for evaluating the potentials of specific development types. The guide can provide indications as to the type and scope of development based on existing conditions, and can influence the direction of redevelopment either up or down (intensive or limited).

The next page is an example of the guide applied to the Denver Union Station Development.

Relation to CBD:

Adjacent: Land uses compatible with CBD. Focal point or edge.

City Size:

>500,000: Multiple use/multiple structure facilities (office buildings, hotels, commercial centers, transit facilities, government centers, convention centers, recreation)

Site Size:

10 acres: Multiple use/multiple structure.

Building Size:

50,000: Multiple uses within building or large scale single use development.

Transportation/Circulation:

Interstate: Fair - a slightly positive influence

Arterial Streets: Fair - positive factor

Intercity Bus: Poor - not really within walking distance slightly negative factor

Local Bus: Excellent; within walking distance of major terminal point and on bus route - positive factor.

Railroads: Good/bad - location of passenger service but also mainline freight location. Slightly negative factor.

Auto Access: Fair - arterials nearby but one way streets and viaducts are difficult for access. Neutral

Bus Passenger: Excellent - within walking distance of major bus terminal. Positive factor.

Pedestrian Access: Good - nearby pedestrian mall. Within 15 minutes of majority of CBD. Positive factor.

Parking: Poor - parking a problem in area and must be included in project.

Overall Evaluation: Location, city size, indicate high intensity mixed use project while other factors indicate positive attitude and probable success.

The following development figures for the Denver project are based on mixes and types observed in the research and in particular, the proposed project in Minneapolis.

DENVER UNION STATION

Development Figures

Site Size: 18.38 acres = 800,632.8sf

Building Size: Gross 174,000sf
Net 130,000sf

Present Zoning: B-7 FAR = 2, with premiums total not to exceed 4
I-2 FAR - Unlimited

Assumptions: Zoning may be changed to PUD or something similar to B-7 or B-5.

Building Floor Area Calculations:

With B-5 FAR 10 + premiums = 8,006,328sf
With B-7 FAR 2 up to 4 = 1,601,265.6 - 3,202,532.2sf

For Development: Assume FAR 5 = 4,003,164sf

For Comparison: One United Bank Center = 1,200,000sf = 52 stories

Potential Uses: For Denver at same % breakdown as Depot Park

	Depot Park	Denver	%
Offices	400,000	1,720,000	43
Hotel (250)	166,000 (1084)	720,000	18
Commercial/retail	100,000	440,000	11
Recreation (Health club)	30,000	120,000	3
Housing (200)	235,000 (850)	1,000,000	25
Parking (1600)	542,000 (3500)	1,190,000	N/A
Transit Facility	-----	?	--
Bldg Total	931,000	4,000,000	100

Above figures equal maximum expected.

Assuming density near Depot Park the following figures appear a reasonable assumption for development analysis:

Offices	700,000
Hotel (450)	298,800
Commercial/retail	175,000
Recreation/health club	52,500
Housing (350)	411,250
Parking (1750)	612,500
Transit	30,000
Total	<u>2,280,050 sf</u>

Equals FAR of 2.1 (present B-7 before premiums)

evaluation criteria

Certain criteria must be established in order to evaluate both the actual development and the development program in the specific situations. The following list of criteria will be used to judge the results of the Denver Union Terminal development. Slight modifications to the list would allow it to be used for other projects.

Economic/Market Demand:

1. Does the development respond to existing economic/market conditions or does it attempt to force a new or unneeded use?
2. Does the project have a good chance of generating enough income for operations and profit? Does it support itself?

Political Acceptability:

1. Does the development conform to existing planning and zoning proposals?
2. Is the local government amenable to the development proposal?
3. Does the project require revision of codes or plans?
4. Do surrounding neighborhood, merchants, industries welcome or oppose the development?
5. Does the project enhance the identity or "sense" of a place? Is it looked on as beneficial to the neighborhood?
6. Does the project increase the tax base and provide additional employment?
7. Does the development require expenditures by the local government?

Region Considerations:

1. Does the development respond to regional demands for different land uses?
2. Is the development in agreement with regional development goals?

Transportation:

1. Does the development take advantage of transportation systems or is it hindered by them?
2. Can the project act as a node for transportation systems?
3. Are major modifications required to the transportation network?

State Government:

1. Does the development meet all state goals, plans, and regulations?

Federal Government:

1. Do federal regulations (air, water) impact on the project?
Are all requirements met?
2. Are federal funds required for the project?

Design Considerations:

1. Does the development make use of existing buildings, neighborhoods?
2. Is the project in conflict or harmony with existing neighborhood (style, land uses)?
3. Are good features of area emphasized?
4. Is efficient use of land and neighborhood a goal of the project?

Other:

1. Gut feel: Is project beneficial or detrimental to city, neighborhood, or area?
2. Is the project a plus to the city, a place to be pointed out with pride?

DENVER EXISTING CONDITIONS

DENVER EXISTING CONDITIONS

In August 1981, the Denver Union Terminal Railway Company requested proposals for the redevelopment of an 18.4 acre tract of land which includes Denver's Union Station.

The center portion and extreme outer portions of the wings were constructed in 1914 and the taller portions of the wings near the center of the building were constructed in 1880. The building contains approximately 174,000 square feet with a net rentable area of approximately 130,000 square feet including basements.

The request for proposal indicates a willingness to consider almost any concepts. The plan developed for evaluation is fairly conventional, as can be seen in a later description.

Both the Denver Planning Office and the Denver Partnership have studied and prepared guidelines for development in the lower downtown Denver area.

The Denver Planning Office has said, in Policies for the Development of Downtown Denver and Adjacent Areas, the redevelopment of the lower downtown area should encourage the preservation and improvement of older structures and existing uses and attract and accomodate new retail, office, and residential uses. Lower downtown should be held intact as it becomes bordered by new construction, to retain its distinctiveness and attraction to investors and businesses. Also stated was that attention should be given to Union Station as a future focus for the district. It is also highly desired to influence the construction of new residential units in the area. There is a desire to limit the expansion of the CBD so as to maintain its vitality.

The Denver Partnership has made available a publication of lower downtown development strategies for the 20 block B-7 area. The following assumptions were made for different development scenarios established by the Denver Partnership:

1. The existing character of the lower downtown is unique to the Denver area, and should be considered as an identifiable place separate in scale from the rest of downtown.
2. Parking for the overall district must be adequate to satisfy market needs and investor requirements.
3. In order to maintain support of land owners and the development community, the development scenarios must provide a reasonable economic return.

4. Residential development is a key ingredient to the long term success of the Lower Downtown District. The goal is to provide approximately 1000-1500 units in addition to those already under construction.

The chart on the next page shows estimated costs and revenues in the lower downtown area.

The scenarios established by the Denver Partnership are as follows:

Scenario A: Preservation and Infill. Scenario A attempts to preserve the existing street facade and scale of the district, while at the same time offering the potential for infill development on all sites.

Scenario B: Controlled New Development. This scenario assumes that larger parcel acquisitions will occur with resulting larger scale buildings. In order to control this development pressure and prevent building owners from having to sell their buildings, scenario B introduces the concept of Transfer of Developer Rights (TDR). Developers would be able to increase their floor area ratios by purchasing unused development rights from owners in the area. Scenario B1 (The Dispersed Model) presumes that development can occur anywhere within the district while Scenario B2 (The Zone Model) takes the position that the existing character of Lower Downtown can only accept development in certain areas and should be restricted to those areas.

Scenario C: Market Development. This scenario assumes that parcel acquisitions will continue except for those parcels where historic structures, buildings eligible for tax benefits, and those over four stories are located. Special incentives for residential development must be included along with provisions for protecting street frontage where parking garages cover 75% of the site.

Other development issues include a coordinated transportation plan, pedestrian/street improvements, and provisions of open space within the district.

The following graphics are used to show existing conditions affecting the Denver Union Station redevelopment.

DEVELOPMENT \$

COSTS (Including hard and soft costs):

Land -- Averages \$200 per s.f. including buildings
Parking -- \$20 per s.f. above grade
 23 per s.f. below office or residential
 30 per s.f. below grade
Rehab -- Ranges between \$40-70 per s.f.
New
Construction -- Ranges between \$60-90 per s.f.

REVENUES (Net income):

Parking -- Estimated at \$140 per stall per month, which
 equals \$7.00 per day for 20 days (Pro forma
 uses \$125 net)
Office -- \$20-24 per s.f. for rehab
 \$24-28 per s.f. for new construction
Retail -- \$16-22 per s.f.
Residential -- \$130-175 per s.f. sales price as a condominium.
 In order to evaluate pro formas, profit from
 sales have been translated into income on a ten
 year basis at 15%).

RAILROAD REDEVELOPMENT PLANNING

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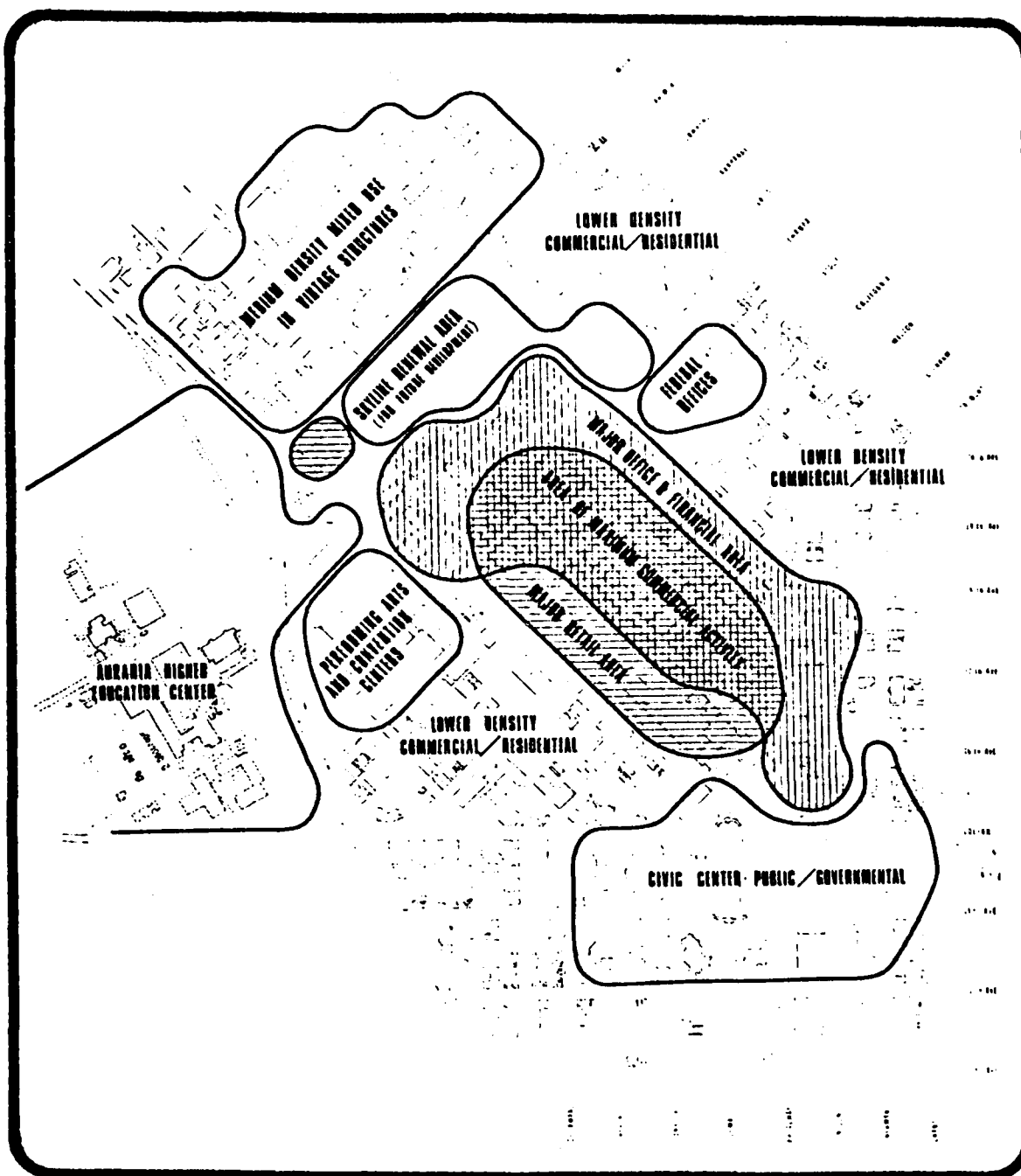
REDEVELOPMENT: COSTS

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M & KEMPER



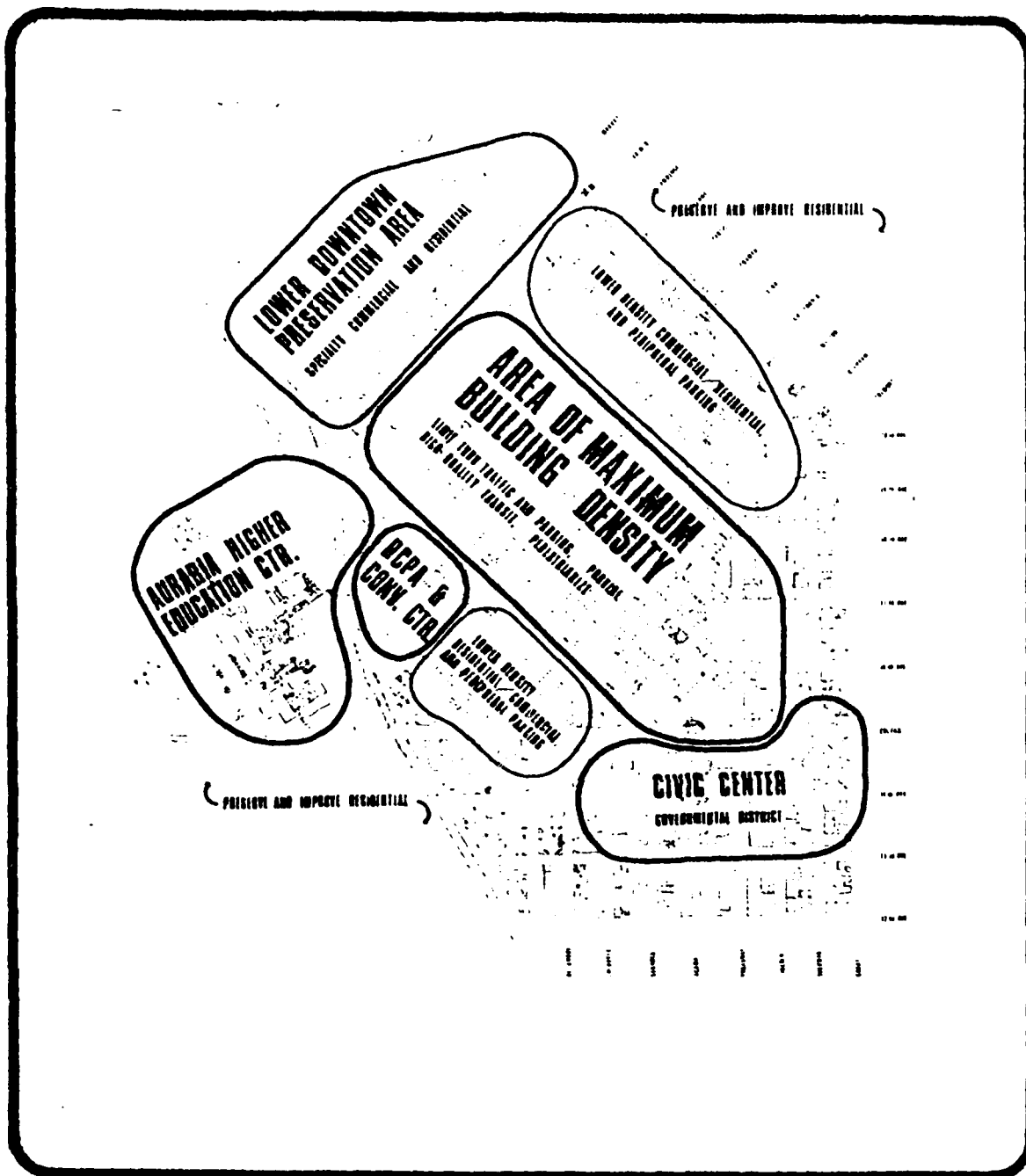
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LAND USE PATTERNS

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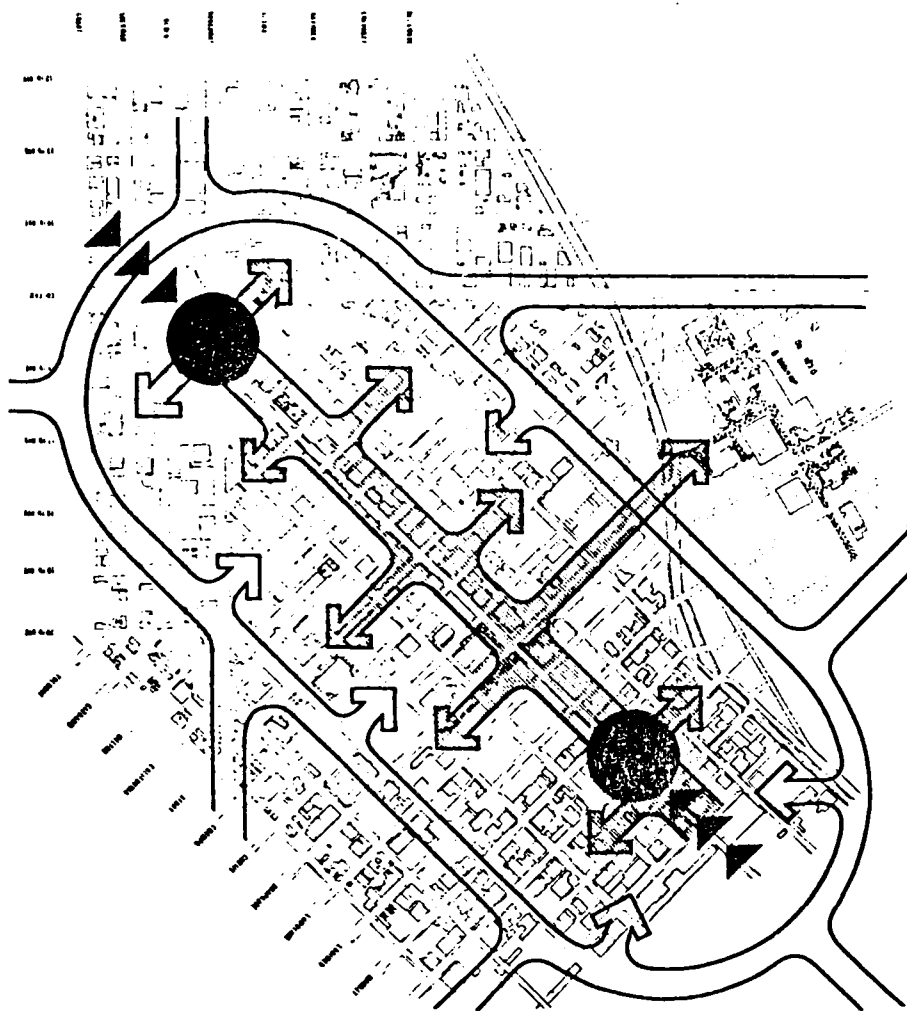
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LAND USE & DENSITY

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● TRANSIT TRANSFER POINTS

◀ TRANSIT ACCESS TO TRANSFER POINTS

⇓ INTERNAL TRANSIT AND PEDESTRIAN SHUTTLE SERVICE

↗ MAJOR TRAFFIC ARTERIALS SERVING PERIPHERAL PARKING FACILITIES

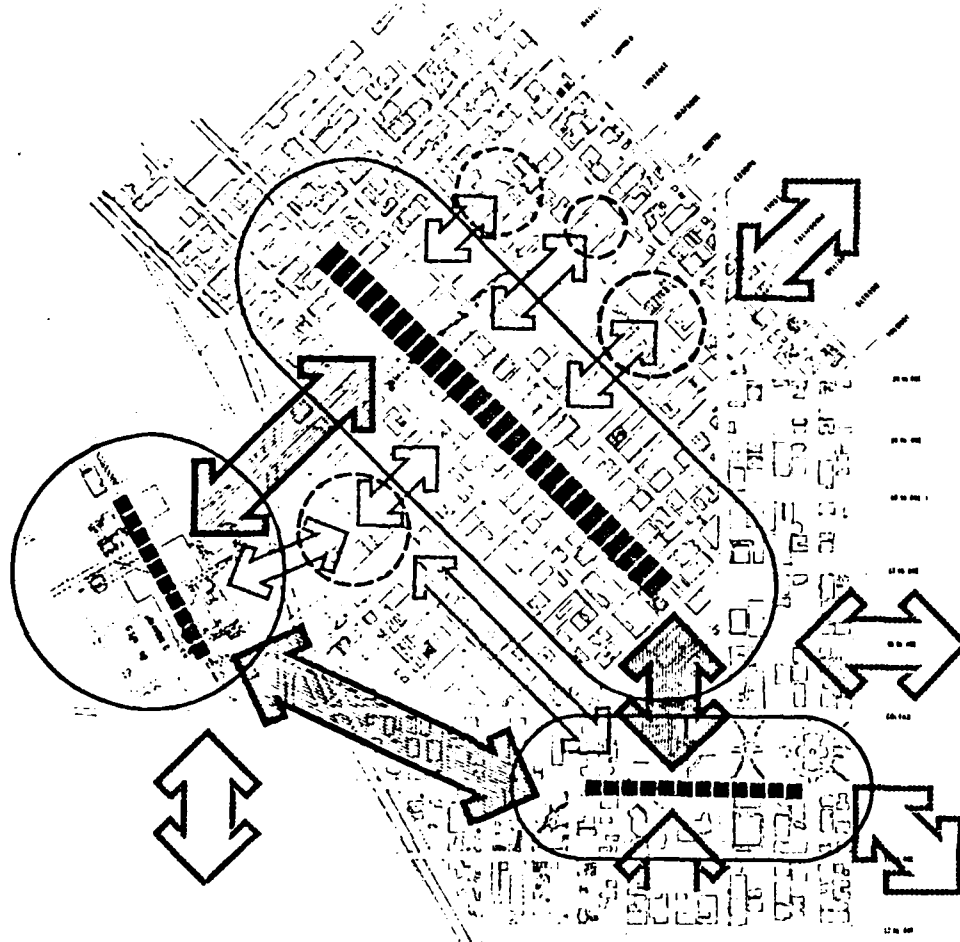
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CIRCULATION

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○ MAJOR DOWNTOWN
FUNCTIONAL AREAS

▤▤▤▤ INTENSIVE
PEDESTRIAN
SYSTEM WITHIN
FUNCTIONAL AREAS

➤ PEDESTRIAN
LINKAGES BETWEEN
MAJOR FUNCTIONAL
AREAS

➤ SECONDARY
PEDESTRIAN
LINKAGES BETWEEN
ACTIVITY CENTERS

➤ PEDESTRIAN
GATEWAYS TO
ADJACENT
NEIGHBORHOODS

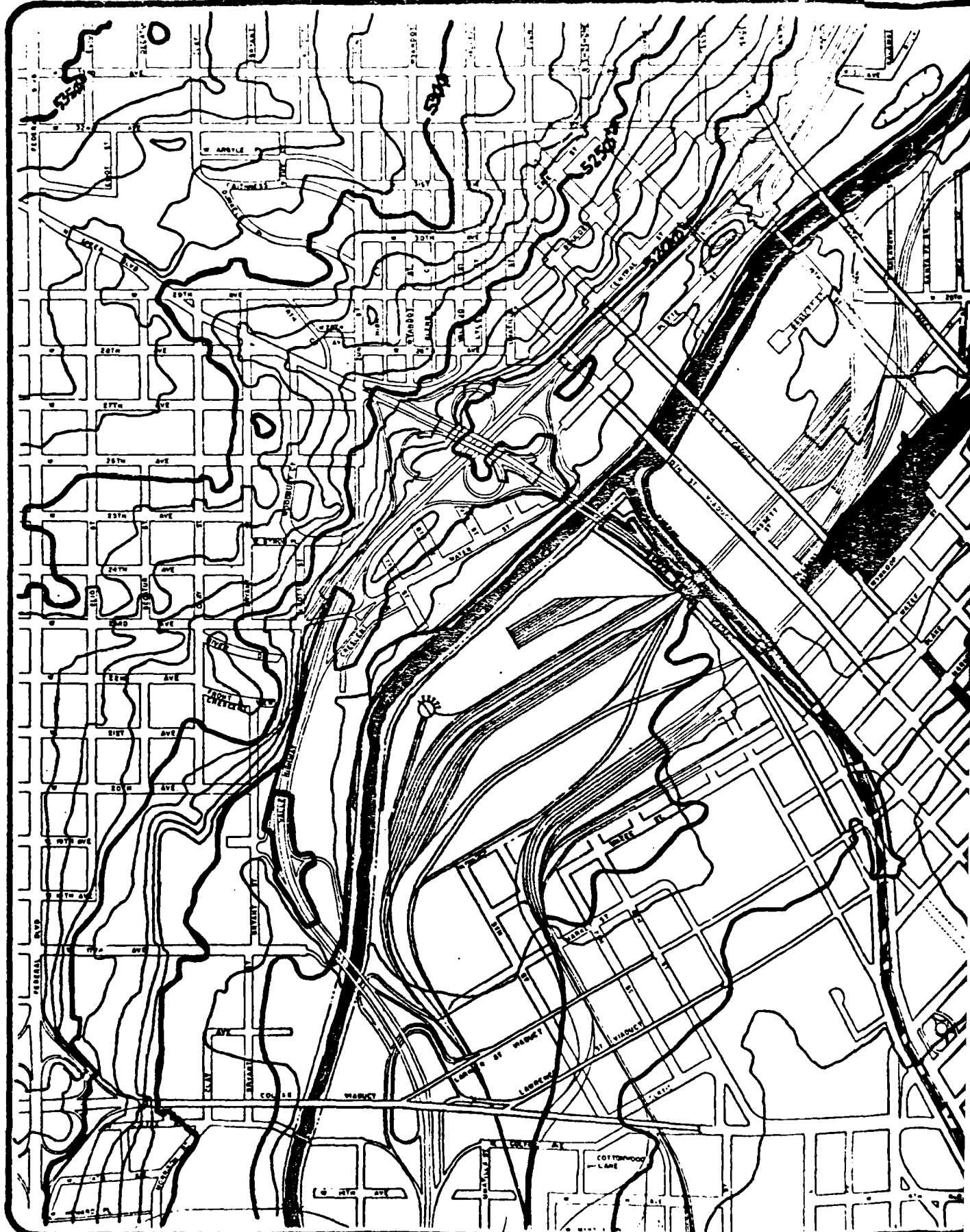
RAILROAD REDEVELOPMENT PLANNING

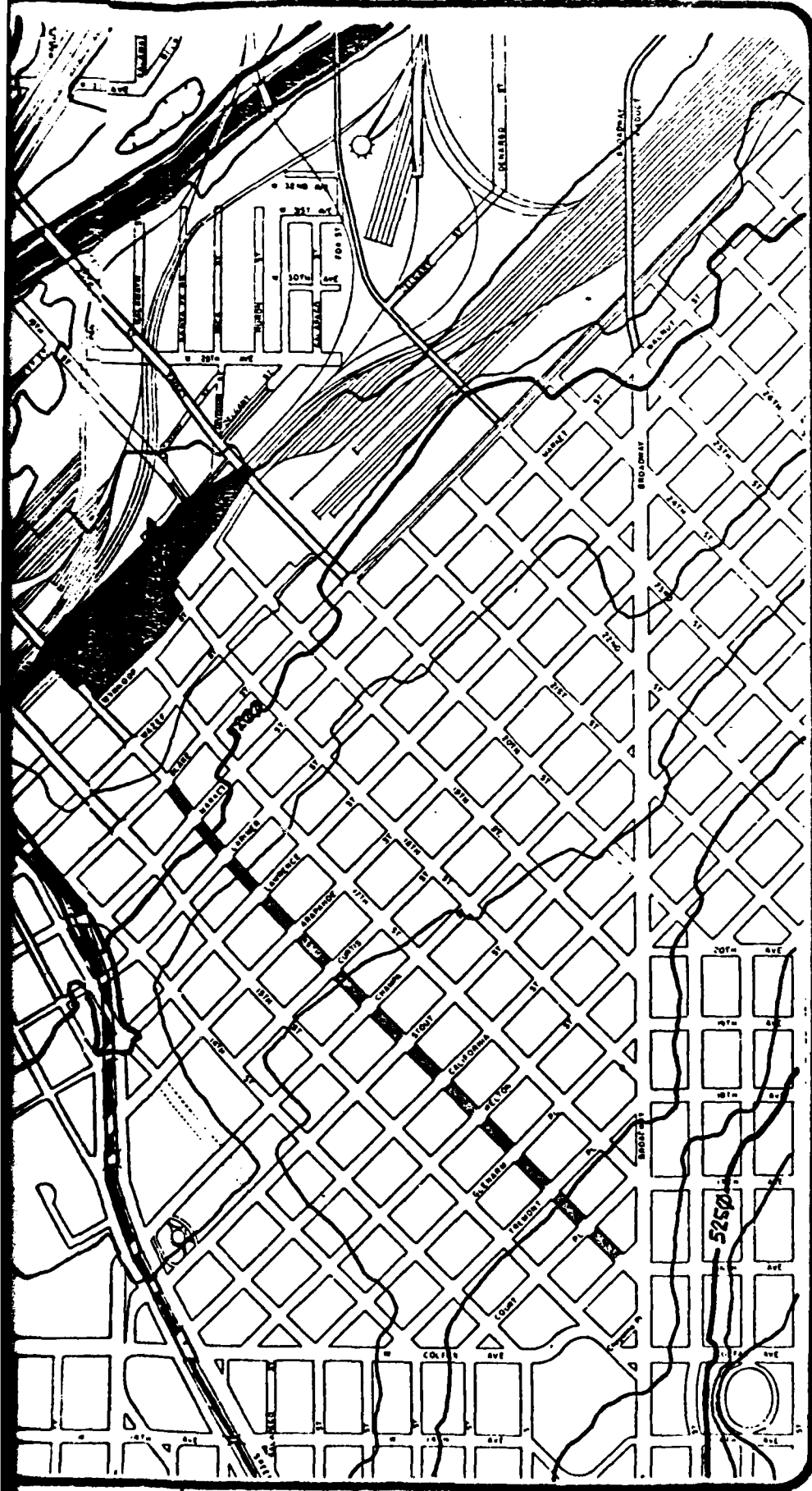
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PEDESTRIAN LINKS

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TOPOGRAPHY - FLOODPLAIN

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GENERAL PURPOSE AND DESCRIPTION OF ZONE DISTRICTS
CITY AND COUNTY OF DENVER

The following paragraphs explain the purpose and general description of the various zone districts contained within the Denver Zoning Ordinance. The regulations of these zone districts are changed from time to time, and a person desiring to learn the latest provisions of these regulations should contact the Department of Zoning Administration.

This explanation has been prepared by the Zoning Review Section of the Denver Planning Office.

- RS-2 SINGLE UNIT DETACHED DWELLINGS, RURAL DENSITY. Minimum of one acre of land required for each housing unit. Home occupations are prohibited. Density = 1 dwelling unit/acre.
- RS-4 SINGLE UNIT DETACHED DWELLINGS, SUBURBAN DENSITY. Minimum of 12,000 square feet of land required for each dwelling unit. Home occupations are prohibited. Density = 3.6 dwelling units/acre.
- RX ATTACHED OR CLUSTERED SINGLE UNIT DWELLINGS, LOW DENSITY. Development Plan must be approved by City Council. Home occupations are prohibited. Minimum of 7,500 square feet of land area required for each dwelling unit. Density = 5.8 dwelling units/acre.
- O SINGLE UNIT DETACHED DWELLINGS, LOW DENSITY. Foster Family Care and Day Care allowed as home occupations by permit. Minimum of 6,000 square feet of land required for each dwelling unit. Density = 7.3 dwelling units/acre.
- R-1 SINGLE UNIT DETACHED DWELLINGS, LOW DENSITY. Same as R-O except that home occupations and room-renting to one or two persons are allowed upon application and issuance of a permit. Density = 7.3 dwelling units/acre.
- R-2 MULTI-UNIT DWELLINGS, LOW DENSITY. Typically duplexes and triplexes. Home occupations are allowed by permit only. Minimum of 6,000 square feet required for each duplex structure with an additional 3,000 square feet required for every unit over 2. Density = 14.5 housing units/acre.
- R-2-A MULTI-UNIT DWELLINGS, MEDIUM DENSITY. 2,000 square feet of land required for each dwelling unit unless a unified site plan is submitted under the Planned Building Group (PBG) provisions. In which case, 1,500 square feet of land is required for each unit. Home occupations are allowed by permit. Density = 21.8 housing units/acre (29 housing units/acre under PBG).
- R-3-X HIGH DENSITY APARTMENT DISTRICT. This district is intended to encourage new residential development in older, developed areas. Building size is controlled by bulk standards and open space requirements. Building floor area cannot exceed 2 times the site area. Maximum lot coverage is 40%.
- R-3 HIGH DENSITY APARTMENT DISTRICT. Building size is controlled by bulk standards and open space requirements. Building floor area cannot exceed 3 times the site area. This zone should not be used as a buffer zone. Maximum density is not specified and is determined by the size of the units and the factors mentioned above.

- 3 HIGH DENSITY APARTMENT DISTRICT. Building size is controlled by limited bulk standards, off street parking and open space requirements. Building floor area cannot exceed 3 times the site area. Maximum density is not specified and is determined by the size of the individual units and the factors mentioned above.
- R-4 VERY HIGH DENSITY APARTMENT AND OFFICE DISTRICT. The purpose of this district is to provide a location for very high density apartment and intensive office development. Building size is controlled by limited bulk standards, off street parking and open space requirements. Allows hotel or motel uses and limited accessory retail shopping. Building floor area cannot exceed 4 times the site area.
- R-5 INSTITUTIONAL DISTRICT. Allows hospitals, colleges, schools, churches and other institutional uses. Maximum lot coverage is 60% of zone lot. Building height is controlled by bulk standards.
- B-1 LIMITED OFFICE DISTRICT. This district provides office space for services related to dental and medical care and for office-type services, either for the residents of nearby residential areas, or are characterized by a low volume of direct daily customer contact. The volume of vehicular traffic is usually low. This district is located away from main arterial highways, characteristically is small in size and is situated near major hospitals or between large business areas and residential areas. The regulations are designed to permit development of the enumerated functions, limited by standards designed to protect the abutting or surrounding residential districts. To these ends, the regulations establish standards comparable to the standards for low-density residential districts, resulting in similar building bulk and retaining the low concentration of pedestrian and vehicular traffic. Building height controlled by bulk standards and open space requirements. Building floor area cannot exceed the site area.
- B-2 NEIGHBORHOOD BUSINESS DISTRICT. This district provides the retailing of commodities classed as "convenience goods", and the furnishing of certain personal services, to satisfy the daily and weekly household or personal needs of the residents of surrounding residential neighborhoods. The volume of pedestrian traffic in proportion to automobile traffic entering the district is much higher than in other retail business districts. This district is located on collector streets, characteristically is small, almost always is entirely surrounded by residential districts and is located at a convenient walking distance from the surrounding residential districts it is designed to serve. The regulations are designed to permit development of the enumerated functions, limited by standards designed to protect the abutting and surrounding residential districts. To these ends, the regulations establish standards comparable to the standards for low-density residential districts, resulting in similar building bulk and retaining the relatively low concentration of vehicular traffic as compared to other retail business districts. Building height controlled by bulk standards and open space requirements. Building floor area cannot exceed the site area.

-3

SHOPPING CENTER DISTRICT. This district is primarily to provide the retailing of most commodities and the furnishing of certain personal services, satisfying all household and personal needs of the residents of abutting residential communities. The volume of pedestrian traffic in proportion to automobile traffic entering the district is relatively low. This district is usually located on major arterial streets at or near the intersection with another major arterial street so that it is accessible from all directions, characteristically is large, almost always is entirely surrounded by residential districts and is located at a convenient driving distance from the residential districts it is designed to serve. The regulations are designed to permit development of the enumerated functions, limited by standards designed to protect the abutting or surrounding residential districts. To these ends, the regulations establish standards comparable to the standards for low density residential districts, resulting in similar building bulk and retaining as low a concentration of vehicular traffic as is compatible with the functioning of the district. Building height is controlled by bulk standards and open space requirements. Building floor area cannot exceed the site area.

-B-4

GENERAL BUSINESS DISTRICT. This district is intended to provide for and encourage appropriate commercial uses between adjacent arterial streets, which are normally transit routes, and abutting residential districts. Commercial uses include a wide variety of consumer and business services and retail establishments that serve other business activities, and local transit-dependent residents within the district as well as citywide residents. The regulations allow a moderate intensity of use and concentration for the purpose of achieving compatibility between the wide variety of uses permitted in the district. The limitations imposed on the district are designed to protect the integrity and character of adjacent residential districts. Use of mass transit is encouraged by lessening off street parking requirements for residential use. Building height is not controlled. Building floor area cannot exceed twice the site area.

B-A-1

ARTERIAL OFFICE AND APARTMENT USE DISTRICT. Allows banks, offices, hospitals, clinics, institutions, churches, apartments and office service uses. Requires 100 feet of arterial street frontage. Maximum lot coverage is 30%. Building floor area cannot exceed 2 times the site area. Building height is controlled by bulk standards. Maximum residential density is unspecified and is determined by the size of units and the factors mentioned above. Arterial setback areas are required for landscaping.

- B-A-2

ARTERIAL SERVICE DISTRICT. This district is intended as a tourist oriented zone, allowing only hotels, motels and restaurants with automobile service stations. Requires 100 feet of arterial street frontage. Zone lot coverage not to exceed 30%. Building height is controlled by bulk standards. Front setback areas are required for landscaping.

B-A-3

ARTERIAL GENERAL COMMERCIAL DISTRICT. This district is designed to accommodate those uses which are oriented toward the motorist and residents of nearby neighborhoods but which uses are not normally part of shopping centers. Included among such uses are bowling alleys, theaters, night clubs, drive-in restaurants and services stations. Setback areas are required for landscaping. Ground coverage by buildings cannot exceed 30% of the site. Building height is controlled by bulk standards.

B-A-4

AUTO SALES AND SERVICE DISTRICT. This district provides an area designed particularly for the special needs and characteristics of auto sales and service activities. The Comprehensive Plan encourages the establishment of this district in concentrated centers rather than in a linear arrangement along arterials. Ground coverage by structures cannot exceed 60% of the site area. Building height is controlled by bulk standards.

- B-5

CENTRAL BUSINESS DISTRICT. Permits business, office and light industrial uses along with residential and educational uses. Maximum floor area cannot exceed 10 times the site area, plus floor area premiums for the development of plazas, arcades, atriums, etc. No off street parking is required. Building height is not controlled by bulk standards.

-B-7

BUSINESS RESTORATION ZONE. This district is intended to preserve and improves older structures which are architecturally and/or historically significant. This district allows light industrial, general retail, wholesale, services, offices and high density residential uses. Additional floor area is allowed with the development of residential units, underground parking or open space areas. Building floor areas cannot exceed 2 times the site area. However, with premiums the floor area can be increased to 4 times the site area. Building height not controlled by bulk standards.

- B-8

INTENSIVE GENERAL BUSINESS/VERY-HIGH DENSITY RESIDENTIAL DISTRICT. This district, primarily for activity centers, provides the concentration of retailing, personal and business services, residential, and cultural uses at a necessary intensity to efficiently be served by mass transit facilities. This very intense district is designed to serve the entire metropolitan area as an alternative to urban sprawl. Significant levels of intense employment and commercial activity, high volumes of pedestrian traffic, mass transit facilities, and a relatively compact geographical area are characteristics of this district.

The regulations are designed to permit a highly concentrated, intensive development of the enumerated facilities, limited by standards designed to provide light and air for street exposures of buildings in the district and to protect the district itself from over-intensive development of land coverage and over-congestion as related to the ultimate capacity of common public facilities which serve the entire district. Building floor area cannot exceed 4 times the area of the site. Building height not controlled by bulk standards.

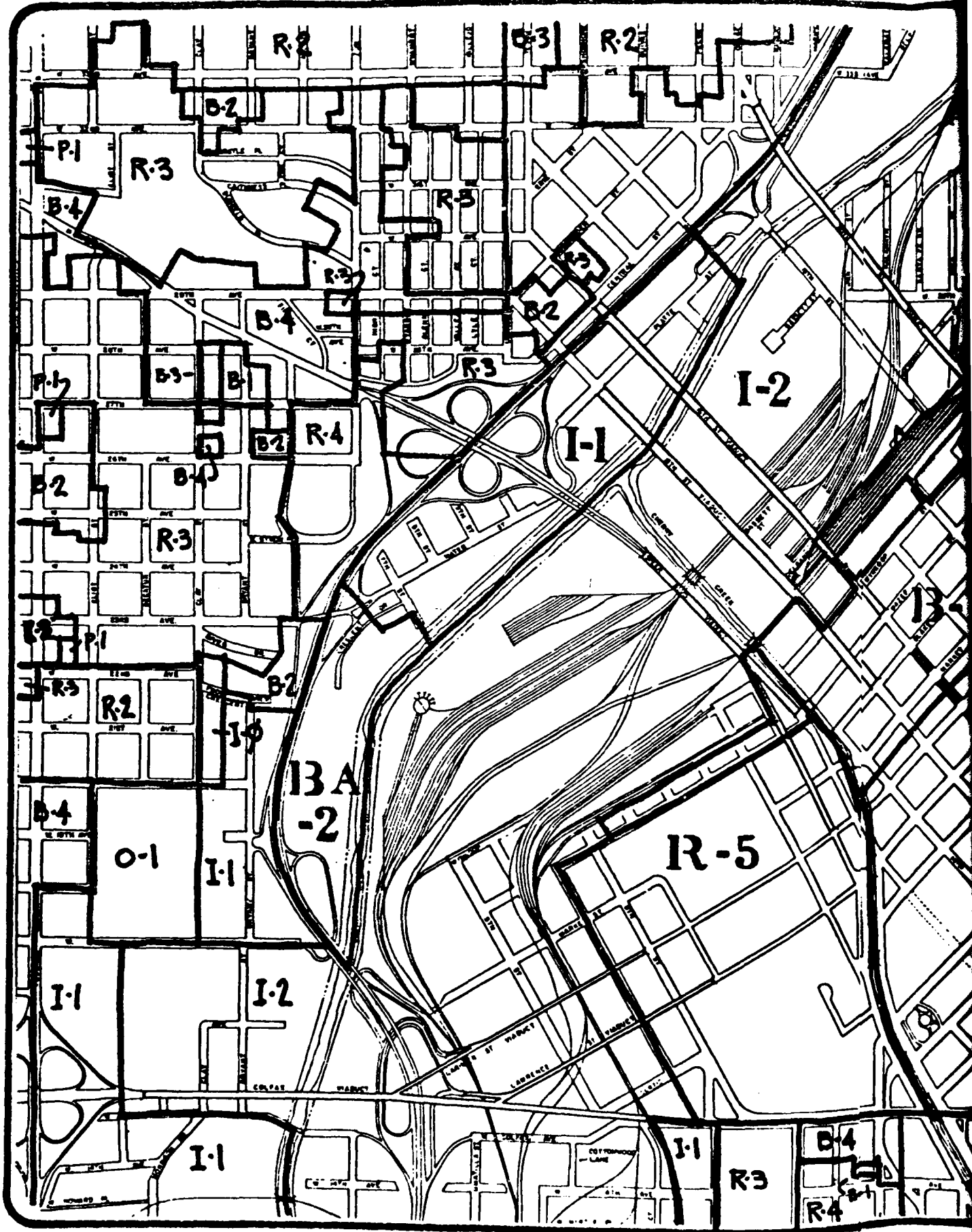
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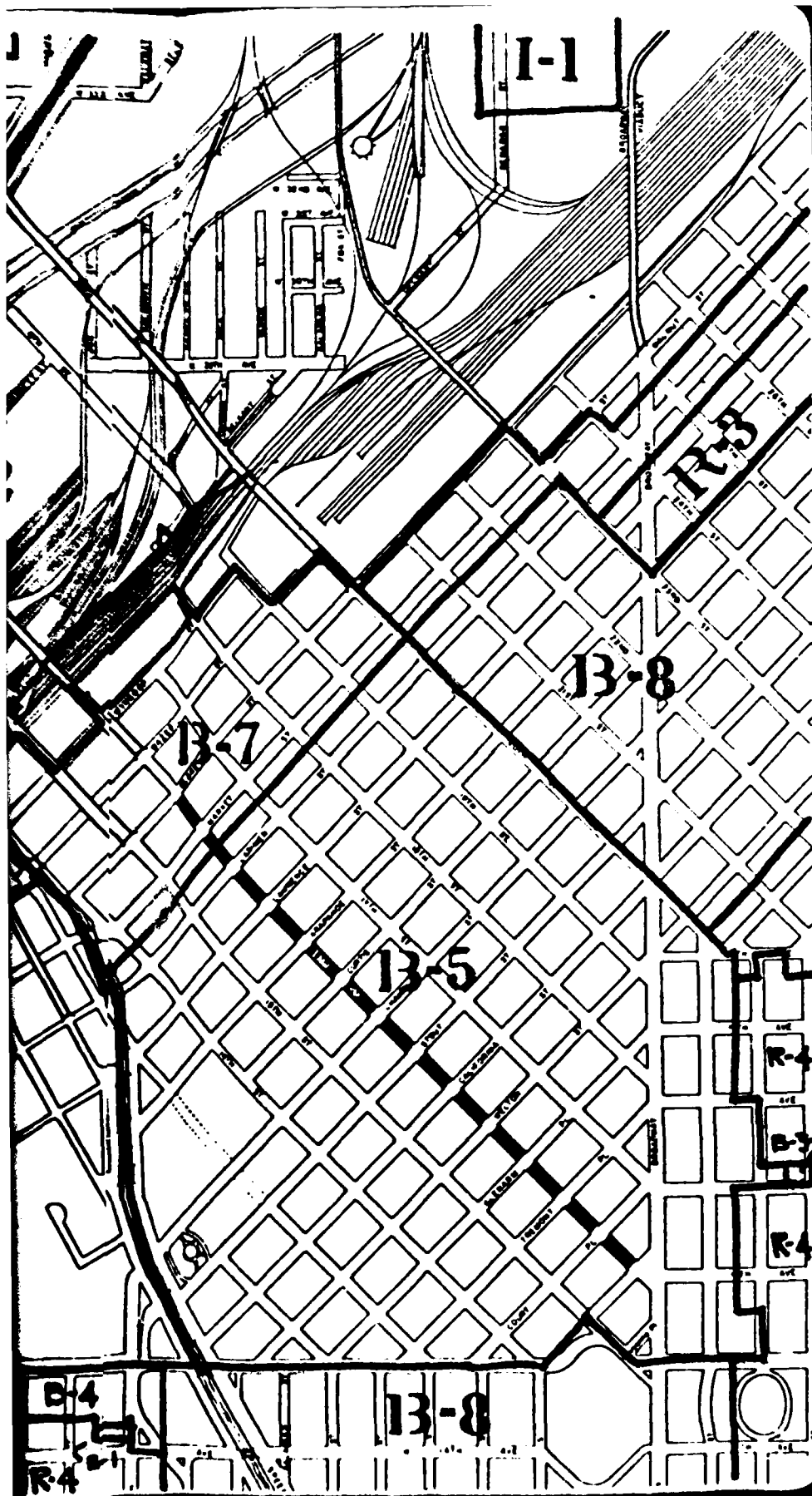
LIGHT INDUSTRIAL DISTRICT. A transitional district between intensive industrial and residential districts. Allows limited manufacturing, wholesale and retail activities, offices and motels. Building height is controlled by bulk plane standards and setback requirements for buildings. Floor area cannot exceed 50% of the site area.

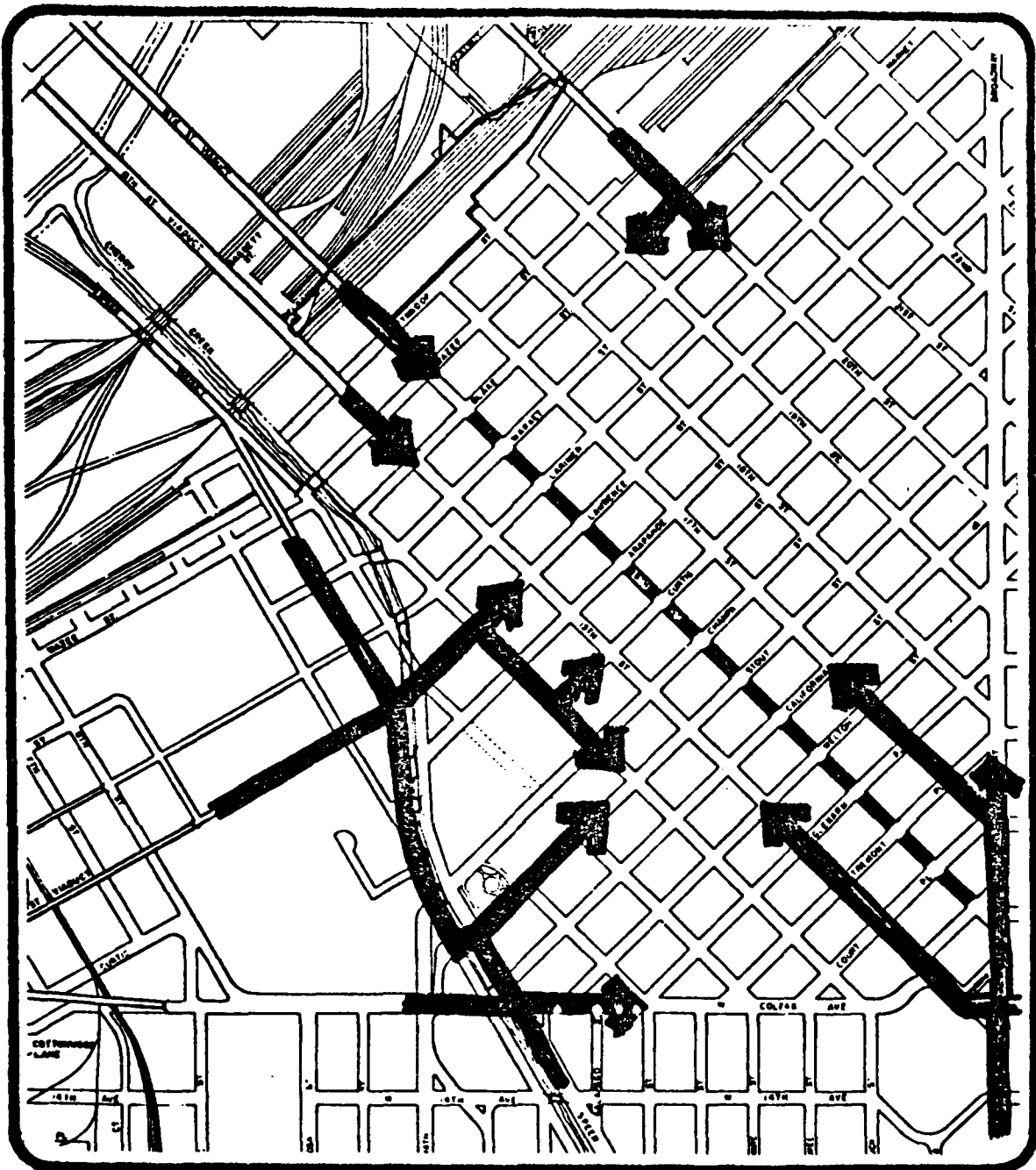
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GENERAL INDUSTRIAL DISTRICT. Allows many manufacturing, warehousing and wholesaling activities, along with limited retail and service uses for the benefit of the area employees. Building floor area cannot exceed 2 times the site area. Generally no setback requirements.

- 2 HEAVY INDUSTRIAL DISTRICT. Allows all manufacturing, warehousing, wholesaling and mineral extraction activities. Limited retail and service uses for the benefit of area employees are permitted. No limitations on the size or location of buildings. This district should not be located adjacent to residential or business zones.
- O-1 OPEN USE DISTRICT. Allows airports, recreational uses, parks, cemeteries, reservoirs, and other open uses including a limited number of public and semi-public activities housed in buildings. Setback requirements apply to the location of buildings.
- O-2 OPEN SPACE DISTRICT. Allows large tracts of open land utilized primarily for agricultural or ranching activities.
- P-1 OFF-STREET PARKING DISTRICT. Allows parking lots and structures. Bulk and setback regulations apply to buildings. This zone is intended to provide needed business parking without the expansion of the business zone, i.e., a buffer between business and residential uses. Requires visual barriers adjacent to residential uses.
- P.U.D. PLANNED UNIT DEVELOPMENT. P.U.D. is a form of development characterized by a unified site design for clustering buildings and providing common open space, density increases, and a mix of building types and land uses. It permits the planning of a project and the calculation of densities over the entire development area, rather than on an individual lot-by-lot basis. It also refers to a process, mainly revolving around site-plan review, in which city agencies and neighborhood residents have considerable involvement in determining the nature of the development. It includes aspects of both subdivision and zoning regulation and is administered through the rezoning process.
- Any P.U.D. is in effect a specific zone district for a specific area, including specific regulations written by the applicant and when approved by City Council, enforced by the City. It allows maximum flexibility during the planning stage and maximum assurance that exactly what is proposed will be developed as proposed.







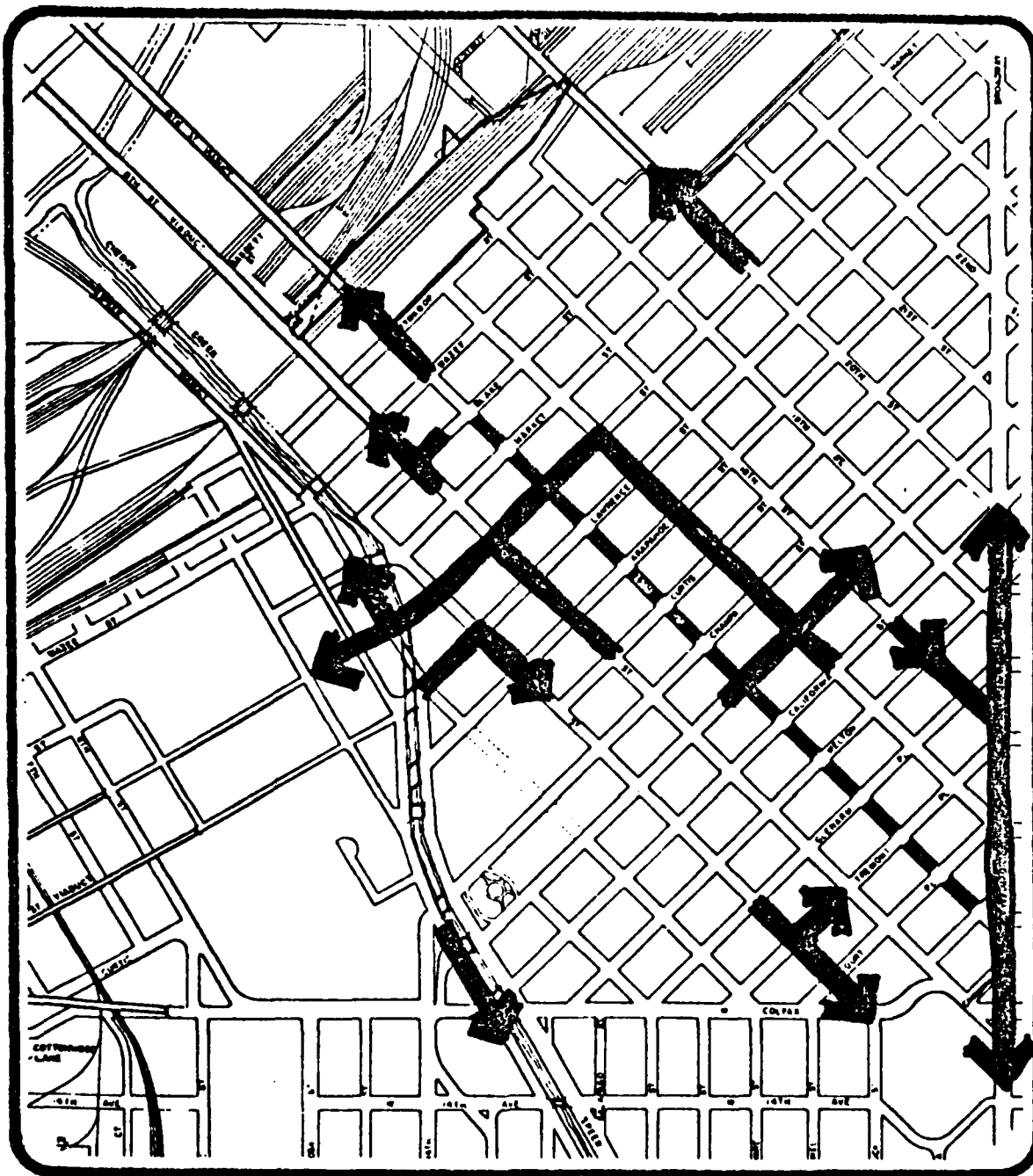
RAILROAD REDEVELOPMENT PLANNING

20

TRAFFIC ARTERIES A.M.

UNIVERSITY OF COLORADO AT DENVER
MPCD 700 FALL 1981

COLLEGE OF ENVIRONMENTAL DESIGN
M S KEMPER



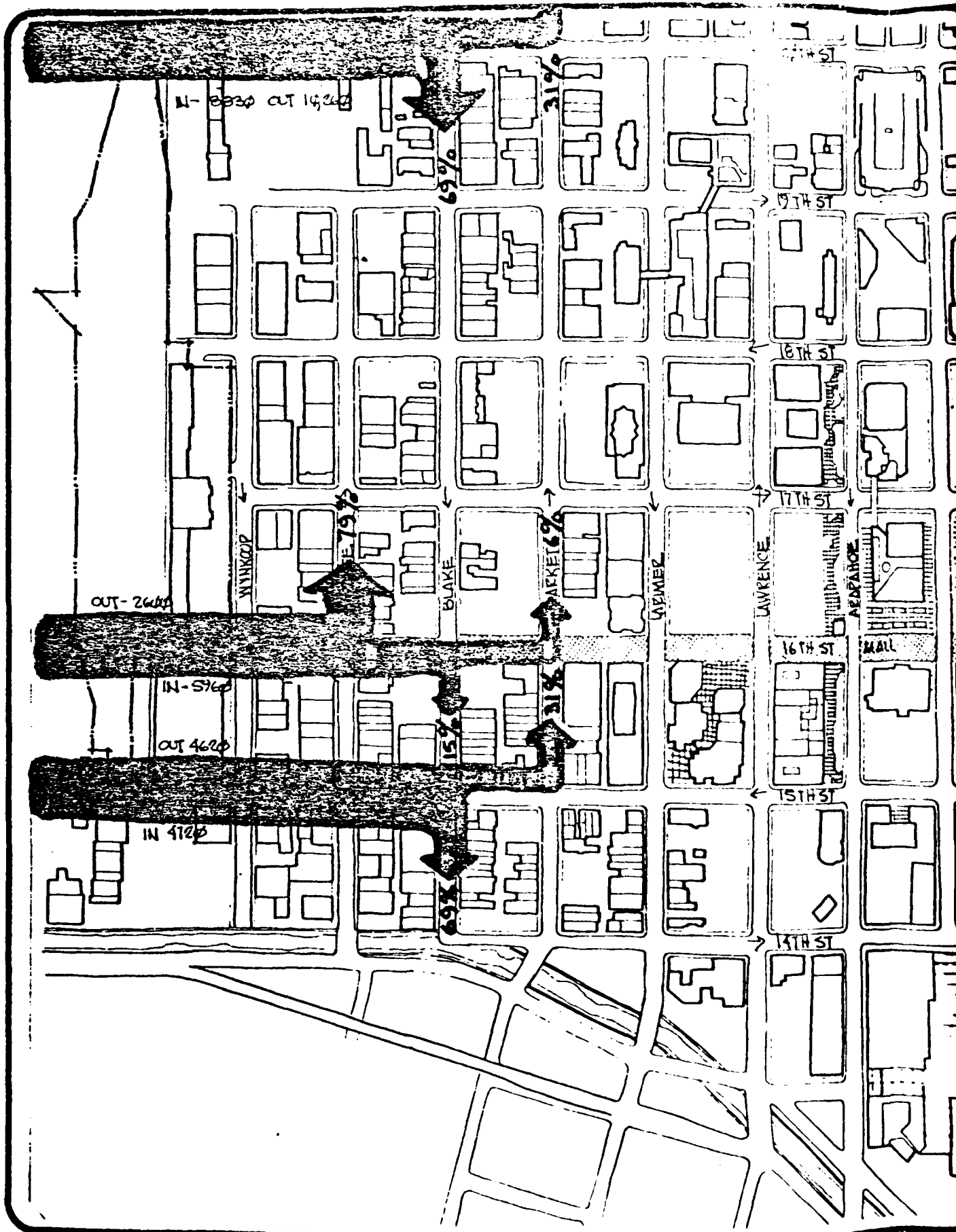
RAILROAD REDEVELOPMENT PLANNING

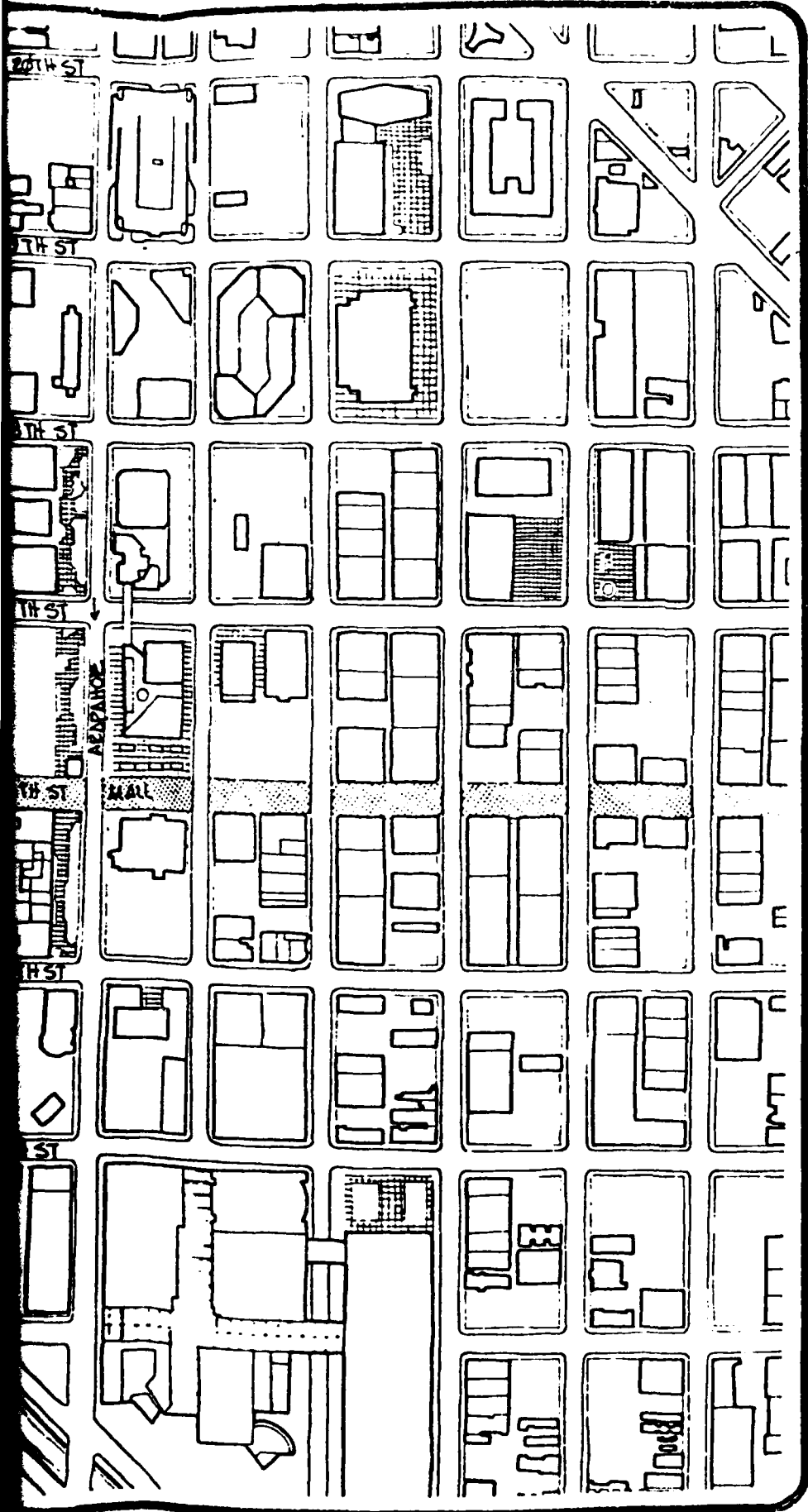
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TRAFFIC ARTERIES P.M.

UNIVERSITY OF COLORADO AT DENVER
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COLLEGE OF ENVIRONMENTAL DESIGN
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RAILROAD REDEVELOPMENT PLANNING

DOWNTOWN ACCESS

22

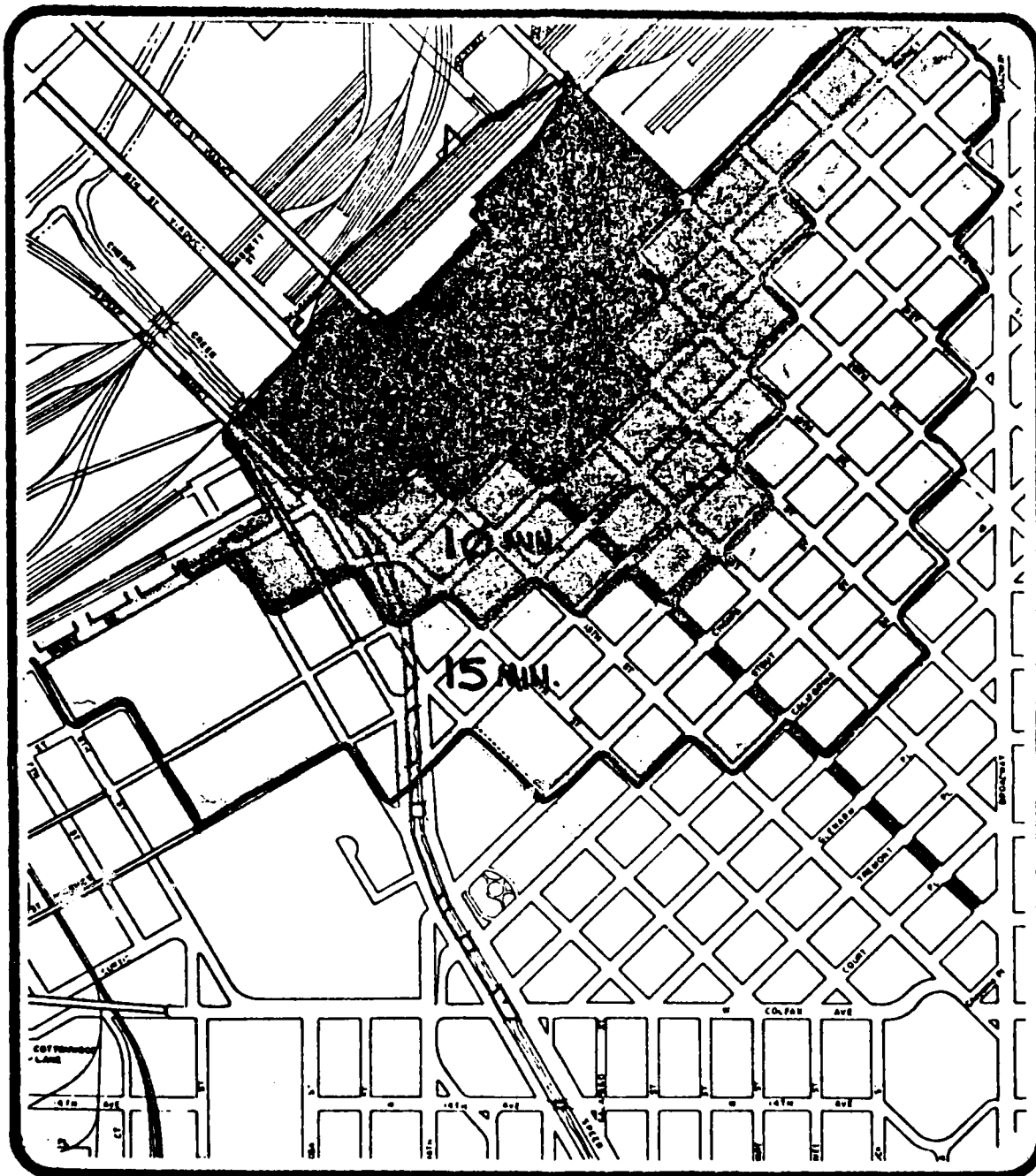
COLORADO DEPARTMENT OF HIGHWAYS
REGIONAL TRANSPORTATION DISTRICT
AUGUST 1961
PERCENTAGES EQUAL PEAK HOUR
PROPORTIONS.

UNIVERSITY OF COLORADO AT DENVER

MPCD 790 FALL 1961

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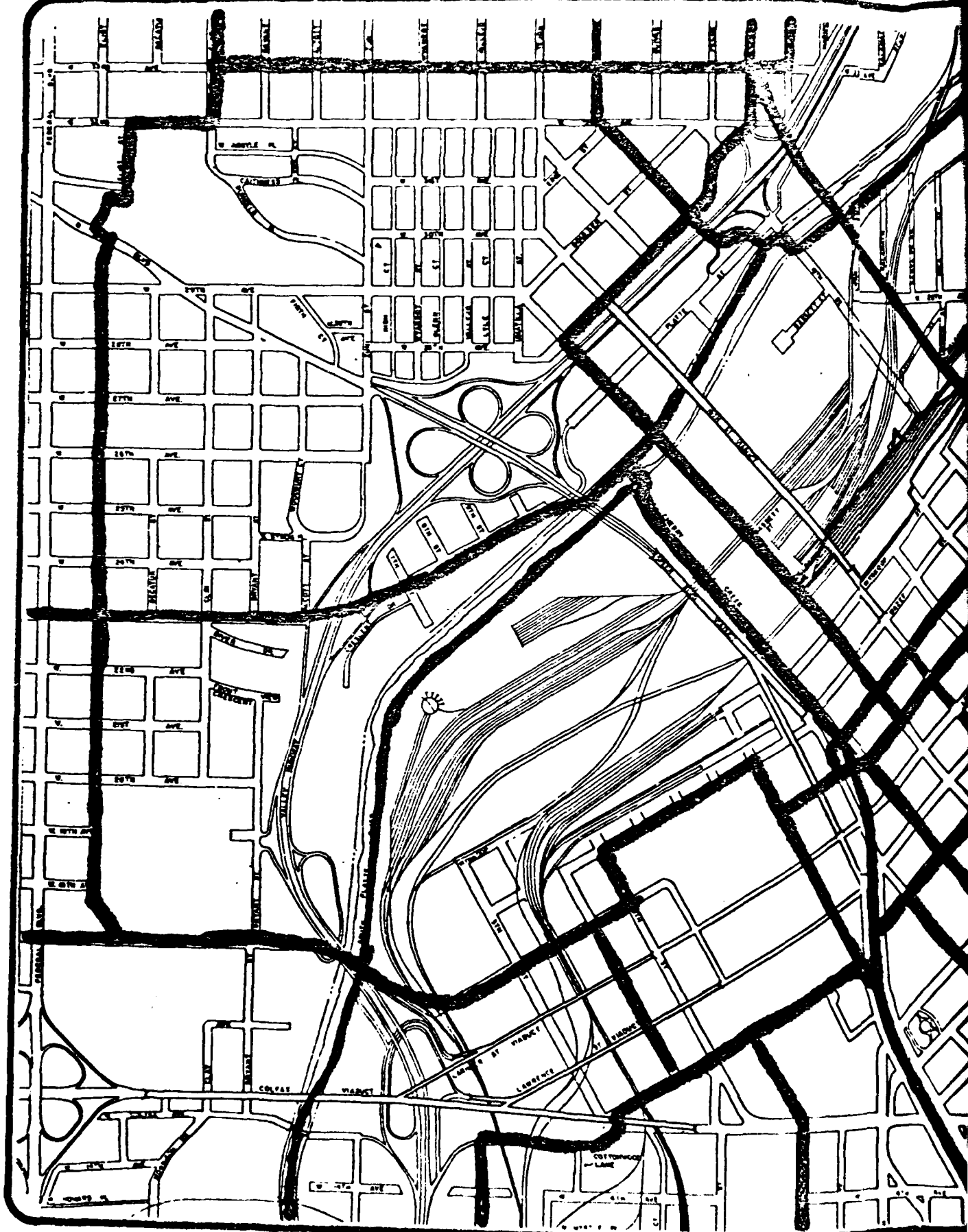
RAILROAD REDEVELOPMENT PLANNING

24

WALKING DISTANCES

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COLLEGE OF ENVIRONMENTAL DESIGN
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RAILROAD REDEVELOPMENT PLANNING

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BIKE PATHS

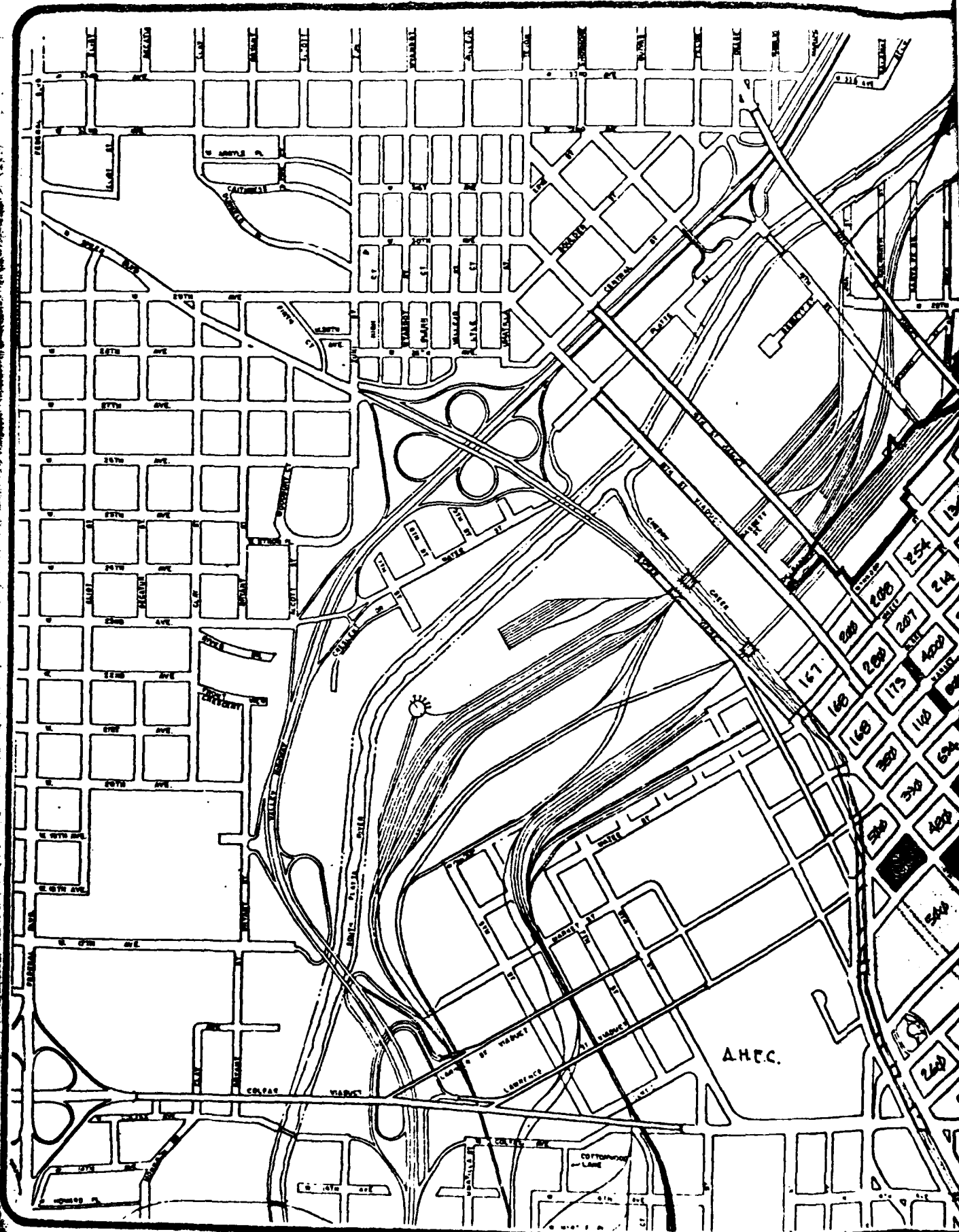
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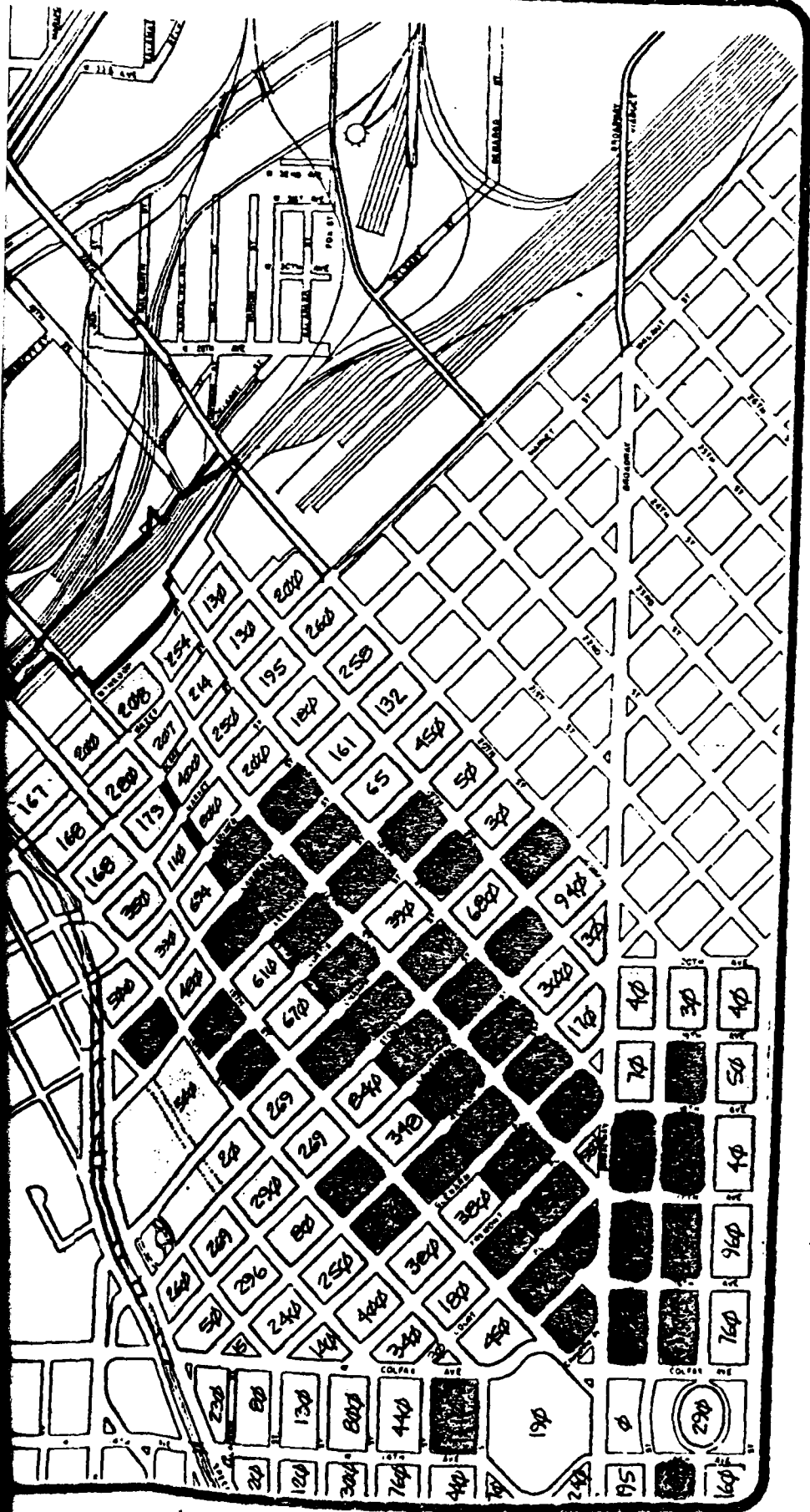
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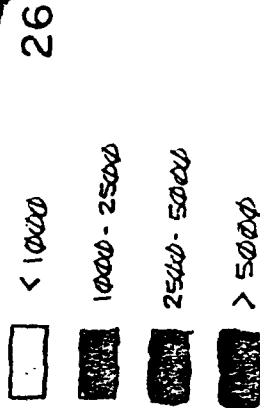
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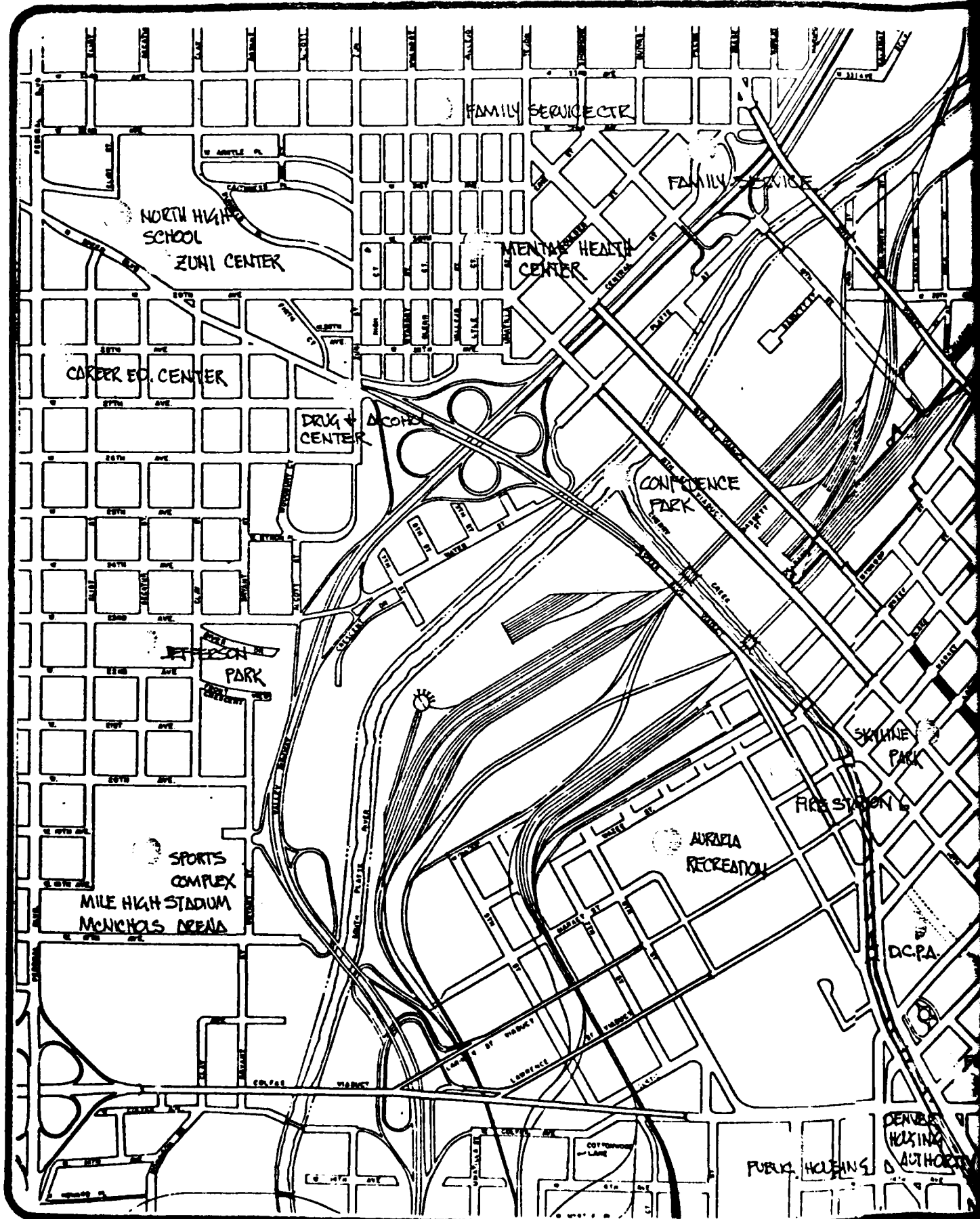


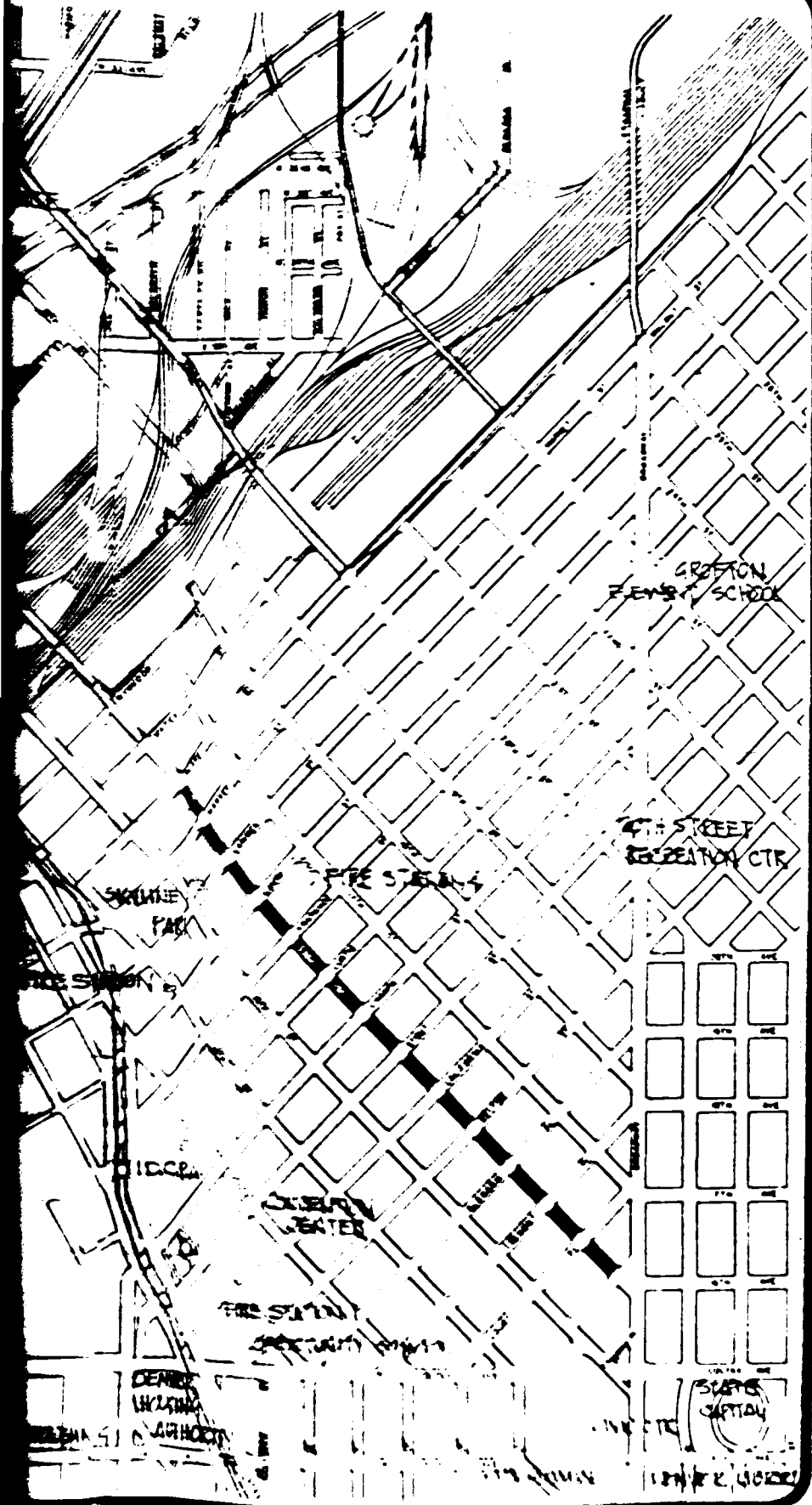
RAILROAD REDEVELOPMENT PLANNING

PROJECTED EMPLOYMENT



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DPO, 1985 ESTIMATED
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RAILROAD REDEVELOPMENT PLANNING

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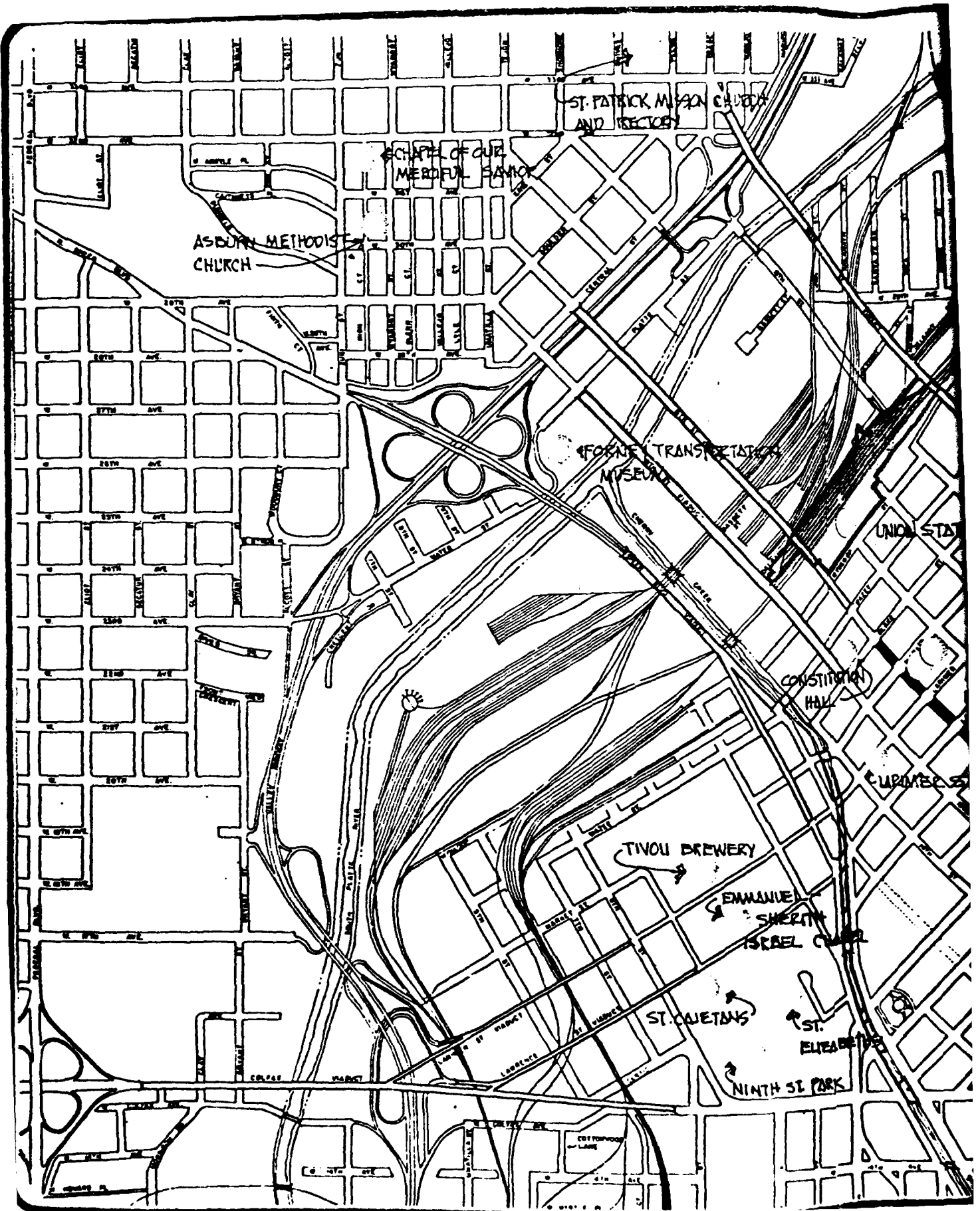
PUBLIC FACILITIES

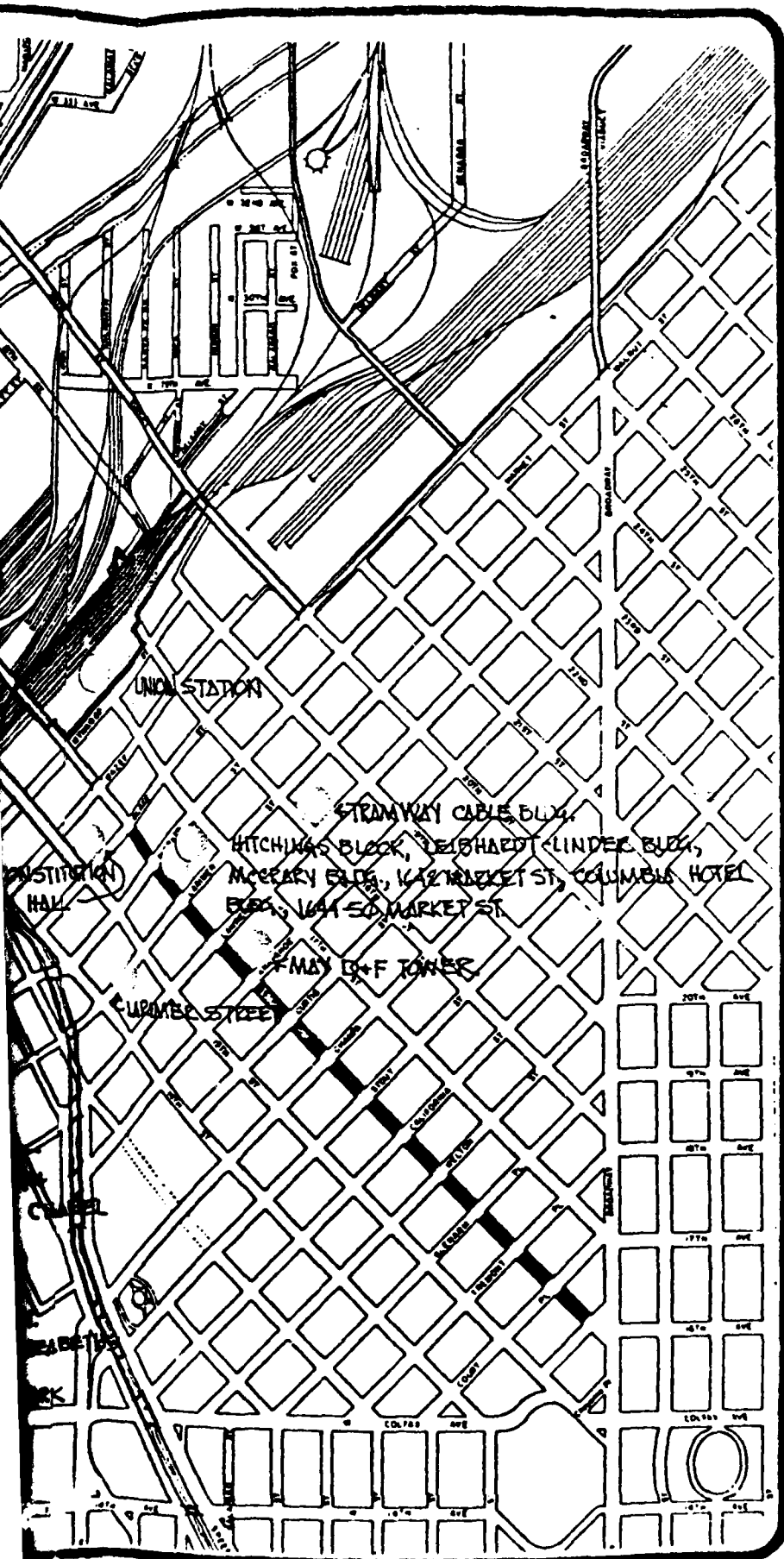
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RAILROAD REDEVELOPMENT PLANNING

DENVER LANDMARK PRESERVATION
COMMISSION, 1976-1977.

DENVER LANDMARK PRESERVATION ORDINANCE

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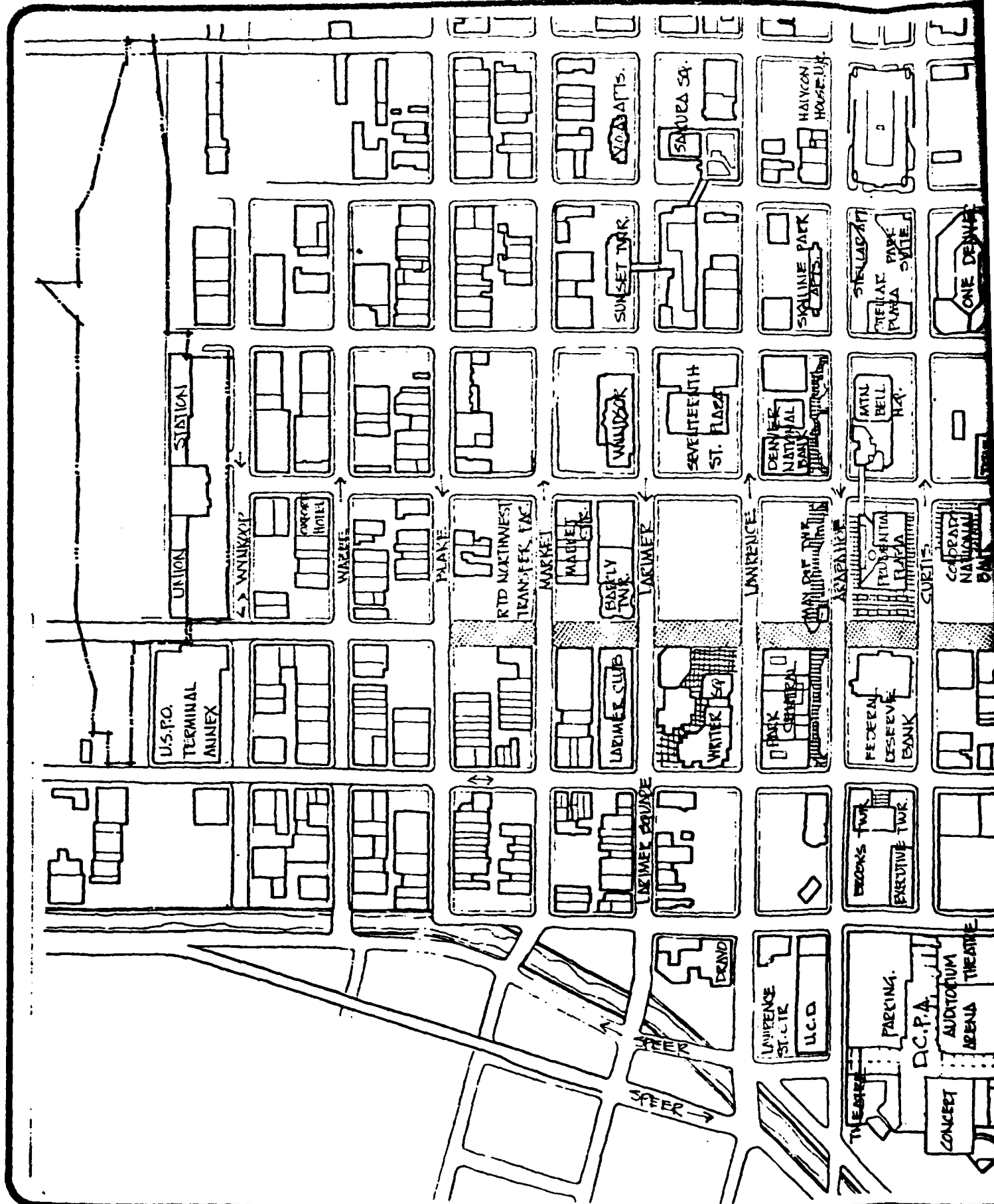
DENVER LANDMARKS

UNIVERSITY OF COLORADO AT DENVER

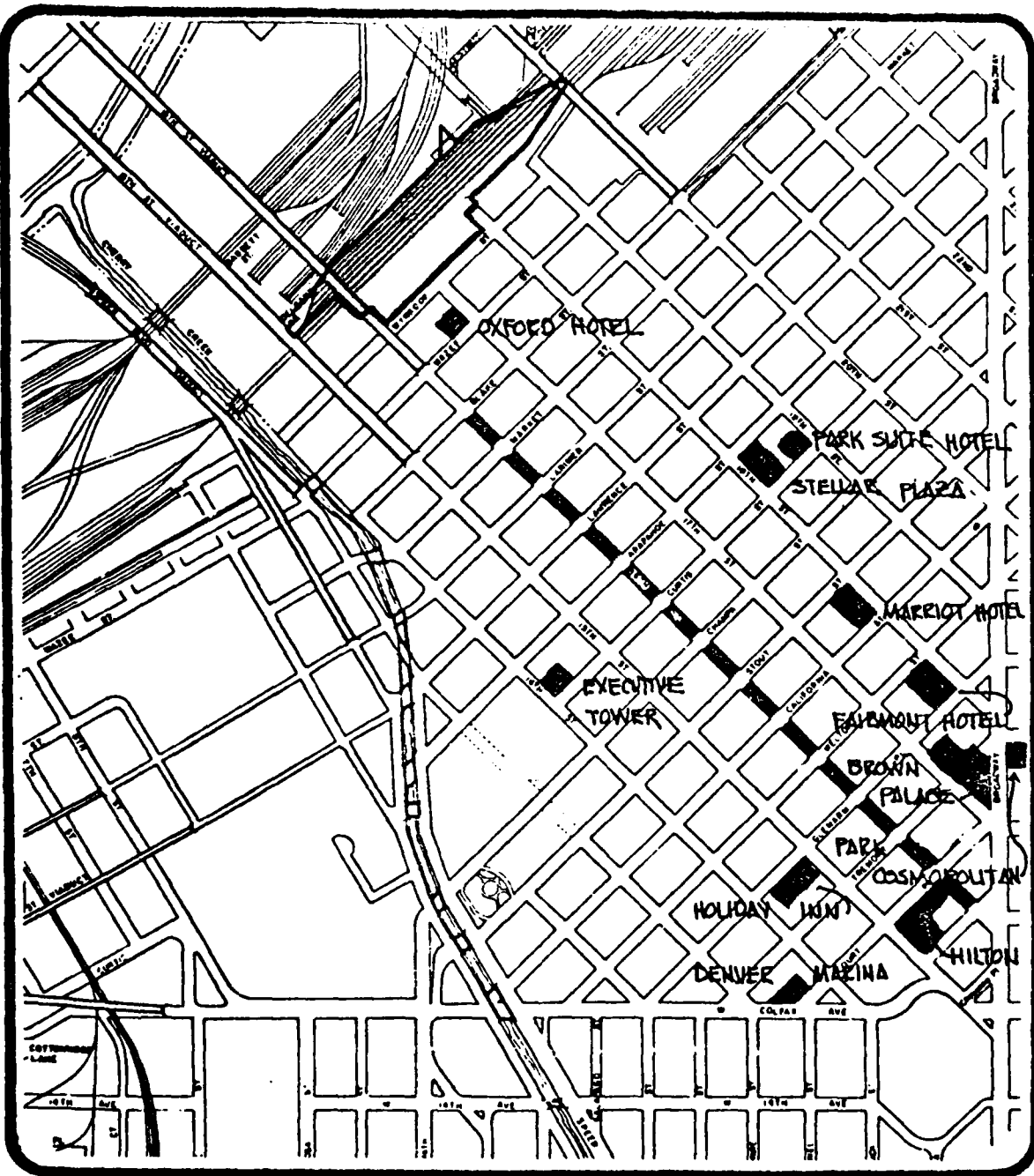
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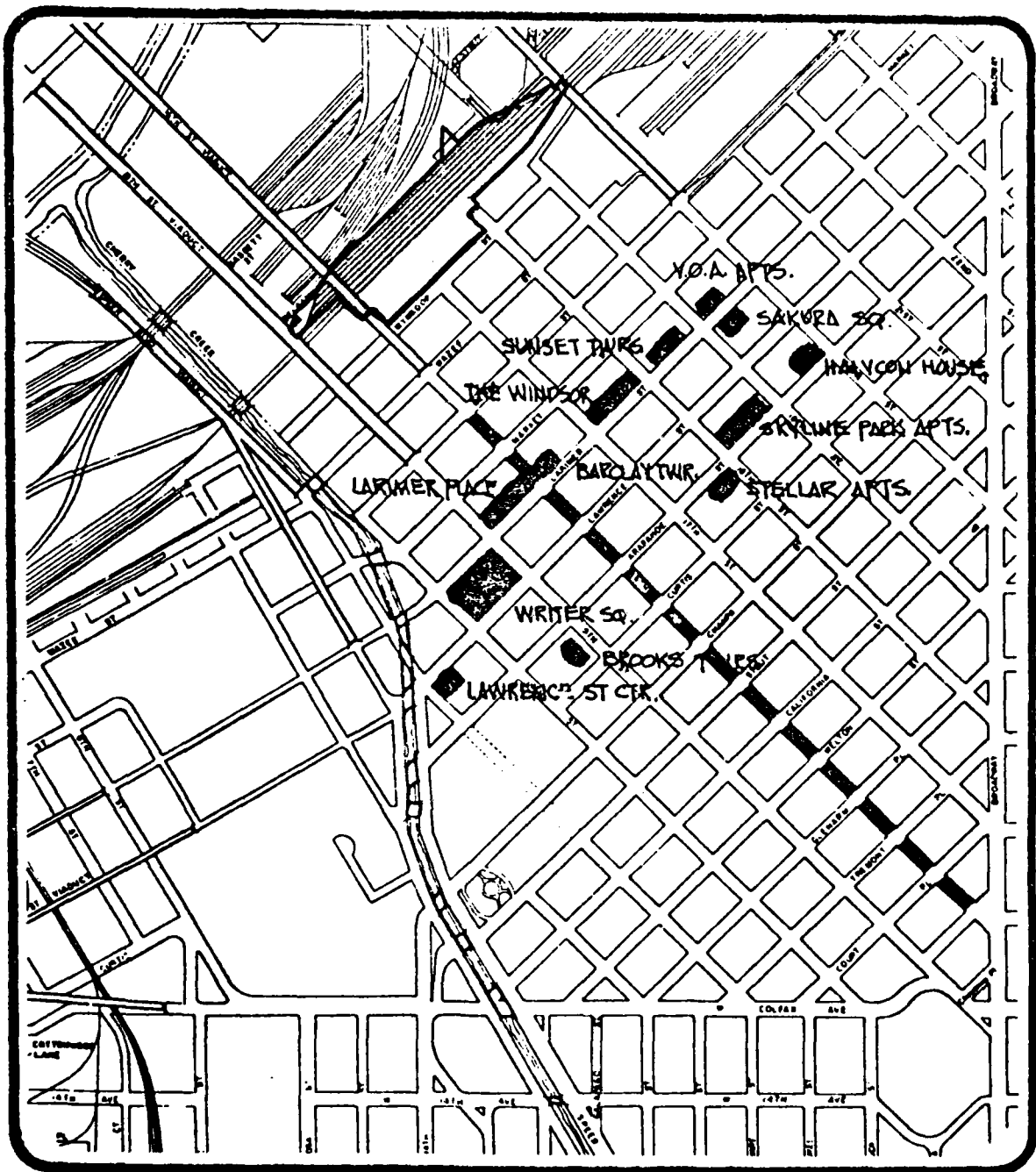


RAILROAD REDEVELOPMENT PLANNING 30

MAJOR HOTELS

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MPCD 790 FALL 1981

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RAILROAD REDEVELOPMENT PLANNING

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RESIDENCIAL BLDGS.

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MPCD 790 FALL 1981

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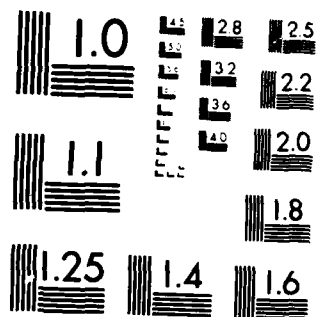
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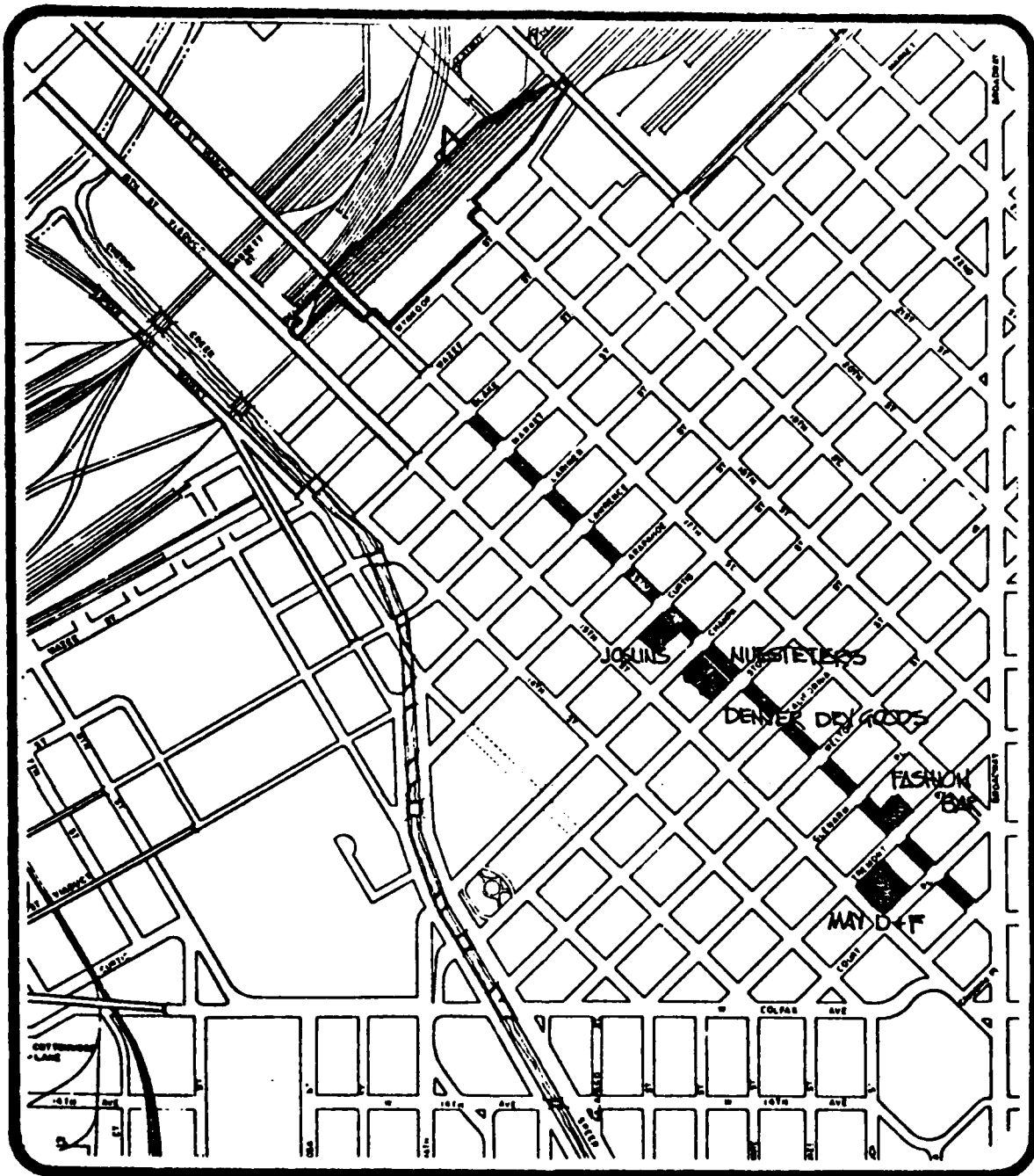
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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A



RAILROAD REDEVELOPMENT PLANNING

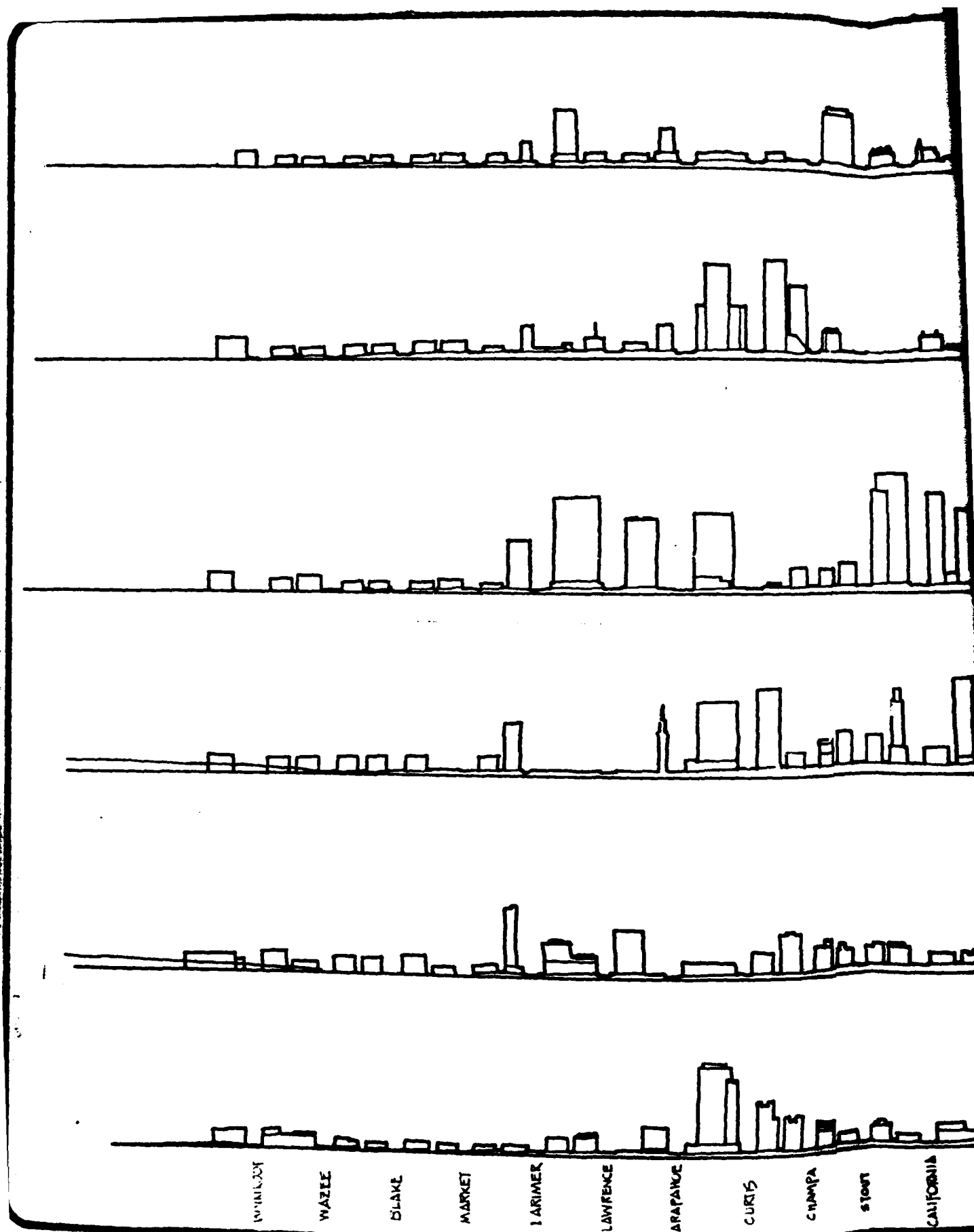
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DEPARTMENT STORES

UNIVERSITY OF COLORADO AT DENVER
MPCD 760 FALL 1981

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WYNKOOP

WAZEE

BLAKE

MARKET

LARIMER

LAWRENCE

ARAPAHOE

CURTIS

CHAMPA

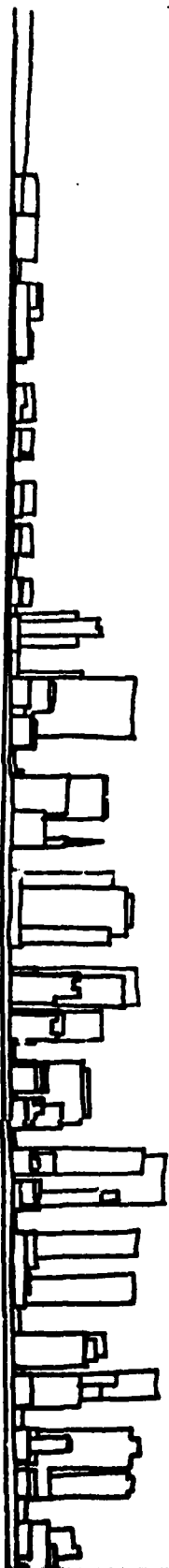
STOUT

CALIFORNIA

WELTON

GLENARM

TREMONT



LARIMER

LAWRENCE

ARAPAHOE

CURTIS

CHAMPA

STOUT

CALIFORNIA

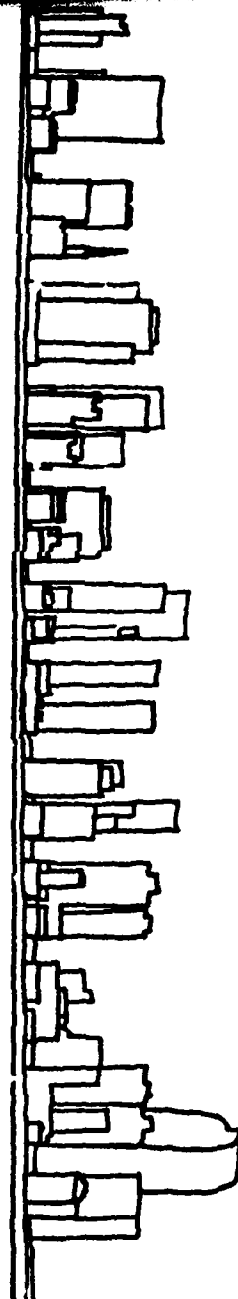
WELTON

GLENARM

TREMONT

COURT

CLEVELAND



DEVELOPMENT ALTERNATIVES

DEVELOPMENT ALTERNATIVES

The development plan alternatives on the following pages are based on the scenario figures expressed in Section II. Alternatives I, II and III are based on a Floor Area Ratio of approximately 2:1. Alternative IV is a development plan based on a Floor Area Ratio of 5:1 as described at the end of Section II.

Alternative I is a "low rise" plan, developed with the concept of maintaining the vertical scale of the area, as much as possible, while providing an economical project.

A mid-rise concept, Alternative II, represents the idea of a more vertical solution with more open space at lower levels.

The high rise solution allows increased open space with a more vertical solution.

A more intense development, in density and verticality, is represented by Alternative IV.

UNION STATION PROPER (ROUNDA AND OLD WINGS) CONVERTED TO COMMERCIAL
COMMERCIAL ALSO ON GROUND LEVEL OF OFFICES/HOTEL

LOW SCALE OFFICES
(6-10 STORIES)

MEDIUM HOTEL (6-8 STORIES)

LOW SCALE OFFICES

MID RISE PARKING

TERRACE

ENTRY

EXIT

EXIT

WYNKOOP PARK

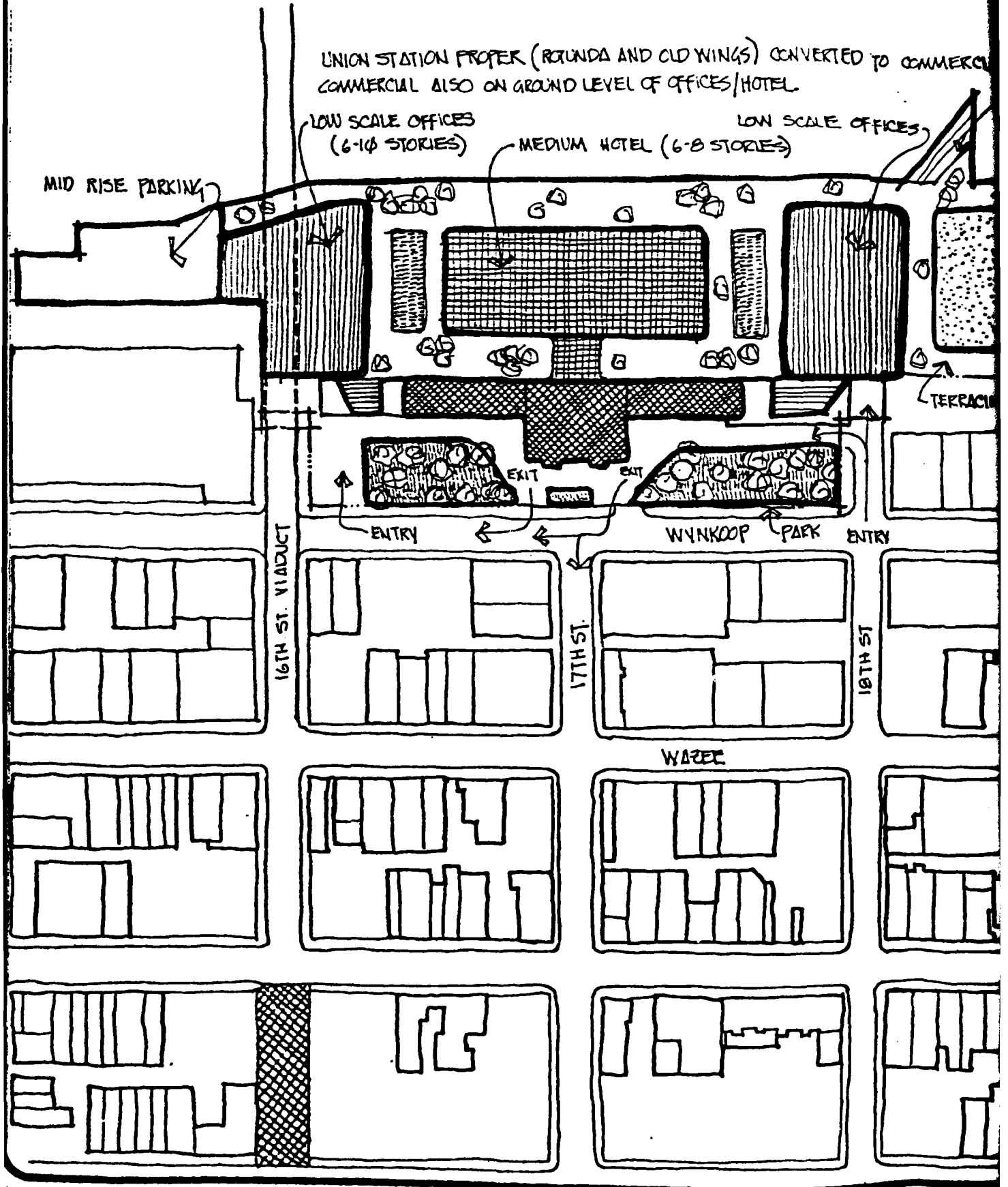
ENTRY

16TH ST. VIADUCT

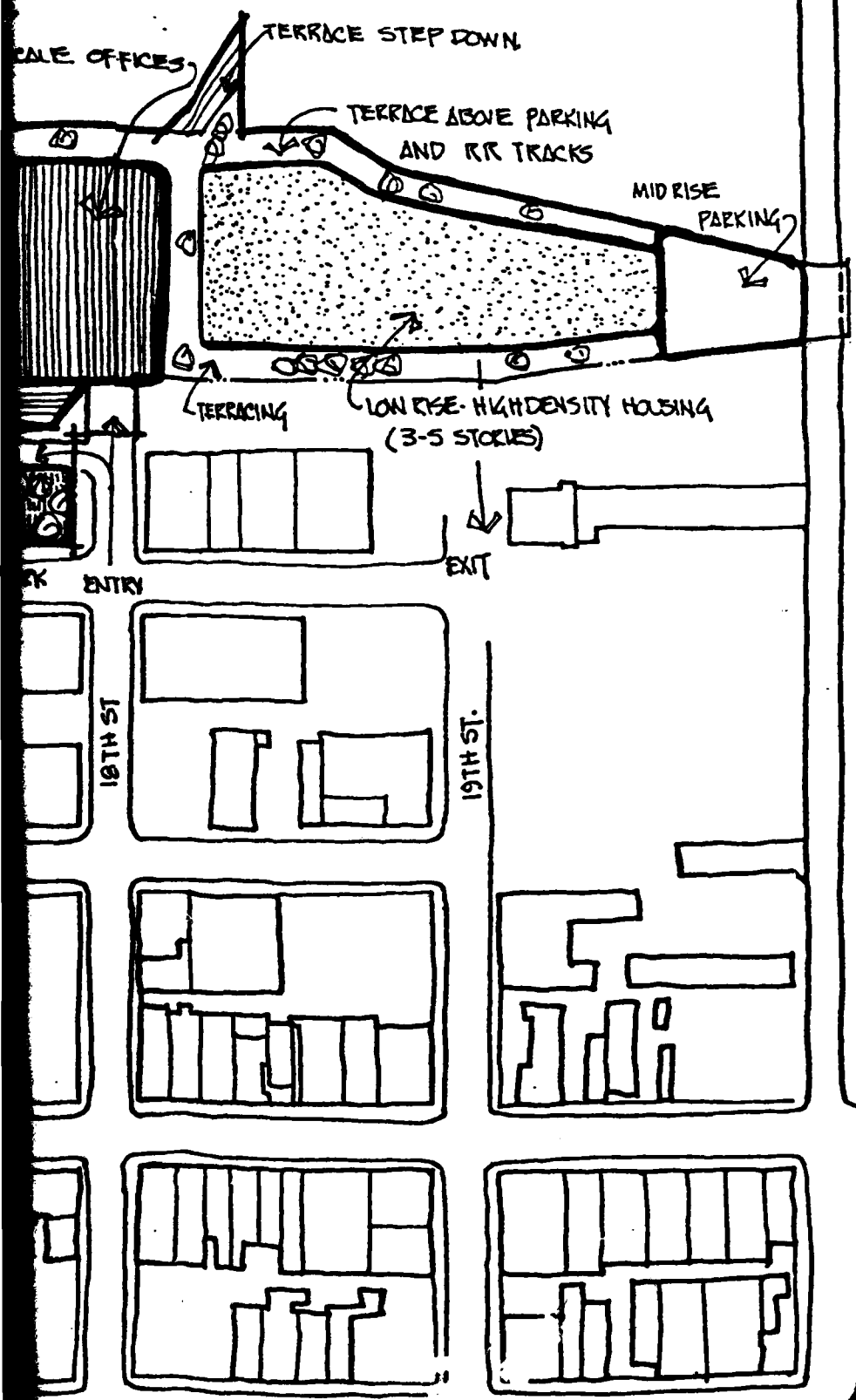
17TH ST.

18TH ST.

WAZEE



VERTED TO COMMERCIAL/RETAIL.



RAILROAD REDEVELOPMENT PLANNING

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ALTERNATIVE ONE LOW RISE

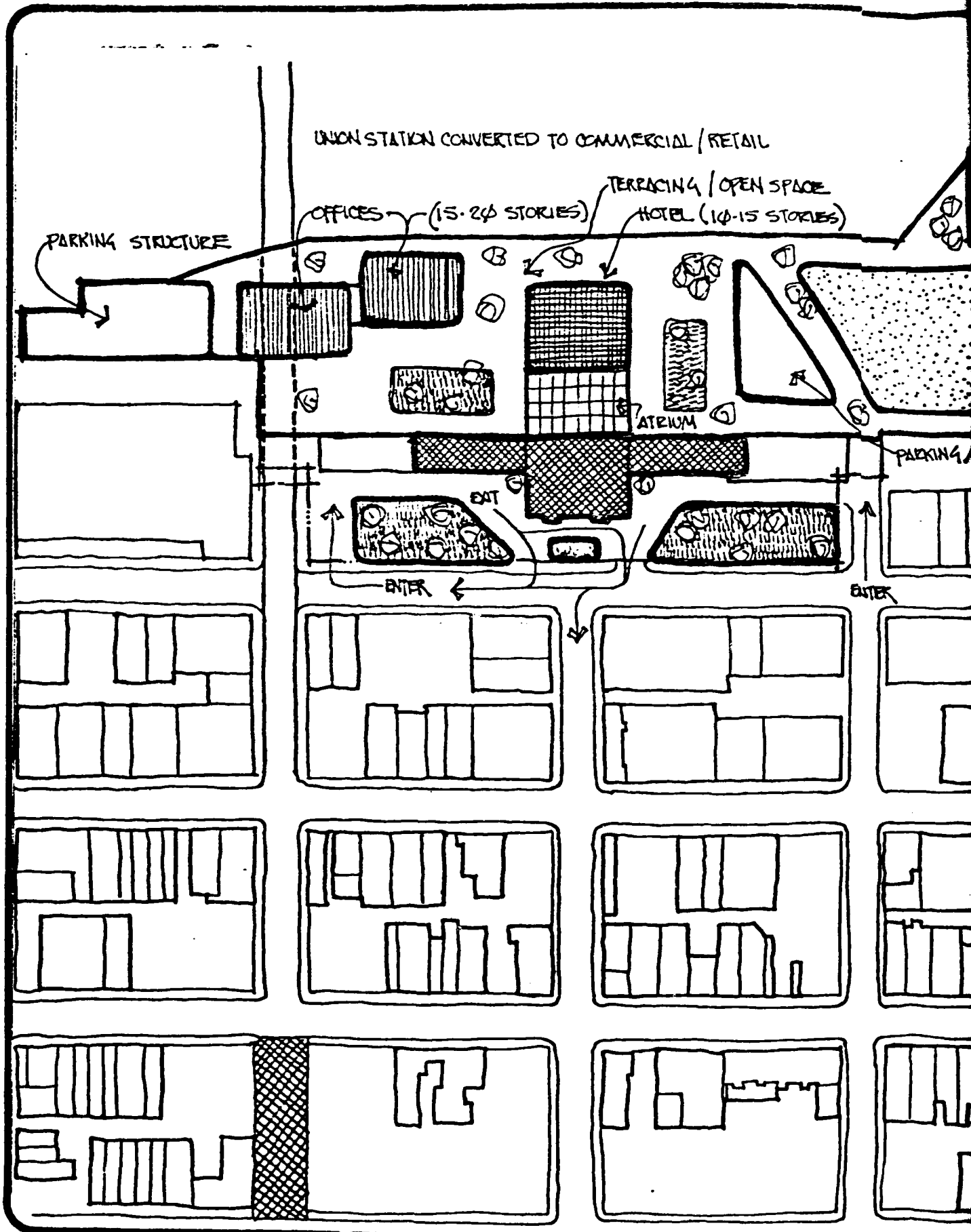
UNIVERSITY OF COLORADO AT DENVER

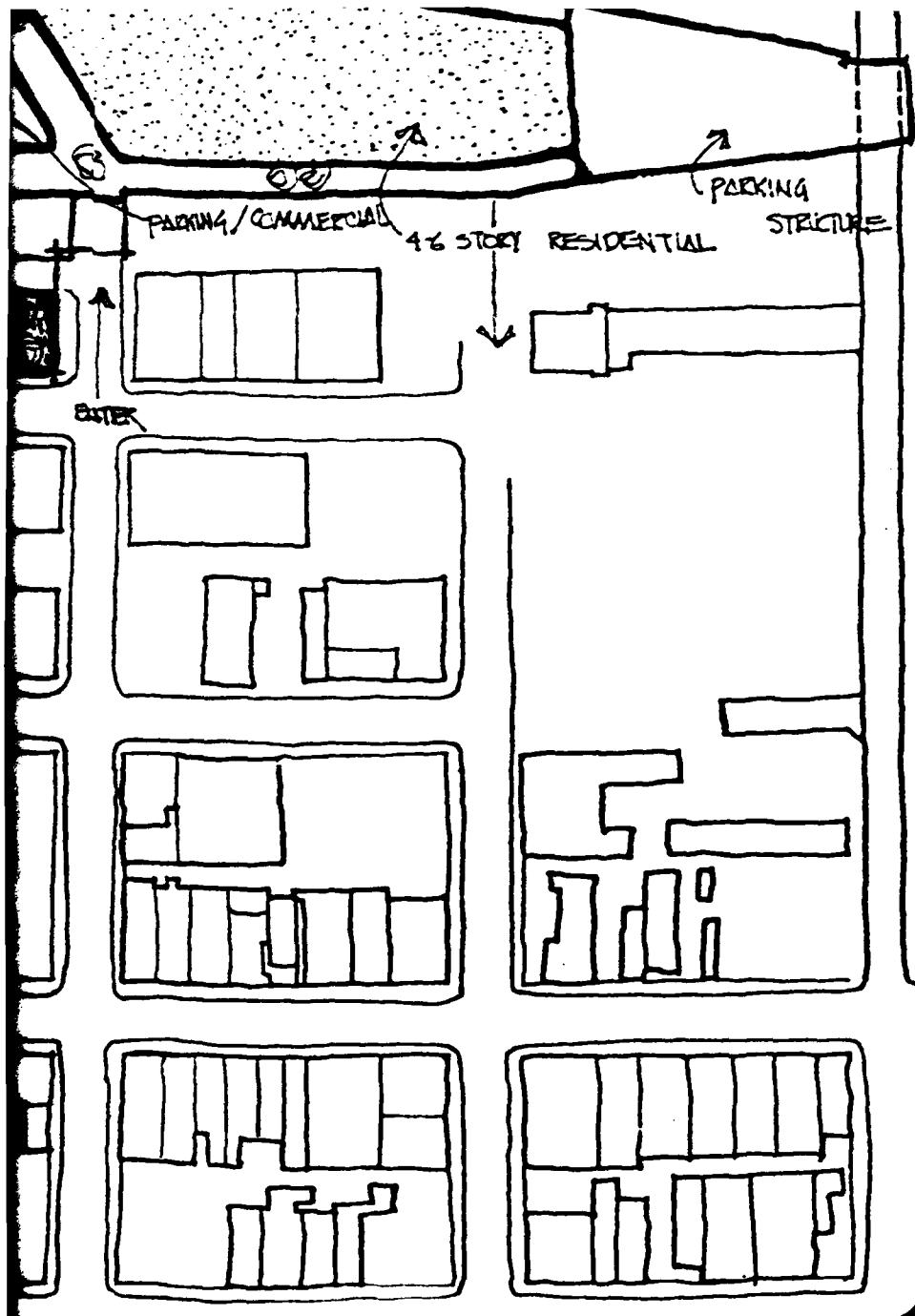
MPCD 790

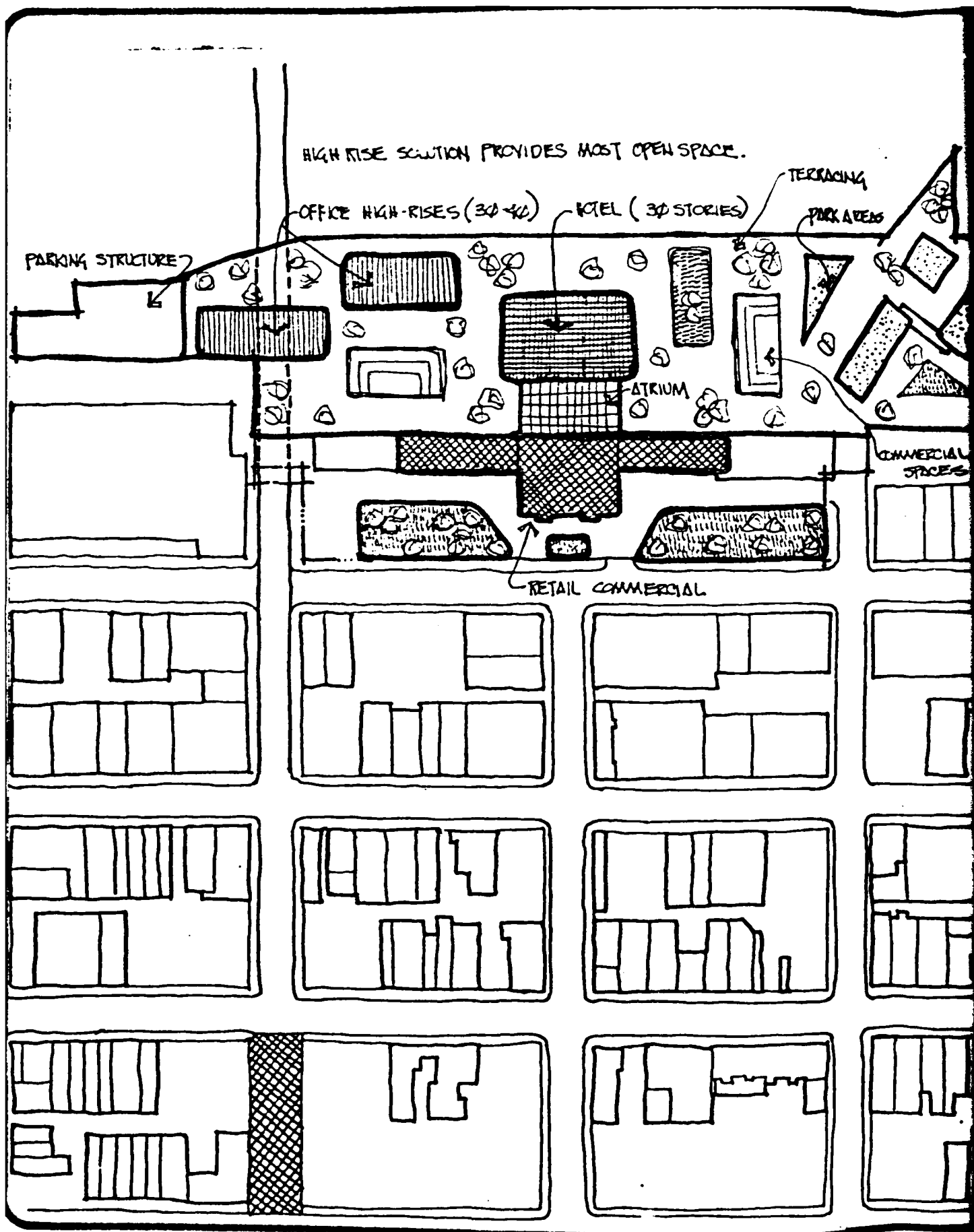
FALL 1981

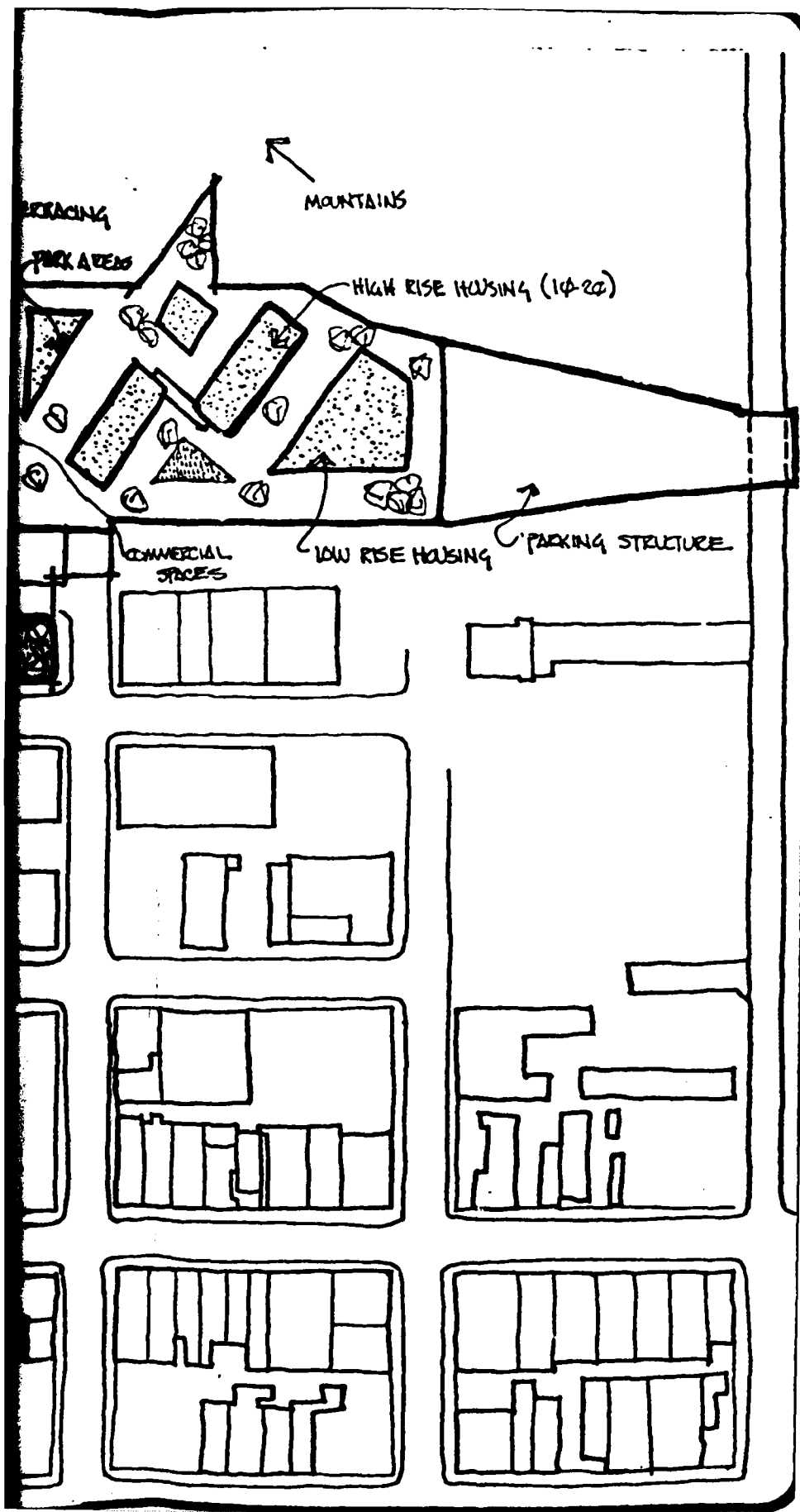
COLLEGE OF ENVIRONMENTAL DESIGN

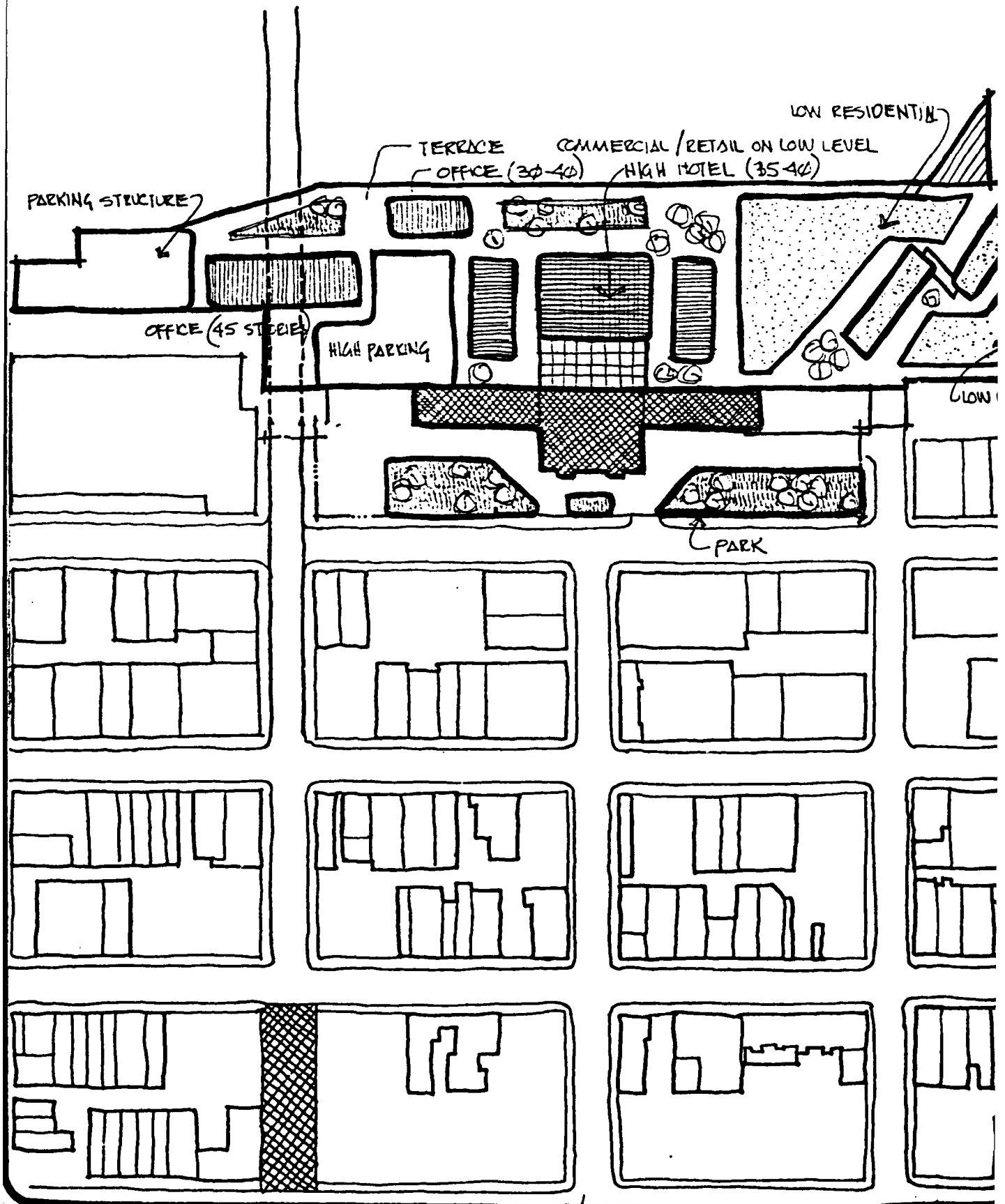
M S KEMPER

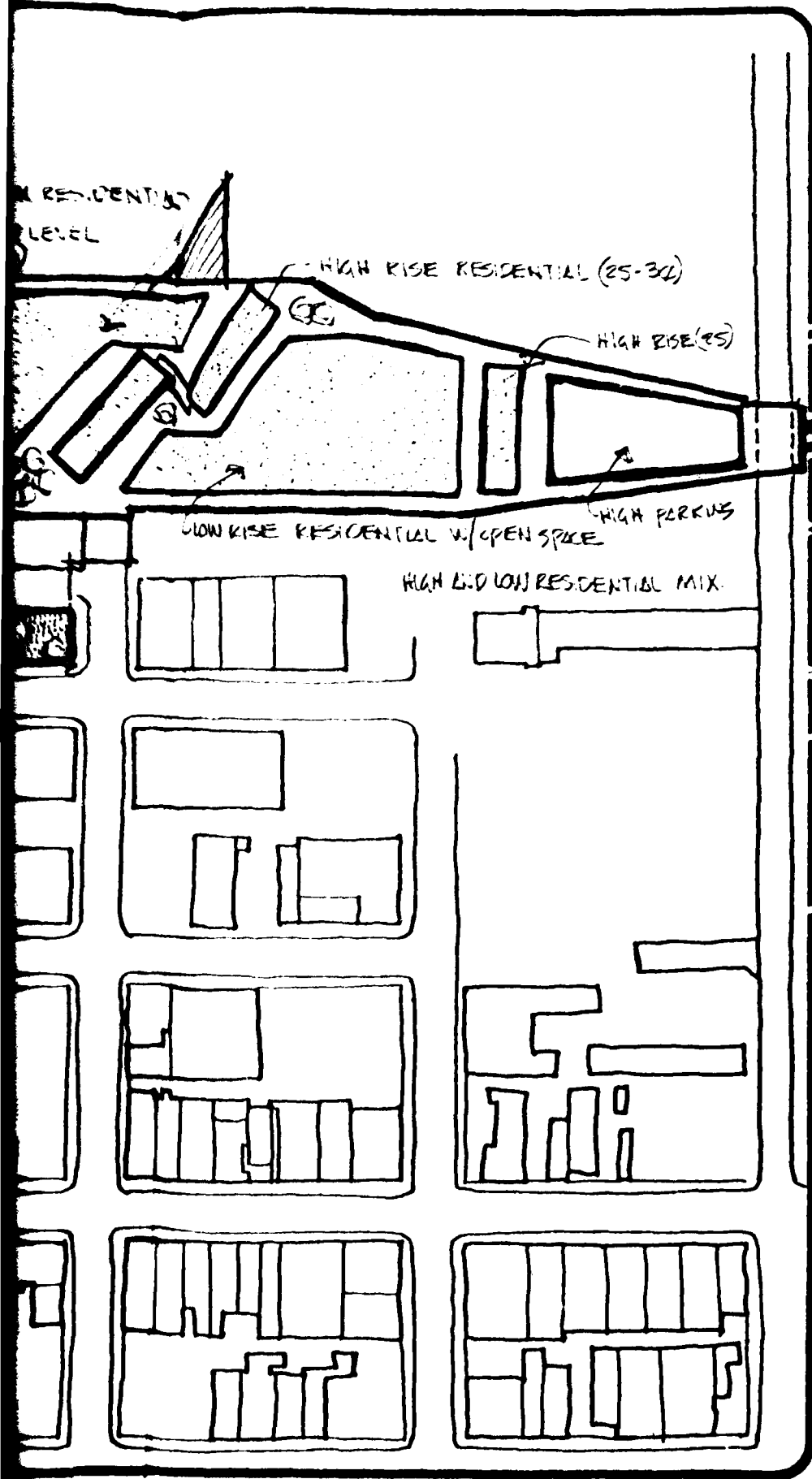












RAILROAD REDEVELOPMENT PLANNING

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ALTERNATIVE FOUR HIGH INTENSITY

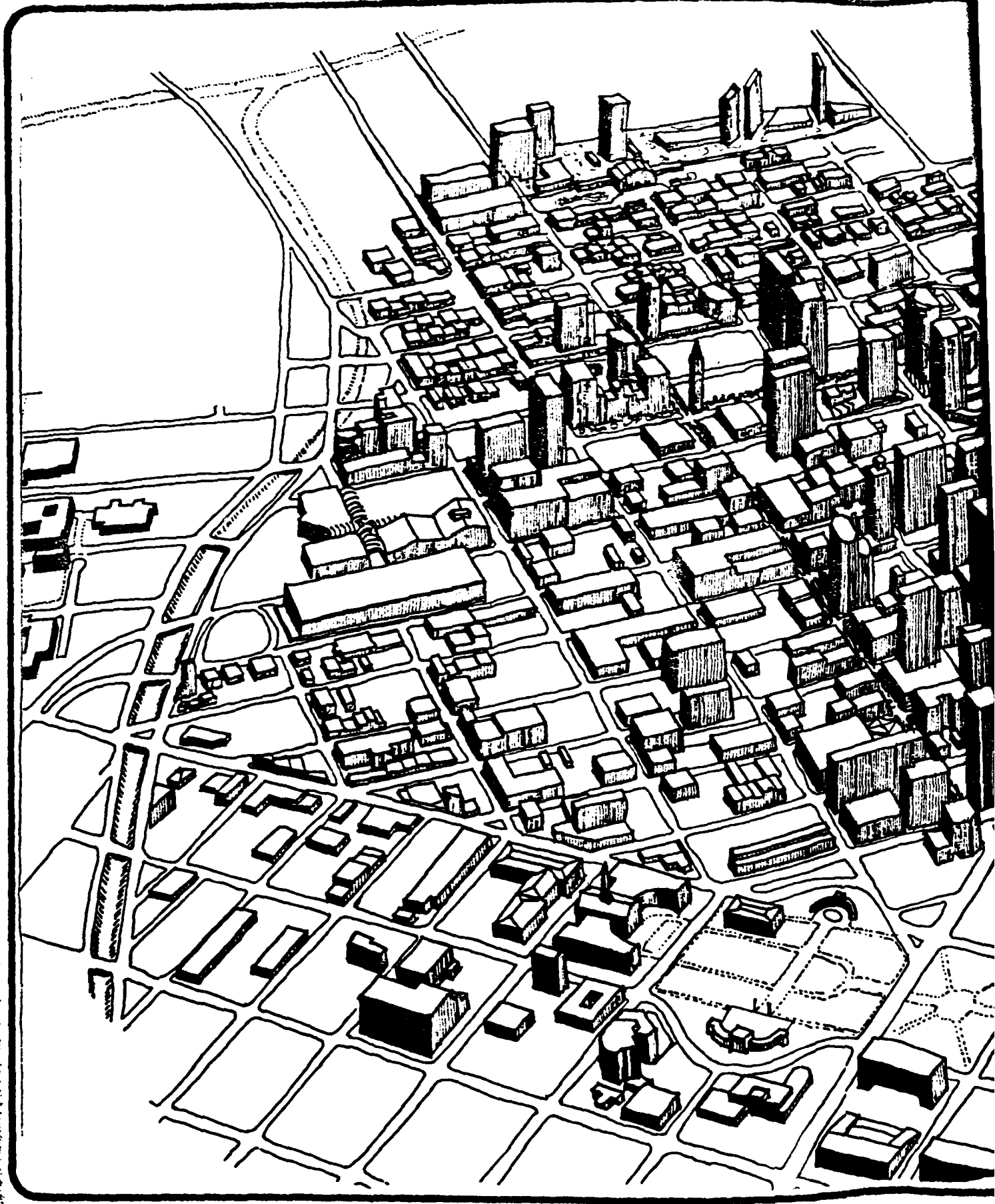
UNIVERSITY OF COLORADO AT DENVER

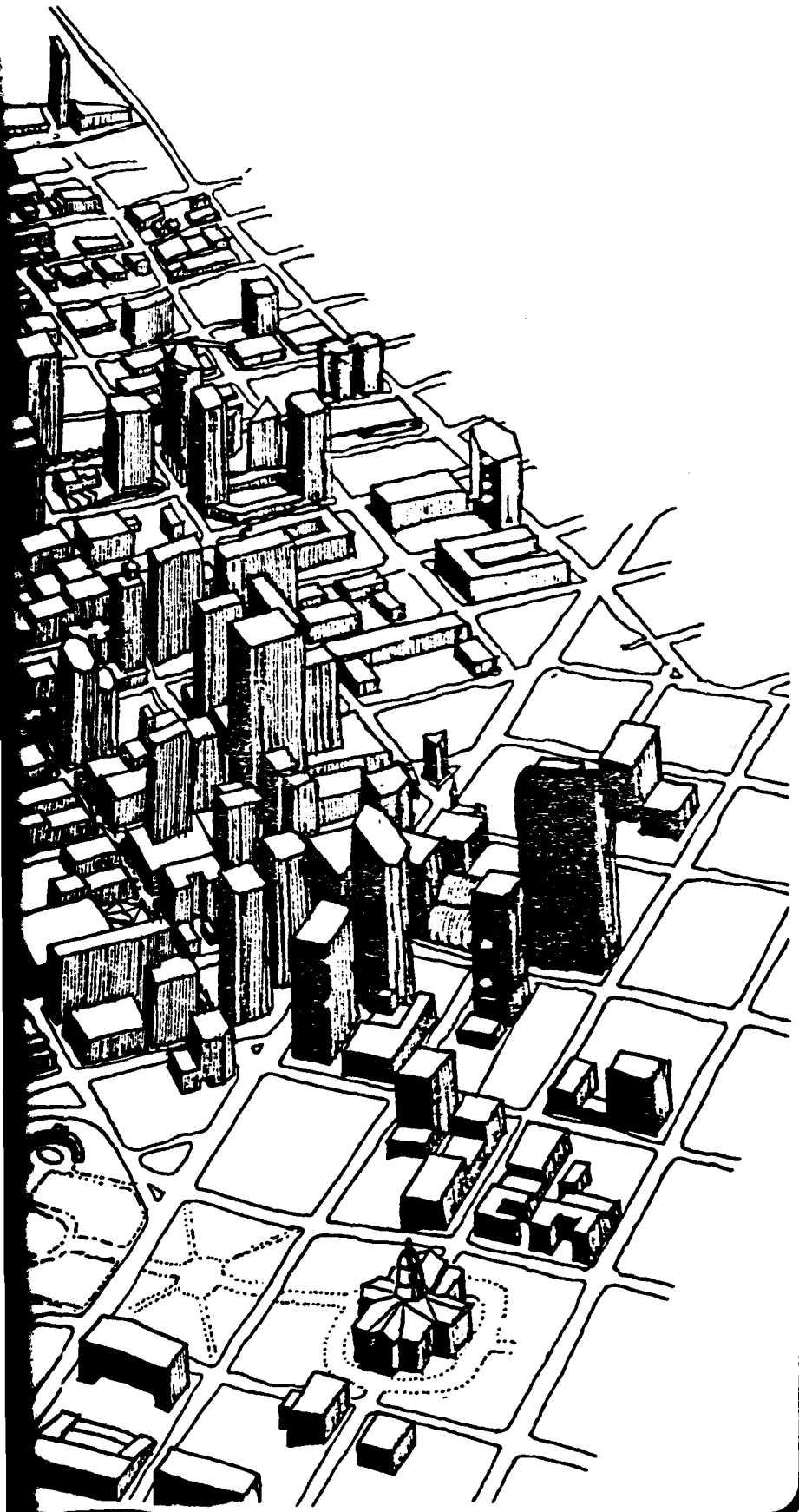
COLLEGE OF ENVIRONMENTAL DESIGN

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RAILROAD REDEVELOPMENT PLANNING

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ALTERNATIVE FOUR BIRDS EYE

UNIVERSITY OF COLORADO AT DENVER

MPGD 790 FALL 1981

COLLEGE OF ENVIRONMENTAL DESIGN

M S KEMPER

ALTERNATIVE EVALUATION

ALTERNATIVE EVALUATION

Based on the evaluation criteria stated in Section II, the following evaluations have been made for the four alternatives.

ALTERNATIVE I: A LOW RISE SOLUTION

Economic/Market Demand: The uses planned for this development respond to market demands. Considering the land values in the area, low rise solutions are generally considered uneconomical and this type of solution would probably not be acceptable to the property owners or developers without some form of additional compensation for keeping the development scale low (such as higher development rights elsewhere). Project economics should be self-supporting but higher development would return more profits.

Political Acceptability: Rezoning is required for any use other than industrial, in all portions of the site except for the terminal building itself. The land uses and scale are supported by expressed development desires. The local government should be amenable to a project which does not tend to coerce a high rise solution into the B-7 area. Surrounding merchants should support this solution which is not in conflict with the area. A low rise solution helps to stabilize the land values and economies in the area.

Region Considerations: In general the uses indicated are in support of regional goals. The development could be easily integrated with a mass transit/light rail development.

Transportation: The scale of development makes use of existing transportation networks without overloading them.

State Government: The project does not appear to be in conflict with any state programs. Provision of residents within the downtown area should have some reduction on commuter traffic and can serve as an example for future residential development projects.

Federal Government: No federal funds are required and the project should be in agreement with pollution goals.

Design Considerations: The scale of this development supports the identity of the neighborhood. The land uses are not in conflict with existing land uses in the B-7 area. There would probably be problems with the nearby railroad yards (noise and air pollution).

Summary: While in agreement with the scale of the neighborhood, this development is probably least likely for developers to pursue because of return usually expected from such high land values.

ALTERNATIVE II: A MID RISE SOLUTION

Economic/Market Demand: As with alternatives I and III, this solution responds favorably to local economic/market demands. A mid-rise solution would allow greater densities or, as in this case, the same densities can be provided with more open space.

Political Acceptability: Approval for a mid-rise solution would be harder to obtain, possibly, than a low-rise but a mid-rise development could be incorporated in the area without destroying the character of the neighborhood. Zoning would need to be changed along with any height limitations that exist for the area. A mid-rise solution would have more visibility and identity than a low-rise solution and help in providing identity to the entire area.

Transportation: It takes advantage of existing networks while not overloading them.

Region Considerations: As with Alternative I, this solution would support regional development goals such as a regional transit facility.

State Government: This project does not appear to be in conflict with any state regulations or goals.

Federal Government: Provision of in-town residential units would be a step in the right direction for reducing auto traffic (air pollution). Coordination with mass transit also would be a well received idea.

Design Considerations: Careful step backs and terracing would be required in order to maintain the character of the street facade of the area. Additional open space could be well utilized for recreational purposes. Integrating the taller mid-rise structures into the area successfully takes additional efforts from the earliest development stages.

Summary: A solution slightly more acceptable to the developers which begins to show the potentials of the site.

ALTERNATIVE III: A HIGH RISE SOLUTION

Economic/Market Demand: This development is in response to local conditions and recognizes the impact of local land values. This type of development is more in keeping with developments in areas of similar values. Income generated should prove sufficient for operating costs and generous profit.

Political Acceptability: A high-rise development is presently not in keeping with local planning officials. They believe that such a project will force similar development in the B-7 area, since it would be between the station and the CBD. Height and zoning changes would be required plus possibly density/bulk

limits. The scale of the development would be highly visible and should have a great sense of identity. Controls of development in B-7 would be required to maintain the scale there.

Regional Considerations: A high-rise solution could act as a gateway into downtown and a definition of the downtown area.

State Government: This type of development should be in agreement with state goals.

Federal Government: As previously stated, a development of this scale which supports mass transit and provides in-town residential units should be in agreement with Federal goals and regulations.

Design Considerations: While not in keeping with the scale of the immediate surroundings, a high-rise solution should be able to be integrated in the area without adversely affecting it. The increased open space could be used for community activities.

Summary: A high-rise solution could provide a border to the downtown, a definite edge versus a melting away of the downtown. It could provide a node of activity which would support the B-7 area and help turn the downtown into a 24-hour area. This solution suggests the possibilities of a high-rise/high density solution in relation to a lower downtown area of special significance, with growth controls.

ALTERNATIVE IV: A HIGH RISE/HIGH DENSITY SOLUTION

Economic/Market Demand: This development is the most market oriented solution of the alternatives. The increased floor square footage provided plus the high-rise structures recognize the value of the land. Phasing would allow for changes in the market. It should provide tremendous support for the lower downtown area while growth controls could be adopted to maintain the character of B-7.

Political Acceptability: Of all the alternatives investigated, this particular concept is most likely to meet with opposition. Many zoning, planning, and height limits would have to be changed. Strong controls would have to be adopted in order to maintain the scale and character of the B-7 area. It should help provide a sense of identity to the area and be highly visible.

Region Considerations: A high intensity development could easily act as a node, for transit systems. It could provide a greater number of residential units in-town and support existing commercial areas.

Transportation: A high intensity development such as this would actively support a mass transit system. Some revisions in the transportation network might be required to support the high density uses.

State Government: This solution changes projections of employment in the area and at the same time increases downtown housing.

Federal Government: The increased numbers of housing would help decrease commuter traffic as previously mentioned.

Design Considerations: The higher densities would require careful design work to mitigate the effects of scale change between the new development and the existing B-7 zone. This is the solution which seems to be recommended by the programming guide. However this evaluation shows many problems that are associated with this type of solution. The scale is extremely different from that of the surrounding area but could, under certain circumstances, be of benefit.

Summary: This solution, recommended by the guide, has much ambiguity. There are many problems (probably the most) with achieving this solution. The high rise/high intensity solution could define an edge to downtown Denver. It could be a gateway or wall to the city. Problems would arise with attempted infill projects in the B-7 area of a scale similar to this. However, the large scale of this project could provide much support for the B-7 area.

IMPORTANCE TO LITERATURE

The importance of the findings in reference to the literature is in the fact that little definitive theory exists in literature which can be directly applied to planning railroad redevelopment. What exists can best be described as a guide for the direction redevelopment should take. So much depends on the actual conditions at the place under consideration for redevelopment that to have a specific theory or program for planning the redevelopment seems almost impossible.

The major link between railroad projects is that quite often they are located on mass transit corridors which can be an added benefit for consideration. Otherwise, normal urban planning practices apply.

The guide developed would be most useful in the early stages of redevelopment for considering what direction it should take. The guide still needs extensive refining in that some programs developed, such as Denver, end up in projects which are hard to establish.

Obviously there is a need a need for further development criteria, which have not been obvious in the literature.

IMPORTANCE TO DENVER

The importance of the findings in relation to Downtown Denver development is that they indicate careful consideration should be given by officials into development of a higher density or scale than previously considered.

If controls can be equitably placed on the B-7 area, a high-rise/high intensity use might be highly desired on the Union Terminal property.

There would be difficulties to overcome with linkages, scale and transportation but if accomplished the development could be a national showplace, such as what has happened on Boston's South Shore Development.

Personal preference is for a project of less intensity than that developed as a result of the program. A mid rise development of high densities would seem to be very desirable even though the developed program indicates the high-rise/high-density solution.

Weighting may need to be given to local conditions so that they are of more importance in the guide.

There needs to be a conscious evaluation of the benefits and problems of the types of developments before one particular type is locked in.

BIBLIOGRAPHY

BIBLIOGRAPHY

Byrne, Robert M. and Baker, Elizabeth D., Railstation Improvements and Development Opportunities: A Look at the Northeast Corridor, Urban Land, Sep. 1981.

Denver Partnership Inc., Denver Lower Downtown Development Strategies, Oct. 1981.

Denver Planning Office, Downtown Travel and Parking, 1981.

Denver Planning Office, Public Facilities Inventory, Jan., 1981.

Denver Planning Office-Downtown Denver Inc., Downtown Denver Development Plan.

Denver Planning Office-Downtown Denver Inc., Policies for the Development of Downtown Denver and Adjacent Areas, Aug. 1971, Revised Jan. 1976.

Depot Park Development Company, Depot Park, Sep, 1981.

Hale, Jonathan, SIC Transit, Architectural Forum, Nov. 1973.

LeMassen, Robert A., All off at Denver, Trains Magazine, June 1970.

Liebman, Williams Ellis, Architects and Planners, Housing Development Strategies Denver: The 80's, Denver Housing Authority, April 1980.

Mayor's Downtown Housing Planning Team, Downtown Housing Policy, 1981.

Pfeiffer, Norman, Right Side of the Tracks, Architectural Forum, Nov. 1973.

Progressive Architecture, Cash on the Line, Cincinnati Union Station, Nov. 1980.

Progressive Architecture, Marshalling the Yards, Chicago Redevelopment, March 1973.

Von Stroh, Gordon E., What Denver can do to Encourage Downtown Housing, Denver Urban Observatory, 1979.

Webber, Margo B. and McGinley, Paul J., Recycling Historic Railroad Stations, U.S. Department of Transportation, Nov. 1978.

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