NORTH FREEWAY CORRIDOR STUDY

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LAKE STREET TO INTERSTATE 680

OMAHA, NEBRASKA

Prepared by

HENNINGSON, DURHAM & RICHARDSON, INC.

For the

CITY OF OMAHA, NEBRASKA

And the

NEBRASKA DEPARTMENT OF ROADS

In cooperation with the

U.S. DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

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PART I
SUMMARY

The contents of this report present the alternative plans and the detailed analyses of the alignments for the North Freeway from Lake Street northward to Interstate 680 in Omaha, Nebraska. For the North Freeway alone, a total of five individual alignments have been subjected to detailed studies:

- an East Alignment.
- a Central Alignment, following a 27th-28th Route between Lake and Grand.
- a Central Alignment, following a 31st Avenue Route between Lake and Grand.
- a West Alignment, following a 27th-28th Route between Lake and Grand.
- a West Alignment, following a 31st Avenue Route between Lake and Grand.

Also included in this corridor study are alternate plans and analyses for an Airport Connector which would extend eastward from the North Freeway to Abbott Drive. Two Airport Freeway alternates were studied:

- a Fort Street Alignment.
- a Hartman Avenue Alignment.

Each of these above "Build" alternates was evaluated against the "No Build" Alternative.

In this report, the reader is provided with an executive summary of the study findings here in PART I. PART II is an introduction which defines the scope of the corridor study while PART III describes the study's community involvement program. In PART IV, a detailed description is presented on the study area's characteristics which were used to locate potential freeway alternates.

The final freeway alternates and their detail map plans are given in PART V, while summaries of the individual analyses on traffic, costs, social, economic and environmental factors are presented in PART VI. PART VII exhibits the conclusions, recommendations and guidelines resulting from the corridor study.

At the end of this report are the APPENDICES which provide the detailed accounts of each analyses and evaluation as well as the supporting documentation for the discussions in PARTS I through VII of this report.

Based upon the analyses contained in this comprehensive corridor study, the following is a listing of the major findings, conclusions, recommendations, and guidelines developed by the Consultant, Henningson, Durham and Richardson.

1. Throughout the 18 months of this corridor study, the Consultant found one emotional issue continually being expressed by the Northern Omaha citizens. This issue is expressed best in the following summary statement:

> An important point stressed time and time again during this corridor study was the serious degenerative impact that the uncertainty surrounding the North Freeway has had on North Omaha over the last 20 years. It is the public's feeling that a prompt determination of the "where" and the "when" of the North Freeway is long overdue, and that any further actions on the North Freeway be expedited.

2. For the North Freeway alternates, the Consultant concludes that the No Build Alternate is the least desirable since arterial streets as 30th St., John Pershing Dr., Ames Ave., 24th St., 16th St., Fontenelle/Martin, and other North Omaha thoroughfares cannot in their present form, nor with street widenings, meet the current trends toward the public's future travel demands. The Consultant, therefore, concludes that some form of a North Freeway Facility is warranted to fulfill the future total transportation needs of Omaha, both for auto and transit.

3. Among the Build Alternates for the North Freeway, the Consultant makes no formal recommendation between the East, Central and West Alignments. However, the Consultant finds that a) the West Alignment has the better traffic service through its interchange locations and the continuity with U.S. 73 and other arterial streets, serves a larger geographic area, and has the lower total cost; b) the Central Alignment has costs comparable to the West and has adequate traffic service, but it dislocates the most residences and businesses and severs more neighborhood areas; and c) the East Alignment dislocates the fewest residences and businesses, passes through more vacant land areas, has the general support of the public as based upon the attitudinal surveys, and conforms best to established neighborhood edges.

4. The Consultant finds that if the East Alignment is selected, the Fillmore Park Area must receive special planning and design attention under joint efforts by city, state and federal agencies. The Consultant concludes that a) the freeway, this park, and railroad can be compatible with proper consideration in the final design of the freeway (FIGURE VII-4); b) the freeway will not adversely disrupt the existing use of the baseball field at Fillmore Park, even if 10 to 15 feet of air rights in the outfield are used; and c) the freeway can expand the park's recreational area by adding usable space through the use of excess freeway right-of-way and the areas under the freeway structure.

5. For the Airport Connector, the Consultant concludes that some form of an Airport roadway facility is required to directly connect from the North Freeway over the bluffs into the river flood plain area. Although the Consultant makes no formal recommendation between the Hartman and Fort Street alternate alignments for the Airport Connection, the Hartman Alignment is the more favorable in the opinion of the Consultant. The Consultant, however, does suggest that rather than a freeway standard, an at-grade expressway with controlled access located along the Hartman Avenue Airport Connection Alignment a) would function adequately, b) would improve local accessibility and circulation for lower construction costs, and c) is the type of facility which is warranted.

6. The Consultant finds that the total construction, right-of-way, and relocation costs for the North Freeway/Airport Connector System are:

- $77.4 to $79.7 million — West Alignment plus Airport Connector
- $82.0 to $83.7 million — Central Alignment plus Airport Connector
- $88.7 to $88.9 million — East Alignment plus Airport Connector

The North Freeway alone from Lake to I-680 would cost an estimated total of $58 to $65 million for a West Alignment, $62 to $68 million for a Central Alignment, and $78 to $80 million for an East Alignment.

The Airport Freeway alone from the North Freeway eastward to Abbott Drive would cost an estimated total of $13 to $19 million when connected with either a West or a Central Alignment for the North Freeway and $6 to $8 million when connected with an East Alignment.

7. The Consultant recommends the following stage construction sections for each North Freeway/Airport Freeway alternate system:

East Alignment System -	Lake to Ames
	Ames to Craig plus Airport Connector to 16th
	Craig to I-680
	Airport Freeway
Central Alignment System -	Lake to Ames
	Ames to Redick plus Airport Connector to 24th for 27th-28th segment and to 30th for 31st Ave. segment.
	Redick to McKinley
	McKinley to I-680
	Airport Freeway
West Alignment System -	Lake to Ames
	Ames to Curtis, Airport Connector to 24th for 27th-28th segment and to 30th for 31st Ave. segment.
	Curtis to McKinley
	McKinley to I-680
	Airport Freeway

8. In conjunction with this stage construction schedule, the Consultant makes the following recomendations:

a. Although four to five stages are listed for the freeway alternatives, construction in fewer stages would be preferable from the standpoint of minimizing disruption and reducing overall project cost. Financial considerations will likely prohibit fewer stages however.

b. The construction of the Hartman-Redman Arterial in conjunction with the first or second stage of the North Freeway, depending upon the alternate chosen, should be expedited. The concurrent completion of these street links would assure smoother, better distribution of traffic and would avoid potential bottlenecks arising form stage construction.

c. Special consideration should be addressed to adequate and proper circulation in the 30th and Ames area following construction of the first stage of the freeway. Circulation patterns and temporary connections are important in terms of maintaining good traffic flow.

9. In regard to replacement housing, the Consultant concludes that there is an adequate supply of housing units in Omaha for families relocated by the North Freeway. The Consultant strongly recommends that advance right-of-way acquisition funds be set up to allow the purchase of properties all along the project, particularly in the section from Lake to Ames. The effect of this would spread the relocations out over a length of time as would stage construction, thus avoiding the problem of relocation housing deficiencies. More importantly, it will circumvent the situation in which homeowners feel

stranded in sections of the right-of-way where construction may not occur for several years. The Consultant also recommends that the whole matter of relocation housing be given close attention by the City and State and that the North Freeway relocation efforts should be coordinated as much as possible with other community redevelopment and rehabilitation projects.

10. The Consultant concludes that the Citizen Consortium, which was organized for the North Freeway Corridor Study, contributed considerably to the completion of the freeway study and enabled freeway planners to have a better understanding of the north residents, their area, and their concerns on the North Freeway. For the design phases, the Consultant recommends that the informal citizen advisory group be organized in each major neighborhood region during the final design of each North Freeway section in order that the design engineers can establish a means of learning community opinions and of communicating with the public about the freeway, and the area through which it is traversing.

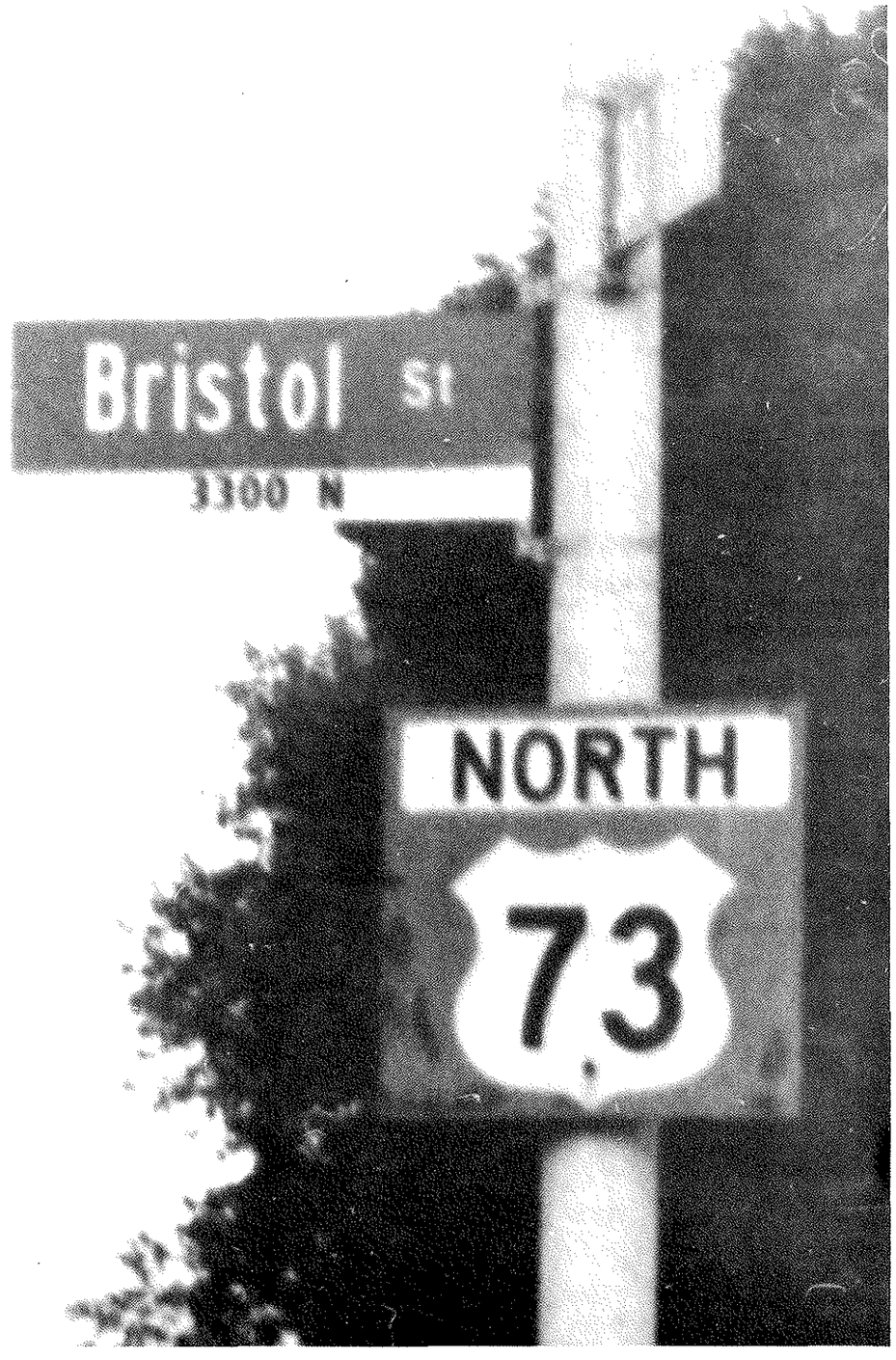
11. The Consultant concludes that including "aesthetic qualities" in the freeway's design is significantly important in blending the North Freeway into its surrounding neighborhood areas rather than as a dividing, disruptive transportation facility. The Consultant, therefore, recommends a) that guidelines be established for aesthetics in the design phase for the North Freeway; b) that such aesthetic guidelines include the appropriate uses of landscaping, physical shapes and forms of structures, texture treatments and facings of structures, earth contour treatments, and other features which will promote a pleasing view both of and from the North Freeway facility; c) that aesthetically qualified professionals be included on the Design Team for the North Freeway; and d) that citizens and public service groups in the freeway alignment vicinity be consulted during the design stage as to their opinions on the aesthetic guidlines and on the actual aesthetic design plans.

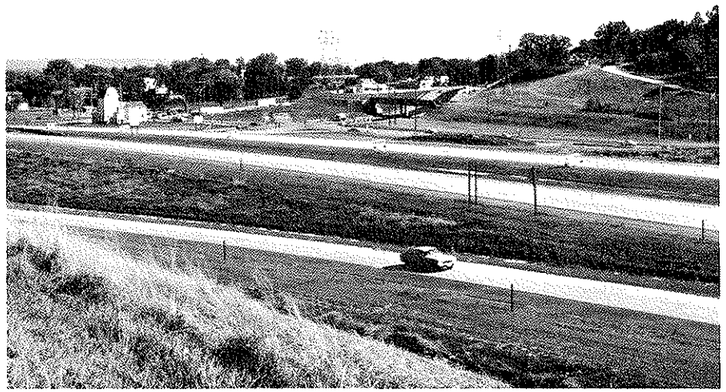
12. The Consultant concludes a) that excess right-of-way along the North Freeway should be utilized where feasible for landscaped open space, recreation uses, and other potential uses, and b) that such joint use will serve to maximize the use of urban lands and to better the blending of the freeway into the urban environment. The Consultant recommends that the City, State and Federal governmental units officially endorse the joint use concept for the North Freeway, actively encourage its implementation, and form a North Freeway Joint Use Program for utilizing excess rights-of-way.

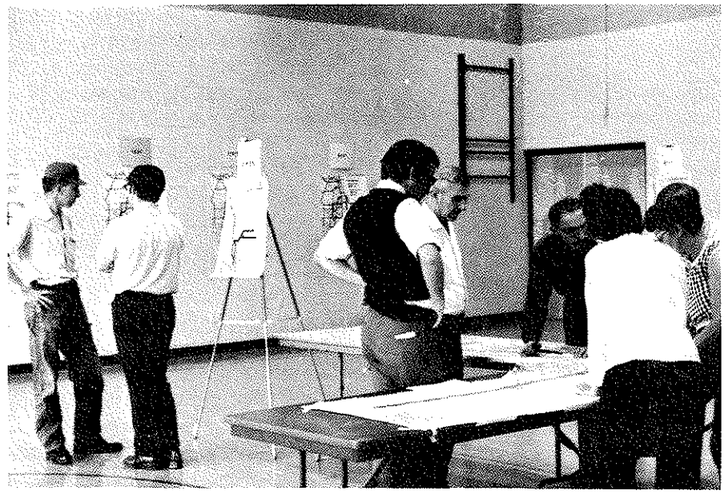
13. The Consultant recommends that Metro Area Transit and MAPA be consulted during the final design phase of the freeway development to insure compatibility of the freeway with the potential transit facility, in whatever form it may assume. This coordination between concerned agencies is necessary to the proper development of this potential multi-modal corridor.

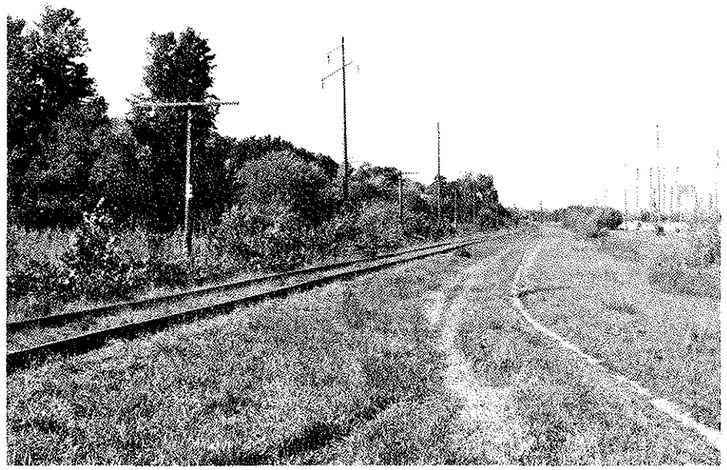
14. At one of the Consortium meetings, the point was made that the South Freeway had been renamed the John F. Kennedy Freeway by the City of Omaha in memory of the late President. It was then suggested that the North Freeway similarly be renamed to reflect the memory of a historical leader or event. Based upon these interests, the Consultant concludes that changing the name of the North Freeway from one of geographic direction to one with historical or memorial significance has worthwhile merit and should be pursued by the City of Omaha and the Nebraska Department of Roads.

15. The Consultant suggest a) that the City and State consider the conduct of an additional attitude survey on the North Freeway alternate routes, b) that such a survey be conducted just prior to the corridor public hearing, and c) that the survey results be used as a supplement to the public hearing transcript. The advantage of the survey is that it enables a larger number of citizens to express their views than during the more traditional public hearing process. Views expressed in a survey can be more representative of public opinion in the community as many people are reluctant to speak at public hearings.









PART II A CORRIDOR STUDY

PART II

A CORRIDOR STUDY

The setting is Omaha, Nebraska. The subject is the North Freeway which has a history spanning nearly 20 years. If the Freeway is to be completed, the concern is "where" and "when". The concerned reside in an area comprised of differing peoples with varying incomes, heritages, occupations, ages and other person characteristics. The objective, therefore, becomes the selection of a North Freeway alignment to answer "where" with a decision of either to build or not to build the North Freeway. If the decision is to build, then a time schedule to answer "when" can be planned.

These statements tend to summarize the current issues which center around the North Freeway and the issues leading to the conduct of a freeway corridor study.

BACKGROUND - POINT OF BEGINNING

With the advent of the Interstate Highway System, Omaha's street and highway system became enhanced by freeways which traversed around most of the City and which directly connected into the Central Business District (FIGURE II-1). In order to complete a freeway system within Omaha, one additional north-south freeway was proposed. This was the North Freeway which would serve as a radial roadway connecting I-480 in the Downtown to I-680 somewhere to the north.

From the planning standpoint, the North Freeway Concept has been a part of several community planning studies from the mid-1950's to the present time period. Concepts relating to the North Freeway may be found in the following formal reports:

- Omaha Metropolitan Area Proposed Trafficway System, Volume III-Street and Highway Plan, Howard, Needles, Tammen and Bergendoff, January 1957.

- Interim Major Street Plan, Part One-Section Four, Omaha Master Plan, Report No. 136, Omaha City Planning Board, December 1964.

- Omaha Metropolitan Area Transportation Study (OMATS), Barton-Aschman Associates, Inc., May 1970.

- COATS 1995 Interim Transportation Plan, Omaha-Council Bluffs Metropolitan Area Planning Agency. May 1973, April 1974.

The 1957 Plan illustrated conceptual drawings for all of the Omaha Interstate Highways as well as for the West, North and South expressways. This study in using 1970 traffic forecosts called for the completion of a North Expressway as far north as Maple Street at 28th Ave. Its function was to relieve 30th Street and to relieve the 30th at Cumming Street intersection.

The 1964 Interim Plan showed the concept of a North Expressway. The path was the same as in the 1957 Plan except that the northern terminus was at Lake Street.

During the period from 1958 to 1965, final design plans for portions of the freeways in Omaha were being developed. Kirkham, Michael and Associates (KMA) prepared design plans for the Interstate 480 interchange near Dodge Street and for the intial North Freeway extension northward to Hamilton.

In conjunction with their design work, several alternate sketches were developed showing the possible North Freeway routes from Hamilton to the Grand Avenue/Fort Street area. These alternate sketches conformed closely with similar sketches found in the 1957 Plan. Detailed design plans from Hamilton to Fort Street, however, were not prepared at that time during the early 1960's nor were detailed social and environmental studies conducted.

During the early 1970's, KMA was contracted to complete functional and design plans for the Hamilton to Lake section of the North Freeway. Those plans are now finished and construction of this section is due for completion by 1976.

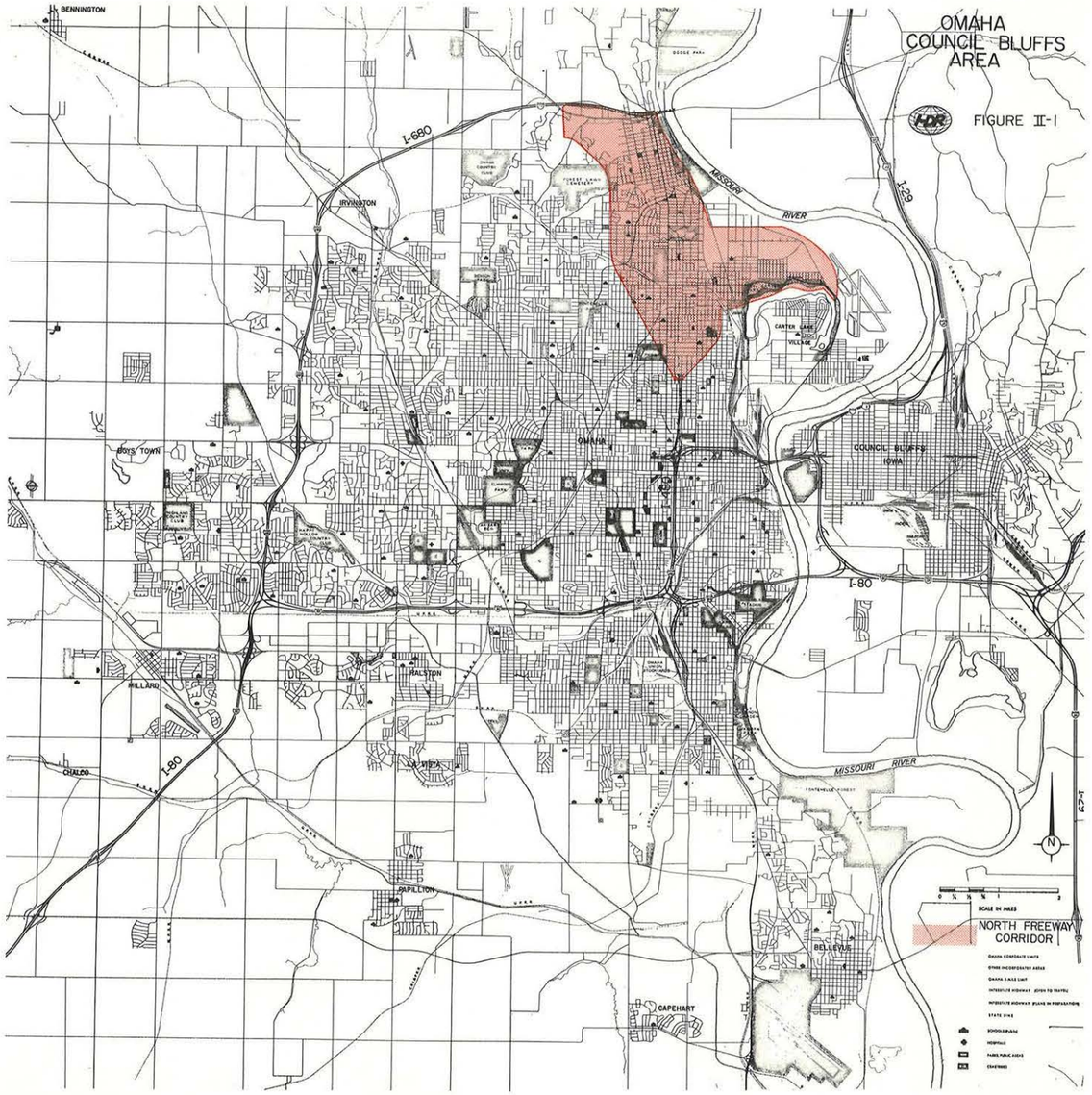
In OMATS, the North Freeway was proposed for the forecast year of 1985 as an extension along 27th Street from I-480 in the Downtown north to a terminus at Grand Avenue, about half the distance toward connecting I-480 with I-680. The right-of-way and construction efforts to date conform to this plan.

In the 1995 COATS Plan, the North Freeway followed the OMATS alignment to Lake Street. From Lake to I-680, the Plan exhibited a "Y" shaped corridor requiring a detailed location study.

From the implementation standpoint, the mid-to-late 1960's saw the completion of sections of the North Freeway from I-480 northward to Hamilton.

Between 1970 and 1972, right-of-way was purchased and cleared from Hamilton to Lake Streets. Because of changes in the required planning guidelines, the need for purchasing 17 additional housing units for right-of-way, and the conformance to noise and new public hearing requirements, construction of this segment met with delays. Completion of the Freeway from Hamilton to Lake is now anticipated in 1976.

On the basis of the committed sections of the North Freeway, it would appear that implementation efforts have resulted in the freeway slowly creeping northward with plans covering what seemed as only 8 to 10 blocks at a time. This approach has led to concerns by the people living beyond each successive northern terminus of the North Freeway as to "what path will the freeway follow next".



PURPOSE OF THE CORRIDOR STUDY

Recognizing this concern, the City of Omaha and the Nebraska Department of Roads jointly decided that a definite routing for the North Freeway northward from Lake to I-680 was needed. Such a decision on the routing would provide both public officials and the citizens with clear indications for years to come of the freeway's path and status.

To have a factual basis for selecting a definite freeway route and for fulfilling federal guidelines on highway projects and environmental aspects, the City and State initiated a comprehensive corridor study for the North Freeway from Lake Street northward to I-680.

Although some sketch drawings exist which show the North Freeway north of Grand Avenue to Interstate 680, none have been formally documented and adopted by the City and none contain the sufficient details as to the exact physical location and the resultant socioeconomic-environmental impacts. As mandated by the post-1970 guidelines of the Federal

Highway Administration1], such details must be addressed before any segment north of Lake Street can be constructed.

The general corridor study area was defined as the irregularly shaped region shown in FIGURE II-2. It begins at Lake Street between 27th and 28th Streets on the south. Northward to I-680, the study area spreads to encompass the region between 40th Street and John Pershing Drive. A part of the study area also extends eastward to Abbott Drive roughly between the Missouri River and Carter Lake. This additional area is included to provide for a freeway connection between the North Freeway and Eppley Airfield, the Metropolitan Area's regional air terminal.

The stated objectives of the corridor study are 1) to determine the most feasible alignments for the freeway facilities, 2) to gather and analyze the factual data on these alignments for traffic and costs and for the impacts to social, economic, and environmental conditions, and 3) to present the findings for use as input into the freeway's planning and decision-making process leading to a route location report, an environmental impact statement, and a corridor public hearing.
Completion of these objectives will enable the policy decision-makers to determine if the North Freeway should be extended beyond Lake Street and if so to select the best routing for the Freeway and to plan scheduling and budgeting for its implementation.

BASIS FOR THE CORRIDOR STUDY

During the past three years, the Omaha-Council Bluffs Metropolitan Area Planning Agency (MAPA) has been engaged in a joint effort with the states of Iowa and Nebraska, and local counties and cities in developing a 1995 Transportation Plan for the metropolitan area.

The MAPA program resulted in many tests and evaluations of street and transit alternative systems. MAPA's findings indicated that:

> The increase in traffic volumes which are forecasted for the year 1995 will considerably overload the metropolitan area's existing street and highway system unless actions are taken to accommodate the travel demand . 2]

Thus, the objective of the MAPA study became the identification of transportation problems, both highway and transit, and the development of solutions.
To assist in satisfying the 1995 travel demands on 30th Street, John Pershing Drive, Ames Avenue, Lake Street, Military Avenue, and other major streets, the North Freeway was incorporated into MAPA's test networks. This freeway along with other street and transit proposals evaluated eventually formed the 1995 Transportation Plan (FIGURE II-3).

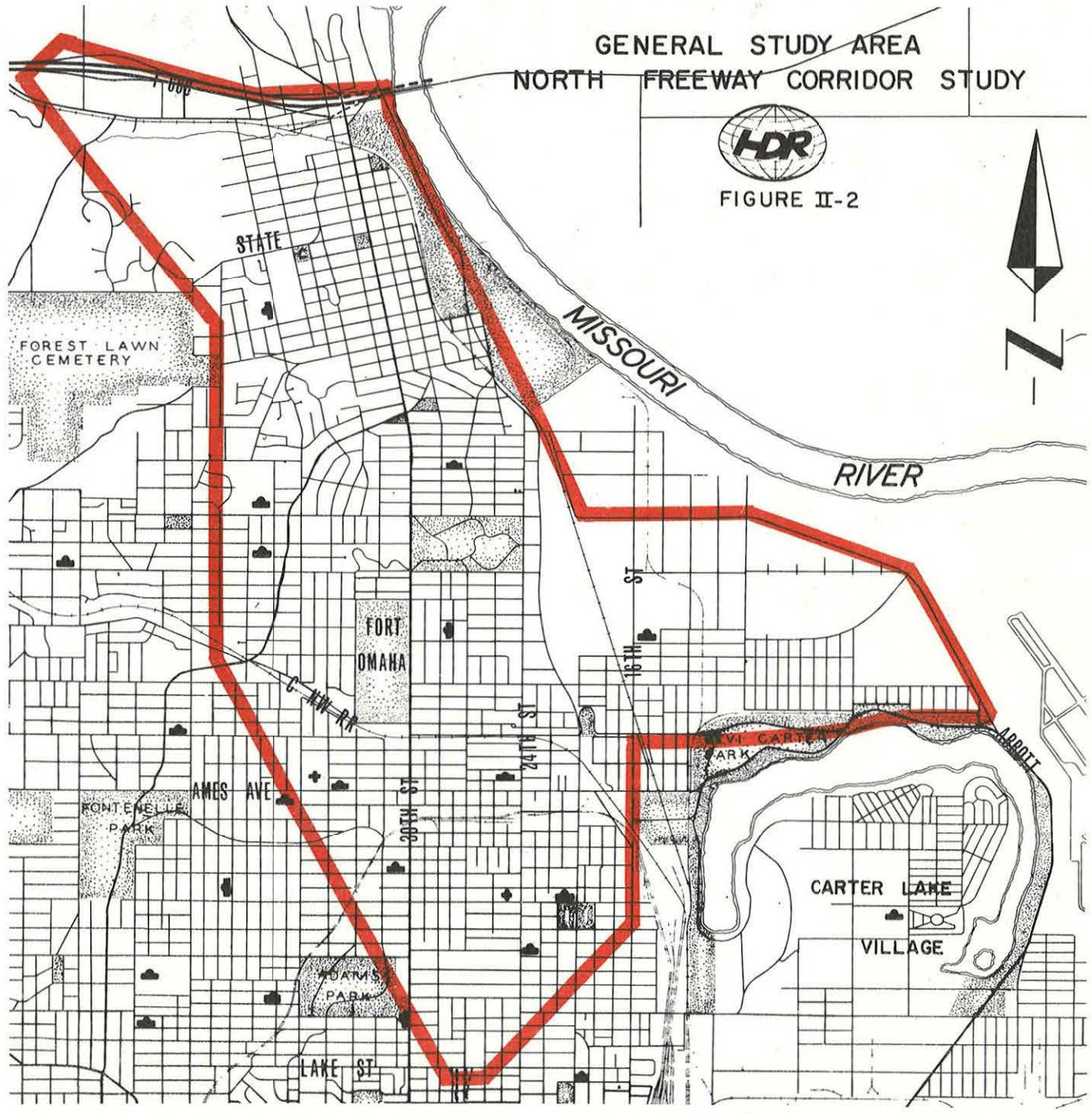
The 1995 COATS Plan is comprised of an all-bus transit system and a grid street system containing some freeway facilities and many street widenings. In the priority listing for 1995 COATS Plan, the North Freeway and the Airport Freeway Connection corridor study shares "Number 1" Priority with several other corridor proposals.

As stated in the MAPA plan,

> ...freeway improvements, such as the North Freeway and Kennedy Freeway, are very basic to the 1995 street grid system in that they are used not only to move auto and truck traffic but also for express busses. 3]

MAPA's Citizen Advisory Board (CAB) also contributed inputs into the 1995 COATS Plan. Their conclusions expressed the need to complete the North Freeway to I-680. However, rather than a broad corridor, the CAB proposed a definitive route north of Lake Street which basically used a 16th Street /Chicago and Northwestern Railroad alignment northward to I-680. 4] Although their proposal is documented in the COATS Report, it is not a part of the adopted 1995 Transportation Plan.

The findings of the MAPA Plan for 1995 are reinforced by statements in the 1985 OMATS report. OMATS found that for 1985 the North Freeway was justified only as far north as Grand Avenue. However, OMATS did relate to post-1985 planning with the statement that



1] Federal Highway Program Manual, Vol 7, Ch7, Sect. 1,2, and 5. U.S. Department of Transportation, Federal Highway Administration.

2] COATS 1995 Interim Transportation Study, Omaha-Council Bluffs Metropotian Area Planning Agency, Report No. 108-1, May 1973, p. 112.

3] Ibid, p106.

4] Ibid, p146.

Another important factor in the design of the street and highway network is the provision of flexibility so that travel needs will be served beyond 1985; ...Two key examples of this are the ultimate extension of the North Freeway to an interchange with Interstate 680 and the development of a freeway connection from the North Freeway to the airport complex at Eppley Airfield. An ultimate system to serve the Omaha Metropolitan Area must include these two freeway facilities. 5]

CONDUCT OF THE CORRIDOR STUDY

Mobilization for the corridor study began in the late fall of 1973 with actual work activities being initiated in January 1974. Under the contract with the City of Omaha and the Nebraska Department of Roads, Henningson, Durham & Richardson (HDR) had the primary responsibilities for the management and conduct of the North Freeway Corridor Study. In support of the study management, three levels of communication and input into the project were established: 1) the Consultant Study Team; 2) City-State-Consultant Reviews; 3) a Citizen Consortium. tium.

To perform the actual work elements of the project, a Study Team was organized to provide a multi-disciplinary approach in completing the corridor study. The Study Team was structured as follows:

Engineering - Henningson, Durham and Richardson

Socio-Economics - Center for Applied Urban Research, University of Nebraska at Omaha

Environment - Associated Environmental Services Company

Community Involvement - Creighton University

To provide monitoring and policy direction during the study, City-State-Consultant meetings where held periodically at milestones in the project. Primary participants were representatives of the City of Omaha Public Works Department, the Nebraska Department of Roads, and HDR, with additional participation by the Omaha City Planning Department, MAPA, and the Federal Highway Administration.

To provide a means of community input and response to work activities, a Citizen Consortium was organized. The structuring of the Consortium, as well as other community involvement activities, is discussed elsewhere in this report.

For the Study Team, the total work effort for the North Freeway Corridor Study was divided into two major phases:

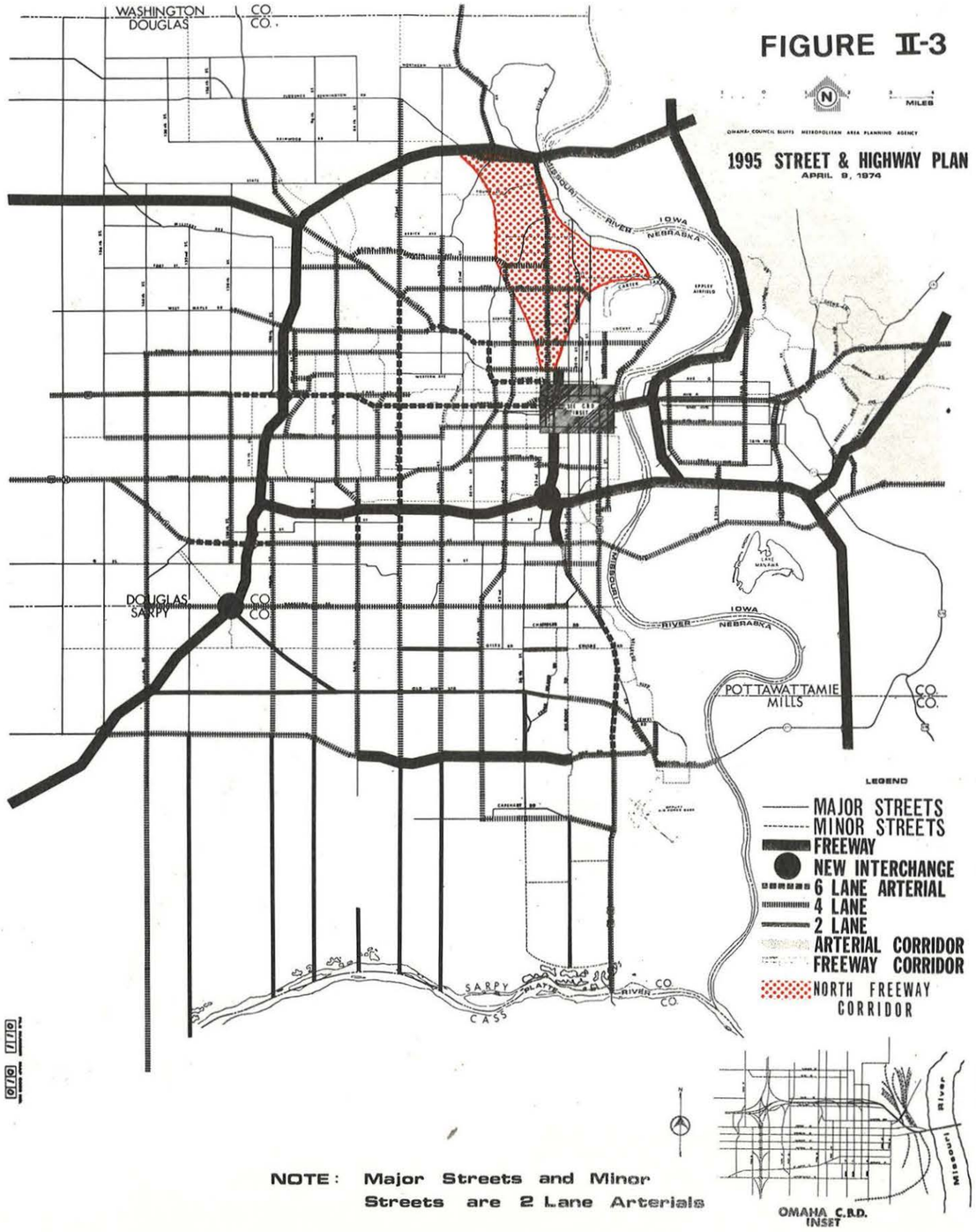
Phase I - General Corridor Study: Location of Potential Alignments

Phase II - Detailed Corridor Study: Detailed Analyses of selected Alignments

In Phase I, the primary purposes were to become familiar with the study area and its citizens and to become knowledgeable of the area's characteristics which would relate to the locating of potential freeway alignments. Toward these purposes, the Study Team gathered pertinent data which provided an overview into the social, economic, and environmental settings of the study area. Such data was used to locate potential freeway routings and to evaluate their feasibilities. PARTS III and IV of this report describe the Phase I operation.

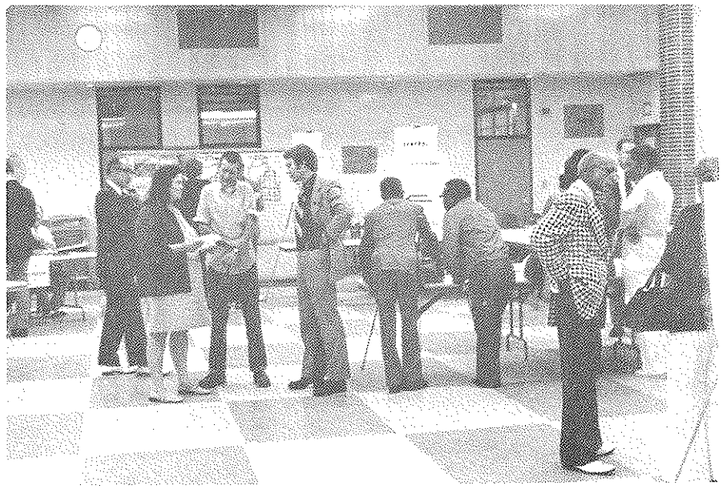
The end product of Phase I was the narrowing of the field of the potential alignments to those selected alignments which exhibited the higher feasibilities for a North Freeway. In Phase II, these selected alignments were first defined as to interchange configurations, roadway locations, roadway elevations, and general right-of-way limits. Following the physical definition of each alignment, impact studies were conducted which analyzed and compared the freeway alternates. PARTS V, VI and VII describe the Phase II operation.

FIGURE II-3



5] Omaha Metropolitan Area Transportation Study (OMATS), Vol 1, Barton-Aschman Associates, Inc. May, 1970, pp. 78-80.

PART III
COMMUNITY INVOLVEMENT



PART III

COMMUNITY INVOLVEMENT

PROGRAM FOR INVOLVEMENT

To be truly effective, community involvement means more than just holding a public hearing at the conclusion of the corridor study. Community involvement should inform, should establish communication, and should produce input which all lead to the clearer presentation and understanding of the facts, both pro and con, on the project.

Recognizing its importance, a community involvement program was undertaken as part of the North Freeway Corridor Study. Two major purposes were to be served by such a program. First, it was the intent of the City, State and HDR that those affected or interested in the North Freeway be kept informed of the corridor study's procedures and progress during the course of the planning investigations (to inform). Second, it was hoped that receptive lines of communication could be opened whereby questions, concerns, thoughts, and opinions could be ascertained and incorporated into the planning process (to listen).

Toward fulfilling these purposes, the community involvement program was structured to include a combination of various methods. The following is a general listing of these methods with the discussions below expanding on several of those which were more important:

a. Freeway field office

b. Citizens advisory group

c. Public meetings

d. Citizen attitude survey

e. Telephone communications

f. Press releases and interviews

g. Presentations to organized groups

h. Displays, exhibits, and maps

i. Informal contacts with individuals, agencies, and businesses

j. Handout materials

k. Television interview programs.

In general, the two purposes were fulfilled. Input concerning neighborhoods, accessibility, property uses, public attitudes, and other items of information were obtained and utilized by the Study Team in developing the freeway alternates and in assessing their impacts. In general, the public became better informed about the freeway planning effort and more cognizant of the facts being compiled for subsequent use in a decision on the final freeway alignment.

NORTH FREEWAY FIELD OFFICE

In the fall of 1973, HDR opened a field office at 4929 North 30th Street, which is located in the southern half of the corridor area. Facilities included a drafting room, two engineer/planner rooms, and a conference room. Equipment could accommodate 5-8 employees comfortably while the meeting room could handle up to 30 persons.

Office hours were established as 8 A.M. - 5 P.M. Monday through Friday with appointments being made for visitations at other hours. Two telephone extensions were provided via the central operator in the Consultant's Main Office at HDR Place on Indian Hills Drive in West Omaha.

The field office served as a base of operations for the Study Team. Many of the work activities were done at this location. Various work sessions scheduled with the City, State, Consortium, and Study Team also were held at the office.

The more important use of the office was for public accessibility to the study planners and engineers by those citizens desiring information or wishing to see the working drawings. Being located on 30th Street, the office was on the major north-south arterial in the corridor and on the primary bus transit route for North Omaha. The office was also only five blocks from Ames Avenue, a major east-west arterial.

The number of visitors to the field office fluctuated with the weather, seasons, and amount of news media coverage. Contacts, both in-person and telephone, varied from as low as 1 or 2 a day to as high as 20. The higher visitations generally occurred both immediately before and after the scheduled public meetings.

The field office remained in operation through to the spring of 1975 during which the later stages of the study report were being completed.

CITIZEN CONSORTIUM

In order to be more aware of the opinion and feelings of the citizens in northern Omaha, an advisory group of persons from the corridor area was formed. Its name was the Citizen Consortium and its purposes were fourfold:

1. To serve as a link between the planners/engineers and the citizens.

2. To provide input from a citizen's viewpoint on the North Freeway to the planners/engineers.

3. To review and react to the work being done on the North Freeway Study.

4. To obtain assistance in developing the concepts of the North Freeway whereby the Freeway can be made a part of North Omaha Community rather than an obstacle and whereby it can be an aid to the economy of North Omaha.

Details on the organization of the Consortium may be found in APPENDIX A. Basically, the Consortium began with 15 individuals who lived and/or worked in the corridor. By the end of the study, 9 had remained active.

The composition of the membership attempted to gain equal representation from the sub-areas within the corridor. Their backgrounds were diversified to include various age, occupational, and racial groups. Rather than known spokesmen, the persons selected were believed to be more representative of the general citizen and were believed to have the important attributes of available time and interest—time to devote to the North freeway; interest in the North Omaha to Florence communities of Omaha.

The Consortium was organized in March 1974. Its meetings were held on a periodic basis as various work items by the Study Team were completed or as project decision points were reached. Overall, sixteen meetings were held between April 1974 and report production in March 1975.

The Consortium was of benefit to the conduct and completion of the corridor study. Through the Consortium's comments and reviews, the Study Team learned of community facilities and land activities impacted by the freeway alignments; became aware of sensitive areas which required additional analysis; learned of work efforts which were imcomplete or unclear; and learned of travel patterns, community services, and citizen contacts to be made. These aspects as well as other information relative to area characteristics, life styles, feelings and attitudes aid in conducting the corridor study.

PUBLIC MEETINGS

Several series of public meetings were held by the Study Team during the project at each major milestone in the corridor study. The usual orientation type of public meeting held at the start of a corridor study (in the fall of 1973) was not conducted because of a recent public hearing (North Freeway, Hamilton to Lake) and other recent meetings on the Freeway by various groups.

The first series of public meetings were held on the

evenings of May 6-9, 1974. The format was a speaker-audience type of presentation followed by a question-and-answer period. Objectives were to present the results of the Phase I - General Corridor Study and the approximately 25 potential freeway alignments.

The second series of public meetings were held on September 16 - 18, 1974. An open house format was used whereby the citizens walked through displays and talked directly with the planners and engineers involved in the corridor study. The objectives were to present the more detailed (1" = 200') aerial sketch plans prepared in Phase II - Selected Alignments for the North Freeway.

The third stage of public meetings was scheduled for one afternoon-evening in the spring. This meeting was held toward the close of the corridor study after the completion of the impact studies and the preliminary submittal of this report, but prior to the environmental impact statement and public hearing. Displays on noise impacts, costs, traffic, housing, and other impacts of the study alternatives were presented in an open house format.

All public meetings were held at locations within the study area in schools, churches, or community facilities. Single page handouts were distributed which stated briefly a) the purpose of the meeting and b) the next process to be undertaken. Press releases which preceded all meetings received excellent coverage from the newspaper, radio and television media in announcing the meetings and the information to be given.

These public meetings were of utmost importance to the corridor study. The comments received enabled the Study Team to assess the adequacy of past work efforts and to be aware of items requiring additional investigation.

APPENDIX C contains summaries of the public meetings.

CITIZEN ATTITUDE SURVEY

To obtain a clearer indication of public feelings about the North Freeway and to have additional input for the socio-economic and environmental studies, an attitudinal survey was conducted during June and July of 1974.

Reserarch into prior highway opinion surveys as well

N. Freew
Study S
In Quiet

Citizen input sought in North Freeway study

Office gives freeway info

'Open Houses' to Display Proposed Freeway Routes

N. Omaha Residents Demand Action on Freeway Route

Freeway action may at

Freeway no threat to planned library

Freeway Plan Won't Slow Pla Work

Public meets slated on corridor

● Continued fror

can have questions

North Side Poll: Only ent Dislike Area

sounding board for opinion and to be some of the decision

He said this will time his firm ha such a body to part corridor study.

In 1973, meetings ing of the Hamilton Street section of t were conducted by, ers, the City Huma Board, the Metrop

of the North Omaha Commercial Club (NOCC) that "we want citizen input on this."

Irv Hansen, ch rman of the highway comm NOCC, said the club definitely" participa groups planned by in studying the corridor "We'll definitely partici in something that means so much to our part of Omaha," Hansen said.

"I hope we'll have of this going a few h ping and leaving the dark."

Jim Suttle, director o Henningsen, Durham and Ric

NOCC has favored the follow- route for the freeway ex- Hansen said.

eway would run from its present et to 28th

be an inter offshoot going no pley Airfield and anot west to 39th Street, north the eastern boundary of the Florence cemetery, and north- t to meet with Mormon Road, Highway 73 and

CL expressed

Suttle said that if in the pro- of the 18-month study a southern alignment between two or three s, "it's only fair olans on the et an en- ement ea so that know whe

In response comment that "pe and tired of studies,

said, "I hope this will be the final one. I think people have had enough of freeway studies and the voice of the people will hold if we ca agree on one corridor."

NOCC m ques- oned Suf st borough turbance o ments, parks an the freeway interc I-680, and the possibi the ene greater transit

SUTT Durhan a

Neighborh ort Key to Freew

By Debbie Ivey

Only lack of neighborhood t will stop a drive against ed North Freeway persons agreed

of the North Con Omaha North Side Street and Ames

Robert T. Jones, chairman, said, "If the

wide enough to accommodate buses or an "elevated 'people-mover' of some kind" in case mass transit is more widely used.

New officers also were elected at Thursday's (Nov. 29) meeting.

Richard Collins, elected pres- nt after serving a year as esident, said, "it might rworked phrase, but is a sleeping

the City Counci uc- tion of the freeway Lake street is six to eight yea away.

In an attempt to hear opinions from the black community, members wrote a letter to State Sen. Ernest Chambers of Omaha this month. They asked for an explanation of the "conspicuous absence of hard facts" t the freeway.

esult, Jones said that Doyle and other ill attend the

25 Freeway Possibilities sented to C

By Howard Silber

A variety of possible routes for the extension of the North Freeway to Interstate 680 and two potential alignments for the proposed Airport Freeway were reported Tuesday to the City Council.

James H. Suttle, spokesman for the freeway corridor study team, said the report defines combinations and, following four public meetings next week, we will select two or three alternates for more detailed study," Suttle said.

Suttle said the corridor team is urging citizen comment at the meetings.

For the discussions, the corridor area was divivded into four sectors. There will be a meeting for each of the sectors.

The various route possibilities reach toward Interstate 680 from Lake Street between Twenty-seventh and Twenty-eighth Streets.

Possible routes extend as far west of Fort Omaha, continuing north to near Martin Avenue and then curving northwest to meet Interstate 680 near Forty-second Street.

Easterly alternatives curve northeast near Ames Avenue and follow the bluffs east Florence Boulevard. From near Read Street there are several alternates that lead to Interstate 680.

The two basic Airport Freeway routes extend east to Abbott Drive from various North Freeway alignments. One of lows Fort Street and the other takes a course just north of Hartman Avenue.

hardson, architectur- eering consulta- iversity of Nebraska r for Applied Urba Associated Enviro ices Co., and Creigh sity.

Suttle, who is associated wit HDR, said additional informa tion on route alignments may

Meetings Planned Monday-Tuesday

The North Freeway Corridor Study Team has scheduled four public meetings next week, one for each sector.

Each of the m be gin at 7 p.m. The sche

Lake Street to Ames Avenue — Monday, May 6, Horace Mann Junior High, Twentieth nd Pratt Streets.

s to Kansas Avenues — May 7, Navy and Ma Reserve Training hirtieth Street and Laure. venue.

Craig Street to meets the 68 — Thursday, May 9, St. Philip Neri School, Thirty first and Mormon Streets.

The same presentation will be made at all four meetings, a team spokesman said.

as review comments by the Consortium, Study Team, City and State aided in the development of the questionnaire.

Some of the survey findings were anticipated while some attitudes were surprising. Examples of the latter included a lower than anticipated level of support found for any freeway alignment in the area between Lake and Ames and the high support overall for the East Alignment proposed for a North Freeway.

The results of the survey provided everyone (citizen and professional) with a better indication of public attitudes. It enabled a larger number of citizens to express their views than during the more traditional public hearing process. Views expressed in the survey were more representative of public opinion in the community as many people are reluctant to speak at public hearings.

The findings were used to separate factual community attitudes from any one individual's opinions about community attitudes. Several of the evaluations and impact studies of the freeway alternates made direct and indirect application of the survey results.

More details of the statistical findings of the attitude survey as well as its design and conduct may be found in APPENDIX B. In addition, a brief telephone survey was also taken of the Omaha Area by the Center for Applied Urban Research, University of Nebraska at Omaha, to learn the views of residents outside of the freeway corridor area. Details of this study are reported in APPENDIX AA.

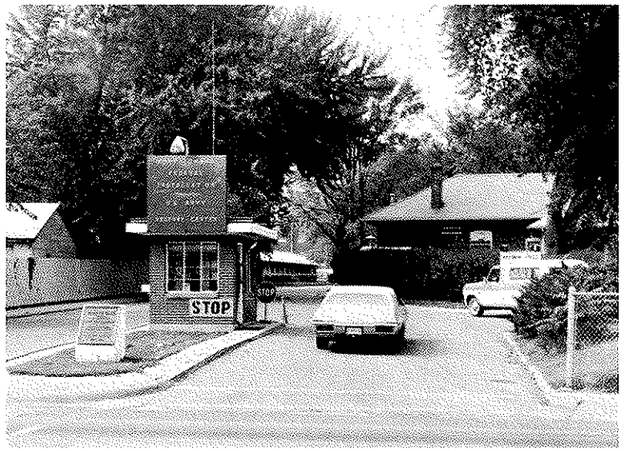
KYNE 26

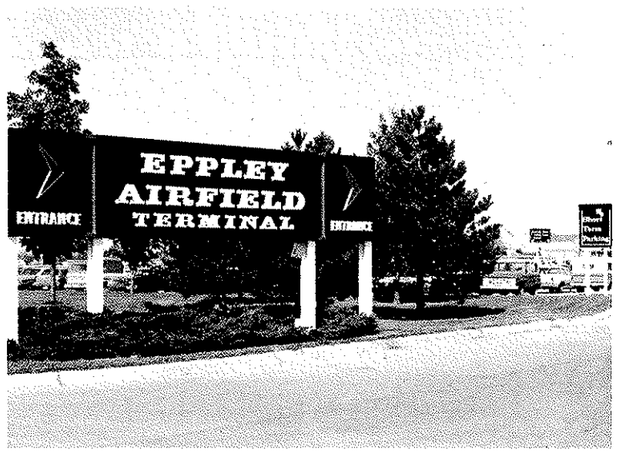
KMTV 3

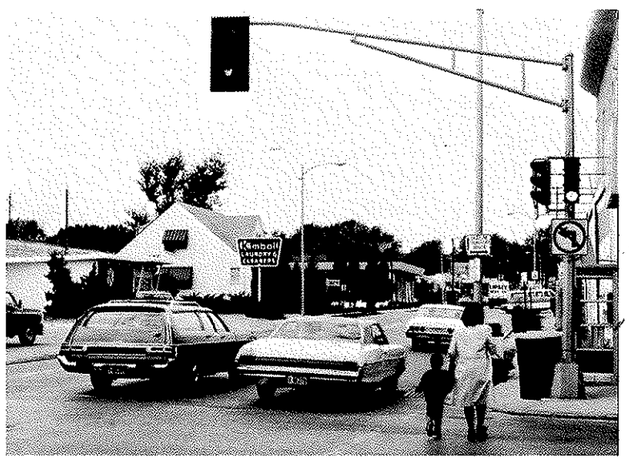
WOW 6

KETV 7

PART IV
GENERAL CORRIDOR STUDY







PART IV

GENERAL CORRIDOR STUDY

To establish a foundation for locating all potential freeway alignments, the initial part of the corridor study during the spring of 1974 (Phase I) undertook the gathering of pertinent information on the area's characteristics and its people. Toward this purpose, information was compiled to establish an overview of the corridor on the physical setting, the socio-economic setting, and the environmental setting. This data base was then used to locate potential freeway routings and to make preliminary evaluations of their feasibilities.

PHYSICAL SETTING

The physical setting within the corridor study area comprises a varied range of manmade and natural conditions which present both advantages and disadvantages in choosing potential freeway alignments.

Of foremost interest is the terrain and side slopes exhibited by the lands within the corridor. FIGURE IV-1 reflects the topography in 50-foot contour ranges. Three basic areas are depicted -a) the white flood plain area of the Missouri River, b) the yellow, rather flat area separated by a steep bluff from the flood plain, and finally c) the hilly areas (various colors) in the western side of FIGURE IV-1.

The hilly country is formed of natural deposits of wind blown loess. Roughly speaking, it is that part of the study area west of 30th Street. As is typical of loess deposits, the surface is broken with the characteristic rough erosion gullies resulting from natural drainage. It comprises an area where topography is a very important part of roadway location. Cuts and fills are inevitable, and slopes must have protection from damaging and unsightly erosion.

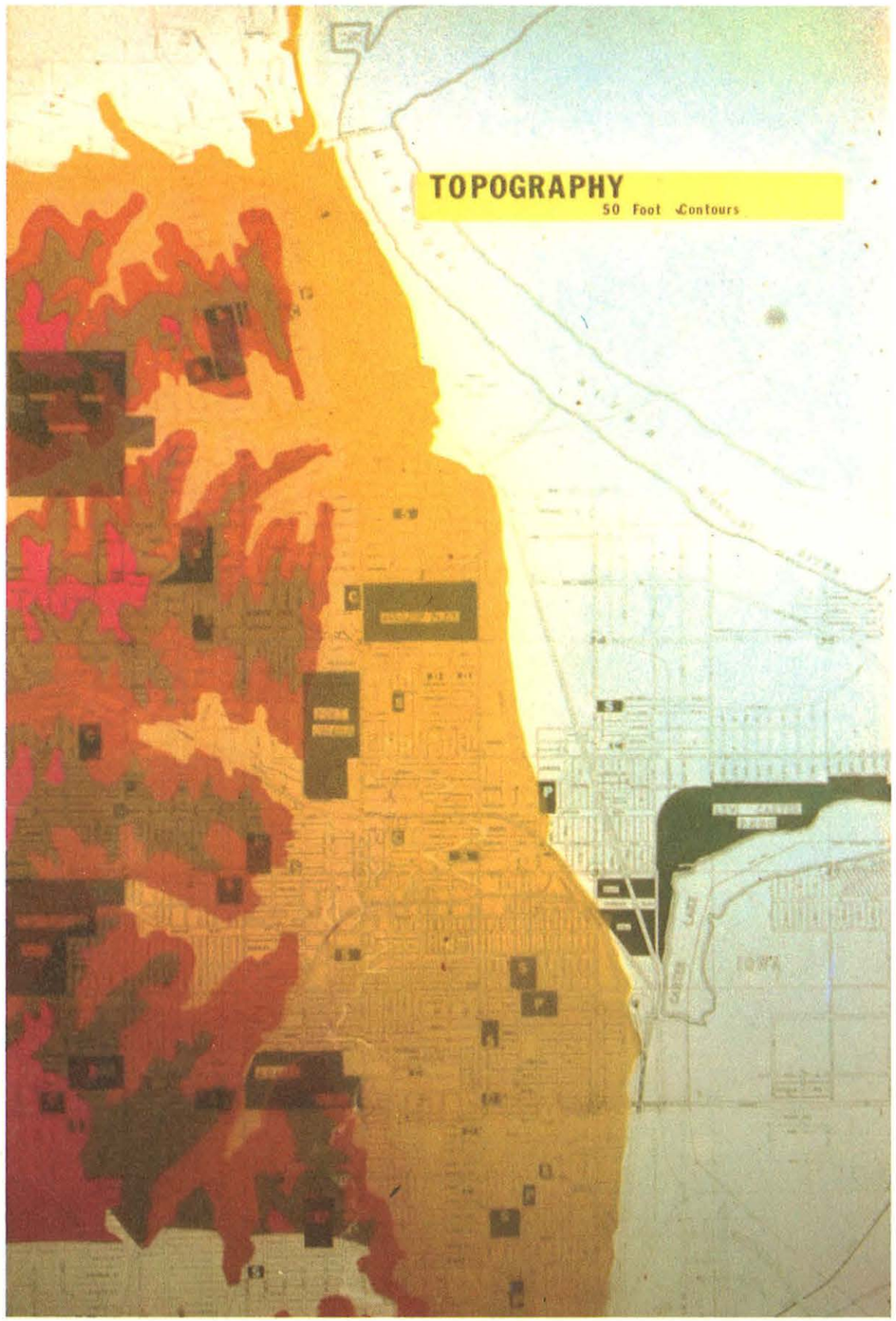
A rather flat bench (yellow area) begins at the toe of the slopes of the hilly country, lying roughly between 30th Street at the west and the bluff forming a sharp dropoff to the flood plain. This can best be described as modified loess, washed down from the hills. It poses no particular problems, except that cut slopes are subject to erosion if not properly protected.

The flood plain (white area) lies between the bluff, forming the eastern edge of the bench, and the river. It is somewhat heterogenous, varying from deposits of fine sand to silts. Some areas will provide good support for roadway, while others require either extensive work or removal and replacement with suitable material. Because of its minimal elevation above river level, a depressed roadway is totally inapplicable to this area.

The study area is highly urbanized. The land use patterns in FIGURE IV-2 illustrate the existing uses as well as the current potential additional uses for vacant lands.

In general, the area is nearly all residential with older homes being generally south of Grand and east of 30th. Commercial activity is predominantly found along 30th Street with some businesses on Ames, 24th and 16th. Industrial uses are in a strip along the Missouri Pacific Railroad (just south of Ames), along part of 16th, and scattered in the flood plain area.

The alignments for the North Freeway may have a positive catalytic impact on land use. With the freeway alignment, the business and financial institutions may have a more open policy toward proposed development throughout the corridor. Principal beneficiaries would be industries on the flood plain and commercial/office uses in the vicinity of major arterials and North Freeway interchanges. This could be followed by residential development on vacant lands west of the bluffs.



TOPOGRAPHY

FIGURE IV-1

LEGEND

	FEET
Red Violet	1200 & Over
Brown	1150 - 1200
Orange	1100 - 1150
Tan	1050 - 1100
Yellow	1000 - 1050
White	Less than 1000

LAND USE CONCEPT
NORTH FREEWAY AREA

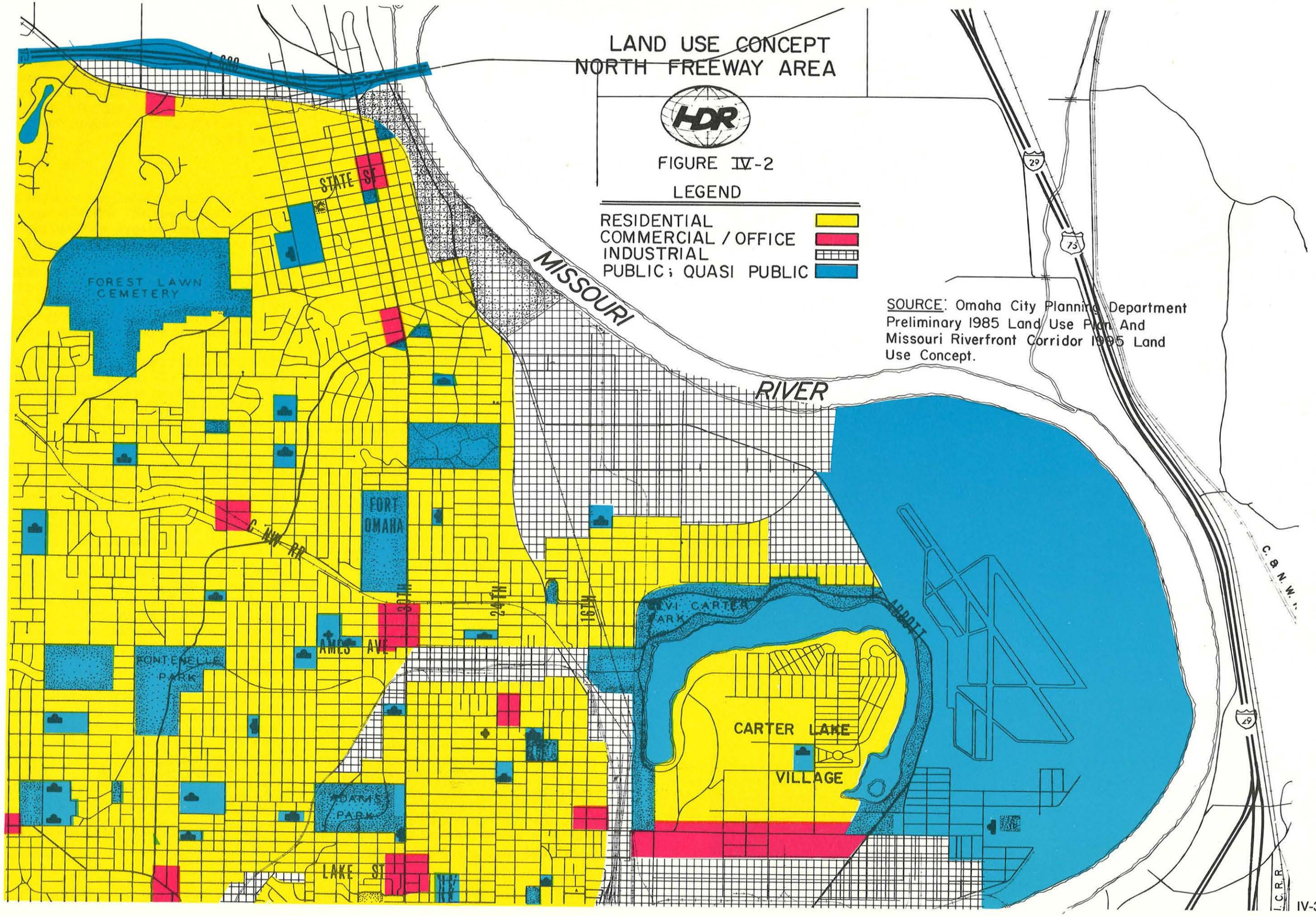
HDR

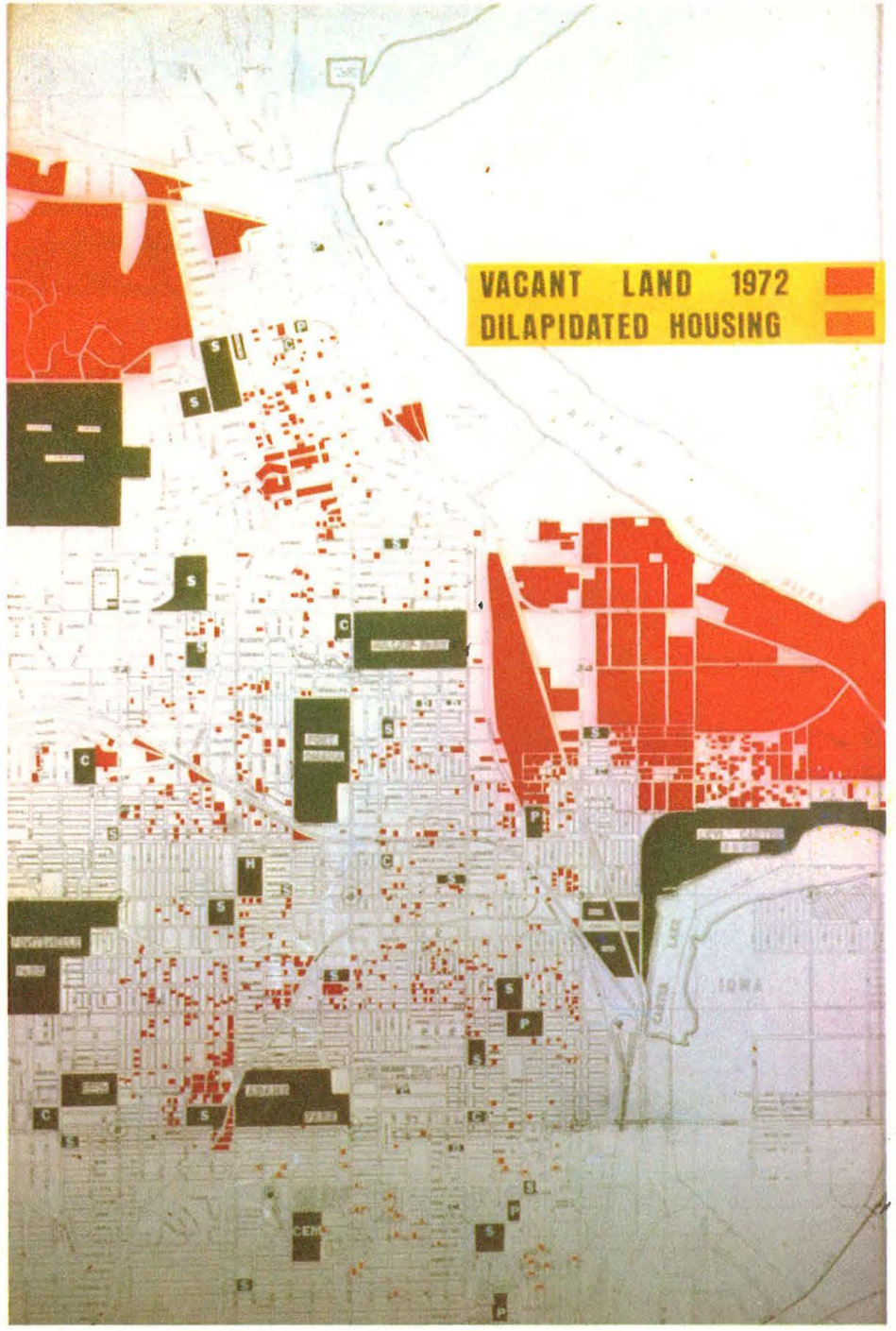
FIGURE IV-2

LEGEND

- RESIDENTIAL
- COMMERCIAL / OFFICE
- INDUSTRIAL
- PUBLIC; QUASI PUBLIC

SOURCE: Omaha City Planning Department Preliminary 1985 Land Use Plan And Missouri Riverfront Corridor 1995 Land Use Concept.





VACANT LAND, PUBLIC & QUASI-PUBLIC LAND

FIGURE IV-3

LEGEND

Black	—Parks, Churches, Other Public & Quasi-Public Land
Red	—Vacant Land & Lots
Orange	—Dilapidated Housing

Overall, the residential uses will continue to dominate the corridor area. However, the freeway could stimulate the needed additional commercial activities and employment opportunities now absent.

Numerous churches, schools, major parks (Miller, Carter Lake), Fort Omaha, and cemeteries are located throughout the study area. These are shown as the black areas in FIGURE IV-3. Historical sites are also scattered through the study area (See FIGURE Y-1 in APPENDIX Y).

By Federal law, park lands and historical sites listed in the National Register are to be avoided unless no other prudent and feasible routing exists. In locating potential freeway routings, special attention must be given to avoid these lands as well as the other community service uses listed above.

FIGURE IV-3 also shows vacant land areas. The large vacant land area in the eastern flood plain will most likely be developed industrially. In the far northwest area, these vacant lands most likely will be developed for residential uses. Other colored areas represent vacant lots, many of which had their housing units demolished in the area south of Grand Avenue. Available data sources showed dilapidated housing to be limited in number as most such units have been demolished.

Within the study area, the major street system is centered around two arterials: north-south 30th and east-west Ames. Other arterials and collectors are Fontenelle Boulevard, Florence Boulevard, 16th, John Pershing Drive, 24th and Lake. FIGURE IV-4 shows the 1974 daily traffic volume for the existing street system.

Most of the primary arterials and collectors are two-lane facilities. Ames, 30th, McKinley, and I-680 are the only four-lane roadways, with I-680 section from US 73 to 30th Street being newly opened in 1974.

FIGURE IV-5 indicates the ratios of 1974 traffic volumes to the street's capacity. A Level of Service C 1] was used in calculating the capacity ratios for consistency with that standard used by MAPA2] in its development of a 1995 Transportation Plan.

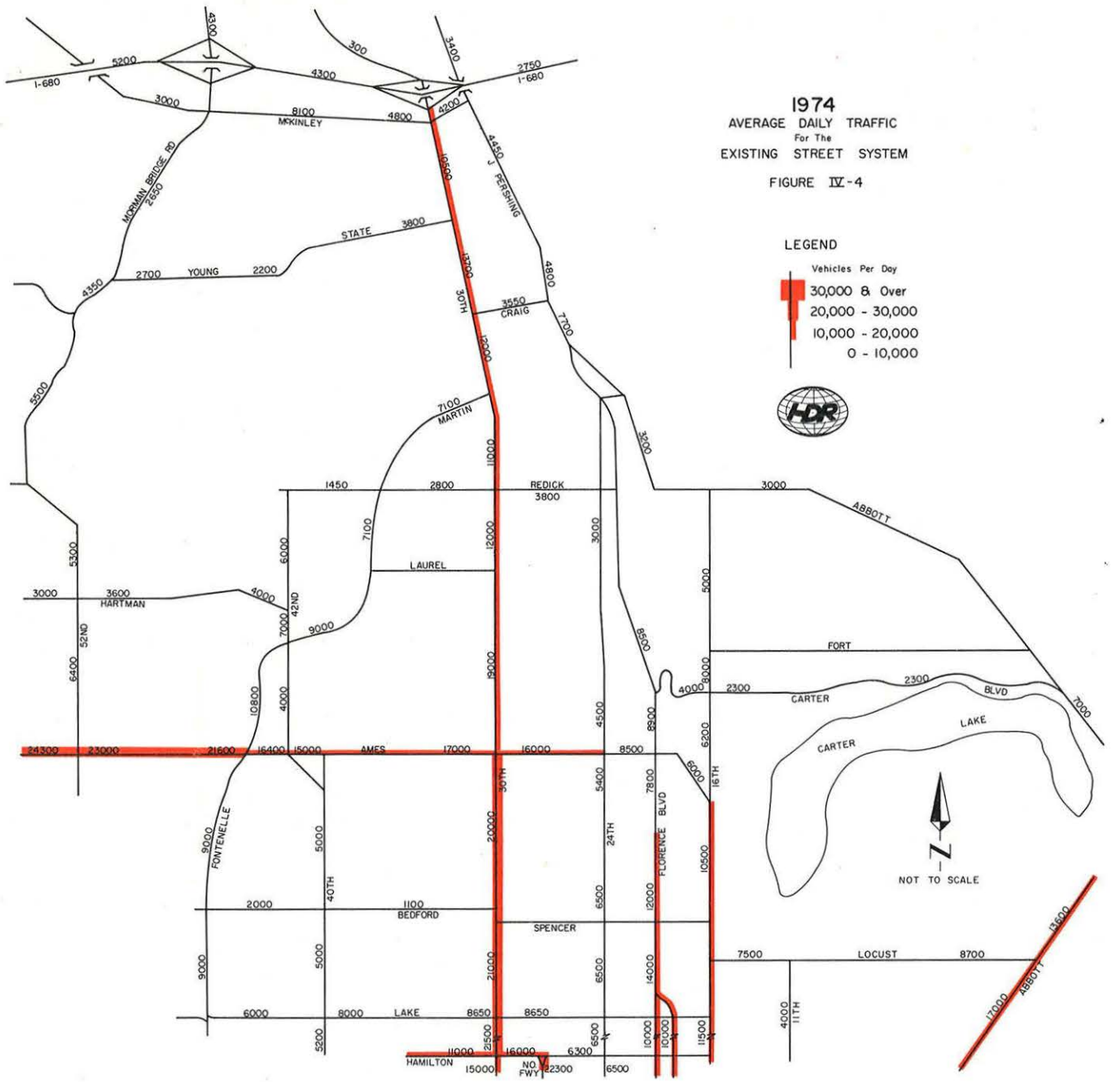
In FIGURE IV-5, streets with the MAPA capacity ratios less than 1.07 are operating acceptably at Levels A,B,C. Streets at Level D (1.07 to 1.20) can also be acceptable although they will experience moderate delays during most peak hour traffic periods.

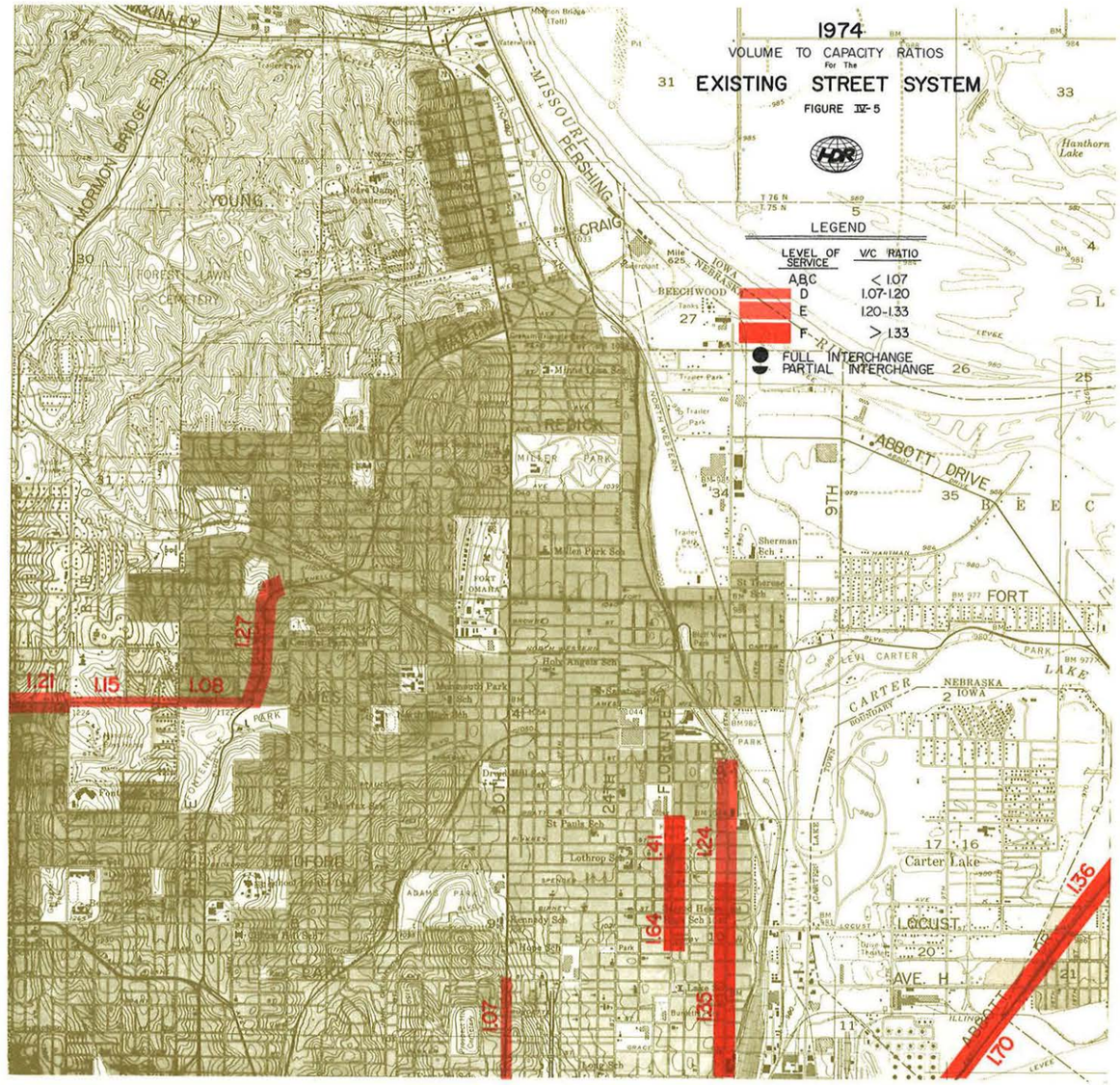
Level E (1.20 to 1.33) is the true capacity limit of the street and indicates serious delays and congestion. For the 1974 volumes, Fontenelle Boulevard from Ames to 42nd, 16th from the vacinity of Ames south, and Ames in the vicinity of 52nd Street are experiencing serious congestion at point locations.

Level F (above 1.33) indicates a total breakdown in the street's ability to efficiently carry traffic volumes. Abbott Drive from Eppley to the Downtown, and Florence Boulevard north and south of Spencer Street are indicated to be critically congested during heavy traffic periods.

1] Level of Service is a qualitative measure of operating conditions. The six levels are: Level A-free flow, no delay; Level B - stable flows, slight delays; Level C - stable flows, acceptable delays(usual standard for design); Level D - approaching unstable flows, tolerable delays; Level E - unstable flows, congestion and intolerable delays (capacity); and Level F - forced flows, jammed conditions.

2] Omaha - Council Bluffs Metropolitan Area Planning Agency.

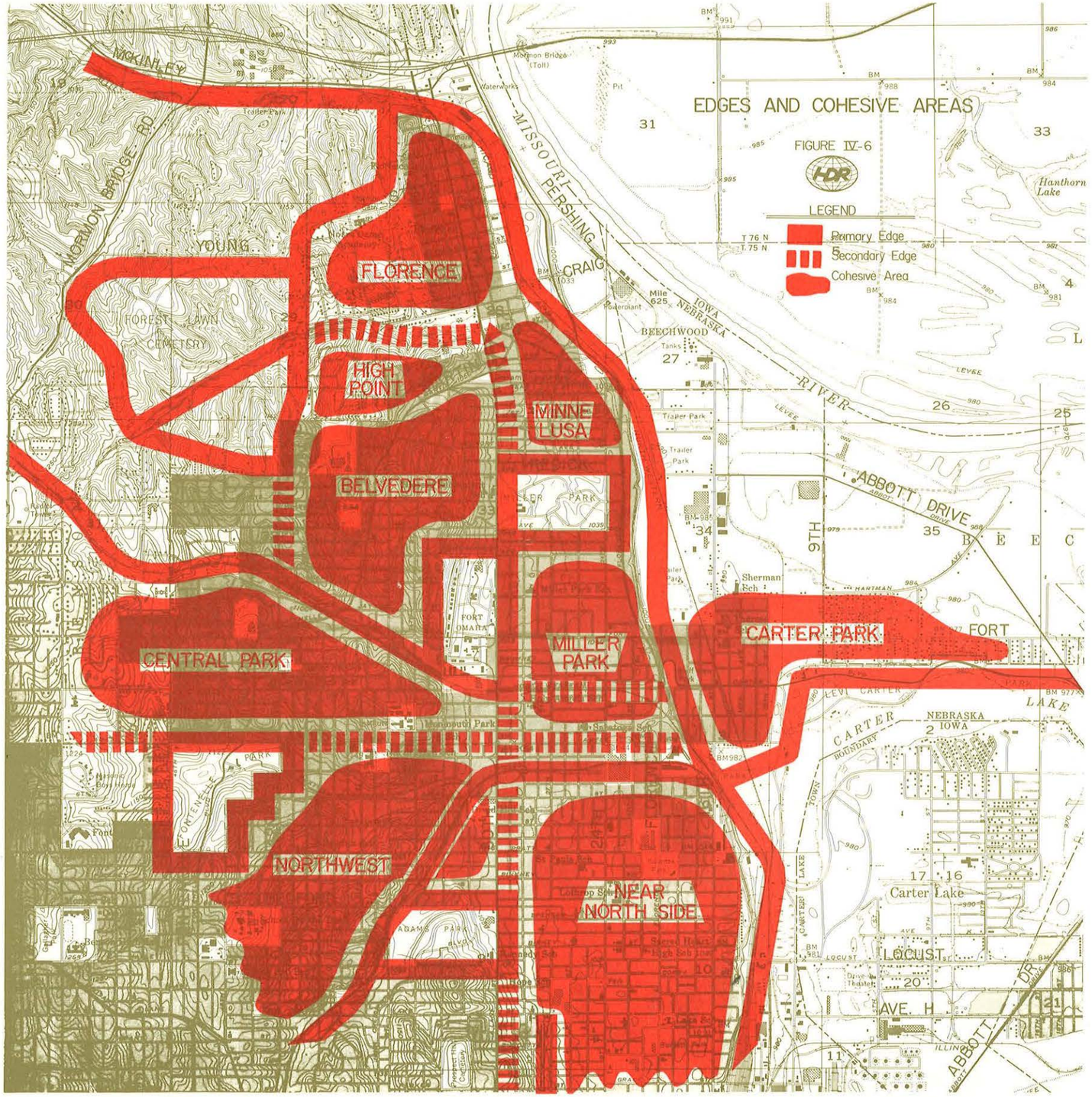




The Chicago and Northwestern Railroad has two lines located in the study area: one following lower edge of the bluffs; one running east-west near Grand Avenue. The potential exists to use the air rights over or to parallel this bluffs line or possibly to use the east-west line for freeway right-of-way due to limited rail usage of this line now.

The Missouri Pacific also has a line running east-west through the industrial strip south of Ames. The Union Pacific has several service lines, all confined to the flood plain industrial areas.

Bus transit service of the Metro Area Transit Authority is provided by several lines. The routings primarily use Ames, 30th, Fontenelle-Martin, 24th, 16th, Lake, 42nd, 40th and parts of Fort and Abbott Drive. The North Freeway routings should maintain or offer increased service potential for transit.



SOCIO-ECONOMIC SETTING

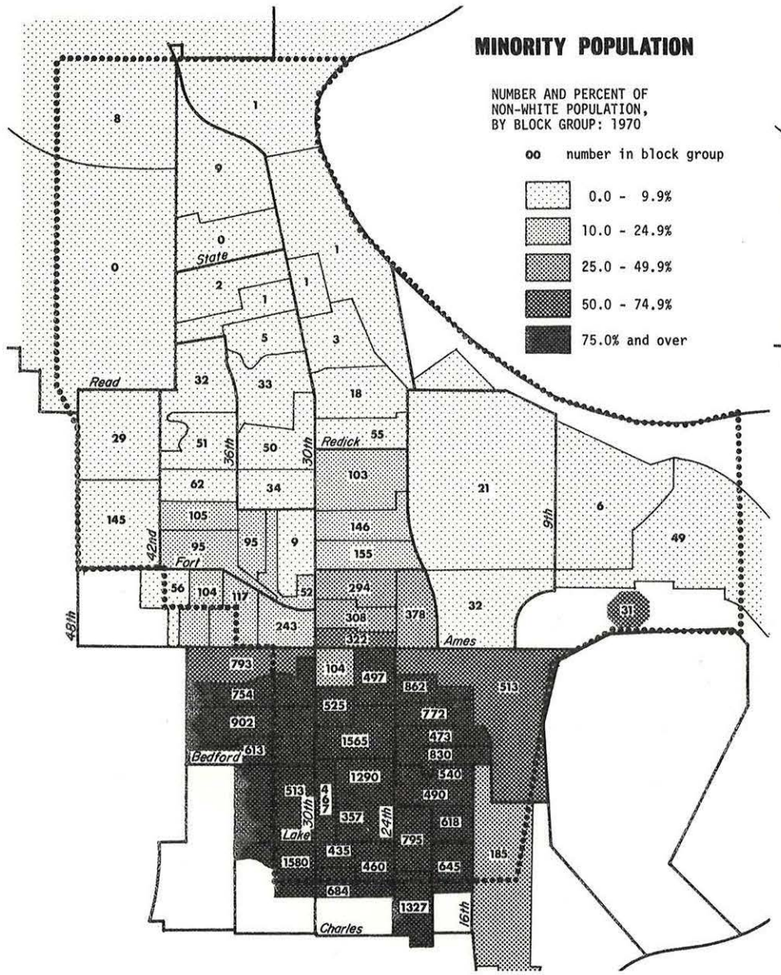
In most recent years, planners have learned that neighborhood boundaries are more often drawn on issues rather than normal socio-economic factors. With this premise, the corridor area was analyzed from the standpoint of "edges and cohesive areas." The findings shown in FIGURE IV-6 are based upon discussions with area neighborhood groups and persons familiar with the northern Omaha communities. For definition, "edges" are natural or man-made boundaries which tend to separate residential areas. Examples in the freeway corridor would be Ames Avenue and 30th Street, the bluffs, and railroad lines.

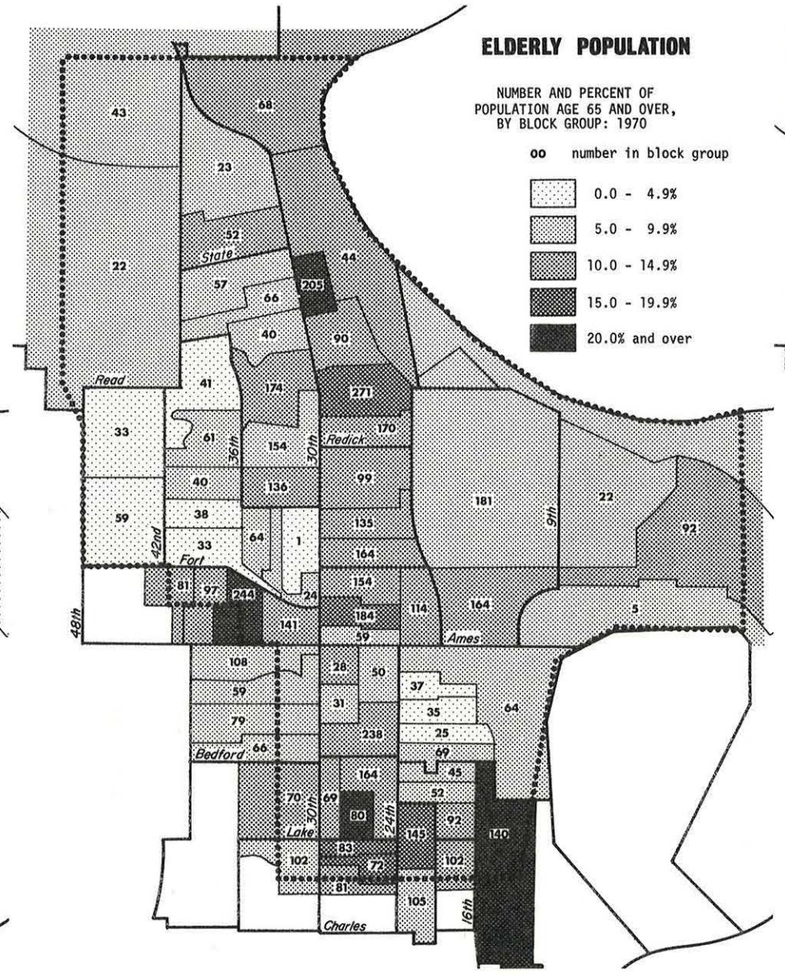
"Cohesive areas" are the areas between these edges which exhibit similarities in living activities, people, and other identities. They may be composed of smaller ethnic or sub-neighborhoods which generally can be recognized by the typical resident of the area. Examples would be Florence, Miller Park, and Near Northside.

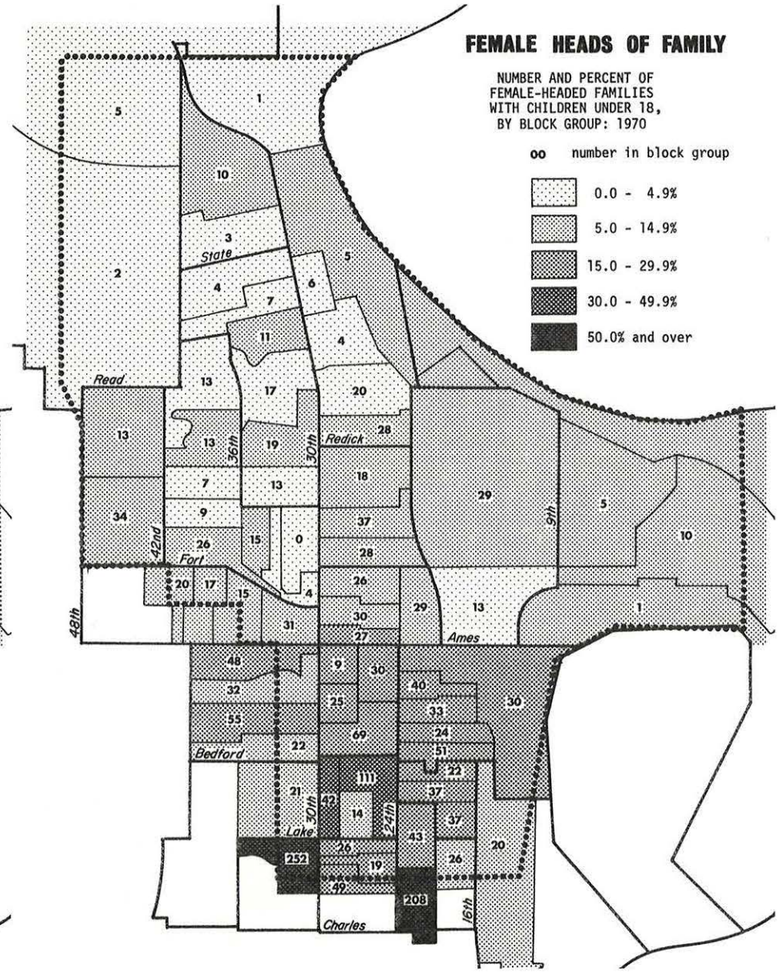
In studying FIGURE IV-6, several factors become apparent for input toward locating the potential freeway alignments. Of high importance as freeway routings were the railroad lines and the bluffs just east of Florence Boulevard in order to minimize the severing of neighborhoods. Usage of major streets, such as Ames and 30th, for a freeway route would adversely impact local access and circulation throughout the corridor area. Cohesive areas should be carefully crossed to avoid creating small, isolated residential segments. Numerous bridge crossings of the freeway route would be needed to reconnect residential areas and re-establish circulation and access paths once the freeway is located. APPENDIX M expounds further on neighborhood areas.

Available population information from the 1970 Census was compiled for the study. FIGURE IV-7 illustrates the population distribution patterns by Census Block Groups for Elderly Population, Minority Population, and Female Head of Household Population.

While most Omaha senior citizens live in the city's core area, the North Freeway Area contains many block groups which exceed the elderly average of 10.1 percent of the population for Omaha. High densities are especially apparent in block groups where elderly apartment towers and institutions are located. Although the elderly are distributed throughout the corridor, a pattern of heavier concentration







POPULATION CHARACTERISTICS

FIGURE IV-7

can be observed in those block groups between 30th Street and 24th Street south of Ames, and between 30th Street and Florence Boulevard north of Ames.

The Black minority population in the North Freeway Corridor is heavily concentrated south of Fort Street. From the population data, a three-tier residential pattern has formed - a) south of Ames is a heavy concentration of Blacks in basically substandard housing and low-income categories with extensive socio-economic problems; b) north of Ames and west of Florence Boulevard is an emerging middle class Black residential area characterized by professional, more highly educated people; c) immediately north of this group is a white middle class residential area. The centroid of Black population is moving consistantly in a north and westerly direction.

A general pattern of a larger number of families with children and headed by females is evident in the corridor south of Ames. Two areas with the heaviest concentreation are the public housing projects (Hilltop and Logan-Fontenelle) which are just south of the Lake Street boundary for this freeway study. Within the corridor, the higher percentages occur in the Spencer Homes public housing project.

The property records of the Douglas County Assessor were reviewed. The assessed values of land and improvements were totalled for blocks and converted into a "dollars per square foot per block" value. FIGURE IV-8 shows the resultant cost patterns which developed.

The lower property values are found in blocks south of the east-west railline of the Chicago and Northwestern Railroad which reflects the numerous older and often substandard houses. The large vacant land areas below the bluffs contribute to the lower ranges indicated although several high value commercial and industrial buildings do exist. The higher property values are grouped in an east-west belt of green and tan which extends across the center of the corridor from 42nd through Fort Omaha and Miller Park to Florence boulevard.

Fourteen public elementary and five parochial school attendance districts lie either partly or wholly within the corridor area. Overlapping these areas are three junior high and five senior high districts. Approximately 18 percent of the 80,000 children enrolled in public and parochial schools in 1973 live in the North Freeway Corridor Area.

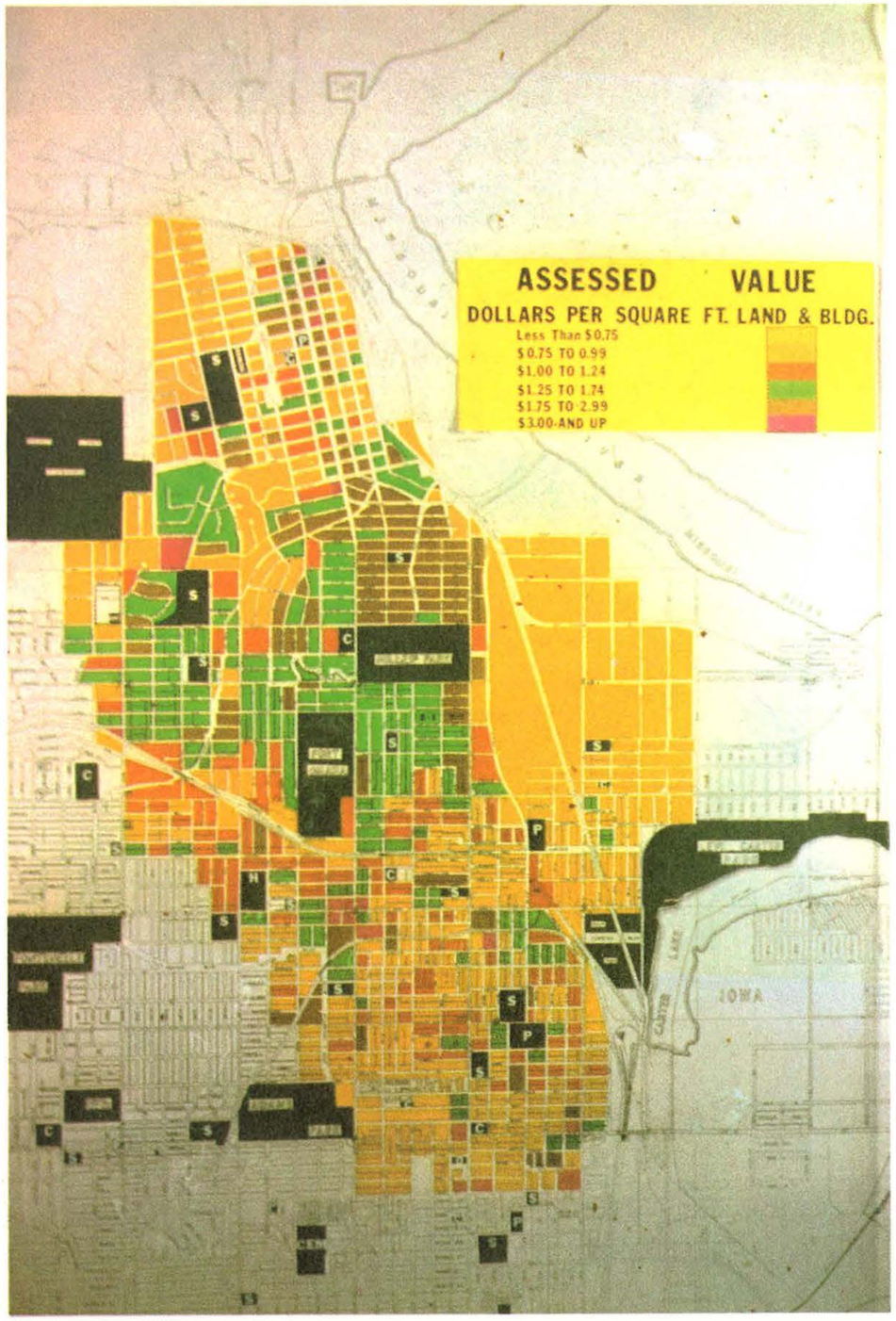
In reviewing the study area, nearly all existing school district lines would appear to be bisected by any freeway routing. This factor again points toward the necessity of sufficient freeway crossing points to reconnect school travel paths.

ASSESSED PROPERTY VALUES

FIGURE IV-8

LEGEND

	$/SQ. FT/BLOCK
Red Violet	— $3.00 & Over
Brown	— 1.75 - 2.99
Green	— 1.25 - 1.74
Orange	— 1.00 - 1.24
Tan	— 0.75 - 0.99
Yellow	—Less than $0.75



ENVIRONMENTAL SETTING

Although the entire study area is highly urbanized, there are several small natural areas in existence as well as numerous trees thoughout the residential areas. These existing areas were studied with respect to the direct impacts of freeway routings, even though future development (residential, commercial, industrial) could alter the present natural setting.

FIGURE IV-9 indicates those areas with environmental significance. Foremost are the major parks in or near the proposed freeway routings: Miller Park, Fontenelle Park, Carter Park and Adams Park. Each park area must be avoided unless no other feasible routing exists.

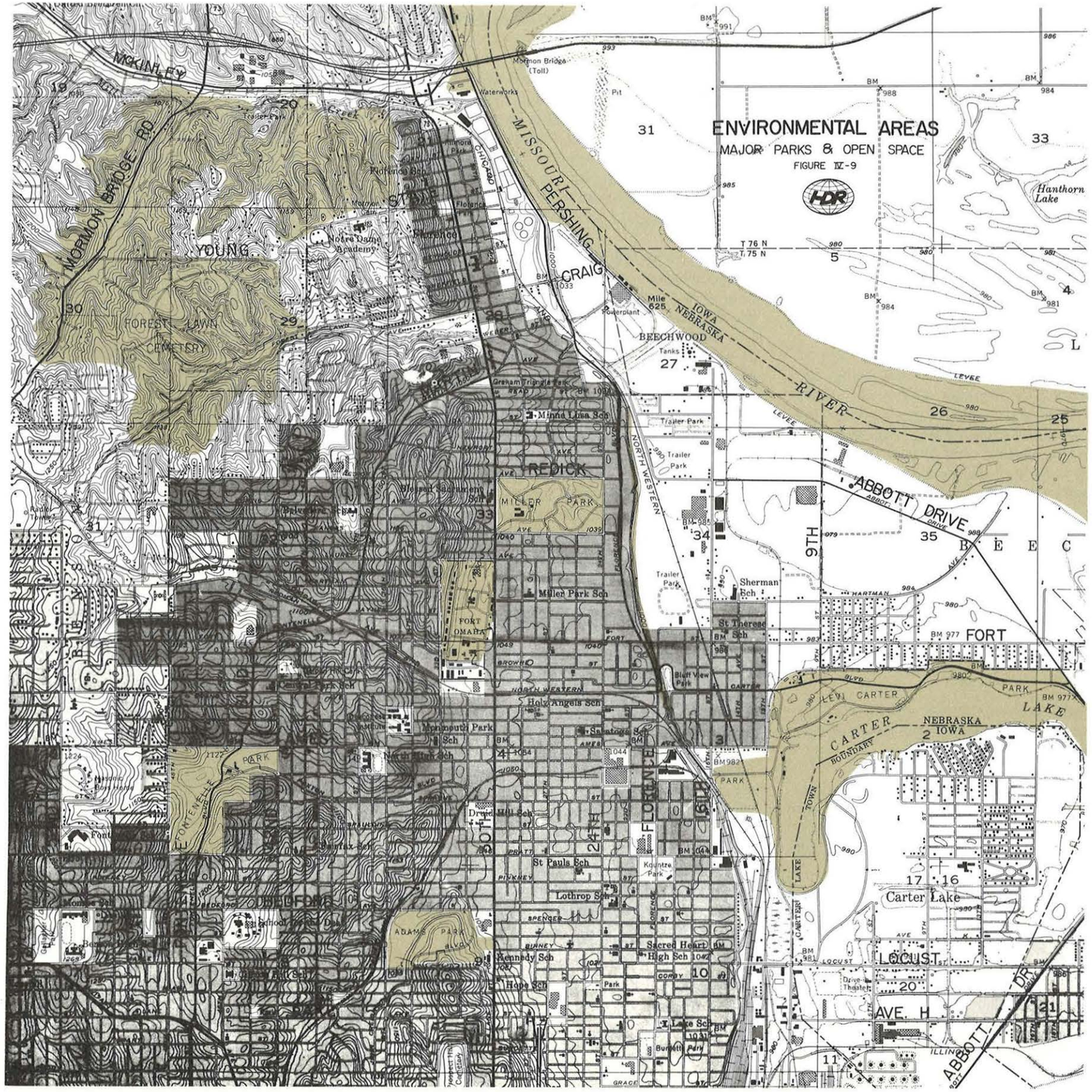
Of major interest are the hilly lands north of State/ Young Streets. The grass lands within this area are replaceable; however, the forested lands would take years to replace and therefore would be significantly impacted along with the wildlife still residing there.

Two other areas have very minor significance but are worthy of mention. These are the bluffs just east of Florence Boulevard and an old oxbow lake north of Fort Street near Abbott Drive. The bluffs are part of many residential properties and support a considerable stand of trees. The oxbow lake has silted away over the years and is of minor significance as a natural wetland.

It is recognized that air and noise pollution will be factors requiring more detailed evaluation as directly related to traffic, the exact freeway path, and types of adjoining land activities. Usage of vegetation, topography, noise berms and the other features should be considered with any freeway routing whether the freeway is at, above, or below the ground level.

Aesthetics becomes a function of "on road" and "off road" viewing. Because of the urban nature of the study area, vistas are somewhat limited. However, aesthetically displeasing aspects of the freeway should be dealt with through special treatment during the design. Should aesthetically pleasing areas be missing, then perhaps the excess freeway right-of-way can create such areas.

The Missouri River itself forms the eastern boundary of the Study Area and is a major waterway. Presently, the entire river area through the nearby six counties of Iowa and Nebraska is being closely studied under the Riverfront Development Program. Objec-



tives are mainly directed to the usage of the river for a multitude of recreational, open space, and community living activites.

DEVELOPMENT OF POTENTIAL FREEWAY ALIGNMENTS

The study team developed general layouts of all potential alignments for the North Freeway based upon the knowledge gained from studies of the physical setting, socio-economic setting, and environmental setting in the corridor area. Also, influencing the location of the potential alignments were the contacts with local citizens, groups, and agencies as well as field reconnaisance surveys of the area.

More than 25 potential alignments were developed (over 100 actual alignments when considering the various combinations of freeway sections). These alignments were composed of three basic groups for the North Freeway—East Alignments, Central Alignments, and West Alignments. The Airport Connector Freeway had two potential alignments—Fort Street and Hartman Avenue.

Of the factors used in locating these potential alignments, topography played the most important role with each route following all the feasible contours from Lake Street northward. The "edges and cohesive areas" which defined major neighborhood regions also played an important role in finding route locations along borders which were man-made or natural.

Although the study area is highly urbanized, the environmental analysis located wooded areas which should be bypassed by the freeway.

Locations of parks, schools, churches, cemeteries, and historical sites were avoided where possible. On the other hand, land values and population patterns although collected were not found to be useful at this stage in locating the potential routings.

Sketches received from citizens were also reviewed and used to locate some potential freeway sections. In particular, several section of the East Alignments follow paths proposed by MAPA's Citizen Advisory Board.

Details on the physical routings of all the potential alignments may be found in APPENDIX D.

EVALUATION OF POTENTIAL FREEWAY ALIGNMENTS

Having identified over 25 potential alignments for the North and Airport Freeway, the Study Team next had the task of reducing this large number of routes to the 2 or 3 best routes. These selected alignments would be then developed in detail to show physical features (interchanges, lanes, right-of-way) and would be subjected to detailed impact studies (traffic, costs, social, economic, environmental).

Input into making such a decision came from three major sources: 1) analyses by each discipline on the Consultant Study Team; 2) review comments from the Citizen Consortium; 3) informal review by the City and State engineering staffs. Additional input came from four public meetings and from individual contacts with citizens, businessmen, and other community residents.

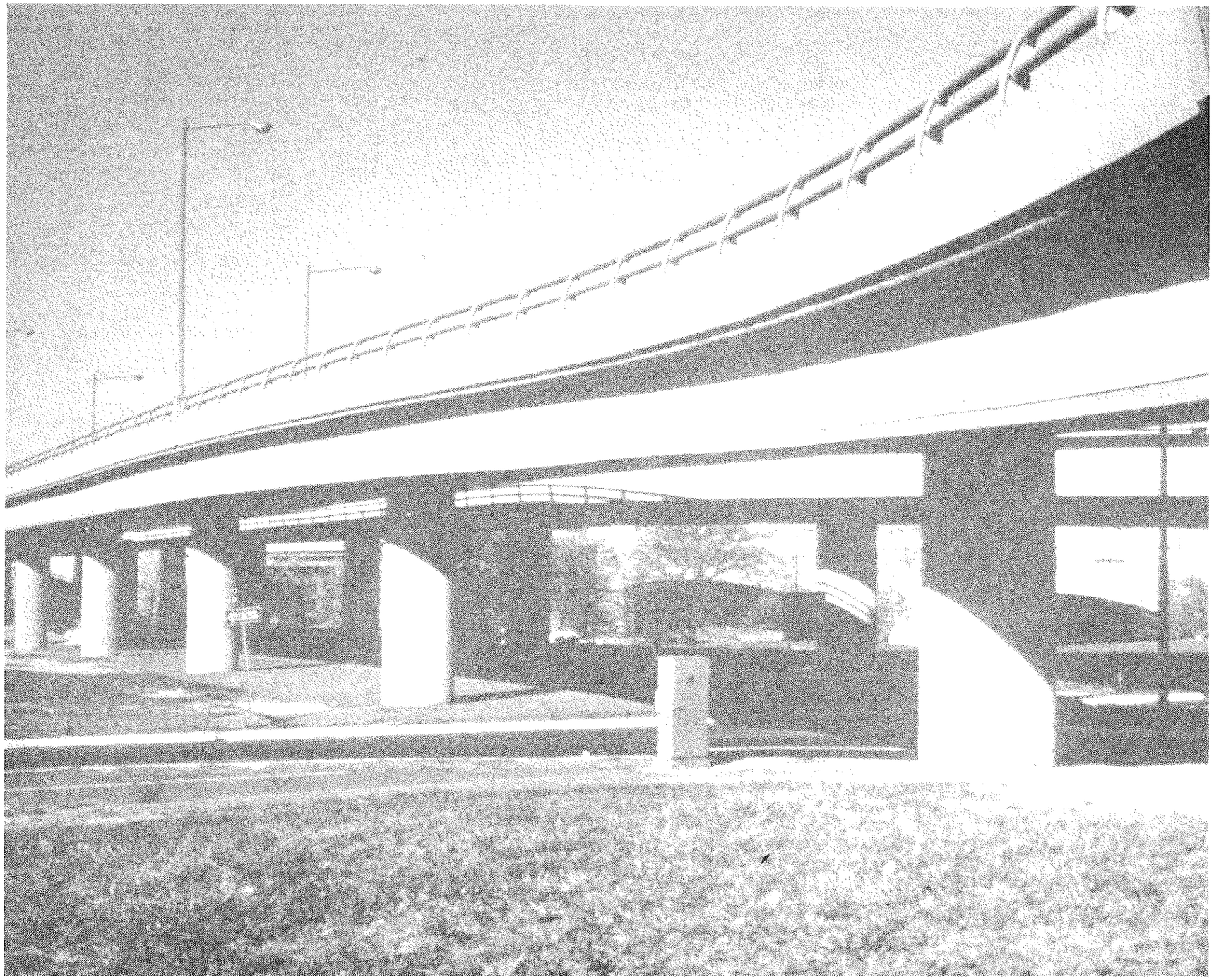
The overall selection approach was through a comparative "process of elimination" whereby the better routings out of the West Alignments were first chosen with the weaker routings being discarded. These better alignments were then narrowed to the best alignment. Where two alignments or sections seemed too close, both were retained.

This same process was repeated for the Central, the East, and the Airport Alignments.

Finally, the selected alignments consisted of one West with 2 southern sections, one Central with 2 southern sections, one East, and two Airport Connectors. Comparing the three individual groups involved in the selection process, the concensuses by the Study Team, Consortium, and City-State Staffs were very close with the final selections being unanimous. The final decisions by the City and State on these selected alignments then became a rather easy task.

The selected alignments are detailed and evaluated in PART V. Further discussion on the analyses and evaluations leading to their selections may be found in APPENDIX D.

PART V
DESCRIPTION OF SELECTED ALIGNMENTS



PART V

DESCRIPTION OF SELECTED ALIGNMENTS

SELECTED ALIGNMENTS

As was discussed in PART IV, the evaluation of the potential alignments by the Study Team, Citizen Consortium, City and State led to the selection of three basic North Freeway alignments (East, Central, West) and two basic Airport Freeway alignments (Hartman and Fort).

In actuality, the selected North Freeway alignments consisted of one East Alignment, one Central Alignment with two southern sections, and one West Alignment also with two southern sections. Thus, there are truly five possible alignments selected for the North Freeway itself.

For each of these five North Freeway alignments, there are two airport alternatives. Consequently, from a systems standpoint, there are ten possible combinations for the North Freeway — Airport Freeway network. These ten alignment combinations are as follows:

1. East with Fort Street Airport Connector.

2. East with Hartman Avenue Airport Connector.

3. Central (27th - 28th Street Section) with Fort Street Airport Connector.

4. Central (31st Avenue Section) with Fort Street Airport Connector.

5. Central (27th - 28th Street Section) with Hartman Avenue Airport Connector.

6. Central (31st Avenue Section) with Hartman Avenue Airport Connector.

7. West (27th - 28th Street Section) with Fort Street Airport Connector.

8. West (31st Avenue Section) with Fort Street Airport Connector.

9. West (27th - 28th Street Section) with Hartman Avenue Airport Connector.

10. West (31st Avenue Section) with Hartman Avenue Airport Connector.

Included with the above "Build" alignments is an eleventh alternative which is the "No Build" condition. The No Build is comprised of the existing street system plus those improvements actually programmed and funded for construction.

In comparison of their freeway mileage, each of the 10 Build alternates have similar distances, as may be seen in TABLE V-1. For the North Freeway alone, the alternates all have lengths of about 5 miles. Between the two Airport Connections, the Hartman Alignment is slightly shorter than the Fort Street Alignment due to the angle of the Abbott Drive. For the total freeway system, the East has the shortest total freeway mileage. The primary reason for the additional mile of length with Central and West is due to the Airport Connector retracing the path of the East Alignment from 16th Street westerly to the 30th Street area.

In the discussion which follows, a summary description of the roadway characteristics along with plan and profile drawings are presented for each North Freeway alternate system. These descriptions depict the East Alignment plus the Airport Connectors, the Central Alignment plus the Airport Connectors, the West Alignment plus the Airport Connectors, and the No Build Alternate. Preceding these descriptions, are presentations of the 1995 traffic forecasts as well as the general design standards for the freeway concepts.

TABLE V-1

MILEAGE SUMMARY OF SELECTED ALIGNMENTS

Alternative Freeway System	Length (in miles) North Freeway *	Airport Connection **	Total System
EAST plus Fort	5.01	1.50	6.51
EAST plus Hartman	5.01	1.12	6.13
CENTRAL (27th-28th) plus Fort	4.96	2.33	7.29
CENTRAL (27th-28th) plus Hartman	4.96	2.12	7.08
CENTRAL (31st Ave.) plus Fort	4.80	2.55	7.35
CENTRAL (31st Ave.) plus Hartman	4.80	2.34	7.14
WEST (27th-28th) plus Fort	5.12	2.33	7.45
WEST (27th-28th) plus Hartman	5.12	2.12	7.24
WEST (31st Ave.) plus Fort	4.95	2.55	7.50
WEST (31st Ave.) plus Hartman	4.95	2.34	7.29

* Distances measured along proposed North Freeway from Lake to McKinley

** Distances measured along proposed Airport Freeway from 30th St. to Abbott Dr. when with the Central or West (31st Ave.) Routing; from 27th St. to Abbott Dr. when with the Central or West (27th-28th) Routing.

TRAFFIC FORCASTS

The 1995 traffic flows utilized in the design and evaluation phases of this report were derived from a series of computer traffic assignments performed by the Nebraska Department of Roads in conjunction with the Omaha-Council Bluffs Metropolitan Area Planning Agency (MAPA). These assignments were reviewed and analyzed by representatives from the Nebraska Department of Roads, the City of Omaha, and HDR for soundness, validity, and reasonability with area traffic patterns.

The resultant volumes for 1995 average daily traffic (ADT) are graphically displayed for the East Alignment in FIGURE V-1, for the Central (27th-28th) Alignment in FIGURE V-3, for the West (31st Avenue) Alignment in FIGURE V-5, and for the No-Build Alternative in FIGURE V-7. Because of similarities in the basic traffic patterns around 30th Street and Ames Avenue, traffic assignment volumes in FIGURE V-3 for the Central (27th - 28th) were assumed to also approximate the traffic volumes on the West (27th - 28th) Alignment. Likewise, traffic for the West (31st Avenue) Alternate in FIGURE V-5 were assumed to also approximate travel demand on the Central (31st Avenue) Alignment. Similarly, the assigned volumes on the Hartman Avenue Airport Connector were assumed to prevail on the Fort Street Airport Connectors. These assumptions enabled an analysis of the different ramp configurarions and geometrics of these other alternates to be preformed.

The assignments for the networks with a North Freeway alignment and an Airport Connector included as well all street improvements listed in the 1995 Interim Transportation Plan 1] for the Metropolitan area. In the general North Freeway Corridor Study Area these improvements included the following:

1. Abbott Drive - 9th to 16th (widen from 2 to 4 lanes)

2. Lake Street - 16th to Radial Highway (widen from 2 to 4 lanes)

3. Avenue H - 16th to Abbott (viaduct and widen from 2 to 4 lanes)

4. 40th Street - Lake to Ames (widen from 2 to 4 lanes)

5. 42nd Street - Ames to Redman (widen from 2 to 4 lanes)

6. Hartman/Redman - 52nd to 42nd (widen from 2 to 4 lanes), 42nd to North Freeway (4 lanes)

In keeping with the standard corridor study definition, the basic No-Build Alternate consists of the 1974 existing street system plus committed improvements as of 1974. These committed improvements are: (1) Abbott Drive - Avenue H to 9th Street, (2) completion of the second bridge over the Missouri River on I-680, and (3) extension of the North Freeway from Hamilton Street to Lake Street.

For each of the traffic flow maps, there is a corresponding Volume to Capacity Ratio (V/C) Map, FIGURES V-2, V-4, V-6, and V-8, which indicate how well the various streets will perform under the demands of 1995 traffic, relative to their respective capactities. This performance is interpreted as one

1] COATS 1995 Interim Transportation Study, Omaha-Council Bluffs Metropolitan Area Planning Agency, Report No. 108-1, May 1973, April 1974.

of several "Levels of Service". 2] The V/C ratios are those derived by MAPA for use as street service standards in the Metropolitan Area.

Referring to the legends of the V/C Maps, those streets with ratios less than 1.07 are operating acceptably, with Level C being the usual standard for intersection design. Streets operating at Level D (1.07 to 1.20) will experience moderate, but tolerable delays during peak traffic periods.

Level E (1.20 to 1.33) represents the true capacity of the street and is indicative of serious delays and congestion. Streets operating at Level F are characterized by a complete breakdown in the streets' ability to efficiently carry traffic during peak traffic periods. Excessive delays and congestion will occur at this level.

As is discussed in detail in APPENDIX E, any of the Build Alternatives provide several beneficial affects to the street system. Few streets are seriously congested (Level of Service E or F), the major north-south artery 30th Street flows acceptably well, and accessibility to the rest of Omaha from the corridor is enhanced.

The V/C Maps also point out certain recommended street improvements for 1995, which possibly should have their design requirements reviewed. For example, portions of the Hartman-Redman Arterial and Lake Street improvements may require six lanes rather than four lanes.

The No-Build Alternative in comparison to the Build Alternatives is marked by a large number of streets operating poorly at Levels E or F. Thirtieth Street is seen from FIGURE V-8 to be functioning at Level F along most of its length. As is discussed in APPENDIX E, many other major streets are congested with traffic beyond their capacity. Overall system efficiency is extensively deteriorated.

2] Level of Service is a qualitative measure of operating conditions at an intersection. The six levels are: Level A - free flow, no delay; Level B - stable flows, slight delays; Level C - stable flows, acceptable delays (usual standard for intersection design); Level D - approaching unstable flows, tolerable delays; Level E - unstable flows, congestion and intolerable delays (capacity); and Level F - forced flows, jammed conditions.

A Modified No-Build discussed in APPENDIX E consists of the basic No-Build plus all recommended street improvements in the North Omaha Area called for in the 1995 Interim Transportation Plan except for the North Freeway. Despite these improvements, the Modified No-Build is lacking in sufficient street capacity. The primary deficiency would still be 30th Street and the recommended 1995 Plan improvements alone without the North Freeway would have no relief effect upon an existing 30th Street. Thirtieth Street would require a 6-lane divided facility meaning properties on one side of 30th would need acquiring. Also, John Pershing and Fontenelle Boulevard would need widening to 4 lanes as would other arterial streets in the area. In summary, the point is that a modified No-Build would simply not provide the needed street capacity.

In closing, the 1995 traffic assignments for the various alternates in this study provided the basis for evaluating the relative effectiveness of each alternate with respect to traffic service and overall system performance, as well as for assessments of the impacts of vehicle emissions and noise in the study corridor area.

All of the traffic assignments executed in the course of this study are based on certain underlying assumptions, forecasts, and allocations utilized by MAPA in its development of the 1995 Interim Transportation Plan. MAPA's planning process involves the following basic steps:

1. Inventory - Collection of various socio-economic data (population, dwelling units, employment, land use, auto ownership, school enrollment, area travel characteristics) for each of 241 transportation zones in in the Metropolitan Area.

2. Forecast - Updating of the various socio-economic variables to the planning horizon year of 1995 for each zone.

3. Trip Generation - Estimation of trip-ends in each zone, from generation model based on a correlation of trip production and socio-economic data for each zone.

4. Trip Distribution - Linking of trip ends to form trips as derived from the trip distribution model which produces the predicted number of trips between any two zones.

5. Model Split - Mathematical model based on transit usage data, socio-economic variables, and transportation system characteristics which separates transit trips from trips by private vehicles.

6. Trip Assignment - Assignment of forecast zone-to-zone trips onto the major metropolitan streets based on the origin and destination of a trip, and the travel time on and the capacity of each link of the street system.

7. Evaluation - Evaluation of various alternative street systems as to ability to accommodate forecast traffic demands.

These factors are all elements of an accepted general urban transportation planning methodology which has evolved for the purpose of defining future transportation needs and evaluating proposed alternative systems, both highway and transit, formulated to meet those future needs. The basic assumption of this planning process is that, barring some fundamental change, the demand for travel in an urban area is repetitive and predictable. 3]

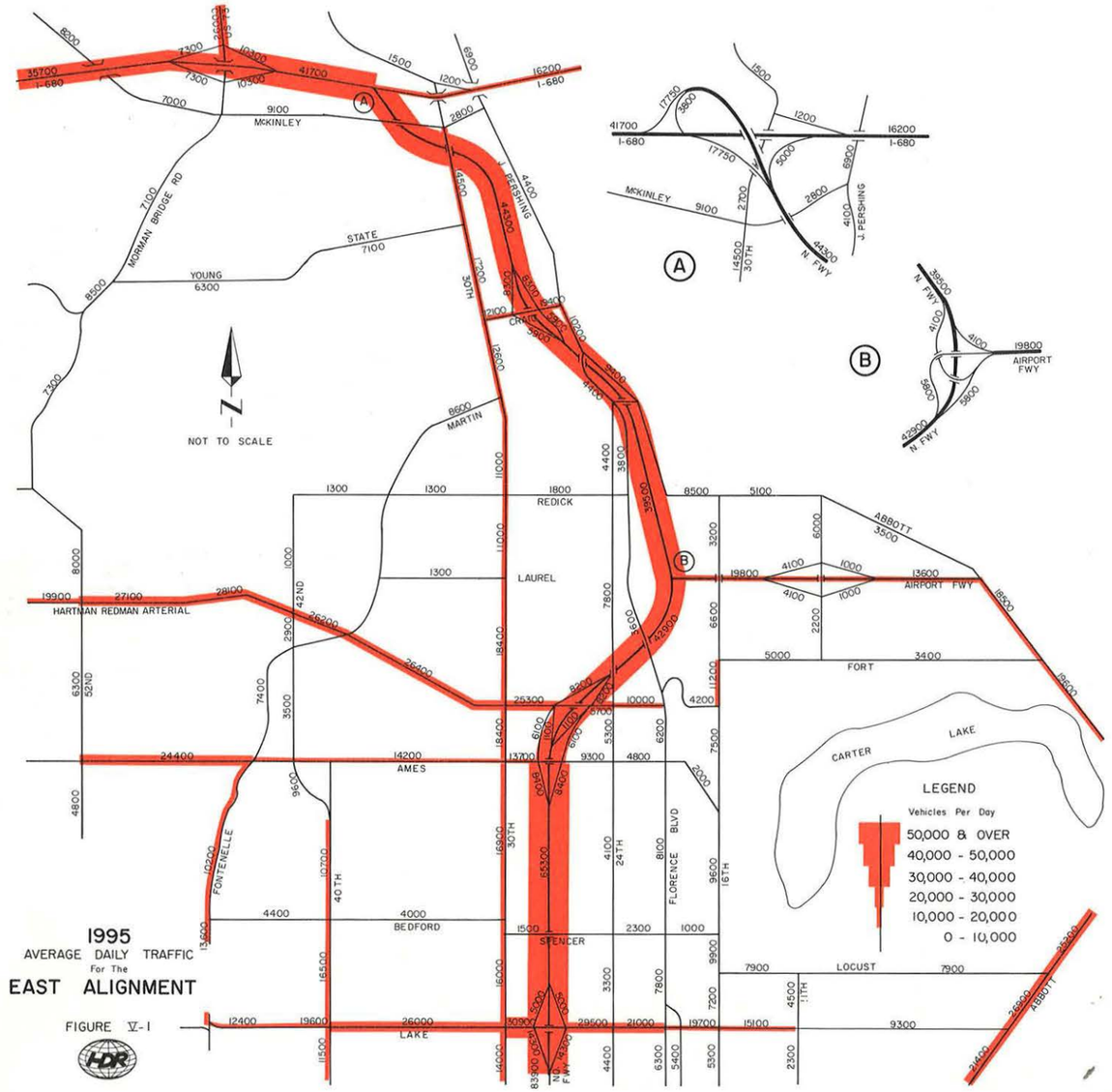
The forecast of land use is one of the basic factors effecting urban travel patterns. Factors considered by MAPA in such a forecast include existing land use patterns and committments, anticipated patterns of development, topography, planned development, projected total metropolitan growth patterns, and public policy, plans, and ordinances related to land use and development. Based on the projection of future land uses, allocation of the population and employment forecasts to the transportation zones is performed.

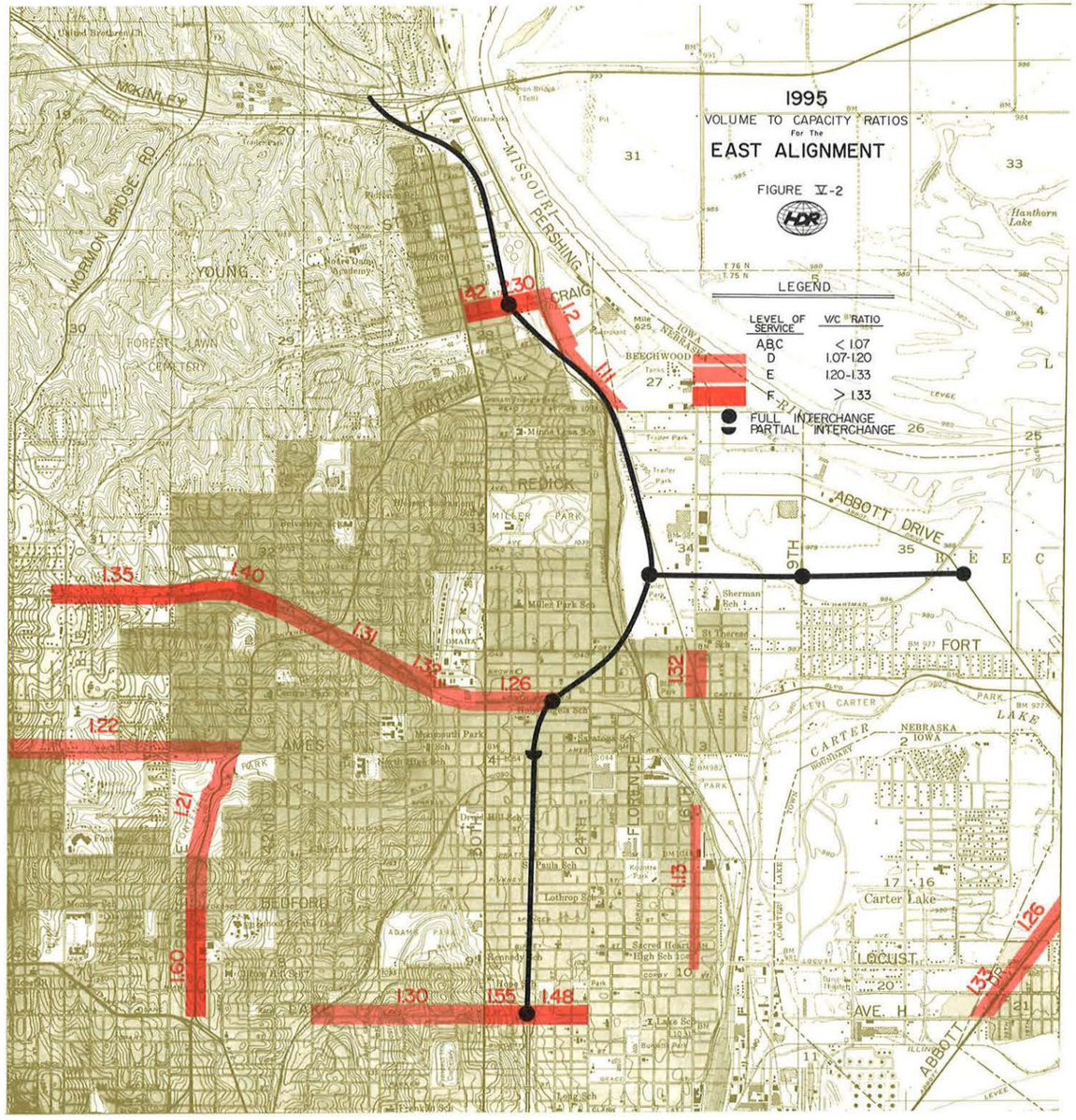
The Preliminary 1985 Land Use Plan expects little change in the portion of the North Freeway Corridor which is presently developed. However, considerable industrial development is contemplated for the river areas between the Airport and 16th Street along Abbott Drive. Moreover, moderate residential and industrial growth is anticipated in the open areas at the north end of the corridor. Considerable residential development on either side of I-680 to the west is also expected to occur , as the ring of suburban growth which began in southwest Omaha continues to the north and east along I-680.

3] COATS 1995 Interim Transportation Plan, p12.

It should be noted that if more detailed information regarding the area wide transportation planning program, its models, and its updating and monitoring methods is desired, MAPA should be contacted directly.

It should also be noted that the nation's transportation system presently is going through a period of instability due to the "energy crisis". The currently available planning models and their forecasts are based upon travel trends prior to the present energy problems. Once the current crisis ceases and national energy and transportation courses are re-established, a concrete basis for readjusting the planning process to meet area travel patterns will exist and appropriate updates can be made to the North Freeway planning and design work. Meanwhile, the traffic forecasts contained in this report are based upon the best available planning methodologies now in existance in the Omaha Metropolitan Area and now reflected in the cooperative planning program of MAPA, the City of Omaha, and the Nebraska Department of Roads.


35700
I-680
8000
7300
7300
10300
10500
41700
16200
I-680
1500
1200
6900
7000
9100
McKINLEY
2800
7100
MORMAN BRIDGE RD
STATE
7100
YOUNG
6300
8500
7300
6500
4400
J. PERSHING
44500
30TH
17200
CORBY
5900
6400
2100
CRAIG
3900
10200
5200
4700
12600
8600
MARTIN
11000
4400
3800
1300
1300
1800
REDICK
8500
5100
39500
3200
1300
LAUREL
11000
7800
6600
8000
19900
27100
28100
HARTMAN REDMAN ARTERIAL
42ND
1000
29900
26200
26400
18400
42900
19800
4100
1000
4100
1000
13600
AIRPORT FWY
18600
6300
52ND
7400
3500
2900
25300
10000
5000
FORT
3400
4200
11200
18600
6100
1100
6100
1100
6200
5300
5700
6200
7500
24400
14200
AMES
13700
9300
4800
2000
4800
9600
9400
6500
6500
4100
24TH
8100
FLORENCE BLVD
9600
16TH
10200
PONTENELLE
10700
40TH
16800
30TH
4400
4000
BEDFORD
1500
SPENCER
2300
1000
9900
13500
16500
16000
5200
5200
3300
7800
7200
7900
LOCUST
7900
4500
11TH
12400
19600
26000
LAKE
30900
29500
21000
19700
15100
9300
26500
ABBOTT
11500
44000
4400
6300
5400
5300
2300
24500
CARTER
LAKE
A
B
1500
1200
16200
I-680
41700
I-680
17750
3800
17750
5000
6900
MCKINLEY
9100
2700
2800
4100
J. PERSHING
4500
30TH
44500
N. FWY
39500
N. FWY
4100
4100
19800
AIRPORT FWY
5800
5800
42900
N. FWY
N
NOT TO SCALE
LEGEND
Vehicles Per Day
50,000 & OVER
40,000 - 50,000
30,000 - 40,000
20,000 - 30,000
10,000 - 20,000
0 - 10,000
1995
AVERAGE DAILY TRAFFIC
For The
EAST ALIGNMENT
FIGURE V-1
HDR


1995
VOLUME TO CAPACITY RATIOS
For The
EAST ALIGNMENT
FIGURE V-2
HDR
LEGEND
LEVEL OF SERVICE
V/C RATIO
A,B,C
< 1.07
D
1.07-1.20
E
1.20-1.33
F
> 1.33
FULL INTERCHANGE
PARTIAL INTERCHANGE
MISSOURI-PERSHING
MORMON BRIDGE RD
McKINLEY
YOUNG
FOREST LAWN CEMETERY
MARTIN
REDICK
ABBOTT DRIVE
9TH
AMES
BEDFORD
FLORENCE BLVD
24TH
16TH
30TH
CRAIG
FORT
LOCUST
AVE H
CARTER LAKE
LAKE
IOWA
NEBRASKA
BEECHWOOD PK
Hawthorn Lake
1.42
1.30
1.12
1.11
1.35
1.40
1.31
1.35
1.26
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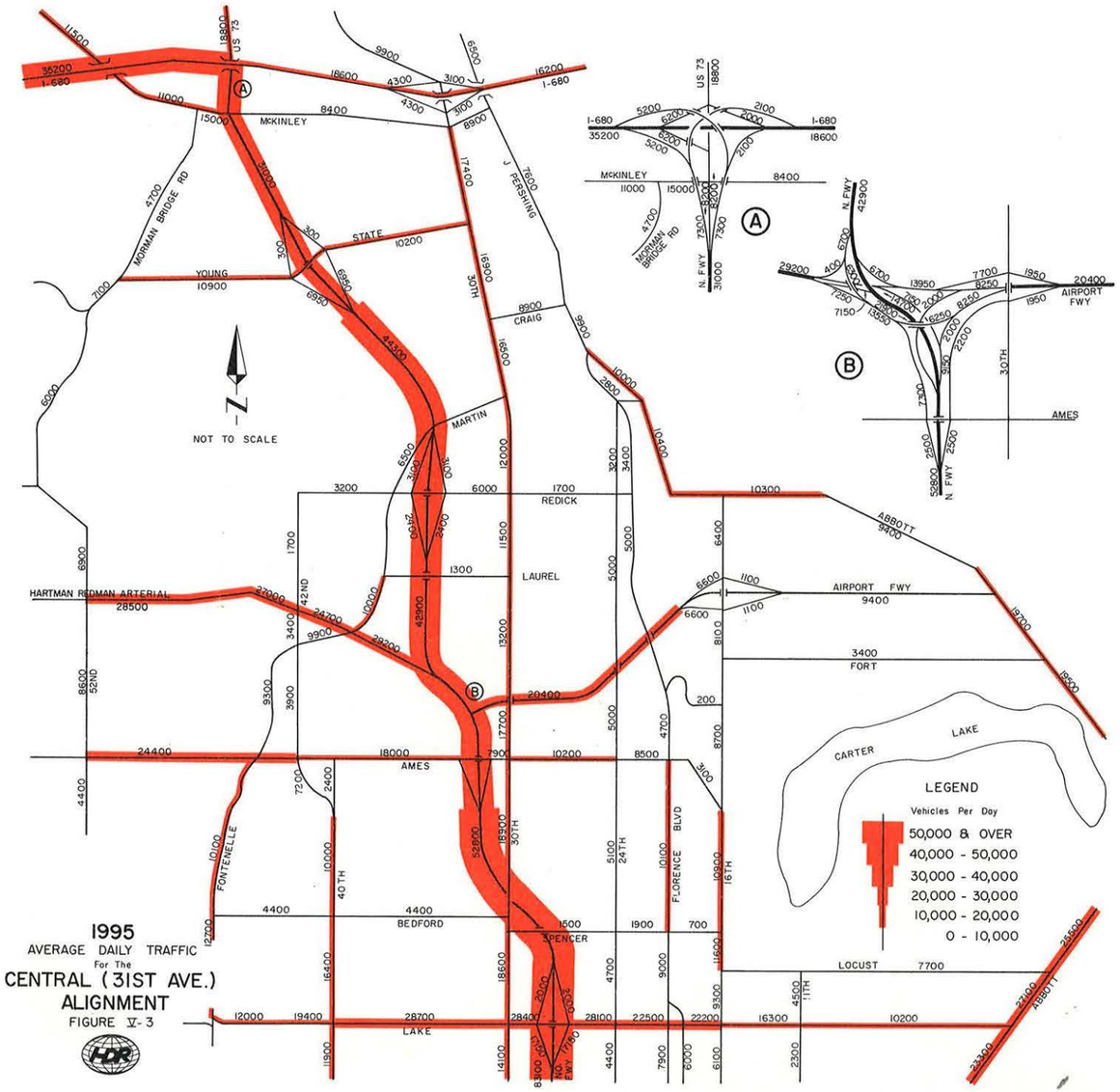
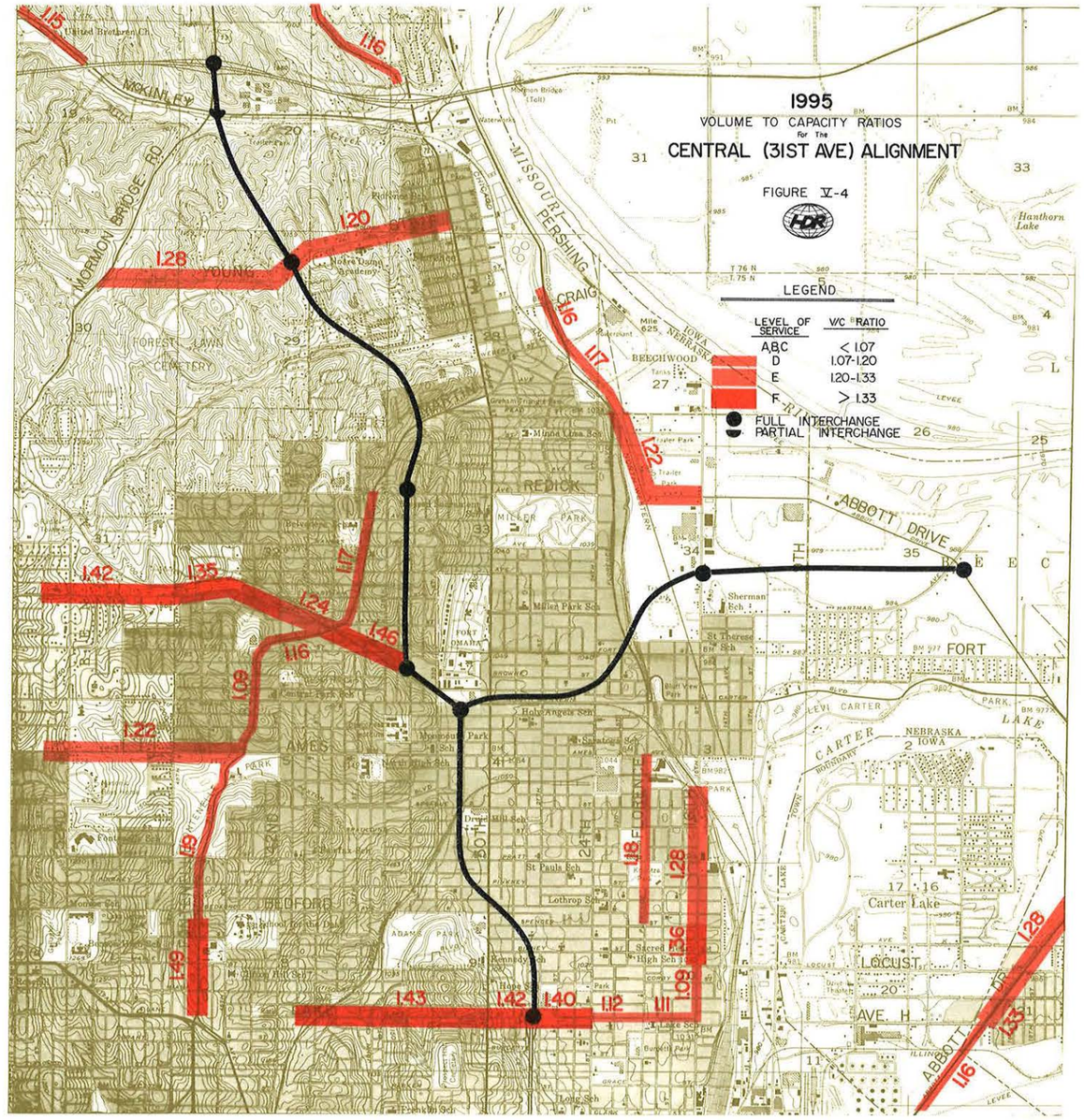
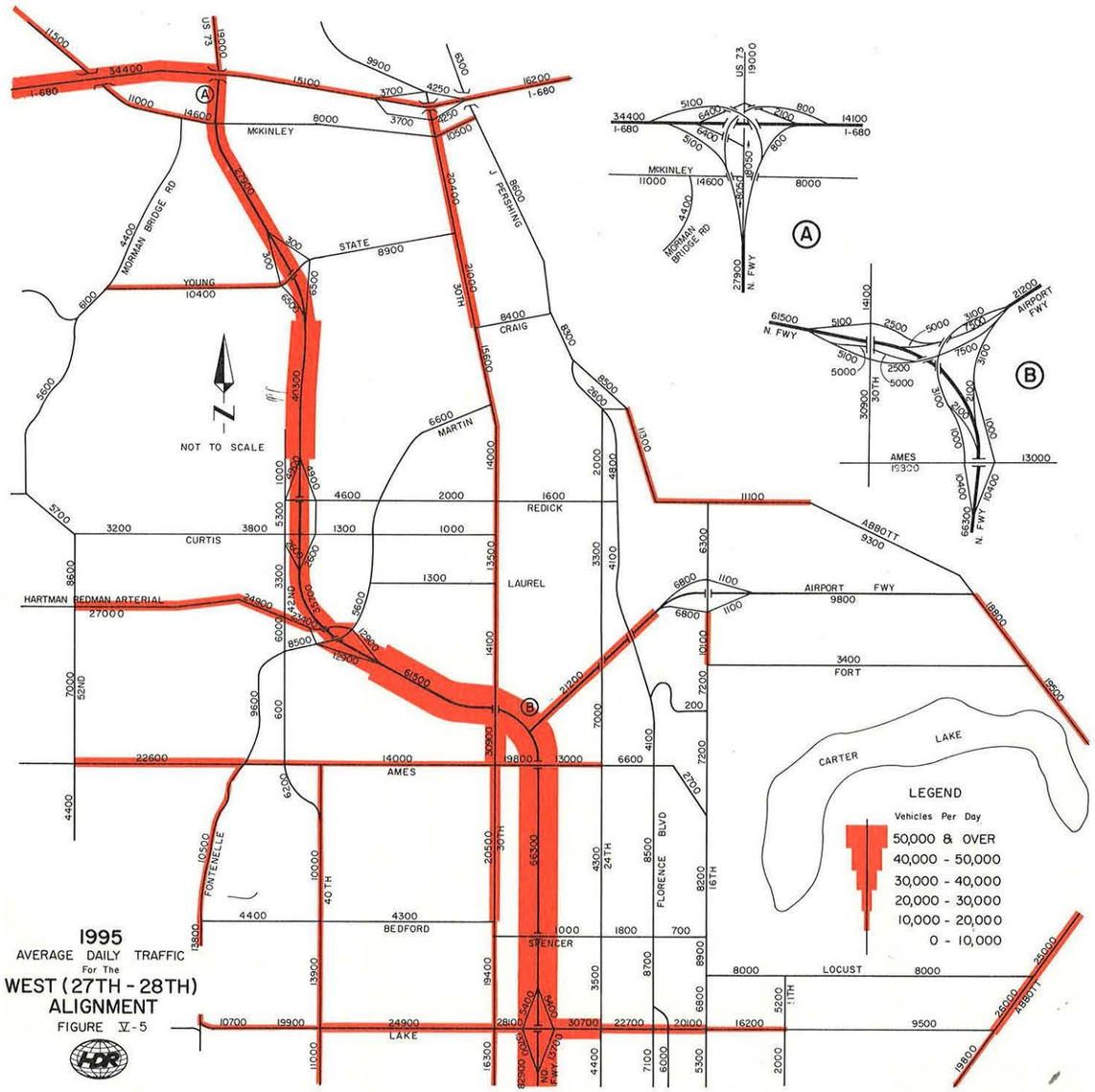
1.22
1.21
1.13
1.60
1.30
1.55
1.48
1.33
1.26



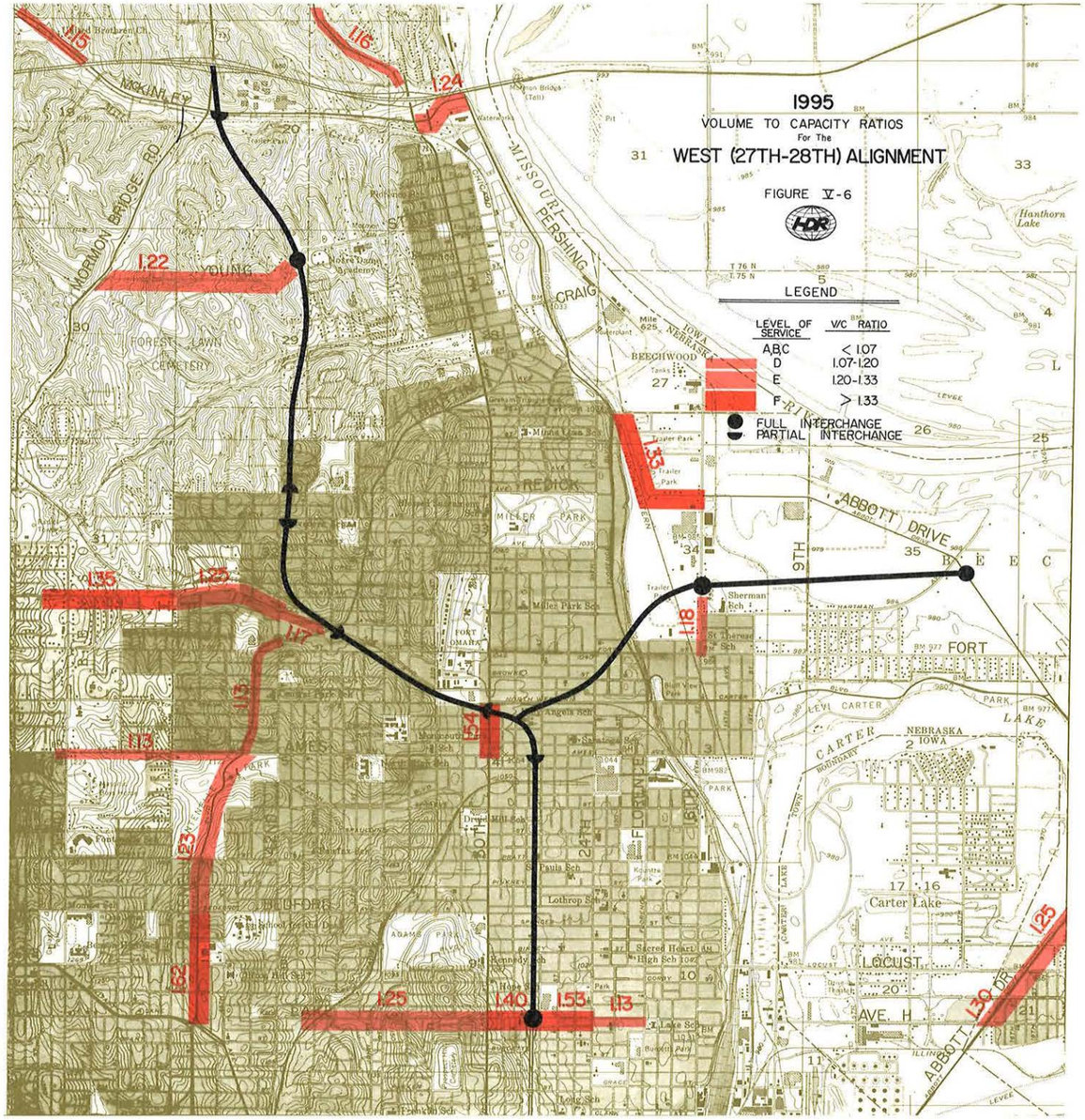
1995
AVERAGE DAILY TRAFFIC
For The
CENTRAL (31ST AVE.)
ALIGNMENT
FIGURE V-3



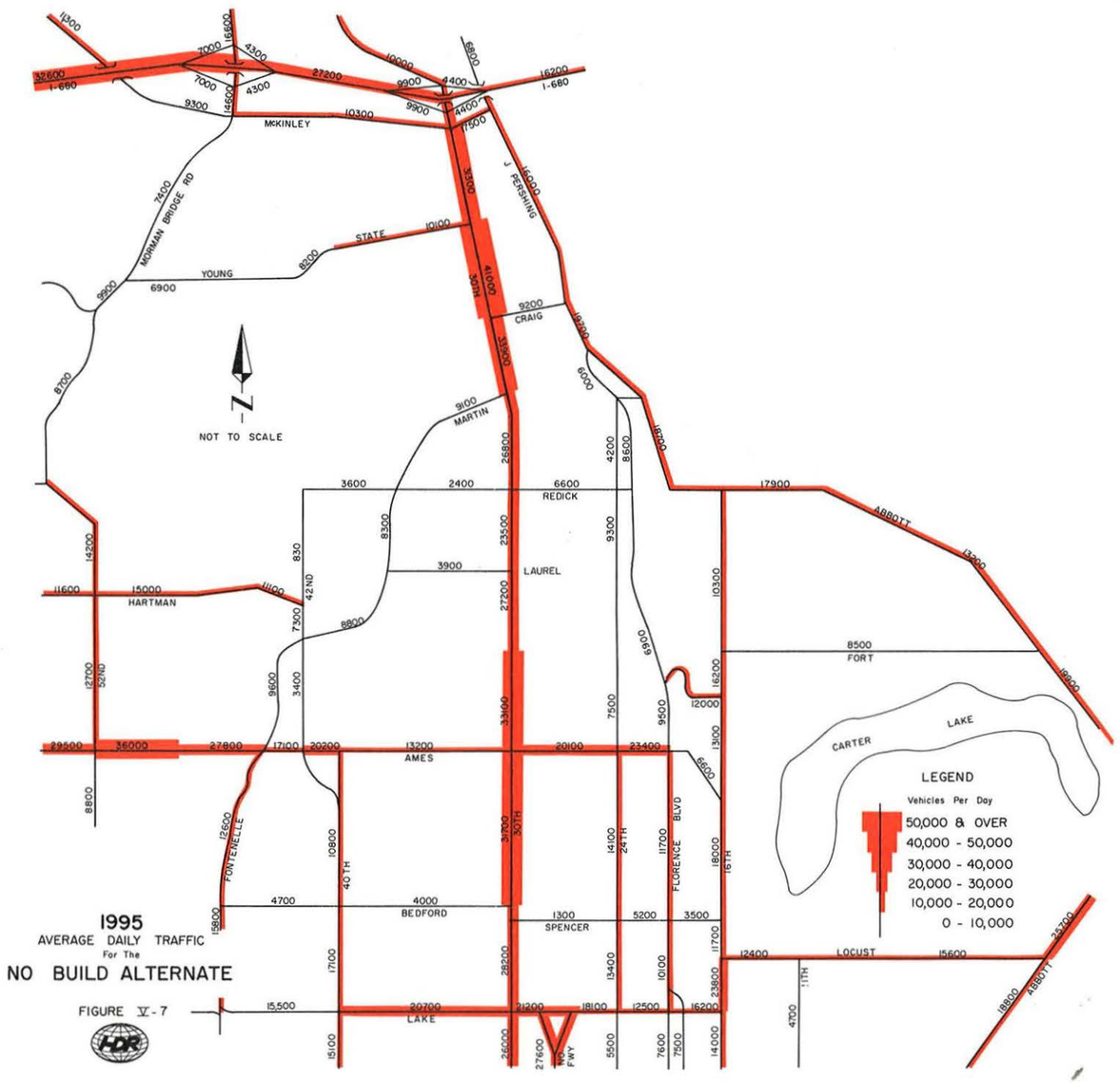
1995
VOLUME TO CAPACITY RATIOS
For The
CENTRAL (31ST AVE) ALIGNMENT
FIGURE V-4



1995
AVERAGE DAILY TRAFFIC
For The
WEST (27TH - 28TH)
ALIGNMENT
FIGURE V-5

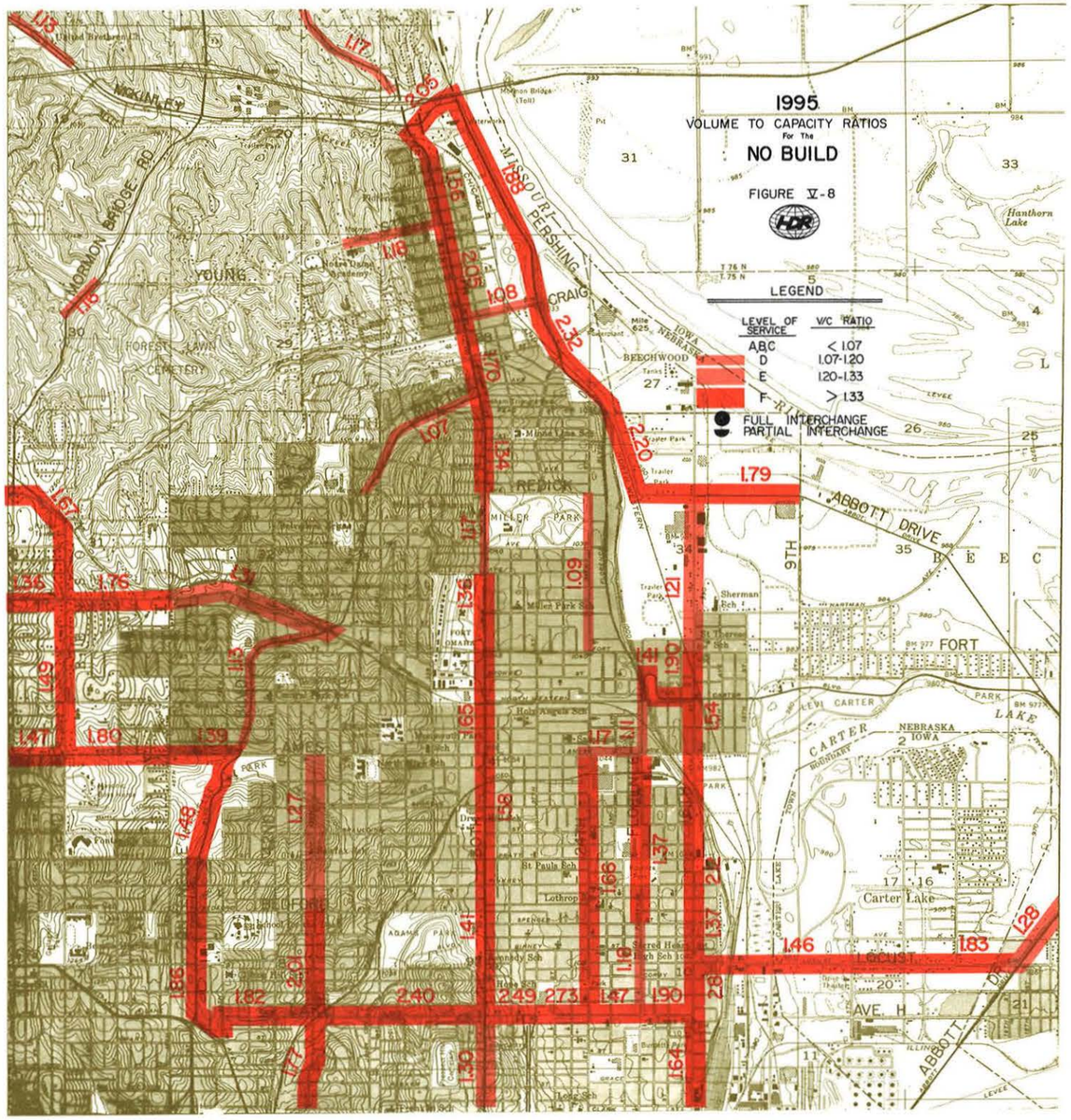


1995
VOLUME TO CAPACITY RATIOS
For The
WEST (27TH-28TH) ALIGNMENT
FIGURE V-6



1995
AVERAGE DAILY TRAFFIC
For The
NO BUILD ALTERNATE

FIGURE V-7



1995
VOLUME TO CAPACITY RATIOS
For The
NO BUILD

FIGURE V-8

GENERAL DESIGN STANDARDS AND ELEMENTS

The design of the North Freeway and its various auxiliary elements is subject to design standards and guidelines set forth in the Road Design Manual 4] published by the State of Nebraska Department of Roads and in the various publications of the American Association of State Highway Officials (AASHO).5]

The major design considerations can be broken into three categories: vertical geometric alignment, horisontal geometric alignment, and cross-sectional configuration of roadway elements.

The vertical alignment consists of two principal elements, grades and vertical curves. The minimum grade should be 0.50% to insure good runoff of storm water. The maximum grade for a freeway-type facility allowed by the Road Design Manual is 3%. Grades steeper than this can be utilized only with prior approval of the State of Nebraska Roadway Design Engineer.

Profiles of the freeway alignments indicate that 3% grades should be sufficient in most areas. However, grades of about 4% may be required for short sections of some alignment, because of hilly terrain. This would not be excessive according to guidelines in the AASHO Red Book. Of course, grades less than the maximum should be used as much as possible.

Vertical curves, and their lengths, are an important feature of roadway alignment. Minimum lengths of crest vertical curves are determined by adequate sight distance and safe stopping distance. For sag vertical curves, the principal consideration is sufficient headlight distance at night. The design of both is a function of roadway design speed and the algebraic difference in grades. Vertical curve designs will conform to State of Nebraska standards.

The principal feature of the horizontal alignment is horizontal curvature. Referring to the Road Design Manual, the maximum superelevation in this part of the state is 0.08 ft/ft. Accordingly, the maximum degrees of curvature corresponding to varous design speeds are as follows:

Design Speed mph	Typical Element	Maximum Curvature degrees
70	Main Line	3.5
65	Main line	4.5
60	Main line	5.0
50	Ramp	7.5
40	Ramp	12.5
30	Loop	23.0

Design speed has an important influence on horizontal geometrics and warrants further discussion. Preliminary alignments have been sketched to a design speed of 70 m.p.h. This design speed necessitates the use of the maximum curvature in many locations because of physical restrictions and obstacles to the location of the freeway.

Generally, a highway has a posted speed limit which is 5 to 15 m.p.h. less than the actual design speed. This is done to provide a margin of safety when conditions are so unfavorable that the design features of the roadway cannot be fully utilized. For the North Freeway, a design speed of 65 mph with a posted speed up to 55 mph seems a reasonable compromise between a high posted limit and less disruptive geometrics, considering the urban character of the corridor.

In addition to the above specific horizontal and vertical alignment design considerations, there are other more general guidelines which should be recognized in the design of the alignment to insure a safe, smooth-flowing, and aesthetically pleasing freeway. These general controls can be found in the ASSHO Red Book 6] for horizontal, vertical and combined horizontal and vertical alignments, respectively. These are all summarized in the Road Design Manual as well.

Deviation from the usual Nebraska design practice is recommended in the configuration of acceleration and deceleration lanes. For an urban section such as the North Freeway the use of speed change lanes of the auxiliary lane type found in the AASHO Blue Book 7] is preferable to the taper type merge and diverge sections usually used. This type of speed change lane will provide a better level of service when operating under heavy traffic conditions on an urban facility.

The cross-sectional configuration of the freeway will basically conform to accepted design standards in the State of Nebraska for lane and shoulder widths, lateral and median separation, embankment slopes, vertical clearance, and other design elements. FIGURE V-9 illustrates the cross-sections proposed for the North Freeway.

An allowance in cross-sectional design was made for exclusive bus lanes which will be compatible with the option to add a traffic lane to both vehicle roadways providing maximum flexibility in the ultimate development of this transportation corridor.

This transit facility, if implemented, could be in the form of two separate bus travel lanes in the median area between the two vehicular roadways, or it could be the innermost travel lane in each direction marked for exclusive bus use. A third possibility would be to have no special provision for buses. Buses would merely operate on the regular traffic lanes along with the rest of the traffic.

At Lake Street between 27th and 28th streets, the freeway cross-section has two three-lane roadways in each direction, each with 10-foot inside and outside shoulders, and 30-foot clear space between the edge of the outside lane and the bridge abutments. The bridge at Lake Street is a two-span bridge with a center pier.

North of Lake Street where this study is involved, several arrangements are possible. Six traffic lanes are generally required for the North Freeway from Lake Street north to the interchange with the Hartman—Redman Arterial Street for the West and Central alignments, and to the Airport Connector interchange on the East Alignment. North of these points four traffic lanes are sufficient.

Another area of cross-sectional configuration is the relation of the roadways to existing grade. This relationship can take three forms: depressed, at-grade, and elevated (on structure or on embankment). Generally, depressed sections will be used as much as possible since they are better suited to the urban environment. Elevated sections will be proposed on the end of the alignments near I-680, and along the Metropolitan Utilities District (M.U.D.) facilities for the East Alignments. In the central area of the corridor, the rolling terrain dictates that alignments will lie in alternating cuts and fills of varying magnitude.

All of these characteristic cross-sections are illustrated in FIGURE V-9. It should be noted that the proposed design standards, types of interchanges, structures, and other features given within this report are for corridor planning purposes and may be subjected to more detailed revisions during any final design.

4] Road Design Manual, Nebraska Department of Roads, 1973.

5] A Policy on Geometric Design of Rural Highways (Blue Book), 1965; A Policy on Design of Urban Highways and Arterial Streets (Red Book), 1973; Ammerican Association of State Highway Officials.

6] Ibid. pp 336-7; 344-7.

7] Ibid. FIGURE VII-13 Band D

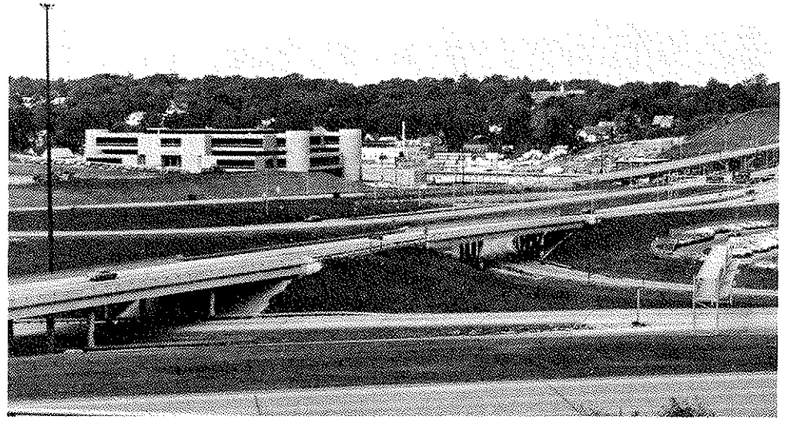
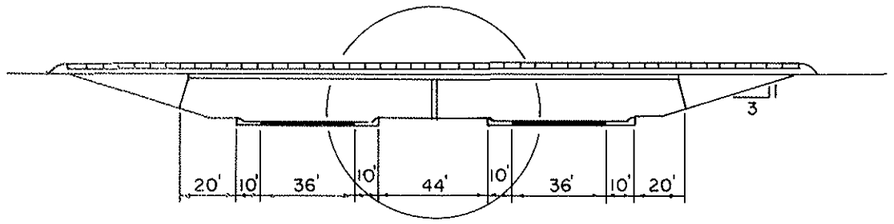
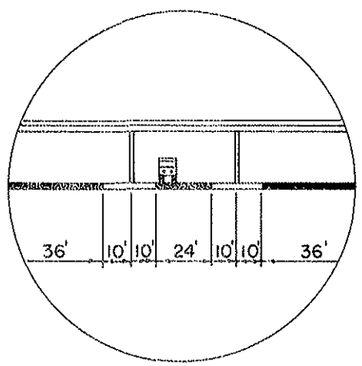


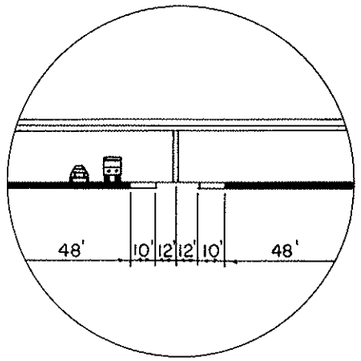
FIGURE V-9 TYPICAL FREEWAY CROSS SECTIONS



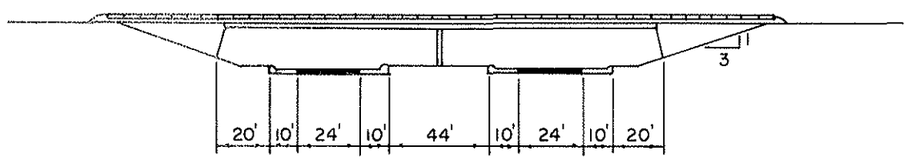
A. 6 LANE, DEPRESSED FREEWAY, AT OVERPASS



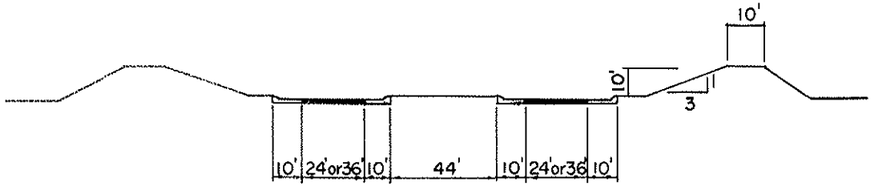
DETAIL A-1, SEPARATE BUS LINES



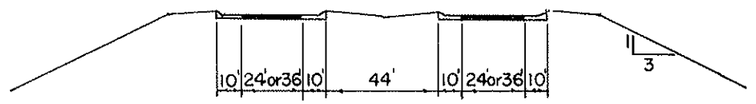
DETAIL A-2, ADDED BUS/TRAVEL LANES



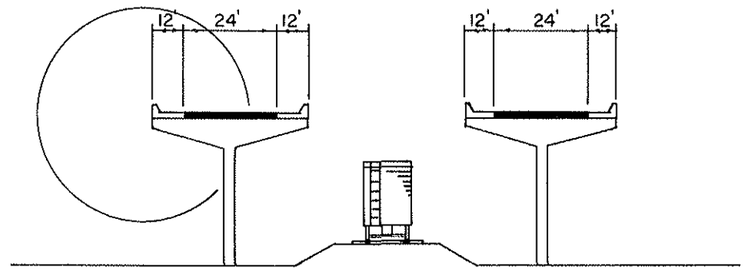
B. 4 LANE, DEPRESSED FREEWAY, AT OVERPASS



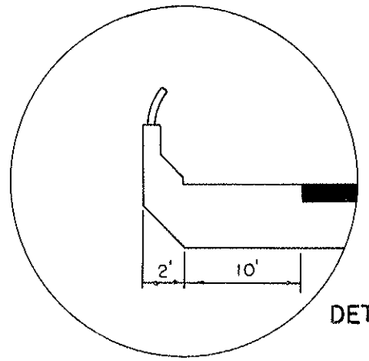
C. 4 OR 6 LANE, AT GRADE SECTION, WITH NOISE BERM



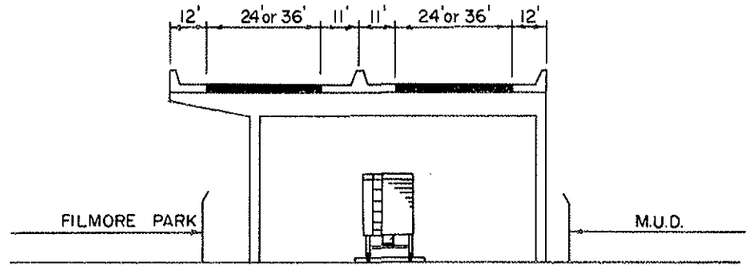
D. 4 OR 6 LANE, ELEVATED EMBANKMENT



E. 4 LANE ELEVATED STRUCTURE



DETAIL E-1, CONCRETE BARRIER CURB



F. 4 OR 6 LANE, ELEVATED STRUCTURE AT FILLMORE PARK

EAST ALIGNMENT PLUS AIRPORT CONNECTION

East Alignment. The general philosophy of the East Alignment is to follow the bluffs and Florence railroad line thereby limiting residential disruption, minimizing relocations, and providing simple easy access to the airport and nearby industrial area. This is accomplished by utilizing areas of vacant land between the Chicago and Northwestern Railroad and the Bluffs east of Florence Boulevard and by paralleling this same railroad further north to I-680.

A general description of the East Alignment follows to supplement the details shown in the plan and profile plates. Details on traffic service, number of lanes, weaving and ramp sections, and other geometric items may be found in APPENDIX E.

Beginning at the southerly terminus at Lake Street between 27th and 28th Streets, the East Alignment passes under Lake as a 6-lane depressed section and proceeds north between 27th and 28th streets with this section(PLATE 101). With the construction of this section, a full diamond interchange will be located at Lake.

Cross streets will pass over the freeway at Binney, Bristol, Pratt, and Sprague. A railroad bridge for the Missouri Pacific Railroad will be located at Boyd. A half Diamond interchange will be located at Ames with ramps to and from the south. The freeway passes under Ames with the same 6-lane depressed section (PLATE 102).

North of Ames, the East Alignment swings to the northeast where it connects to the proposed Hartman—Redman arterial 8] with a full diamond interchange. Continuing as a depressed six-lane section this alignment would pass under Florence Boulevard and emerge from the adjacent bluff in a near at-grade section. Streets crossing the freeway in this area consist of interchanges at Ames and the Hartman-Redman Arterial, 24th, and a crossing at Florence Boulevard.

In the vacant area between Florence Boulevard and the Chicago and Northwestern Railroad, there are two possible cominations for the East Alignment interchange with the Airport Connectors. The ramps required by the Fort St. Airport Connector Alternate loop around to the west of the East Alignment, then pass over the East and continue eastward as the elevated Airport Freeway along Fort St. This also provides for the crossing of the railroad and 16th Street (PLATES 103).

Extensive earth fill can be incorporated in this area to dispose of the excess cut from depressed freeway sections to the southwest. Using waste material will greatly reduce the cost of fill for this area.

PLATE 104 shows a second possibility for the East Alignment with the Hartman Avenue Airport Connection. The interchange configuration in this case is a fully directional interchange. Like the Fort Street Interchange, this interchange makes use of the excess earth material excavated from the Lake to Florence Boulevard section of freeway. At this directional interchange, the ramps of the Airport Freeway pass over the East Alignment, the railroad, and 16th Street before extending on eastward toward Abbott Drive.

After the ramps to the Airport diverge, the section of the North Freeway is reduced to a four-lane elevated section. In proceeding north (PLATE 105), the East Alignment begins elevating to a point near Redick where the North Freeway becomes elevated structure and begins to cross over a portion of the railroad right-of-way. This structure continues and crosses over Read Street, a sewage pump station north of Read, and a large drainage channel. The freeway continues north as an elevated structure utilizing some air space on either side of the rail line which is now located within the centerline of the freeway.

The freeway crosses over 25th Street which will retain its connection to John Pershing Drive. At Craig (PLATE 106), a diamond interchange is located and full access is provided to the freeway. Here the freeway is an elevated structure and remains so until it crosses over the railroad at a point just north of Craig. The elevated structure ends at this point and the section becomes elevated on earth fill. The East Alignment continues between 28th Street and 28th Avenue as an elevated section on earth fill to Bondesson where it again becomes elevated structure. An overpass is located at Grebe to provide access to the Florence MUD Facility.

At Bondesson, the East Alignment begins swinging to the northwest behind Fillmore Park. Here, the freeway is an elevated structure which in part uses railroad right-of-way air rights and possibly some air rights of Fillmore Park. At this point, the first ramp of the I-680 interchange diverges to the northeast (PLATES 106 and 107).

The freeway follows the railroad right-of-way until it crosses over 30th Street. Then turning north, the East Alignment crosses the railroad, McKinley and I-680 as an elevated structure and enters the side of a large bluff north of I-680. Circling behind this hill,

8] Proposed arterial within C&NW Railroad right-of-way, as proposed in the COATS 1995 Transportation Plan.

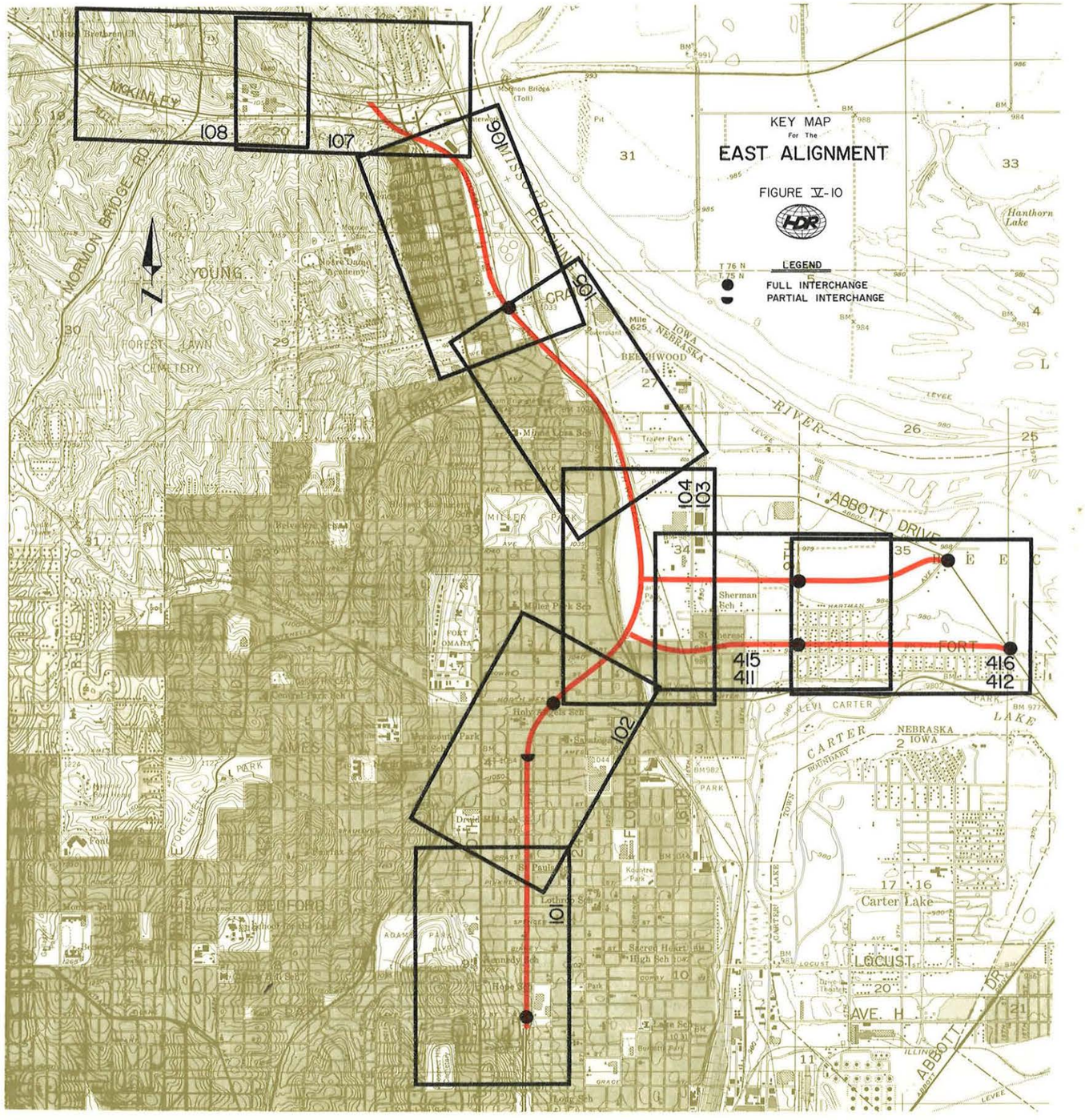
the freeway splits with the northbound lanes connecting directly to eastbound I-680. The southbound lanes swing around in a loop where they connect to the eastbound lanes of I-680 (PLATE 107).

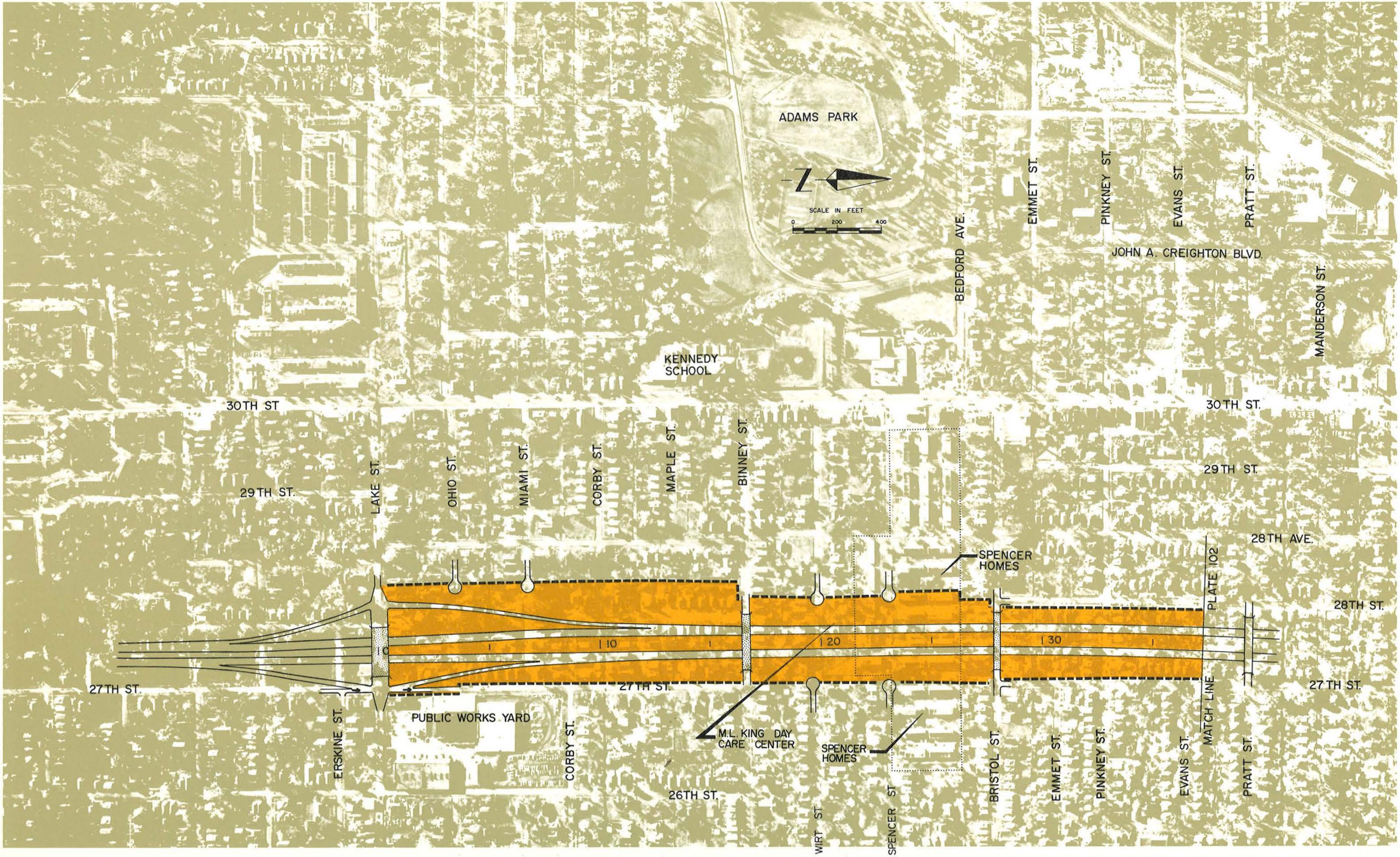
Extensive reconstruction is required on the existing I-680 interchanges at 30th Street and at U.S. 73. At 30th Street, all but one movement, the westbound off-ramp, will require removal. The 30th Street Bridge for westbound I-680 will require the addition of an extra lane and the old Mormon Bridge will have to have the west end modified to allow for the proposed merge lane. The interchange at U.S. 73 will require the removal of the westbound exit and access ramps. These ramps will be replaced with a "horse-shoe" type ramp located in the west quadrant of U.S. 73 (PLATE 107). Thus, direct access from 30th Street to I-680 and to the East Alignment would not occur.

Airport Freeway. There are two general airport corridors being studied in this report: the Fort Street Route and the Hartman Avenue Route. For each of these, there is a different configuration to suit the East Alignment.

The Fort Street Connection to the East Alignment begins at a trumpet interchange slightly north of Fort. This route is a four-lane elevated section as it passes over the Chicago and Northwestern Railroad and 16th Street. Proceeding east on earth fill, this alignment crosses over the Union Pacific Railroad and proposes a diamond interchange at 9th Street. East of 9th, this alignment descends slowly to an at-grade roadway section and terminates at Abbott Drive with a signalized intersection (PLATES 411 and 412).

The Hartman Avenue Connection to the East Alignment begins at a fully directional interchange and crosses above the Chicago and Northwestern Railroad and 16th Street as a four-lane section. This alignment remains on earth fill until it crosses the Union Pacific Railroad to a diamond interchange at 9th Street. Continuing to the east, the Hartman Airport Connection descends to an at-grade section and terminates with a signalized intersection at Abbott Drive. At the eastern terminus of this alternate, directional ramps to and from the south pass over Abbott Drive and Airport Drive (a new platted street in the industrial park area) to provide a directional connection toward Eppley Airfield (PLATES 415 and 416).




ADAMS PARK
SCALE IN FEET
0 200 400
BEDFORD AVE.
EMMET ST.
PINKNEY ST.
EVANS ST.
PRATT ST.
JOHN A. CREIGHTON BLVD.
MANDERSON ST.
KENNEDY SCHOOL
30TH ST
30TH ST.
29TH ST.
29TH ST.
LAKE ST.
OHIO ST.
MIAMI ST.
CORBY ST.
MAPLE ST.
BINNEY ST.
28TH AVE.
SPENCER HOMES
PLATE 102
28TH ST.
10
20
30
27TH ST.
27TH ST.
27TH ST.
MATCH LINE
ERSKINE ST.
PUBLIC WORKS YARD
CORBY ST.
M.L. KING DAY CARE CENTER
SPENCER HOMES
26TH ST.
WIRT ST.
SPENCER ST
BRISTOL ST.
EMMET ST.
PINKNEY ST.
EVANS ST.
PRATT ST.

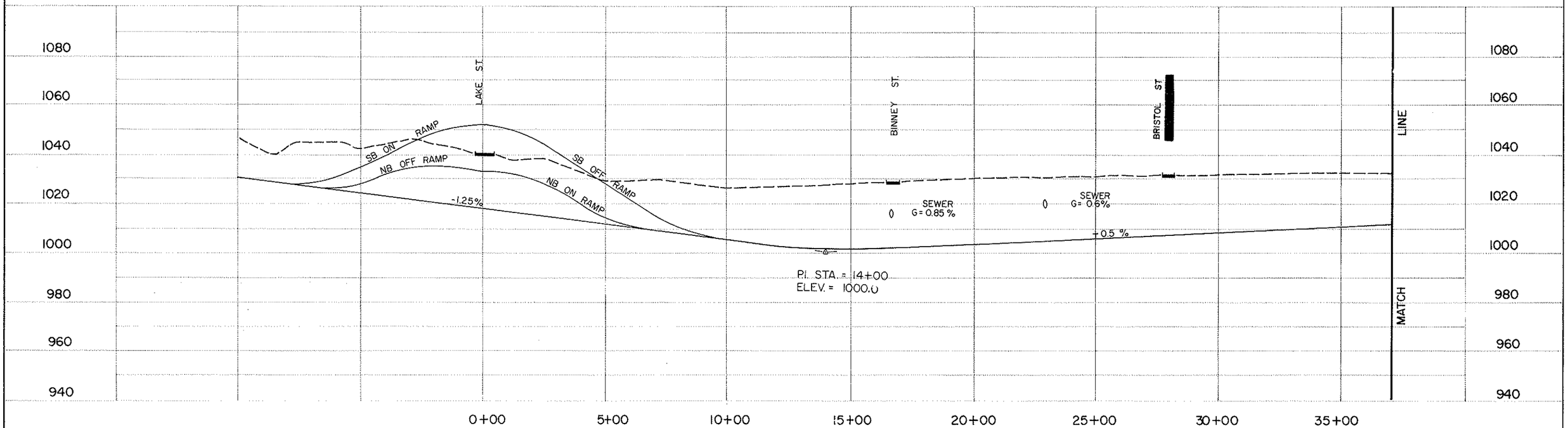
REQUIRED AREA — ROADWAY ON STRUCTURE

NORTH FREEWAY CORRIDOR STUDY
Prepared By HENNINGSON DURHAM & RICHARDSON

Prepared for the CITY OF OMAHA and NEBRASKA DEPARTMENT OF ROADS in cooperation with U.S. D.O.T. FEDERAL HIGHWAY ADMINISTRATION

EAST ALIGNMENT
LAKE TO EVANS

HDR PLATE NO. 101



THIS DRAWING HAS BEEN REDUCED TO ONE-HALF THE ORIGINAL SCALE

SCALE: 1"=20' VERT. 1"=200' HORZ. EXISTING ——— PROPOSED ———	NORTH FREEWAY CORRIDOR STUDY Prepared By HENNINGSON DURHAM & RICHARDSON	Prepared for the CITY OF OMAHA and NEBRASKA DEPARTMENT OF ROADS in cooperation with US DOT FEDERAL HIGHWAY ADMINISTRATION	EAST ALIGNMENT LAKE TO EVANS	PLATE NO. 101 P

REQUIRED AREA ROADWAY ON STRUCTURE

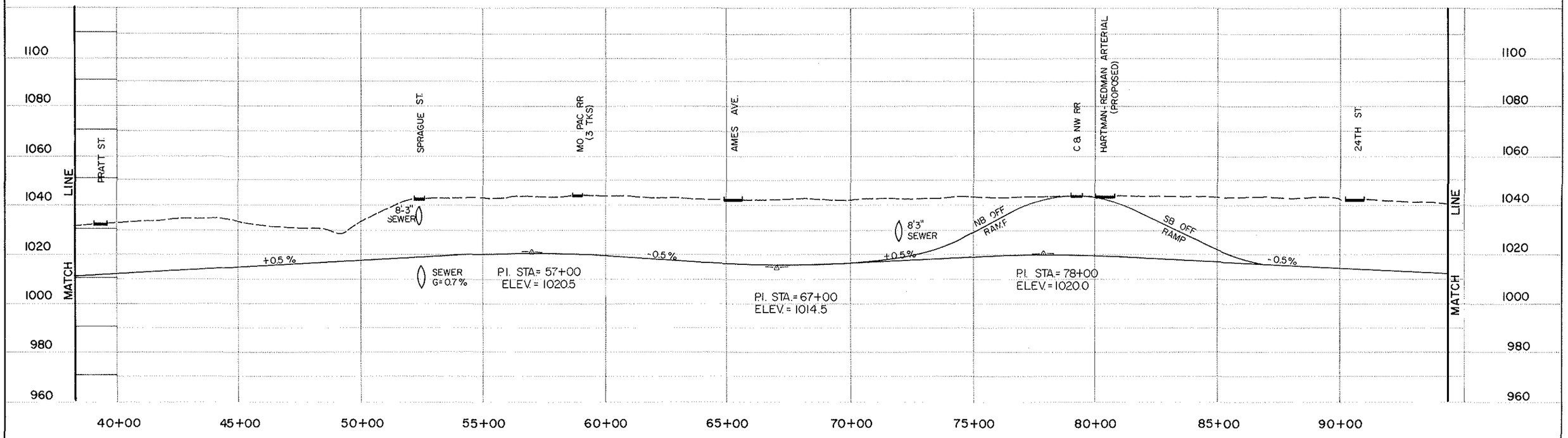
NORTH FREEWAY CORRIDOR STUDY
Prepared By HENNINGSON DURHAM & RICHARDSON

Prepared for the CITY OF OMAHA and NEBRASKA DEPARTMENT OF ROADS in cooperation with U.S. D.O.T. FEDERAL HIGHWAY ADMINISTRATION

EAST ALIGNMENT
EVANS TO 24TH

HDR

PLATE NO. 102



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SCALE: 1"=20' VERT. 1"=200' HORZ. EXISTING ——— PROPOSED ———	NORTH FREEWAY CORRIDOR STUDY Prepared By HENNINGSON DURHAM & RICHARDSON	Prepared for the CITY OF OMAHA and NEBRASKA DEPARTMENT OF ROADS in cooperation with US D.O.T. FEDERAL HIGHWAY ADMINISTRATION	EAST ALIGNMENT EVANS TO 24TH / HDR / PLATE NO. 102 P

GRAND AVE.
BROWNE ST.
CAMDEN AVE.
FORT ST.
25TH ST.
ELLISON AVE.
HARTMAN AVE.
HIMEBAUGH AVE.
LAUREL AVE.
CROWN POINT AVE.
KANSAS AVE.
MILLER PARK
REDICK AVE.
BAUMAN AVE.
NEWPORT AVE.
MARY ST.
24TH ST.
SARATOGA ST.
OGDEN ST.
PLATE 102
MATCH LINE
FLORENCE BLVD.
SCALE IN FEET
0 200 400
GRAVEL ACCESS ROAD
MATCH LINE
1100
1110
1120
1130
1140
PLATE 105
FLORENCE TOWER
RAILROAD RELOCATED
CAMDEN AVE.
18TH ST.
CARTER BLVD.
17TH ST.
BROWNE ST.
MATCH LINE
PLATE 411
C&NW RR
FORT ST.
OGDEN ST.
JAYNES ST.
ELLISON AVE.
16TH ST.
REDICK AVE.

REQUIRED AREA ROADWAY ON STRUCTURE

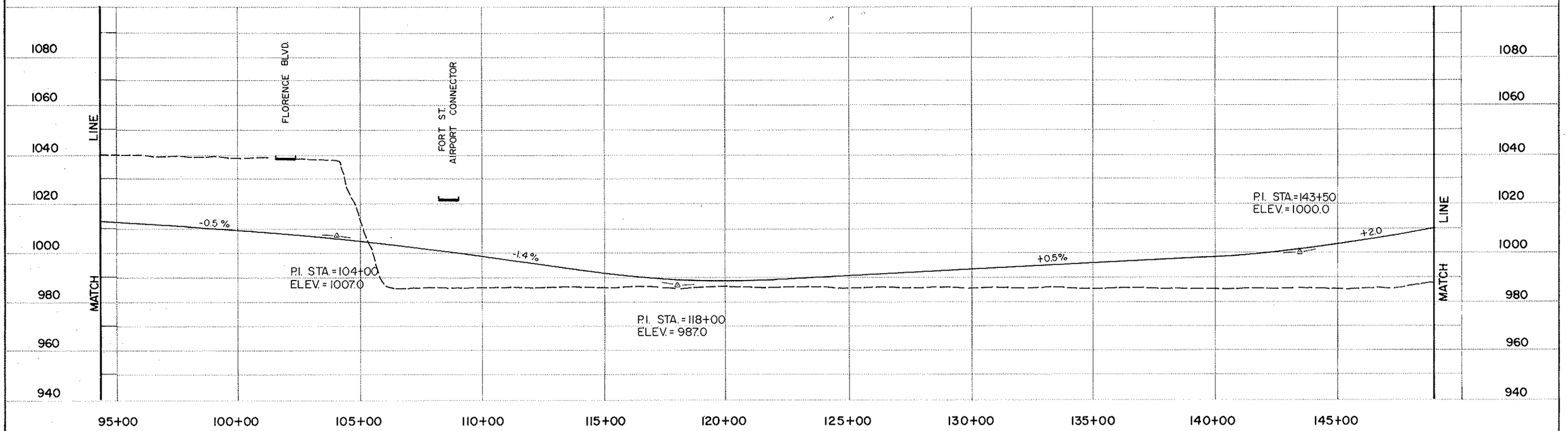
NORTH FREEWAY CORRIDOR STUDY
Prepared By HENNINGSON DURHAM & RICHARDSON

Prepared for the CITY OF OMAHA and NEBRASKA DEPARTMENT OF ROADS in cooperation with U.S. D.O.T. FEDERAL HIGHWAY ADMINISTRATION

EAST ALIGNMENT
24TH TO REDICK
TO 16TH & FORT

HDR

PLATE NO. 103



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SCALE: 1"=20' VERT. 1"=200' HORZ. EXISTING ---- PROPOSED ——	NORTH FREEWAY CORRIDOR STUDY Prepared By HENNINGSON DURHAM & RICHARDSON	Prepared for the CITY OF OMAHA and NEBRASKA DEPARTMENT OF ROADS in cooperation with U.S DOT FEDERAL HIGHWAY ADMINISTRATION	EAST ALIGNMENT 24TH TO REDICK HDR PLATE NO. 103 P

GRAND AVE.
BROWNE ST.
CAMDEN AVE.
FORT ST.
25TH ST.
ELLISON AVE.
HARTMAN AVE.
HIMEBAUGH AVE.
LAUREL AVE.
CROWN POINT AVE.
KANSAS AVE.
MILLER PARK
REDICK AVE.
BAUMAN AVE.
NEWPORT AVE.
MARY ST.
24TH ST.
SARATOGA ST.
PLATE 102
MATCH LINE
OGDEN ST.
FLORENCE BLVD.
SCALE IN FEET
0 200 400
1100
1110
1120
1130
1140
FLORENCE TOWER
GRAVEL ACCESS ROAD
MATCH LINE
PLATE 105
RAILROAD RELOCATED
CAMDEN AVE.
18TH ST.
CARTER BLVD.
17TH ST.
BROWNE ST.
C&NW RR
FORT ST.
OGDEN ST.
JAYNES ST.
ELLISON AVE.
MATCH LINE
PLATE 415
16TH ST.
REDICK AVE.

REQUIRED AREA ROADWAY ON STRUCTURE

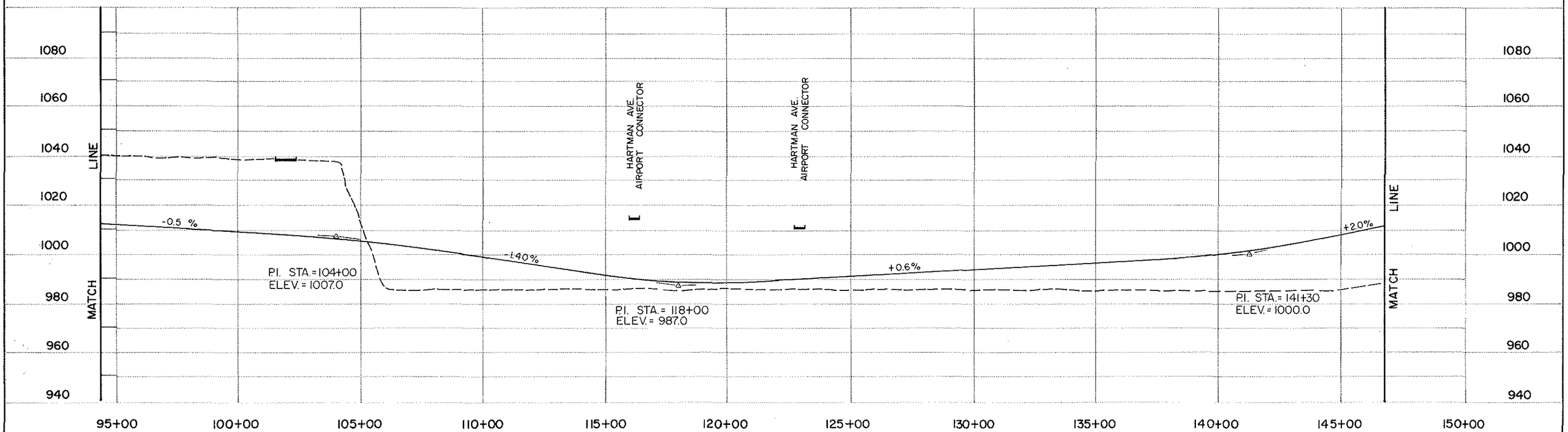
NORTH FREEWAY CORRIDOR STUDY
Prepared By HENNINGSON DURHAM & RICHARDSON

Prepared for the CITY OF OMAHA and NEBRASKA DEPARTMENT OF ROADS in cooperation with U.S. D.O.T. FEDERAL HIGHWAY ADMINISTRATION

EAST ALIGNMENT
24TH TO REDICK
TO 16TH & HARTMAN

HDR

PLATE NO. 104



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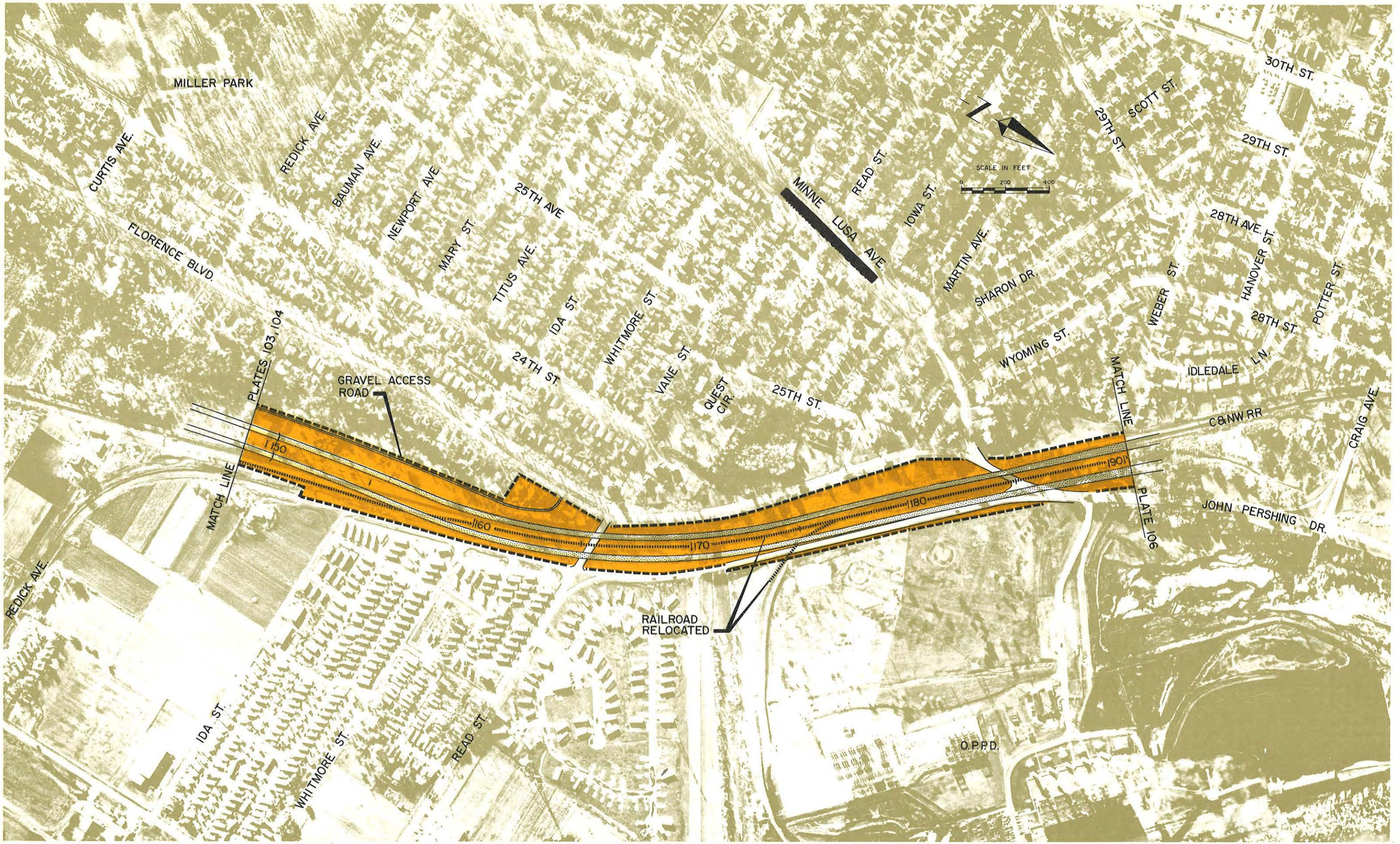

REQUIRED AREA ROADWAY ON STRUCTURE

NORTH FREEWAY CORRIDOR STUDY
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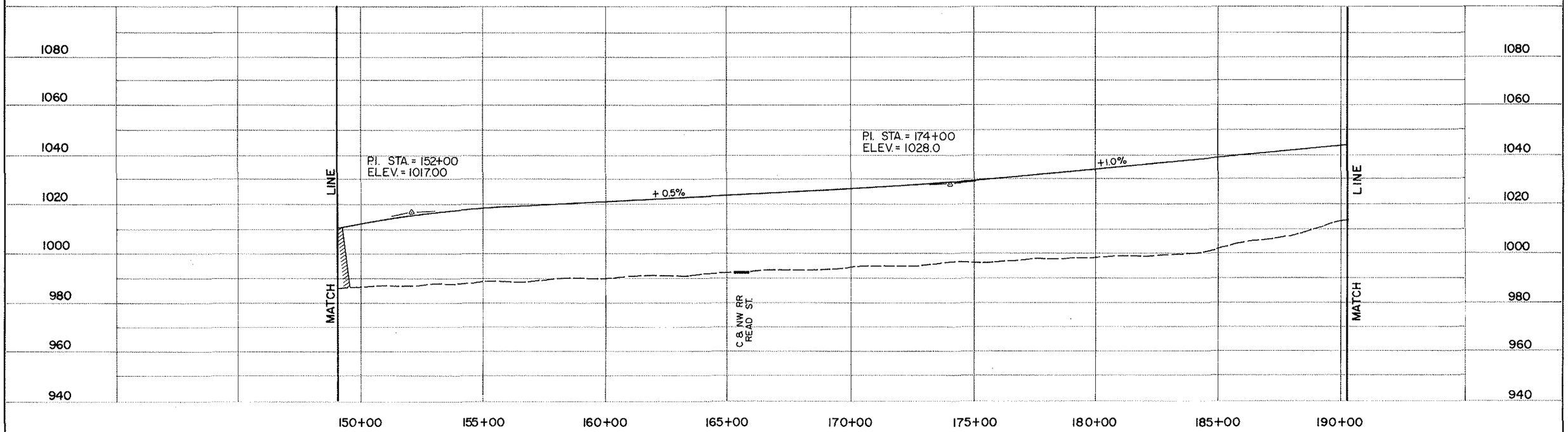
EAST ALIGNMENT
REDICK TO WEBER

HDR

PLATE NO. 105



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REQUIRED AREA ROADWAY ON STRUCTURE

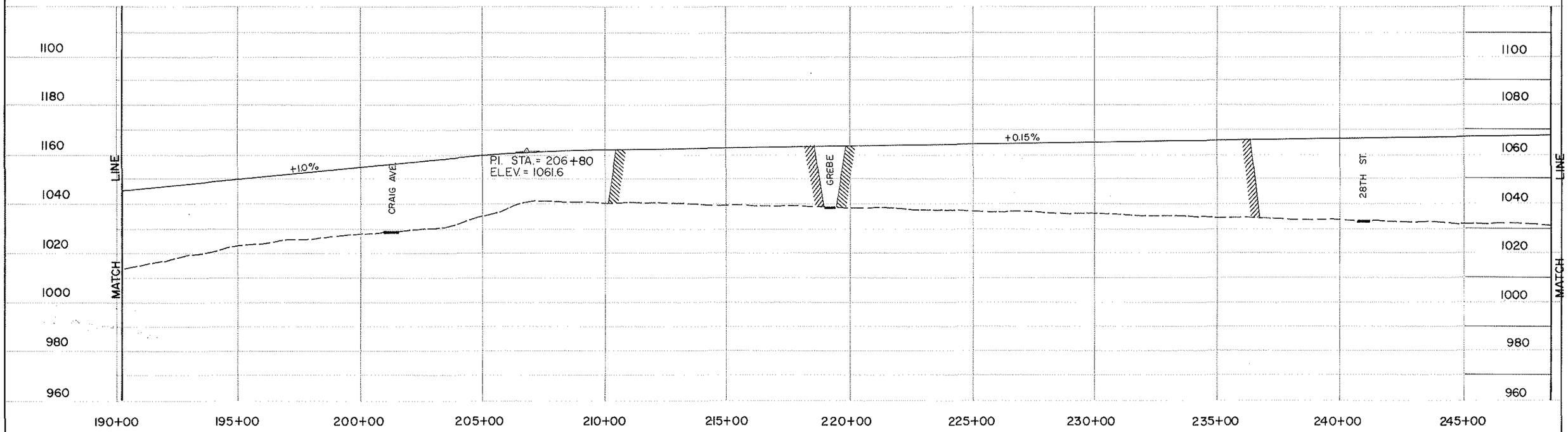
NORTH FREEWAY CORRIDOR STUDY
Prepared By HENNINGSON DURHAM & RICHARDSON

Prepared for the CITY OF OMAHA and NEBRASKA DEPARTMENT OF ROADS in cooperation with U.S. D.O.T. FEDERAL HIGHWAY ADMINISTRATION

EAST ALIGNMENT
WEBER TO FILLMORE

HDR

PLATE NO. 106



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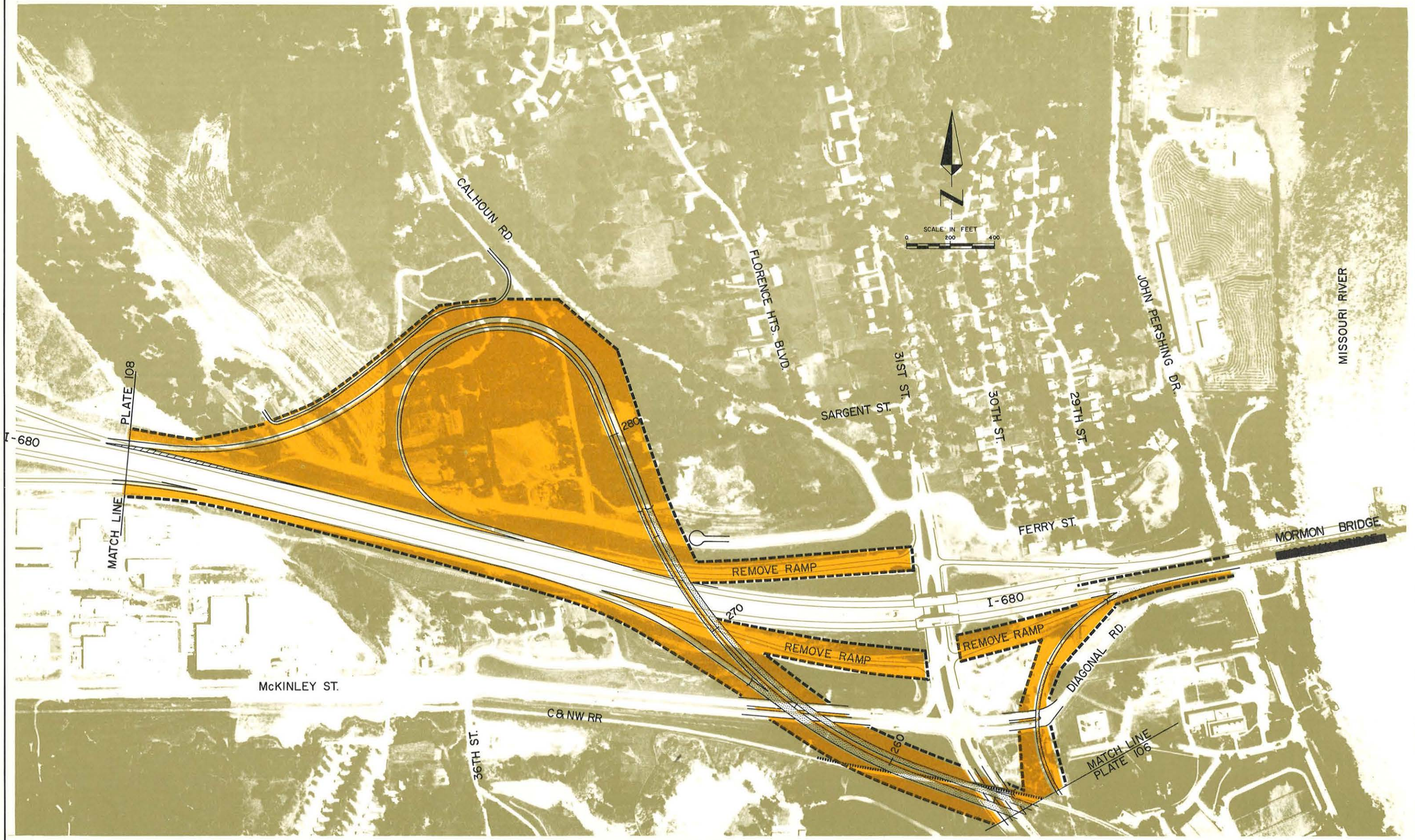

REQUIRED AREA ROADWAY ON STRUCTURE

NORTH FREEWAY CORRIDOR STUDY
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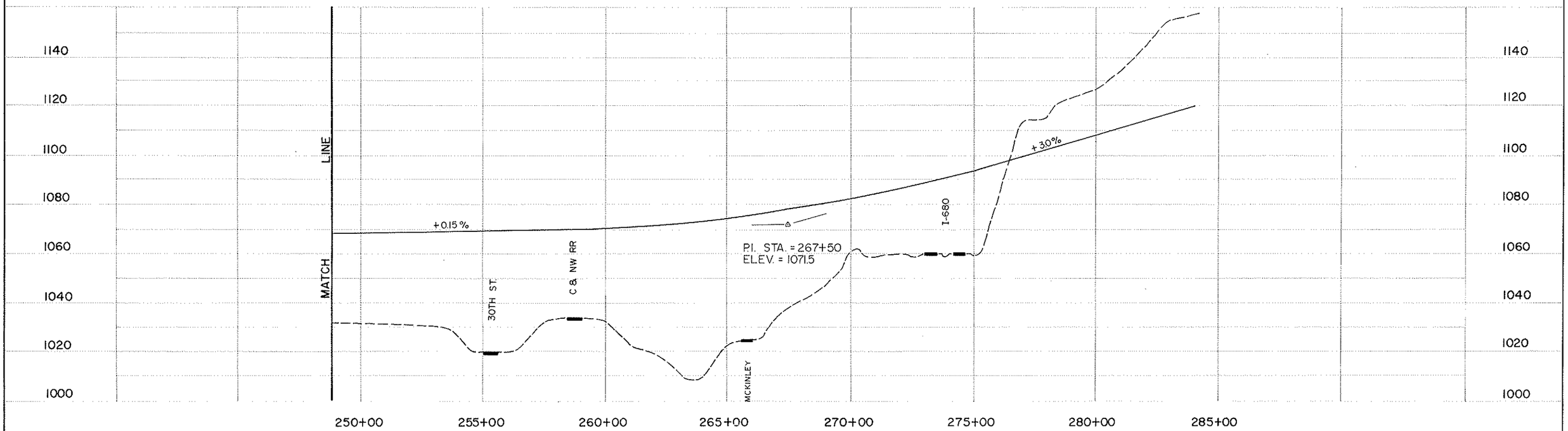
Prepared for the CITY OF OMAHA and NEBRASKA DEPARTMENT OF ROADS in cooperation with U.S. D.O.T. FEDERAL HIGHWAY ADMINISTRATION

EAST ALIGNMENT
FILLMORE TO I-680 INTERCHANGE

HDR

PLATE NO. 107



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HDR

PLATE NO. 107 P

REQUIRED AREA ROADWAY ON STRUCTURE

NORTH FREEWAY CORRIDOR STUDY
Prepared By HENNINGSON DURHAM & RICHARDSON

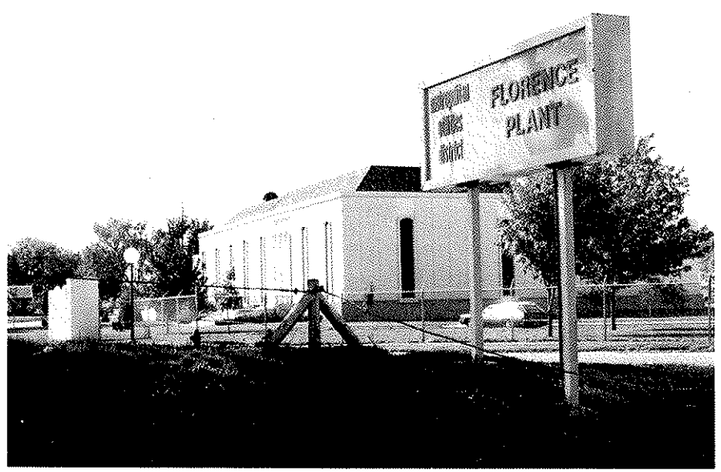
Prepared for the CITY OF OMAHA and NEBRASKA DEPARTMENT OF ROADS in cooperation with U.S. D.O.T. FEDERAL HIGHWAY ADMINISTRATION

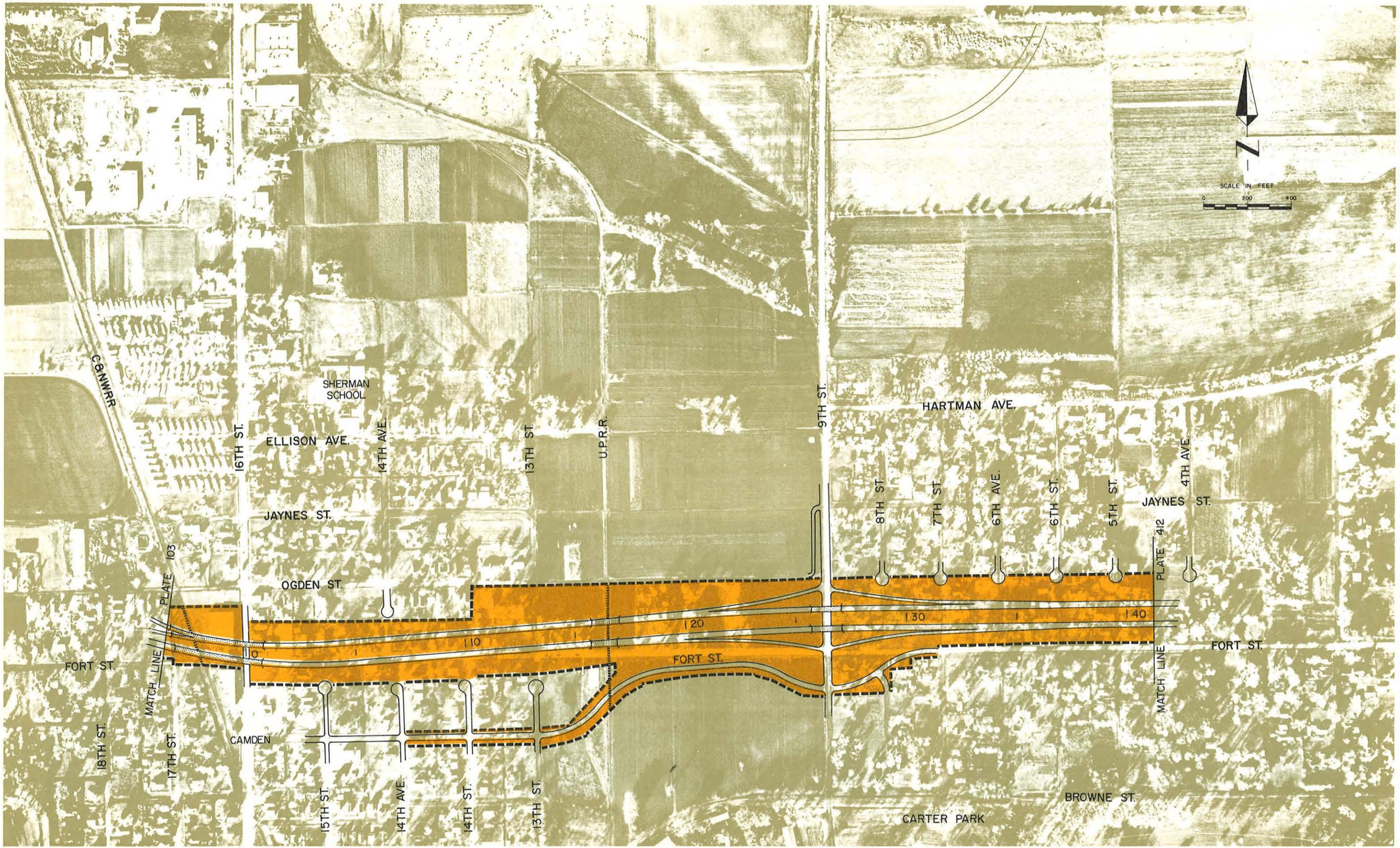
EAST ALIGNMENT
U.S. 73 INTERCHANGE

HDR

PLATE NO. 108


RIVERFRONT INDUSTRIAL PARK
SALE
LEASE
SITES
BUILDINGS
342-
1662
OMAHA INDUSTRIAL FOUNDATION


FLORENCE
PLANT



REQUIRED AREA ROADWAY ON STRUCTURE

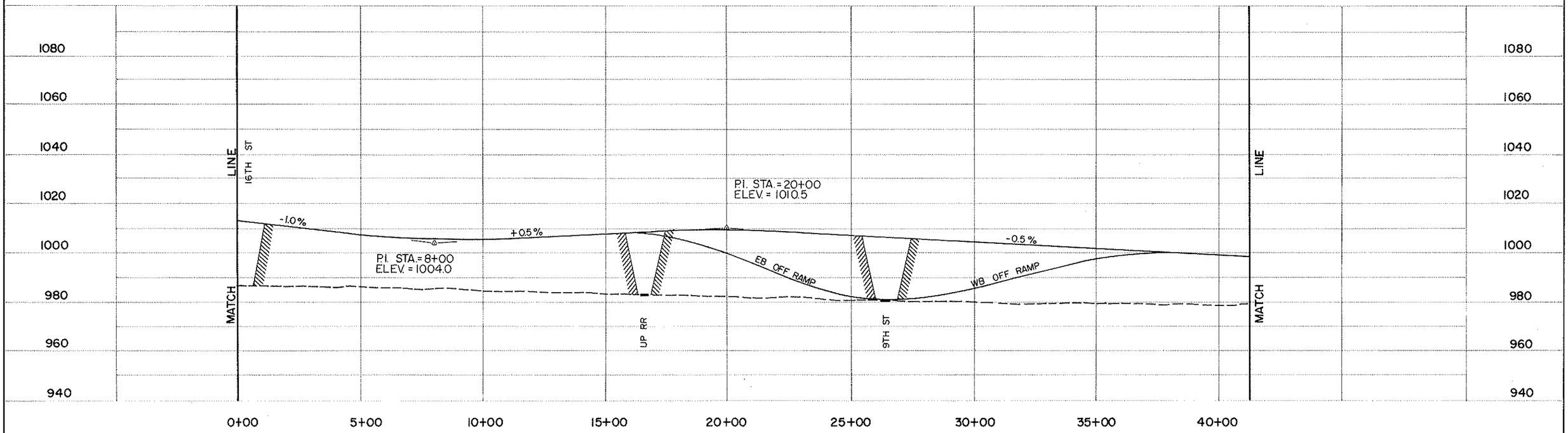
NORTH FREEWAY CORRIDOR STUDY
Prepared By HENNINGSON DURHAM & RICHARDSON

Prepared for the CITY OF OMAHA and NEBRASKA DEPARTMENT OF ROADS in cooperation with U.S. D.O.T. FEDERAL HIGHWAY ADMINISTRATION

EAST ALIGNMENT
FORT AIRPORT CONNECTOR
16TH TO 5TH

HDR

PLATE NO. 411



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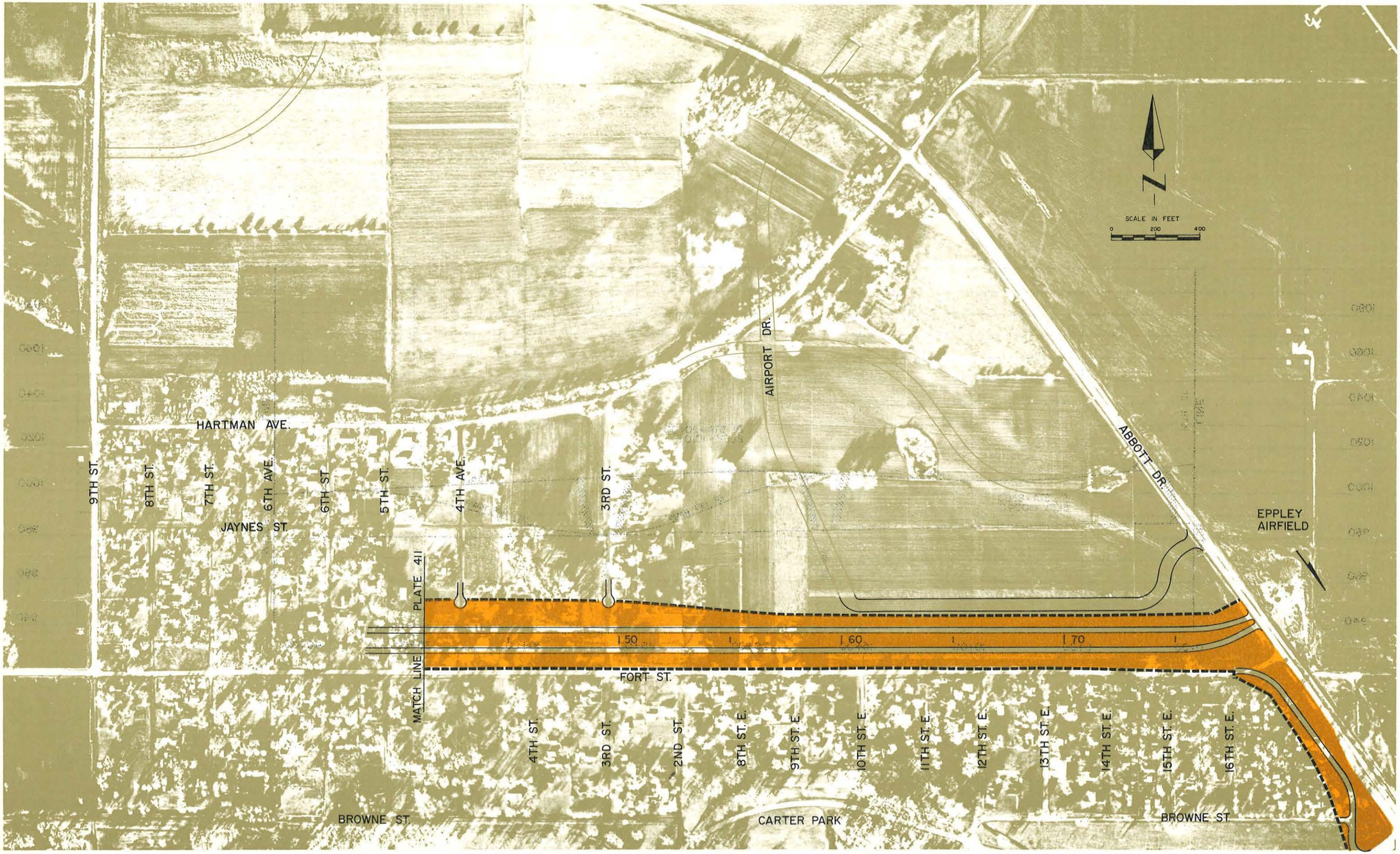
SCALE: 1"=20' VERT. 1"=200' HORZ. EXISTING ---- PROPOSED ——	NORTH FREEWAY CORRIDOR STUDY Prepared By HENNINGSON DURHAM & RICHARDSON	Prepared for the CITY OF OMAHA and NEBRASKA DEPARTMENT OF ROADS in cooperation with US D.O.T. FEDERAL HIGHWAY ADMINISTRATION	EAST ALIGNMENT FORT AIRPORT CONNECTOR 16TH TO 5TH STREET	HDR	PLATE NO. 411 P



REQUIRED AREA — ROADWAY ON STRUCTURE

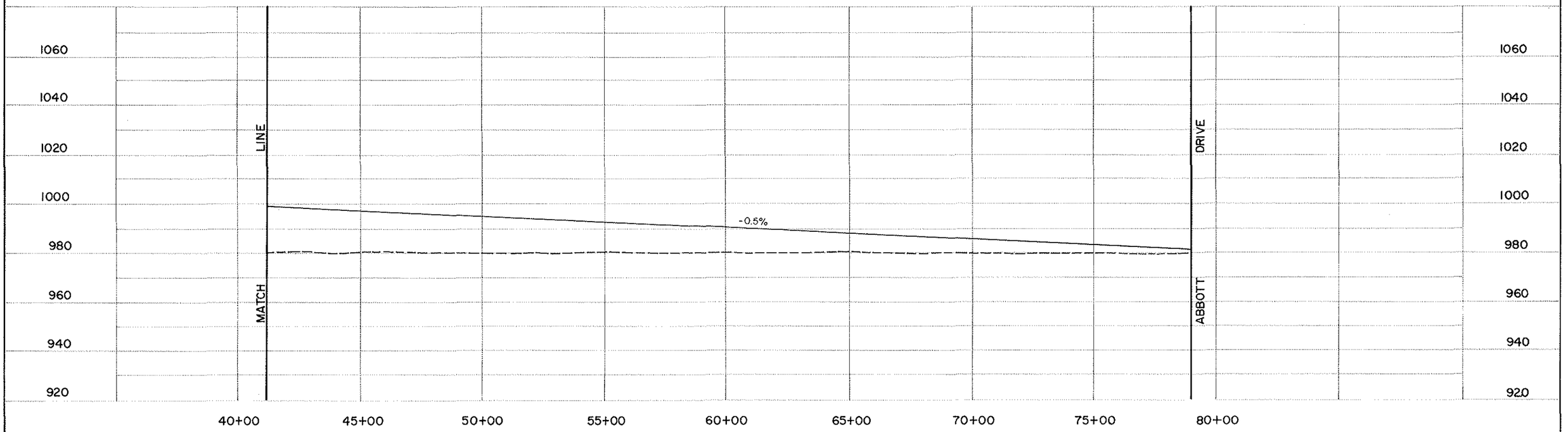
NORTH FREEWAY CORRIDOR STUDY
Prepared By HENNINGSON DURHAM & RICHARDSON

Prepared for the CITY OF OMAHA and NEBRASKA DEPARTMENT OF ROADS in cooperation with U.S. D.O.T. FEDERAL HIGHWAY ADMINISTRATION

EAST ALIGNMENT
FORT AIRPORT CONNECTOR
5TH TO ABBOTT

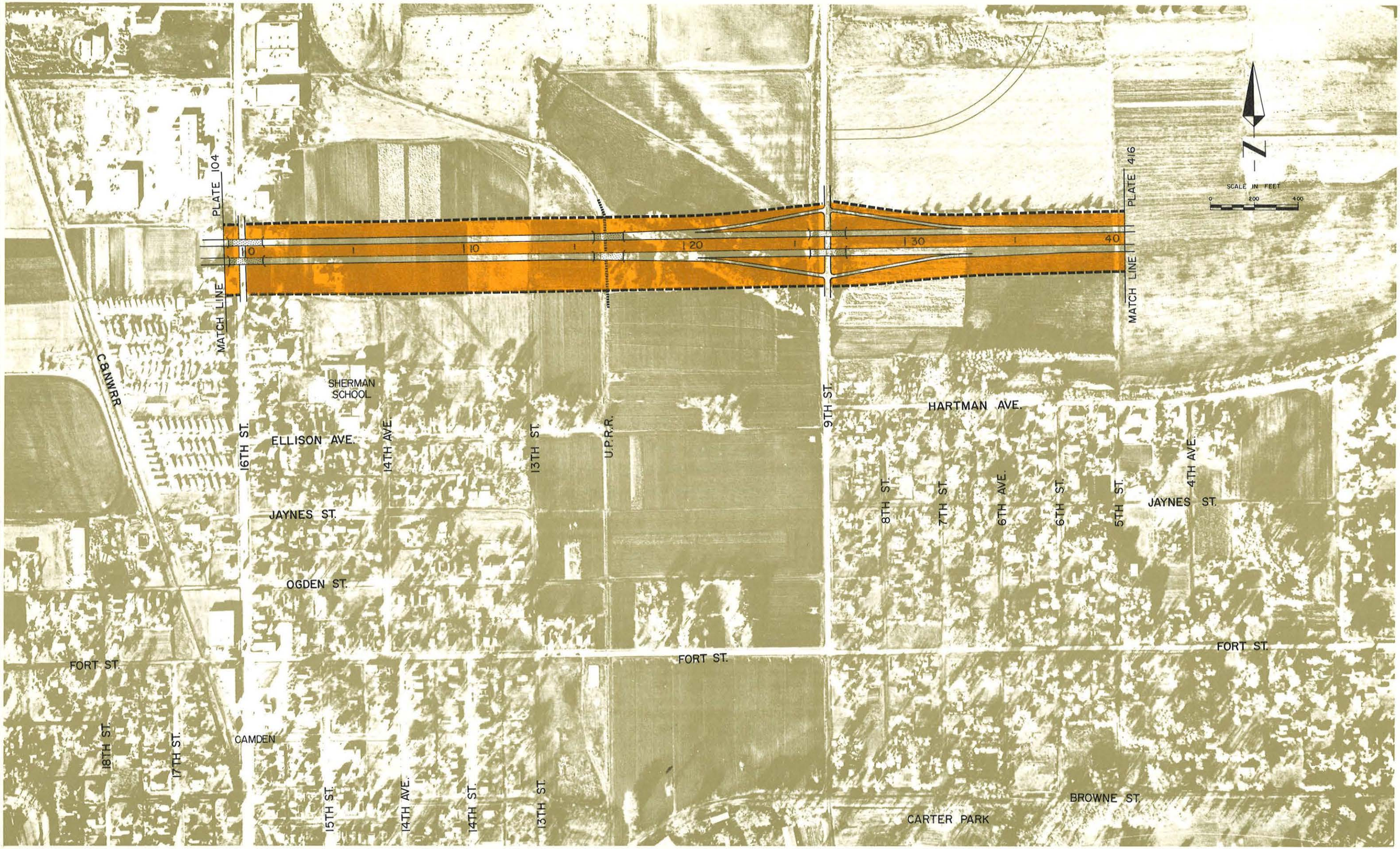
HDR

PLATE NO. 412



THIS DRAWING HAS BEEN REDUCED TO ONE-HALF THE ORIGINAL SCALE

SCALE: 1"=20' VERT. 1"=200' HORZ. EXISTING ---- PROPOSED ——	NORTH FREEWAY CORRIDOR STUDY Prepared By HENNINGSON DURHAM & RICHARDSON	Prepared for the CITY OF OMAHA and NEBRASKA DEPARTMENT OF ROADS in cooperation with U.S D.O.T. FEDERAL HIGHWAY ADMINISTRATION	EAST ALIGNMENT FORT AIRPORT CONNECTOR 5TH TO ABBOTT	HDR	PLATE NO. 412 P



REQUIRED AREA ROADWAY ON STRUCTURE

NORTH FREEWAY CORRIDOR STUDY
Prepared By HENNINGSON DURHAM & RICHARDSON

Prepared for the CITY OF OMAHA and NEBRASKA DEPARTMENT OF ROADS in cooperation with U.S. D.O.T. FEDERAL HIGHWAY ADMINISTRATION

EAST ALIGNMENT
HARTMAN AIRPORT CONNECTOR
16TH TO 5TH

HDR

PLATE NO. 415

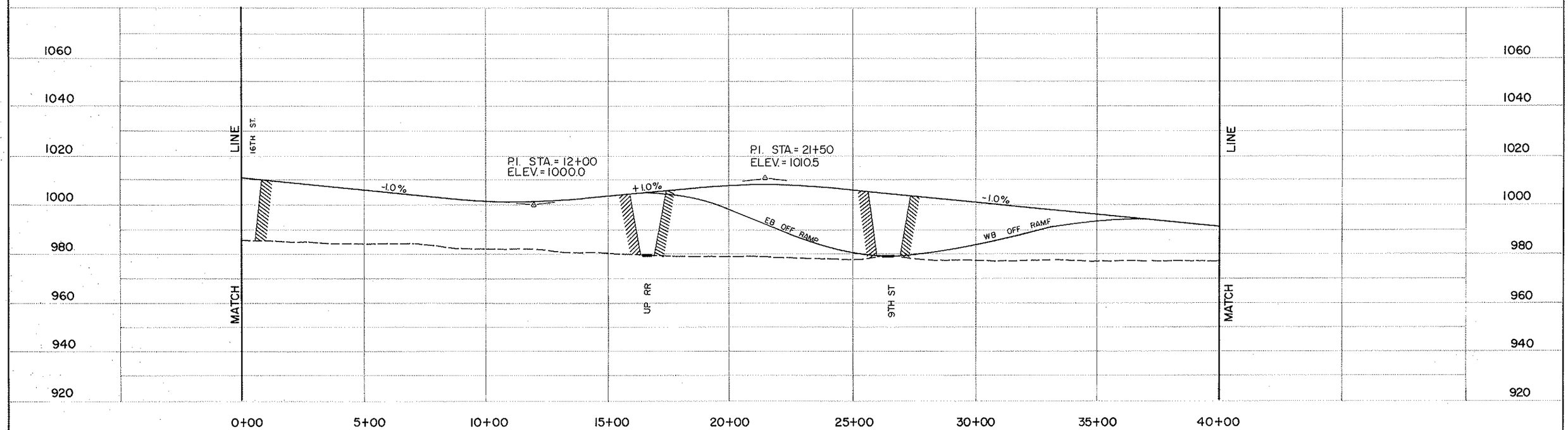


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PLATE 415

MATCH LINE

150

40

AIRPORT DR.

ABBOTT DR.

N

SCALE IN FEET

0 200 400

EPPLEY AIRFIELD

HARTMAN AVE.

9TH ST.

8TH ST.

7TH ST.

6TH AVE.

6TH ST.

5TH ST.

4TH AVE.

3RD ST.

JAYNES ST.

FORT ST.

4TH ST.

3RD ST.

2ND ST.

8TH ST. E.

9TH ST. E.

10TH ST. E.

11TH ST. E.

12TH ST. E.

13TH ST. E.

14TH ST. E.

15TH ST. E.

16TH ST. E.

BROWNE ST.

CARTER PARK

BROWNE ST.

REQUIRED AREA ROADWAY ON STRUCTURE

NORTH FREEWAY CORRIDOR STUDY

Prepared By HENNINGSON DURHAM & RICHARDSON

Prepared for the CITY OF OMAHA and NEBRASKA DEPARTMENT OF ROADS in cooperation with U.S. D.O.T. FEDERAL HIGHWAY ADMINISTRATION

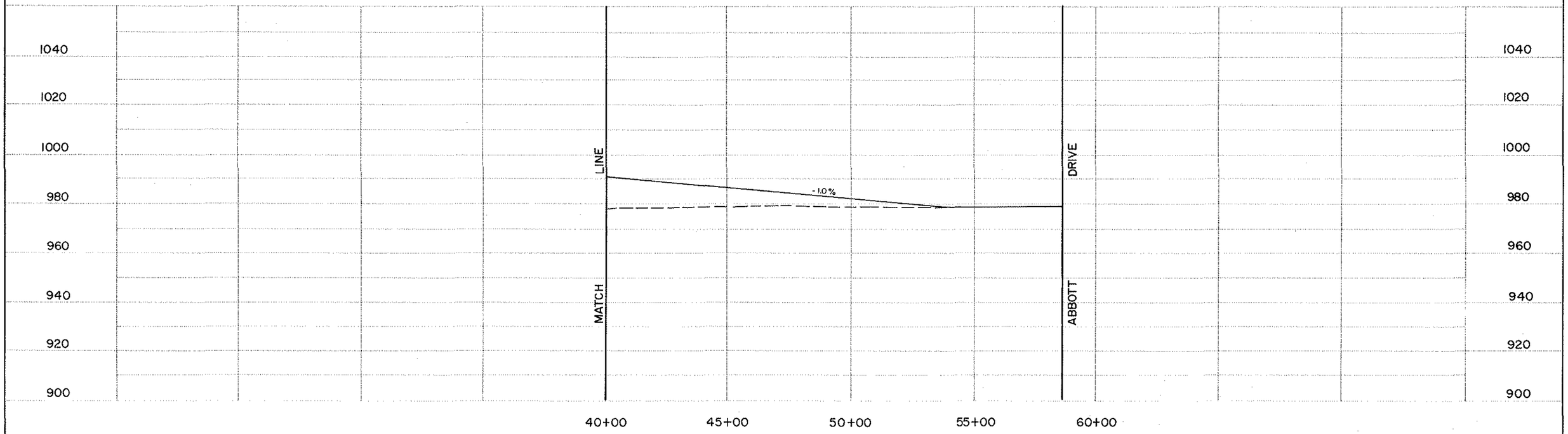
EAST ALIGNMENT

HARTMAN AIRPORT CONNECTOR

5TH TO ABBOTT

HDR

PLATE NO. 416



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CENTRAL ALIGNMENT PLUS AIRPORT CONNECTION

Central Alignment. The general philosophy of the Central Alignment is to provide a more direct route in paralleling 30th Street that will best serve the transportation needs of the people in and around the study area. To achieve this end, access points were provided whenever possible to increase free and easy accessibility to the freeway and the alignment was located nearer to the population areas where it would be most convenient to the most people.

A general description of the Central Alignment follows to supplement the details shown in the plan and profile plates. Details on the traffic service, number of lanes, weaving and ramping, and other geometric items may be found in APPENDIX E.

As mentioned previously, there are two possible routes for the Central Alignment south of Grand. They are the 27th-28th Street Route and the 31st Avenue Route from Lake to Grand. The 27th-28th Street Route begins as a depressed section between 27th and 28th Streets at Lake and continues north to Taylor Street with the same features as described for the East Alignment (PLATES 201 and 202).

At Taylor the 27th-28th Street Route swings to the northwest, passes under Ames, and begins a fully directional interchange which connects to the Airport Freeway. Partial diamond interchanges are located at 30th Street and a Ames to provide for local access (See PLATE 203).

Passing under 30th Street, the Central Alignment remains depressed and continues to the northwest along the Chicago and Northwestern Railroad right-of-way. At 33rd Street, this alignment swings to the north and becomes an at-grade section.

The 31st Avenue Route is the second possibility for the Central Alignment south of Grand. Like the 27th-28th Street Route, it begins at 27th and Lake as a 6-lane depressed section and proceeds north. At Maple Street, however, the 31st Avenue Route swings to the northwest. The freeway passes under 30th Street and then swings north again and follows the west side of John A. Creighton Boulevard. To maintain its continuity with Paxton Boulevard, John Creighton is relocated to the west side of the freeway where it becomes a frontage road (PLATES 251 and 252).

Along the 31st Avenue Routing, streets crossing the freeway south of Ames are Lake, Binney, 30th and Spaulding. Passing under the Missouri Pacific Railroad and Ames, the 31st Avenue Route stays depressed until north of Grand Avenue.

To the south side of Ames, a partial diamond interchange is located to provide local access. North of Ames, a fairly complicated fully directional interchange is located to provide a connection with the Airport Freeway and the proposed Hartman-Redman Arterial (PLATE 253).

A section of frontage road connecting the partial interchange at Ames with a similar partial interchange at 30th was added to improve the local access and circulation with this large interchange configuration and to relieve the 30th at Ames intersection.

North of Redman, the Central Alignment is the same for either the 31st Avenue or the 27th-28th Street Route. Remaining between 34th and 35th Streets, the Central Alignment proceeds north as a four-lane at-grade section until it reaches Hartman where it becomes depressed. Crossings are provided at Laurel and Curtis and a full diamond interchange is located at Redick (PLATE 204).

Coming from a depressed section the Central Alignment crosses over a small valley containing Martin Avenue before becoming a depressed section again as it approaches Ernst. North of Weber, the freeway begins following the hillside and becomes elevated while crossing North Ridge Drive and Forest Lawn Avenue. When it reaches King Street, it becomes an at-grade section again.

A pedestrian overpass is located at King to provide added access to Florence School (PLATE 205).

A full diamond interchange is located at State Street (PLATE 206).

North of State, the Central Alignment crosses rolling terrain with both cut and fill sections. The freeway requires six lanes in this area to provide for weaving between and interchanges at State and McKinley.

The interchange at I-680 and U.S. 73 is a fully directional interchange constructed over the existing diamond interchange. Only one ramp (in the northeast quadrant) of the existing diamond requires removal; therefore, both freeway to freeway and local to freeway movements are provided. The service eliminated by removing this one ramp is comparable with that provided at the 31st Avenue interchange and, therefore, no major impact is anticipated. Thus, all direct access exist from U.S. 73 and McKinley onto I-680 and the West Alignment with the exception of access onto eastbound I-680.

A high degree of continuity is provided to the U.S. 73 connection by the North Freeway ramps which connect directly into U.S. 73 at McKinley. In addition, these ramps form a suitable stage construction feature of the freeway as these lanes could be used

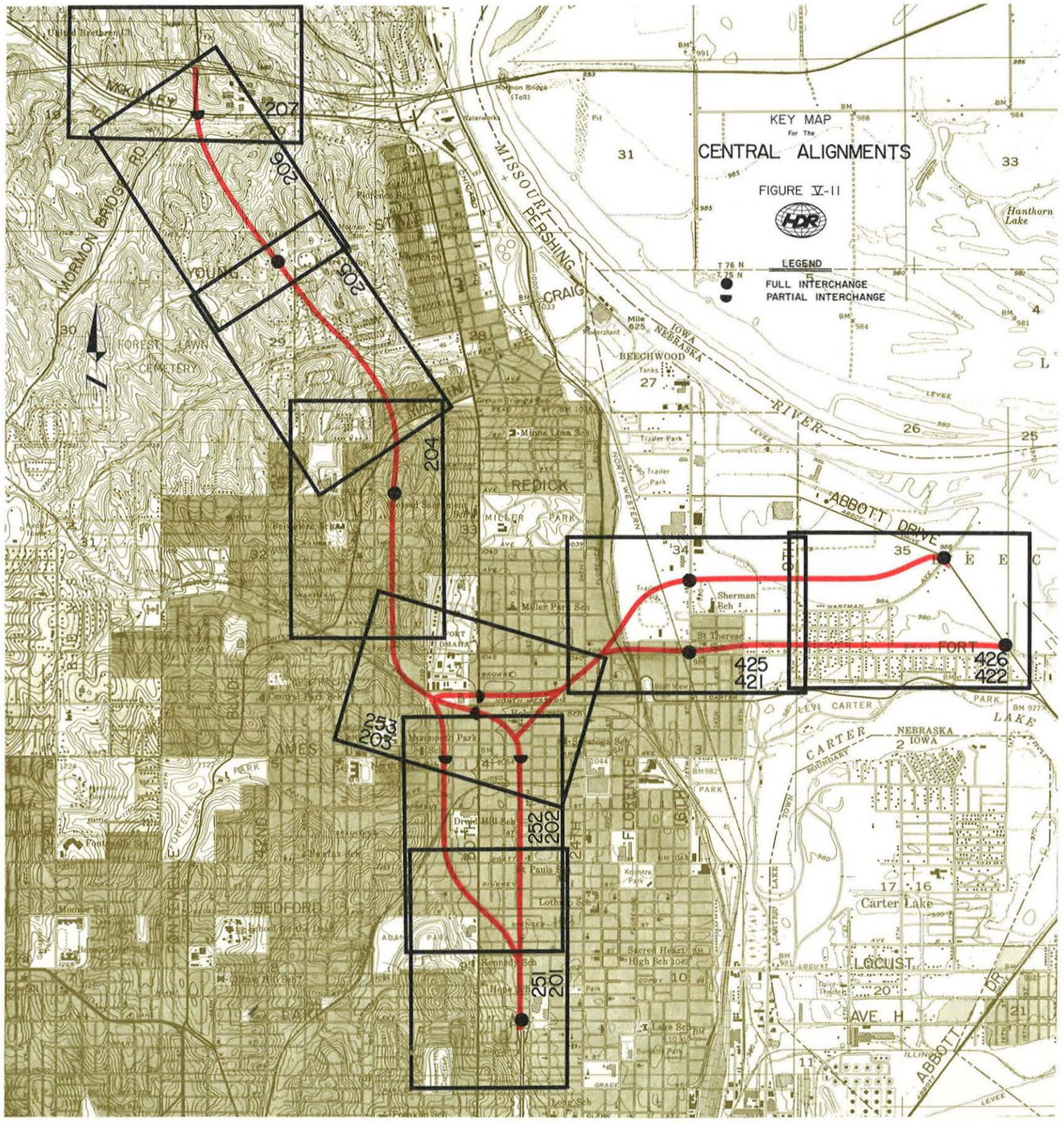
to provide a temporary connnection to I-680 via the existing U.S. 73 interchange configuration without building any directional ramps (PLATE 207).

Airport Freeway. The Fort Street Airport Connection with the 27th-28th Street Route for the Central Alignment begins as a four-lane depressed section at 25th Street. Proceeding to the northeast this section passes under crossings at 24th and Florence Boulevard and passes through the bluffs to become an elevated freeway on earth fill. This alignment crosses over the Chicago and Northwestern Railroad and 16th Street where a full diamond interchange is located. Farther east, it crosses over the Union Pacific tracks and 9th Street before it becomes an at-grade section. This alignment terminates with an at-grade signalized intersection at Abbott Drive (PLATES 203, 421 and 422).

The Fort Street Airport Connection to the 31st Avenue Route originates between Grand and Saratoga at 30th Street and proceeds east as a four-lane depressed freeway. Passing under a crossing at 27th Street, this route swings to the northeast and continues east with the same configuration as described for the 27th-28th route of the Fort Street Alignment (PLATES 253, 421 and 422).

The Hartman Avenue Airport Connection connects with the 27th-28th Street Route for the Central Alignment. It begins as a four-lane depressed section at 25th Street and proceeds to the northeast. This section passes under bridge crossings at 24th and Florence Boulevard and passes through the bluffs to become an elevated section. This section then swings north through an area of vacant land before it again swings east at Himebaugh and passes over the Chicago and Northwestern Railroad. It also passes over 16th Street where a full diamond interchange is located. Farther east it crosses over the Union Pacific tracks and 9th Street before it becomes an at-grade section and connects to a signalized intersection at Abbott Drive. This alternate also provides for directional ramp connections to and from the south onto Abbott Drive (PLATES 203, 425 and 426).

The Hartman Avenue Airport Connection to the 31st Avenue Route originates between Grand and Saratoga at 30th Street and proceeds east as a four-lane depressed freeway. Passing under a crossing at 27th Street this route swings to the northeast and continues east with the same configuration as described for the 27th-28th Street routes for the Hartman Avenue Alignment (PLATES 253, 425 and 426).



ADAMS PARK

SCALE IN FEET
0 200 400

KENNEDY SCHOOL

BEDFORD AVE.

EMMET ST.

PINKNEY ST.

EVANS ST.

PRATT ST.

MANDERSON ST.

JOHN A. CREIGHTON BLVD.

30TH ST

30TH ST.

29TH ST.

29TH ST.

LAKE ST.

OHIO ST.

MIAMI ST.

CORBY ST.

MAPLE ST.

BINNEY ST.

28TH AVE.

SPENCER HOMES

PLATE 202

28TH ST.

110

120

130

27TH ST.

27TH ST.

PUBLIC WORKS YARD

ERSKINE ST.

CORBY ST.

M.L. KING DAY CARE CENTER

SPENCER HOMES

26TH ST.

WIRT ST

SPENCER ST

BRISTOL ST.

EMMET ST.

PINKNEY ST.

EVANS ST.

MATCH LINE

PRATT ST.

REQUIRED AREA ROADWAY ON STRUCTURE

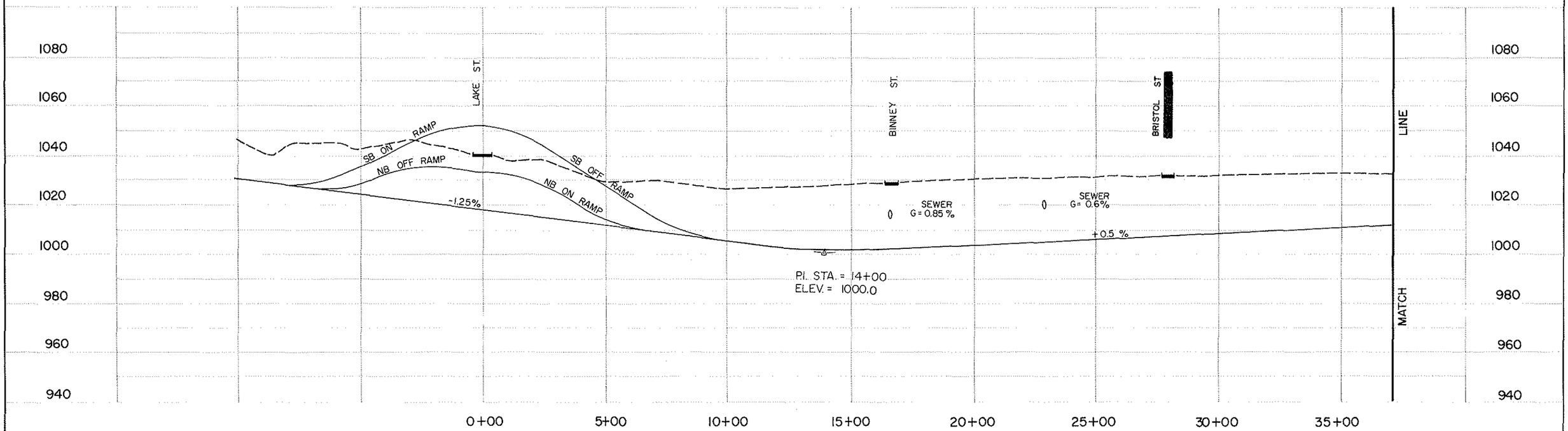
NORTH FREEWAY CORRIDOR STUDY
Prepared By HENNINGSON DURHAM & RICHARDSON

Prepared for the CITY OF OMAHA and NEBRASKA DEPARTMENT OF ROADS in cooperation with U.S. D.O.T. FEDERAL HIGHWAY ADMINISTRATION

CENTRAL ALIGNMENT
LAKE TO EVANS

HDR

PLATE NO. 201



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ADAMS PARK

BEDFORD AVE.

EMMET ST.

EVANS ST.

33RD ST.

32ND ST.

31ST AVE.

DRUID HILL SCHOOL

MPRR

30TH ST.

BRISTOL ST.

PINKNEY ST.

29TH ST.

PRATT ST.

MANDERSON ST.

SPAULDING ST.

RUGGLES ST.

SPRAGUE ST.

SAHLER ST.

TAYLOR ST.

AMES AVE.

MEREDITH AVE.

28TH AVE.

PLATE 201

PLATE 203

28TH ST.

27TH ST.

MATCH LINE

140

150

160

26TH AVE.

26TH ST.

SCALE IN FEET

0 200 400

REQUIRED AREA ROADWAY ON STRUCTURE

NORTH FREEWAY CORRIDOR STUDY

Prepared By HENNINGSON DURHAM & RICHARDSON

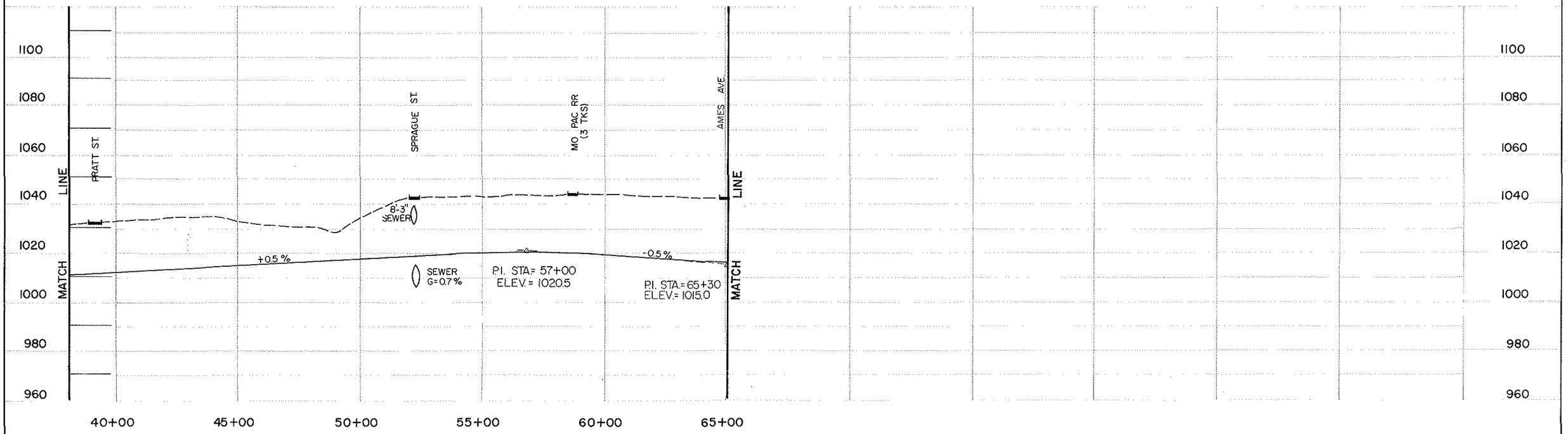
Prepared for the CITY OF OMAHA and NEBRASKA DEPARTMENT OF ROADS in cooperation with U.S. D.O.T. FEDERAL HIGHWAY ADMINISTRATION

CENTRAL(27TH-28TH) ALIGN.

EVANS TO AMES

HDR

PLATE NO. 202



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FORT OMAHA

SCALE IN FEET
0 200 400

MATCH LINE
PLATE 204
MATCH LINE
PLATES 421, 425
PLATE 202

35TH ST.
34TH ST.
33RD AVE.
33RD ST.
30TH ST.
28TH AVE.
27TH ST.
25TH AVE.
24TH ST.

JAYNES ST.
36TH ST.
REDMAN AVE.
PROPOSED HARTMAN-REDMAN ARTERIAL
FORT ST.
CAMDEN AVE.
BROWNE ST.
SARATOGA ST.
GRAND AVE.
C&NWRR
LARIMORE AVE.
TEMPLETON AVE.
FOWLER AVE.
SARATOGA SCHOOL
MEREDITH AVE
AMES AVE.
TAYLOR ST.
M.P.R.R.

I 10
I 100
I 90
I 80
I 70

REQUIRED AREA ROADWAY ON STRUCTURE

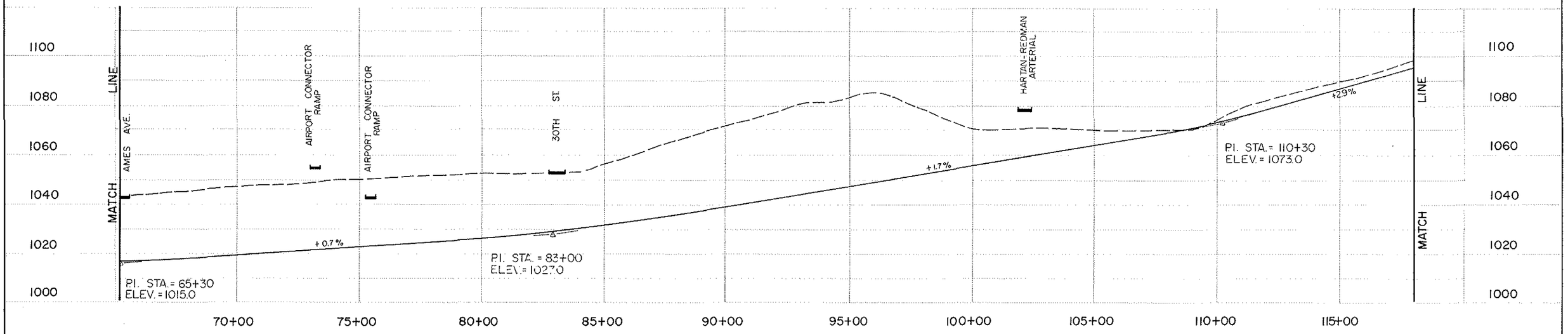
NORTH FREEWAY CORRIDOR STUDY
Prepared By HENNINGSON DURHAM & RICHARDSON

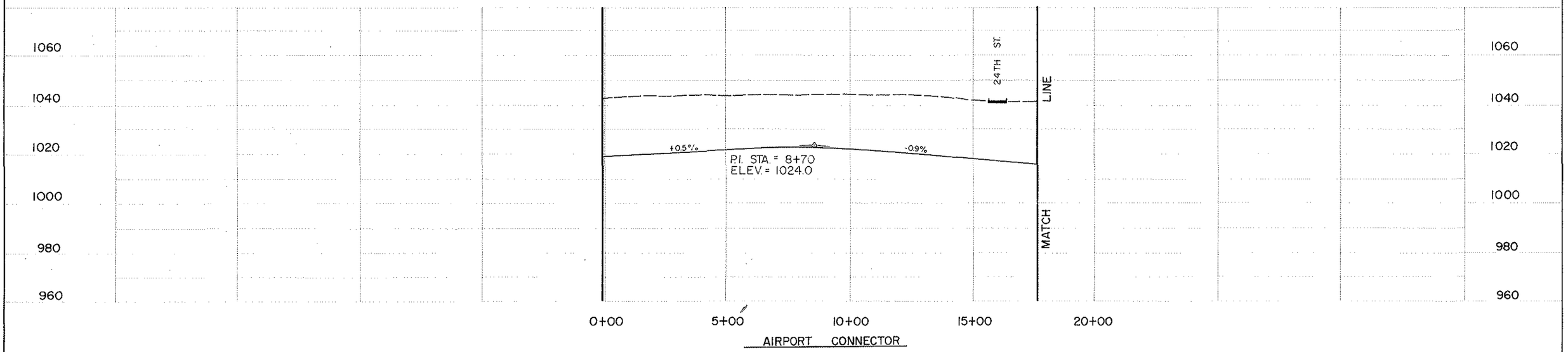
Prepared for the CITY OF OMAHA and NEBRASKA DEPARTMENT OF ROADS in cooperation with U.S. D.O.T. FEDERAL HIGHWAY ADMINISTRATION

CENTRAL (27TH - 28TH) ALIGN.
AMES TO ELLISON
AIRPORT CONNECTOR 27TH TO 24TH

HDR

PLATE NO. 203





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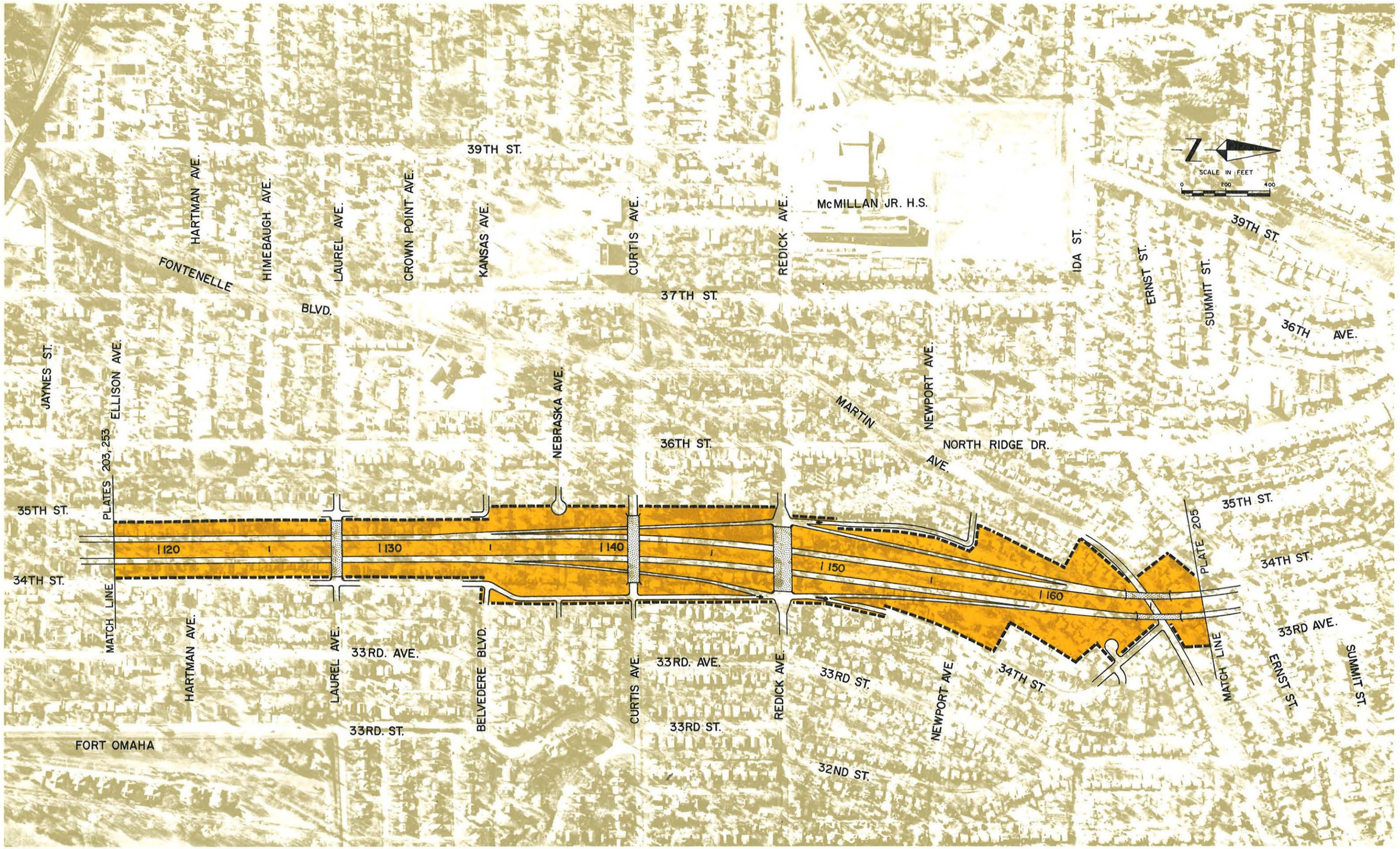


REQUIRED AREA ROADWAY ON STRUCTURE

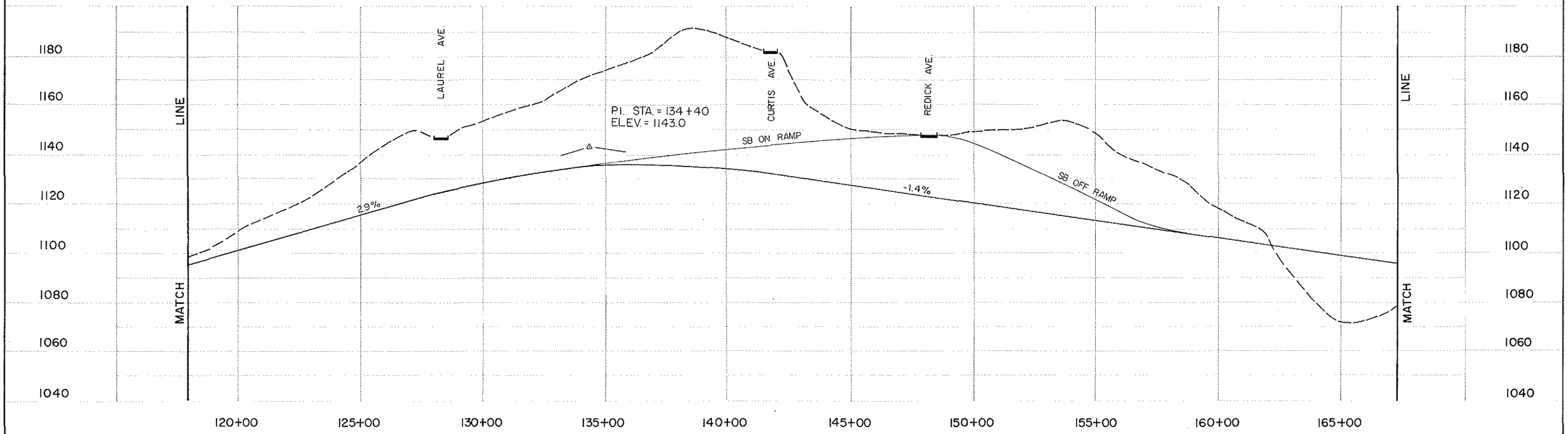
NORTH FREEWAY CORRIDOR STUDY
Prepared By HENNINGSON DURHAM & RICHARDSON

Prepared for the CITY OF OMAHA and NEBRASKA DEPARTMENT OF ROADS in cooperation with U.S. D.O.T. FEDERAL HIGHWAY ADMINISTRATION

CENTRAL ALIGNMENT
ELLISON TO ERNST

HDR

PLATE NO. 204



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FOREST LAWN CEMETERY

SCALE IN FEET
0 200 400

IDA ST.
ERNST ST.
SUMMIT
READ ST.
IOWA ST.
39TH ST.
39TH AVE.
SCOTT ST.
WEBER ST.
FOREST LAWN AVE.
40TH ST.
KING ST.
YOUNG ST.
PLATE 206
36TH AVE.
WEBER ST.
NORTH RIDGE DR.
ERNST ST.
MARTIN AVE.
PLATE 204
35TH ST.
WEBER CIR.
HANOVER CIR.
FOREST LAWN AVE.
39TH ST.
KING ST.
1210
2001
2201
1190
PEDESTRIAN OVERPASS
YOUNG ST.
38TH ST.
GREBE ST.
MORMON ST.
MATCH LINE
1170
1180
MATCH LINE
FLORENCE SCHOOL
37TH ST.
33RD AVE.
36TH ST.
STATE ST.
33RD ST.
ERNST ST.
SUMMIT ST.
WEBER ST.
FOREST LAWN AVE.
CRAIG AVE.
34TH ST.
SHEFFIELD ST.
KING ST.

REQUIRED AREA ROADWAY ON STRUCTURE

NORTH FREEWAY CORRIDOR STUDY
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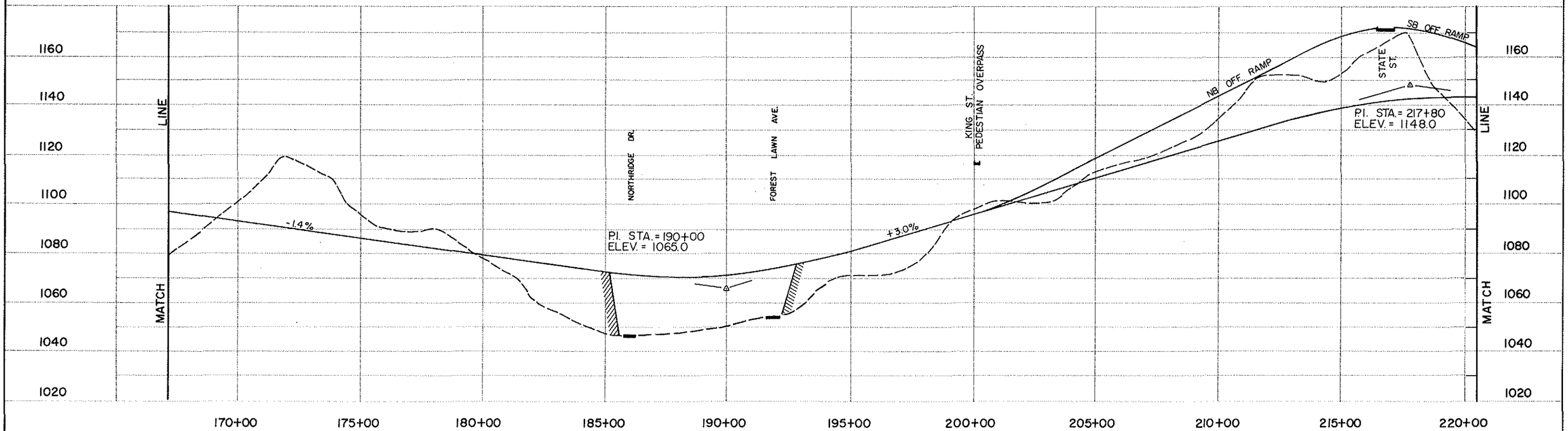
CENTRAL ALIGNMENT
ERNST TO STATE

HDR

PLATE NO. 205



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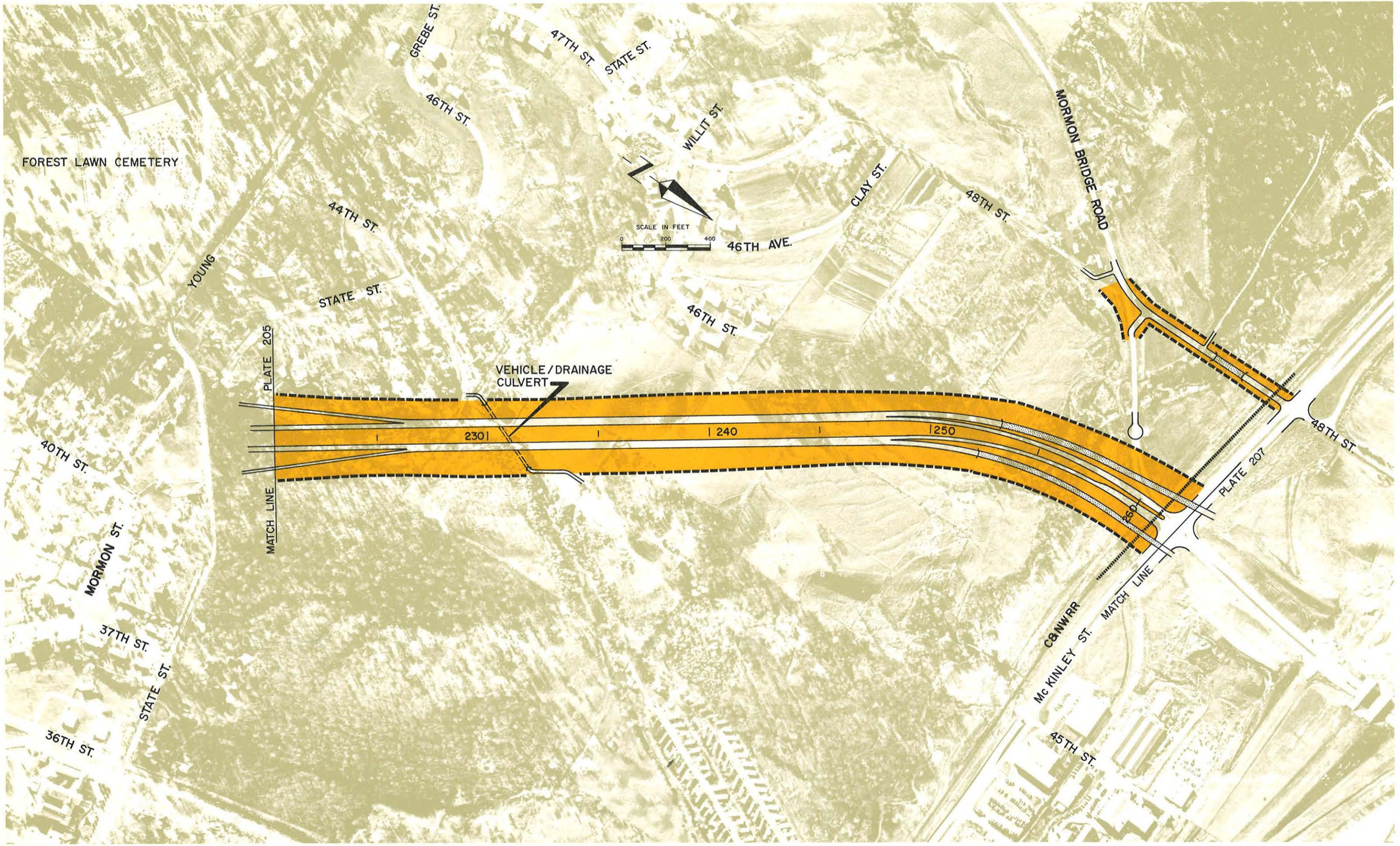

REQUIRED AREA ROADWAY ON STRUCTURE

NORTH FREEWAY CORRIDOR STUDY
Prepared By HENNINGSON DURHAM & RICHARDSON

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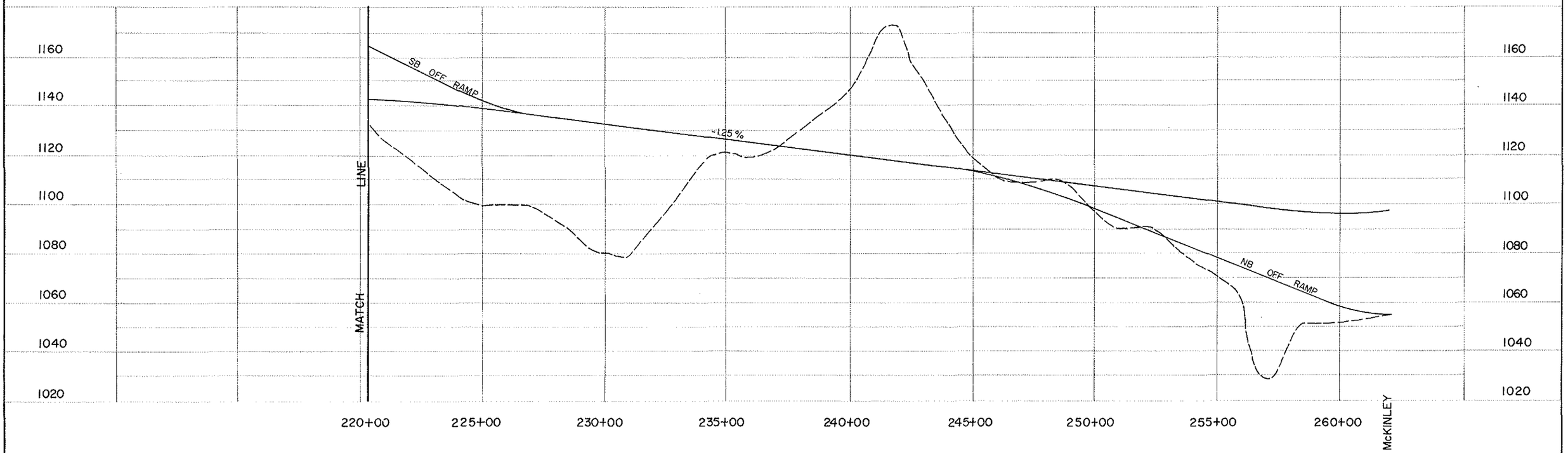
CENTRAL ALIGNMENT
STATE TO Mc KINLEY

HDR

PLATE NO. 206



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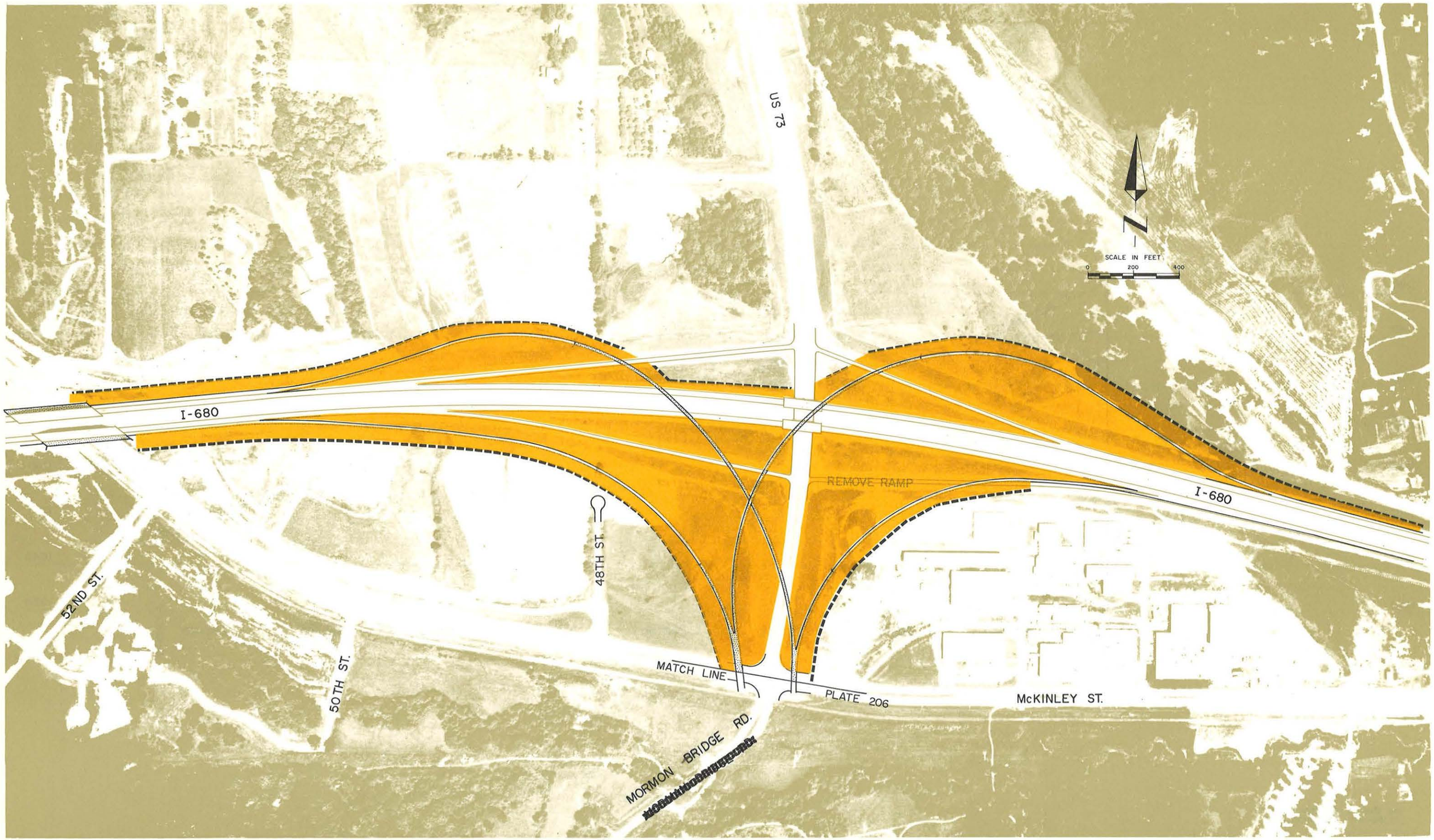

REQUIRED AREA ROADWAY ON STRUCTURE

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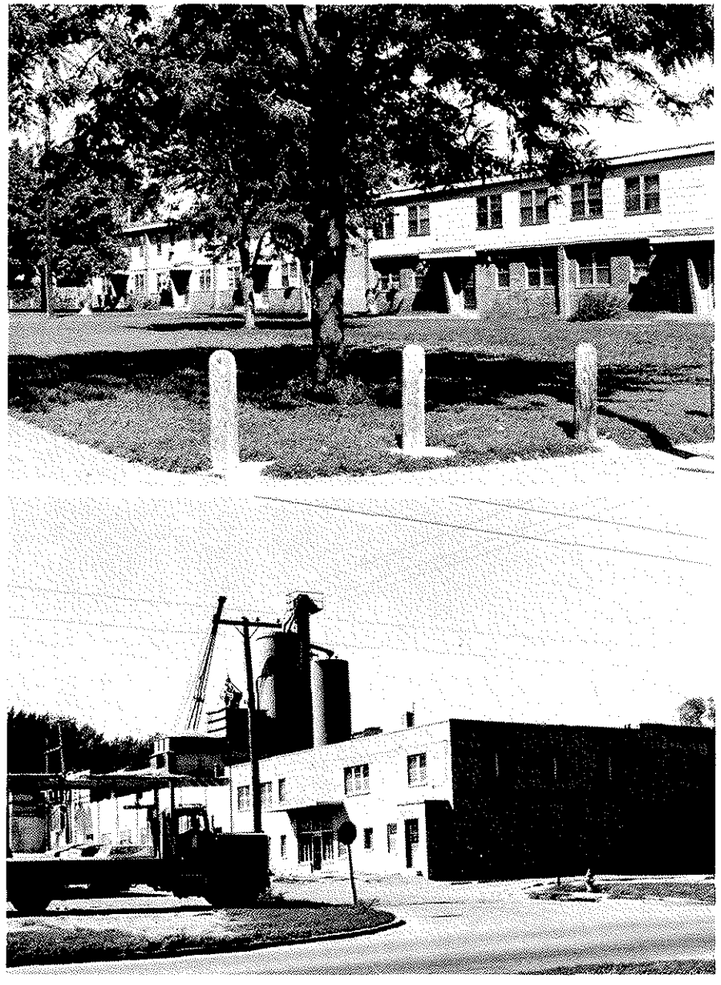
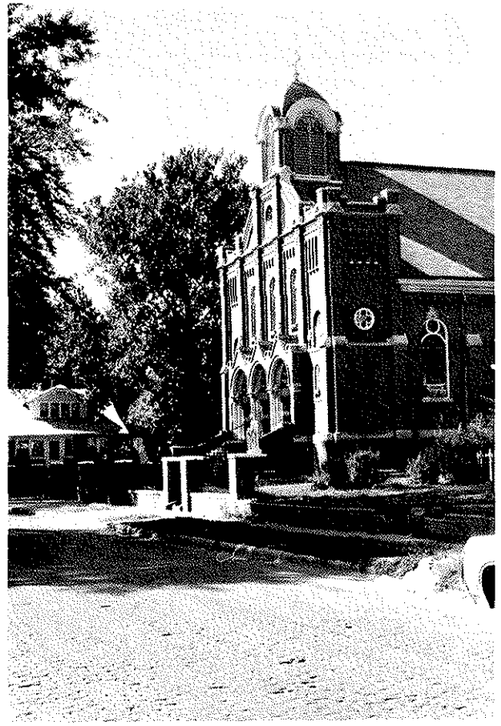
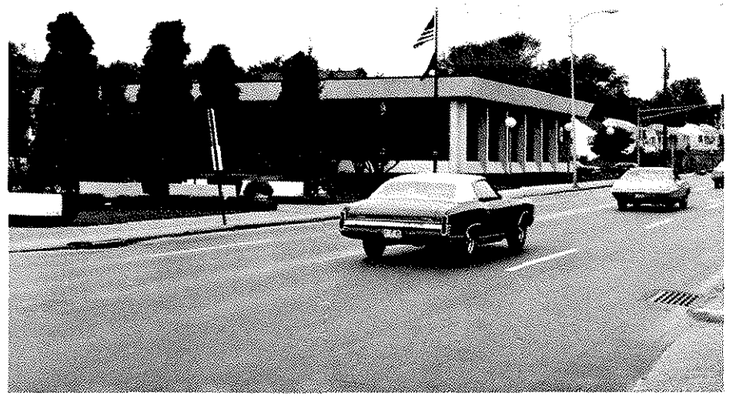
CENTRAL ALIGNMENT
I-680 INTERCHANGE

HDR

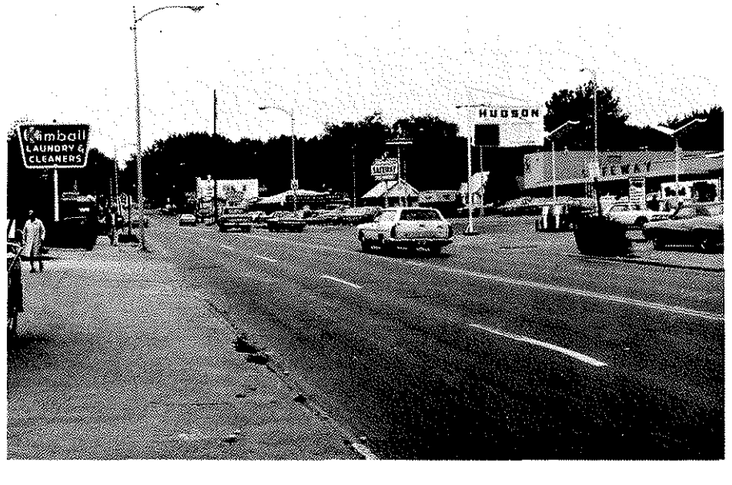
PLATE NO. 207








GULF
REFINED


Kimball
LAUNDRY &
CLEANERS
HUDSON

ADAMS PARK

SCALE IN FEET
0 200 400

KENNEDY SCHOOL

30TH ST

29TH ST

27TH ST

26TH ST

LAKE ST.

OHIO ST.

MIAMI ST.

CORBY ST.

MAPLE ST.

BINNEY ST.

BEDFORD AVE.

EMMET ST.

PINKNEY ST.

EVANS ST.

PRATT ST.

MANDERSON ST.

JOHN A. CREIGHTON BLVD.

MATCH LINE

PLATE 252

I-30

I-20

I-10

SPENCER HOMES

28TH AVE.

28TH ST.

PUBLIC WORKS YARD

ERSKINE ST.

M.L. KING DAY CARE CENTER

WIRT ST

SPENCER ST

BRISTOL ST.

REQUIRED AREA ROADWAY ON STRUCTURE

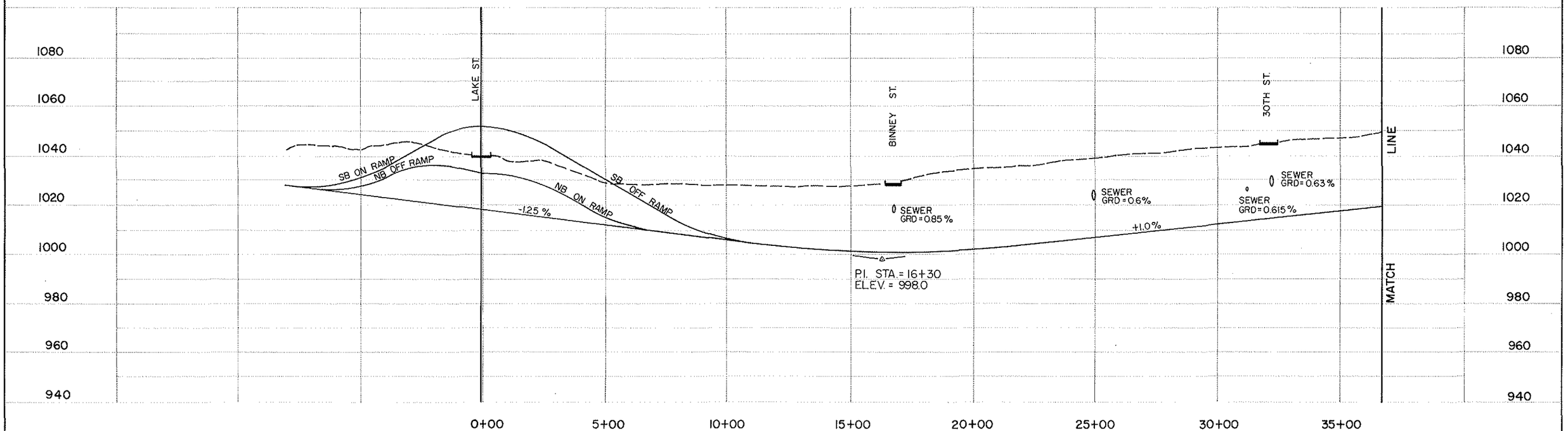
NORTH FREEWAY CORRIDOR STUDY
Prepared By HENNINGSON DURHAM & RICHARDSON

Prepared for the CITY OF OMAHA and NEBRASKA DEPARTMENT OF ROADS in cooperation with U.S. D.O.T. FEDERAL HIGHWAY ADMINISTRATION

CENTRAL (31 ST. AVE) ALIGN.
LAKE TO EMMET

HDR

PLATE NO. 251



THIS DRAWING HAS BEEN REDUCED TO ONE-HALF THE ORIGINAL SCALE

SCALE: 1"=20' VERT. 1"=200' HORZ. EXISTING ---- PROPOSED ——	NORTH FREEWAY CORRIDOR STUDY Prepared By HENNINGSON DURHAM & RICHARDSON	Prepared for the CITY OF OMAHA and NEBRASKA DEPARTMENT OF ROADS in cooperation with U.S. D.O.T. FEDERAL HIGHWAY ADMINISTRATION	CENTRAL (31ST AVE) ALIGN LAKE TO EMMET HDR PLATE NO. 251 P

ADAMS PARK

BEDFORD AVE.

EMMET ST.

EVANS ST.

33RD ST.

RELOCATED JOHN A. CREIGHTON BLVD.

32ND ST.

PLATE 253

SCALE IN FEET

0 200 400

150

160

70'

31ST AVE.

MATCH LINE

DRUID HILL SCHOOL

MPRR

MATCH LINE

PLATE 251

30TH ST.

BRISTOL ST.

PINKNEY ST.

29TH ST.

PRATT ST.

MANDERSON ST.

SPAULDING ST.

RUGGLES ST.

SPRAGUE ST.

SAHLER ST.

TAYLOR ST.

AMES AVE.

MEREDITH AVE.

28TH AVE.

28TH ST.

27TH ST.

26TH AVE.

26TH ST.

27TH ST.

REQUIRED AREA ROADWAY ON STRUCTURE

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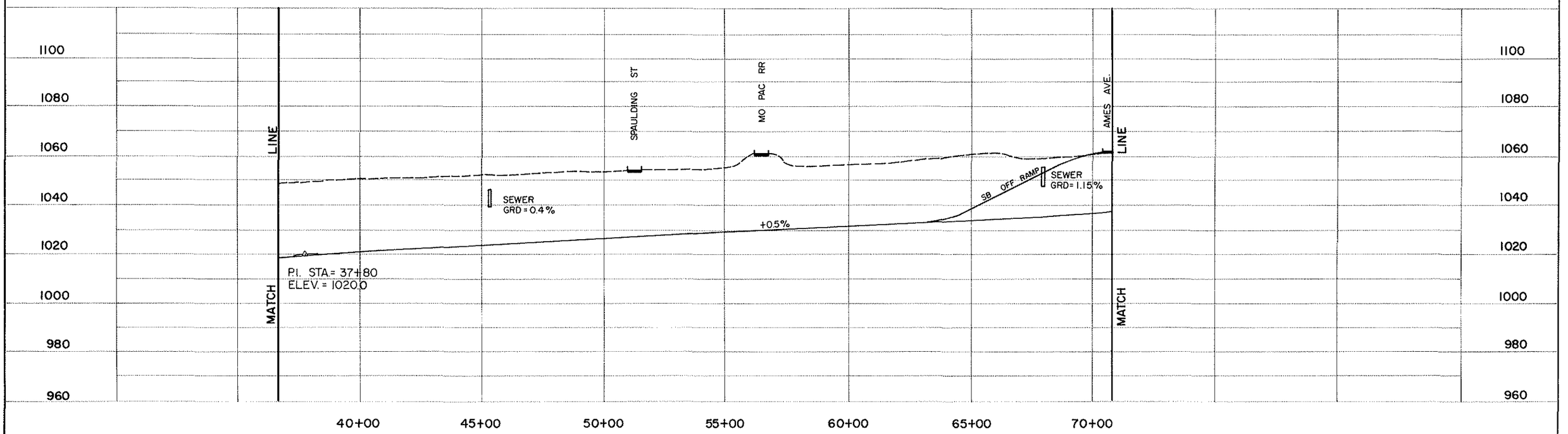
CENTRAL (31ST. AVE) ALIGN.
EMMET TO AMES

HDR

PLATE NO. 252



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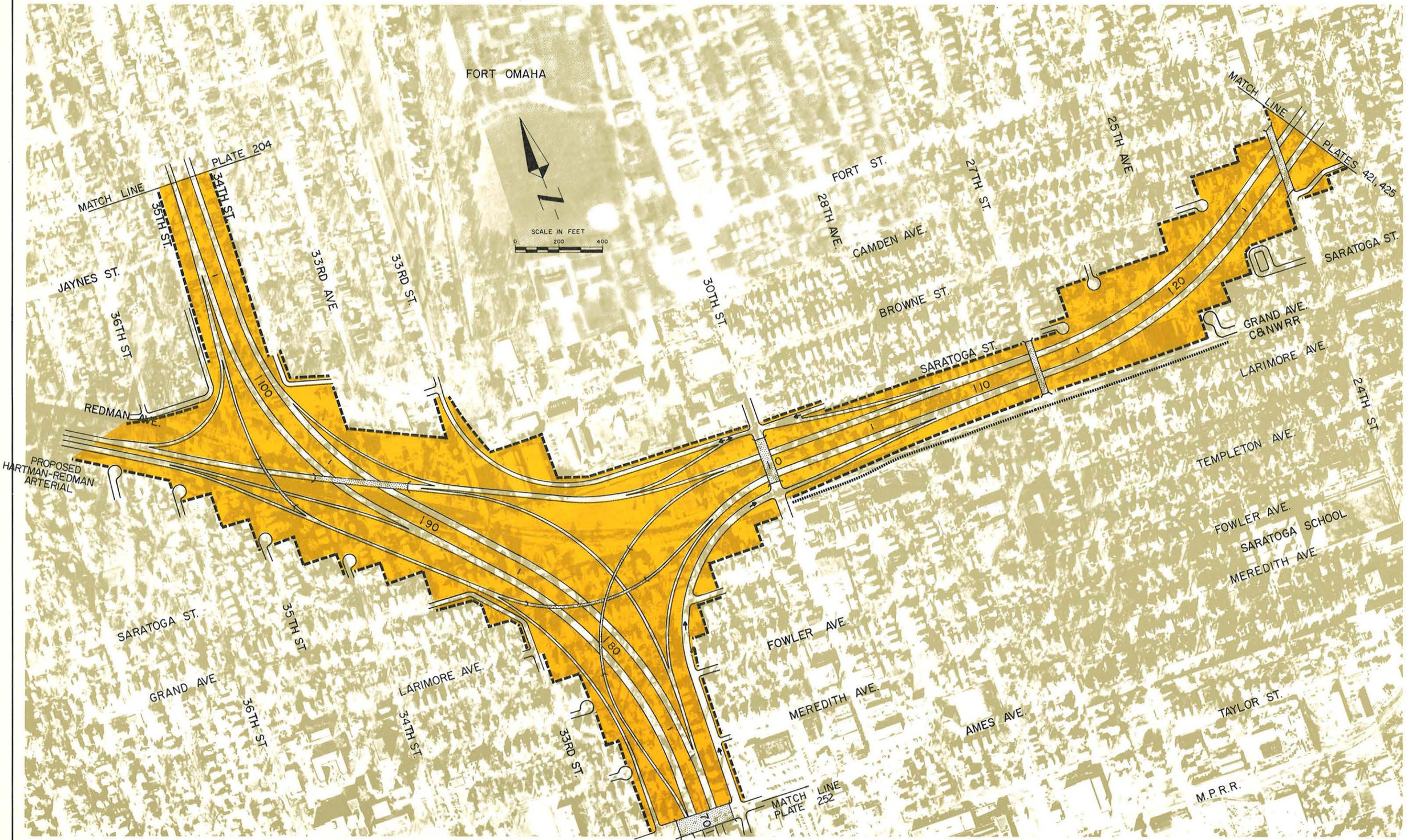
CENTRAL (31ST AVE) ALIGN
EMMET TO AMES

PLATE NO. 252 P



REQUIRED AREA ROADWAY ON STRUCTURE

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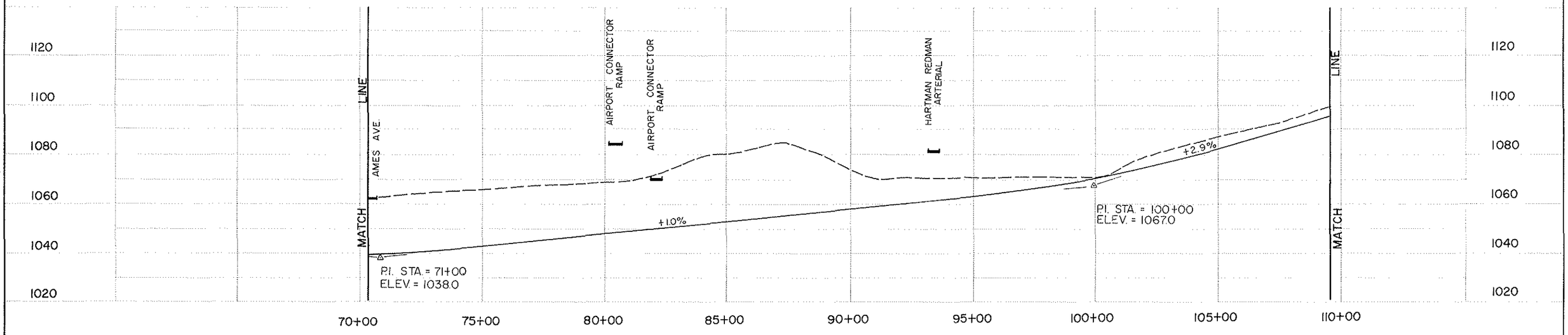
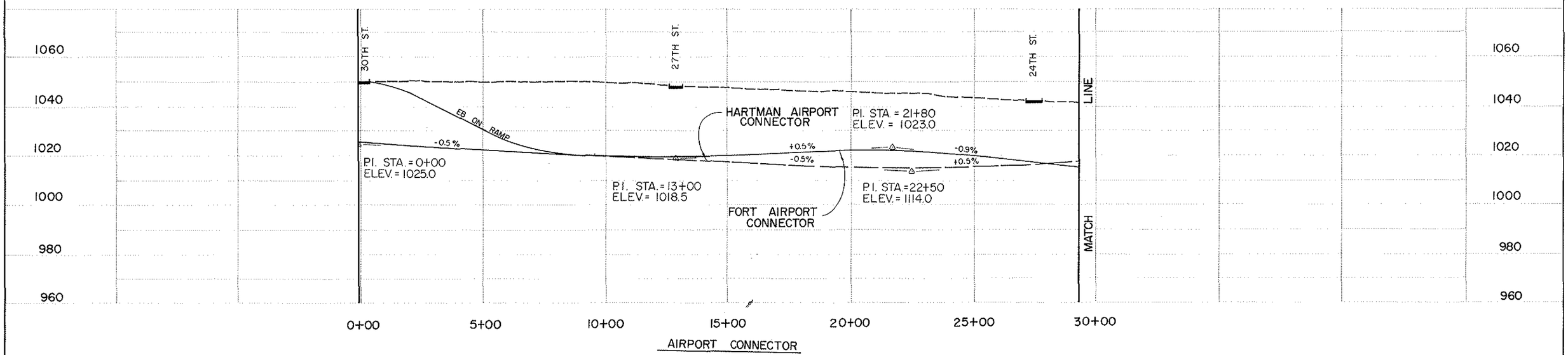
CENTRAL (31ST AVE.) ALIGN.
AMES TO ELLISON
AIRPORT CONNECTOR 30TH TO 24TH

HDR

PLATE NO. 253





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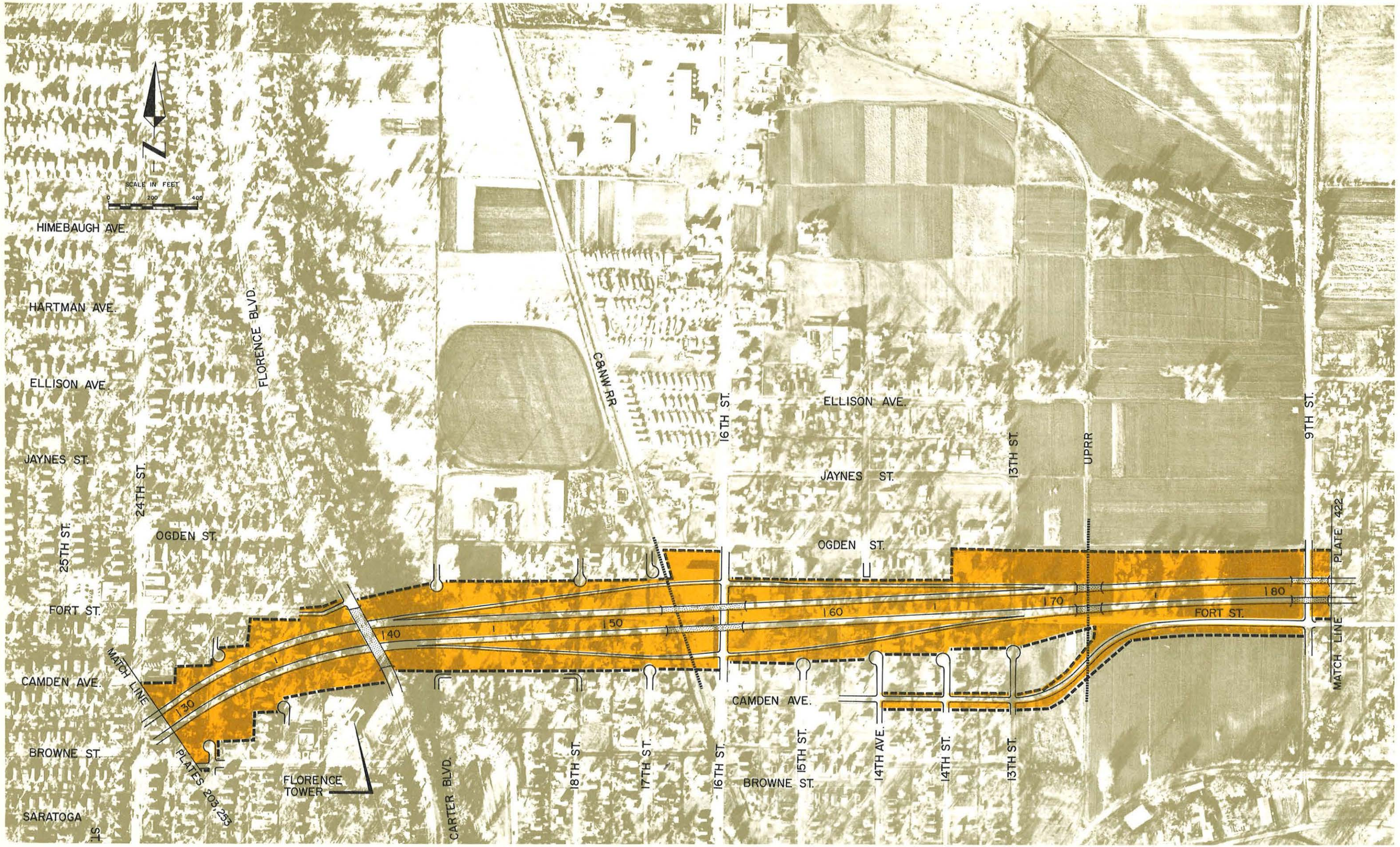

REQUIRED AREA ROADWAY ON STRUCTURE

NORTH FREEWAY CORRIDOR STUDY
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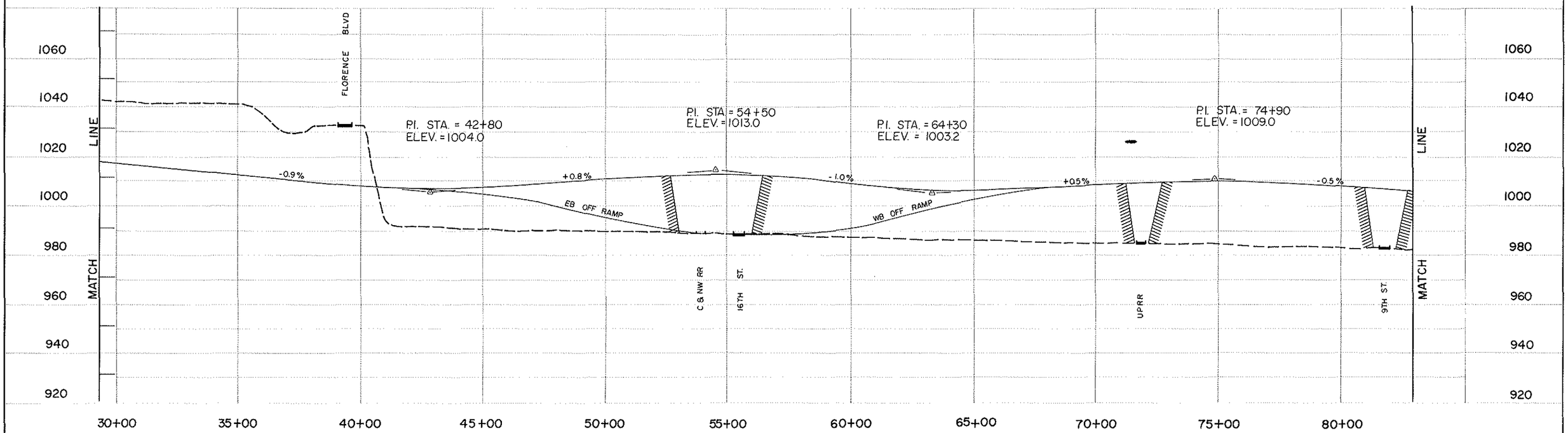
CENTRAL ALIGNMENT
FORT AIRPORT CONNECTOR
24TH TO 9TH

HDR

PLATE NO. 421



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N

SCALE IN FEET
0 200 400

HARTMAN AVE.

9TH ST.
8TH ST.
7TH ST.
6TH AVE.
6TH ST.
5TH ST.
4TH AVE.
3RD ST.

JAYNES ST.

AIRPORT DR.

ABBOTT DR.

EPPLEY AIRFIELD

PLATE 421

90 100 110 120 130

FORT ST.

MATCH LINE

4TH ST.
3RD ST.
2ND ST.
8TH ST. E.
9TH ST. E.
10TH ST. E.
11TH ST. E.
12TH ST. E.
13TH ST. E.
14TH ST. E.
15TH ST. E.
16TH ST. E.

BROWNE ST.

CARTER PARK

BROWNE ST.

REQUIRED AREA ROADWAY ON STRUCTURE

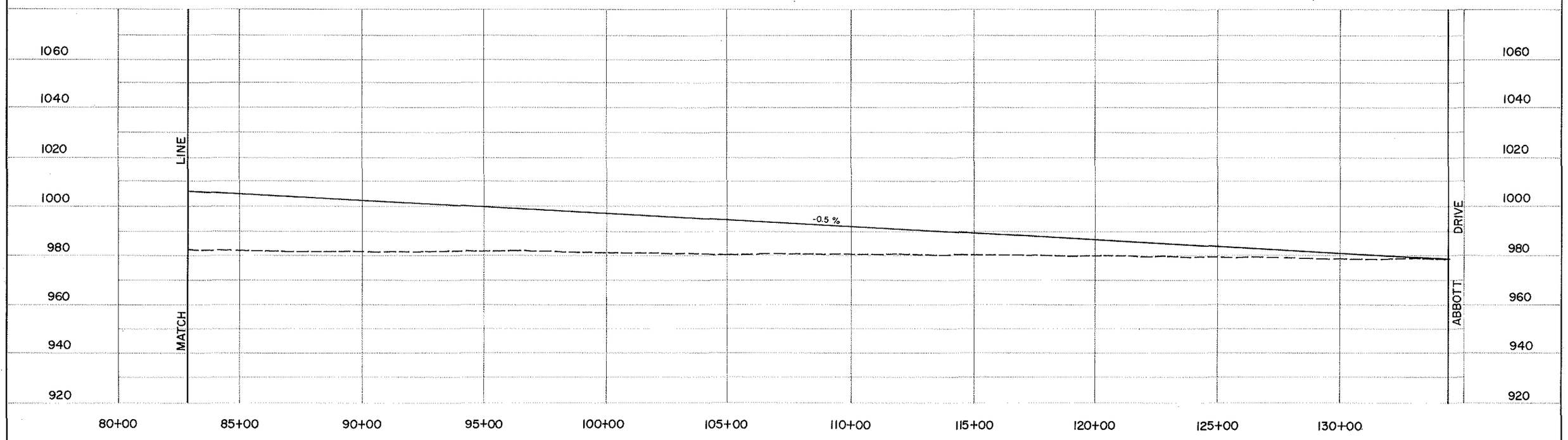
NORTH FREEWAY CORRIDOR STUDY
Prepared By HENNINGSON DURHAM & RICHARDSON

Prepared for the CITY OF OMAHA and NEBRASKA DEPARTMENT OF ROADS in cooperation with U.S. D.O.T. FEDERAL HIGHWAY ADMINISTRATION

CENTRAL ALIGNMENT
FORT AIRPORT CONNECTOR
9TH TO ABBOTT

HDR

PLATE NO. 422



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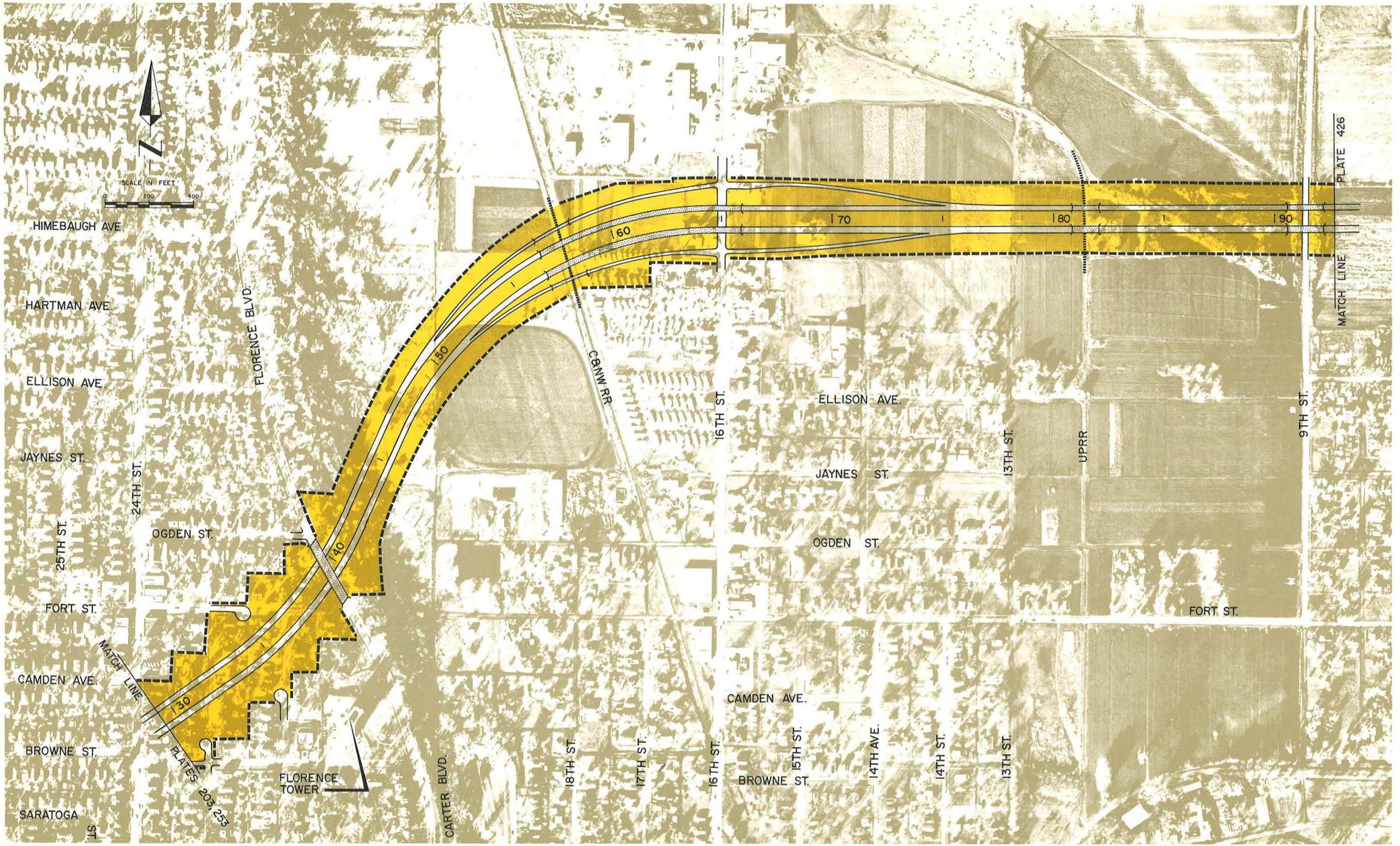
CENTRAL ALIGNMENT
FORT AIRPORT CONNECTOR
9TH TO ABBOTT

PLATE NO. 422P



REQUIRED AREA ROADWAY ON STRUCTURE

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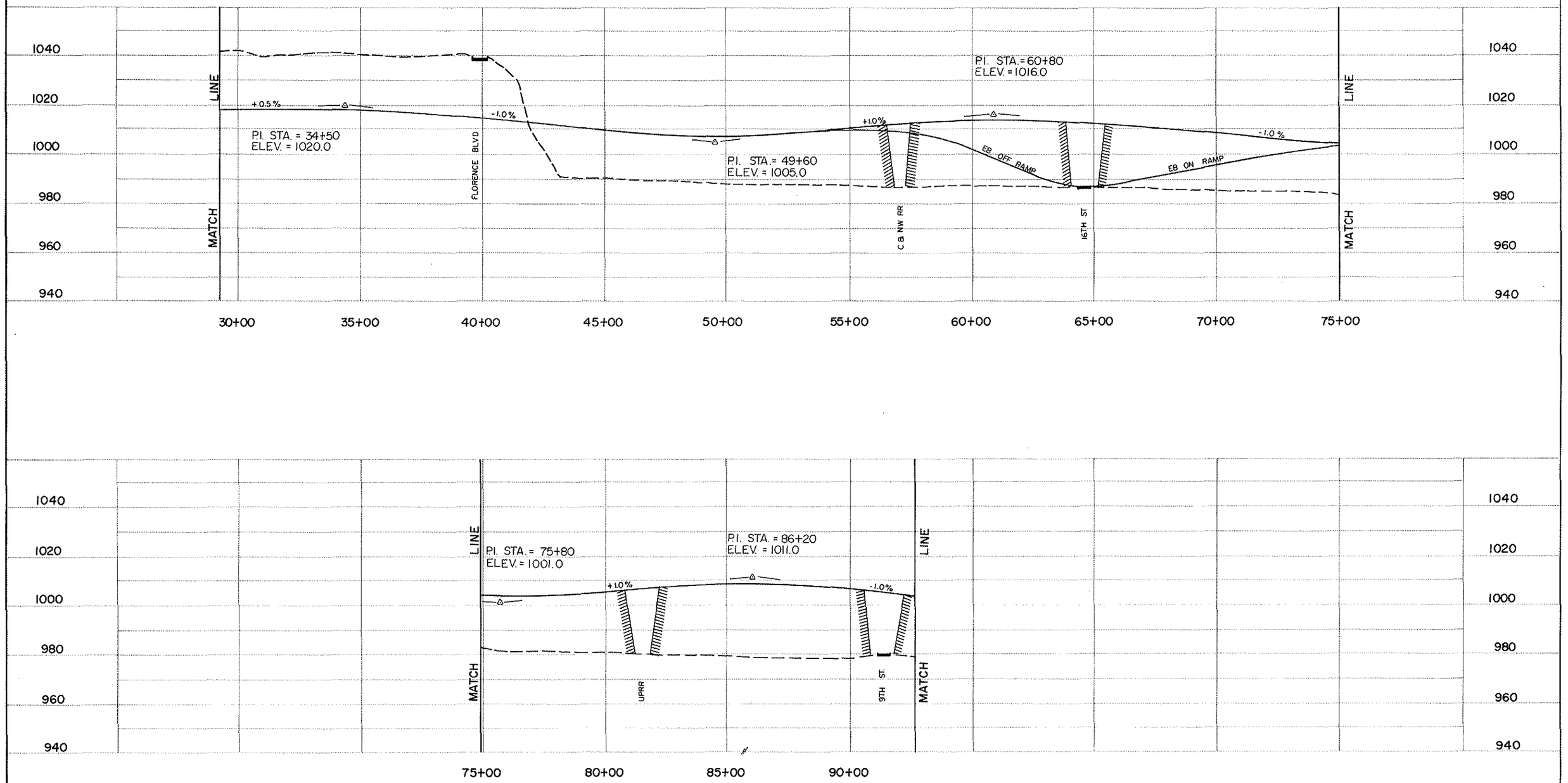
CENTRAL ALIGNMENT
HARTMAN AIRPORT CONNECTOR
24TH TO 9TH

HDR

PLATE NO. 425



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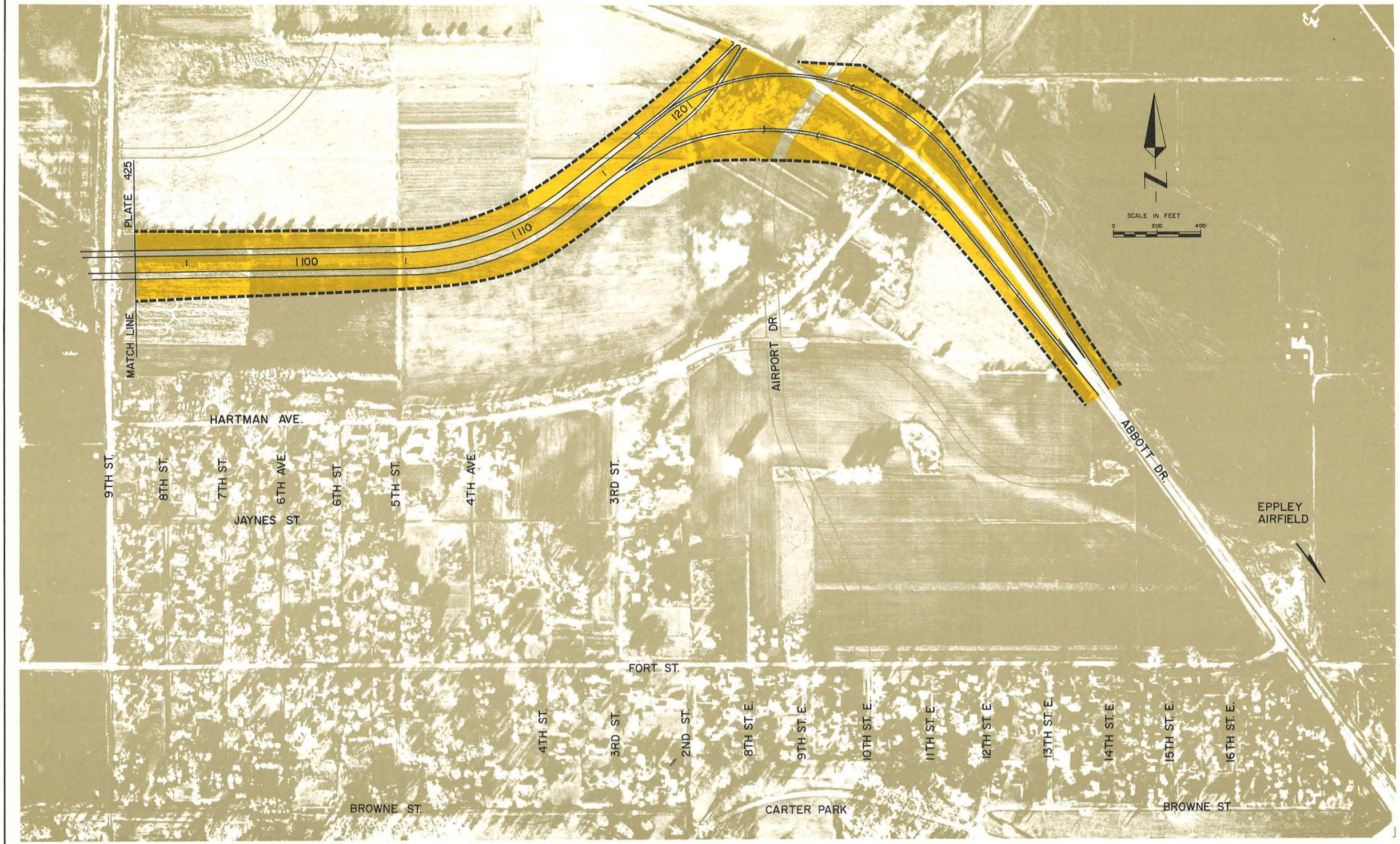

REQUIRED AREA ROADWAY ON STRUCTURE

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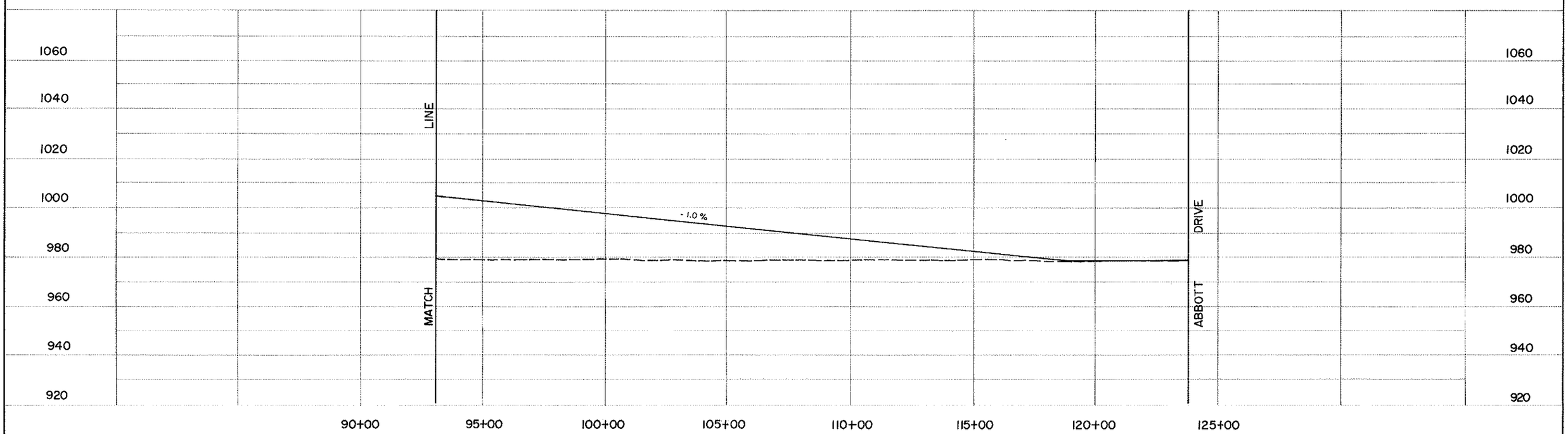
CENTRAL ALIGNMENT
HARTMAN AIRPORT CONNECTOR
9TH TO ABBOTT

HDR

PLATE NO. 426



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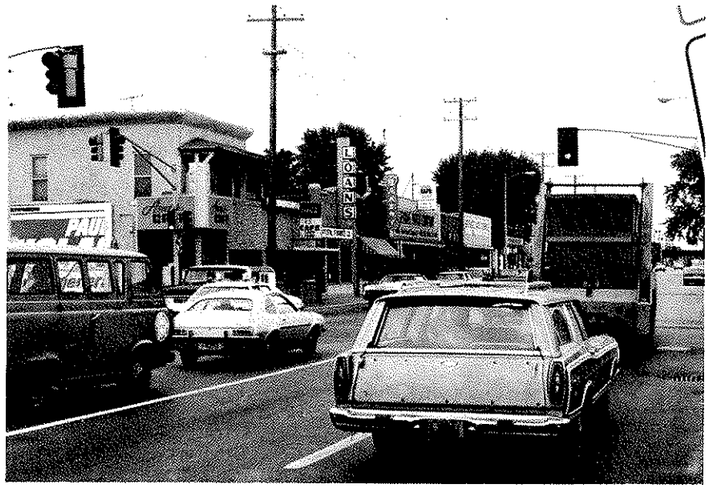
CENTRAL ALIGNMENT
HARTMAN AIRPORT CONNECTOR
9TH TO ABBOTT

PLATE NO. 426P



WEST ALIGNMENT PLUS AIRPORT CONNECTION

West Alignment. The West Alignment was intended to take advantage of the Chicago and Northwestern Railroad right-of-way and the vacant areas around Forest Lawn Cemetery. This alignment utilizes low cost right-of-way and natural terrain features to create a route that provides many easy access points and, therefore, good traffic service.

A general description of the West Alignment follows to supplement the details shown in the plan and profile plates. Details on the traffic service, number of lanes, weaving and ramping, and other goemetric items may be found in APPENDIX E.

South of Ames the West Alignments are the same six-lane depressed section as the Central (31st Avenue) and Central (27th-28th) Street Routes (PLATES 301 and 302).

The 27th-28th Street Route is a depressed six-lane section as it approaches a partial diamond interchange at Ames. North of Ames the freeway swings to the northwest and begins a fully directional interchange which connects to the Airport Freeway. A partial diamond interchange provides local access at 30th Street (PLATE 303).

Passing under 30th Street, the West Alignment remains depressed but is slowly climbing to an at-grade section as it follows the Chicago and Northwestern right-of-way (PLATE 303).

The 31st Avenue Route of the West Alignment is the same six-lane depressed section as the Central Alignment south of Ames (PLATES 351 and 352). To the north of Ames, a fully directional interchange is located to provide a connection with the Airport Freeway as well as local connections to the freeway. A section of frontage road is included to the east of this interchange to enhance local access and to interconnect the partial diamond interchanges at 30th and at Ames.

North of the directional interchange, the West Alignment connects into the Chicago-Northwestern Railroad right-of-way at 35th and Redman (PLATE 353).

Following the Chicago and Northwestern right-if-way to the northwest and West Alignment becomes elevated at Fontenelle Boulvard where a half diamond interchange is located providing a connection with Fontenelle Boulebard and the proposed Hartman—Redman Arterial(PLATE 304).

The West Alignment becomes a four-lane section and at this point continues to follow the railroad right-of-way. The freeway then swings north, becomes depressed and follows the east side of 42nd Street which serves as a frontage road.

At both Curtis and Redick, half diamond interchanges are located. These interchanges are connected with frontage roads to form one complete diamond interchange with full access to the freeway form either Curtis or Redick (PLATES 304 and 305). The split interchange allows traffic to disperse over two collector streets and accesses Curtis, and important collector west of 42nd Street and Redick, an important collector east of 42nd.

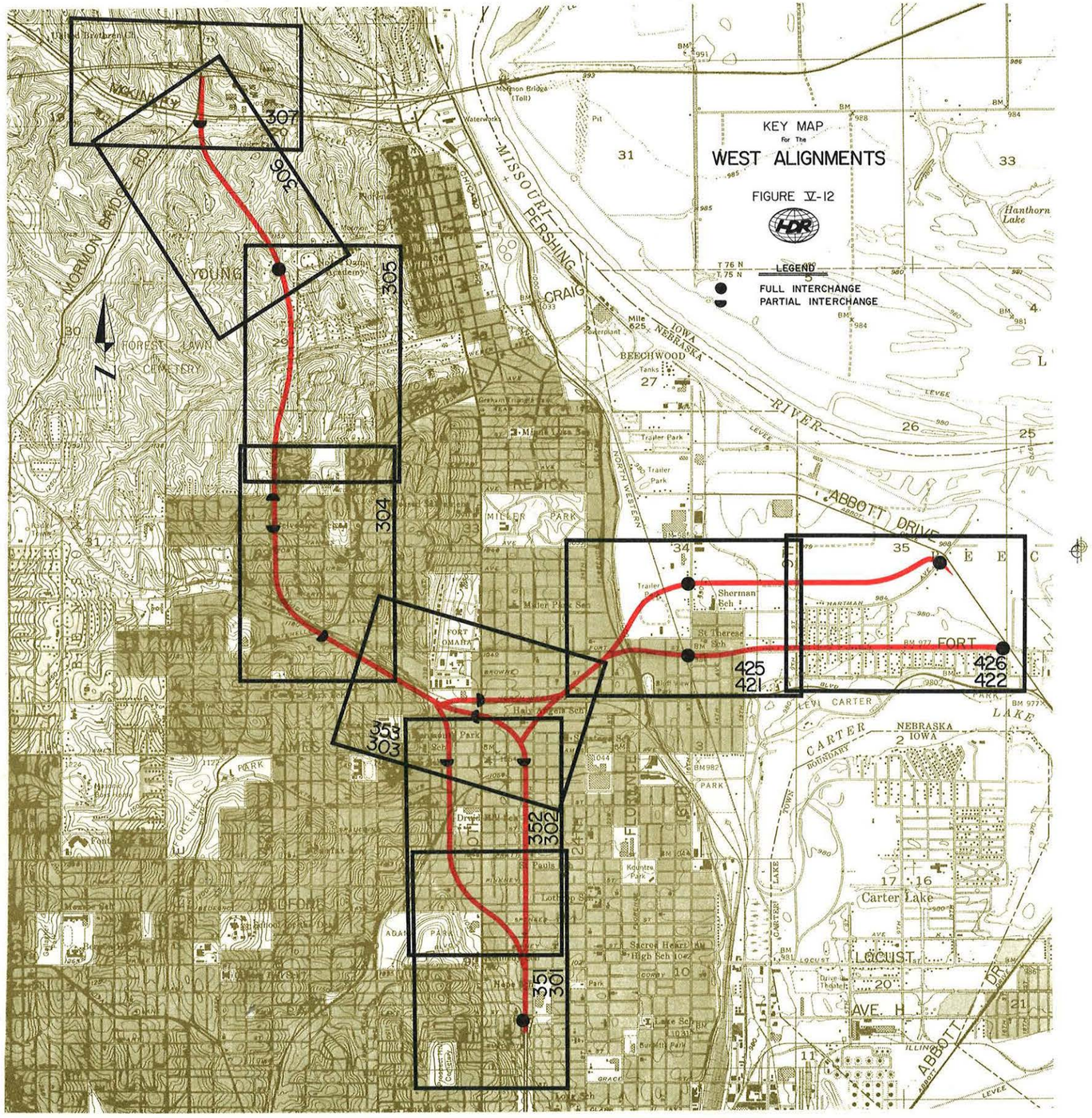
North of Redick, the West Alignment begins encountering undeveloped areas as it proceeds as an at-grade section down a valley presently occupied by 42nd Street. Toward the north end of this valley, the alignment becomes elevated on earth fill and crosses over the easterly 400 feet of Forest Lawn Cemetery. Crossings are provided at Hanover and at Forest Lawn Avenue in this area (PLATE 305).

Following the west side of 40th Street with 40th being retained as a frontage road, the West Alignment again becomes depressed to pass under a diamond interchange at State Street (PLATE 306).

Proceeding north of State, this alignment is the same as described for the Central Alignment (PLATES 306 and 307).

AIRPORT FREEWAY

Airport Freeway. The West and Central Airport Connectors are identical for all possible alignment configurations. Consult the Central Airport Connection for a detailed description and review PLATES 421, 422, 425 and 426 for the plan and profile concepts.



ADAMS PARK

SCALE IN FEET
0 200 400

KENNEDY SCHOOL

BEDFORD AVE.

EMMET ST.

PINKNEY ST.

EVANS ST.

PRATT ST.

MANDERSON ST.

JOHN A. CREIGHTON BLVD.

30TH ST

30TH ST.

29TH ST.

29TH ST.

LAKE ST.

OHIO ST.

MIAMI ST.

CORBY ST.

MAPLE ST.

BINNEY ST.

28TH AVE.

SPENCER HOMES

PLATE 302

28TH ST.

I 10

I 20

I 30

27TH ST.

27TH ST.

27TH ST.

PUBLIC WORKS YARD

ERSKINE ST.

CORBY ST.

M.L. KING DAY CARE CENTER

SPENCER HOMES

26TH ST.

WIRT ST

SPENCER ST

BRISTOL ST.

EMMET ST.

PINKNEY ST.

EVANS ST.

MATCH LINE

PRATT ST.

REQUIRED AREA ROADWAY ON STRUCTURE

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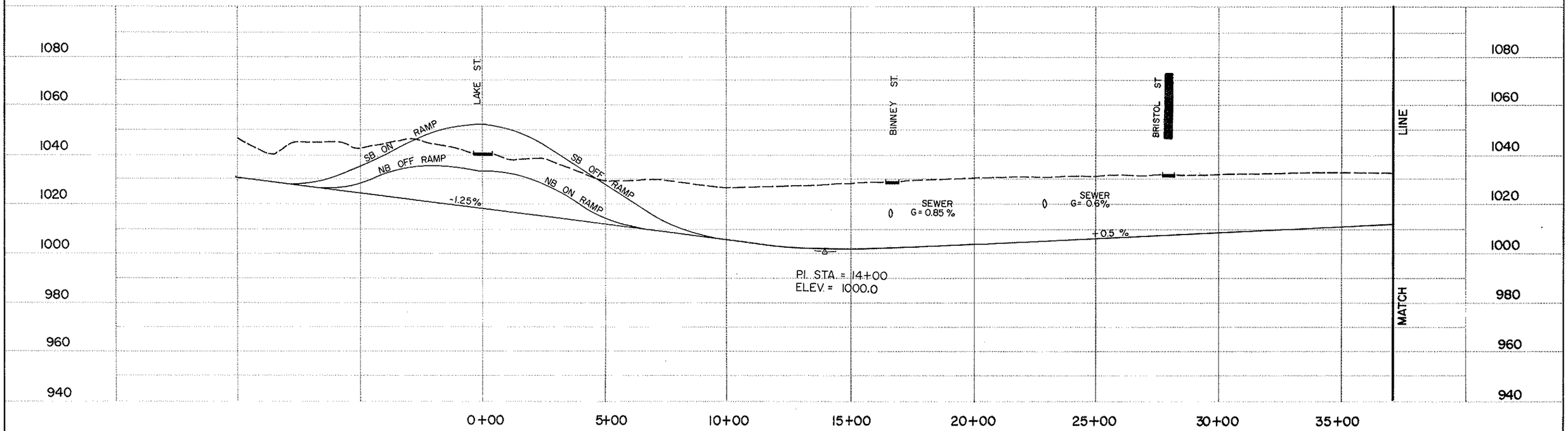
Prepared for the CITY OF OMAHA and NEBRASKA DEPARTMENT OF ROADS in cooperation with U.S. D.O.T. FEDERAL HIGHWAY ADMINISTRATION

WEST ALIGNMENT
LAKE TO EVANS

HDR

PLATE NO. 301



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ADAMS PARK
BEDFORD AVE.
EMMET ST.
EVANS ST.
33RD ST.
32ND ST.
31ST AVE.
SCALE IN FEET
0 200 400
DRUID HILL SCHOOL
MPRR
30TH ST.
BRISTOL ST.
PINKNEY ST.
29TH ST.
PRATT ST.
MANDERSON ST.
SPAULDING ST.
RUGGLES ST.
SPRAGUE ST.
SAHLER ST.
TAYLOR ST.
AMES AVE.
MEREDITH AVE.
28TH AVE.
PLATE 303
28TH ST.
PLATE 301
140
150
160
27TH ST.
MATCH LINE
MATCH LINE
26TH AVE.
26TH ST.

REQUIRED AREA ROADWAY ON STRUCTURE

NORTH FREEWAY CORRIDOR STUDY
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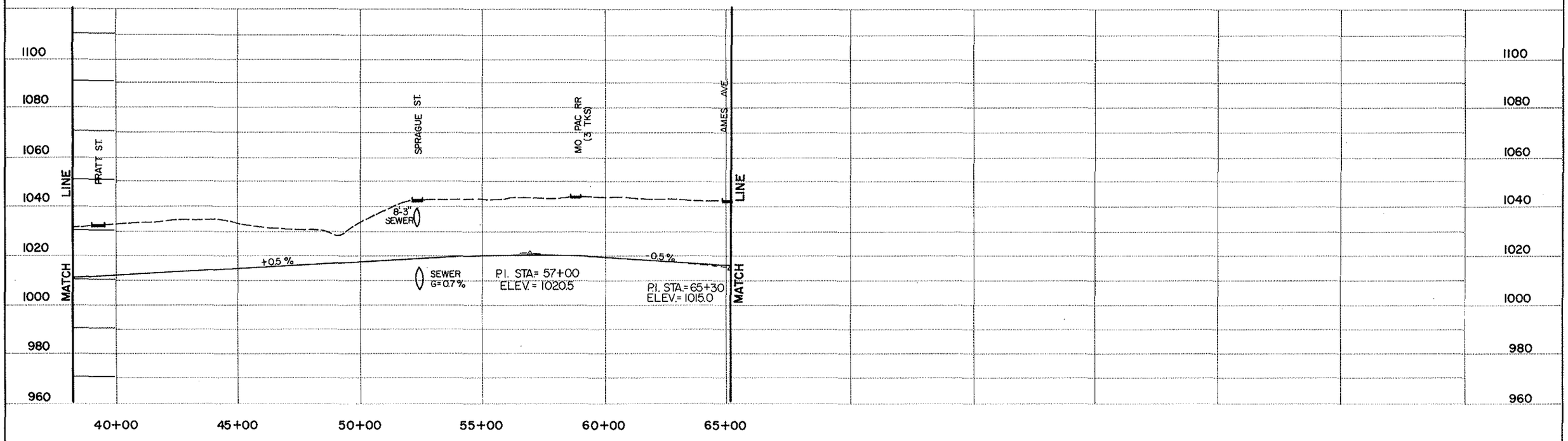
WEST ALIGNMENT
EVANS TO AMES

HDR

PLATE NO. 302



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WEST ALIGNMENT
EVANS TO 24TH

HDR

PLATE NO. 302 P

REQUIRED AREA ROADWAY ON STRUCTURE

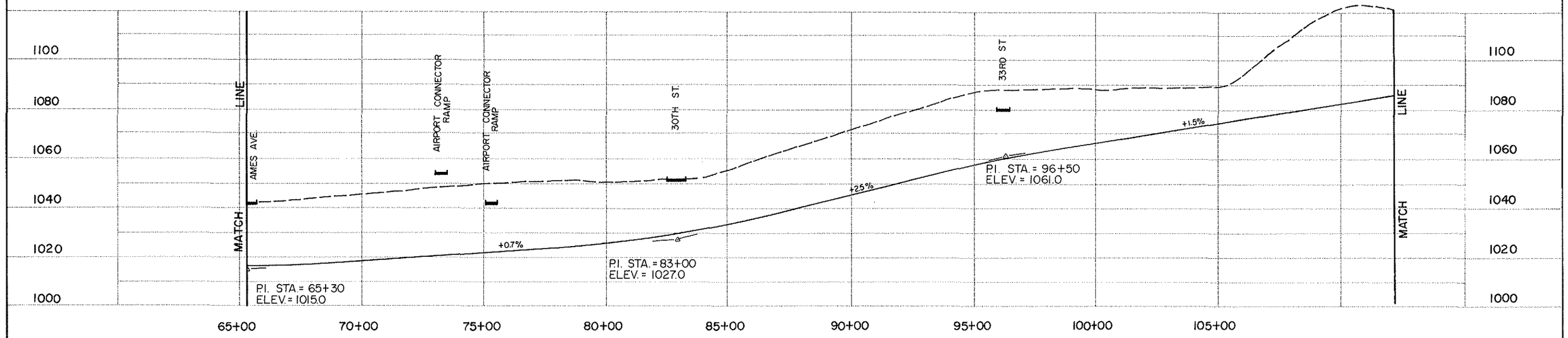
NORTH FREEWAY CORRIDOR STUDY
Prepared By HENNINGSON DURHAM & RICHARDSON

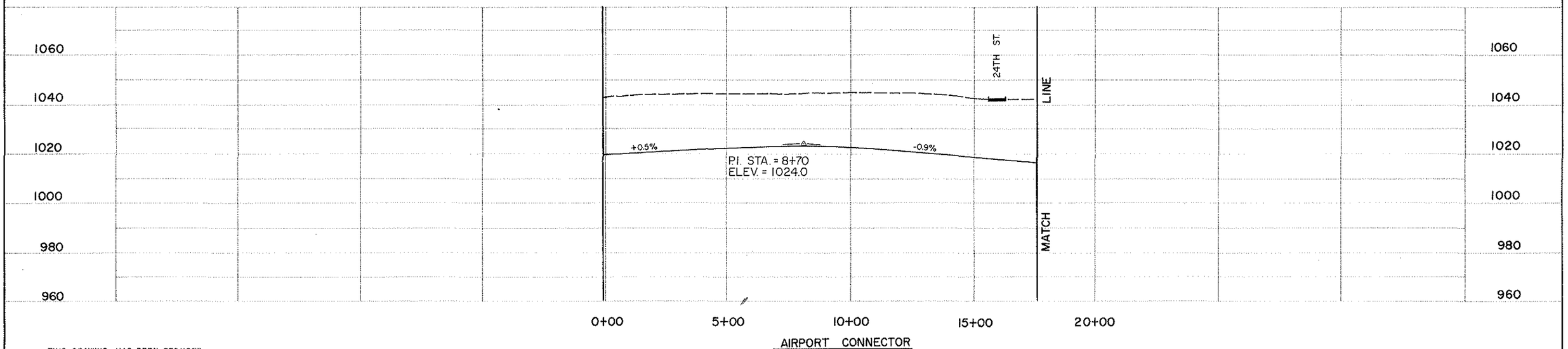
Prepared for the CITY OF OMAHA and NEBRASKA DEPARTMENT OF ROADS in cooperation with U.S. D.O.T. FEDERAL HIGHWAY ADMINISTRATION

WEST (27TH - 28TH) ALIGNMENT
AMES TO 36TH ST.
AIRPORT CONNECTOR 27TH TO 24TH

HDR

PLATE NO. 303





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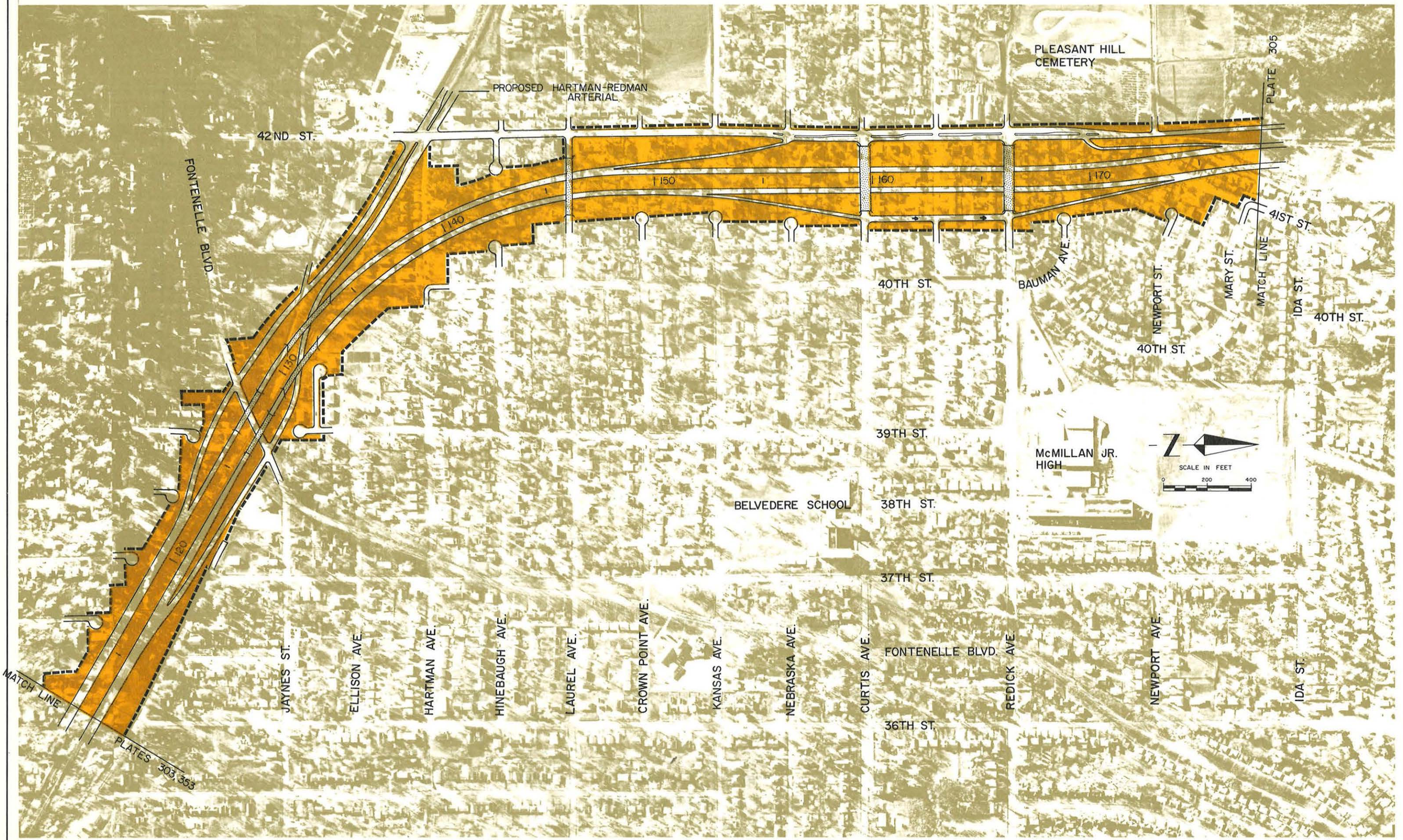

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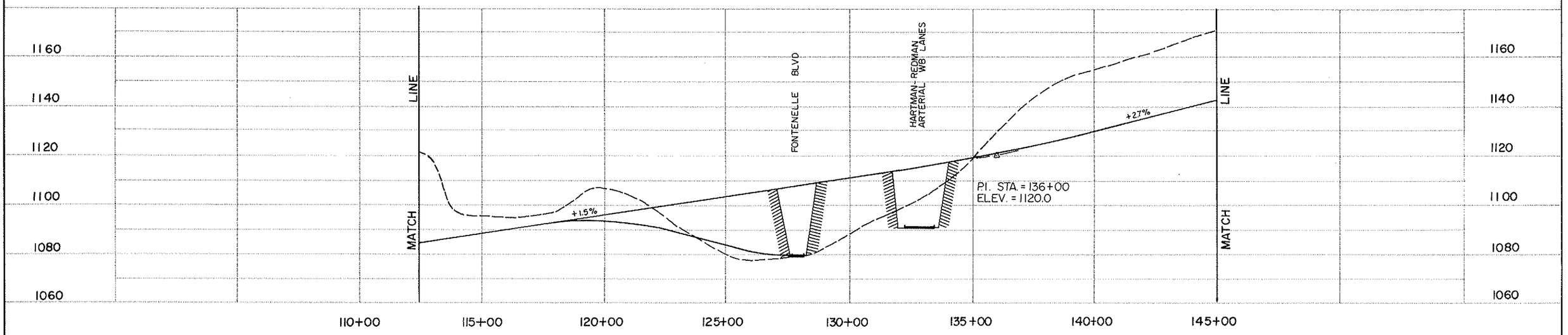
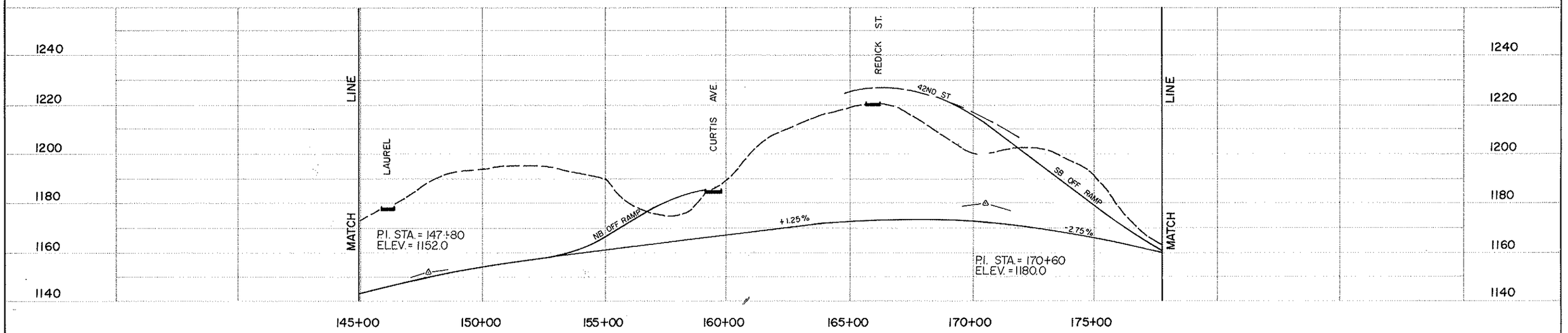
WEST ALIGNMENT
36TH TO MARY STREET

HDR

PLATE NO. 304





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REQUIRED AREA ROADWAY ON STRUCTURE

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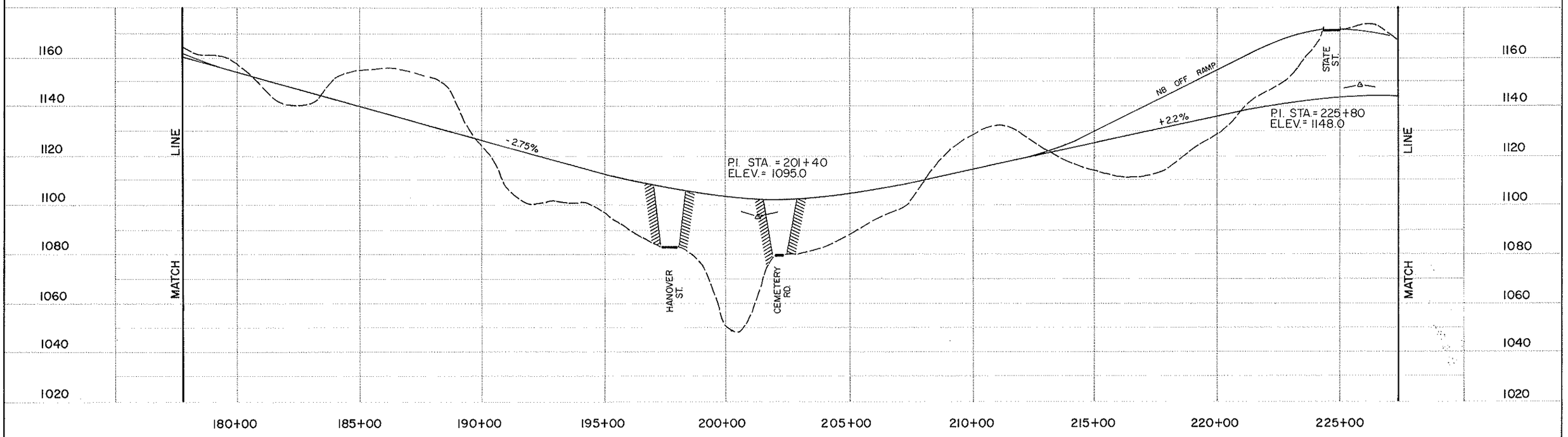
Prepared for the CITY OF OMAHA and NEBRASKA DEPARTMENT OF ROADS in cooperation with U.S. D.O.T. FEDERAL HIGHWAY ADMINISTRATION

WEST ALIGNMENT
MARY TO STATE

HDR

PLATE NO. 305



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SCALE: 1"=20' VERT. EXISTING ——— 1"=200' HORZ. PROPOSED ———	NORTH FREEWAY CORRIDOR STUDY Prepared By HENNINGSON DURHAM & RICHARDSON	Prepared for the CITY OF OMAHA and NEBRASKA DEPARTMENT OF ROADS in cooperation with U.S D.O.T. FEDERAL HIGHWAY ADMINISTRATION	WEST ALIGNMENT MARY TO STATE	PLATE NO. 305 P

FOREST LAWN CEMETERY

GREBE ST.

46TH ST.

47TH ST.

STATE ST.

WILLIT ST.

CLAY ST.

48TH ST.

MORMON BRIDGE RD

MORMAN BRIDGE ROAD

SCALE IN FEET
0 200 400

46TH AVE.

44TH ST.

YOUNG

STATE ST.

46TH ST.

PLATE 305

VEHICLE / DRAINAGE CULVERT

230

240

250

260

48TH ST.

PLATE 307

1270

40TH ST.

MORMON ST.

MATCH LINE

37TH ST.

STATE ST.

36TH ST.

C&NWRR

Mc KINLEY ST.

MATCH LINE

45TH ST.

REQUIRED AREA ROADWAY ON STRUCTURE

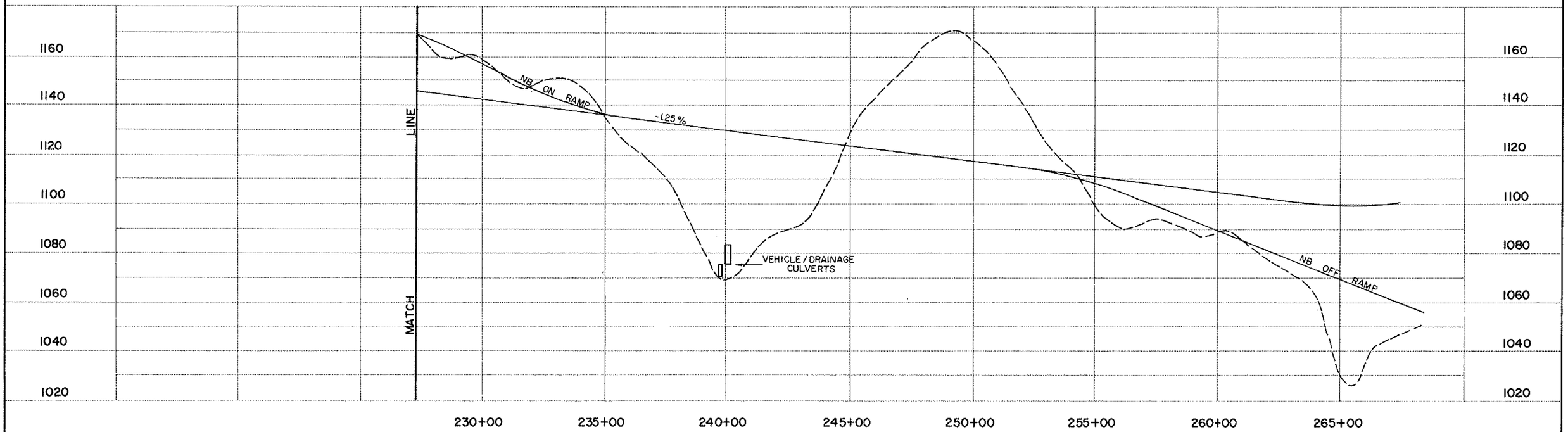
NORTH FREEWAY CORRIDOR STUDY
Prepared By HENNINGSON DURHAM & RICHARDSON

Prepared for the CITY OF OMAHA and NEBRASKA DEPARTMENT OF ROADS in cooperation with U.S. D.O.T. FEDERAL HIGHWAY ADMINISTRATION

WEST ALIGNMENT
STATE TO McKINLEY

HDR

PLATE NO. 306



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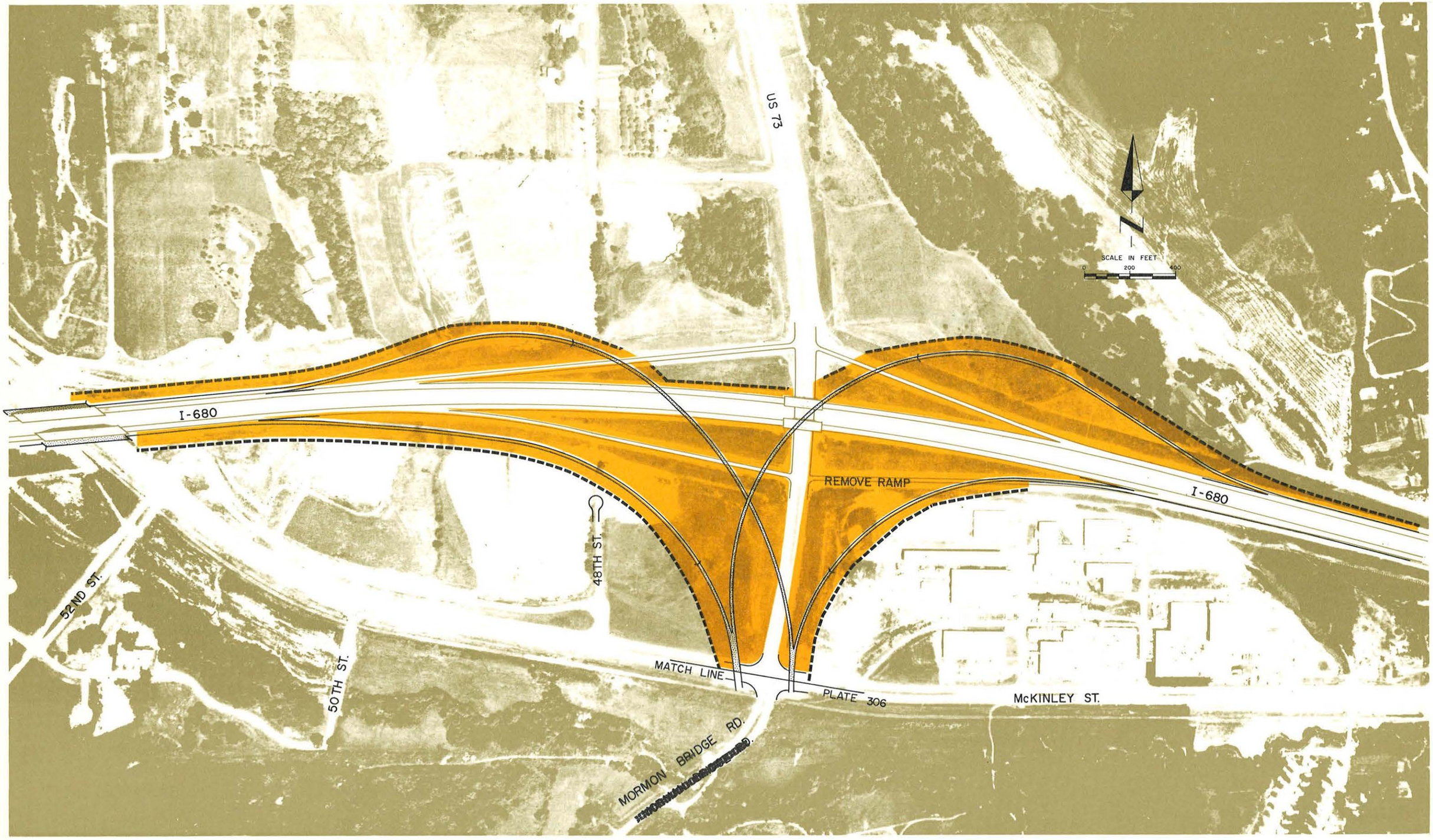


REQUIRED AREA ROADWAY ON STRUCTURE

NORTH FREEWAY CORRIDOR STUDY
Prepared By HENNINGSON DURHAM & RICHARDSON

Prepared for the CITY OF OMAHA and NEBRASKA DEPARTMENT OF ROADS in cooperation with U.S. D.O.T. FEDERAL HIGHWAY ADMINISTRATION

WEST ALIGNMENT
I-680 INTERCHANGE

HDR

PLATE NO. 307


North
Freeway

ADAMS PARK

SCALE IN FEET
0 200 400

KENNEDY SCHOOL

30TH ST

29TH ST

28TH AVE.

28TH ST.

27TH ST.

26TH ST.

JOHN A. CREIGHTON BLVD.

MATCH LINE

PLATE 352

BEDFORD AVE.

EMMET ST.

PINKNEY ST.

EVANS ST.

PRATT ST.

MANDERSON ST.

LAKE ST.

OHIO ST.

MIAMI ST.

CORBY ST.

MAPLE ST.

BINNEY ST.

ERSKINE ST.

WIRT ST

SPENCER ST

BRISTOL ST.

130

120

110

SPENCER HOMES

PUBLIC WORKS YARD

M.L. KING DAY CARE CENTER

REQUIRED AREA ROADWAY ON STRUCTURE

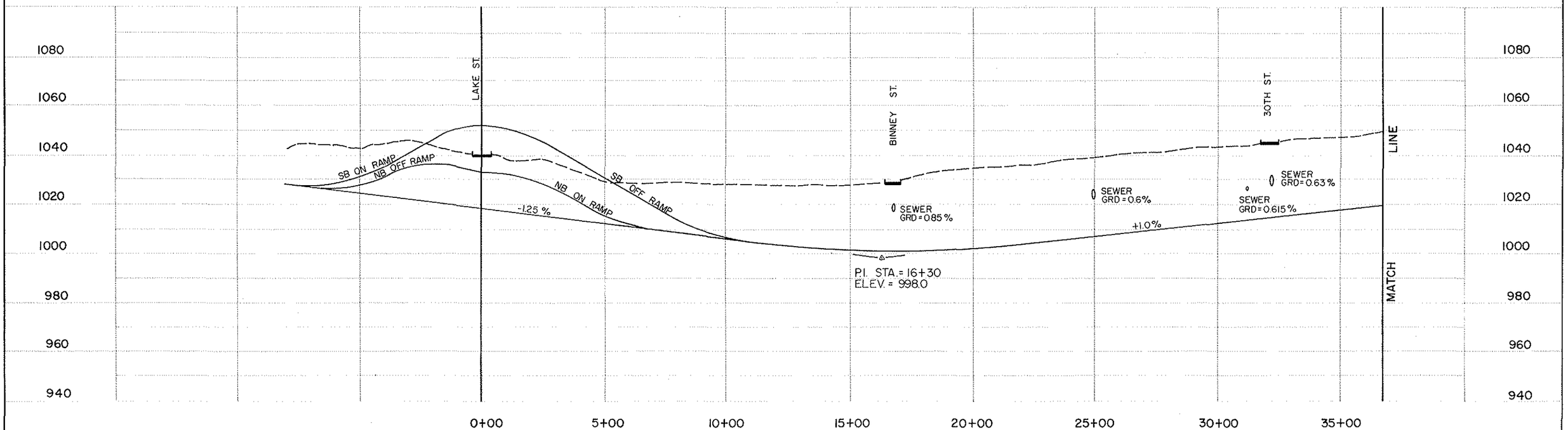
NORTH FREEWAY CORRIDOR STUDY
Prepared By HENNINGSON DURHAM & RICHARDSON

Prepared for the CITY OF OMAHA and NEBRASKA DEPARTMENT OF ROADS in cooperation with U.S. D.O.T. FEDERAL HIGHWAY ADMINISTRATION

WEST (31 ST. AVE) ALIGN.
LAKE TO EMMET

HDR

PLATE NO. 351



THIS DRAWING HAS BEEN REDUCED TO ONE-HALF THE ORIGINAL SCALE

SCALE: 1"=20' VERT. 1"=200' HORZ. EXISTING ---- PROPOSED ——	NORTH FREEWAY CORRIDOR STUDY Prepared By HENNINGSON DURHAM & RICHARDSON	Prepared for the CITY OF OMAHA and NEBRASKA DEPARTMENT OF ROADS in cooperation with U.S. D.O.T. FEDERAL HIGHWAY ADMINISTRATION	WEST (31ST AVE) ALIGNMENT LAKE TO EMMET	PLATE NO. 351 P

ADAMS PARK

BEDFORD AVE.

EMMET ST.

EVANS ST.

33RD ST.

RELOCATED JOHN A. CREIGHTON BLVD.

32ND ST.

PLATE 353

SCALE IN FEET
0 200 400

31ST AVE.

150

140

160

701

MATCH LINE

PLATE 351

DRUID HILL SCHOOL

MPRR

MATCH LINE

30TH ST.

BRISTOL ST.

PINKNEY ST.

29TH ST.

PRATT ST.

MANDERSON ST.

SPAULDING ST.

RUGGLES ST.

SPRAGUE ST.

SAHLER ST.

TAYLOR ST.

AMES AVE.

MEREDITH AVE.

28TH AVE.

28TH ST.

27TH ST.

26TH AVE.

26TH ST.

27TH ST.

REQUIRED AREA ROADWAY ON STRUCTURE

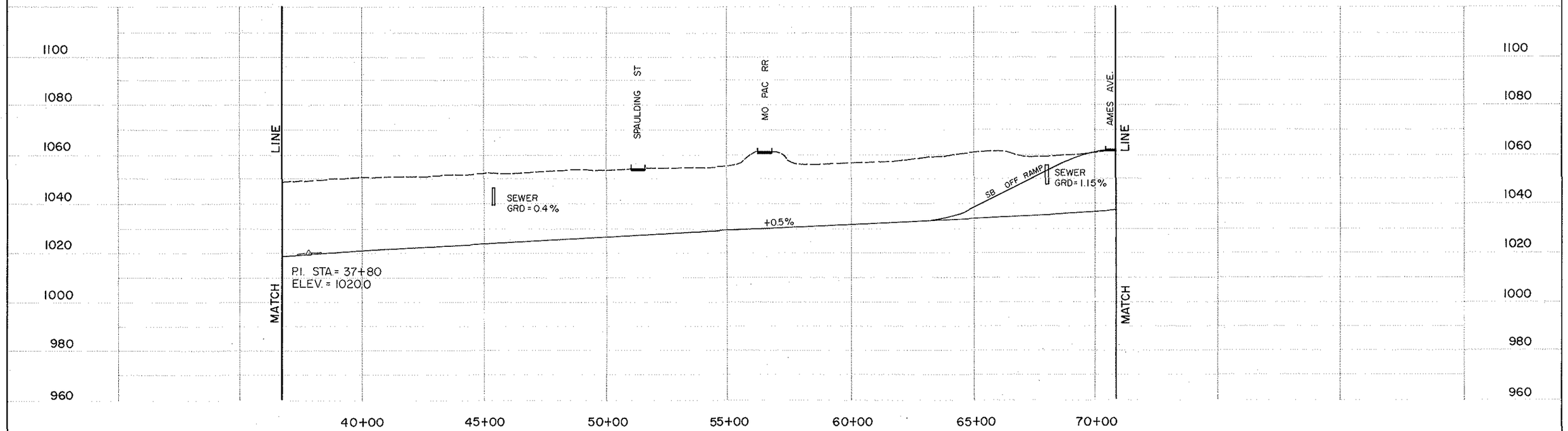
NORTH FREEWAY CORRIDOR STUDY
Prepared By HENNINGSON DURHAM & RICHARDSON

Prepared for the CITY OF OMAHA and NEBRASKA DEPARTMENT OF ROADS in cooperation with U.S. D.O.T. FEDERAL HIGHWAY ADMINISTRATION

WEST (31ST. AVE) ALIGN.
EMMET TO AMES

HDR

PLATE NO. 352



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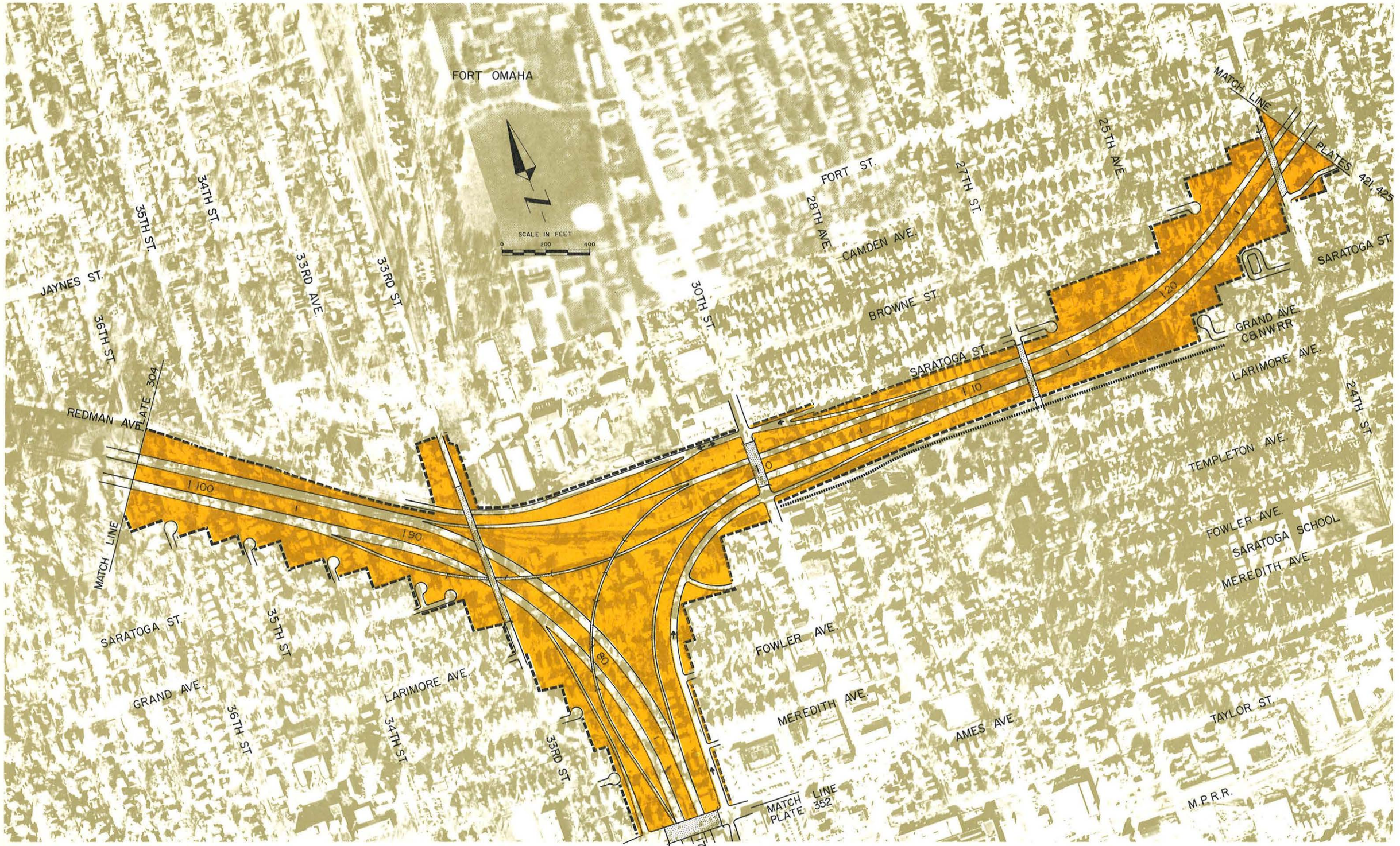
SCALE: 1"=20' VERT. 1"=200' HORZ. EXISTING ——— PROPOSED ———	NORTH FREEWAY CORRIDOR STUDY Prepared By HENNINGSON DURHAM & RICHARDSON	Prepared for the CITY OF OMAHA and NEBRASKA DEPARTMENT OF ROADS in cooperation with U.S DOT FEDERAL HIGHWAY ADMINISTRATION	WEST (31ST AVE) ALIGNMENT EMMET TO AMES HDR PLATE NO. 352 P



REQUIRED AREA ROADWAY ON STRUCTURE

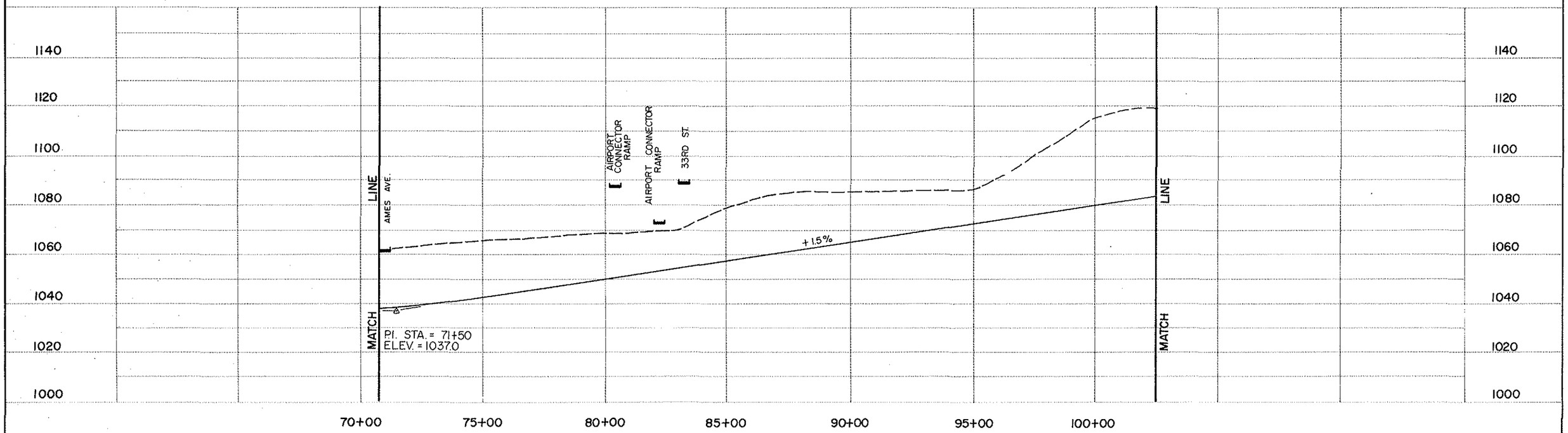
NORTH FREEWAY CORRIDOR STUDY
Prepared By HENNINGSON DURHAM & RICHARDSON

Prepared for the CITY OF OMAHA and NEBRASKA DEPARTMENT OF ROADS in cooperation with U.S. D.O.T. FEDERAL HIGHWAY ADMINISTRATION

WEST (31ST. AVE) ALIGNMENT
AMES TO 36TH ST.
AIRPORT CONNECTOR 30TH TO 24TH

HDR

PLATE NO. 353



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SCALE: 1"=20' VERT. 1"=200' HORZ. EXISTING ——— PROPOSED ———

NORTH FREEWAY CORRIDOR STUDY
Prepared By HENNINGSON DURHAM & RICHARDSON

Prepared for the CITY OF OMAHA and NEBRASKA DEPARTMENT OF ROADS in cooperation with U.S. DOT. FEDERAL HIGHWAY ADMINISTRATION

WEST (31ST AVE) ALIGNMENT
AIRPORT CONNECTOR AMES TO 30TH — 36TH TO 24TH

PLATE NO. 353 P

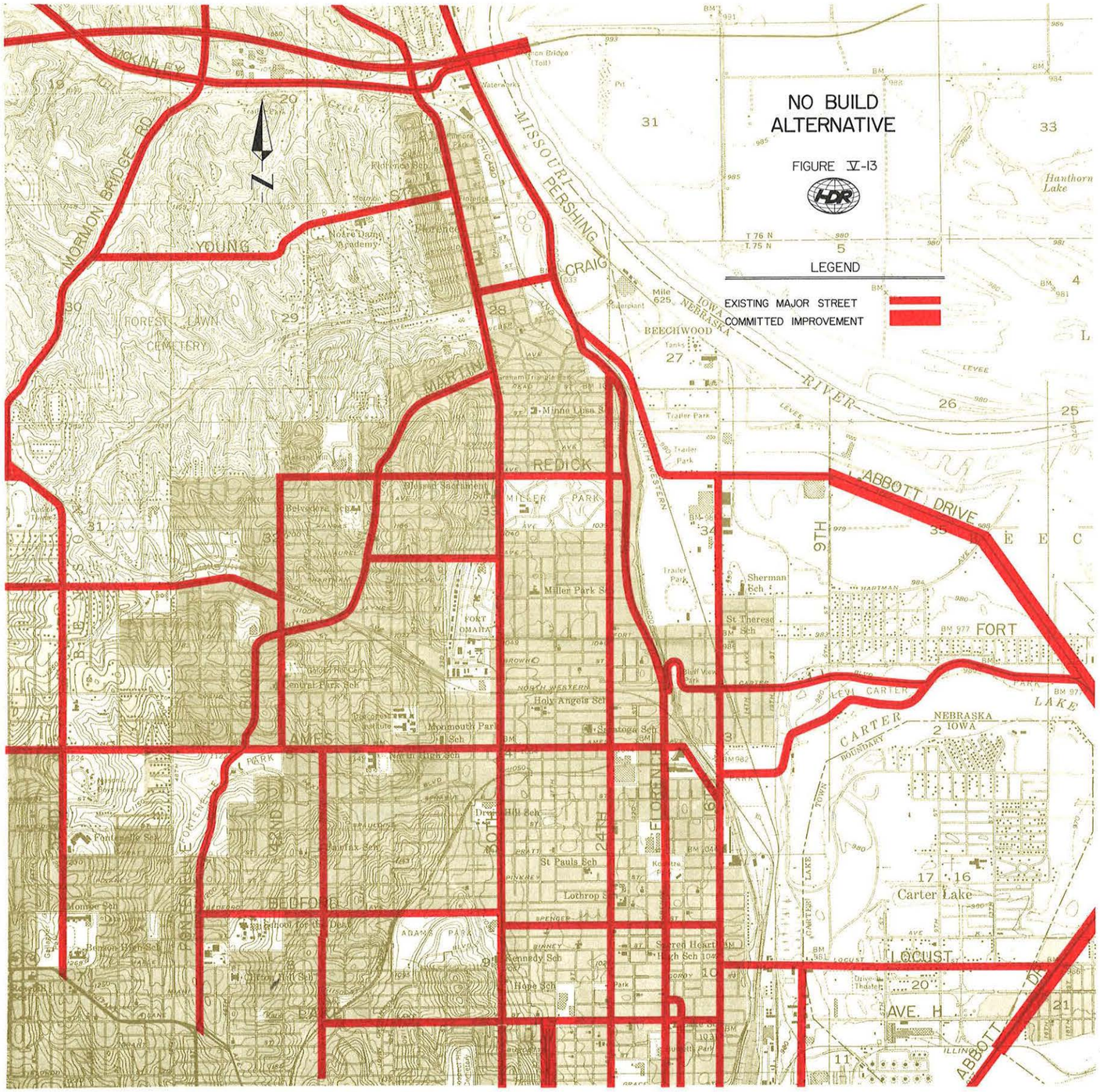
NO-BUILD ALTERNATIVE

The No-Build Alternative, in conformance with the standard corridor study definition, consists of the 1974 existing street system plus committed improvements as of 1974. These committed improvements are: (1) Abbott Drive - Avenue H to 9th Street; (2) completion of the second bridge over the Missouri River on I-680, and (3) completion of the North Freeway from Hamilton to Lake Street, which is presently under contract for construction.

As illustrated in FIGURE V-13, most major streets in the study area follow a general grid pattern. The principal artery is 30th Street, a four-lane strret designated as U.S. 73, running the length of the corridor and forming the spine of the street system. Other major north-south streets are 16th Street, 24th Street, 40th and 42nd Streets, Fontenelle Boulevard, Pershing Drive, and Morman Bridge Road. Principal east-west Streets are Ames Avenue, a four-lane divided arterial connecting the corridor to northwest Omaha. Others are Lake Street, Bedford, Spencer, Locust, Redick, Craig, and McKinley Avenue.

Looping around Carter Lake past Eppley Airfield is Abbott Drive, which is to be 4-lanes between Avenue H and 9th Street in the near future. All surface streets mentioned are generally two-lane, two-way roadways, with the exception of 30th Street, Ames Avenue, McKinley Street, and the soon-to-be-widened Abbott Drive.

Freeway links are, of course, the North Freeway, extending form I-680 north to Hamilton Street, and in the immediate future to Lake Street. Crossing the north end of the corridor is I-680, with interchanges at 30th Street and U.S. 73.



PART VI
EVALUATION OF SELECTED ALIGNMENTS

PART VI
EVALUATION OF SELECTED ALIGNMENTS

EVALUATION CRITERIA

With the geometric concepts having been defined in PART V, the alternative freeway plans must now be subjected to detailed evaluations for five major criteria—Traffic Service, Cost, Social Factors, Economic Factors, and Environmental Factors. Directives covering these criteria and their applications have been described in several documents issued by the Federal Highway Administration (FHWA.) 1]

From the FHWA directives, these five criteria have been grouped into nine categories. These categories and their related factors are defined as follows:

1. Traffic Service includes fast, safe, and efficient transportation as the prime function under this factor. Also to be considered are provisions for national defense and for the operation and use of existing highway and other transportation facilities during and after construction.

2. Costs include engineering, right-of-way and construction cost of the alternatives. Maintenance and operating costs may also be considered.

1] Federal Highway Program Manual, Vol. 7, Ch. 7, Sect. 1,2, and 5. U.S. Dept. of Transportation, Federal Highway Administration.

3. Regional and Community Growth includes general plans and proposed land use, total transportation requirements, and status of the planning process.

4. Conservation and Preservation includes soil erosion and sedimentation, the general ecology of the area as well as man-made and other natural resources, such as, park and recreational facilities, wildlife and waterfowl areas, historic and natural landmarks.

5. Public Facilities and Services includes religious, health and educational facilities, and public utilities, fire protection and other emergency services.

6. Community Cohesion includes residential and neighborhood character and stability, highway impacts on minority and other specific groups and interests, and effects on local tax base and property values.

7. Displacement of people, business, and farms includes relocation assistance, availability of adequate replacement housing and economic activity (employment gains and losses, etc.).

8. Air, Noise, and Water Pollution includes consistency with approved air quality implementation plans, FHWA noise level standards (as required under the Federal Highway Program Manual), and any relevant Federal or State water quality standards.

9. Aesthetic and Other Values includes visual quality, such as: "view of the road" and "view from the road", and the joint development and multiple use of space.

In the narrative which follows, an evaluation discussion is presented for these listed evaluation categories and factors. This discussion covers both the positive and negative impacts of each freeway alternate and the "No Build" Alternate. Most of these discussions are in summary form with references to the appendices of this report where more detailed commentary can be found.

The reader should be aware of one fact in reviewing the written impacts discussed below and in the appendices. That fact is that throughout the course of the study which led to the developing and refining of the conceptual roadway plans (PART V), the findings of the socio-economic and environmental studies influenced decisions regarding these roadway plans. Consequently, many of the "would-be" impacts caused by the freeway have been solved or meliorated. These solutions then became a part of each proposed alternate. Thus, several of the impact studies now being addressed below to evaluate the alternate freeways produce "after-the-fact" findings which show minimal or no resultant impacts. An example would be the positive meliorating influence of the many proposed bridge crossings over the freeway upon schools, public safety and neighborhood cohesion.

With this in mind, the following sections and subsections present the evaluations of the No Build and Build alternates for their impacts upon traffic service, costs, social, economic, and environmental characteristics in the North Omaha Corridor Area.

TRAFFIC SERVICE

Fast, Safe, and Efficient Transportation. One of the prime objectives of the North Freeway is to contribute to the fast, safe, and efficient transportation of people and goods in Omaha, both on the freeway and on the streets in the area served by the freeway. Factors to be considered in the evaluation of the alternative alignments include freeway geometrics, convenience, configuration of interchanging, level of service, simplicity of driver decision points, system continuity, and overall system efficiency.

On the basis of these considerations, which are discussed in detail in APPENDIX E, the alternative systems are ranked as follows with respect to their ability to provide fast, safe, and efficient transportation.

1. West (31st Avenue) Alignment with Hartman Avenue Airport Connector.
2. West (31st Avenue) Alignment with Fort Street Airport Connector.
3. Central (31st Avenue) Alignment with Hartman Avenue Airport Connector.
4. Central (31st Avenue) Alignment with Fort Street Airport Connector.
5. West (27th-28th) Alignment with Hartman Avenue Airport Connector.
6. West (27th-28th) Alignment with Fort Street Airport Connector.
7. Central (27th-28th) Alignment with Hartman Avenue Airport Connector.
8. Central (27th-28th) Alignment with Fort Street Airport Connector.
9. East Alignment with Hartman Avenue Airport Connector.
10. East Alignment with Fort Street Airport Connector.
11. No-Build Alternative.

At one extreme is the West (31st Avenue) Alignment with the Hartman Avenue Airport Connector. This alignment provides good freeway service to a greater area minimizing congestion on surface streets, including 30th Street with simple interchanging and smooth geometrics. Operationally, the West functions with Levels of Service B to C. 2] It provides a smooth junction with I-680 and direct continuity with U.S. 73 to the north, sacrificing only one ramp of the existing interchange of U.S. 73 and I-680. Six partial or full interchanges between Lake and I-680 furnish excellent connections between the surface street system and the freeway.

The West (27th - 28th Street) Alignment provides the same overall performance and access, but with some sacrifice in smooth geometrics and good circulation around 30th and Ames.

The two Central alignments are nearly comparable to their West Alignment counterparts. There operation is also at Levels of Service B to C. More complicated interchanging at 30th and Ames, and slightly steeper grades north of Redman lessen the overall performance of these alignments. The Central, like the West, provides for a smooth junction with I-680 and direct continuity with US 73. It also provides six partial or full interchanges.

The East Alignments have more direct access into the industrial land areas in the river bottom lands. Operationally, the East functions at Levels of Service B to C. By comparison with the West and Central, however, the East Alignments are the least desirable of the Build Alternatives since they provide the least desirable interchanging with I-680, lack direct continuity with US 73, and furnish only three points of access to the local street system between Lake and I-680. Moreover, the existing interchange at I-680 and 30th Street will lose three of four ramps; therefore, the Florence Area would lose its direct access to I-680 at 30th Street.

At the bottom end of the spectrum is the No Build Alternative which offers poor traffic service and no significant traffic relief to the principal arterials, especially 30th Street. It is characterized by a larger portion of the street system operating poorly at Levels of Service E and F. Even if the recommended surface street improvements in the 1995 COATS Plan were implemented, such a Modified No Build Street System would not provide the needed traffic service and therefore, would not substitute as an efficient alternate to the Build Alternates. As explained in APPENDIX E, a Modified No Build would require the widening of 30th Street to 6 lanes divided, John Pershing Drive to 4 lanes, Fontenelle Boulevard south of 42nd Street to 4 lanes plus the removal of parking to accommodate four lanes on major portions of 24th Street, Florence Boulevard and 16th Street.

Operation and Use of Existing Highway Facilities and Other Transportation Facilities During Construction and After Completion. This criterion involves an evaluation of disruption to any existing transportation facilities during and after construction of the North Freeway and an Airport Connector. Affected transportation facilities include the existing street system, railroad lines, the existing and proposed transity system, special route systems namely bike paths and truck routes, and airport access.

The basis of analysis is a consideration of what impact the implementation of the North Freeway would have on the various elements of the total transportation system. These impacts are either of a temporary nature occurring during the course of construction, or are of a continuing nature involving permanent changes.

The East Alignment will require one railroad grade-separation at the Hartman-Redman Arterial and two grade separations on either of its Airport Connectors. The East Alignment also involves a considerable length of railroad air rights with some relocation of trackage. At-grade crossings would be re-

---

2] Level of Service is a qualitative measure of operating conditions. The six levels are: Level A- free flow, no delay; Level B - stable flows, slight delays; Level C - stable flows, acceptable delays (usual standard for design); Level D - approaching unstable flows, congestion and intolerable delays (capacity); and Level F - forced flows, jammed conditions.

quired on the two new frontage roads/ramp connections, just south of the Hartman-Redman Arterial, but these crossings would be used only occasionally by switching train engines.

The Central Alignments require railroad grade separations with the Missouri Pacific Railroad tracks south of Ames, the taking of some railroad right-of-way along Redman Avenue, and a grade separation over the railroad paralleling McKinley near I-680. Each of the Airport Connectors for the Central Alignment requires two railroad grade separations. At-grade crossings would be necessary on the freeway ramps connectiong US 73 to the North Freeway on the ramps east of 16th Street on the Fort Street Airport Connector. Moderate delays could occur at these points if hours of peak traffic flow are not avoided by train traffic.

The West Alignments have the same general impact on railroads as do the Central Alignments.

Any of the freeway alternates would greatly enhance metropolitan and regional access to Eppley Airfield, an important element of the area's transportation system. The Airport Connector between Abbott Drive and the North Freeway would greatly improve ties between the airport and the Metropolitan Area as compared to the No Build situation.

Any of the proposed freeway systems would be compatible with the proposed bikeway plan, and could even offer possibilities for expansion of the bike path network along excess freeway rights-of-way.

All of the freeway systems will also be compatible with the proposed truck routes and will offer an alternative path to trucks thus relieving certain streets, especially 30th Street, of some truck traffic. The East would have more direct Freeway truck routing to the industrial areas near Eppley Airfield. All are better than the No Build with regard to truck traffic.

In terms of local circulation and construction detouring, the alignments are for the most part comparable. The No Build would have no detouring. The East Alignment disrupts the fewest streets with the West and then Central Alignments following. However, adequate crossings have been included to serve school attendance districts, general local circulation, and arterial street crossing needs (APPENDIX Z). The Hartman Airport Connector is superior to the Fort Street Airport Connector in this regard.

Temporary disruptions are those caused during construction of the freeway. They arise from the temporary closing of streets, detours, and reroutings caused by freeway construction activity. Including the Airport Connectors, the East System would involve detours at 9 major street locations; the West and Central systems involve 7.

The West and Central (31st Ave.) routings plus their Airport Connectors cross 30th Street twice. Temporary changes in traffic flows will occur on the street system in the vicinity of the ends of the various stage construction sections. The stage section which would end near 30th and Ames is identified as the first stage is built only as far as Ames, then the traffic between 30th Street and the North Freeway. If the first stage is buildt only as far as Ames, then the West (31st Avenue) and Central (31st Avenue) are more desirable. Optimally, whatever first stage is selected should have some sort of connection directly to 30th Street.

With respect to transit operations, all of the freeway alternates are compatible with the existing and proposed bus routes. The West and Central Alignments offer more potential for good express bus service than does the East Alignment. Metro Area Transit also feels that the West and Central Alignments offer the greatest potential for the freeway median space reserved for future transit usage.

In view of these considerations, which are discussed in greater detail in APPENDIX F, the alternates are ranked as follows going from most desirable to least desirable in terms of operation and use of existing transportation facilities during and after construction:

1) East Alignment with Hartman Airport Connector

2) West (27th-28th) Alignment with Hartman Airport Connector

2) Central (27th-28th) Alignment with Hartman Airport Connector

4) West (31st Ave.) Alignment with Hartman Airport Connector

4) Central (31st Ave.) Alignment with Hartman Airport Connector.

6) East Alignment with Fort Airport Connector

7) West (27th-28th) Alignment with Fort Airport Connector

7) Central (27th-28th) Alignment with Fort Air port Connector

9) West (31st Ave.) Alignment with Fort Airport Connector

9) Central (31st Ave.) Alignment with Fort Airport Connector

11) No-Build

National Defense. The North Freeway would be of importance to both National and Civil Defense functions. The freeway's role would center around its interconnection of two Interstate Highways I-680 and I-480, its connection to the Downtown and to Epply Airfield, and its access to the Fort Omaha Navy and Marine Corps Reserve Station on 30th Street.

For Civil Defense, the freeway would serve to greatly improve the evacuation routings through North Omaha as well as accessibility of the large Downtown Civil Defense Shelters. Hospital access to Creighton and Lutheran as well as to the new Immanuel (via the proposed RR arterial along Hartman-Redman in the 1995 Interim Transportation Plan) would be of benefit in national emergencies.

With 1995 volumes on the No Build System, the vehicle delays and lack of mobility would handicap National and Civil Defense activities at a time when travel efficiencies are most critical.

Overall, the freeway alternates are rated equal for National Defense and would all be vastly superior to the No Build. The West and Central alternates are slightly better than the East only because their physical locations place them into more of the populated urban area. There are no differences between the Fort and Hartman Airport Freeways.

COSTS

Construction and Engineering Costs. These estimates include those costs associated with the physical design and construction of the freeway facility. The costs were computed in current (1974) dollars to give an indication of the relative differences between the freeway alternates. APPENDIX G contains details on the cost estimate by freeway section and by major quantity items.

For the North Freeway alone (TABLE VI-1), the West and Central alignments using the 31st Avenue Routing are the lowest in construction cost, each totalling about $44 million. With the 27th-28th Routing, the cost increases slightly to $47 million for either the West or Central. The East Alignment cost range from $65 to $67 million depending on the Airport Interchange alternative. This $20 million approximate increase in the East's cost is mainly due to the elevated freeway structure from Read St. north to I-680 in paralleling the C&NW Railroad.

For the Airport Freeway alone, the construction costs for either the Hartman or Fort alignments are highly dependent upon the North Freeway alignment. With the East, either Airport Connector would cost about $6 million. With the Central or West, a North Freeway on a 27th - 28th Routing plus a Fort Street Alignment to the Airport is the least costly at $9.7 million. For the other Central or West alignments, the Airport Connections range closely at $12 to $14 million.

For a Total System, the construction costs range from $57 to $75 million for a North Freeway, an Airport Freeway and a compatible segment of a Hartman-Redman Arterial. 2] Overall, the West and Central Systems are nearly equal in construction costs at $57 to $60 million. The East System is considerably higher in cost. The No-Build, of course, requires no costs for the comparable system.

2] The proposed arterial in the 1995 Interim Transportation Plan along the C&NW Rail line is included since each freeway alternate directly affects the required length of this arterial.

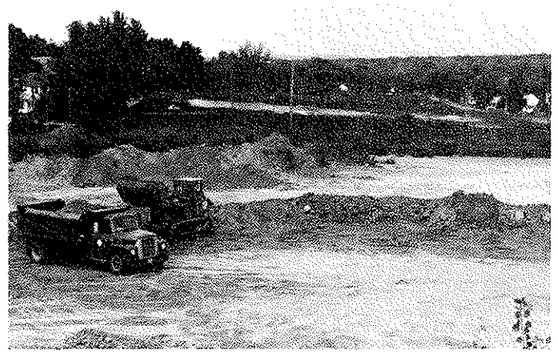


TABLE VI - 1

COST SUMMARY (IN MILLIONS OF DOLLARS)

	EAST Fort Airport Connector	**EAST** Hartman Airport Connector	**CENTRAL** 27th-28th Route Fort Airport Connector	**CENTRAL** 27th-28th Route Hartman Airport Connector	**CENTRAL** 31st Ave. Route Fort Airport Connector	**CENTRAL** 31st Ave. Route Hartman Airport Connector	**WEST** 27th-28th Route Fort Airport Connector	**WEST** 27th-28th Route Hartman Airport Connector	**WEST** 31st Ave. Route Fort Airport Connector	**WEST** 31st Ave. Route Hartman Airport Connector
NORTH FREEWAY										
Construction	$65.0	$67.4	$47.3	$47.3	$44.7	$44.7	$47.2	$47.2	$44.1	$44.1
Right-of-Way	7.3	6.8	12.4	12.4	10.5	10.5	9.8	9.8	7.7	7.7
Residential Relocation	6.5	6.1	8.4	8.4	6.9	6.9	7.7	7.7	6.0	6.0
	$78.8	$80.3	$68.1	$68.1	$62.1	$62.1	$64.7	$64.7	$57.8	$57.8
AIRPORT FREEWAY										
Construction	6.1	5.6	9.7	12.4	13.3	14.5	9.7	12.4	13.3	14.5
Right-of-Way	1.0	0.6	1.8	1.5	3.0	2.6	1.8	1.5	3.0	2.6
Residential Relocation	0.7	0.03	1.3	0.6	2.7	1.9	1.3	0.6	2.7	1.9
	$7.8	$6.2	$12.8	$14.5	$19.0	$19.0	$12.8	$14.5	$19.0	$19.0
HARTMAN-REDMAN ARTERIAL (N.Fwy. to 42nd St) 1]	$ 1.9	$ 1.9	$0.6	$0.6	$0.6	$0.6	--	--	--	--
TOTAL SYSTEM										
Construction	$73.0	$74.9	$57.6	$60.3	$58.6	$59.8	$56.9	$59.6	$57.4	$58.6
Right-of-Way	8.3	7.4	14.2	13.9	13.5	13.1	11.6	11.3	10.7	10.3
Residential Relocation	7.2	6.1	9.7	9.0	9.6	8.8	9.0	8.3	8.7	7.9
Non-Residential Relocation 2]	0.4	0.3	0.5	0.5	0.6	0.6	0.5	0.5	0.6	0.6
	$88.9	$88.7	$82.0	$83.7	$82.3	$82.3	$78.0	$79.7	$77.4	$77.4

1] To be constructed basically within existing street and railroad right-of way.

2] Because of the small number of commercial, industrial and office properties affected, non-residential relocation costs are shown only for the total system to avoid singling out any one such property.

From the above discussion and by studying TABLE VI-1 it is apparent that the Airport Connection creates the cost differential between the West and Central Alignments. Provisions to allow for freeway-to-freeway connections with the Airport Connector are responsible for about $4.8 million of the cost of the North Freeway cost. This means that the "actual cost" to provide the Airport Freeway is about $5 million higher than indicated in TABLE VI-1 and the North Freeway cost is a similar amount lower. (Estimates were not made for interchanges other than a freeway-to-freeway with the Airport Connector. However, the cost for other types of interchanges with the Airport Connector would be considerably less than the $5 million for a freeway-to-freeway interchange.)

In addition to the cost figures described in TABLE VI-1, there are additional costs in the area of utility relocations and adjustments. These costs are for the expenses of relocating water, gas, telephone, and electric utilities which are located within public right of-way. Although these costs will likely be absorded by the respective utilities, they are, nevertheless, costs which will be incurred because of the construction of the freeway. These additional utility relocation costs are summarized in TABLE VI-2.

Right-of-Way Cost. The right-of-way (ROW) cost estimate developed for the corridor study is intended to provide an indication of the total market value of the properties within the "construction limits" of each freeway alternate. APPENDIX H provides a detailed accounting of the ROW costs and the methodology.

In summary, the ROW cost (TABLE VI-1) show that the East System is the least costly at $7 to $8 million which reflect its lower mileage and its usage of fewer residentially developed properties. The West System is second at $10 to $12 million. The Central System, taking the most developed properties, has the highest ROW cost at $13 to $14 million.

For the North Freeway alone, the same proportional difference occurs as was just presented for the entire system ROW costs. That is, the East is lowest followed in increasing order by the West and then the Central.

TABLE VI-2

COST ESTIMATE OF UTILITY ADJUSTMENTS FOR UTILITIES LOCATED IN PUBLIC RIGHT-OF-WAY

Alignment	North Freeway	Airport Connector	Total
East and Fort St. Airport Connector	$504,000	$ 88,000	$592,000
East and Hartman Ave. Airport Connector	504,000	68,000	572,000
Central (27th-28th) and Fort St. Airport Connector	572,000	166,000	738,000
Central (27th-28th) and Hartman Ave. Airport Connector	572,000	94,000	666,000
Central (31st Ave.) and Fort St. Airport Connector	656,000	175,000	831,000
Central (31st Ave.) and Hartman Ave. Airport Connector	656,000	101,000	757,000
West (27th-28th) and Fort St. Airport Connector	546,000	166,000	712,000
West (27th-28th) and Hartman Ave. Airport Connector	546,000	94,000	640,000
West (31st Ave.) and Fort St. Airport Connector	632,000	175,000	807,000
West (31st Ave.) and Hartman Ave. Airport Connector	632,000	101,000	733,000

For the Airport Freeway, the Hartman Alignment is lowest in all cases. However, it should be noted that the significant variation in ROW costs is attributed to mileage differences on the Airport Freeway with each alignment possibility.

Relocation Costs. When comparing the various freeway alternates, the relocation costs follow a similar trend as did the right-of-way costs. TABLE VI-1 reflects the residential relocation costs, which are lowest for the East System ($6.1 to $7.2) and highest for the Central System ($9.0 to $9.7). Non-residential relocation costs were estimated separately and range as low as $0.3 with the East System to $0.6 for either the Central or West Systems. A more detailed discussion of relocation costs may be found in APPENDIX U.

Maintenance and Operating Costs: For maintenance, the West routings have the lowest annual costs ($81,000 to $93,000). The East has the highest costs ($108,000 to $111,000) much of which is associated with the elevated structure segments of the roadway. Of the Airport Connectors, the Hartman Routing is slightly lower than Fort.

For operating costs, the freeway routings are all very close with an average of $0.1004 per mile on all roadways in the Greater Omaha Network. The No Build Network has a cost of $0.1527 per mile for road users. On a daily basis, the No Build cost the motorists $740,600 more than the Build alternates in operation costs.

Considering only the streets in the North Freeway Study Area, the West is only slightly better than the East and both are slightly better than the Central for road user costs. (The West has operating costs of $0.1745 per vehicle-mile compared to $0.1859 for the East and $0.2106 for the Central.)

In summary, the maintenance and operating costs show little major difference between the freeway alternates. All are superior to the No-Build. More details maybe found in APPENDIX T.

REGIONAL AND COMMUNITY GROWTH

The proposed North and Airport Freeways are both in conformity with all applicable plans for the regional area and for special study areas. The No Build alternate presently is non-conforming.

On the regional level, the freeways are identified in the 1995 Interim Transportation Plan for usage by auto-type vehicles as well as bus transit. Rather than definitive routings, the plan calls for, as high priority, the conduct of detailed corridor location studies. The MAPA Citizen Advisory Board version of the 1995 Plan did define a North Freeway routing along which the East Alignment is patterned. However, this routing was not the plan which was officially adopted by the local jurisdictions and the MAPA Board of Officials.

Several other special area plans have been or are being generated in the Corridor Study area. The North Omaha Community Development Plan (NOCD) 4] Community Design Center (CDC) Recreation Center Plan 5], the Riverfront Program, the planning efforts of the Mid-City Business and Professional Association, and the planning by the Omaha Industrial Foundation(OIF) all include the North Freeway in their plans although specific routings are not defined. Although specific routings are not defined in these special area plans, some planning efforts do favor certain of the North Freeway Alternates. The OIF planning efforts would support the more direct access to their industrial acreages which the East plus Hartman System offers. Any of the routings would be compatiable with the NOCD, CDC and Mid-City concepts. The Riverfront Program supports the concept of the North Freeway as having long-range impacts on area circulation and local economy.

4] North Omaha Community Development Plan, North Omaha Community Development Program, 1974.

5] North Omaha Recreation and Culture, Community Design Center, College of Architecture, University of Nebraska 8 Lincoln, 1974.

CONSERVATION AND PRESERVATION

General Ecology. The corridor study area for the North Freeway can be generally divided into three habitat groups: 1) forest-covered bluffs; 2) Missouri River floodplain; and 3) broken pasture-rangelands. Each of these habitats exists in a matrix of high intensity urban development. As a consequence of the urbanization in the corridor area, all three habitat groups have been severely altered and disrupted and must now be considered as essentially urban environment. This of course characterizes the present conditions associated with the No-Build.

The most unique habitat in terms of replacement value is the bluff-forest located mostly in the northwestern portion of the study area (State/Young to McKinley). Both the Central and West routes pass through segments of the bluff-forests. These forest, which may take as long as 75 years to develop, represent the western limit of the eastern deciduous forests which follow along the bluffs of the Missouri and its tributaries. Since these forests are in private ownerships and since private developments are not now required to have environmental impact assessments, continued urban residential growth could further alter the forest areas.

The impact of urbanization has limited remaining wildlife in the corridor to those that can form compatible associations with intensive human activity.

The flood-plain habitat has essentially been totally disrupted by existing urbanization. The pasture rangeland is not extensive while the bluff-forest habitat is generally good to excellant and is considered to be the most valuable habitat in the study area.

Overall, construction activities associated with the North Freeway will not disrupt significantly any major ecological habitat group. The East Alignment has minimal impact on the ecosystem and is therefore the most favorable. The West and Central appear to be nearly equal and are second to the East. The No Build option has no additional ecological impact.

APPENDIX X contains additional discussion on the General Ecology impacts.

Recreation and Parks. With the possible exception of Fillmore Park, the freeway alignments have no direct impact on existing parks in the North Area. With regards to the "boulevards" which are under the supervision of the Omaha Parks Department, all alignments cross one or more of these roadways.

At Fillmore Park, the East Alignment concept is to build an elevated freeway over the Chicago and Northwestern Railroad right-of-way. However, up to 15 feet of the air rights over the baseball outfield at Fillmore Park may also be required. The park and freeway can blend together in this area. No piers in the outfield are envisioned. Conflicts with playable balls on the existing ballfield with the freeway would not occur. However, it should be noted that if the park's air rights are necessary for the freeway, federal approvals must be obtained.

The boulevards were originally established as special roadways to link together the major parks. All the alignments cross at least one boulevard. The Central and West (31st Ave.) follow a protion of John Creighton Boulevard which is relocated as a frontage roadway to the westside in order to maintain street continuity with Paxton Boulevard. APPENDIX W discusses the boulevard and other park issues in more detail.

An additional impact of the freeway upon the park system is in the potential use of excess freeway right-of-way for recreation use. Because of freeways do not adversely disrupt the existing uses of present parks and because of the potentials in using excess right-of-way for recreation type uses, the Build alternates become more advantageous than the No Build for this factor. Such park and recreation potentials are best with the East followed in order first by the 31st Avenue Route (West and Central) and then the 27th-28th Route (West and Central). APPENDIX Q discusses this in more detail.

In summary , the major issues of the park impacts reflect on current park disruptions. As such, the West and Central (27th-28th) would be the best alternates. This conclusion is drawn from their lack of direct impact upon parks and minimal impacts to the boulevards. The West and Central (31st Ave.) alignments are next due to the potential impacts to John Creighton Boulevard. Then comes the No Build. The East is last due to the potential conflicts at Fillmore Park.

Natural and Historical Landmarks. The Nebraska State Historical Society as well as local citizens with historical interests were contacted regarding sites both listed and unlisted in the National Register of Historic Places. Details on the historical sites are presented in APPENDIX Y.

The East Alignment necessitates the moving of the Weber Mill to a new site. This mill is neither the original structure nor at the original location. Its movement could be a positive impact as the present location is not appropriate for this historic Mormon monument whereas a move to a park would be a more appropriate location.

In the Florence Area, the East Alignment uses the air rights over the C&NW railroad. It may also be necessary to use up to 15 feet of the air rights of Fillmore Park, which is adjacent to the railroad. This park's ground area has historical significance as it was the Market Square of the old Town of Florence.

The Central and West alignments impact the southwest corner of Fort Omaha. However, this corner area of the Fort contains only maintenance and warehouse buildings and not historically significant structures.

In summary, there are no significant historical site impacts caused by the proposed West, Central, or Airport freeway alignments. For the East, all conflicts with the two historical sites can be resolved.

PUBLIC FACILITIES AND SERVICES

Religious Institutions and Activities. The East Alignment with a Hartman Connector takes three small churches, all of which are between Lake and Ames. The East plus Fort adds a fourth small church.

For the 27th - 28th Route, the Central and West also take the same three small churches between Lake and Ames. In addition, Holy Angels Church is taken. Adding the Airport Connector, the Fort St. Alternate will require one additional church while the Hartman Alternate requires none.

For the 31st Avenue Route, the Central and West take no churches. Adding the Airport Freeway a Fort Alignment adds one church and Hartman none.

North of Grand to I-680, the West and Central take no additional churches.

Of the churches taken, the Holy Angels Church is probably the most significant due only to the unique architectural features of this old structure. On this basis, the East plus Hartman is the least disruptive after the No Build. The East plus Fort would be second followed by the remaining alternates.

Additional discussion may be found in APPENDIX K.

Educational Facilities. In general, the negative impacts to education facilities are few with any of the proposed North Freeway alternates. Attendance travel lines will not be adversely impacted due to the proposed freeway crossings (APPENDIX Z).

Overall, the freeway alignments are not significantly different from the No Build or each other. In a ranking, the East plus Hartman would be equal to the No Build, as this freeway alternate takes no schools nor causes adverse noise levels to any schools. The East plus Fort would follow.

The West and Central (31st Ave) routes do take Dominican High School and, therefore, are ranked below the East.

Additional discussion may be found in APPENDIX J.

Public Utilities. An inventory of the extent and location of public service utilities was made to provide an indication of the amount of disruption that would occur during construction of each of the freeway alternates. Details are contained in APPENDIX N.

The East Alignment is the least disruptive alternative, with the exception of the No Build, although it encounters the most problems with electric utilities. Three major water lines will require relocation, as will four underground telephone conduits or cables. Several high and low pressure gas lines as well as a gas governor station are impacted along Grand Avenue, but, this alternate is the least severe in this regard.

About six major sewer modifications are necessary. Two of these are inverted siphons while the others are new collector lines or relocated sewers. Electric utility disruptions include about six wood-pole transmission lines and two locations, on either Airport Connector and near Fillmore Park, where steel towers will require relocation. Pipelines may require minor relocations. This alignment also takes part of the Norgas facility which packages bottled gas.

The Central and West Alignments are summarized together as their net impact on utilities is nearly the same. This is the case since these alignments vary basically only between Redman Avenue and State Street where very few major utilities are located. Either of these two alignments impacts about three times the major water mains as the East Alignment, mainly in the vicinity of 33rd and Redman. Sewer relocations involve three major inverted siphons for each alignment, two minor inverted siphons on the Central and one minor inverted siphon on the West, and a few new collector lines. Electric utility disruptions for either involve steel tower relocations on either Airport Connector and near McKinley Street, and four or five wood pole transmission line relocations.

Wheras the East involves four buried telephone conduits or cable relocations, the West and Central require six of these complex adjustments. Besides encountering numberous high and low pressure gas lines in the 30th and Grand vicinity, any of the West or Central Alignments require the taking of a gas governor station on Grand Avenue. In addition, the Central (27th-28th) and West (27-28th) Alignments require the purchase of part of the Norgas bottled gas facility.

With regard to freeway drainage, present drainage service areas in North Omaha were generally maintained where each freeway section traversed. In the depressed freeway sections, pump stations were necessary at some locations with most of this drainage being directed into the Minne Lusa Relief Sewer. For the Airport Connectors sufficient sewer capabilities are available in the new Airport Industrial Area lines. Although no major drainage problems are envisioned from this utility analysis, all sewer capacities will require detailed evaluations during final freeway designs.

In summary, the Central (27th - 28th) and Central (31st Ave.) Alignments have very nearly the same net impact on utilities, as do the West (27th -28th) and West (31st Ave.) Alignments. The East Alignment affects mainly the electric utilities and this additional impact involves principally wood transmission lines, which are much less troublesome to relocate than are the steel towers. All of the possible freeway alternatives impact the steel towers to about the same extent, the East slightly more so. With respect to water, sewer, and gas utilities the East Alignment is less disruptive because it does not require a directional interchange in the 30th and Ames vicinity, where extensive sewer, water, gas, and telephone utilities are located.

An approximate indication of the relative impact of each of the freeway alternates (only five are listed as the two airport connectors are comparable for each alternate) upon each of the utilities discussed is given in TABLE VI-3. The relative impact of each alignment upon a particular utility is indicated by a number from 1 to 4. Each line is totaled to provide an indication of the disruption to utilities caused by each alignment.

As TABLE VI-3 shows, the East Alignment disrupts utilities to a somewhat lesser extent, while all of the West and Central Alignments are very nearly comparable. The No Build Alternative, of course, causes no disruption to utilities.

Public Health and Safety. With the interchange locations and vehicular bridge crossing locations proposed for each freeway alternate, negative impacts to fire protection, police protection, and emergency service will not result with any of the freeway alternates. Overall, the freeway alignments should increase accessibility necessary for these community services as compared to the No Build. Additional discussion as well as the results of interviews with the affected city departments may be found in APPENDIX L.

TABLE VI- 3
RELATIVE IMPACT ON UTILITIES

UTILITY IMPACT (1 least to 4 most disruptive)

Alignment	Water	Sewer	Electric	Telephone	Gas	Total
East	1	2	4	2	2	11
Central (27th - 28th)	3	3	3	3	3	15
Central (31st. Ave.)	4	3	3	3	3	16
West (27th - 28th)	3	3	3	3	3	15
West (31st Ave.)	4	3	3	3	3	16

COMMUNITY COHESION

Neighborhood Character. The integrity of neighborhoods, as well as their related public and parochial school districts, church areas and parishes, should be reinforced or preserved where possible by the freeway. Penetrations and partitioning should be avoided or minimized.

Overall, the East Alignment is the least disruptive physically, after the No Build, as it follows neighborhood edges the best. The West alignments are second while the Central routings are the poorest. For the Airport Freeway, the Hartman Alignment is far superior to a Fort Street Route.

Details of how the alternates impact neighborhood edges and cohesive areas may be found in APPENDIX M.

Minority Group Impact. The three most significant minority groups are the Blacks, Elderly, and Female-Heads of Households residing in the North Corridor Area. TABLE VI-4 summarizes the impacts of each freeway system upon these minorities. APPENDIX U gives more details.

Using 1970 population estimates, the number of blacks that would be dislocated range from 1,002 to 1,154 for the freeway alternates. Thus, there is little difference in the direct displacement of black citizens by the freeway alternates. This same conclusion can be drawn in comparing the 108 to 151 range for female-head-of-household.

Only slight difference is shown in the displacement to the elderly. Here, the East has the least while the Central (31st Ave.) has the largest number of elderly dislocated.

Considering average family income, more low income families are affected by the East Alignment. Approximately 40% (238 to 266) of the households dislocated by the East live in blocks where median income is below $8,000 as compared to 19 -26% (189-272) for the Central and 22 - 29% (189-272) for the West.

Overall, the No Build has no direct disruptive impact upon minorities. Among the Build Alternates, they are all judged to have the same relative impacts.

Effects on Tax Base and Property Values. In APPENDIX S, several comparisons are made between similar properties in the North Freeway Area and those properties along two sections of I-480. From the findings of these comparisons, it is concluded that 1) the impacts to property values along the North Freeway will be different for different classes and types of property; 2) residential property values will perhaps experience negative impacts; and 3) non-residential land uses are estimated to receive considerable value benefits from the freeway.

The overall evidence suggests that property zoned commercial in major portions of the North Freeway Corridor will be enhanced significantly by the North Freeway; however, this gain in property value and tax revenue may be offset by an apparent suspected negative impact on residential property.

TABLE VI - 4
RESIDENTIAL DISPLACEMENT SUMMARY

Alignment	No. of Dwelling Units	Population	Blacks	Elderly	Female Heads of Household	Average Income
East and Fort	701	2,161	1,119	281	116	$ 9,256
Central (31st) and Fort	1,063	3,298	1,028	445	151	11,236
Central (27th-28th) and Fort	1,054	3,323	1,154	385	145	10,814
West (31st) and Fort	922	2,793	1,013	373	137	10,798
West (27th-28th) and Fort	933	2,884	1,147	325	132	10,322
East and Hartman	596	1,846	1,109	242	108	9,123
Central (31st) and Hartman	999	3,092	1,018	421	144	11,411
Central (27th-28th) and Hartman	998	3,143	1,154	363	139	10,964
West (31st) and Hartman	858	2,587	1,002	350	130	10,970
West (27th-28th) and Hartman	877	2,703	1,147	302	126	10,461

Of the alignments, the East Alignment could have the least negative impacts after the No Build upon property values as fewer dwellings are taken and it follows the edge of the major neighborhoods. A Hartman Alignment to Abbott Drive is likewise better than the Fort Street Routing. The West Alignment would follow the East while the Central has the most negative impacts upon property values.

DISPLACEMENT

Displacement of Families. The most critical impact area to be addressed in this corridor study relates to the displacement of families and the cost of their relocation. The details of relocation may be found in APPENDIX U.

TABLE VI-1 previously summarized the relocation costs for each freeway alternate. For the North Freeway, the East Alignment has less relocation cost and impact than the West or Central. The West has only slightly lower cost than the Central. No significant difference is shown between the 31st Avenue and 27th -28th routings. The Hartman Airport Connection has less relocation cost and impact than the Fort Alternate.

Regarding the physical impacts upon families and their dwellings, the system camparison is shown in TABLE VI-4. The East Alignment plus Hartman displaces 596 dwelling units with approximately 1846 people. In contrast, the two West Alternates with a Hartman Airport Connector displace 858 and 877

dwelling units with 2587 and 2703 persons, respectively.

The Central Alignment involves the most displacements. With a Hartman Airport Connector, either Central Alignment will displace almost 1,000 dwelling units with approximately 3,100 people.

Overall, the No-Build, of course, has the least relocation impact. Of the Build Alternates considering the costs and dwelling units, the East plus Hartman is the best system followed by the East with a Fort Airport Connection. The West plus Hartman, West plus Fort, Central plus Hartman, and Central plus Fort follow in that order.

Displacement of Businesses. In most instances, the business establishments in the path of the freeway are small activities (e.g., beauty shops in the home), but in a few cases larger firms will be taken impacting both the business itself and its employment. TABLE VI-5 summarizes for the entire North and Airport Freeway System the number of businesses and their estimated employment. Additional discussion may be found in APPENDIX V.

Other than the No Build, which displaces no businesses, the East alignments displace the least number of firms (8 to 10) and employees (57 to 86). The West alignment displaces 17-19 firms and 96-152 employees. The most displacement occurs with the Central alignments where 21-24 businesses with 98-156 employees are effected.

The business activities involved are primarily found in the Ames at 30th and the 16th at Fort areas. Most, however, are located alone or in small clusters of 2 or 3 firms.

Replacement Housing Availability. TABLE VI-6 summarizes the dwelling unit displacements by home owners and renters and by the number of rooms. Even though these data reflect the average size of the units on a census block, there is still a considerable range of sizes that will be displaced by each freeway route. Each freeway route will require four, five, six, and seven-room houses as replacement housing. Although owner-occupied housing is more likely to be five and six rooms, rented housing is more likely to be four and five rooms.

TABLE VI-6 also presents data on the availability of replacement housing in these categories. The data are from the 1970 Census and represent vacant units that were for sale or rent at the time of the enumeration. It indicates that in 1970, at least, there were sufficient three-room, four-room and seven-room houses in Omaha to accommodate the displaced homeowners (if we assume that the homes taken are the same size as the average home on the census block).

But regardless of the route, the number of vacant six-room houses was less than the number of owners displaced from six-room houses. The number of five-room houses available was adequate only for the East alignments and the West Alignment using the 27th -28th Street Route with the Hartman Airport Connection. But since freeway construction would occur in phases over a number of years, not all replacement units would be needed at once. Current availability of replacement housing therefore is not a crucial factor in this analysis of impact. Sufficient housing will be available and would be even more available with stage construction of the freeway.

The data also indicates that there are enough vacant rental housing units with adequate distribution of size to accommodate tenants displaced by each of the freeway routes. Whether these houses and rental units meet the requirement for "decent, safe, and sanitary" replacement housing is unknown.

Data on the geographical distribution of vacant housing units, drawn from a recent study of housing in the Riverfront Area, indicate that approximately 30% of the vacancies in the Douglas County Area occurred in the four housing sub-areas affected by the North Freeway, and an additional 21% occurred in four sub-areas contiguous to this area. 6] But the location of these units may not be a critical consideration since the survey of North Freeway residents also indicated that only one-fifth (19%) indicated a preference for relocation within the same neighborhood while 35% said they preferred location elsewhere and 46% indicated they had no opinion (APPENDIX B).

Special note should be taken that the Eastern Alignment and the 27th -28th Street routing of the Central and Western alignments will displace 57 units of public housing owned by the Omaha Housing Authority at Spencer Homes.

The 31st Avenue routing of the Central and Western alignments will take 64 units in this development.

Additional discussion relating to the availability of replacement may be found in APPENDIX U.

Based upon a comparison of the number of displaced dwelling units to the number of available replacement units, the East Alignments are second to the No-Build. The West plus Hartman alternates are next followed in order by the Central.

Economic Activity and Employment. In regard to existing employment, the number of displaced employees (TABLE VI-5) for each freeway alignment do not parallel the number of displaced businesses associated with that employment. Here again, the East plus Hartman is the least disruptive while the Central (31st Ave.) or the West (31st Ave.) plus the Fort Airport Connector disrupt most existing employees.

In regard to potential redevelopment of economic activities, the North Freeway will have a larger positive economic impact. All three basic freeway alignments will provide valuable linkage of residential areas with existing and future employment centers, such as the Central Business District and the industrial tracts in and around Eppley Airfield. With the freeway, reduced congestion on the city streets will improve employee travel via bus or auto and will improve goods and material movements via trucking.

The North Freeway will provide opportunities for expanding commercial and industrial activities. However, the freeway alone should not be viewed as the panacea for revitalizing the commercial well-being of North Omaha. As a part of a comprehensive community development efforts, the freeway can and will provide an important structural component for revitalization of the economic and employment base in the North Omaha areas.

6] Data recalculated from Center for Applied Urban Research, Housing and Community Development in the Nebraska-Iowa Riverfront Development Project Area, 1973. (Omaha, 1973), pp. 31-61.

TABLE VI - 5
NUMBER OF BUSINESS ESTABLISHMENTS AND EMPLOYEES DISPLACED BY ALIGNMENTS

Alignments	Firms	Employees
East Alignment with Fort Airport Connection	10	86
East Alignment with Hartman Airport Connection	8	57
Central Alignment (27th-28th) with Fort Airport Connection	21	118
Central Alignment (31st Ave.) with Fort Airport Connection	24	156
Central Alignment (27th-28th) with Hartman Airport Connection	22	98
Central Alignment (31st Ave.) with Hartman Airport Connection	23	123
West Alignment (27th-28th) with Fort Airport Connection	17	116
West Alignment (31st Ave) with Fort Airport Connection	19	152
West Alignment (27th-28th) with Hartman Airport Connection	18	96
West Alignment (31st Ave.) with Hartman Airport Connection	18	119

TABLE VI - 6
HOUSING NEEDS AND AVAILABILITY SUMMARY *

Alignment	Total	OWNER-OCCUPIED Number of Rooms						RENTED Number of rooms					
		3	4	5	6	7+	Total	3	4	5	6	7+	Total
East and Fort	701	7	23	110	234	55	429	16	175	69	12	-	272
Central (31st) and Fort	1,063	4	54	309	318	35	720	-	165	136	38	4	343
Central (27th-28th) and Fort	1,054	4	43	264	347	44	702	-	194	134	23	1	352
West (31st) and Fort	922	4	26	282	254	28	594	-	171	117	37	3	328
West (27th-28th) and Fort	933	4	30	256	258	36	584	-	216	121	12	-	349
East and Hartman	596	3	5	63	230	55	356	16	157	55	12	-	240
Central (31st) and Hartman	999 **	-	31	273	315	40	659	-	153	121	38	4	316
Central (27th-28th) and Hartman	998 **	-	20	229	348	49	646	-	184	120	23	1	328
West (31st) and Hartman	858 **	-	22	255	226	31	534	-	171	102	24	3	300
West (27-28th) and Hartman	877 **	-	8	221	259	41	529	-	205	107	12	-	324
Housing Units Available	4,114	57***	109	226	108	226	726	1,199	1,018	729	280	162	3,388

* Source for availability data: U.S. Bureau of Census, Metropolitan Housing Characteristics, Table C-9.
** Includes 24 mobile homes not otherwise included in this table.
*** Includes 1-3 room units.

Based more upon the potential positive impacts, the East Alignments are the best of the alternates followed by the West and Central. The No Build option would have the least potential for economic and employment revitalization in northern Omaha.

APPENDIX V contains additional discussion.

POLLUTION

Noise Pollution. The Build Alternatives exhibit certain areas with 1995 L10 noise levels 7] exceeding those standards 8] required by the U.S. Department of Transportation, Federal Highway Administration. A detailed discussion may be found of the 1995 noise forecasts, the resultant noise contour maps, and the 1974 ambient noise measurements taken at schools, churches, and other noise sensitive receptors in APPENDIX O of this corridor report.

After an analysis of the three alignments, it can be said that the East Alignment has the lesser noise conflict, with 55 dwellings and a park exceeding the L10 exterior-design noise level standards in comparison to 163 dwellings with the Central Alignment and 80 dwellings with the West Alignment. Also, the same results can be seen after a similar comparison between the predicted noise levels of each alternate and existing noise levels. This result is for the most part, due to the location of each alignment with the East Alignment being located in more undeveloped and industrial oriented zones.

The No Build alternate has the potential of impacting more sensitive areas with higher noise levels than any of the Three Build Alignments. The projected 1995 traffic volumes show capacity or near capacity traffic on 30th Street and numberous other north-south arterials in the North Omaha vicinity. The North Freeway is designed to minimize these excessive traffic loads and in turn minimize excessive noise in the noise sensitive areas (schools, churches, etc.) near these arterials.

7] L10 is defined as the sound level which would be exceeded 10% of the time.

8] Federal Highway Program Manual, Vol. 7, Ch. 7, Sect. 3, U.S. Department of Transportation, Federal Highway Administration (Formally PPM 90-2).

Air Pollution. APPENDIX R provides a discussion of the carbon monoxide (CO) emissions of each alternate as well as CO contour maps. None of the Build Alternates exceed the 1995 CO emission standards. Therefore, all Build Alternates are rated equal for air pollution. Because of its traffic congestion characteristics, the No Build is considered less effective than the Build Alternates in reducing air pollution levels.

Water Pollution. None of the proposed alternates will affect the water quality of lakes or streams to any appreciable degree. The only possible detriment to any aquatic organism would be the result of severe point source erosion during initial construction activities. This type of pollution can be checked at the construction site by controlling erosion from areas that have been stripped of vegetation.

The only ponded waters in the corridor study area are the Miller Park Lake and Carter Lake. The North Freeway will have no affect on these lakes either during construction or after completion.

Runoff from the freeway surface will be directed into a series of storm sewers or open drainage ditches. Indications are that all runoffs in North Omaha may receive primary treatment in the near future due to the Environmental Protection Agency's requirements on combination sanitary-storm sewers which are now predominant in the corridor.

AESTHETICS AND OTHER VALUES

Aesthetics. Due to the highly urbanized nature of the corridor study area, aesthetics of the North Freeway becomes more of a factor relating to the "potentials" for aesthetics rather than the "adversities" caused to existing aesthetics. Certainly, each freeway routing does pass through residential areas, tree-lined areas, or areas with pleasing horizon views. But, potentials do also exist for contructing the freeway in such a manner to retain or improve the aesthetics through lanscaping, concrete texture treatments, freeway views, and other means.

APPENDIX P presents a detailed discussion of aesthetics, both in terms of impacts and potentials. Later, PART VII will attempt to set some guidelines on aesthetics for the design of the North Freeway.

The East Alignment might be rated higher than the West and Central in terms of on-road visual quality. The northern sector near Florence would provide an interesting on-road view of the Missouri River skyline and bluffs. Off-road view potentials could be advantageous for the northern Florence sections provided landscaping and aesthetic treatments are applied to the freeway. Potentials do exist for a linear park or open space area in the flood plain area between the freeway and the bluffs from Florence Boulevard to Read Street.

The West and Central alignments are similar in aesthetic considerations. On-road views of the tree-lined residential hillsides and the Omaha Skyline do offer some potential. The cuts and fills of these alignments offer additional opportunities for maintaining existing trees in interchange areas, using earth berms with shrubs and prairie grasses for medians, and using small trees, shrubs, and grasses for sideslopes.

The Airport Connectors have significant importance to airport visitors and their first impressions into Omaha. Thus, the on-road view becomes important with the Hartman Alignment having a slight edge over the Fort Street Route.

Multiple Use of Space Like aesthetics, the multiple use of space factor is aimed more at the potentials that each freeway alternate offers toward the joint use of right-of-way. The emphasis is to have any joint uses link with those land uses adjacent to the freeway in order to make better use of urban lands and to add those community services of a commercial or recreational nature.

Among the North Freeway alternates, the East Alignment is slightly better overall than the Central or West. This is attributed to the East's joint freeway - railroad use of the right-of-way, the potentials for adding recreation areas in or near Florence and North of I-680, and the potentials for some commercial or industrial uses in excess right-of-way.

For the West and Central Alignments, the 31st Avenue Route has many more potentials for joint use than the 27th - 28th Route. There are no practical differences between the Airport Connectors.

Public Attitude Survey. During June-July 1974, an attitudinal survey was taken of residents living within two blocks of each freeway alignments to provide an indication of the public opinions on the North Freeway. Within the study area, 42% favored the East Alignment; 36% the No Build; 12% the Central; and 9% the West.

Reasons for the route preferences for the East Alignment were primarily negative; e.g. "in convenience fewer people", "less neighborhood damage", "less costs", "less homes destroyed". Reasons for the No-Build were given as "personal consideration" and "freeway not needed/wanted". Opinions in favor of the West and Central were for "more use to people".

More detailed information may be found in APPENDIX B on the public attitudes and their personal characteristics.

During the fall of 1974, the Center for Applied Urban Research conducted a telephone survey 9] of the public attitudes across the City towards the North Freeway. The results, which may be found in APPENDIX AA, revealed that 53% favored the building of the North Freeway while 19% favored a No Build solution. A question on preferences between the East, Central, and West was not asked.

EVALUATION SUMMARY

The above discussion has presented a brief assessment of each evaluation factor for each freeway alignment. Each of these individual assessments considered pertinent qualitative and quantitative findings to provide an accounting of the negative and positive impacts associated with the Build and No Build alternates.

In reviewing the above individual summaries, several questions become apparent as the reader attempts to ascertain which of the alternates is the better system. For example, which factors are more important? Costs? Relocation? National Defense? What degree of difference exists between the alternates and the evaluation factors? In an attempt to answer these and other related questions as to which is the better freeway system alternate, the following discussion has been prepared.

No Build Alternate. This alternate is basically at one end or the other of the evaluation. Either it is the best or worst depending upon the evaluation factor. However, the primary factors for the No Build center around the Traffic Service and the Cost.

9] "North Omaha Expressway: Survey of Public Opinion," Review of Applied Urban Reserarch, Center for Applied Urban Research, University of Nebraska at Omaha, December 1974, Vol. 2, No. 12, pp. 6-7.

If the No Build is the best alternate for the Traffic Service Factor, then there would be no justification for the Build alternates. However, if the Build alternates have better traffic service and will significantly improve those deficiencies found in the No Build, then the community must determine if it can afford the capital and social costs of a Build Alternate.

As previously discussed in detail, the No Build in fact will not handle future traffic demands nor be an aid to better transit service and airport ground accessibility. Even if all streets in the 1995 Transportation Plan are widened and no freeways are built, such a "modified" No-Build will again not handle the traffic, particularly on 30th Street, which would require purchase of properties on one side for street widening to six lanes with a median.

Each of the Build alternates is in fact far superior to the No Build in meeting Omaha's total transportation needs, principally for efficient motor vehicle usage, transit service, and airport access.

Relating further to its poor Traffic Service, the No Build Alternate likewise has the most adverse impacts to:

- Public Health and Safety - The Build alternates have better access and mobility for ambulance service as well as for fire and police functions.

- Economic Activity and Employment - The Build alternate would aid the development of an access to new commercial and industrial use in northern Omaha thus expanding employment opportunities provided by such developments.

- Regional and Community Growth - All prior and recently adopted comprehensive plans by the community envision some extention of the North Freeway.

The No Build ranks the best in the Cost Category since as could be expected, it would involve the least direct capital expenditures. That is, no public tax dollars would be expended for Construction, Engineering, Relocation, and Right-of-Way costs of the North and Airport Freeways. In addition, several other evaluation factors, some of which relate also to costs, are likewise ranked highest for the No-Build:

- Public Utilities - With no freeway, there

are no costs and disruptions of Utilities.

- Displacement of Businesses; Displacement of Families; Neighborhood Character; Tax Base and Property Values; Replacement Housing - With no freeway, there are no relocation costs and no needs for replacement housing.

Airport Freeway Alternates. A Fort Street Alignment and a Hartman Alignment have been assessed as part of the North Freeway System for connections from the North Freeway easterly to Abbott Drive. Both have vast similarities; both are superior to the No Build for transportation service.

The major differences between the two Airport Freeway Alternates are centered around the facts 1) that Fort St. is an existing arterial street needed for local access to a residential area on its southside and to an industrial area on its northside, and 2) that Fort St. also serves as a loose boundary between these two land use areas. As such, these differences are reflected in several evaluation factors:

- Operation of Other Transportation Modes During and After Construction - The Hartman Alignment is better, since the existing Fort Street could continue its local access function to adjacent lands.
- Neighborhood Character; Displacement of Families; Replacement Housing Availability - Hartman Alignment is better, as it traverses a more open area and does not infringe upon the small neighborhood area south of Fort Street.

Moreover, Traffic Service and Cost become critical factors for the Airport Connectors, just as they were for the No Build. The traffic volume forecasts show a low usage of the Airport Freeway as compared to other urban freeways. The volumes do show a need for a direct roadway connection between the North Freeway on the top of the bluffs and the river bottom area below the bluffs at 16th St. Overall, the volumes show that from the North Freeway to Abbott Drive a full freeway standard may not be necessary for the Airport Connection.

Thus, considering the Cost Factor, an Airport Freeway may in fact be more of a luxury whereas an Airport At-Grade Expressway or Arterial (like "L" Street in southern Omaha) may be the better requirement to link the bluffs and the river bottom area.

North Freeway : 31st Avenue vs 27th-28th Routing. For the southern section of West and Central Alignments of the North Freeway, two possible routes exist between Lake Street and Grand Avenue - one route along 31st Avenue; one route along 27th and 28th Streets. Significant differences are not apparent between these two southern sections. What differences there are can be summed as follows for the evaluation factors:

- Traffic Service - A slight advantage is given the 31st Avenue Route since its frontage roads and interchange points would reduce left turn demands through the congested 30th and Ames intersection. In addition, the frontage system partially provides a circumferential roadway around the potentially larger commercial area at 30th and Ames.

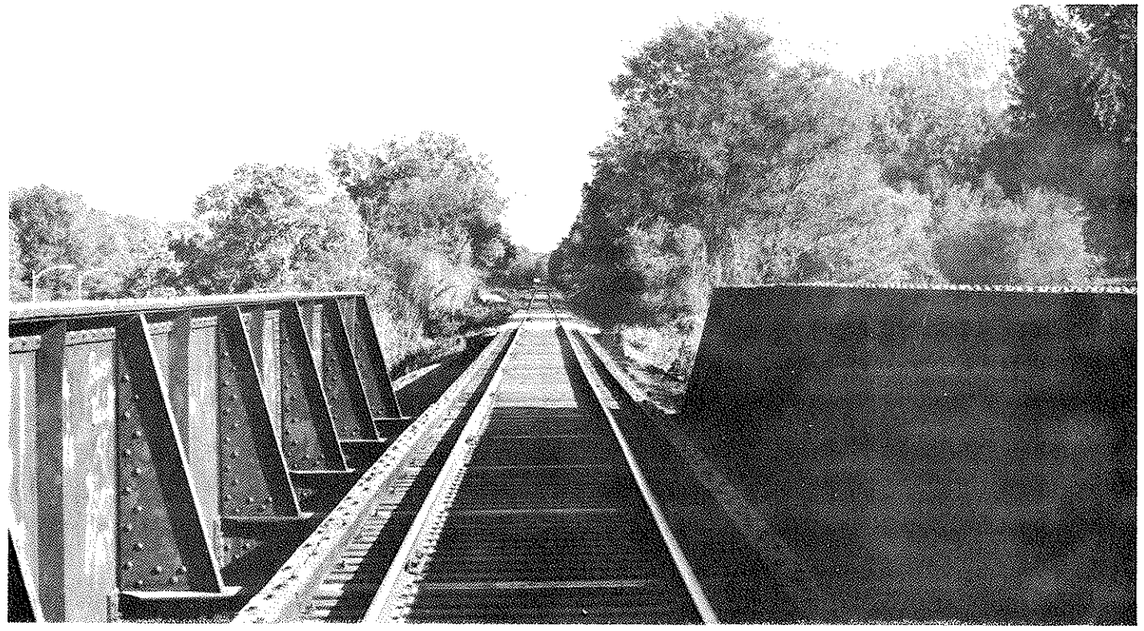
- Multiple Use of Space - Regarding the potentials for redeveloping excess rights-of-way, the 31st Avenue Route has more potentials because of its diagonal crossing of the city street pattern.

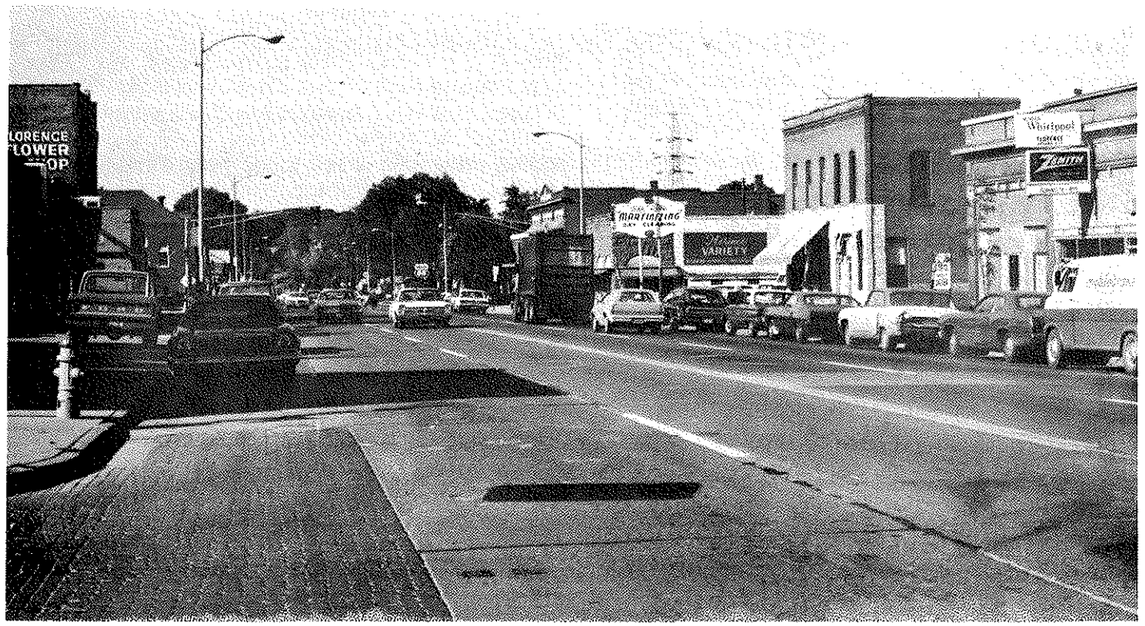
- Displacement of Businesses - The 31st Avenue Route does require the displacement of a few more businesses than the 27th -28th Route.

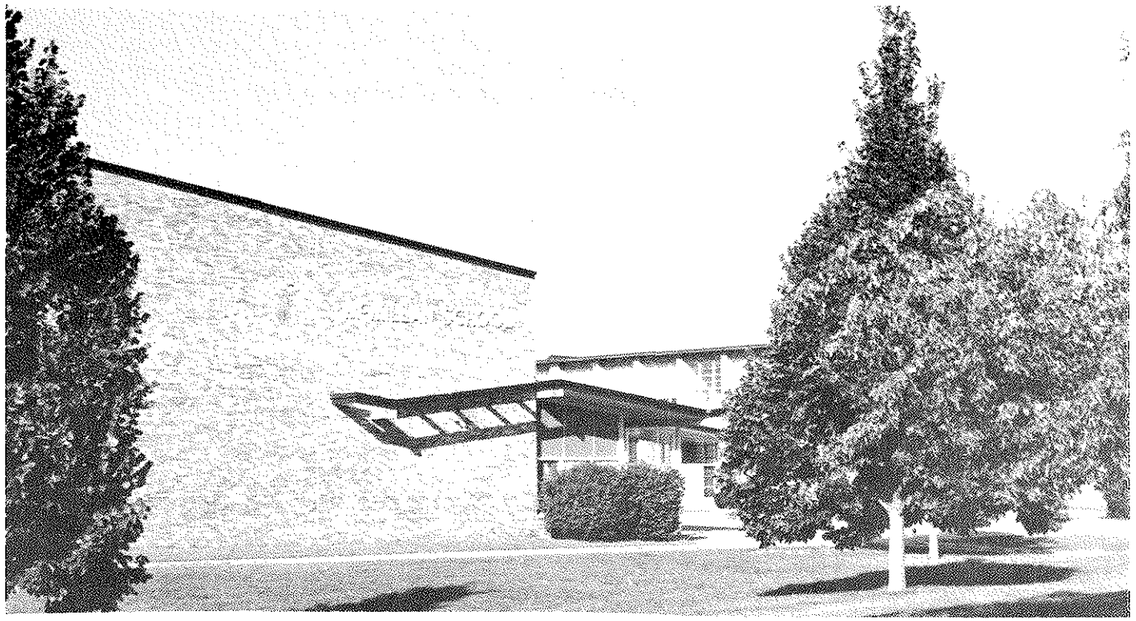
- Parks and Recreation - Although no actual parks are involved with either routing, the 31st Avenue Route does require the relocation of a portion of John Creighton Boulevard as a frontage road. The 27th - 28th Route crosses none of the boulevards.

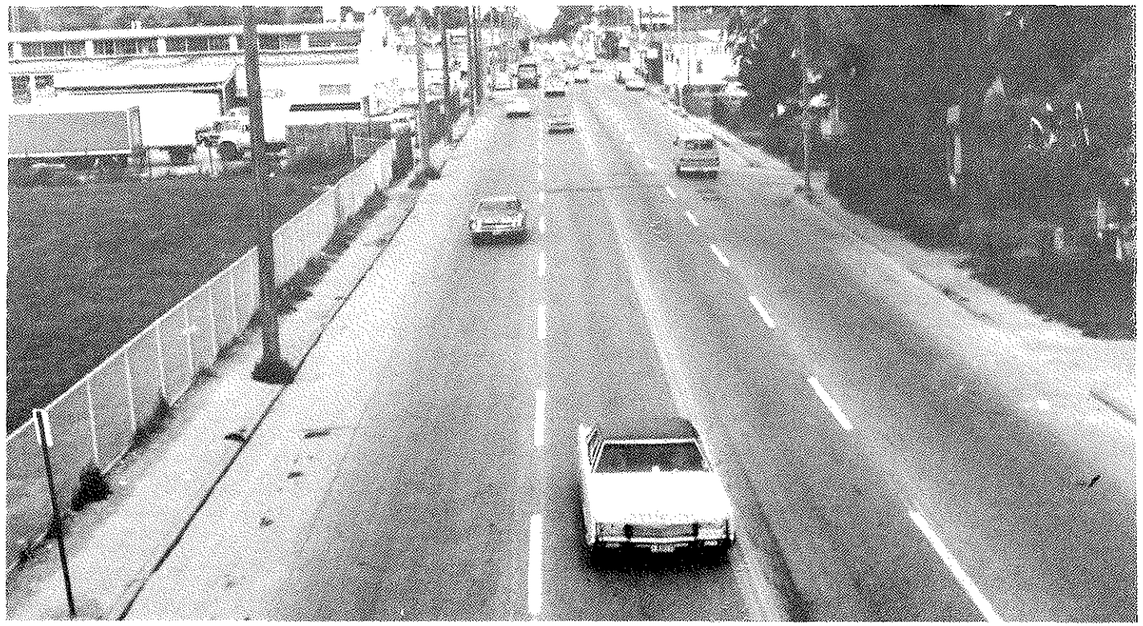
- Costs - For the North Freeway alone, the 31st Avenue Routing would be about $6 million lower than a 27th -28th Routing. For the Airport Freeway alone, the 31st Ave. Routing would be about $5 million higher. Thus, for the whole system (both North and Airport freeways), the 31st Ave. Routing is generally upto $1 million lower than a 27th - 28th Routing.

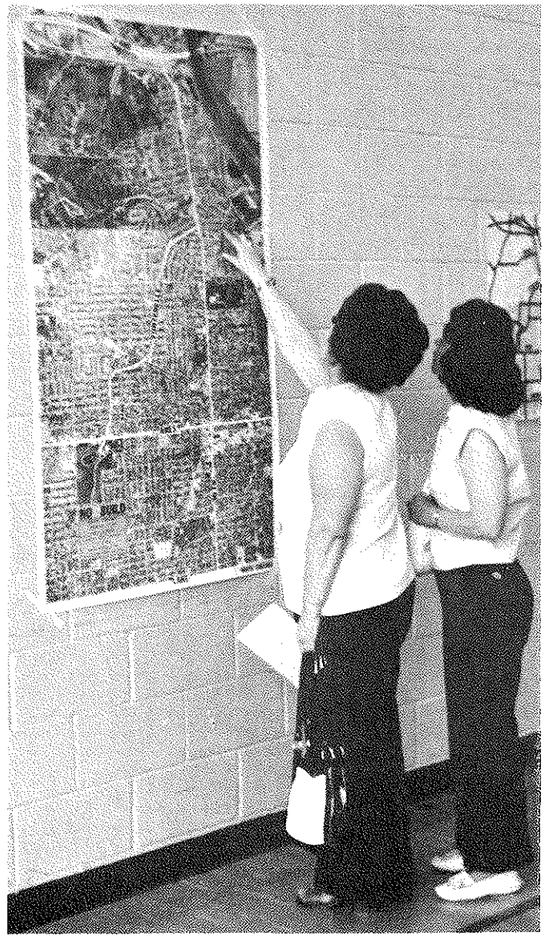
Again, the significant differences are not apparent between these two sections although the 31st Avenue Routing may be given a slight preference if based totally upon Traffic Service and Cost.











North Freeway: Basic Alternatives - TABLE VI-7 through VI-10 list the evaluation factors for the three basic Build alternates and the No Build Alternate. Using the summary discussions found previously in this part of the report, the evaluation factors have been grouped as to "most satisfactory", "satisfactory", and "least satisfactory". These groups should provide the reader with a better comparison of the alternates.

As these four tables relate, the No Build, East, Central, and West do exhibit differences. The more significant differences center mainly around Traffic Service, Cost, and Displacement.

- Traffic Service - The West Alignment is the better routing. The West combines the advantages of 1) a larger number and adequate spacing of interchanges, 2) giving more access to the neighborhoods in northern Omaha, 3) better stage construction, 4) better continuity with US 73 and other major streets, and 5) expanding neighborhood transit service on the freeway. As previously stated, the No Build will not handle future traffic demand and therefore is the least satisfactory.

- Costs - The Central and West Routes are less costly of the Build Alternates considering Construction, Engineering, Right-of-Way, and Relocation. The higher cost for the East is attributed to the cost of the elevated freeway structure along the East Alignment. The No Build has no direct costs.

- Displacement - The East Alignment stands out as dislocating the fewest residences and businesses of the Build alternates. The East passes through more vacant land areas and along an existing railroad corridor. The Central displaces the most residences and businesses.

TABLE VI - 7
EAST ALIGNMENT EVALUATION SUMMARY

Most Satisfactory 10]	Satisfactory 10]	Least Satisfactory 10]
1. Operation During & After Construction (detours; transit; trucking; etc.)	1. Fast, Safe, Efficient Transportation	1. Construction Costs
2. National Defense	2. Right-of-Way Costs	2. Parks & Recreation
3. Maintenance & Operating Costs	3. Relocation Costs	
4. Regional & Community Growth	4. Religious Institutions	
5. General Ecology	5. Public Utilities	
6. Public Health & Safety	6. Neighborhood Character	
7. Economic Activity and Employment	7. Minority Group Impact	
8. Noise Pollution	8. Displacement of Families	
9. Aesthetics	9. Displacement of Businesses	
10. Multiple Use of Space	10. Replacement Housing Availability	
11. Public Attitude Surveys	11. Tax base and property Values	
	12. Air Pollution	
	13. Natural & Historical Landmarks	
	14. Educational Facilities	
	15. Water Pollution	

TABLE VI - 8
CENTRAL ALIGNMENT EVALUATION SUMMARY

Most Satisfactory 10]	Satisfactory 10]	Least Satisfactory 10]
1. National Defense	1. Fast, Safe, Efficient Trasportation	1. Right-of-Way Costs
2. Maintenance & Operating Costs	2. Operation During & After Construction (detours; Transit; Trucking, etc.)	2. Relocation Costs
3. Regional & Community Growth	3. Construction Costs	3. Religious Institutions
4. Parks & Recreation	4. General Ecology	4. Public Utilities
5. Public Health & Safety	5. Economic Activity & Employment	5. Neighborhood Character
6. Natural & Historical Landmarks	7. Water Pollution	6. Displacement of Families
	8. Multiple Use of Space	7. Displacement of Businesses
	9. Air Pollution	8. Replacement Housing Availability
	10. Noise Pollution	9. Public Attitude Surveys
		10. Tax Base and Property Values
		11. Aesthetics
		12. Educational Facilities

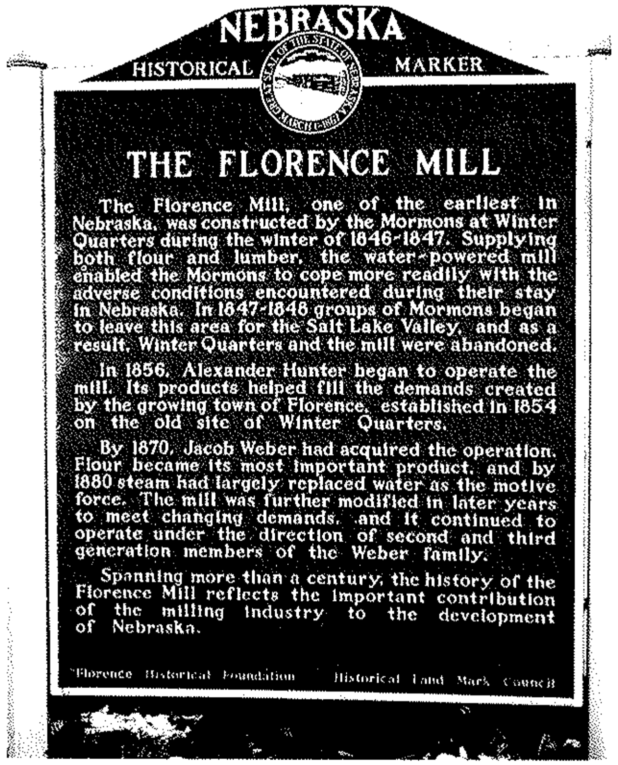
10] Most Satifactory, Satisfactory, Least Satisfactory are used here for comparison of one alternate against all other alternates.

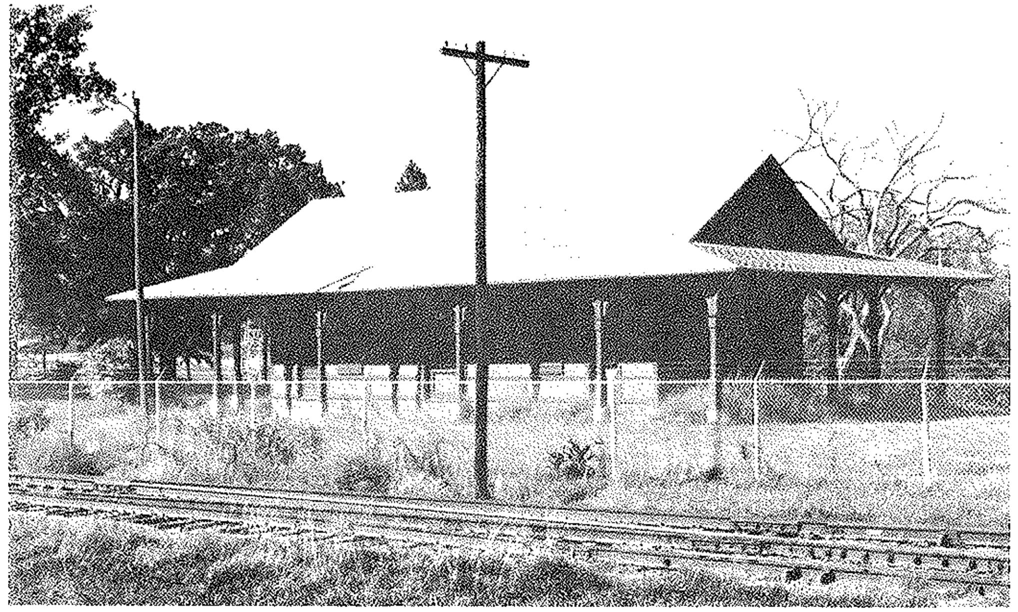
TABLE VI - 9
WEST ALIGNMENT EVALUATION SUMMARY

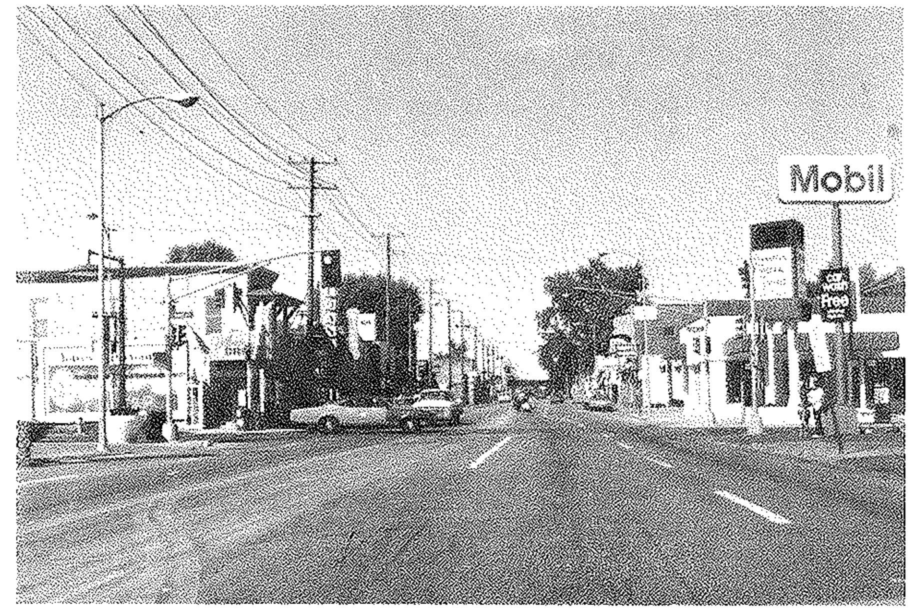
Most Satisfactory 10]	Satisfactory 10]	Least Satisfactory 10]
1. Fast, Safe, Efficient Trasportation	1. Operation During & After Construction (detours; transit; trucking; etc.)	1. Religious Institutions
2. National Defense	2. Construction Costs	2. Public Utilities
3. Maintenance & Operating Costs	3. Right-of-Way Costs	3. Public Attitude Surveys
4. Regional & Community Growth	4. Relocation Costs	4. Aesthetics
5. Parks & Recreation	5. General Ecology	5. Educational Facilities
6. Public Health & Safety	6. Neighborhood Character	
7. Natural & Historical Landmark	7. Minority Group Impact	
	8. Displacement of Families	
	9. Displacement of Businesses	
	10. Replacement Housing Availability	
	11. Economic Activity & Employment	
	12. Noise Pollution	
	13. Water Pollution	
	14. Multiple Use of Space	
	15. Tax Base and Property Values	
	16. Air Pollution	

TABLE VI - 10
NO BUILD ALTERNATE EVALUATION SUMMARY

Most Satisfactory 10]	Satisfactory 10]	Least Satisfactory 10]
1. Construction Costs	1. General Ecology	1. Fast, Safe, Efficient Transprotation
2. Right-of-Way Costs	2. Parks & Recreation	2. Operation During & After Construction (detours; transit; trucking; etc.)
3. Religious Institutions	3. Public Attitude Surveys	3. National Defense
4. Public Utilties	4. Aesthetics	4. Maintenance & Operating Costs
5. Neighborhood Charactor		5. Regional & Community Groth
6. Minority Group Impact		6. Public Health & Safety
7. Displacement of Families		7. Economic Activity & Employment
8. Displacement of Businesses		8. Water Pollution
9. Replacement Housing Availability		9. Multiple Use of Space
10. Tax Base and Property Values		10. Air Pollution
11. Relocation Costs		11. Noise Pollution
12. Natural & Historical Landmarks		
13. Educational Facilities		

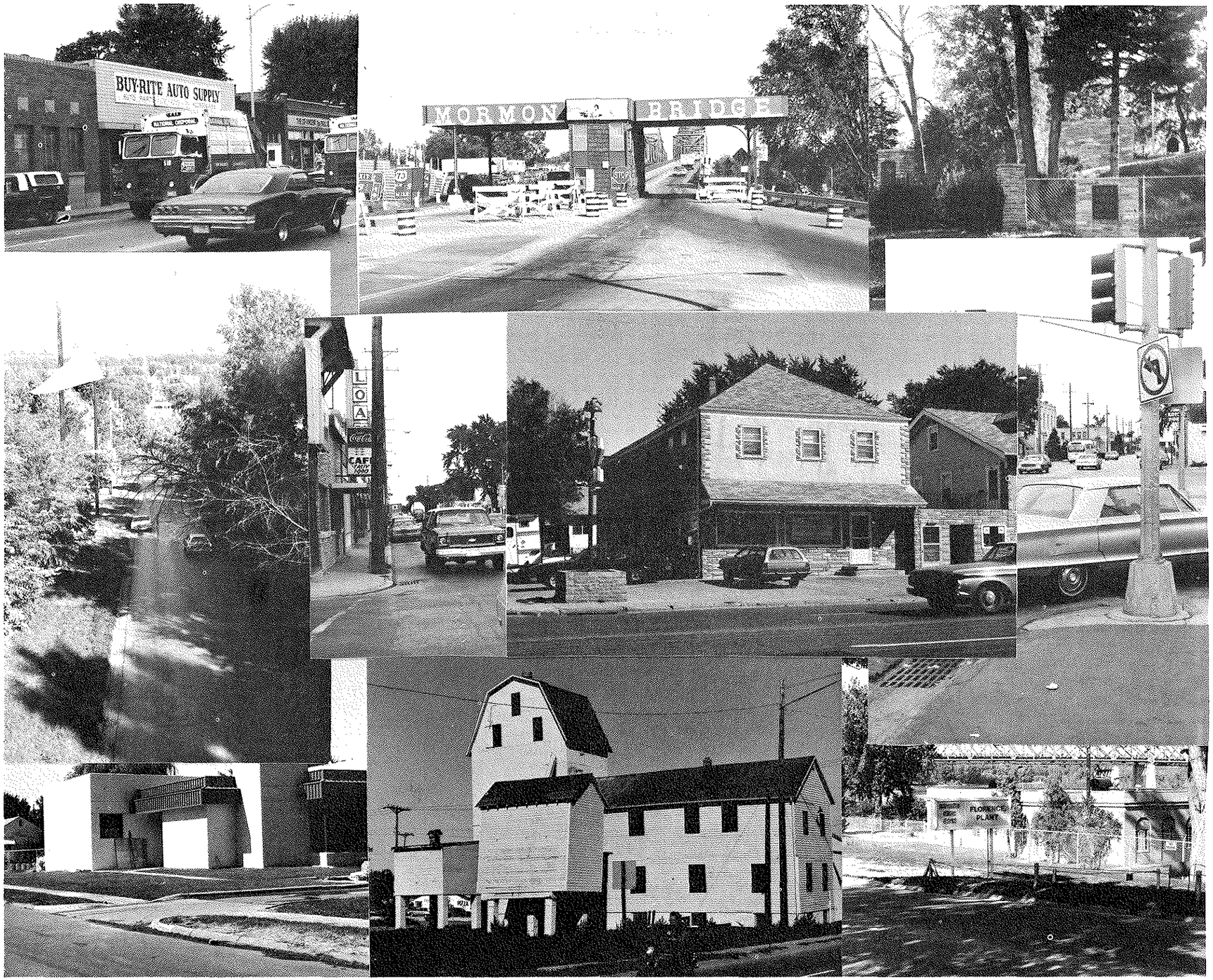

NEBRASKA
HISTORICAL
MARKER
THE FLORENCE MILL
The Florence Mill, one of the earliest in Nebraska, was constructed by the Mormons at Winter Quarters during the winter of 1846-1847. Supplying both flour and lumber, the water-powered mill enabled the Mormons to cope more readily with the adverse conditions encountered during their stay in Nebraska. In 1847-1848 groups of Mormons began to leave this area for the Salt Lake Valley, and as a result, Winter Quarters and the mill were abandoned.
In 1856, Alexander Hunter began to operate the mill. Its products helped fill the demands created by the growing town of Florence, established in 1854 on the old site of Winter Quarters.
By 1870, Jacob Weber had acquired the operation. Flour became its most important product, and by 1880 steam had largely replaced water as the motive force. The mill was further modified in later years to meet changing demands, and it continued to operate under the direction of second and third generation members of the Weber family.
Spanning more than a century, the history of the Florence Mill reflects the important contribution of the milling industry to the development of Nebraska.
Florence Historical Foundation
Historical Land Mark Council




Mobil


BAR
LOA
CAFE
KOFFEE HOUSE

PART VII
CONCLUSIONS, RECOMMENDATIONS AND GUIDELINES



PART VII
CONCLUSIONS, RECOMMENDATIONS, GUIDELINES

The foregoing parts of this report as well as the detailed discussions of the appendices provide a comprehensive accounting of the alternates considered and the evaluations conducted for the North Freeway and Airport Freeway. Utilizing these studies and the months of work effort behind them, the following conclusions, recommendations and guidelines have been assembled for consideration by the City and State in formulating their decisions on the North and Airport Freeway System.

CONCLUSIONS ON THE NORTH FREEWAY

For the North Freeway alone, a total of five individual alignments have been subjected to detailed studies for the sections between Lake Street and I-680:

- an East Alignment.
- a Central Alignment, following a 27th-28th Route between Lake and Grand.
- a Central Alignment, following a 31st Avenue Route between Lake and Grand.
- a West Alignment, following a 27th-28th Route between Lake and Grand.
- a West Alignment, following a 31st Avenue Route between Lake and Grand.

The No Build situation consitutes a sixth alternate.

From the analyses, the No Build solution is found to be the least desirable of the above six alternatives. The conclusion is based primarily upon the exhibited transportation service deficiences of the No Build as related directly to higher congestion for motor vehicle operations and reduced flexibility in transit routings.

By the same token, a modified No Build comprised of the 1995 COATS Plan street improvements minus a North Freeway is also found not to be a desirable solution. Numerous street capacity deficiencies would still require street widenings. Major examples would be a 30th Street widening from 4 to 6 lanes with a median, which would require the purchases of properties on one side of the street from Lake to I-680. In addition, John Pershing Drive and Fontenelle Boulevard (south of 42nd Street) would require widening to 4 lanes. Portions of Florence Boulevard, 24th, and 16th, would require parking removal to obtain 4-lane capabilities.

Of the Build Alternates, the East Alignment is the most acceptable to the public as based upon the citizen attitude surveys (APPENDICES B and AA). However, the East is also by far the most expensive to construct and provides the poorest traffic access and service to the Florence, Miller Park, and North Omaha areas.

The Central Alignment provides adequate traffic service as a North Freeway. Its costs are in the middle range among the Build alternates. However, the Central's main limitations relate to having the highest number of residential relocations and to traversing through an area of rather rough terrain between Grand Avenue and Forest Lawn Avenue which would directly divide an existing hill and its urbanized neighborhoods.

The West Alignment has the best traffic service as a North Freeway and the lowest costs among the Build alternates. It does not command the public attitude support as does the East.

Although the direct costs of the North Freeway are of considerable magnitude, justification does exist for implementing this freeway as part of the comprehensive transportation system to meet those future travel demands of the citizens of Omaha. Consequently, a Build Alternative for the North Freeway is warranted over the No Build Alternative.

In Summary, the Consultant concludes that the No Build Alternate is the least desirable of the alternatives studied since arterial streets as 30th, John Pershing, Ames, 24th, 16th, Fontenelle/Martin, and other North Omaha thoroughfares cannot in their present form nor with street widenings meet the current trends toward the public's future travel demands. The Consultant, therefore, concludes that some form of a North Freeway Facility is warranted to fulfill the future total transportation needs of Omaha, both for auto and transit.

Among the Build Alternates for the North Freeway, the Consultant makes no formal recommendation between the East, Central, and West Alignments. However, the Consultant finds that 1) the West Alignment has the better traffic service through its interchange locations, and the continuity with U.S. 73 and other arterial streets, serves a larger geographic area, and has the lower total cost; 2) the Central Alignment has costs comparable to the West and has adequate traffic service, but it dislocates the most residences and businesses and serves more neighborhood areas; and 3) the East Alignment dislocates the fewest residences and businesses, passes through more vacant land areas, has the general support of the public as based upon the attitudinal surveys, and conforms best to established neighborhood edges.

CONCLUSIONS ON THE AIRPORT CONNECTOR

Analyses of the various impacts of freeway construction have dealt with utilities, relocation, traffic service, operation and use of other transportation facilities, right-of-way and construction costs, and other matters. In light of all these considerations, the Hartman Avenue Airport Connector exhibits advantages over the Fort Street Airport Connector for each of the mainline alternates because:

1. It geographically better serves the river flood plain area east of the bluffs and north of Carter Lake.

2 It disrupts fewer persons, households, and neighborhoods.

3. It alters local circulation patterns to a lesser extent.

4. It is more compatible with industrial land uses than with residential areas.

5. It avoids at-grade rail crossing or interchange ramps at 16th Street.

Although its path is slightly greater in length, the above advantages far outweigh this factor. The cost of the Hartman Airport Connector is equal to or only slightly greater than that of the Fort Street Airport Connector, depending on the alternate system. Much of this cost differential is in the optional directional ramps at Abbott Drive on the Hartman Airport Connector which are not provided for in the Fort Street Airport Connector cost estimate.

The Airport Connector is an important element of this corridor study since it provides much needed direct metropolitan and regional access to Eppley Airfield and an additional connection between the top of the bluffs and the flat areas of the Missouri River. Moreover, it will serve the Omaha Industrial Foundation (OIF) and other industrial developments in the river flats area.

As a freeway-type facility the Airport Connector has a capacity at Level of Service C 1] in the vicinity of 50,000 vehicles per day. The highest 1995 assigned traffic volume on any segment of the Airport Connectors approaches only 22,000 vehicles per day, yielding Level of Service A. Since the traffic assignments for 1995 presumed nearly complete development of the proposed industrial/office lands in the river flood plain area, the high value of 22,000 vehicles per day is not likely to increase greatly. The developments would consume all available land, and once saturation occurred, only small additional increases in traffic would occur on the Airport Connector.

Consequently, an Airport Connector freeway would be grossly under utilized in terms of its traffic-carrying potential, with little prospect of significant growth in traffic. The question arises then of the value of benefits to be derived from a freeway facility versus the cost differential between an Airport Freeway and a lesser Airport roadway facility. Based on the facts at hand, it is felt that an at-grade expressway (similar to L Street in southwest Omaha) would adequately handle the 1995 traffic demands of the Airport Connector corridor.

If the only factor to consider was providing fast direct access to Eppley Airfield at a high level of service, then a freeway facility would be the solution. However, when considering the amount of traffic to be served, costs in relation to other area-wide transportation system priorities, and the benefits to be derived, an at-grade expressway would better fit the travel needs of the situaton; i.e., the airport access needs; industrial land access needs; city-wide access needs.

An at-grade expressway:

1. Could be built at lesser cost, within narrower right-of-way and with fewer disruptions and dislocations.

2. Would provide sufficient traffic capacity (in excess of 25,000 vehicles per day at Level C assuming expressway green time at signals of 60%) to provide Level of Servic C or better on any of the Airport Connectors.

3. Would greatly enhance accessibility between North Omaha and the river flood plain area by providing more frequent access points (intersections).

4. Would still provide high-level type access to Eppley Airfield, with little if any increase in travel time as compared to a freeway connection.

Based on the above considerations and the preceding discussion, the Consultant concludes that some form of an Airport roadway facility is required to directly connect from the North Freeway over the bluffs into the river flood plain area. Although the Consultant makes no formal recommendation between the Hartman and Fort Street alternate alignments for the Airport Connection, the Hartman Alignment is the more favorable in the opinion of the Consultant. The Consultant, however, does suggest that rather than a freeway standard, an at-grade expressway with controlled access located along the Hartman Avenue Airport Connection Alignment

1] Level of Service is a qualitative measure of operating condition on a roadway. The six levels are: Level A - free flow, no delay; Level B - stable flows, slight delays; Level C - stable flows, acceptable delays (usual standard for design); Level D - approaching unstable flows, tolerable delays; Level E - unstable flows, congestion and intolerable delays (capacity); and Level F - forced flows, jammed conditions.

would function adequately, would improve local accessibility and circulation for lower construction cost, and is the type of facility which is warranted.

CITIZEN CONSORTIUM

Inputs from the Citizen Consortium are directly and indirectly found throughout this report as well as in the work tasks leading to the completion of the corridor study.

The development of the Consortium and the evaluations of its effectiveness are given in APPENDIX A in detail. In summary, however, there are points about and points rased by the Consortium which need to be presented here.

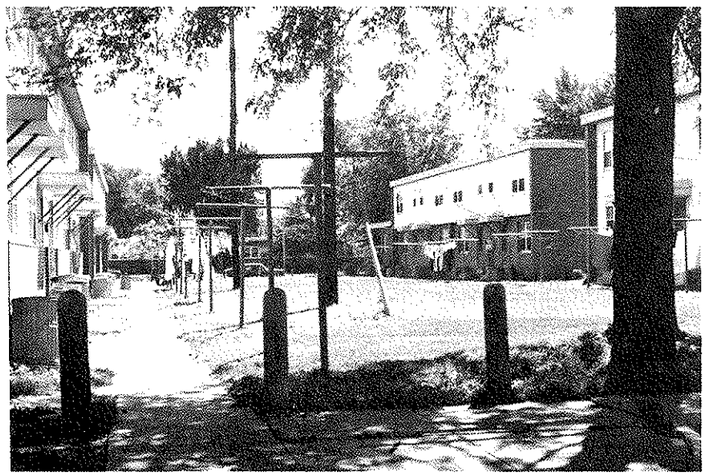
At one of the later Consortium meetings, members expressed interest in having their choices for the best alignment of the North Freeway noted for the record. Three stated a preference for the East Alignment because they felt it would have the least disruption to homeowners, the elderly, the black community, and scenic areas; would provide good service to the Airport and the new industrial parks; and would benefit business areas, especially in Florence. One of these felt that better freeway-to-local street access in the Florence area was absolutely necessary with the East Alignment, however.

One member was opposed to any of the proposed Airport connectors, and favored the No Build Alternate slightly over a West Alignment.

Another member favored the West (31st Ave.) Alignment because of the good geographical location, the connection to I-680 and US 73, and the beneficial effect it would have on the 30th and Ames commercial area. This alignment would also allow the Florence Area to maintain its identity.

Completion as far north as Ames Avenue of any alignment was the preference of one member. North of this point, arterial streets such as Ames, 30th, 24th, and the proposed Hartman-Redman Arterial, would act as "fingers" into north and northwest Omaha and would adequately disperse traffic. This member also felt that building only to Ames would allow for a potential connection to an expressway or arterial which would run between the Fremont Freeway at I-680 in Irvington east along the C&NW Railroad right-of-way and east to Eppley Airfield.

One member strongly endorsed the No Build as he



sees no benefit to be derived from a North Freeway, although he did see merit in completing the freeway as far north as Ames Avenue.

With regard to the effectiveness and applicability of the Consortium, both the Consultant and Consortium conclude that the citizen's advisory group was beneficial.

Those members who participated in the Consortium throughout the course of the study appreciated the opportunity to provide an active input to the highway planning process. They were pleased and satisfied by the organization and conduct of their many meetings and the extent to which they were involved during this study. Everyone felt they had ample time to freely express their ideas and comments. They felt they were valuable to their friends and neighbors because they brought their knowledge of the facts concerning the North Freeway back to their neighborhood and other acquaintances. Another comment was that by coming together in the Consortium, the members were able to learn of the needs and concerns of each others neighborhoods.

An important point members of the Consortium time and time again during their involvement in the study was the serious degenerative impact that the uncertainty surrounding the North Freeway has had on North Omaha over the last 20 years. It is their feeling that a prompt determination of the "where" and the "when" of the North Freeway is long overdue, and that any further actions on the North Freeway be expedited.

Most of the Consortium felt it would be advantageous to continue the Consortium concept through the final-design phase of the freeway planning process but only in relation to the freeway's appearance and aesthetics. One member felt that this was appropiate provided anew group of members was selected. Two others considered additional involvement interesting, but not necessary. They were of the opinion that professionals should handle final design alone as long as basic concepts have been outlined beforehand.

From the Consultant's standpoint, itis recommended that an informal citizen advisory group be organized in each major neighborhood region during the final design of each North Freeway section in order that the design engineers can establish a means of learning community opinions and of communicating with the public about the freeway, and the area through which it is traversing.

COST SUMMARIES

The estimated costs for the various North Freeway alternates are summarized in TABLE VII-1. The figures presented are estimates of total project costs to include construction and engineering costs, right-of-way acquisition costs, and relocation costs in terms of mid-1974 dollars. Detailed discussion of these cost elements is found in APPENDICES G, H, and U.

The Consultant finds that a West Alignment with either Airport Connector will cost $77.4 to $79.7 Million; a Central Alignment System will cost $82.0 to $83. 7 Million, and an East Alignment System will cost $88.7 to $88.9 Million.

STAGE CONSTRUCTION

In a project of this size and cost, stage construction inevitably is a consideration from several standpoints. Disadvantages of stage construction include an increase in overall construction cost, lengthening of time delays to owners whose property will eventually be acquired, and a lengthening of the overall time span during which disruption and freeway-related changes would occur.

TABLE VII-1

SUMMARY OF COST ESTIMATES

Alternative System		Cost in Millions 1]
1.	West (31st Ave.) and Fort Airport Connector	$77.4
2.	West (31st Ave.) and Hartman Airport Connector	77.4 ←
3.	West (27th-28th) and Fort Airport Connector	78.0
4.	West (27th-28th) and Hartman Airport Connector	79.7
5.	Central (27th-28th) and Fort Airport Connector 2]	82.0
6.	Central (31st Ave.) and Fort Airport Connector 2]	82.3
7.	Central (31st Ave) and Hartman Airport Connector 2]	82.3 ←
8.	Central (27th-28th) and Hartman Airport Connector 2]	83.7
9.	East with Hartman Airport Connector 3]	88.7 ←
10.	East with Fort Airport Connector 3]	88.9

1] Includes non-residential relocation costs ranging from $336,200 to $600,200.

2] Includes $0.6 million for construction of Hartman-Redman Arterial from Central Alignment to 42nd St. to provide an equal basis of comparison.

3] Includes $1.9 million for construction of Hartman-Redman Arterial from East Alignment to 42nd St. to provide an equal basis of comparison.

Advantages include a spreading out of relocations avoiding a large demand on available replacement housing, a relieving of surface streets from south to north as they become congested, and a spreading of the freeway's financial obligations over a longer period of time.

On the basis of these points and the discussion in APPENDIX I, the Consultant recommends the following stage construction sections for each North Freeway/Airport Freeway alternate system:

East Alignment System -	Lake to Ames
	Ames to Craig and Airport Connector to 16th
	Craig to I-680
	Airport Freeway
Central Alignment System -	Lake to Ames
	Ames to Redick, Airport Connector to 24th for 27th-28th segment and to 30th for 31st Ave. Segment.
	Redick to McKinley
	McKinley to I-680
	Airport Freeway
West Alignment System -	Lake to Ames
	Ames to Curtis, Airport Connector to 24th for 27th-28th segment and to 30th for 31st Ave. Segment.
	Curtis to McKinley
	McKinley to I-680
	Airport Freeway

In conjunction with this stage construction schedule, the Consultant makes the following recommendations:

a. Although four to five stages are listed for the freeway alternatives, construction in fewer stages would be preferable from the standpoint of minimizing disruption and reducing overall project cost. Financial considerations will likely prohibit fewer stages however.

b. The construction of the Hartman-Redman Arterial in conjunction with the first or second stage of the North Freeway, depending upon the alternate chosen, should be expedited. The concurrent completion of these street links would assure smoother, better distribution of traffic and would avoid potential blttlenecks arising form stage construction.

c. Special consideration should be addressed to adequate and proper circulation in the 30th and Ames area following construction of the first stage of the freeway. Circulation patterns and temporary connections are important in terms of maintaining good traffic flow.

REPLACEMENT HOUSING

The review of replacement housing availability for persons dislocated by the proposed North Freeway (detailed in APPENDIX U and summarized in Part VI) indicates that sufficient replacement is available in the 3, 4, and 7 room house categories. The total available amount of 5-room housing is deficient for all but two alternates and the total amount of 6-room housing available is deficient for all alternates. This problem of potential housing deficiencies may be resolved when it is realized that the freeway will not be built entirely at one time, but will be constructed in several stages. Consequently, assuming staged construction, no replacement housing deficiences will be encountered in any category, owned or rented. This conclusion also rests on the assumption that the available housing stock meets the requirement of "decent, safe, and sanitary" replacement housing.

This is not to say that this facet of project impact therefore is no longer critical. Housing rehabilitation and redevelopment are currently priority considerations to community groups in the North Omaha Area. These groups are helping to determine priorities for a community development grant from the U.S. Department of Housing and Urban Development. A tax-incentive plan is being promoted as a means to encourage redevelopment in the city.

The private sector is being encouraged to support a rebirth of the area through financial backing. An example is the proposed black-owned development on Ames east of 30th Street calling for commercial and apartment units. Recent additions in the 30th and Ames area are a bank, a savings and loan, a new library and anew post office. All of these projects help to stabilize the area and maintain its viability.

The hope is to rekindle the sense of community, in both the residential and business areas, in all the older parts of the city. Another possibility includes the potential creation on the federal level of an Urban Homesteading Act. Work efforts through the North Omaha Commercial Club, Mid-City Business and Professional Association, and the Omaha Industrial Foundation can have positive effect on employment and business growth in the North Omaha Area.

A restructuring of the concept of public housing is occuring as well. The trend is toward scattering the sites of public housing units as opposed to large scale aggregation in housing projects. This latter point is relevant to the Spencer housing Project through which all of the freeway alignments pass. The North Freeway can be utilized as a catalyst for implementing the concept of disaggregation. Concurrently other improvements can be undertaken to upgrade the Spencer Homes. In any case, considerable advance planning will be required to provide replacement housing for those units at Spencer Homes taken by the North Freeway.

In regard to replacement housing, the Consultant concludes that there is an adequate supply of housing units in Omaha for families relocated by the North Freeway. The Consultant strongly recommends that advance right-of-way acquistion funds be set up to allow the purchase of properties all along the project, particularly in the section from Lake to Ames. The effect of this would spread the relocations out over a length of time as would stage construction, thus avoiding the problem of relocation housing deficiencies. More importantly, it will circumvent the situation in which homeowners feel stranded in sections of the right-of-way where construction may not occur for several years. The Consultant also recommends that the whole matter of relocation housing be given close attention by the City and State and that the North Freeway relocation efforts should be coordinated as much as possible with other community redevelopment and rehabilitation projects.

TRANSIT

As part of this corridor study, the potential for some form of future transit facility within the freeway right-of-way was considered in development of the alternative alignments. As is discussed in detail in APPENDIX F, the specific features and characteristics of such a facility depend largely on the type of transit service to be provided. No formal concept has been adopted by Metro Area Transit or MAPA, but both organizations endorse the reservation of freeway right-of-way for future transit usage.

Approximately 45 feet of median space between the freeway shoulders has been retained for some form of future transit facility along generally the entire length of the alternates. The Consultant recommends that Metro Area Transit and MAPA be consulted during the final design phase of the freeway development to insure compatibility of the freeway with the potential transit facility, in whatever form it may assume. This coordination between concerned agencies is necessary to the proper development of this potential multi-modal corridor.

AESTHETICS

If the North Freeway is to truly become an integral part of the northern Omaha Community, then aesthetics must become an integral part of the freeway's design and implementation.

After considering the freeway alternatives and their impacts, the Consultant finds that the "view-of-the-road" and the "view-from-the-road" can and must be enhanced. Such enhancements should start with aesthetic guidelines based upon goals and objectives for the City, its people, and the North Freeway. Such guidelines should be generated from the involvement by aesthetically qualified professionals and citizens working jointly with freeway design engineers.

The aesthetic goal could read that "The North Freeway shall exhibit sound aesthetic qualities in itself and to the individual neighborhoods through which it passes."

For aesthetic objectives, the language could read that "The North Freeway should:

A. Maximize the use of natural grasses, trees, shrubs, vines, and other vegetation, particularly along the right-of-way fences and edge boundaries; and,

B. Maximize the use of pleasing surface textures, shapes, and forms in the bridges, piers, walls, and other structural features of the freeway."

In response to the aesthetic goal and objectives, specific guidelines should be established which relate to those aesthetic treatments and measures to be undertaken in the design of the North Freeway. Primary examples are listed below while several of them are shown in the accompanying pictures and sketches of FIGURE VII-1.

1. Bridges. Design structures that are unique to the North Freeway and that offer pleasing appearance.

2. Piers. Design shapes unique to the adjacent land areas and neighborhood groups.

3. Embankments. Varible contouring with the use of vines, ground covers, trees, and other vegetations.

4. Textures. Special texturizing of concrete surfaces on piers, bridge abutments, and walls.

5. Facings. Special coverings of brick or stone on walls and bridge abutments.

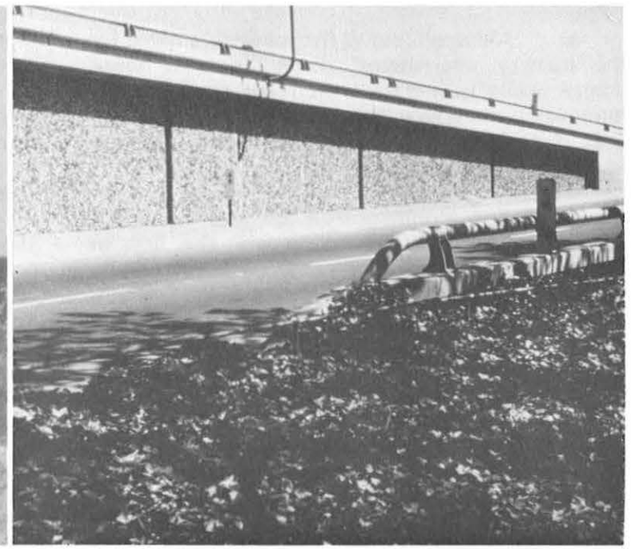
6. Sign Bridge. Smooth design and lines of the sign structure rather than the obtuseness of the Truss-type sign bridges.

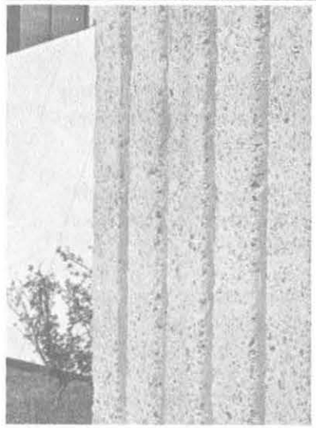
7. Earth Berms. Use for noise abatement and landscaping; a means of using excess excavation materials in medians and sideslope areas.

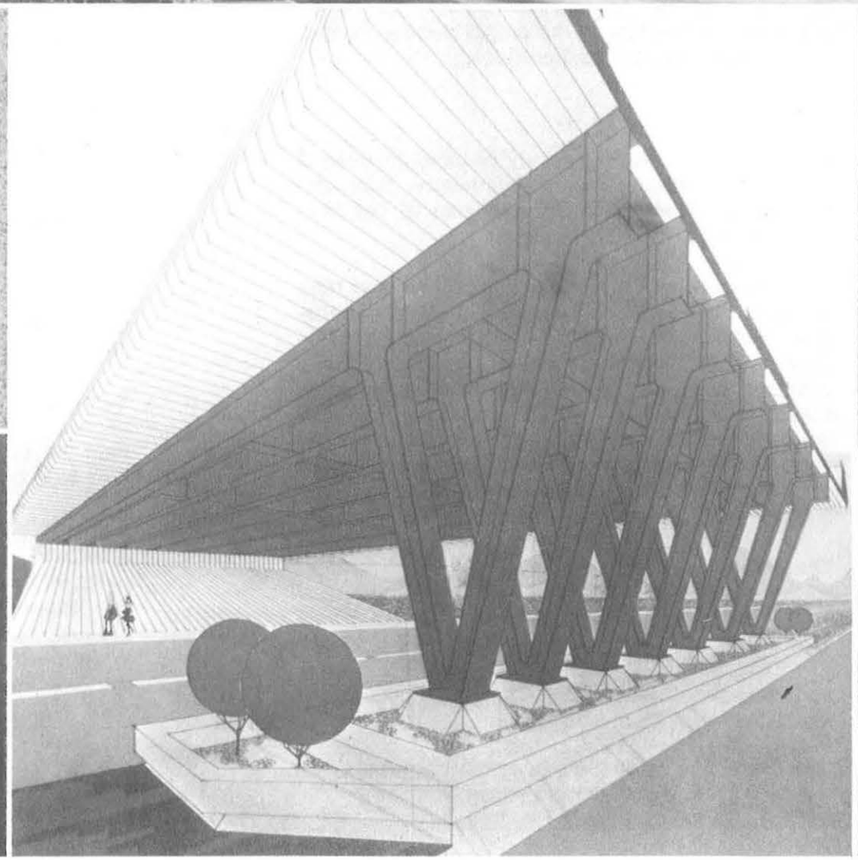
8. Walls. Design with pleasing surfacing and top treatments; combine with vines and other vegetation.

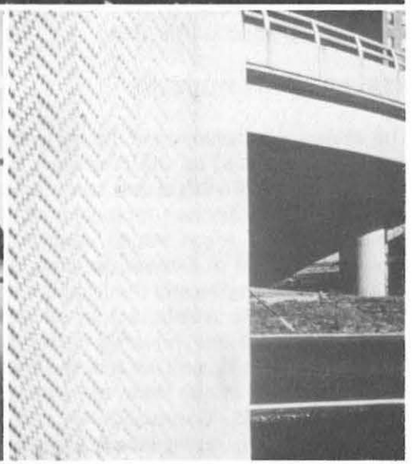
9. Plantings. Use of native grasses, trees, and other vegetation for open spaces, noise and air abatement, and natural screening.

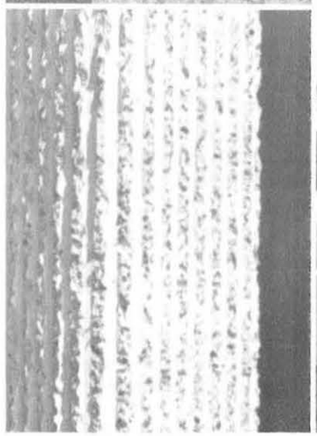

Valencia Blvd

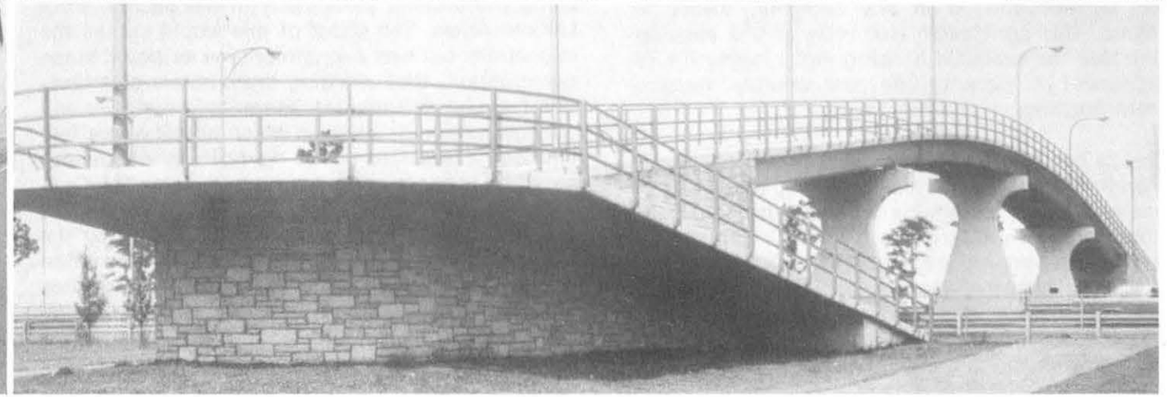


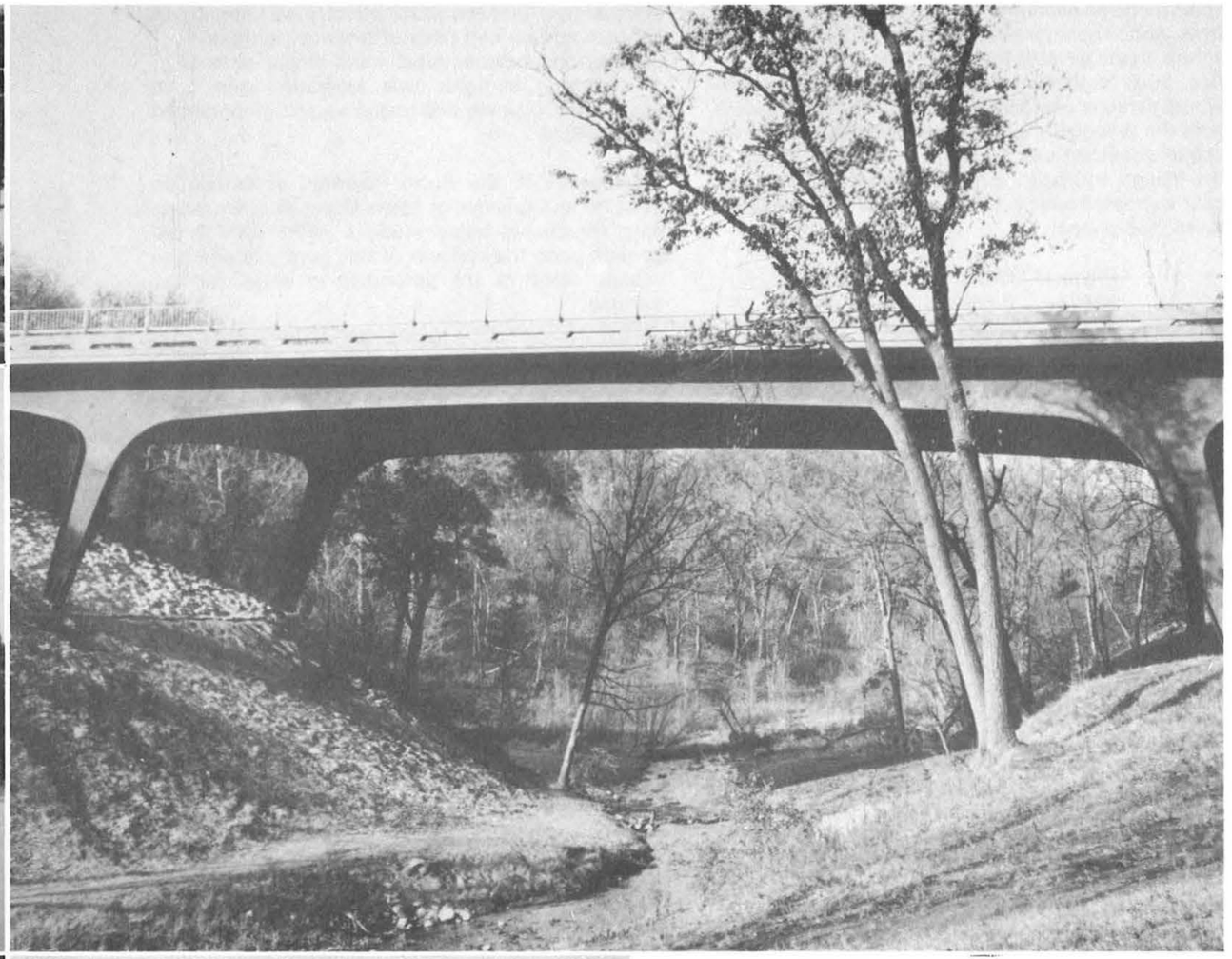


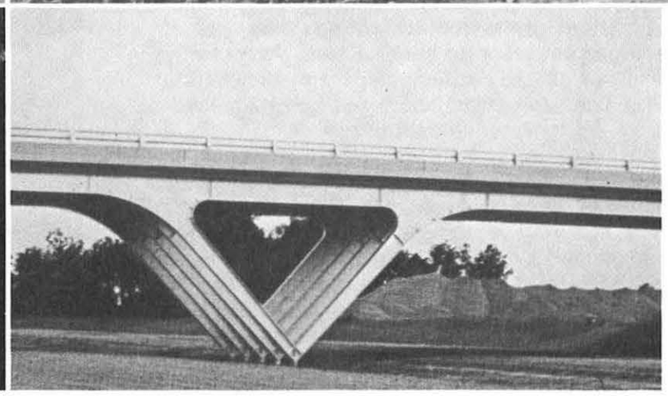












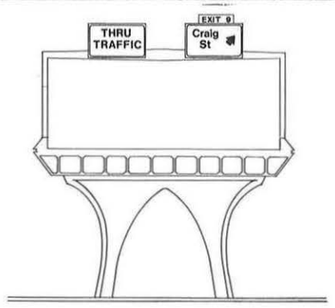


FIGURE VII-1
AESTHETIC CONCEPTS

To envision an aesthetic goal, to formulate its objectives, and to conceive its guidelines will not in themselves create a North Freeway with aesthetic qualities. Such implementation rests with those professional persons charged by the governmental bodies with the responsibility of designing the freeway for actual construction. To augment the aesthetics in the design endeavor, a design approach would appear warranted which is composed of a minimum of these disciplines:

1. Physical Designers - Structural, Highway, Electrical, Traffic, Drainage and other engineers involved with the physical design of the freeway.

2. Aesthetic Designers - Architects, Landscape Architects, Planners, and other professionals involved with the aesthetic features and treatment to be incorporated in the physical design.

3. Citizen Advisors - Individuals and community service groups from the freeway neighborhoods who can respond to the aesthetic design features and aid in presenting those features to the public.

Based upon the above, the Consultant concludes that including "aesthetic qualities" in the freeway's design is significantly important in blending the North Freeway into its surrounding neighborhood areas rather than as a dividing, disruptive transportation facility. The Consultant, therefore, recommends 1) that guidelines be established for aesthetics in the design phase for the North Freeway; 2) that such aesthetic guidelines include the appropriate use of landscaping, physical shapes and forms of structures, texture treatments and facings of structures, earth contour treatments, and other features which will promote a pleasing view both of and from the North Freeway facility; 3) that aesthetically qualified professionals be included on the Design Team for the North Freeway; and 4) that citizens and public service groups in the freeway alignment vicinity be consulted during the design stages as to their opinions on the aesthetic guidelines and on the actual aesthetic design plans.

MULTIPLE USE OF SPACE

In an attempt to maximize the use of urban lands, increasing efforts across the country are being made concerning the joint uses of freeway rights-of-way. Such efforts have entailed multi-modal uses (e.g. rail-highway), air rights uses, recreation uses, open space uses, bikeway and trail uses, and other related applications.

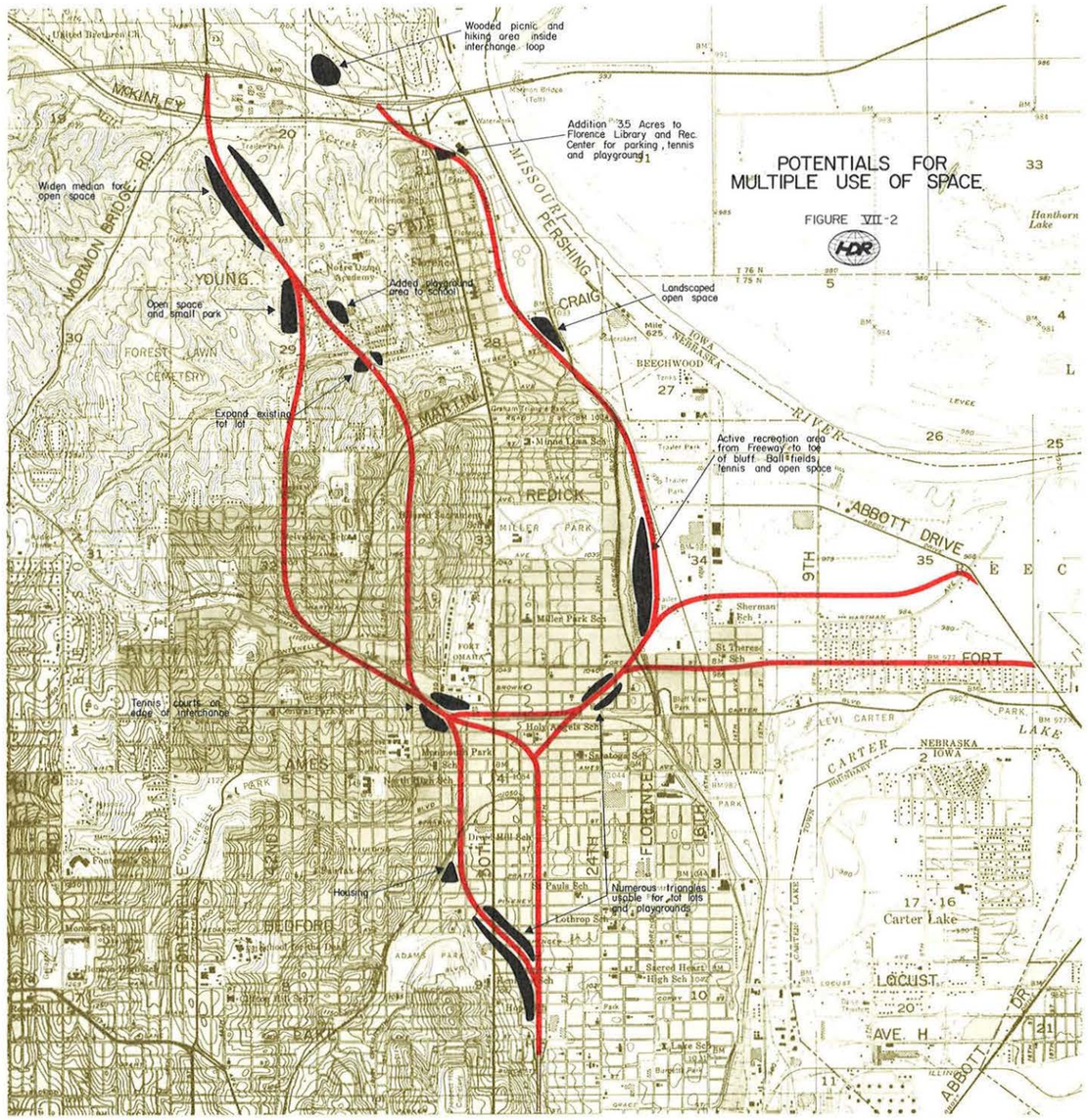
With regard to the North Freeway, potentials do exist for multiple use of space along all of the alternate alignments being studied. APPENDIX Q expounds upon the concept of this joint use and discusses some of the potentials in detail for the freeway.

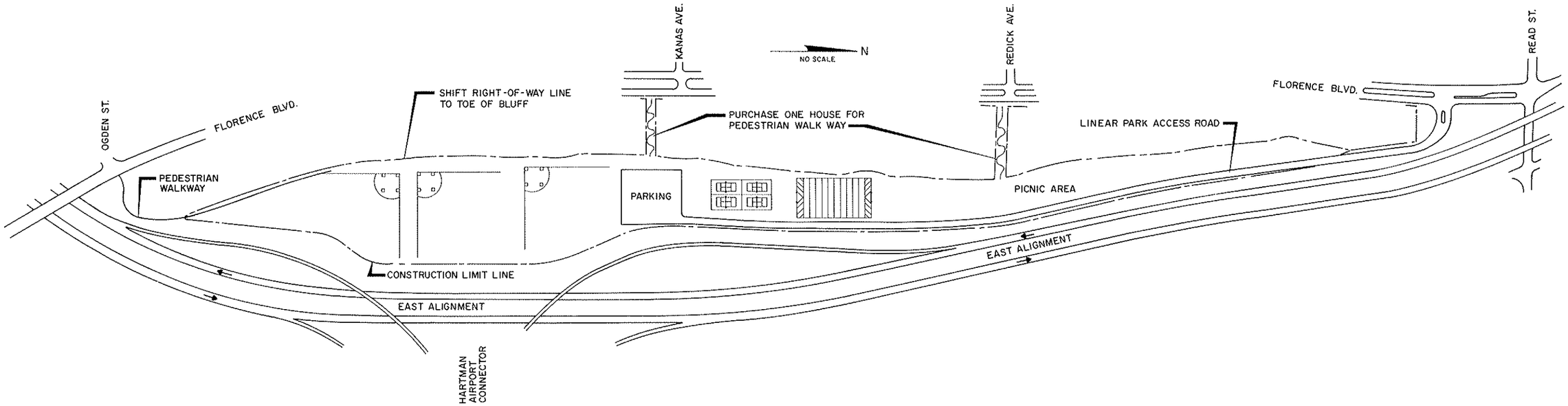
Because of the residential character of the study area, the North Freeway's potential for multiple use would appear to be restricted more towards open space, playground and recreational needs in the community. Numerous triangles of excess right-of-way will result in areas where the freeway diagonally crosses the existing street system. Many of these areas could be used for neighborhood playgrounds or landscaped for open space. Other areas are large enough for basketball and tennis courts while two locations with the East Alignment offer areas with sufficient size and natural amenities for park type uses.

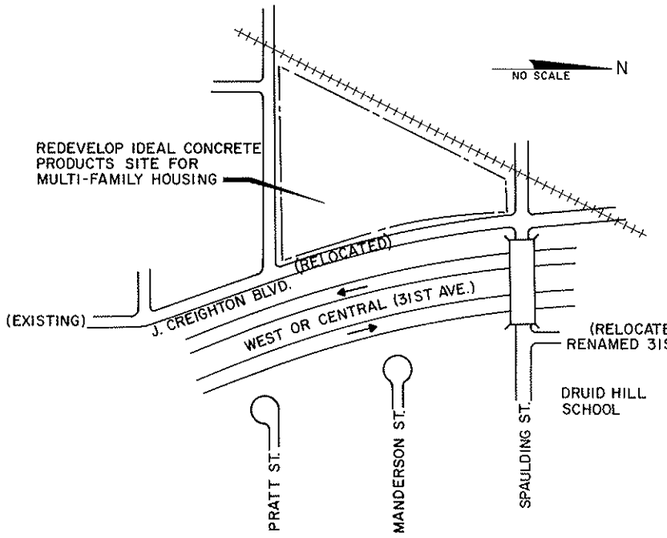
As examples of these potential joint uses, FIGURE VII-2 shows an overall indication of possible locations while FIGURE VII-3 illustrates several conceptual sketches relating to various sections from FIGURE VII-2 along each alternate of the freeway. These skeches are offered merely as ideas which indicate positive measures for better blending the freeway into the adjacent land areas and regaining usage of the freeway right-of-way.

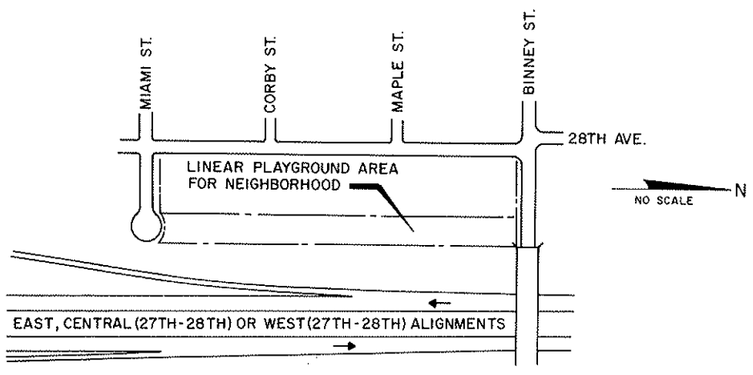
In addition to the sketches in FIGURE VII-3, it should also be noted that from a multiple use standpoint portions of the freeway routings make use of the railroad corridors for either actural right-of-way or air rights usage. Furthermore, the median of the freeway has a proposed width sufficient for landscaping and for future transit usage.

Planning for the joint use of right-of-way should be a coordinated effort between the City, State, and Federal agencies. Following the selection of the final alignment for the North Freeway, steps should be taken toward the development of a joint-use program and policy for the North Freeway. Such an effort should be done as part of the City's Comprehensive planning Program with cooperative involvement from the State and Federal governmental units









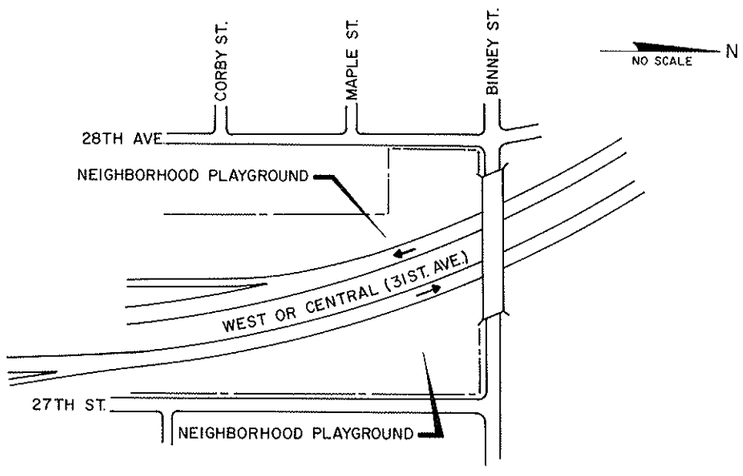
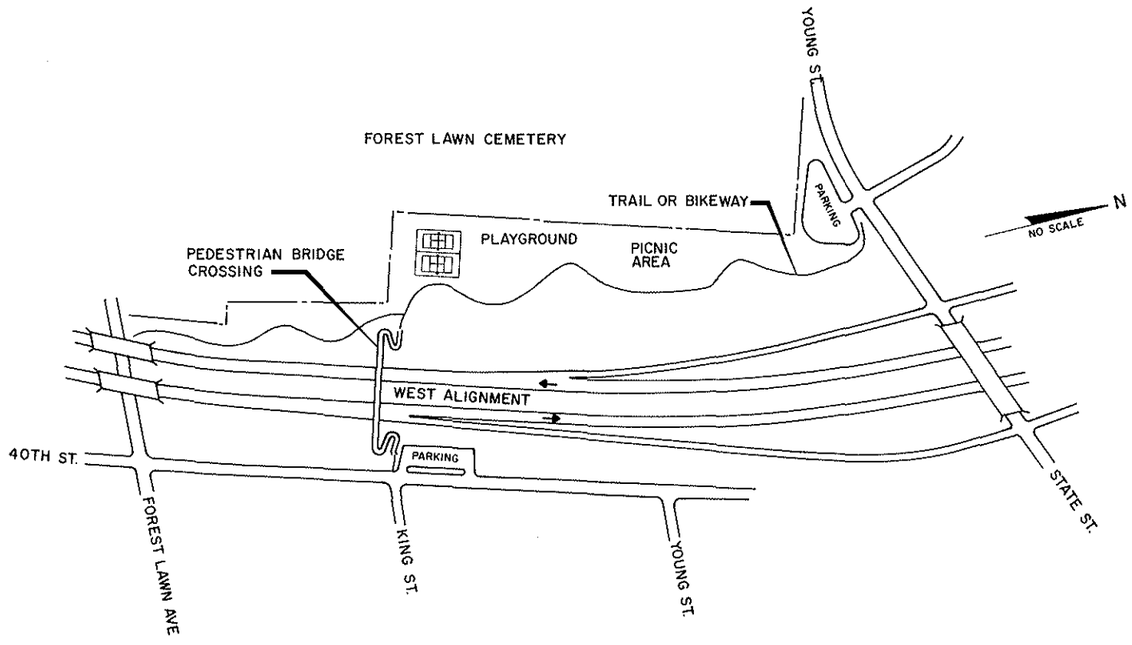
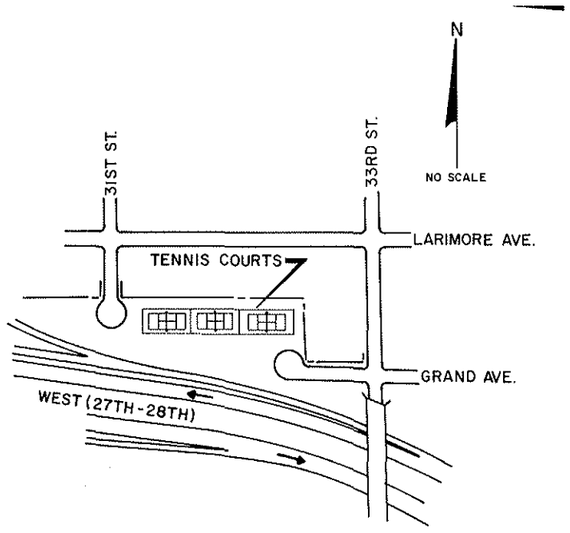


FIGURE VII-3

MULTIPLE USE OF SPACE SELECT CONCEPT SKETCHES





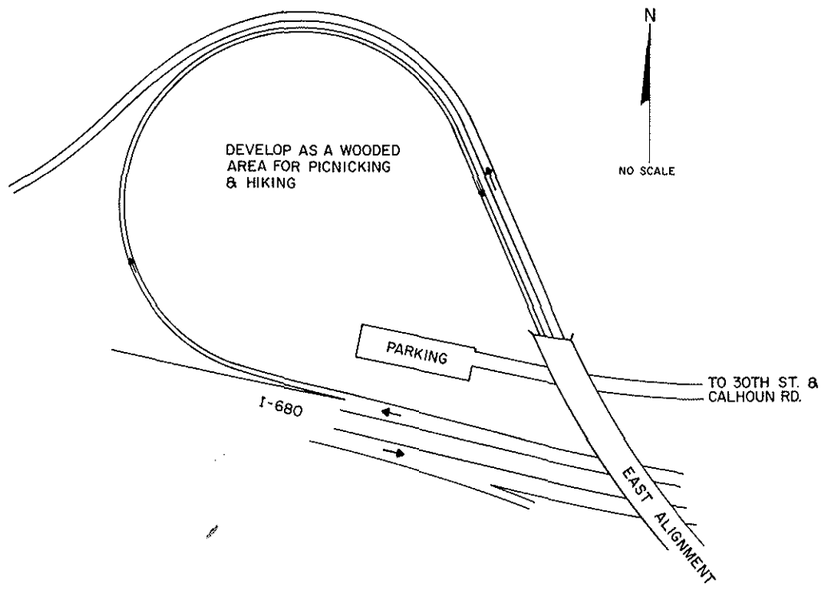


FIGURE VII-3 (CONTINUED)

MULTIPLE USE OF SPACE SELECT CONCEPT SKETCHES

as well as local community groups.

With the above discussion in mind, the Consultant concludes 1) that excess right-of-way along the North Freeway should be utilized where feasible for landscaped open space, recreation uses, and other potential uses, and 2) that such joint use will serve to maximize the use of urban lands and to better the blending of the freeway into the urban environment. The Consultant recommends that the City, State and Federal governmental units officially endorse the joint use concept for the North Freeway, actively encourage its implementation, and form a North Freeway Joint Use Program for utilizing excess rights-of-way.

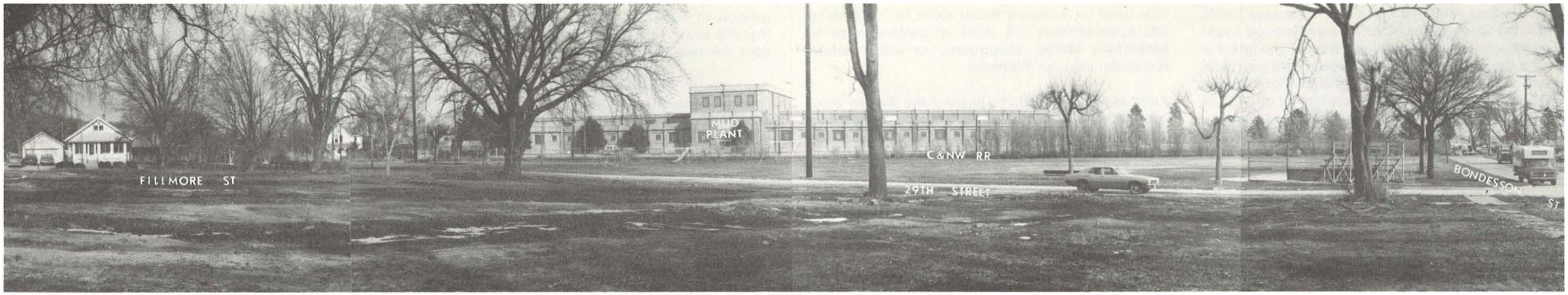
FILLMORE PARK

If the East Alignment of the North Freeway is selected, special attention must be given to the area in and around Fillmore Park, 28th Avenue and Bondesson. Such special attention during the freeway's design must be focused on preserving the intended use and character of the park. Also, attention must be given the uses of the Chicago and Northwestern Railroad and to the nearby Metropolitan Utiltiy Distric facilities.

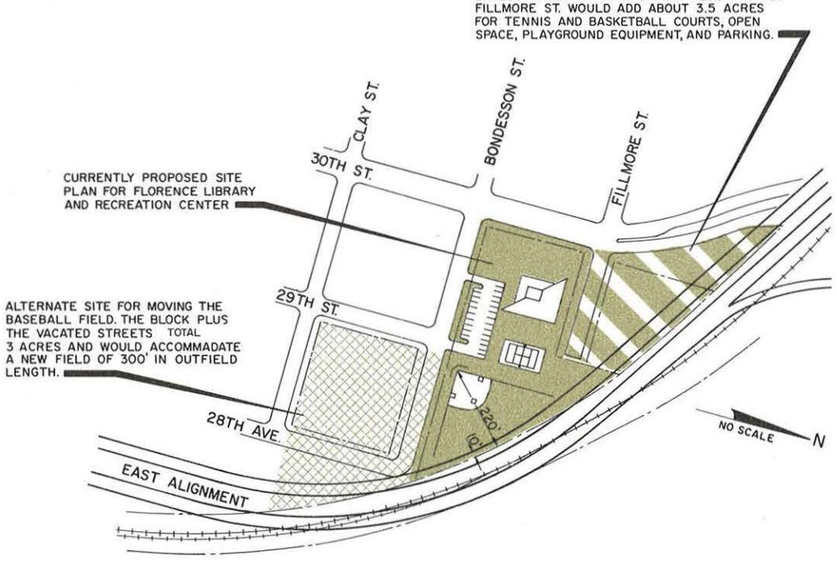
It is the Consultant's conclusion that the park and freeway can be blended together. This will require a concentrated and coorperative effort whereby the design architects and engineers of the North Freeway mst work jointly with the Omaha Parks and Recreation Department as well as with the utility and the railroad.

FIGURE VII-4 illustrates 1) the existing setting at Fillmore Park, 2) the proposed site layout plan for the New Florence Library and Recreation Center, 3) the East Alignment of the North Freeway, 4) the usage of excess freeway right-of-way for recreation purposes, and 5) alternatives for expanding the baseball field to a 300-foot depth.

The proposed Florence Library and Recreation Center is scheduled for construction in early 1975. It will combine a needed building facility and tennis court to the existing baseball field and playground area at Fillmore Park. Although the baseball field is short (approximately 220-foot) for other than little league play, it is used by organized men's softball teams and other similar baseball and softball play.

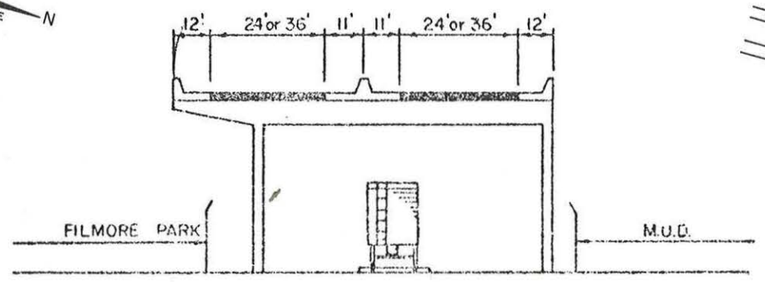


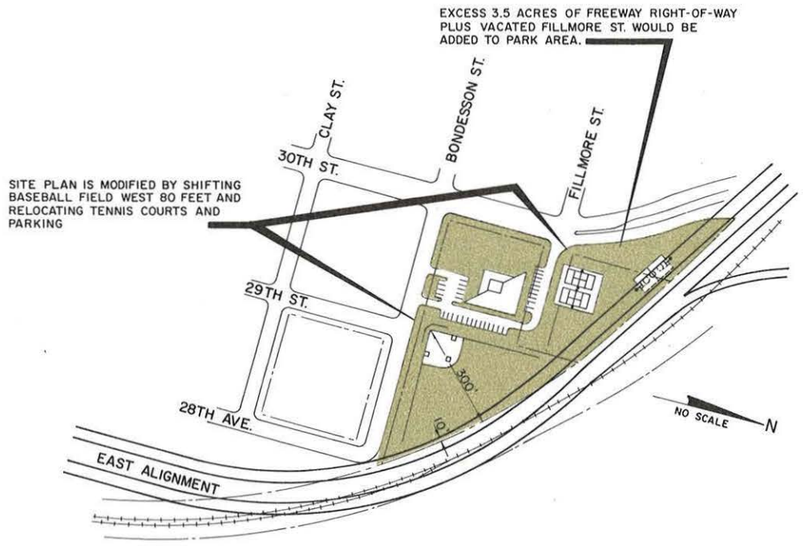
A. PANARAMIC VIEW OF FILLMORE PARK



B. PROPOSED SITE PLAN

D. 4 LANE, ELEVATED STRUCTURE AT FILLMORE PARK





C. MODIFIED SITE PLAN

FIGURE VII-4

FILLMORE PARK AREA

With the East Alignment, the North Freeway would follow the Chicago and Northwestern Railroad trackage through the area adjoining the park. The intent is to use the air rights of the railroad. Freeway piers would be located toward the outer edges of the 100-foot railroad right-of-way to allow for any future track additions. The elevation of the freeway will be controlled by the necessary vertical clearance for the tracks (22.5 foot minimum from top of rail to bottom of freeway deck).

At the park, it may be neccessary to bridge a portion of the outfield of the baseball diamond. That is, up to 10 or possibly 15 feet of air rights over the "home run" fence line may be necessary. A detailed ground survey for the final freeway design will reveal to the designers how much the railroad air rights can be maximized and how much, if any, of the park air rights would be necessary.

No piers would be required in the playing field of the park. The freeway deck would be at a height which would not interfere with "playable" fly balls hit into the outfield. For safety of vehicles on the freeway, a fence screen would be desirable on the edge of the freeway.

The Florence Library and Community Center which are to be built in the block just west of the Fillmore Park would not be physically affected by the East Alignment. Noise levels from the freeway in 1995 would exceed the 70 decibel standard.

At the time of final design, it may be found that some portion of Fillmore Park would be adversely affected by the freeway noise levels, by 10 to 15 feet of the freeway deck extending over the outfield, or by some other factor. If this becomes a fact, then a solution must be found to maintain the integrity of Fillmore Park.

FIGURE VII-4 illustrates several alternate solutions which are presented at this time only for discussion purposes. Final solutions must be developed between highway and park officials.

One solution involves the land area north of both Fillmore Park and the Florence Library to the railroad. This area in the East Alignment is proposed for purchase as part of the freeway's right-of-way. Because the freeway would in this area be structurally elevated, the opportunity exists for using this right-of-way and the area under the freeway for expanding the Fillmore Park facilities. This area plus the land now used for Fillmore Street (30th to 29th) would add approximately 3.5 acres of usable space for basketball, tennis, playground, or other needed recreation uses for Florence.

Another solution could be to purchase the city block bounded by 28th Avenue, 29th Street, Bondesson, and Clay. This block is due south of Fillmore Park and could serve as the replacement baseball field.

An additional solution could be the modification of the Library and Recreation Center Site by moving the baseball field 80 feet west and relocating the tennis courts and parking lots.

As stated previously, these are ideas and not final solutions. The point to be clearly recognized is that Fillmore Park must be preserved and that all efforts must be made to avoid using any part of the Park, ground area or air rights. It should also be recognized that although the concepts shown in FIGURE VII-4 may have considerable merit, past experiences have shown problems and delays at the federal level in gaining approval for park/highway cooperative joint uses or right-of-way exchanges. This is not to say that the FIGURE VII-4 concepts could not be implemented. They could. The point to be made is that it will require considerable joint planning and design effort at the city, state and federal levels to insure the integrity of Fillmore Park would not be diminished by the presence of the East Alignment of the North Freeway.

The consultant finds that if the East Alignment is selected, the Fillmore Park Area must receive special planning and design attention under joint efforts by city, state and federal agencies. The consultant concludes that 1) the freeway, park, and railroad can be compatible with proper consideration in the final design of the freeway (FIGURE VII-4); 2) the freeway will not adversely disrupt the existing use of the baseball field at Fillmore Park, even if 10 to 15 feet of air rights in the outfield are used; and 3) the freeway can expand the park's recreational area by adding usable space through the use of excess freeway right-of-way and the areas under the freeway structure.

RENAMING THE NORTH FREEWAY

At one of the Consortium meetings, the point was made that the South Freeway had been renamed the John F. Kennedy Freeway by the City of Omaha in memory of the late President. It was then suggested that the North Freeway similarly be renamed to reflect the memory of a historical leader or event.

From the concensus of the Consortium, the name "Martin Luther King Jr. Freeway" was proposed as a possible name for the North Freeway. It was believed that such a memorial name would be in keeping with the concept established by the naming of the Kennedy Freeway.

In pursuing this concept further, it was found that the name "Winter Quarters Freeway" had also been unofficially proposed by the North Omaha Commercial Club as a memorial name to the Mormon history of the Florence Area.

Based upon these interests, the Consultant concludes that changing the name of the North Freeway from one of geographic direction to one with historical or memorial significance has worthwhile merit and should be pursued by the City of Omaha and the Nebraska Department of Roads.

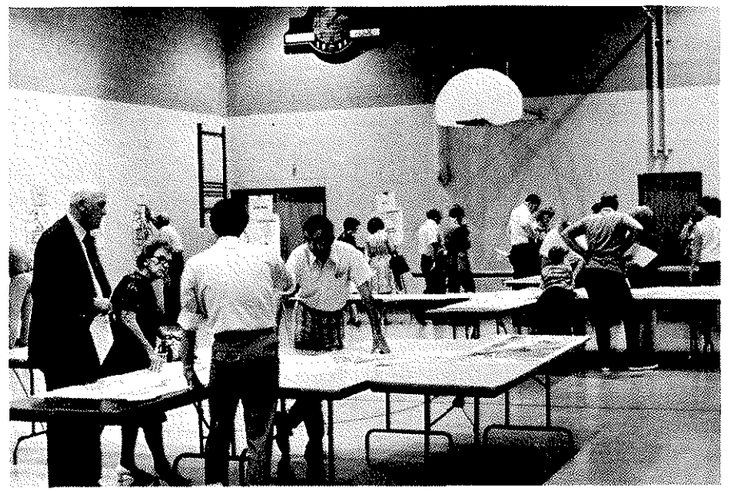
ADDITIONAL ATTITUDE SURVEY

As previously discussed, two attitudinal surveys about the North Freeway were conducted during the corridor study. Both were conducted after the three basic routings (East, Central and West) had been publicized, but prior to the completion of the various impact evaluations on each routing. Consequently, it may be desirable to conduct an additional attitude survey after the final corridor study report with its facts and findings is released for public review.

This survey could be conducted during the month prior to the public hearing. The survey results could then be used along with the corridor report, environmental impact statement, and public hearing transcript to produce the total data package for use by the policy-decision makers.

The advantage of the survey is that it enables a larger number of citizens to express their views than during the more traditional public hearing process. Views expressed in a survey can be more representative of public opinion in the community as many people are reluctant to speak at public hearings.

Therefore, the Consultant suggest 1) that the City and State consider the commission of an additional attitude survey on the North Freeway alternate routes, 2) that such a survey be conducted just prior to the corridor hearing, and 3) that the survey results be used as a supplement to the public hearing transcript.



APPENDICES

APPENDIX A.
CITIZEN CONSORTIUM

It was recognized long before the initiation of the North Freeway Corridor Study that maximizing input from the public would be highly important in developing and completing all the aspects pertinent to the study. In addition, input should come from a variety of different sources to insure that a cross-section of opinions and ideas would be incorporated into the planning study effort.

One such source was the Citizen Consortium which functioned during the corridor study in an advisory capacity to project planners and engineers.

In establishing the Consortium, several questions were raised which had to be addressed: How many members? How would members be selected? Should the Consortium members be limited to known leaders or spokesmen? How would non-spokesmen members be selected? How would membership be equalized between the different groups and areas within the corridor? What definite role would the Consortium have?

These questions and others were considered at length by the Study Team. Finally, with opinions still mixed, these decisions regarding the Consortium were made as a guide to its formation:

1. A small nucleus group of approximately 12 to 16 people would be formed.

2. Equal membership would be invited from the four major areas within the corridor — Lake to Ames, Ames to Miller Park, Minne Lusa/ Miller Park Area, Florence Area.

3. Members would be property owners, businessmen, parents, or residents of the corridor who had the time to serve rather than those who may have "name" recognition but limited time to serve.

A list of potential members was compiled with names supplied by contacts with school principals, ministers, PTA groups, neighborhood organizations, business clubs, and public contacts with citizens. After screening the initial listing, fourteen individuals were issued invitations to serve.

During the first two months, two members were replaced because of personal conflicts. During the remaining months 9 of the 14 continued to be active with the Consortium. The names of these nine are listed in the beginning of this report. Because of their involvement and their diligent efforts, this corridor study became more complete in addressing the facts and issues regarding the North Freeway.

ACTIVITIES OF THE CONSORTIUM

The first meeting was held on April 3, 1974, as a "get acquainted get ready to work" dinner. At that time, the Consortium's purposes were defined in four statements:

1. The Consortium would serve as a linkage between the planners and engineers and the citizens.

2. The Consortium would review and react to the work being done on the North Freeway Study.

3. The Consortium would provide input from a citizen's viewpoint on the North Freeway to aid the planners and engineers.

4. The Consortium would assist in developing the concepts of the North Freeway so that the freeway might be a part of the North Omaha community aiding rather than impeding its economic and social well-being and growth.

These purposes were further supported by seven general objectives which defined the work areas of the Consortium. These objectives were to:

1. Assist in the conduct of public meetings.

2. Assist in establishing goals and objectives for the North Freeway and the North Omaha neighborhoods.

3. Assist in establishing guidelines for use in insuring that adequate replacement housing would be available for families displaced by the North Freeway.

4. Assist in learning public attitudes, fears, and concerns about the North Freeway.

5. Assist in the location of pedestrian and street crossings of the North Freeway.

6. Assist in conceiving multiple uses for the freeway right-of-way.

7. Assist in learning where neighborhoods may be disrupted due to the freeway location.

A total of 16 evening meetings of the Consortium were held between April 1974 and March 1975. Agenda, maps, papers and other materials were sent in advance of meetings. Specialists on relocation, the environment, and other impact areas attended several of the meetings to answer directly the members' questions.

The Consortium's main question at the outset was whether or not their recommendations would have any real impact on the North Freeway. They wanted to know their role in the decision on whether there would be a freeway and what route that freeway would take. They discussed the possibility of a "No Build" decision and the impacts to North Omaha by 1995 of the North Freeway.

The greatest concern of all members was the welfare of those residents who would lose their homes, and their satisfactory relocation in another home that was comparable in cost and neighborhood to their prior setting.

One other important matter of general interest was the effect of the freeway on the environment. The noise pollution and air pollution that would be caused by the freeway was discussed. The Consortium wished to know what efforts were being made so that no unnecessary pollution would take place.

Other issues addressed included property value impacts, commercial development potentials, interchange locations and local access, need for the North Freeway and the Airport Connector, the role of MAPA and long-range transportation planning, population distribution and character, transit service, minority groups (non-white, elderly, low income), and public attitudes and community feelings.

From these discussions, the Study Team made various mental and written notations which were reflected in the work efforts throughout the course of the study. Some notations from the Consortium reflected directly on the adequacies of the study work efforts while others reflected on the direction in which the study was proceeding.

One example was the positive comments made by the Consortium of the neighborhoods assessment done early in the corridor study by the Study Team to define "edges and cohesive areas" (PART IV, FIGURE IV-6). The repeated discussions by the Consortium caused the Study Team to spend considerably more time analyzing the characteristics and needs of the population and impacts relating to relocation.

The Consortium brought several land use activities to the attention of the Study Team. Foremost was the impact caused to the reconstruction of the Martin Luther King Day Care Center on Wirt Street. Attitudes toward Spencer Homes Housing Project expressed the critical need for properly relocating the "Projects" residents but expressed little interest in saving the present apartment buildings.

Considerable discussion was held by the Consortium on the physical alignments of the potential freeway alternate routings (APPENDIX D). Their choice of those routes which merited detailed study provided an input to the Study Team, City, and State in the decisions leading to the selection of the final alternatives for the detailed studies.

Through the Consortium, the Study Team became aware of the rumors which were circulating in the neighborhoods. By keeping the Consortium informed, the Consortium members were able to respond with factual information directly to neighbors and friends.

The Consortium also related to the Study Team information on travel patterns and routes for school, shop-ing and work. This information was later used in locating interchange points and freeway crossings.

The types of questions asked by the Consortium assisted greatly in the Study Team's preparation for the public meetings. Thus, the Study Team had time to investigate many questions in advance and prepare more complete answers. This also aided in preparing materials for use at the public meetings, in preparing handout materials, and in responding to questions posed in interviews with the news media. An additional example was the suggestion from the Consortium that relocation officials from the Nebraska Department of Roads be in attendance at the September Open House Meetings.

During the study, the Consortium commented on the various technical memoranda, written materials, and work maps prepared by the Study Team as well as

the functional sketch plans prepared for each freeway alignment.

As the study progressed toward the preparation of a final report, the Consortium likewise assisted in the review of the "working draft" along with the Study Team, City and State staffs.

STUDY TEAM'S EVALUATION OF THE CONSORTIUM

Looking back over the months the Consortium was in operation, the Study Team offers the following comments in assessing the services of the Citizen Consortium as well as suggestions for future use in organizing citizen advisory groups.

In organizing the Consortium, it was felt that a small membership would discourage absenteeism and create a "close-knit," nucleus group. It would have been wiser, to have a somewhat larger membership. Absenteeism did exist and a larger membership may have lessened its effects. The small group did, however, seem to develop a person-to-person relationship as members spoke freely and learned of common concerns about the freeway.

Selecting an equal number of members from each subarea of the corridor was a wise decision. However, a large Consortium would have resulted in a better distribution of members.

In selecting members, the decision to favor parents, business persons, and residents was the right decision. The membership selected did represent a good cross-section of personal backgrounds and interests.

In compiling a list of potential members, PTA and church groups should be concentrated upon as they usually have well-defined geographical boundaries and are generally accepted and recognized by most citizens. Also, citizens involved in these groups do represent the criteria set for the Consortium member — that is, parents, business persons, residents.

The decision to meet with political spokesmen individually for their ideas rather than via their membership on the Consortium was greeted with mixed feelings by the Study Team. However, the decision to follow this course appears to have been a correct one.

The election or selection of a Consortium Chairman was not done and perhaps it should have been. To properly elect a chairman, the members would require time to become more acquainted.

Although the individual members did carry status reports back to their neighbors and to some groups, it would have been advantageous to establish some organized means whereby each Consortium member had the responsibility to inform certain groups or the leaders of those groups.

Overall, the Consortium provided objective comments which made the Study Team more congizant of public concerns. Consequently, the Study Team was in a better position to gather data and conduct analyses pertinent to these concerns. This benefited the thoroughness of the corridor study as well as the dissemination to the general public and public officials of both the positive and negative impacts of the North Freeway and Airport Connector.

CONSORTIUM'S EVALUATION OF THE CONSORTIUM

Towards the end of the corridor study, the Consortium members' comments concerning their collective effectiveness and importance in the course of the study, and their individual observations, were solicited by the Study Team. Their sentiments were unanimous on some points, while on others a diverse set of opinions was expressed.

Concerning the organization and composition of the Consortium, most felt that more members (25-40) would have provided a better base group for two reasons. The largers group would negate the effects of occasional absenteeism and would permit a better representation of the various neighborhoods, school and church organizations, and business and other community — oriented groups.

Most of the Consortium thought also that such groups were a good source of potential members, and that members of the Consortium should have concern for the betterment of their community. This point was well made by one member who felt that "**Interest** is the most important basis for selection." Membership should not be restricted to those officially connected with a particular organization. Persons not associated with a group should also be invited to participate, so long as they are interested in contributing, and represent the average citizen. One member felt that a better representation might be achieved by avoiding groups that could have "special interests".

The point was stated that in organizing the group, a realistic estimate of the frequency of meetings and their length should be given to prospective members to help them determine if they will have the spare time to commit themselves on a regular basis.

The Consortium felt that they had been helpful in advising the freeway planners of community feelings, concerns, questions, and suggestions, and agreed that they had seen recognition of these points and then incorporation into the study efforts.

The Consortium also agreed that their participation in the planning and study efforts had greatly increased their understanding of the highway planning process, its procedures, and requirements. Many were amazed by the scope and magnitude of the work involved in the freeway location study. Some felt what they had learned about the inner workings of the planning process in general and about North Omaha in particular would broaden interest in their community. To several, first-hand involvement gave a new dimension to the news items on city and regional planning that appears in Omaha's newspapers from time to time.

On the matter of **increasing** the Consortium's effectiveness in planning the freeway, comments were varied. The main point made by most was that a stronger tie between Consortium members and their communities would be desireable. This could be accomplished by having members report to groups they may represent, by publishing fliers on a regular basis for distribution to stores and post offices or on a door-to-door basis, and by additional articles in local newspapers. The members felt that efforts made by the Study Team to publicize the freeway location study were good, but should be intensified as much as possible.

Opinions were mixed concerning leadership of the Consortium. One member felt that elected or appointed leadership and supervision from someone other than the Consultant might help strengthen and unify the voice of the Consortium. Others felt members would more freely express themselves if leadership was minimal, that the group would lead itself, and that a unified voice was not necessarily desirable. Another member felt the Consortium has acomplished its purpose of advising the planners, and can do no more.

Most of the Consortium felt it would be advantageous to continue the Consortium concept through the final-design phase of the freeway planning process, but only in relation to the freeway's appearance and aesthetics. One member felt that this was appropriate provided a new group of members was selected. Two others considered additional involvement interesting, but not necessary. They were of the opinion that professionals should handle final design alone as long as basic concepts have been outlined beforehand.

At one of the latter Consortium meetings, members expressed interest in having their choices for the best alignment of the North Freeway noted for the record. Three stated a preference for the East Alignment because they felt it would have the least disruption to homeowners, the elderly, the black community, scenic areas; would provide good service to the Airport and the new industrial parks; and would benefit business areas, especially in Florence. One of these felt that better freeway-to-local street access in the Florence area was absolutely necessary with the East Alignment however.

One member was opposed to any of the proposed Airport Connectors, and favored the No Build Alternate slightly over a West Alignment.

Another favored the West (31st Ave.) Alignment because of a good geographical location, the connection to I-680 and US 73, and the beneficial effect it would have on the 30th Ames commercial area. This alignment would also allow the Florence area to maintain its identity.

Completion as far north as Ames Avenue of any alignment was the preference of one member. North of this point he contends, arterial streets such as Ames, 30th, 24th, and the proposed Hartman-Redman Arterial, acting as "fingers" into north and northwest Omaha, would adequately disperse traffic. This person also felt that building only to Ames would allow for a potential connection to an expressway or arterial which would run between the Fremont Freeway at I-680 in Irvington, east along the C&NW Railroad right-of-way and east to Eppley Airfield.

One final member strongly endorsed the No Build, as he sees no benefit to be derived from a North Freeway, although he did see merit in completing the freeway as far north as Ames Ave.

In summary, those members who participated in the Consortium throughout the course of the study, appreciated the opportunity to provide an active input to the highway planning process. They were

pleased and satisfied by the organization and conduct of their many meetings, and the extent to which they were involved during this study. Everyone felt they had ample time to freely express their ideas and comments. They felt they were valuable to their friends and neighbors because they brought their knowledge of the facts and concerning the North Freeway back to their neighborhood and other acquaintenances. Another comment was that by coming together in the Consortium, the members were able to learn of the needs and concerns of each other's neighborhoods.

An important point members of the Consortium made time and time again during their involvement in the study was the serious degenerative impact that the **uncertainty** surrounding the North Freeway has had on North Omaha over the last 20 years. It is their feeling that a prompt determination of the "where" and the "when" of the North Freeway is **long** overdue, and that any further actions on the North Freeway be expedited.

APPENDIX B.
CITIZEN ATTITUDE SURVEY

This discussion analyzes the results of a survey of 626 households conducted by personal interview in the North Freeway corridor during the period of June 15-July 30, 1974. The first section discusses the sampling design and quality control methodology. The next section describes the demographic characteristics of the sample population. The final section presents an analysis of the survey results.

SAMPLING DESIGN AND QUALITY CONTROL

Introduction. The "universe" to be sampled for the survey was the total number of residents living in a geographical area bounded by Lake Street on the South, McKinley Street on the North, 48th Street on the West, and 9th Street on the East. All three major alignments either go through this area or affect the neighborhood within this area (FIGURE B-1).

Stratification of the Survey Area. It was assumed that people residing in different neighborhoods would be affected differently by the construction of the proposed North Freeway and would, therefore, have different perceptions and attitudes. Thus, in addition to three major alignments, the total survey area was stratified according to three major sections:

A) Lake Street to Grand Avenue (Southern section)

B) Grand Avenue to Weber Street (Middle section)

C) Weber Street to McKinley Street (Northern section)

Furthermore, each of these sections and alignments was divided into two components:

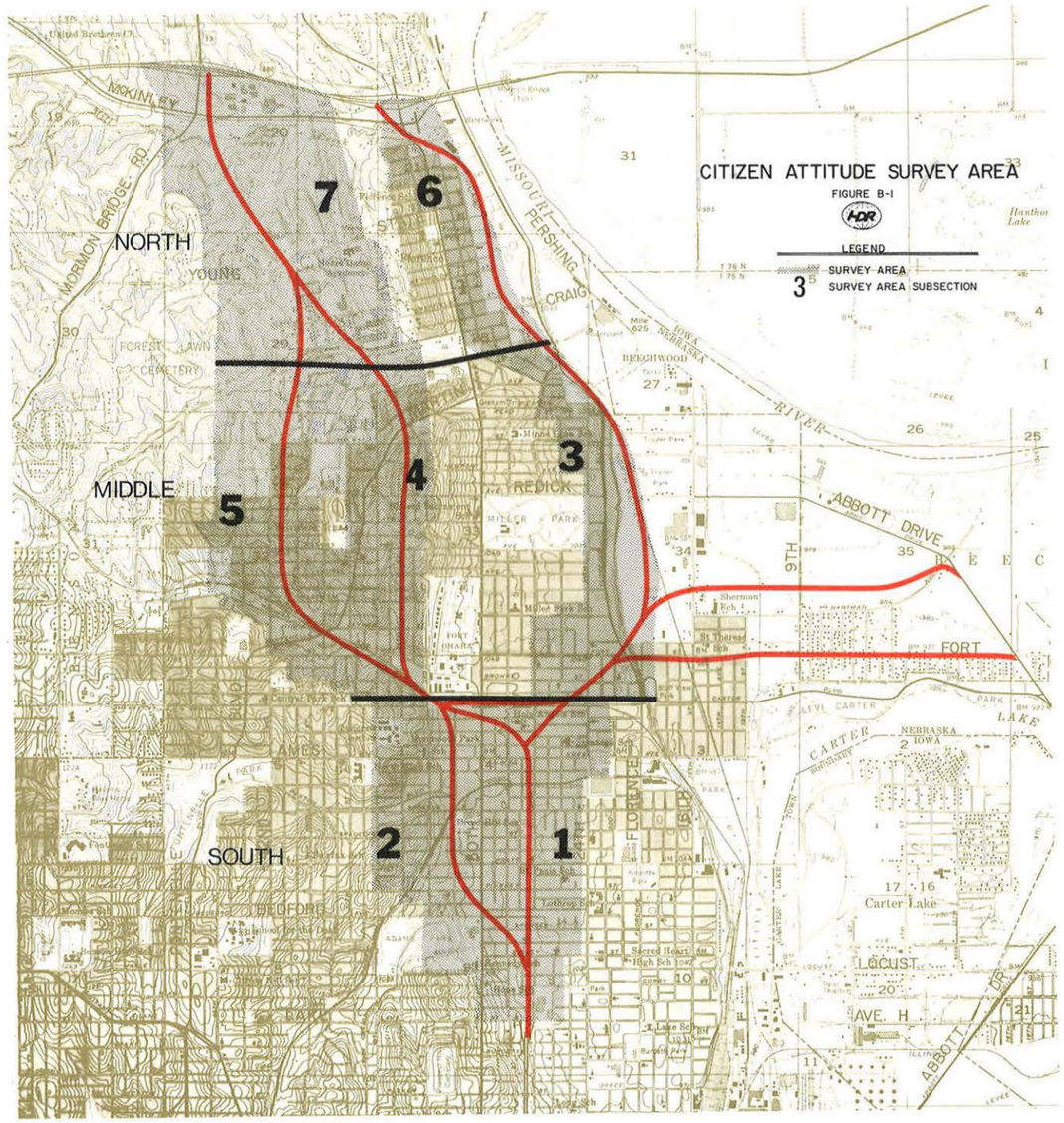
1) Those blocks through which the right-of-way (ROW) for the alignment or route would go. (Component A).

2) The neighborhood blocks — approximately two blocks on either side of the ROW for the proposed alignment and route (Component B).

The design provided for a total of 14 strata for the total survey area. The stratification of the total survey area was essential to yield necessary information for the selection of the most feasible alignment for construction. It was also a statistically preferred step in obtaining a greater representative sample with less probable sampling error.

The survey area is delineated in FIGURE B-1. The sample was taken from households located in the immediate two-block area around the three alternative alignments for the North Freeway.

Sample Size. The elementary sampling units or elements were households residing in the survey area. The sample size of 626 households (approximately 6% of the total number of households in the survey



area) was obtained through use of statistical theory. The sample size yields a 2.3% sampling error for a binomial population (i.e., a question involving a choice of two answers, e.g., yes or no). In other words, one may expect that in 95 out of 100 cases the sample estimate plus or minus 2.3% will contain the true value.

Two Stage Stratified Probability Sampling Method. The reliability of the survey results largely depends upon how the sample was obtained and the selection of the sampling techniques given the availability of the data to use and the purpose of the survey. To reduce the sampling error, a two stage stratified probability sampling approach was employed.

The first stage of this sampling method was selection of the sample blocks for each stratum. The sample blocks were selected according to a sampling technique called "probability sampling proportional to the sizes of the sampling units".1] This method allows larger blocks a greater probability to be drawn into the sample. Adjustments were made to maintain a minimum of eight sample blocks for each stratum to insure reliability for making comparison analysis. Aerial photograph city maps and the 1970 Census data provided necessary information to achieve this task.

The second stage of the sampling method was the selection of the elementary sampling units or the sample households from the sample blocks obtained from the first stage sampling procedure. Each of the interviewers (students at Creighton University) was instructed to select three households randomly from our four faces of the sample blocks. Respondents had to be adult members of the household. Detailed maps and exact locations of the sample blocks were provided. TABLE B-1 shows the results of the sample selection.

Quality Control. To assure reliable survey results, the following quality control procedures were used:

1. Questionnaire design — Preliminary questionnaires were designed and presented at various citizen consortium meetings and to personnel of related agencies for review and comment. Final questionnaires were developed and pretested in the field before they were distributed to student interviewers.

2. Interviewers' training — Two training sessions for interviewers were held at Creighton University. Interviewing procedures and the significance of the quality of their work were discussed.

3. Follow-up phone calls — During the June 15-July 30, 1974 field interviewing period, follow-up phone calls to all sample households were made to check validity of the interviews immediately after each questionnaire was returned. Approximately 45% of the questionnaires were returned because of irregularities (e.g., incomplete, household not contacted). Additional interviews were completed to make up the required number sample households.

1] For detailed information about this sampling procedure, see: William G. Cochran, **Sampling Techniques,** John Wiley and Sons, Inc., New York, 1960, pp. 206-262.

TABLE B-1

RESULTS OF SURVEY SAMPLE SELECTION

Segment Number (Strata)	"Population" * No. of Blocks	"Population" * No. of Households	Sample No. of Blocks	Sample No. of Households
Total:	488	10,155	205	626
1A	28	665	10	41
1B	65	1,570	28	90
2A	23	476	11	31
2B	58	975	21	63
3A	16	395	10	30
3B	53	1,724	26	85
4A	27	701	12	34
4B	51	1,222	17	54
5A	29	536	13	37
5B	50	1,111	21	66
6A	19	118	8	24
6B	36	249	9	24
7A	12	175	8	21
7B	21	238	11	26

*Source of data: 1970 Census, Nebraska.

CHARACTERISTICS OF THE SURVEY SAMPLE POPULATION

Introduction. An overview of population and housing characteristics of the households interviewed is presented in this section. Although the data presented is for the total North Freeway survey area, it should be noted that population and housing stock characteristics vary considerably within the study area. For example, the extreme southern section is heavily minority populated, with many low income residents; similarly, housing there is of a lower value and more of it is considered deteriorated or dilapidated.

North Freeway Population Characteristics. The population interviewed was concentrated in the 25 to 55 year bracket, with 13% over 65 and 14% under 25 years of age. The racial composition was heavily minority with 45% listed as black. Almost two-thirds (66%) reported a high school education and another 24% indicated some college experience. Forty-one percent (41%) reported an annual income of under $8,000 and another 39% reported an income of between $8,000 and $12,000. A disproportionate number of females were included in the sample (65% were female). (See TABLE B-2.)

North Freeway Housing Characteristics. The majority of housing units were single family homes, owner occupied, and in sound condition. In fact, 92% of the persons interviewed resided in single family units, and 81% either owned or were purchasing their housing unit. Almost one-fifth (17%) of the households resided in units classified as deteriorated or dilapidated (See TABLE B-3).

TABLE B-2

CHARACTERISTICS OF RESPONDENTS NORTH FREEWAY SURVEY AREA

Housing Characteristics	Number of Respondents	Percent of Total
Race:	617	
White	339	55
Black	276	45
Other	2	*
Income:	476	
Under $8,000	194	41
$8,000 to $12,000	184	39
Over $12,000	98	21
Age:	604	
Over 65 Years	80	13
55-64 Years	81	13
25-54 Years	360	59
Under 25 Years	83	14
Education Level:	553	
Grade School	57	10
High School	364	66
College	132	24
Sex:	607	
Female	393	65
Male	214	35
Total:	626	

*Less than 0.5%.

ANALYSIS OF RESULTS

Route Preference. Of the respondents expressing a preference for one of the four alternatives — i.e., not to build the North Freeway, or for one of the three (West, Central, or East) basic alignments — more preferred the East Alignment than any other alternative

TABLE B-3

CHARACTERISTICS OF HOUSING UNITS, NORTH FREEWAY SURVEY AREA

Housing Characteristics	Number of Respondents	Percent of Total
Type of Housing:	620	
Single-Family	569	92
Multi-Family	41	6
Mobile Home	10	2
Housing Condition:	606	
Sound	503	83
Deteriorated	84	14
Dilapidated	19	3
Housing Status:	621	
Owner/Purchasing	502	81
Renter	119	19

TABLE B-4

ROUTE PREFERENCE

		West No.	West (%)	Central No.	Central (%)	East No.	East (%)	No Build No.	No Build (%)	Total
Total:		51	9	67	12	235	42	201	36	554
Section:	1	4	3	10	8	40	34	64	54	118
	2	8	12	13	19	19	28	27	40	67
	South	12	6	23	12	59	32	91	49	185
	3	9	8	15	14	59	54	26	24	109
	4	4	5	15	20	44	58	13	17	76
	5	23	26	10	11	29	32	28	31	90
	Middle	36	13	40	15	132	48	67	24	275
	6	3	6	2	4	18	38	24	51	47
	7	-	-	2	4	26	55	19	40	47
	North	3	3	4	4	44	47	43	46	94
Location:	On ROW Block	8	4	25	13	83	43	77	40	193
	Near ROW Block	43	12	42	12	152	42	124	34	363
Race:	White	32	10	37	12	141	45	103	33	313
	Black	18	8	30	13	87	38	97	42	232
Occupancy:	Own	38	8	56	12	197	43	162	36	453
	Rent	12	12	10	10	37	38	39	40	98
Income:	Over $12,000	15	16	12	13	48	52	17	18	92
	$8,000-$12,000	16	9	16	9	83	49	55	32	170
	Under $8,000	10	6	22	13	54	32	81	49	167
Age:	Over 65 Years	3	4	4	5	32	43	35	47	74
	55-64 Years	6	9	9	14	23	35	28	42	66
	25-53 Years	29	9	38	12	145	44	114	35	326
	Under 25 Years	10	14	13	18	31	42	19	26	73

TABLE B-5

REASONS FOR ROUTE PREFERENCE

	West	Central	East	No Build	
Personal consideration	3	5	7	28	43
Freeway not needed/wanted	4	-	1	37	42
More use to people	10	11	17	-	38
Less neighborhood damage	-	3	24	5	32
Inconvenience fewer people	-	3	25	3	31
Do not want freeway in neighborhood	6	5	13	4	28
Less homes destroyed	2	1	19	5	27
Less cost	3	1	20	1	25
Relocation **desired**	-	6	4	-	10
Straighter route	2	-	5	-	7
Most scenic route	-	-	6	-	6
Shorter route	1	2	2	-	5
Less impact on poor	1	2	1	-	4
Too much trouble	-	-	-	3	3
Increase taxes	-	-	-	2	2
Best route	2	6	3	-	11
Other	4	5	10	5	24
Total Reasons Offered	38	50	157	93	338
Total Route Preference	51	67	235	201	554

(42%), but almost as many (36%) indicated they preferred the No Build option. The West and Central Alignments were least preferred (9% and 12% respectively).

Neither the magnitude nor the ordering of these preferences was consistent in all areas or among all groups. For instance, almost half (49%) of those in the Southern section (the area South of Grand Avenue) indicated a preference for the No Build option while only 24% of those in the Middle area (between Grand Avenue and Weber Street) preferred that the freeway not be built. In two sections — the eastern portion of the Southern section (Section 1) and the eastern portion of the Northern section (Section 6) — a majority preferred the No Build option (54% and 51% respectively). In both sections, however, the East Alignment which would go through their area was preferred over the other alignments.

Sentiment against a freeway was greater among the lower income residents (under $8,000) than among the more affluent (over $12,000) — 49% of the former compared to 18% of the latter indicated a preference for the No Build option. TABLE B-4 also indicates that the older respondents (55 and over) were more likely to prefer the No Build option than any of the other alternatives, while younger respondents chose the East Alignment more frequently.

Reasons for Route Preference. An analysis of the data in TABLE B-5 indicates that the reasons offered in behalf of the East Alignment were of a different nature than those offered for the West and Central Alignments. Those selecting the East Alignment usually offered "negative reasons" — e.g., 16% of those offering reasons for their choice said it would inconvenience fewer people, an additional 15% said there would be less neighborhood damage, another 12% said it would destroy fewer homes, and 13% thought it would be least costly. That the East Alignment would be of more use to the people was only the fifth most common reason, with a response rate of 11%. In contrast, the most frequently given reason for preferring the West or Central Alignment was that it would be of more use to the people (26% and 22% respectively for the two routes).

It is also interesting to note that those advocating the No Build preference were least able to offer any reason for their choice — less than half (93 of 201 or 46%), compared to two-thirds (157 of 235 or 67%) preferring the East Alignment, and three-fourths for the other alignments (38 of 51 or 75% for the West and 50 of 67 or 75% for the Central). 2]

Concern About Separation from Community Facilities. Approximately two-fifths (41%) of the respondents indicated they were concerned that the new freeway would separate them from community facilities. The proportion varied considerably depending on their geographical location — for example, only 24% of those living in the area around the middle segment of the West Alignment (Section 5) expressed concern, while 59% of those near the East Alignment south of Grand Avenue (Section 1) were concerned.

More blacks than whites were concerned (48% of the former and 35% of the latter). But the key explanatory variable is location in relation to the alignment rather than race. For example, the blacks in Section 2 were only half as likely as those in Section 1 to be concerned (36% of the former and 72% of the latter).

2] It should be noted that the question format used was open-ended, i.e., the respondent was asked to volunteer an answer, rather than select one from a list of alternatives. (The exact question was: "Why do you think your choice is best?")

Similarly, the few whites remaining in Section 1 were more likely to indicate concern than whites in other areas; and blacks in Section 5 were less likely to be concerned than other blacks. But race has some impact as blacks in each of these areas were slightly more concerned than whites.

In each of the three sections (South, Middle, and North) those in the area of the East Alignment expressed more concern. More than half (52%) of those near the East Alignment (Sections 1, 3, and 6) expressed concern, compared to 32% of those near the other routes (TABLE B-6).

Objection to Moving. Most of the residents (72%) indicated they would not object to moving if they received housing equal to their current home. The greatest resistance came from those in the Northern section where almost half (48%) would object even under the proviso that equal housing could be found. Those in the western portion of this area (Section 7) were even more adamant, with 57% indicating they would object to relocation. Those in the Southern area (Sections 1 and 2) were least likely to object to relocation; residents in sections 3 and 5 were also unlikely to object (22% and 21% respectively), while those in Section 4 showed more resistance to relocation (44%). In general, whites were more reluctant than blacks to move (34% of the former and 21% of the latter indicated they would object). The elderly (those over 65) were also reluctant to move (41%) (TABLE B-7).

Site of Relocation. The data in TABLE B-8 indicates that only one-fifth (19%) of the respondents wanted to remain in the same neighborhood should their home be needed for the freeway right-of-way. Almost half of the respondents (46%) did not know where they wanted to move at this time. Residents of the Northern area were most likely to express a desire to remain in the same neighborhood (34% compared to 17% for the other areas).

The youngest group (under 25) was the most likely of the four age groupings to prefer relocation in the same neighborhood (33% compared to 18% for the others). When only those with a preference are considered, the youngest group is still the most likely to prefer their own neighborhood (53%) while those over 65 are more likely than those between 25 and 65 to prefer their own neighborhood (40% and 31% respectively). Of those with a preference, blacks were slightly more likely than whites to want to leave their neighborhoods.

TABLE B-6

CONCERN ABOUT SEPARATION FROM COMMUNITY FACILITIES

		Yes		No		Total
		Number	Per Cent	Number	Per Cent	Number
Total:		252	41	360	59	612
Section:	1	74	59	51	41	125
	2	32	35	60	65	92
	South	106	49	111	51	217
	3	49	45	61	55	110
	4	30	34	57	66	87
	5	25	24	78	76	103
	Middle	104	35	196	65	300
	6	23	48	25	52	48
	7	19	40	28	60	47
	North	42	44	53	56	95
Location:	On ROW Block	83	39	129	61	212
	Near ROW Block	169	42	231	58	400
Race:	White	118	35	217	65	335
	Black	129	48	137	52	266
Occupancy:	Own	195	39	300	61	495
	Rent	53	47	60	53	113
Income:	Over $12,000	40	41	58	59	98
	$8,000-$12,000	71	39	110	61	181
	Under $8,000	82	44	104	56	186
Age:	Over 65 Years	32	41	46	59	78
	55-64 Years	32	40	48	60	80
	25-54 Years	143	41	208	59	351
	Under 25 Years	37	46	44	54	81

TABLE B-7

OBJECT TO MOVING

		Yes		No		Total
		Number	Per Cent	Number	Per Cent	Number
Total:		174	28	443	72	617
Section:	1	26	20	105	80	131
	2	19	21	73	79	92
	South	45	20	178	80	223
	3	24	22	87	78	111
	4	38	44	49	56	87
	5	22	21	81	79	103
	Middle	84	28	217	72	301
	6	18	39	28	61	46
	7	27	57	20	43	47
	North	45	48	48	52	93
Location:	On ROW Block	52	24	165	76	217
	Near ROW Block	122	31	278	70	400
Race:	White	114	34	221	66	335
	Black	57	21	214	79	271
Occupancy:	Own	145	29	353	71	498
	Rent	29	25	87	75	116
Income:	Over $12,000	29	30	68	70	97
	$8,000-$12,000	53	29	127	71	180
	Under $8,000	56	29	136	71	192
Age:	Over 65 Years	32	41	47	59	79
	55-64 Years	19	24	60	76	79
	25-54 Years	89	25	268	75	357
	Under 25 Years	26	33	54	68	80

Perceptions of Impact of Freeway on Property Values. More than three times as many residents of the area thought that the North Freeway would decrease the value of their homes than increase it. Only 12% of the respondents viewed the freeway as increasing the value of their home, while 39% felt it would decrease it. Almost half — 48% — indicated they did not know. Those in the middle sector of the East Alignment (Section 3) were most likely to perceive the freeway favorably on this question, although there were still more residents viewing it pessimistically (22% saw the freeway increasing the value of their homes, 35% decreasing it, and 43% did not know.

Blacks, renters, and younger residents were more likely to perceive the freeway as aiding the value of their home than others did, but in each group there were more viewing the North Freeway negatively than favorably (TABLE B-9).

Rating of Factors to be Considered in Planning and Building the North Freeway. Respondents were asked to rate the importance of 14 different factors in planning the routes for the North Freeway. A ranking based on the proportion of respondents saying the factor was "very important" is presented in TABLE B-10. It indicates that most concern was expressed for the elderly, with 55% saying that minimizing their displacement was very important and only 6% of the respondents placing the lowest value on it. More than half (53%) of the respondents also considered minimum disruption of neighborhoods as a very important factor.

Concern about displacing low income families or residents in general also ranked high with 47% and 48% respectively of the respondents indicating that these factors were very important. Some factors, on the other hand, were considerably less important to the residents. For example, preservation of historical sites, or wildlife were rated as very important by relatively few respondents (17% and 20% respectively). Similarly, access to parks and recreation was more likely to receive the lowest importance rating than the highest.

An analysis of the responses by the various groupings of respondents based upon a rank ordering of the proportion of "very important" responses indicates little difference between the groups. Rank order correlations ranged from .82 to .92. The greatest differences occurred among the three regions. For example, the Middle region (between Grand Avenue and Weber Street) gave the factor of displacing few elderly residents its third highest ranking while in the Northern section this factor placed

TABLE B-8

SITE FOR RELOCATION

		Same Neighborhood		Elsewhere		Don't Know		Total
		Number	Per cent	Number	Per cent	Number	Per cent	Number
Total:		120	19	214	35	283	46	617
Section:	1	13	10	31	24	84	66	128
	2	18	19	34	37	41	44	93
	South	31	14	65	29	125	57	221
	3	23	21	59	53	30	27	112
	4	16	18	34	39	37	43	87
	5	18	17	37	36	48	47	103
	Middle	57	19	130	43	115	38	302
	6	14	30	10	21	23	49	47
	7	18	38	9	19	20	43	47
	North	32	34	19	20	43	46	94
Location:	One ROW Block	39	18	66	31	111	51	216
	Near ROW Block	81	20	148	37	172	43	401
Race:	White	75	22	114	34	146	44	335
	Black	43	16	96	35	132	49	271
Occupancy:	Own	88	18	167	34	240	49	495
	Rent	30	26	45	38	42	36	117
Income:	Over $12,000	28	29	42	43	27	28	97
	$8,000-$12,00	39	21	74	40	70	38	183
	Under $8,000	35	18	61	32	95	50	191
Age:	Over 65 Years	12	15	18	23	49	62	79
	55-64 Years	11	14	26	33	42	53	79
	25-54 Years	67	19	138	39	150	42	355
	Under 25 Years	27	33	24	29	31	38	82

TABLE B-9

PRECEPTIONS OF IMPACT OF FREEWAY ON PROPERTY VALUES

		Decrease Values		Increase Values		Don't Know		Total
		Number	Percent	Number	Percent	Number	Percent	Number
Total:		237	39	73	12	291	48	601
Section:	1	34	27	9	7	82	66	125
	2	34	38	12	13	44	49	90
	South	68	32	21	10	126	59	215
	3	38	35	24	22	47	43	109
	4	35	41	11	13	39	46	85
	5	39	40	11	11	48	49	98
	Middle	112	38	46	16	134	46	292
	6	20	43	4	9	23	49	47
	7	37	79	2	4	8	17	47
	North	57	61	6	6	31	33	94
Location:	On ROW Block	66	32	22	11	116	57	204
	Near ROW Block	171	43	51	13	175	44	397
Race:	White	148	46	36	11	140	43	324
	Black	86	32	36	14	144	54	266
Occupancy:	Own	196	40	54	11	234	48	484
	Rent	38	34	19	19	56	56	113
Income:	Over $12,000	48	51	15	16	31	33	94
	$8,000-$12,000	85	47	20	11	75	42	180
	Under $8,000	59	32	20	11	105	57	184
Age:	Over 65 Years	25	34	6	8	43	58	74
	55-64 Years	35	45	3	4	40	51	78
	25-54 Years	150	43	48	14	149	43	347
	Under 25 Years	22	27	14	17	45	56	81

TABLE B-10

RATING OF FACTORS TO BE CONSIDERED IN PLANNING AND BUILDING THE NORTH FREEWAY

	Very Important (%)	Important (%)	Least Important (%)	Total Number
Displace few elderly	55	39	6	568
Disrupt few neighborhoods	53	35	12	575
Displace few residents	48	42	10	567
Displace few low-income families	47	43	10	574
Encourage new industry and jobs	43	41	16	579
Provide better community service	40	48	12	575
Take property with lowest cost	39	36	25	567
Preserve schools and attendance boundaries	39	46	16	572
Limit noise and pollution	36	49	15	557
Displace few businesses	34	46	20	567
Preserve churches and religious centers	28	55	17	576
Provide access to parks and recreation	21	51	29	580
Preserve wildlife	20	40	40	572
Preserve historical sites	17	39	45	577

eleventh. Another factor with a wide difference in its rank order was that the preserving schools and attendance boundaries with the Northern area placing it as the fourth most important factor while the Middle placed it tenth. The greatest differences between income groupings concerned the ranking of noise and pollution considerations with the middle income group ($8,000-$12,000) ranking it higher than the higher income group (fifth and tenth place respectively). Owner-renter differences were greatest for the freeway's impact on new jobs and the need to preserve school boundaries.

An examination of the proportions giving the "very important" response indicates that those in the North were most likely to consider factors as very important (8 of the 14 factors were cited by more than 50% of the respondents as very important; this compares to only one factor rated that important by those in the other areas). The greatest percentage-point difference occurred between the Northern and Middle sections with 72% of the former indicating that the factor of displacing few residents was very important while only 40% of those in the Middle area rated it that way. Similarly large differences between the North and one of the other sections occurred on the factors of preserving churches and religious centers, preserving schools and attendance areas, and disrupting few neighborhoods (with a higher proportion of North residents listing the factor as very important). The largest percentage-point difference between blacks and whites occurred on the factor of providing better community services (with whites more likely to consider it very important). The largest difference among the income group occurred on the question of taking property with the least cost — those with a higher income were more likely to cite this factor as very important more than those in the lowest income group. Among the four age groups, the greatest differences was on the question most relevant to them — 63% of those over 65 said the displacement of few elderly was very important but only 46% of the youngest group gave that response. The greatest difference based on distance from the freeway routes revolved around the issue of taking property with the lowest cost, with those more likely to lose their property less likely to be concerned about costs.

Conclusions. The survey of 626 households in the immediate two-block area around the three alternate alignments for the North Freeway accomplished several objectives. It proved itself to be an excellent means for citizen participation in the freeway planning process. It enabled a larger number of citizens to express their views than occurs in the more traditional public hearing process. In addition, it enabled the planners to learn the views of a more representative sample of the population than usually participates in public hearings. Many people who are wary of speaking out in a public forum are willing to express their views in the comforting familiarity of their own home; those holding unpopular opinions may be willing to voice them given the anonymity of the survey situation. The public opinion survey method also allows the collection — and analysis — of more information than would be possible at a public hearing. The survey has also enabled us to update the demographic data available for this area from the 1970 census. This is especially important to the impact analysis since some of the neighborhoods included in the survey are undergoing rapid social change.

Among the major findings of the survey are the following:

a) Many questions elicited sharply divergent responses from different geographical areas and groupings of people. This suggests that the area to be affected by the North Freeway should not be considered homogeneous, and generalizations about the opinions and interests of North Freeway area residents should be viewed with caution. Some questions, on the other hand, demonstrated strong consensus — e.g., 82% of the residents felt that the interest of the people in the community ought to be considered most important in planning a freeway.

b) The East Alignment was preferred by more people than any other alternative — i.e., the other two alignments or the option of not building the freeway.

c) But the main reasons for the East Aligment preference were negative — e.g., it displaces fewer people, it disrupts the neighborhood least.

d) This perception of the East Alignment was only partially borne out by the survey. Although it will displace fewer homes, those living in the vicinity of the East Alignment are more concerned about being separated from familiar community facilities than those living in the area of other alignments.

e) Most residents would not object to moving if they received housing of at least equal value, but this may be difficult to achieve given the unavailability of inexpensive housing that would be needed by the large proportion of low income residents (41% reported annual incomes under $8,000). Of those residents who had an opinion on where they would like to relocate, most preferred to leave their neighborhood.

f) Relatively few residents believe the freeway would increase the value of their homes. Similarly few viewed the freeway as an asset — e.g., only 16% (38 of 245) of those offering reasons for preferring only alignment rather than another suggested their preferred route would be more useful to the people.

g) The most important factors to be considered in planning the North Freeway, according to the respondents, included minimal disruption of neighborhoods and minimal displacement of residents especially the elderly and poor.

NORTH FREEWAY STUDY

ATTITUDINAL SURVEY

To be filled in by Interviewer:

1. Interviewer's Name: _____
2. Data of Interview: _____
3. Respondent's Segment Number: _____
4. Respondent's Address: _____
5. Respondent Lives in: A. Single-Family Home ( )
   B. Duplex ( )
   C. Apartment ( )
   D. Mobile Home ( )
   E. Other (specify) _____
6. Housing Conditions: A. Sound ( )
   B. Deteriorated ( )
   C. Dilapidated ( )
7. Respondent is: A. Male ( )
   B. Female ( )
8. Race: A. White ( )
   B. Black ( )
   C. Other ( )

STATEMENT: Planning studies for the location of a North-Omaha Freeway (Lake Street to I-29 North) are being made in your community.

1. Do you know of these studies?

   a. Yes _____ b. No _____

2. Here is a map of the community with three proposed routes or alignments marked on it. Another alternative not shown on the map is not to build the North Omaha Freeway. Which of the four alternatives do you most favor?

   ( ) a. Western
   ( ) b. Central
   ( ) c. Eastern
   ( ) d. Not building

2a. (Only for those who chose the Western or Central route in Question #2.) This alignment has two choices at the Southern section. Which do you prefer?

   ( ) a. Westerly
   ( ) b. Easterly
   ( ) c. No preference

3. Why do you think your choice is the best? _____

4. In planning a freeway, whose interests do you think should be considered most important?

   ( ) a. Motorists who need to travel quickly from one place to another.
   ( ) b. Truckers who need to get through the city.
   ( ) c. Industrial and commercial interests.
   ( ) d. People who live in the community.
   ( ) e. Other _____

5. Please rate how important you think the following items should be in planning and building the North Freeway. "The route chosen should...."

	Very Important	Important	Least Important
a. Encourage the development of new industry and provide jobs	( )	( )	( )
b. Provide easy access to parks and recreation areas	( )	( )	( )
c. Provide better community service (such as, better fire protection)	( )	( )	( )
d. Preserve historical sites	( )	( )	( )
e. Preserve churches and religious centers	( )	( )	( )
f. Preserve wildlife	( )	( )	( )
g. Preserve schools and attendance boundaries	( )	( )	( )
h. Limit noise and pollution	( )	( )	( )
i. Displace few residents	( )	( )	( )
j. Displace few businesses	( )	( )	( )
k. Displace few low income residents	( )	( )	( )
l. Displace few elderly residents	( )	( )	( )
m. Take the property with the lowest cost	( )	( )	( )
n. Disrupt few neighborhoods	( )	( )	( )

6. What, if any, other items do you feel to be a most important consideration in planning and building a North Freeway?

   _____

   _____

   _____

7. Are you concerned that a freeway will separate you from familiar community facilities?

   ( ) a. Yes
   ( ) b. No

8. If you received housing at least equal to what you now have and assistance in relocating would you object to moving?

   ( ) a. Yes
   ( ) b. No

9. If yes, what are your reasons?

   _____

   _____

   _____

10. If your house were needed to make way for a new Freeway, where would you like to be relocated?

    ( ) a. In the same neighborhood.
    ( ) b. In an area in another part of the city.
    ( ) c. Don't have any idea where.

11. Do you think a Freeway located within 4 or 5 blocks of your property would make it:

    ( ) a. Less valuable
    ( ) b. More valuable
    ( ) c. Don't know

12. Do you rent or own (buying) your house?

    ( ) a. Rent
    ( ) b. Own (Buying)

13. Do you drive an automobile?

    ( ) a. Yes
    ( ) b. No

14. What kind of transportation is most often used by the members of your household in going to and from work?

    ( ) a. Family car
    ( ) b. Car pool
    ( ) c. City bus
    ( ) d. Taxi
    ( ) e. Other_____

15. If you have children, how many attending school would be affected by each route?

    a. East_____
    b. West_____
    c. Central_____

16. Age of respondent.

    ( ) a. Under 25
    ( ) b. 25-55
    ( ) c. 55-65
    ( ) d. Over 65

17. Family annual income.

    ( ) a. Under $8,000
    ( ) b. $8,000 to $12,000
    ( ) c. $12,000 to $20,000
    ( ) d. Over $20,000

18. Education of respondent.

    Grade School_____ High School_____ College_____

19. Respondent's occupation.

    ( ) a. Student
    ( ) b. Retired
    ( ) c. Disabled
    ( ) d. Housewife
    ( ) e. Other (Name of occupation)_____

20. Do you wish to make any other comments about the location of a North Omaha Freeway?

    _____

    _____

    _____

APPENDIX C.
PUBLIC MEETINGS

MAY 1974 PUBLIC MEETINGS

With the concurrence of the City and State, the Consultant held eight public meetings during the course of the corridor study. The purposes of these meetings were **to inform** the public of the study's work progress and **to listen** to the ideas, concerns, and questions of the public and incorporate them into the planning process.

The Consultant handled arrangements for each meeting. This included booking the meeting location and facilities, preparing advance meeting notices and press releases, preparing meeting displays, maps, and handouts, and providing the necessary personnel to staff the meeting.

The discussion below summarizes the conduct and results of each meeting.

May 1974 Public Meetings

A series of four public meetings were held to present the general corridor study results and the more than 25 potential freeway alignments. A brief slide presentation was made in an audience format, with a lengthy question — answer and comment period following.

Placed for public inspection were: large aerial photographs of the alternates, display boards, and acetate overlays of topography, assessed land values, and neighborhood areas. Handout materials consisted of a map showing the 25 potential freeway alignments and a one-page flier which briefly stated the purpose of the meeting and the work tasks to be accomplished prior to the next series of public meetings.

Monday, May 6, 1974. The meeting was held at Horace Mann Jr. High for those living between Lake St. and Ames Ave. The meeting began at 7:15 pm, ran until past 9:00 pm, and attracted 150 persons.

The audience was attentive during the slide presentation. During the question-and-answer period, the tone of the meeting became somewhat heated as pointed questions concerning the history and future of the North Freeway were raised.

Overall, the audience expressed strong displeasure over the delays in the construction of the North Freeway and are tired of studies. There seemed to be considerable fear and distrust in the tone of the statements made.

A strong consensus favored an alignment between 27th and 28th Streets. However, some people from the Spencer Homes expressed concern over the Martin Luther King Day Care Center which is in the path of this alignment.

Tuesday, May 7, 1974. The meeting place was the Navy and Marine Corps Reserve Center at 30th and Laurel. About 170 people attended the session which ran from 7:00 pm to 8:30 pm and covered the area between Ames and Kansas Avenues.

The audience asked a good cross-section of questions, including for example relocation, air and noise, time schedule for the freeway, width of right-of-way, source of funds, how were interchange locations selected, and who makes the decisions.

One gentleman asked for a show of hands of those in favor of the North Freeway. Out of 170 people, about 10 were "against" and 160 "for." With the exception of a few persons, the audience was reserved and quiet. After the meeting was adjourned, many people remained for another 45 minutes to talk with individual staff members.

No consensus was expressed by the audience in favoring one alignment over another. A few comments did favor the East Alignment. The people seemed to accept the fact that a freeway was coming but they wanted to know when it would be built.

Wednesday, May 8, 1974. About 170 persons living between Kansas Avenues and Craig St. attended the meeting at McMillan Jr. High at 38th and Redick from 7:00 pm to 8:30 pm.

A considerable number of questions were asked about relocation and right-of-way acquisition. Typical questions related to the need for a North Freeway, impact to properties left along the freeway, location of interchanges, how was the Consortium formed, relocation benefits, and future announcements about the freeway study and selected routes for detailed study.

Midway through the evening, we asked the audience for a show-of-hand vote on the concept of a North Freeway. About 50% were in favor. No consensus

was obtained from the audience about a preferred route. Some persons did comment on the West Routes serving a larger area of the city. Others pointed to the lower number of homes to be taken by the East Routes.

Several persons expressed concern about relocation and acquisition. As one gentleman stated, "How can anyone believe that they will get a fair deal (when the right-of-way is bought)?"

Thursday, May 9, 1974. The last meeting drew 107 people in the area between Craig St. and I-680. It was held at St. Philip Neri School, 31st and Mormon Streets, from 7:00 pm to 8:45 pm.

The audience was strongly against the North Freeway. On a show-of-hands, only 3 voted in favor of the freeway. A group opposed to the freeway is being organized in this area.

Why? As stated at the meeting, the residents like the "small-town" atmosphere. They consider Florence as Florence and not as part of Omaha.

Most of their concern seemed to center around the West Routes. East Routes were opposed but not as strongly. Considerable concern was expressed about relocation, purchase of property, and about freeways in general. Many asked "Why do **we** need a freeway?"

Overview of the Four Meetings

Support for a North Freeway was very high in the southern corridor areas and was very low in the northern areas. The people had many questions about relocation. They did not readily accept answers of "It's too early to discuss relocation." Regarding neighborhood sentiment, the black community seemed fairly united behind one particular alignment, that being the one between 27th and 28th Streets from Lake to Grand.

Of all the alignments, the East Route along the C&NW Railroad was the most favored because it "takes fewer housing units," cuts through fewer neighborhoods, "is below the bluffs which reduces noise," and "should cost less than West Routes" due to their cuts and fills.

The Consultant sensed that words would not overcome the fear and animosity of the black community for the City, State, and Consultant about the North Freeway, but that actions hopefully will. The public wants the decisions and work on the North Freeway expedited. In general, all four meetings were beneficial most helpful in the corridor study.

SEPTEMBER 1974 OPEN HOUSE MEETINGS

The second series of meetings followed an open house format. The public walked through displays and talked personally with project planners and engineers. The purpose was to present the detailed (1" = 200') aerial sketch plans of the freeway alignments selected for detailed study and to become knowledgeable of public comments and reactions to these detailed plans.

For each freeway alternate, the detailed aerials were highlighted with colors, spliced together, and attached to tables in the meeting room. Other displays were placed around the room showing future traffic and the present freeway time table. Special tables were marked where citizen's could inquire about relocation, socio-economic factors, and environmental factors from specialists in those fields.

A one-page, two-sided handout was distributed. The front side briefly stated the purpose of the meeting and the work to be completed for the next series of public meetings. The back side listed the approximately 30 factors to be considered in the impact studies of each freeway alternate plus the "No Build".

Representatives from the Nebraska Department of Roads Relocation and Corridor Planning Sections and the Omaha City Planning, Public Works, and Housing and Community Development Departments assisted with the open houses. Representatives from the Federal Highway Administration were also in attendance.

Monday, September 16, 1974. Horace Mann Jr. High was the location of this meeting at which attendance was about 40 persons from 7 pm to 9 pm.

Most persons attending lived south of Grand Avenue. relocation, and acquisition. One couple was concerned about vibrations from freeway traffic. They now have damages from trucks using Sprague St.

The properties along east side of Florence Boulevard have lots from 400 to 700 feet deep which extend over the bluffs and into the "flats". Questions were raised on access to rear lot areas with East Alignment. We need to check the plats on street dedications. It may be best to include a service road (gravel) along west side of East Alignment from Florence Boulevard at Read Street southward to Airport Freeway Interchange. This service road may be needed with the Central and West Alignments along north side of the Hartman Airport Connector from 16th westward.

Tuesday, September 17, 1974. Miller Park YMCA was the site of an afternoon-evening meeting running from 3 pm to 9 pm which attracted 130-150 persons.

For the Central and West Alignments, those land areas at the north end of the corridor not in the City are serviced by the Ponca Hills Volunteer Fire Department. This fact should be noted in the Fire Protection Analysis. We may need to extend 40th Street as a frontage road along west side of the Central from Forest Lawn Avenue northward to Young Street.

People were pleased with the effort made to inform them about the study, and were very interested in the aerial graphics on which the relocation between their property and the proposed alignments could be determined.

Wednesday, September 17, 1974. At St. Philip Neri School from 7 pm to 9 pm, attendance was estimated at between 130 to 150 persons.

With the Central Alignment it was felt that a pedestrian overpass is needed at or near Young for children in Colonial Acres and vicinity to gain more direct access to Florence Elementary School.

With the West Alignment, comment was made that access from the Curtis/Redick Interchange into subdivisions north of McMillan Jr. High was not very adequate. One possibility is to extend 41st Street at Newport Ave. on south along the east side of the West Alignment to Redick as a frontage road. With the West Alignment, the lots along the east side of 40th St. between Forest Lawn Cemetery and State Street apparently should be purchased in total rather than in part.

SPRING 1975 OPEN HOUSE

An afternoon-evening open house took place in Spring 1975 as the third stage of the series of public meetings held during the course of the corridor study. This meeting occurred during the closing phases of the study, after the completion of the impact studies, but prior to completion of an environmental impact statement and the corridor public hearing.

The intent of this meeting was to bring to the public detailed graphics of the final study alternatives, and to summarize the principal impacts of each. Graphics depicting noise impacts, traffic forecasts, air pollution impacts, cost summaries, and other impacts of the study alternatives were displayed.

The factual information concerning the study alternatives presented at this open house, as well as in the preceding series of public meetings, has hopefully made the public much more knowledgeable concerning the North Freeway. On this basis the corridor public hearing should be a more meaningful and important part of the planning process.

APPENDIX D.
POTENTIAL FREEWAY ALIGNMENTS

General Physical Description

Potential Freeway alignments were derived from information on topography, community edges and cohesive areas, schools, parks, churches, property values, and other data. These potential alignments are presented in categories based on their general location (West, Central, and East). These alignments utilize the general terrain and land uses of the areas they pass through in an attempt to minimize the adverse effects of the facility. An effort was made to avoid community property such as parks, schools, and churches as well as avoiding areas of high community identity. When all these factors are included, it is apparent that no technically feasible alignment

can be found that will satisfy all the above considerations. Therefore, compromises have to be made to provide buildable alternates that would yield a suitable degree of traffic service. The following discussion is intended to point out some of these compromises and to indicate the more prominent features of each alignment section.

West Alignments. The West Alignments were conceived to take advantage of non-residential areas found along the Chicago and Northwestern Railroad right-of-way and in the area around the Forest Lawn Cemetery. Community edges were found to exist along 30th Street, the Chicago and Northwestern Railroad right-of-way and in the area around the Forest Lawn Cemetery. Community edges were found to exist along 30th Street, the Chicago and Northwestern Railroad right-of-way and in the vicinity of 42nd Street. These community boundaries together with the availability of inexpensive right-of-way and the existence of suitable natural terrain features yielded the West Alignments shown in Figure D-1.

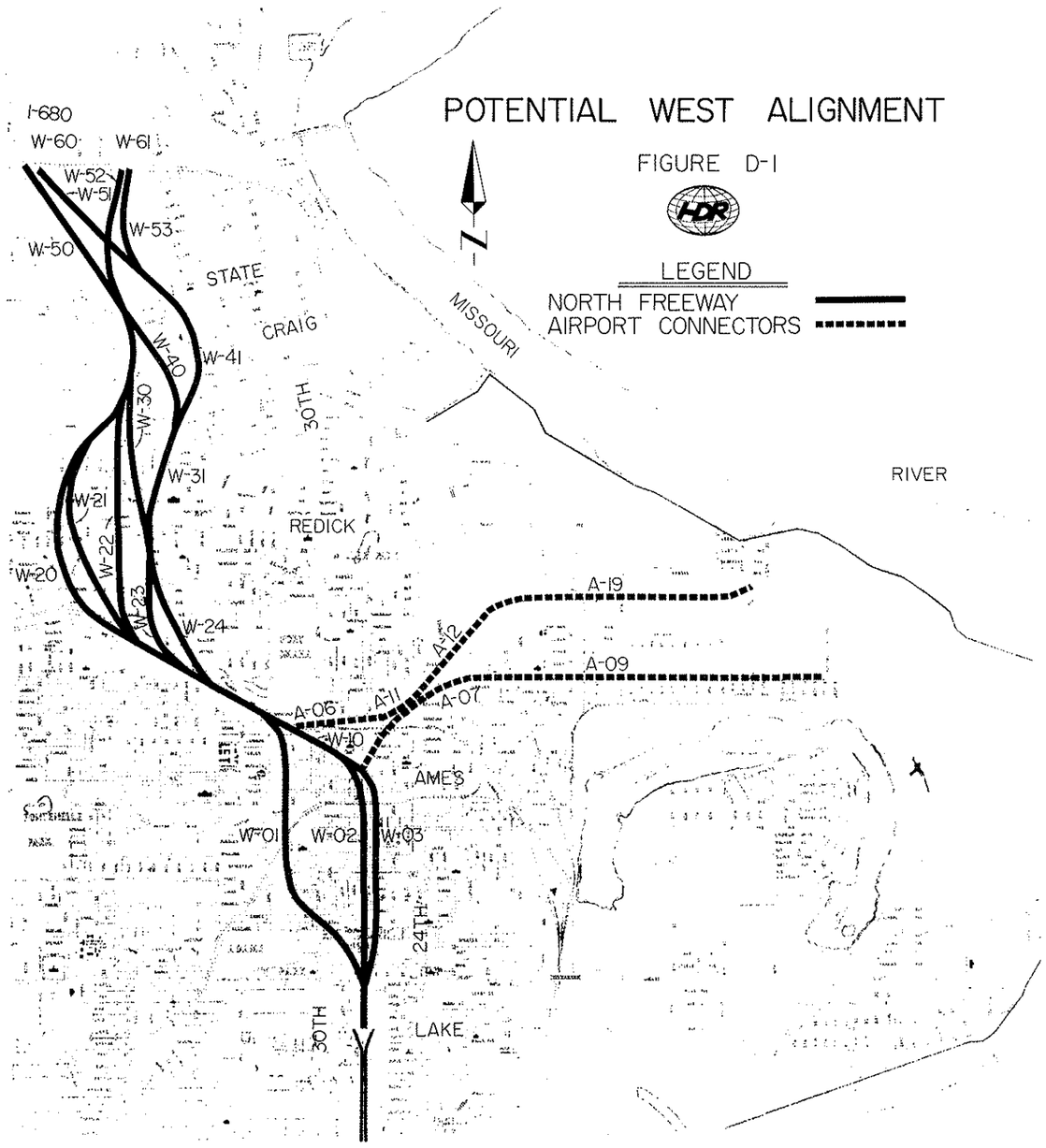
Section W-01 was chosen to provide an alternate that avoided the 30th and Ames commercial center and yet directly connected to the westerly alignments. This would be a depressed section passing under 30th Street, the Missouri Pacific Railroad and Ames Ave.

The Spencer Homes (28th Street and Spencer) consist of 29 multi-family structures. Section W-01 passes through the westerly end of these units taking approximately 10 structures.

This alignment passes very near the Druid Hill School and through a large concrete block plant at John A. Creighton Blvd. and Spaulding. At this location the freeway right-of-way will be entirely on the west side of Creighton Blvd., and the concrete block plant will have to be acquired.

The Parks and Recreation Department proposes to establish scenic routes and bike paths connecting local parks. It should be noted that John A. Creighton Boulevard is proposed for this purpose.

At Ames, this alignment passes to the west of existing commercial development and retains 31st Ave. as a frontage road. An interchange has been developed for this area that provides full freeway-to-freeway movements with the Airport Connector. Freeway-to-local movements are provided partially at 30th Street and partially at Ames. This interchange would not disrupt the new Postal Depot at 31st and Fowler.



W-03 swings a block east of Hamilton to Lake freeway alignment and would follow the block between 26th and 27th Streets. This proposal would take the east units of the Spencer Homes, approximately 8 structures. W-03 is a depressed section as are W-01 and W-02. Due to the swing east, W-03 provides an interchange that does not constrict development in the Ames-30th Street area as much as the W-02 interchange does.

W-10 is unique in that it is subject to a high degree of alteration depending on the type of Airport Connection chosen. The freeway-to-freeway interchange required in this area will disrupt a number of these facilities.

W-22 is described as follows. The southerly section from Fort Omaha to Fontenelle is at-grade and is located partially on railroad right-of-way and situated so that Redman Avenue can be retained as a frontage road to the north. At Fontenelle the freeway will be sufficiently elevated to allow it to pass over the existing street. An interchange would be located here providing a connection with Fontenelle and the proposed Hartman-Redman Arterial. Route W-22 then swings north intercepting the side of a small hill and becoming a depressed section. Remaining a depressed freeway, this alternate passes through a residential area east of 42nd Street. Existing 42nd Street is retained as a frontage road and a split-diamond interchange is located at Curtis and Redick.

At about Ida, Route W-22 again becomes an at-grade section with a possible lane separation to follow the contour of the hillsides. Swinging slightly east the freeway becomes elevated and crosses over Forest Lawn Avenue. W-22 then crosses the easterly portion of Forest Lawn Cemetery.

The cemetery property was utilized in order to keep

the alignment of the freeway west of 40th Street, which is retained as a frontage road. Other benefits are the reduction of residential takings and the preservation of local access routes. No grave sites are located on this section of the cemetery at this time.

North of Forest Lawn, W-22 becomes a depressed section and passes under State Street where a diamond interchange is located.

W-21 is the same as W-22 except from Fontenelle to Forest Lawn. Here W-21 swings farther west to utilize a shallow valley south of Redick and to take advantage of vacant land west of the Mormon Cemetery. W-21 remains at grade from Fontenelle to about Nebraska Avenue where it begins to become depressed in order to pass under Redick where a diamond interchange is located.

From Redick, W-21 comes to the surface and follows a valley of mostly vacant land. Becoming elevated at the north of this valley W-21 swings to the northeast and crosses over Forest Lawn Avenue at the same location as W-22.

Section W-20 is similar to W-22 except that at Fontenelle where W-22 swings north, W-20 continues to follow the railroad right-of-way to the northwest. There would be no connection at Fontenelle, but instead an interchange would be located at 44th Street. Here the freeway swings north retaining its at-grade configuration until it breaks through the ridge at Redick. With this alternate Redick crosses above the freeway and there is no interchange. North of Redick W-20 enters the vacant valley mentioned under W-21 and continues similarly to W-21.

Section W-23 retains the same interchange at Fontenelle as W-22, but swings north sooner and runs along the east side of 41st Street. This section would be depressed and passes under Redick where an interchange would be located.

The Belvedere School is located adjacent to W-23. However, the freeway is depressed at this location thus lessening its impact. The proximity of the interchange at Redick eliminates any access problems.

Section W-24 diverges from the other westerly alternates at 36th Avenue where a connection with the proposed Hartman-Redman Arterial is located. W-24 then swings northeast following an existing valley at-grade through a residential area. W-24 would not be depressed until it approaches the Redick interchange. At this location the freeway would pass beneath the existing road elevation.

North of Redick W-30 and W-31 connect to either W-23 or W-24.

W-30 continues as a depressed section north of Redick as it crosses to the west side of 41st Street. At Ida, W-30 comes to the surface on the side of an existing hill and follows this hill down to Forest Lawn Avenue where it merges with the path of W-22.

Section W-31 swings to the northeast at Redick and follows an existing drainage way down to Weber. This section is at-grade but due to the configuration of the valley it retains many of the advantages of a depressed section.

Section W-40 swings back to the northwest at Weber and crosses over Forest Lawn Avenue. W-40 then becomes an at-grade section until it nears State where it cuts under the proposed interchange as in W-22.

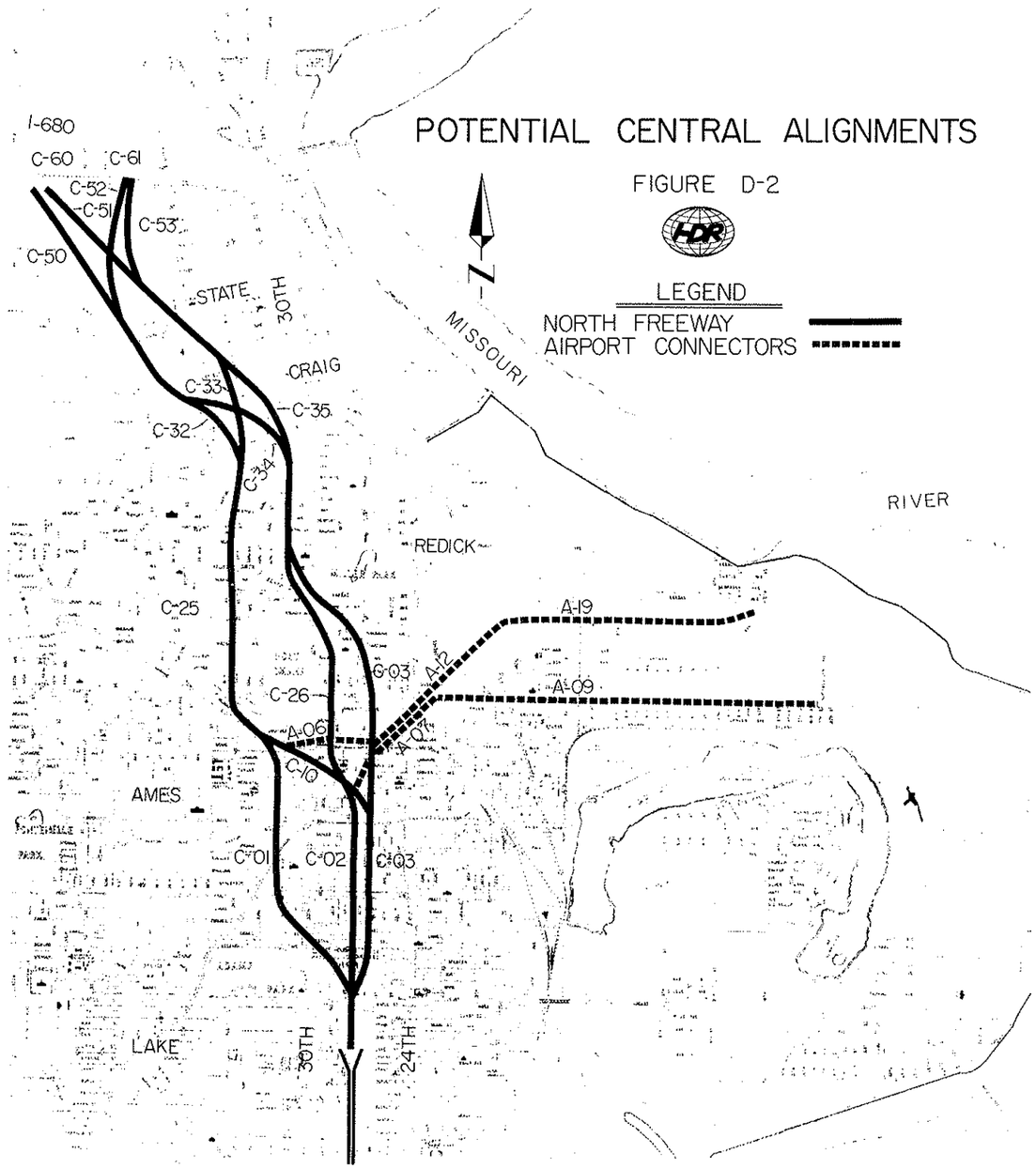
W-41 follows the straight alignment of W-31 continuing to the northeast until it crosses above Forest Lawn Avenue. W-41 then continues elevated across a short valley until it intercepts the side of a steep hill on the west side of Notre Dame Academy. North of the Florence School, W-41 crosses 36th Street and becomes a depressed section.

The proximity of W-41 with the Florence School is not considered a problem because of a difference in elevation of about 30 feet.

W-41 passes under State and provides for an interchange. Thirty-seventh Street requires relocation at State and at 36th Street to provide access to the Florence School.

Section W-50 connects the State Street interchange with an interchange at U.S. 73 and I-680. From a depressed section at State, W-50 becomes elevated as it crosses a valley north of Forest Lawn Cemetery. North of 46th Street W-50 cuts through a high ridge emerging above McKinley.

W-51 connects the W-41 alignment with the U.S. 73/I-680 interchange. W-51 retains its depressed configuration through a ridge north of 37th and State. Emerging from this ridge W-51 becomes elevated and crosses the above-mentioned valley slightly to the northeast of W-50. W-50 does not require as deep



a cut through the ridge north of 46th Street, but approaches the interchange at U.S. 73 and I-680 at a sharper angle making interchanging more difficult. To remedy this, W-51 could be relocated to the southwest and made to coincide with W-50.

W-52 and W-53 connect the State Street interchange to an interchange located between the 30th Street and U.S. 73 interchanges on I-680. They both come from depressed sections at State and proceed down the valley as an elevated section. They both would pass over McKinley.

Central Alignments. The Central Alignments were conceived to provide the most direct routes connecting the existing section of the North Freeway to I-680. Also the existence of several easterly and several westerly routes indicated that some thought should be given to possibilities in the central region (FIGURE D-2).

Section C-01. See the discussion of W-01 in the preceding text.

Section C-02. See the discussion of W-02 in the preceding text.

Section C-03 is the same as Section W-03 south of Ames. At Ames C-03 passes under this arterial, proposes a diamond interchange, and continues north as a depressed section between 26th and 27th Streets.

The Chicago & Northwestern R.R. could pass over C-03 with no trouble.

The proposed Airport Connector connects to C-03 in the vicinity north of the railroad. Depending on the airport connector selected the interchange could incorporate a connection with the proposed Hartman-Redman Arterial.

The Airport Connector requires a substantial amount of takings between the railroad and Fort Street.

At Fort St., C-03 swings west behind a school at 27th and Ellison and then passes under 30th Street between Fort Omaha and Miller Park. A diamond interchange would be located at 30th Street. Swinging north again the freeway follows the east side of 31st Street which is meant to be retained as a frontage road.

In most cases where the freeway passes through a residential area, it is depressed. However, because of the steep gradient between 30th and 31st Streets, the freeway would appear depressed from the west but elevated from the east. Due to the location of churches and businesses along 30th Street and from the aesthetics standpoint, a freeway above existing grade in this area presents some problems.

C-26 originates from an interchange located north of Ames on C-02. C-26 proceeds north between 38th and 29th Streets as a depressed section. At Ellison the freeway swings west under an interchange at 30th Street and then swings north continuing as described under C-03.

C-10. See the discussion of W-10 in the preceding text.

Section C-25 proceeds from either C-01 or C-10 and swings north as an at-grade freeway between 34th and 35th Street. A pronounced valley in this area would give C-35 some of the qualities of a depressed freeway without many of the construction problems. However, this area is characterized as a single family residential area containing many small well-kept homes. Right-of-way acquisition in this area would be very costly. At Newport, C-25 swings slightly east to cross above Martin Avenue.

Section C-32, elevated over Martin, becomes depressed as it passes through a residential area north of Martin. Swinging to the northwest, C-32 descends to cross over Forest Lawn Avenue which requires slight relocation.

North of Forest Lawn Avenue, C-32 becomes a surface section and follows an existing valley northwest to cross under State Street where a diamond interchange is located.

Section C-35 begins at Whitmore on C-03 and swings west. Coming out of a bluff, the freeway is elevated as it passes over Martin Avenue, then goes into a depressed section on the north side of Martin. At about Weber, C-35 again comes out of a bluff and proceeds to the northeast as an elevated freeway. C-35 crosses over Forest Lawn Avenue and then through the south section of Notre Dame Academy. At 36th Street, the C-35 intercepts the side of a steep hill becoming depressed and passing under State Street where a diamond interchange is located.

C-34 crosses Martin, swings to the northwest more sharply and follows a strip of vacant land in an elevated configuration. C-34 crosses over Forest Lawn Avenue at 36th Street and continues as described in C-32.

C-33 continues north from Martin Avenue and becomes depressed as it loses elevation to cross about 30 feet over Forest Lawn Avenue. Crossing a small valley north of Forest Lawn Avenue, C-34 is elevated until it swings to the northwest and intersects the west embankment of Notre Dame Academy. Here C-34 becomes depressed and passes under a diamond interchange at State Street.

C-50. See the discussion of W-50 in the preceding text.

C-51. See the discussion of W-51 in the preceding text.

C-52. See the discussion of W-52 in the preceding text.

C-53. See the discussion of W-53 in the preceding text.

East Alignments. The East Alignments were conceived to take advantage of vacant land between the north line of the Chicago & Northwestern Railroad tracks and the bluffs running along Florence. The Airport Connector is also benefitted with a suitable interchange location in this same area (FIGURE D-3).

From Lake to Ames Sections E-02 and E-03 are similar to W-03 and W-03 respectively.

Section E-02 utilizes a depressed section to pass under Ames where a diamond interchange would be located. From Ames E-02 swings to the northeast crossing beneath the Chicago & Northwestern Railroad.

Section E-03 is similar to E-02 north of Ames except that it is located one block east.

At Browne and 24th Street, E-26 or E-27 can connect to either E-02 or E-01.

Section E-27 would continue as a depressed section from 24th Street and cross beneath Florence Boulevard. Emerging from the bluff at Fort and Florence, E-27 would become elevated and swing to the north. An Interchange with the Airport Connector would be located at about Himebaugh. E-27 then continues along the west side of the railroad as a partially elevated facility. The freeway could pass over Read or Read could be built up to pass over both the Freeway and the C&NW Railroad.

Section E-26 is similar to E-27 except that it is located farther west to facilitate a directional Airport Connector interchange as opposed to one with a partial clover-leaf as would be more appropriate with E-27.

Section E-28 was developed to yield an alternate to locating a freeway adjacent to Florence and to eliminate the problems encountered in the E-62 interchange while retaining the benefits of an easterly alignment.

From Read, E-28 swings to the northwest through an area of single family housing. E-28 would provide a connection at 30th Street. However, it has not been determined if it is possible to pass under 30th at this location, therefore, the type of interchange has not been established.

E-36 originates from the interchange mentioned under E-28 and follows a vacant area to the west of 30th Street where it would become elevated and continue as C-34 described above.

E-37 would swing to the northwest at 30th Street, become elevated and cross over Forest Lawn Avenue. North of Forest Lawn E-37 would continue as C-35 described above.

Section E-38 continues to follow the west side of the Chicago Northwestern R.R. right-of-way from Read Street north as an elevated section.

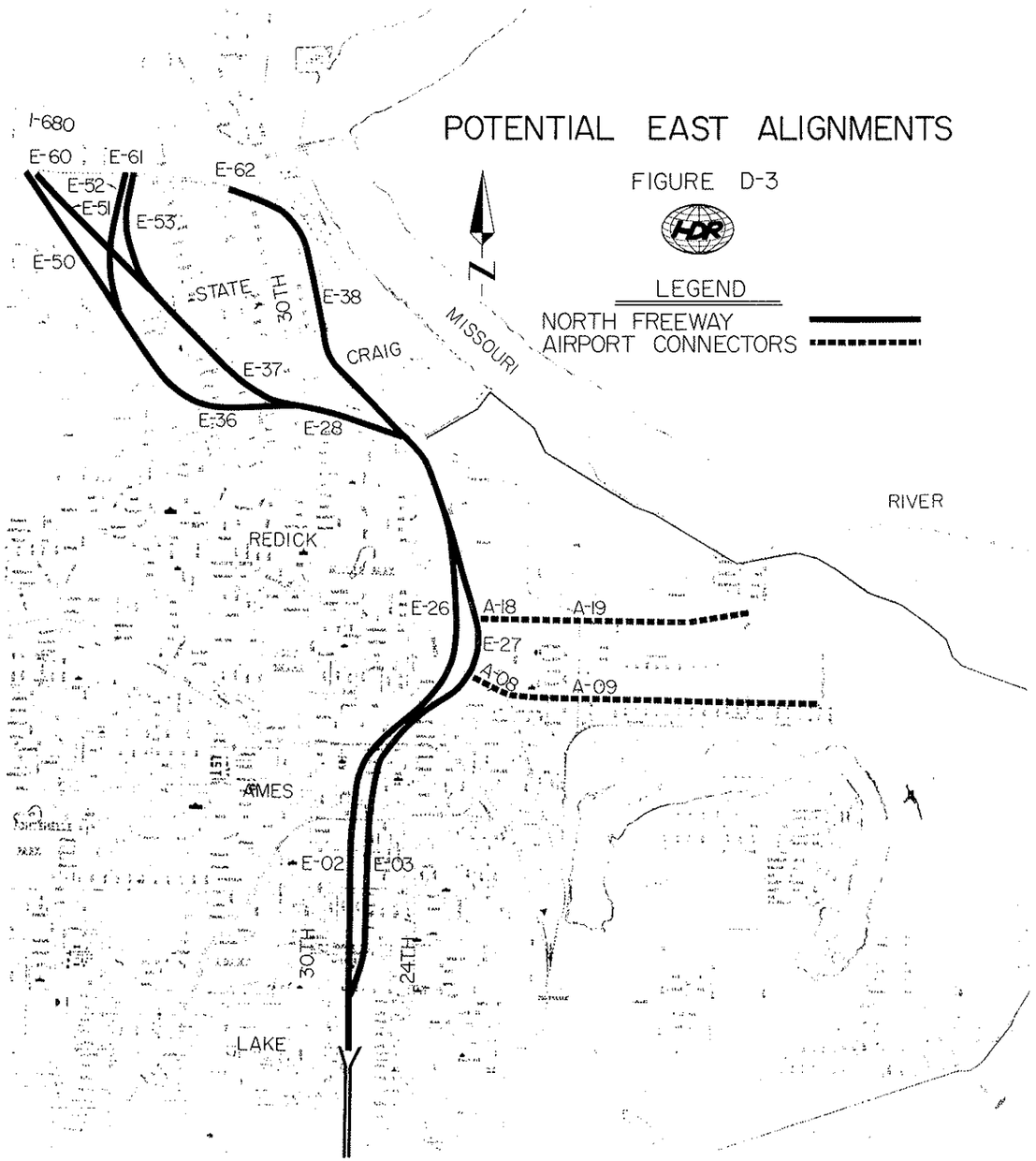
Craig Avenue would require a diamond interchange to allow access to the freeway from the Florence area.

John Pershing Drive, suggested as part of the Riverfront Drive project, would not be effected by E-38.

At Craig, E-38 turns north and is located between 28th Street and 28th Avenue.

The proposed Florence library will be located at 30th and Bondesson, a site adjacent to Fillmore Park. The Freeway could conflict with the library site and Fillmore Park to some extent, depending on the final configuration of the alignment.

I-680 — North Freeway Interchange. When I-680 was designed, the North Freeway was too far in the future to be considered in the design configuration. Therefore, no provision for the North Freeway/I-680 interchange has been made. However, the location of the north end point of the freeway is still flexible



and no particular alignment is favored at this point on the basis of interchanging.

Interchange W-60 shows a fully directional interchange built over the top of the existing diamond interchange at U.S. 73. W-60 provides all freeway to freeway movements and also retains the freeway to local movements present on the existing diamond. The local access required from the south would be provided with a partial diamond off the proposed freeway. This partial diamond could be aligned so as to provide continuity between U.S. 73 and the North Freeway. This could be done by separating the north and south legs of U.S. 73 and creating two signalized intersections on McKinley.

Weaving space is provided for by carrying the ramps of the proposed interchange along the alignment of I-680 several hundred feet before merging.

Interchange C-61 connects the North Freeway with I-680 midway between the 30th Street interchange and the U.S. 73 interchange. This interchange would require the North Freeway to pass over McKinley then under I-680. The new freeway would then loop around to the west and connect with I-680. This interchange requires that the ramps from the U.S. 73 interchange be relocated to the west of that interchange for to provide adequate weaving distances.

The southwest ramp of the 30th Street interchange will require relocation to provide proper weaving distance. The northwest ramp of this interchange will either be reconstructed or eliminated as weaving distances would be very small. It should be noted that this movement, local to westbound I-680 is also provided at the U.S. 73 interchange.

Interchange E-62 is restrained by the northbound North Freeway to eastbound I-680 movement. The distance required for deceleration, turning, acceleration and merging on this movement dictates the configuration of this interchange.

At the end of Section E-38, E-61 is an elevated structure. At this point the above-mentioned turning movement diverges as an elevated ramp that is carried over the railroad tracks and descends to the elevation of I-680 as it crosses well above the valley between Florence and the I-680 bridges.

The main freeway roadway continues to follow the railroad right-of-way until it crosses over relocated 30th Street. The freeway then swings to the northwest crossing over the railroad, well over McKinley and over I-680. E-62 then loops around to the west, descends and connects with I-680.

It is understood that this type of interchange requires a much more costly structure than either W-60 or C-61. It is presumed at this time that such a cost might be justifiable due to the low ROW acquisition costs of the East Alignments.

E-62 requires the removal of all but the northeast ramp of the existing 30th Street interchange. However, local access would be provided at the interchanges of State Street and the North Freeway and U.S. 73 and I-680.

Airport Connectors. There are two basic Airport Connectors. Each of these requires a slightly different treatment with regard to each of the proposed freeway alignments. Therefore, only selected representative freeway links are used in the following discussion (FIGURES D-1, D-2, D-3).

A-06 connects with the interchange of W-01 and swings northeast under 30th Street. Partial local access is provided with a half diamond on the east side of 30th. A-06 then follows the block north of the Chicago & Northwestern R.R. as a depressed section.

A-07 would connect with either a directional interchange as a cloverleaf in the area north of the Chicago & Northwestern R.R. if a central alignment were selected. A-07 would then swing to the northeast and pass under 24th Street and Florence. Emerging from the bluff, A-07 would become elevated and swing east along Fort Street, or possibly just north of Fort.

A-08 is the connection required if an East Alignment is selected. A-08 swings from an interchange on E-26 or E-27 down to Fort Street.

A-09 proceeds along Fort Street or just north of Fort as an elevated freeway. An interchange could be provided at 16th Street with either the West or Central Alignments but not for the East. To the west an interchange could be provided at 9th Street for all alignments. A-09 ends at Abbott Drive where it would become a high grade arterial to the airport.

The Hartman Ave. Airport alignments connect to the North Freeway in a manner similar to the above sections.

A-11 is similar to A-06.

A-12 is connected to C-26 north of the Chicago & Northwestern R.R. as an example of the various locations a connection could be placed. A-12 then follows a path much like E-02 and E-27, passing below 24th Street and Florence as a depressed section. Emerging from the bluffs, A-12 would become elevated and continue to the northeast. New 16th Street A-12 would swing east and cross over 16th Street.

A-18 shows the case where an East Alignment is used. A-18 is an elevated section heading due east. A-18 will only allow for a partial interchange at 16th Street with ramps to and from the east.

A-19 proceeds elevated from an interchange at 16th and goes east along the north side of the site of a small oxbow lake. To the east A-19 swings north and crosses over Abbott Drive to which it then connects. A-19 provides for an interchange at 9th Street.

Environmental Quality of Potential Alternates

West Alternatives. The alternate sections designated as **W-01, W-02,** and **W-03** are generally equal in terms of disruption except that W-01 is slightly longer and is located relatively close to Adams Park. The location, however, of W-01 is still sufficiently distant from Adams Park so that little damage, if any, is likely to occur.

The short segment designated **W-10** would have neglible environmental impact.

Segment **W-20** is not considered to be an environmentally preferable route. The long swing to the west with the resultant traverse across the terrain south of Forest Lawn Cemetery would appear to be highly undesirable. The more northerly location of this alternate near 40th Street is compatible.

Similar objections can be set forth with respect to Section **W-21.** Even though it is a little to the east of W-20, it would still be damaging to the open lands south of Forest Lawn Cemetery.

W-22 is moderately desirable overall and the better of the W-20, W-21, and W-22 segments. Its location tends to run along the edge between the green space and urbanized areas. This would hopefully form a border and allow some "green belt" planning to be put into operation west of the alignment.

The section of the proposed alignment identified as **W-23** is similar in part of its course to W-20, W-21 and W-22. The place of variance does not involve any major environmental disruptions; therefore, no objections exist with respect to this segment. The point should be made, however, that W-23 is included in a preferred westerly located alternate.

Comments concerning **W-24** would be nearly identical to those given for W-23. W-24 would also be just as desirable as W-23 in terms of the preferred western corridor mentioned above.

The route of **W-30** is similar in part of its course to W-20, W-21, and W-22. The area of variation is a segment which is generally parallel to the middle portion of W-22 so that it is equally desirable to W-22.

From the standpoint of environmental concerns, **W-31** would have little impact. In passing however, the presence of a high traffic freeway in this area would possibly be undesirable from the standpoint of noise and air pollution because of a nearby school. This will again depend on noise contours in and about the corridor.

Segment **W-40** is not in itself too objectionable although it does begin to infringe on some of the scenic-forested land north of State Street. Beyond this point are areas which should be protected, if possible, and utilized for other purposes such as parks or green belts.

W-41 is similar to W-40 in terms of its environmental value with two exceptions. First, a large open space which apparently is part of the Notre Dame Academy, is partly used in this alternate. This is not considered to be a native area therefore, its loss would not be too great. Secondly, the Academy itself is close to from the proposed route which again brings up the questions of noise and air pollution. These factors should be carefully weighed before any final decision is made. (The Academy is no longer an active education facility.)

W-50 is a longer route and traverses some forest. However, a great portion of its length is not in forest but across grass lands where replacement is more swiftly accomplished. Therefore, W-50 is a viable western segment.

Alternate **W-51** is likely to be the least preferable of the 50 series segments. The reason for this will be derived from quantitative analyses. Its undesirability is the result of its crossing alternate habitat groups (e.g. forest-grass-forest) and dividing a relatively good stand of trees.

W-52 generally splits an edge between grass and forest. Normally, this would be an objectionable feature. In this case though it would be preferable to W-51 because part of its course is marked by slough land (near trailer court).

Segment **W-53** is similar to W-51 and for this reason, it is objectionable. A redeeming feature of this alternate is its use of some of the slough lands mentioned above in connection with W-52

Few objections can be raised with respect to the **W-60** splice into I-680. Its course is direct and makes use of lands which are already in a disrupted state.

Central Alternatives. For **C-01** and **C-02,** see W-01 and W-02 above.

The course of **C-03** is similar, in part, to W-03 discussed above. However, a large segment of C-03 lies to the north of W-03 following a route between Fort Omaha and Miller Park and back north to approximately Ida or Whitmore Streets. Most of the area traversed is more of social concern than strictly environmental. An objection might be raised concerning the effects of an interchange near Miller Park, or a corridor between Fort Omaha and Miller Park in the first place. There is reasonable evidence to suggest that a high volume traffic-way need not necessarily detract from a park as long as parkland itself is not destroyed. In the case this alignment is considered further, a more detailed analysis of noise, air, and aesthetics would be necessary.

C-10 is the same as W-10.

Segment **C-25** is a straight urban traverse that would do little harm to the natural habitat or environment. A comment can be directed toward the problems of noise and air pollution on the residential areas remaining once construction of the freeway was completed. It would likely be difficult to construct a system which would satisfy the inhabitants around this corridor.

The paragraph on C-03 above expresses reservations about "shooting the gap" between Fort Omaha and Miller Park especially in view of the fact that an interchange would occur in the general area. The comments concerning C-03 can therefore be applied to **C-26.**

Part of **C-32** crosses a corner of semi-forested land but it consumes a fairly small portion of that ground and would thus be more desirable than **C-33** in that the latter segment assumes a direction that would bisect the small forest. As far as aesthetics are concerned, the northern part of C-32 would lend itself to a good view from the road.

The undesirability of C-33 has been approached in the discussion of C-32. Besides the objections mentioned in the above paragraph, there is the problem of noise and air pollution around Notre Dame Academy. The noise problem may be marginal and in the event this alternate became reality, could be alleviated through the construction of protective berms or other attenuating devices.

The segment labeled **C-35** is similar to C-33 except that part of its southern end is displaced eastward. It may be well, in connection with this segment, to discuss some open ground traversed generally by C-33 and C-35 near Forest Lawn Avenue and North Ridge Drive. In many cases, patches of open land in the middle of urban districts are highly desirable. These lands, undeveloped as formal parks, are useful in that they provide a "touch of the country" for some urban people especially children. However, the lands involved here are in poor shape and unless they were redeveloped in trees or grasses, their loss would be minimal.

C-50, C-51, C-52, and **C-53** are the same as W-50, W-51, W-52, and W-53 discussed above.

The interchange labeled **C-61** has one particularly objectionable feature and that is the large cloverleaf loop located north of I-680. It would not only disrupt a significant piece of land (that within the radius) but would also take the edge of a good forest. It is obvious that taking a corner of a forest is usually better than taking the middle or the whole but avoidance of it altogether is most desirable.

East Alternatives. E-02 and **E-03** are essentially the same as the western and C-02, W-02, C-03, and W-03 alternatives discussed above. These bear in an easterly direction in their northern extremes but still do not cause significant environmental disruption.

Segment **E-26** is located partly above and partly on the flood plain of the Missouri River. The areas it crosses are mostly urban and slough land next to industrial sites on the floor plain. This route would

seem to be a highly preferable corridor along with E-27 discussed below. E-26 may offer the best aesthetic alternative.

E-27 loops a little bit more to the east on the flood plain than does E-26. There is little difference in environmental disruption between these two corridors. Above, it was stated that E-26 may have some advantage aesthetically but on the other hand, E-27 may be preferred from the standpoint of noise and air pollution.

E-28 is a short segment which is not particularly objectionable from an environmental view except that it commits this alignment to a westerly merger with I-680 and the attendant environmental conflicts of the western alternatives.

E-37 is undesirable in a way similar to W-41 in that it passes relatively closely to the Notre Dame Academy, which is presently inactive. Secondly, it passes through a woodlands north of State Street and this is considered to be environmentally unsound.

E-50. See the paragraph concerning W-50.

E-51. See the paragraph concerning W-51.

E-52. See the paragraph concerning W-52.

E-53. See the paragraph concerning W-53.

E-38 runs approximately along the route which is considered the most preferable. The lands involved are for the most part industrial slough, noise and air pollution would be easily handled, and there are interesting possibilities for aesthetic enhancement. In addition, this segment could be incorporated into the Riverfront concept and can provide an easy access to the Eppley Airfield.

The interchange **E-62** is similar to C-61. The large partial cloverleaf north of I-680 is not particularly desirable; however, if this interchange were necessary in order to bring the North Freeway along the course of E-38, then the bad points of the I-680 connection would be outweighed by the good points of the E-38 alternative.

The Airport Connector. The Airport Connectors to the North Freeway should have little affect on the natural habitats of the North Omaha and Carter Lake areas. The site has already been vastly disrupted so that little, if any, unmanipulated habitat remains. The greatest single asset of this disrupted flood plain is the high fertility of its soils but the farming operations now being practiced in some areas will be giving way to proposed industrial expansion. This then, will commit the entire section, bounded by the bluffs on the west and river to the east, to an industrialized urban environment.

Summary. The eastern side of the study area is most preferable for the location of the North Freeway from the environmental standpoint. The combinations of segments E-02 or E-03 with E-26 or E-27 and E-28 are considered to be the least disruptive. These eastern preferences from the environmental perspective may be offset by the problem of moving traffic from the Forest Lawn area to Downtown. A possible solution to this would be the creation of a freeway along the river as indicated but with a "spur" bearing northeastward from 27th and Ames, south of Fort Omaha and generally along a route defined by C-10. The "spur" would "feather out" around 42nd and Fort Streets. These routes would account for little environmental disruption since they tend to follow slough lands along industrial sites and railroads.

The preliminary work indicates that the West Alternatives would be environmentally the poorest. In the event one was necessary, the segments that should be considered are W-01, W-02, W-03, W-10, W-22, W-23, W-24, W-30, W-40, W-50, and W-60.

Social-Economic Evaluation of Potential Alternates

West Alignments. Alignment **W-01** will have limited impact on commercial establishments at the bridging of 30th Street. Major obstacles to the route are: Omaha Concrete Stone, Omaha Body and Equipment Company, Electric Storage Battery Company, and businesses close to the 30th and Ames commercial core.

School attendance areas affected are: Druid Hill, Kennedy, Monmouth Park, and North High.1|

1| Schools which are noted as being affected by alignments will need to have overpasses or other access routes at each block in the immediate area of the school to provide for child pedestrian traffic. Alignments which go through residential areas will also need a number of access routes across the roadway. Because North High serves all of northeast Omaha, the Western and Central alignments will affect its attendance area.

Based on 1970 census data, housing valves range from $6,000 to $10,000. Vacancy rates are high and deteriorated housing conditions are widespread. Spencer Homes, an Omaha Housing Authority low-income project, will be affected. This will result in the need for planned relocation for a minority low-income population. Population displacement will be substantial at the proposed interchange site.

The W-01 alignment will not affect any parks but will pass close to the Mt. Nebo Baptist Church at 3211 Pinkney and the Sharon 7th Day Adventist at 3036 Bedford.

Both **W-02** and **W-03** affect an area which is heavily populated with minority groups. Population density is approximately 30 percent higher in W-02 and W-03 than in W-01. Housing values are similar to W-01, vacancy rates are high, and deteriorated housing conditions are widespread. Spencer Homes will be affected by both alignments.

Some light industry and small commercial establishments will be affected. Also affected will be the New Light Baptist Church, Dominican High School, Holy Angels Church and the attendance areas of Lothrop, Sacred Heart, and Saratoga schools.

There is little apparent socio-economic difference between Sections W-02 and W-03.

W-02 will affect Holy Angels Church at 2720 Fowler, the Church of Christ at 2702 Pratt and pass close to the Mt. Moriah Church of God in Christ at 3915 North 28th Street. The New Light Baptist Church will also be affected. This alignment will not affect any parks.

The southern portion of W-03 will affect the New Light Baptist Church. The W-03 alignment will not affect any parks.

Section **W-10** is a relatively short section and offers access to the 30th and Ames commercial core and takes advantage of the railroad right-of-way. As a result, there will be limited residential displacement. Monmouth Park and Dominican school attendance areas will be affected.

Section **W-10** will not affect any parks or churches.

Due to the presence of the railroad right-of-way, the southern portion of W-20 will result in limited population displacement and little neighborhood disruption. Access to the proposed Redman Avenue interchange and northwestern portions of Omaha is provided.

The proposed Redman Avenue interchange of the **W-20** will affect Crown Point Park at 43rd and Laurel Avenue. No churches will be affected by this alignment.

The central portion is largely residential with larger lot sizes and newer housing units than in the **W-21** through **W-23** sections.

The northern portion (north of Redick Avenue) skirts the edge of Forest Lawn Cemetery. Cemetery expansion is currently underway to the west of this area and there are no grave sites along the routeway. No significant residential displacement will occur in the northern portion.

School attendance areas affected are Wakonda, Central Park, St. Richard, and Gethsemane Lutheran.

The southern portion of these alignments **W-21, W-22, W-23, and W-24** offer the same advantage as the southern portion of W-20, but at decreasing lengths, with W-21 having a greater use of railroad right-of-way than W-22. Residential displacement will be minimal.

The central portion of **W-21** and **W-22** is near Pleasant Hill Cemetery. Both alignments will displace a slightly older residential area than W-20.

The central portion of **W-23** and **W-24** affects more residential properties than the W-20, W-21, and W-22 sections.

The northern portion of W-21, W-22, W-23, and W-24 passes through open land with only relatively scattered residential sites. The eastern part of the Waconda School attendance area will be split by W-21. All of the routes will affect the attendance areas of Central Park, St. Richard, and Gethsemane Lutheran schools.

Some residential property in the southern portion of the alignments **W-40** and **W-41** will be affected. Florence School will be isolated from its major attendance area. Students will no longer be attending Notre Dame Academy due to a merger with Rummel effective in September of 1974.

Sections **W-50, W-51, W-52,** and **W-53** are in a basically open and undeveloped area, the socio-economic

impact of the routes will be neglible. W-52 and W-53 pass close to a mobile home park.

Sections **W-21 through W-53** will not affect any parks or churches.

Central Alignments. Sections **C-02** and **C-03** are similar to Sections W-02 and W-03. C-03, however, extends further north into an area which is completely residential. Housing is of higher quality and value than in the southern portion. Population density is high and the area is one of transition, with an increasing minority population since 1970. The attendance areas for Miller Park School and Blessed Sacrament School will be affected by both alignments.

Both C-02 and C-03 will affect the Holy Angels Church at 2720 Fowler.

C-03 (North of Ames) will also affect the Power House Church of God in Christ at 2553 Browne, St. John's Episcopal at 3004 Belvedere Boulevard, Latter Day Saints (Omaha Lamanite Branch) at 5960 North 30th and Blessed Sacrament at 30th and Curtis.

Section **C-10.** See comments regarding Section W-10.

Section **C-25** is characterized as extensively residential with housing generally ranging from fair to good. Access to and from the residential area is limited because of a lack of interchanges. The alignment divides the attendance areas of Belvedere Elementary School and McMillan Junior High School.

Section **C-26** passes through a large residential area, with older and moderately priced homes. Population density is high and the area is transitional, with an increasing minority population since 1970. The route passing between Fort Omaha and Miller Park, and the proposed interchange will affect the religious institutions of Blessed Sacrament, Latter Day Saints, St. John's Episcopal, and Church of God. The route also divides the attendance areas of Belvedere Elementary School and McMillan Junior High School.

The C-26 alignment will not affect any parks but will affect the Latter Day Saints (Omaha Lamanite Branch) and, to some extent, St. John's Episcopal and Blessed Sacrament Church.

Some residential property in the southern portion of the alignments **C-32, C-33, C-34,** and **C-35** will be affected. C-33 and C-35 will isolate Florence School from its major attendance area and will pass through Notre Dame Academy property.

Sections **C-50, C-51, C-52** and **C-53** affect a predominantly open and undeveloped area. C-52 and C-53 pass close to a mobile home park.

Easterly Alignments. Sections **E-02** and **E-03** — See comments on Sections W-02 and W-03.

The extreme southern portions of Sections **E-26** and **E-27** are characterized by a high population density. In these portions, housing values are low with some deterioration.

The central and northern portions of E-26 and E-27 will result in limited residential, commercial, and industrial displacement. The alignments, however, are especially advantageous to commercial and industrial establishments in the vicinity. The routes will have little, if any, affect on the attendance areas of Sherman and St. Theresa Schools. There is little apparent socio-economic difference between the two sections.

The E-26 alignment will pass close to the Pearl Memorial-Asbury United Methodist Parish at 2319 Ogden but will not affect any parks. The E-27 alignment will not affect any parks or churches.

Because of population density, Section **E-28** will result in substantial residential displacement. The housing affected is moderately priced. The attendance area of Minne Lusa School will be affected. The E-28 alignment will not affect any parks but will affect the Mount Olive Lutheran Church at 7301 North 28th Avenue.

Section **E-36** bypasses Notre Dame Academy and will affect the attendance areas of McMillan, Belvedere, and Florence schools.

E-37 passes between Florence School and Notre Dame Academy. It will separate Florence School from a major portion of its attendance area and affect the attendance areas of McMillan and Belvedere Schools. It will also result in more population displacement than E-36.

Alignment **E-38** will pass close to Calvary Foursquare Gospel Church at 8429 North 29th Street, the proposed Florence Library Site, and Fillmore Park.

Sections **E-50, E-51, E-52** and **E-53** affect a predominantly open and undeveloped area. E-52 and E-53 directly affect a mobile home park as do other northern alignments.

Airport Connectors. A-06 and **A-11** skirt the southern edge of Fort Omaha, passing through a heavily populated area. The socio-economic impact will be similar to E-26.

The socio-economic impact of **A-07** and **A-12** is similar to that in the southern portion of E-26 and E-27.

Because Sections **A-08** and **A-09** pass through a largely residential area, the social impact will be greater than **A-18** and **A-19.** The A-08 and A-09 routes will divide areas of Sherman and St. Theresa Schools.

The northern routes (A-18 and A-19) will pass through an industrial development and will have a greater economic impact. They will have little affect on school attendance areas.

Both Routes (A-08, A-09 and A-18, A-19) provide direct access to the airport facilities.

The Airport Connector route, A-11 and A-19, will not affect any parks or churches.

The Airport Connector route, A-06 and A-09, will not affect any parks but will affect St. Therese of the Child Jesus Church at 1423 Ogden, Christian Science-Third Church at 2118 Browne, Faith Baptist Church at 5123 North 15th and Asbury United Methodist Church at 5226 North 15th Street.

Selection of Alignments for Detailed Studies

The potential alignments discussed above were subjected to preliminary reviews by the HDR Study Team, the Citizen Consortium, and the City and State staffs. Reviews were also received from the public, both individually and at a series of four informal public meetings.

Having assessed the above evaluations and preliminary review comments, the following conclusions as to which of the potential alignments should be subjected to the more detailed corridor studies were made.

Final Consensus. The following consensus was reached by the Study Team and the Citizen Consortium. (The alphanumeric designations refer to the sections of the potential alignments).

TABLE D-1

SELECTED ALINGMENTS FOR DETAILED STUDIES

Best Alignment of:	**(May 13, 1974) HDR Study Team Staff**	**(May 15, 1974) Citizen Consortium**
West	W-01 & W-02; 10	W-01 & W-02; 10
	W-22	W-22
	W-50	W-50
Central	C-01 & C-02; 10	C-01 & C-02; 10
	C-25	C-25
	C-32	C-32
	C-50	C-50
East	E-02	E-02
	E-26 or E-27	E-26 or E-27
	E-38	E-38
Airport Connectors	Study both	Study both
	A-09	A-09
	A-19	A-19

West Alignments. Between Lake and Ames, three basic alignments were shown: W-01 (or C-01) along 31st Ave.; W-02 (or C-02 or E-02) between 27th and 28th; W-03 (or C-03 or E-03) between 27th and 26th. Section W-01 would pass through the westerly part of Spencer Homes and through the concrete block plant on Creighton Blvd. The plant management is not concerned with W-01 as their long-range plans are to relocate. W-01 would allow commercial development to more freely expand along Ames between 31st and 24th.

Section W-02 passes through the center part of Spencer Homes, the M. L. King Day Care Center, and Holy Angels Church/Dominican High School. W-03 does not differ significantly from W-02 and they are considered the same concept. W-02 is a more direct alignment.

The Consortium had considerable discussion on both W-01 and W-02. Interest was expressed into the impacts to Spencer Homes, Druid Hill School, and to the homes west of 31st Ave. The consensus was to study both routes in more detail to determine the degree of impacts. Therefore, both W-01 and W-02 were subjected to the detailed studies.

Section W-22 follows along 42nd Street. Its path is more direct than adjacent alternates, conforms better to the city street system, and passes through more vacant land areas. W-22 does pass through the eastern side of Forest Lawn Cemetery. W-22 was recommended with emphasis to be given to minimizing the takings of the cemetery lands.

Section W-50 forms a buffer between the existing land uses and open space north of State Street. It passes through grass lands rather than the young forest areas. W-50 directs the North Freeway to an interchange with I-680 at the existing U.S. 73 interchange point. This would establish roadway system continuity with U.S. 73 and the North Freeway and maintain adequate interchange spacing on I-680. Thus, W-50 was recommended for the detailed study.

Central Alignments. Reasoning for recommending both C-01 and C-02 is the same as described above for W-01 and W-02.

Section C-26 and the northerly part of C-03 have some impact upon Miller Park and Fort Omaha, serious impact to Blessed Sacrament Church and Trinity Lutheran Church and serious impact in isolating small residential block areas of residential (30th to 29th between Ames and Kansas and 30th and 31st between Kansas and Martin).

Of the central alternates, C-25 has a good alignment topographically and it avoids the impacts caused by C-26 and C-03. Thus, C-25 was recommended for more detailed studies with consideration to be given to interchange locations.

Sections C-32 and C-50 are recommended in the northern areas for a Central Route. The reasons are the same as given for W-50. Additional reasons relate to the impacts of the alternates to C-32 and C-50.

C-33 passes through the Notre Dame Academy grounds (although the school is now closed) and seriously impacts Florence Elementary school.

C-53 passes through the young forest north of State Street.

C-52, C-53 and C-61 direct the North Freeway to an interchange with I-680 at a point midway between the I-680/U.S. 73 and I-680/30th Street interchanges. This interchange point can function; however, the weaving sections on I-680 are restrictive and both the existing diamond interchanges would require reconstruction. By comparison, the C-50 and C-60 segments (North Freeway interchange at I-680/U.S. 73 Interchange) would provide adequate weaving sections on I-680 and only part of one existing diamond interchange may require modifications.

East Alignments. E-02 was recommended for reasons given for W-01 and W-02.

As recommended, E-26 and 27 are basically the same path. The difference is due to the Airport Freeway Alternates.

Section E-38 follows an existing "edge" (railroad) in the Florence and Minne Lusa areas and intersects with I-680 at the existing 30th Street Interchange. By comparison, E-36 and 37 bisect the Minne Lusa Area, do not blend with the existing street pattern, and add additional travel distance to the North Freeway. Section E-38 was recommended with a study of interchange locations.

Airport Connectors. Only two possible freeway paths were found: A-09 and A-19 alignments. Both were recommended for further study.

APPENDIX E.
FAST, SAFE, AND EFFICIENT TRANSPORTATION

One of the prime objectives of the North Freeway is to contribute to the fast, safe, and efficient transportation of people and goods in Omaha, both on the freeway itself and on the street system in the areas served by the freeway. The evaluation of each of the alternatives with respect to this objective can be subdivided into two areas: the performance of the freeway with respect to capacity, level of service, and geometrics; and the system-wide effects of the freeway on the surface street system, and the traffic on those streets.

Traffic and Capacity Analysis

The evaluation of the alternates with respect to the geometric design features of the freeway involved analyses of section capacities, weaving sections, merging and diverging maneuvers, sufficient ramp spacing, and proper lane balance.

Peak hourly volumes for this analysis were derived from the average daily traffic flow maps displayed in Part V of this report. Factors of 11% for the percentage of traffic occurring during the peak hour and 50% for an assumed 50-50 directional split of traffic on the freeway were applied to the ADT volumes to obtain the peak hour volumes used in these analyses.

Since traffic assignments were performed only for the East, Central (31st Avenue), and West (27th-28th) Alternates, volumes for the Central (27th-28th), and West (31st Avenue) Alternates were approximated by transferring Central (31st Avenue) traffic to the West (31st Avenue) Alternate and West (27th-28th) Alternate traffic to the Central (27th-28th) Alternate. Similarly, assigned volumes on the Hartman Avenue Airport Connector were assumed to prevail on the Fort Street Airport Connectors. These transfers enabled an analysis of the different ramp configurations and geometrics of these other alternates to be performed.

The procedures of the **Highway Capacity Manual** 1] were followed in the capacity analyses. Additional references included the **Road Design Manual** 2], **A Policy on Geometric Design of Rural Highways — 1965** 3], and **Capacity Analysis Techniques for Design of Signalized Intersections.** 4].

For the purposes of analysis, it was assumed that geometrics of the freeway were very nearly ideal, the percentage of trucks was 10%, the average highway speed for design purposes was 70 mph, and a peak hour factor of 0.83 was appropriate.

In the summary of the capacity analysis, which follows, references for the sake of clarity are made to plates in Part V of this report, showing the various alignments.

East Alignment. The East Alignment generally provides Level of Service 5] B or C along its length

1] **1965 Highway Capacity Manual,** Special Report 87, Transportation Research Board, Washington, D.C.

2] **Road Design Manual,** Nebraska Department of Roads, Bureau of Highways

3] **A Policy on Geometric Design of Rural Highways — 1965,** American Ass'n. of State Highway and Transportation Officials, Washington, D.C.

4] **Capacity Analysis Techniques for Design of Signalized Intersections,** Reprints from **Public Roads, A Journal of Highway Research,** Vol. 34, Nos. 9 and 10, U.S. Department of Transportation.

5] Level of Service is a qualitative measure of operating conditions on a roadway. The six levels are: Level A — free flow, no delay; Level B — stable flows, slight delays; Level C — stable flows, acceptable delays (usual standard for design); Level D — approaching unstable flows, tolerable delays; Level E — unstable flows, congestion and intolerable delays (capacity); and Level F — forced flows, jammed conditions.

and Level A prevailing on the Airport Connectors (FIGURE E-1). Exceptions are in the vicinity of the proposed Hartman-Redman Arterial where the freeway is at Level A, between Craig and I-680 where volumes may induce Level D, and on the North Freeway ramps heading to westbound I-680 where a 40 mph design speed on the curve causes Level D to prevail. I-680 in the vicinity of the new interchange will function at Level A or B. South of Lake Street the North Freeway will operate at Level E unless auxiliary lanes between Hamilton and Lake on-ramps and off-ramps are installed, in which case Level C would prevail. The Hartman and Fort Airport Connectors both would operate at Level A.

Along the length of the alignment, changes in level of service generally occur in smooth steps, for example, from Level B to Level A or from Level B to C. The alignment is geometrically smooth and no substantial grades are encountered.

South of Lake Street, a review of the freeway ramping and the peak hour volumes indicates that unless auxiliary lanes are placed between the Hamilton Street and Lake Street exit and entrance ramps, the freeway would be operating near Level E. The two suggested auxiliary lanes, about 2,000 feet in length would improve traffic flow to Level C. This situation is caused by the high traffic on the main line and the Lake Street Ramps.

The Lake Street interchange is a simple diamond type (PLATE 101). The exit ramps both flare to two lanes, with the northbound exit ramp tying into 27th Street just south of Lake. The northbound entrance ramp diverges from 27th Street just north of Lake. Between Erskine and Corby, 27th Street will be one-way northbound for compatibility with the freeway ramps.

From Lake, the basic 6-lane freeway section continues north to the Fort or Hartman Airport Connector ramps. Between Lake and Ames, the freeway functions at Level C. A half-diamond interchange is located on the south side of Ames (PLATE 102). The northbound exit ramp flares into two lanes, tying into 27th Street just south of Ames, while the southbound entrance ramp takes off from 28th Street. Both 27th and 28th Streets are one-way the first block south of Ames. Both of the Ames ramps should require approximately 1,500 foot acceleration or deceleration lanes at their juncture with the freeway because of the proximity of heavily-utilized on and off ramps of the Hartman-Redman Arterial diamond interchange just north of the Ames ramps.

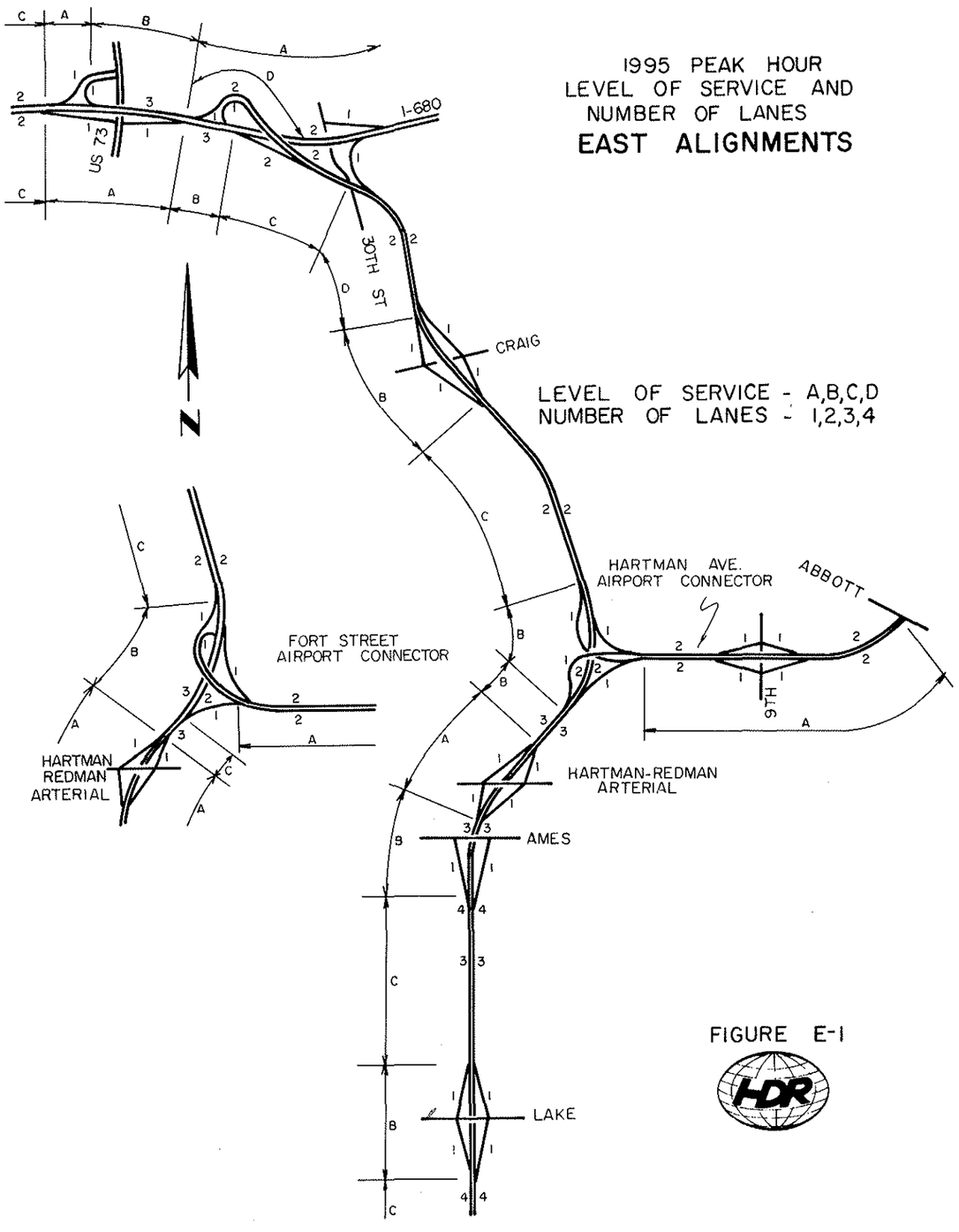


FIGURE E-1

At the Hartman-Redman Arterial, a full diamond interchange is planned (PLATE 102). The exit ramps will flare to two lanes at their terminals. Between Ames and the Hartman-Redman Arterial and paralleling the freeway will be two frontage roads, which will provide local access, better distribute traffic, and compensate for the "missing" half of the Ames diamond interchange. These service roads will be one-way streets accommodating two lanes of traffic south of the Hartman-Redman Arterial ramps and three lanes north from this point to the Hartman-Redman Arterial. These frontage roads will require railroad grade crossings just south of the Hartman-Redman Arterial to accommodate the C&NW Spur line to the customer at 30th St. Usage of the crossings by trains would be very light.

From the Ames ramps to the southerly Hartman-Redman Arterial ramps, the freeway will function at Level B. Between the two pairs of Hartman-Redman Arterial ramps Level A will occur. From the northerly Hartman-Redman Arterial ramps, traffic would flow at Level B to the northerly ramps of the directional interchange with the Hartman Avenue Airport Connector. The freeway becomes a four-lane section north of the southerly directional ramps (PLATE 103). The situation is the same for the interchange with the Fort Street Airport Connector (PLATE 104) except that the northbound section of the freeway between the Hartman-Redman Arterial and the Fort Street Airport Connector off-ramp may operate at Level C due to a relatively short weaving section.

Either of the 4-lane Airport Connectors operates at Level A between the North Freeway and Abbott Drive. In this case, the Airport Connectors interchange with 9th Street by means of a diamond interchange (PLATES 415, 416, 425, 426). The Fort Street Airport Connector ends in an at-grade T-intersection with Abbott Drive. The Hartman Avenue Airport Connector does similarly except that the west-to-south and south-to-west movements would be handled by directional ramps, greatly minimizing traffic through the at-grade junction. Capacity analyses show that the traffic at this intersection could be handled at Level of Service C or better without the ramps.

Continuing north, the mainline of the freeway would operate at Level C toward Craig Street (PLATE 105). Between the two pairs of ramps at the diamond interchange, Level B would occur. The off-ramps at Craig Street would be flared to two lanes at their junction with Craig (PLATE 106). North of Craig, increased volumes will cause Level of Service D to prevail. If the East Alignment is chosen, final design studies

may find that 3 lanes in each direction is justified, although such a section would incur additional structural costs as this portion is elevated.

Near 30th Street in the northbound direction, a ramp with a 45 mph design speed connects to east-bound I-680 (PLATE 107). Two lanes continue north across I-680, where a 40 mph design speed curve will permit only Level of Service D. Subsequently these lanes merge with westbound I-680. A weaving section is formed as shown in FIGURE E-2. Light volumes allow narrowing I-680 westbound from two lanes to one-lane upstream by means of signing and striping. This section should provide Level of Service B, since much of the on-ramp traffic was found to be bound for U.S. 73.

West of this weaving section, the on-ramp from U.S. 73 merges with westbound I-680, from which point Level of Service C occurs (PLATE 108).

Eastbound I-680 operates at Level C to the U.S. 73 off-ramp. Between ramps, Level A occurs. The on-ramp from U.S. 73 coupled with a diverge ramp downstream to the North Freeway forms a weaving section, shown in FIGURE E-3. This section should junction at Level B, as the heavier movements are from I-680 and U.S. 73 to the North Freeway ramp (PLATES 107, 108). I-680 east of the North Freeway ramps will operate at Level A under 1995 peak hour traffic.

The westbound I-680 to southbound North Freeway two-lane ramp and the eastbound I-680 to the southbound North Freeway one-lane ramp merge near 30th Street. The configuration of this section is shown in FIGURE E-4. There is no weaving problem as Craig is sufficiently downstream. However, a left-hand merge is required, which will operate at Level D at peak hour (PLATE 106). In fact both north and southbound freeway sections will operate at Level D in this area. Final design studies may determine that a six-lane freeway is justified here despite the expense of additional elevated structures.

Central Alignment. Nearly all of the Central (27th-28th) Alignment will operate at Levels B or C, while the Central (31st Avenue) Alignment has two sections which may operate at Level D (FIGURE E-5). All of the Airport Connectors function at Level A. Along the Central (27th-28th) Alignment from south of Lake Street to south of Ames, the freeway is essentially a straight 6-lane-section. As with the East Alignment, auxiliary lanes are recommended between the Hamilton and Lake Street ramps to improve service from Level E to C.

The Lake Street interchange is a simple diamond-type with the exit, ramps flared to two lanes as they approach Lake Street (PLATE 201). Between the Lake Street ramps, the freeway operates at Level B, and north toward Ames at Level C. North of Ames and east of 30th Street is a directional interchange with the Airport Connector. On to the west toward 35th and Redman collector distributor roads connect the freeway and Airport Connector with the proposed

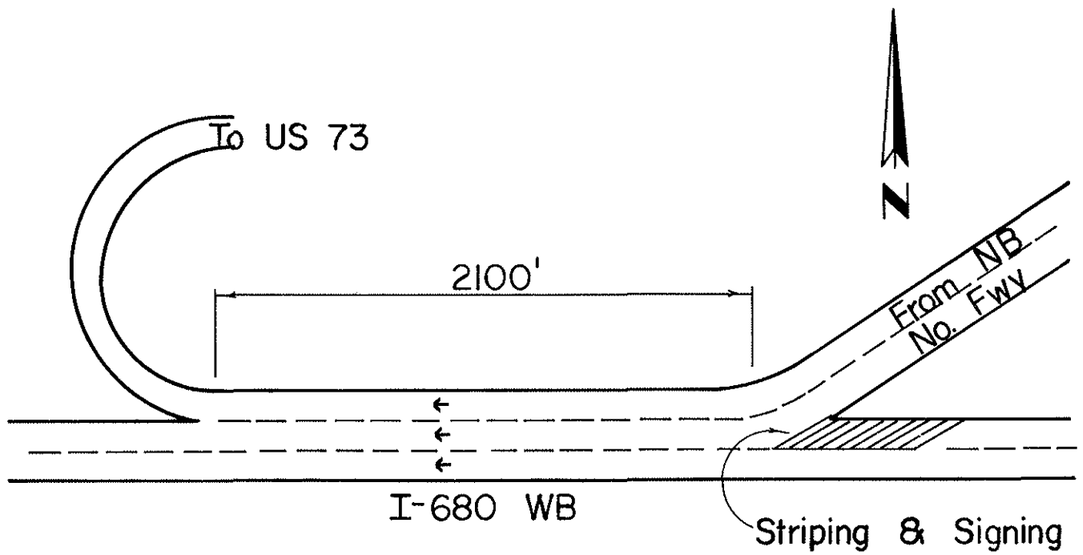


FIGURE E-2 Weaving Section, North Freeway Ramp, To US 73 Ramp, East Alignment

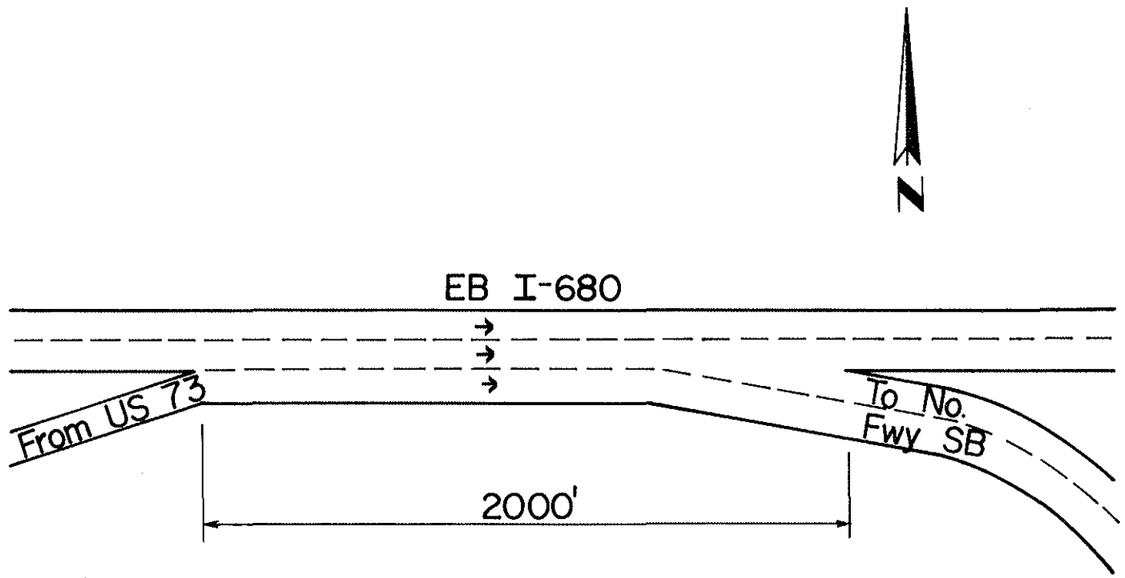


FIGURE E-3 Weaving Section, US 73 To North Freeway Ramp, East Alignment

Hartman-Redman Arterial paralleling Redman Avenue (PLATES 202, 203). This combination interchange allows access to and from the Airport Connector via 30th, Ames, both directions of the freeway, and the Hartman-Redman Arterial. The diamond interchange at 30th connects to the Airport Connector on the east, and via the collector distributor roads, the North Freeway and the Hartman-Redman Arterial to the west. The diamond at Ames connects to the Airport Connector to the north and the North Freeway on the south. Hartman-Redman Arterial traffic has access to the southbound lanes of the North Freeway, to 30th Street, and to the Airport Connector, and from either freeway direction as well as 30th or the Airport Connector. Fairly complete freeway-to-freeway and freeway to-local access is provided. The collector-distributor roads relieve the mainline of some traffic allowing it to function more smoothly.

The two ramps to the south of Ames carry considerable traffic. Consequently, their junctions with main line mark the transition from a six lane to a four-lane freeway, with the on-ramp continuing south as a third lane and the off-ramp vice-versa. North of the Ames ramps are two ramps to and from the Airport Connector, which both are standard merge/diverge movements. North of this point in the northbound direction is the off-ramp to the Hartman-Redman Arterial. In the southbound direction a ramp connects the collector-distributor road to the mainline. North of the Hartman-Redman Arterial, ramps are standard merge and diverge ramps to and from the two collector distributor roads. The southbound on-ramp configuration is displayed in FIGURE E-6. Level of service on the mainline through the interchange is Level D between the Ames and Airport Connector ramps, Level C between the Airport Connector ramps to the collector-distributor road ramps, and Level B between the collector-distributor road ramp pairs.

The collector-distributor roads both will function at Level C, considering the weaving traffic and length of the sections, as shown in FIGURES E-7 and E-8.

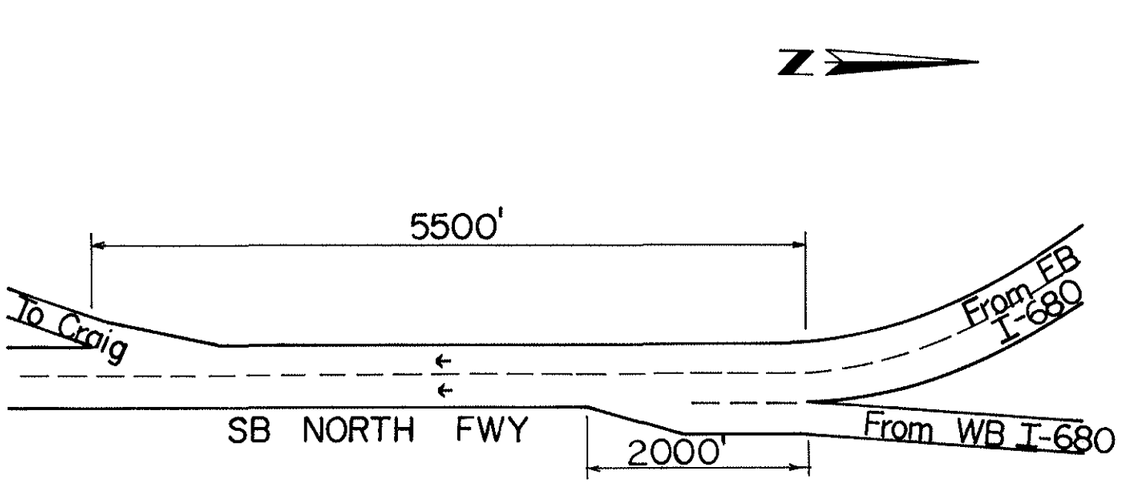


FIGURE E-4 Southbound Merge Section, I-680 To Craig, East Alignment

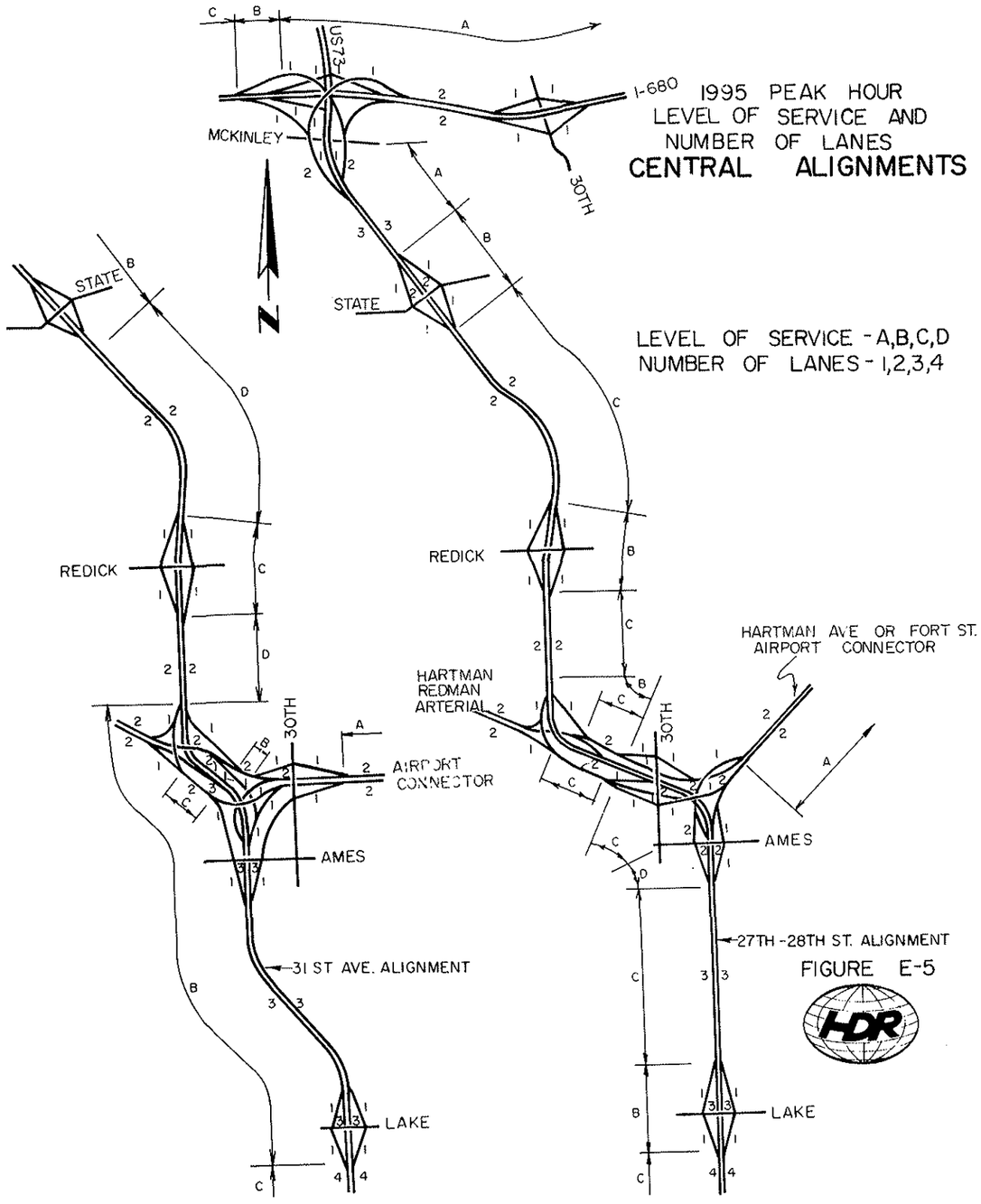


FIGURE E-5

The Airport Connectors will function at Level A. Access points are at 16th Street by way of a full diamond interchange and at Abbott Drive (PLATES 415, 416, 425, 426). The two ramps west of 16th require grade crossings with the C&NW RR on the Fort St. Airport Connectors. Occasional delays will arise from this situation.

The 31st Avenue Alignment like the 27th St.-28th St. Alignment has a basic diamond interchange with Lake Street (PLATE 251). As before auxiliary lanes are suggested south of this interchange to provide Level of Service C between Hamilton and Lake. Exit ramps at Lake will be flared to two lanes, and 27th Street between Erskine and Corby will be one way north. North of Lake the six-lane freeway junctions at Level B, negotiating a long unconstraining reverse curve toward Ames Avenue (PLATE 252). An at-grade railroad crossing is required on the relocated Creighton Blvd. near Pratt St. at the Missouri Pacific tracks. Some delays to surface traffic will arise from this situation.

North of Ames and west of 30th is a directional interchange with the Airport Connector and local access to 30th, Ames, and the proposed Hartman-Redman Arterial (PLATE 253). The extent of local access is similar to that of the interchange found near 30th and Ames on the Central (27th-28th) Alignment.

There is access to and from the Airport Connector on the Hartman-Redman Arterial, 30th Street, and both directions of the North Freeway. Access to the Hartman-Redman Arterial is possible from the freeway, the Airport Connector, and 30th, while roadways accessible from the Hartman-Redman Arterial are southbound North Freeway only, Ames, and the Airport Connector.

From Lake to the northernmost ramps of this directional interchange, those to and from the two collector-distributor roads, this alignment junctions at Level B. The ramps south of Ames are of standard merge and diverge configuration. The off-ramp flares into two lanes and intersects Ames at 31st Avenue, which will be one-way northbound between Ames and Taylor. The ramps east of 30th are similar, with the off-ramp flaring into two lanes along Saratoga Avenue, which will be one-way westbound between the ramp and 30th Street. Curving between 31st Avenue at Ames and Grand Avenue at 30th Street will be a one-way northbound service road, intended to provide improved circulation and traffic relief to the 30th and Ames corner.

The northbound mainline loses its third lane at the exit to the Airport Connector and Fontenelle, where the right-hand land must exit. In the southbound direction, the third lane is added at the Hartman-Redman Arterial on-ramp. Through this area the freeway operates at Level B.

The two collector-distributor roads are similar to those found in the 28th Street Alignment except that the eastbound collector-distributor road does not carry traffic bound from the Hartman-Redman Arterial to the freeway. The configurations of the two collector-distributor roads is shown in FIGURES E-9 and E-10. The eastbound collector-distributor roads will operate at Level C while the westbound collector-distributor road will function at Level B.

North of their respective directional interchanges with Ames, 30th, the Airport Connector, and the Hartman-Redman Arterial, the Central (27th-28th) and Central (31st Avenue) Alignments are identical, except for the traffic assigned to them.

At Redick a standard diamond interchange is located. The exit ramps are flared to two lanes (PLATE 204). The northbound exit and northbound entrance ramps necessitate 34th Street being one-way northbound for a short distance to the North and South of Redick while the southbound exit ramp will require that 35th Street be one-way southbound for a short distance to the north of Redick. A moderate (2,400 ft. at 3%) grade on the northbound freeway approaching Redick will lessen somewhat Level of Service on this segment somewhat.

As part of the Central (27th-28th) Alignment, the segment north toward Redick would operate at Level C, between the Redick ramp pairs at Level B, and north of Redick toward State Street at Level C. As part of the 31st Avenue Alignment, the respective Levels of Service for the above sections would be Levels D, C, and D, all a step lower because of somewhat higher traffic volumes assigned to this alternate.

At State Street, access is provided by a diamond interchange (PLATES 205 and 206) in which the ramps to the south of State merge into and diverge from the freeway in normal fashion, while the ramps to the north of State are continuous, each joining a three-lane weaving section between State and I-680. These weaving sections, shown in FIGURES E-11 and E-12 both operate at Level of Service A.

At I-680, a directional interchange providing freeway to-freeway connections is superimposed over the existing diamond interchange of I-680 with U.S. 73 (PLATE 207). The on-ramp in the southeast quadrant must be removed; however, access from U.S. 73 to eastbound I-680 is possible to the east from 30th Street via McKinley. Local access is supplemented by the direct ramps from U.S. 73 to the North Freeway. These ramps have at-grade crossings with the C&NW R.R. just south of McKinley St. As this line presently serves several daily trains, occasional delays will occur. An eventual agreement to schedule trains at off-peak hours would be desirable to reduce

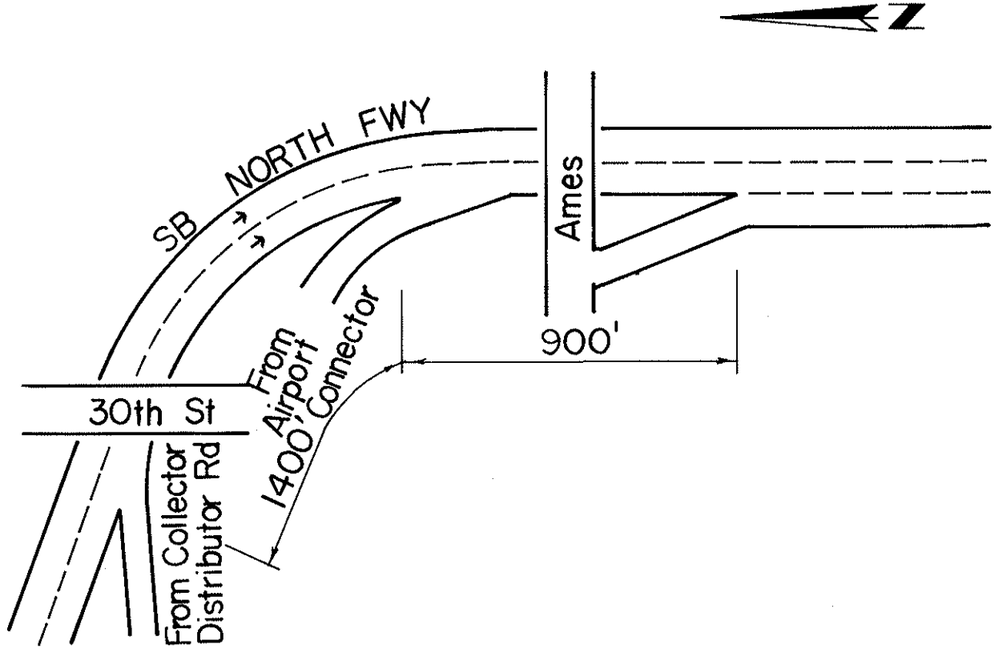


FIGURE E-6 Southbound Merges Near 30th & Ames, Central (27th-28th) Alignment

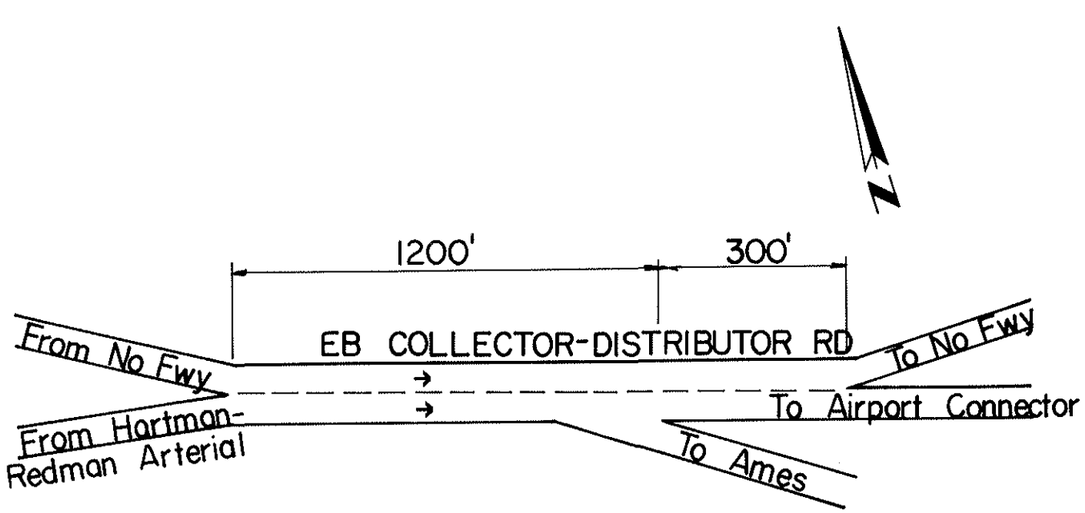


FIGURE E-7 Eastbound Collector-Distributor Rd. Central (27th-28th) Alignment

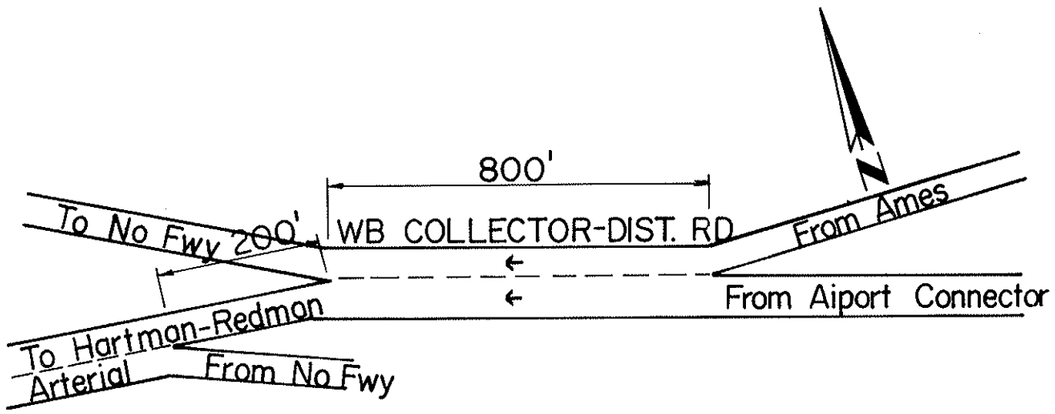


FIGURE E-8 Westbound Collector-Distributor Rd. Central (27th-28th) Alignment

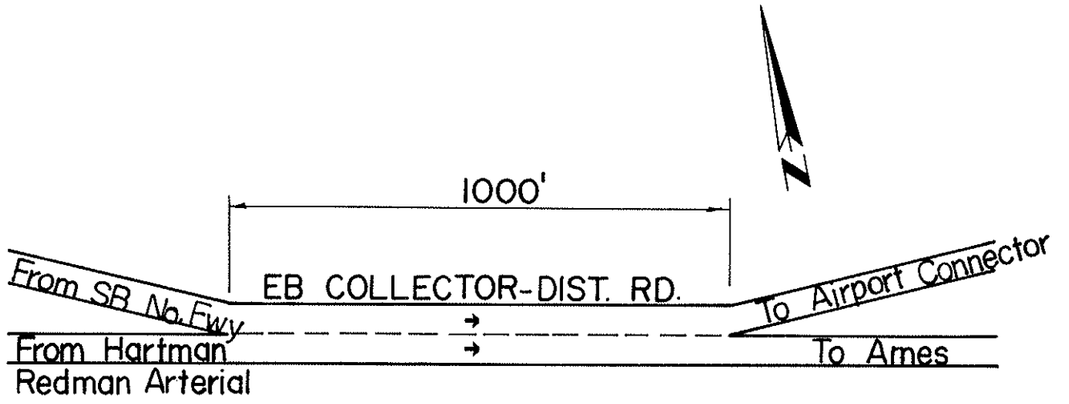


FIGURE E-9 Eastbound Collector-Distributor Road, Central (31st Ave.) Alignment

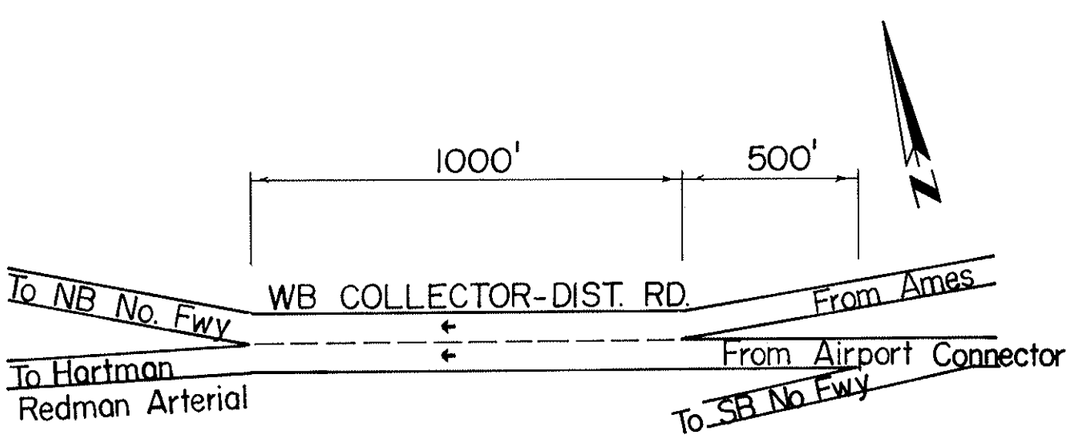


FIGURE E-10 Westbound Collector-Distributor Road, Central (31st Ave.) Alignment

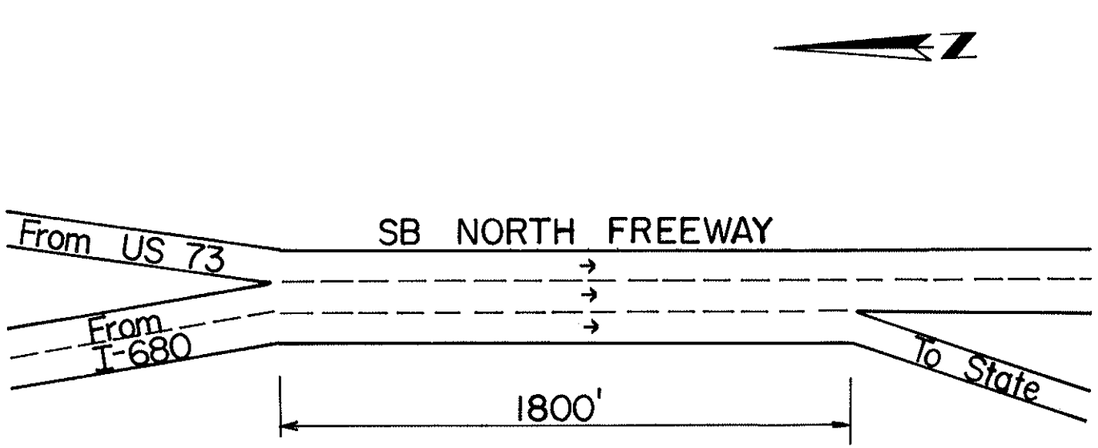


FIGURE E-11 Southbound Weaving Section, I-680 To State, Central Alignment

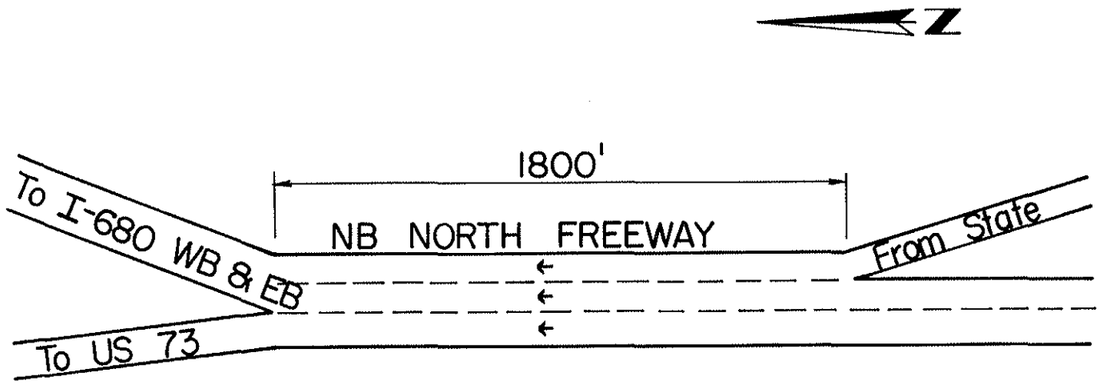


FIGURE E-12 Northbound Weaving Section State To I-680, Central Alignment

delay potential.

I-680 carries four-lanes and operates at Levels A, B and C proceeding from east to west through the interchange. In the westbound direction on I-680 the interchange presents two successive diverges, and subsequently two successive merges. In the eastbound direction on I-680, there are two successive diverges and further downstream a single merge. To the east of this directional interchange is a diamond interchange at 30th Street, which is spaced far enough for the assigned traffic volumes to present no operational problems.

West Alignment. The West (27th-28th) Alignment generally functions at Levels B or C except for one short segment, the West (31st Avenue) Alignment operates at Levels B or C except for two segments, and the Airport Connectors will carry traffic at Level of Service A (FIGURE E-13).

Along the 28th Street Alignment north towards Ames, the comments are essentially the same as for the Central (27th-28th) Alignment. Namely, auxiliary lanes are recommended between Hamilton and Lake interchange ramps to maintain Level of Service C, and that the ramps to the south of Ames mark the point where the freeway changes from six to four lanes in cross-section. North to this point, the freeway operates at Level C, except between the Lake Street ramps where Level B occurs (PLATES 301 and 303).

North of Ames and east of 30th a directional interchange with the Airport Connector is located (PLATE 303). This junction provides for all turning movements between the freeway and the Airport Connector as well as access between the Airport Connector and 30th or Ames, access to the freeway to and from the north on 30th and to and from the south on Ames. Level of Service on the freeway through this interchange is C except between the Ames ramps and the pair of ramps to the north. Between the Ames ramps and the Airport Connector ramps that link up with the freeway from the north, the freeway

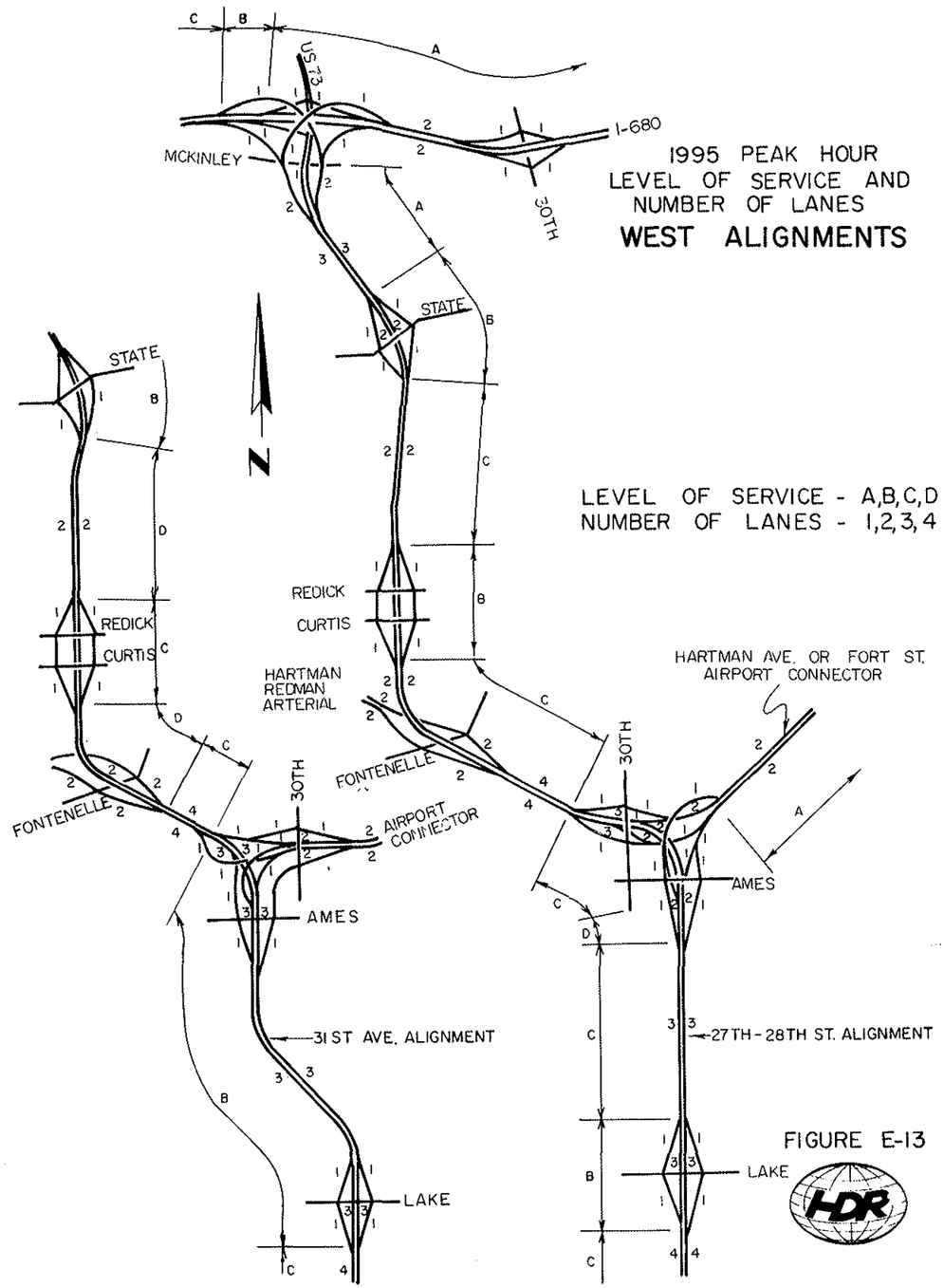


FIGURE E-13

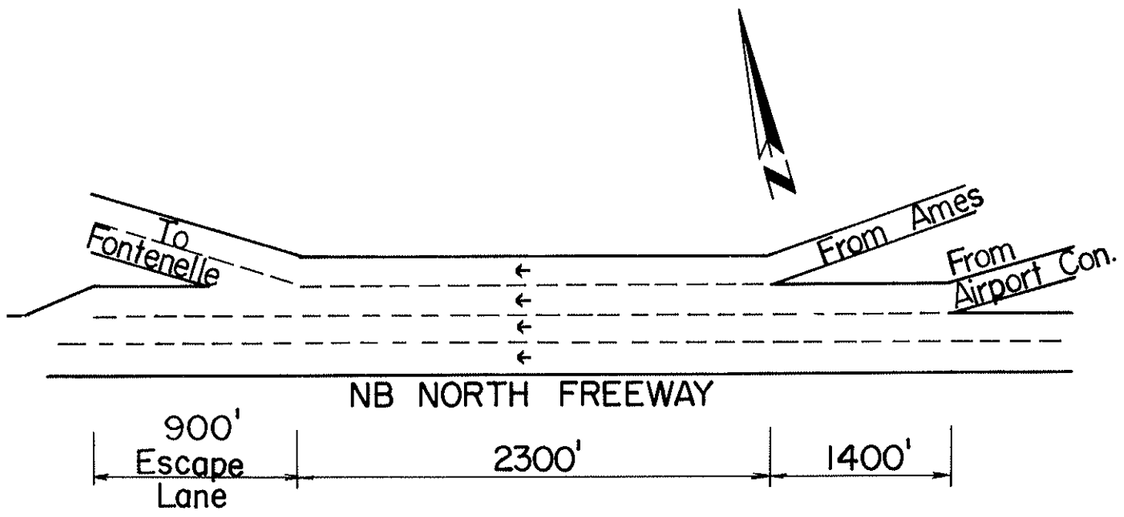


FIGURE E-14 Westbound Weaving Section, Airport Connector Ramp To Fontenelle, West (27th-28th) Alignment

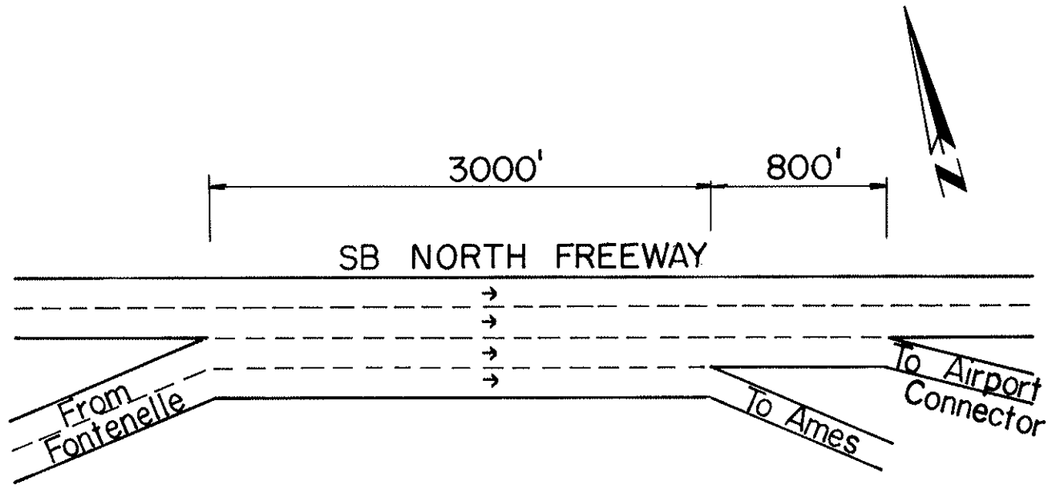


FIGURE E-15 Eastbound Weaving Section, Fontenelle To Airport Connector Ramp, West (27th-28th) Alignment

carries two lanes in each direction. Between the 30th Street ramps and the Fontenelle ramps, the freeway is 8 lanes wide (PLATES 303 and 304) to accommodate assigned peak hour volumes and the weaving sections sketched in FIGURES E-14 and E-15. Both these sections should operate at Level C. As shown in FIGURE E-14 a two-lane diverge helps reduce unnecessary weaving. The two-lanes are continued west to the Fontenelle intersection. The "escape" lane is included to lengthen effective weaving distances. In the southbound direction, the two Fontenelle on-ramps form a four-lane section. These two lanes diverge further downstream as the Ames and Airport Connector off-ramps.

Along the West (31st Avenue) Alignment from Lake on north to Ames, the comments are similar to those for the Central (31st Avenue) Alignment. Basically, as for all the other alignments, auxiliary lanes are recommended between the Hamilton to Lake diamond interchanges to improve Level of Service from E to C. The interchange at Lake is a basic diamond with exit ramps flaring to two lanes (PLATE 351). 27th Street will be one-way northbound for compatibility with the interchange ramps between Erskine and Corby Streets. The six-lane alignment continues north (PLATE 352) through a long smooth set of reverse curves toward the 30th and Ames area interchange (PLATE 353).

The directional interchange provides all the access which is provided by the corresponding Central (31st Avenue) interchange, but without the use of collector distributor roads. Complete freeway-to-freeway access is provided between the North Freeway and the Airport Connector, as well as between 30th Street and the Airport Connector to the east, from 30th to northbound North Freeway, between Ames and the North Freeway to the south, and from southbound North freeway to Ames. The freeway carries six-lanes through the interchange at Level of Service B. The northbound off-ramp at Ames will require 31st Avenue to be one-way northbound between Ames and Taylor. A one-way northbound service road will run between 31st Avenue at Ames to 30th at Grand. The exit ramp from westbound Airport Connector to 30th Street will require Saratoga to be one-way westbound between the ramp and 30th Street. Saratoga is carried over to 30th at this point as a two-way street from the west.

West of the point where the eastbound Airport Connector ramp diverges from the North Freeway and the westbound on-ramp from the Airport Connector and 30th merges with westbound North Freeway, the freeway section has four lanes in each direction as far as the Fontenelle exits (PLATES 353 and 304). The sections between the directional interchange and Fontenelle in either direction are weaving sections as sketched in FIGURES E-16 and E-17.

In the westbound direction, ramps from Ames and the Airport Connector must merge into one lane before meeting the North Freeway. Since both ramps carry moderately high peak hour volumes, their merge is a critical point as it would function at the borderline of Levels D and E. Solutions to this are to add a lane to this merge forming a two-lane ramp and consequently a five-lane weaving section, or to still form a two-lane merge ramp but narrow the mainline from three lanes to two (and dropping Level of Service from B to D). As much of the on-ramp traffic (about 50% from Ames or the Airport Connector) desires to exit at Fontenelle, a workable solution would be to give priority to traffic from the Airport Connector bound for Fontenelle Blvd. This would improve performance of the ramp and the weaving section downstream at the expense of 30th St. on-ramp. An "escape lane" downstream of the Fontenelle exit is desirable in that it lengthens the effective weaving distance for traffic on the on-ramp desiring to travel on the North Freeway.

The eastbound weaving section is confronted with a similar situation fairly short length and fairly high weaving volumes. FIGURE E-17 shows a configuration which should provide Level of Service C. The two-lane diverge minimizes weaving problems. The narrowing of this ramp from two lanes to one lane should be satisfactory because of light volumes. This weaving section should function at Level C as shown. Both of these weaving sections would warrant

an effort in final design to lengthen the weaving sections where possible.

North of the Fontenelle ramps, the West (27th-28th) and West (31st Ave.) Alignments are identical except for the assigned traffic volumes. After crossing Fontenelle Boulevard, the West Alignment curves north along 42nd Street to a split diamond interchange at Curtis and Redick Avenues (PLATE 304). The section between the Fontenelle ramps and the Curtis ramps will operate at Level D. Between the Curtis and Redick ramps, Level C occurs. The northbound off-ramp intersects Curtis after flaring to two lanes. A one-way northbound service road continues north to Redick. The northbound on-ramp proceeds north toward the freeway from this point. In the southbound direction the off-ramp intersects 42nd one block north of Redick. Similarly the on-ramp in the southbound direction begins at Nebraska and 42nd, one block south of Curtis. The one-block spacing of these ramps will allow for better traffic operations on 42nd Street, which will remain a two-way street.

North to State Street (PLATE 305) the freeway functions at Level D due to higher traffic volumes. The discussion for the diamond intersection at State Street and the remainder of the freeway north to I-680 is basically the same as for the Central Alignments (PLATES 305, 306, and 207).

The North Freeway and I-680 will operate at the same levels of service and with the same geometrics as described for the Central Alignment from State Street on north. Comments for the West Alignment Airport Connectors are identical to those for the Central Alignment Airport Connectors.

Systems Traffic Impacts

The second facet of the evaluation of the alternatives with respect to fast, safe, and efficient transportation is the traffic flow impact of each alternative on the remainder of the street system. In the following discussion of the alternatives, reference will be made to FIGURES V-1 through V-8 in PART V of this report.

These figures display the forecast 1995 Average Daily Traffic and the corresponding Volume-to-Capacity Ratio map for each of the general freeway corridors and for the No Build Alternative.

The source of the traffic forecasts for the alternatives is discussed in detail in PART V. The forecasts as shown on the traffic flow maps are a representation of the traffic volumes which would occur on the MAPA 6] recommended street system in 1995 based on projected land use and travel patterns.

The MAPA Recommended Street System is the 1974 Existing and Committed Network plus the recommended street improvements in the **1995 COATS Interim Transportation Plan.** Those improvements recommended in the general corridor study area, in addition to a North Freeway and an Airport Connector, are listed as follows:

1. 40th Street — Lake to Ames (widen from 2 to 4 lanes)
2. 42nd Street — Ames to Hartman-Redman (widen from 2 to 4 lanes)
3. Abbott Drive — 9th to 16th (widen from 2 to 4 lanes)
4. Hartman-Redman Arterial — North Freeway to 52nd (new 4 lane divided street)
5. Lake Street — 16th to Radial Highway (widen

6] Omaha-Council Bluffs Metropolitan Area Planning Agency

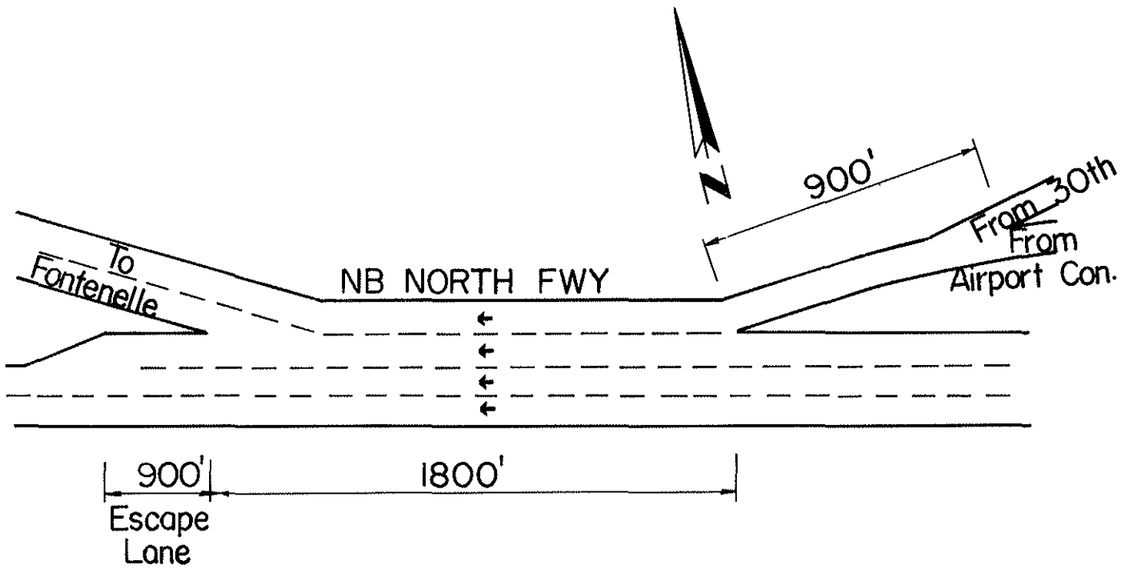


FIGURE E-16 Westbound Weaving Section, Airport Connector/Ames Ramp To Fontenelle, West (31st Ave.) Alignment

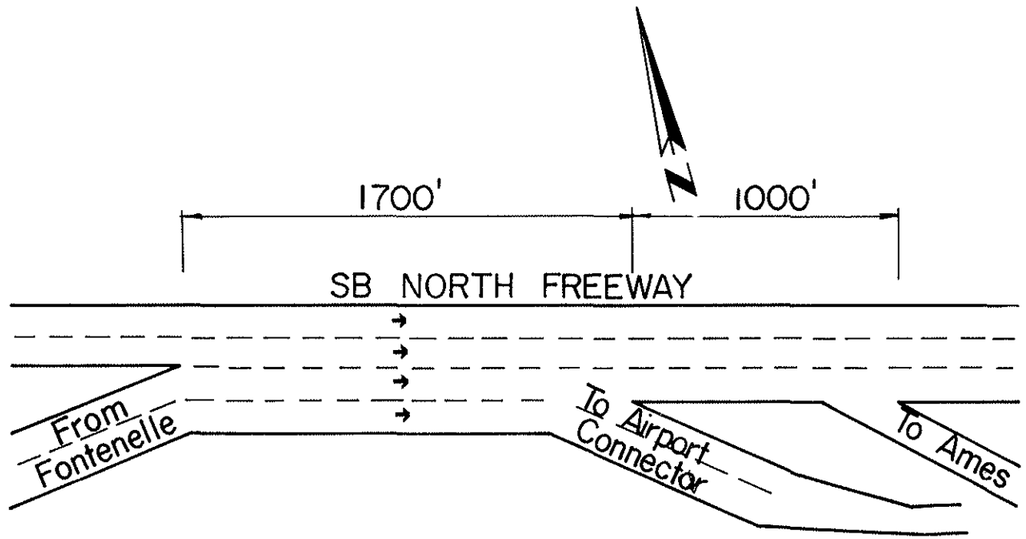


FIGURE E-17 Eastbound Weaving Section, Fontenelle To Airport Connector Ramp, West (31st Ave.) Alignment

from 2 to 4 lanes)

6. Avenue H — 16th to Abbott (widen from 2 to 4 lanes and construct viaduct)

The companion FIGURES V-2, V-4, V-6, and V-8, the V/C (Volume-to-Capacity) Ratio maps, depict the ratio of the forecast 1995 traffic volumes on a street to the capacity of that street. For consistency with the standard used by MAPA in its development of 1995 Transportation Plan, a Level of Service C was utilized in calculating the volume-to-capacity ratios.

As depicted in the legend, streets with ratios less than 1.07 are operating satisfactorily at Levels A, B, or C. Streets functioning at Level D (1.07 to 1.20) can operate acceptably although moderate delays will occur during peak hour traffic periods.

Level E (1.20 to 1.33) is the true capacity of the street and is indicative of lengthy delays and considerable congestion. Level F (over 1.33) constitutes a complete breakdown in traffic-carrying capability marked by excessive delays and extensive congestion.

The volume-to-capacity ratio is a useful tool in evaluating the performance of the various alternative systems being considered. By comparing the extent and location of poorly operating sections (those at Levels E or F) for each system, it is possible to assess the general performance of each network.

East Alignment. The East Alignment is geometrically smooth with moderate horizontal curves, and gradual changes in elevation along its length. The level of service is generally B or C, except north of Craig where higher volumes and loop ramps will induce Level D to occur. Either Airport Connector is uncomplicated geometrically and will function at Level A.

Access to local streets is provided by full diamond interchanges at Lake Street, the proposed Hartman-Redman Arterial, and Craig Avenue. A half-diamond on the south side of Ames is connected with the pairs of one-way frontage roads to the north to the Hartman-Redman Arterial. Consequently full access with the freeway is supplied at Ames via the two-service roads.

Directional interchanges connect the North Freeway to the Airport Connectors. The connection to the Hartman Airport Connector is full-directional, while the one to the Fort Street Airport Connector utilizes loop ramps.

Access from either Airport Connector is provided to 9th Street by a full diamond. At Abbott Drive, the Fort Street Airport Connector terminates in an at-grade intersection, while the Hartman Airport Connector-Abbott Drive junction is at-grade with the two predominant turning movements serviced by grade-separated ramps.

The north end of the East Alignment terminates at I-680 in a freeway-to-freeway interchange with all movements accommodated. The eastbound to southbound movement is carried on a loop ramp while the northbound to westbound movement traverses a ramp to the outside of the loop. The westbound to southbound and northbound to eastbound movements are direct ramps.

South of Florence Boulevard, existing street continuity is maintained by crossings over the depressed freeway at Lake, Binney, Bristol, Pratt, Sprague, Ames, the Hartman-Redman Arterial, 24th Street and Florence Boulevard. This is equivalent to a crossing every one-sixth of a mile. North of this point freeway crossings occur at Read, Craig, 30th Street and McKinley.

The East Alignment would appear to provide diminished traffic service to the North Omaha areas as it swings to the east of the bluffs and skirts the developed areas north to I-680. Because it closely parallels 30th Street in the north and south end of the corridor, the East Alignment effectively siphons considerable traffic from 30th Street. However, the geographical location of the access points to the freeway precludes convenient access to this alignment from much of the corridor as compared to the West or Central Alignments.

Reviewing the V/C Map for the East Alignment (FIGURE V-2) the following list of streets which will function poorly (Levels E and F) was compiled:

Level E: Pershing Drive — Florence Boulevard to Craig
16th Street — Carter Boulevard to Fort
Hartman-Redman — North Freeway to 42nd Street
Ames Ave. — Fontenelle to 56th Street
Fontenelle Boulevard — Ames to Bedford
Lake Street — 30th Street to 40th Street
Abbott Drive — Avenue H to Eppley Field
Level F: Craig Avenue — 30th Street to Pershing
Hartman-Redman — 42nd to 52nd Street
Fontenelle Boulevard — Bedford to Radial Highway
Lake Street — 24th to 30th Street

The total length of streets operating at Level E is 20.4 lane-miles while that at Level F is 7.6 lane-miles. Certain of these segments are capacity-deficient because of directly-induced freeway traffic, most often in the vicinity of interchanges. Two examples are Craig Avenue and Lake Street.

Other segments are either carrying heavy traffic volumes toward or away from the freeway access points, or are heavily-traveled links which are at or exceeding capacity in any of the alternative systems considered in this study.

The two Airport Connector alternatives, the Hartman Avenue Airport Connector and the Fort Street Airport Connector, provide essentially the same traffic service. Both provide equivalent access, and both operate at Level A. The Fort Street Airport Connector provides access to the Airport which is about one-mile shorter between downtown and Eppley Airfield. The Hartman Avenue Airport Connector provides a more desirable interchange with the North Freeway.

Regarding system continuity the basic East Alignment would close the gap from I-480 to I-680 and complete the freeway system looping around much of Omaha, as would any of the other alignments. Another consideration is that U.S. 73 is to be rerouted from 30th Street to the North Freeway. The East Alignment does not provide the most direct connection with U.S. 73 to the north of I-680, as can be seen by reviewing PLATES 107 and 108.

Central Alignments. The Central Alignments comprise four different systems. For both the 28th Street and 31st Avenue Alignments, the Hartman Avenue and Fort Street Airport Connectors have essentially the same traffic impacts, except for minor differences to be mentioned later. Therefore, the following discussion will be directed primarily to the two basic freeway alignments.

The Central (27th-28th) Alignment proceeds due north to Ames where it encounters a reverse curve of maximum curvature (3.5°) connected by a short tangent section. The reverse curve is located through a complex interchange. Access to local streets along this alignment includes a full diamond interchange at Lake Street, and the previously discussed interchange in the vicinity of 30th and Ames. This interchange provides a complete freeway-to-freeway connection between the North Freeway and the Airport Connector. In addition access is provided between the Airport Connector and 30th or Ames, between Fontenelle and the freeway and 30th, and between the freeway and 30th or Ames.

The Central (31st Avenue) Alignment traverses a reverse curve north of Lake Street. This curve is gentle, and well below maximum curvature. This alignment resumes a due north course between Spaulding and Ames Avenue, at which point the alignment traverses another reverse curve with maximum curvature of 3.5°. This reverse curve falls within a complex interchange providing complete freeway-to-freeway access between the Airport Connector and the North Freeway, and freeway-to-local access comparable to that of the 28th Street Alignment.

Either of the two Airport Connectors for these two freeway alignments provide local access at 16th Street by way of a full diamond interchange. The Fort Street Airport Connector intersects Abbott with an at-grade junction. The Hartman Avenue Airport Connector intersects Abbott Drive with an at-grade intersection with the two predominant turning movements handled by grade-separated ramps. The Hartman Avenue Airport Connectors include a set of reverse curves of maximum curvature between the bluffs and 16th Street. Any of the Airport Connectors will junction at Level of Service A.

North of either main alignment interchange near 30th and Ames the Central (27th-28th) and (31st Avenue) Alignments are the same. The alignment continues due north on a short, moderate (3%) grade to a full diamond interchange at Redick Avenue and further north a full interchange at State Street.

North of State Street at I-680, a directional freeway-to-freeway interchange links I-680 with the North Freeway. The existing diamond interchange can be retained with the exception of the on-ramp in the southeast quadrant. This movement is accommodated just to the east at the 30th Street interchange. In addition, two ramps provide a direct link between U.S. 73 and the North Freeway.

The Central (27th-28th) Alignment functions mainly at Levels B or C along its length except for two short segments at Levels A and D. I-680 functions at Levels A through C through the directional interchange. The Central (31st Avenue) Alignment operates at Level B through the 30th-Ames interchange, at Level D from this point north to State Street, with the sec-

tions north of State operating at the same levels as the 28th Alignment. All of the Airport Connectors will function at Level A.

Continuity of the surface street system is adequately maintained along the Central (27th-28th) Alignment by crossings at Lake, Binney, Bristol, Sprague, Ames, 30th, Laurel, Curtis, Redick, Forest Lawn, State and McKinley. The Central (31st Avenue) Alignment has crossings at Lake, Binney, 30th, Pratt, Ames, Laurel, Curtis, Redick, Forest Lawn, State and McKinley. The Airport Connectors provide crossings at 24th, Florence Blvd., 16th and 9th. The frequency of crossings is sufficient to serve local circulation requirements.

From the standpoint of traffic service, the Central Alignments effectively serve the study corridor, as both traverse the middle of the corridor. The Central Alignments provide traffic relief to 30th Street to nearly the same extent as the East Alignment. The interchange points are located such that they readily supply access to local traffic as well as arterial traffic.

A review of the V/C map for the Central (31st Avenue) Alignment (FIGURE V-4) shows the following streets will operate unsatisfactorily at Levels E or F in 1995:

Level E: State Street — Mormon Bridge Road to 30th Street
Hartman-Redman — 42nd Street to Fontenelle Boulevard
Ames Avenue — Fontenelle Blvd. to 56th Street
Pershing Drive — Read Street to 16th Street
16th Street — Sprague to Spencer
Abbott Drive — Avenue H. to Eppley Field

Level F: 16th Street — Spencer to Locust
Lake Street — 24th to 40th Street
Hartman-Redman — North Freeway to Fontenelle Blvd.
42nd to 52nd Street
Fontenelle Blvd. — Bedford to Radial Highway

The total length of streets operating at Level E, in the general corridor area, is 14.6 lane-miles, and that at Level F, 11.4 lane-miles. Some of these street segments carry heavy traffic because they serve as collectors for freeway-bound traffic. Other segments are those high-volume streets whose relationship to the location of the freeway is such that the freeway provides no traffic relief to them.

The two Central Alignments, each with two Airport Connectors, provide nearly identical freeway-to-local street access. Both alignments have comparable geometrics. The Central (27th-28th) Alignment has a pronounced reverse curve with each curve turning through about 80°. The Central (31st Avenue) Alignment includes two sets of much less severe reverse curves. North of this point either route is composed of a smooth, flowing alignment.

The Central Alignments of the North Freeway, which will carry U.S. 73, provide a direct connection between the freeway and U.S. 73 to the north of I-680. This is beneficial from a route-continuity standpoint. Either of the Central Alignments provides a good connection from I-480 to I-680 to the north with a smoothly-operating type of interchange at I-680.

West Alignments. The West Alignments include the West (27th-28th) Alignment and the West (31st Ave.) Alignment, each with a Fort Street and Hartman Avenue Airport Connector east to Abbott Drive.

The West (27th-28th) Alignment is straight between Lake and Ames. A maximum curvature turn of 3.5° begins at Ames and ends with the freeway paralleling Redman Avenue. At Fontenelle Blvd. another curve brings the alingment parallel to 42nd Street. It continues in a northerly direction through a series of gentle curves and uphill and downhill grades of 3% or less north past State Street to an interchange with I-680.

Freeway-to-local access is provided by full diamond interchanges at Lake, Curtis/Redick, and State Street. Additional partial interchanges provide access at 30th, Ames, Fontenelle, and U.S. 73 at McKinley. Freeway-to-freeway junctions link the North Freeway to the Airport Connectors near 30th & Ames and to I-680.

The 31st Avenue Alignment traverses a moderate reverse curve north of Lake and at Ames encounters a moderate curve which turns the alignment to the northwest paralleling Redman Avenue. The remainder of the alignment is identical to that of the 28th Street Alignment described above.

Freeway-to-freeway access is the same as for the 28th Street Alignment while freeway-to-local access is very nearly identical.

The West (27th-28th) Alignment functions at Level B or C along its length except for two short segments at Levels A and D. The 31st Avenue Alignment functions at Level B and C as far as Fontenelle. From Fontenelle to State Levels C and D occur. From State to I-680 Levels A and B occur. With either alignment I-680 functions at Level A east of the directional interchange and at Levels B and C west of the interchange.

Both Airport Connectors operate at Level A. The Fort Street Airport Connector furnishes a more direct to the Airport from the freeway than does the Hartman Airport Connector. The Hartman Airport Connector Alignment includes a reverse curve of minimum radius. Both Hartman and Fort Street Alignments have an interchange with 16th Street and at-grade junction with Abbott. The Hartman Airport Connector junction with Abbott includes two ramps serving the heavy turning movements.

Surface street continuity is adequately maintained along the West (27th-28th) alignment with crossings at Lake, Binney, Bristol, Sprague, Ames, 30th, 33rd Street, Fontenelle, Hartman-Redman, Laurel, Curtis, Redick, Forest Lawn Avenue, State, and McKinley. Along the 31st Avenue Alignment the crossings are at Lake, Binney, 30th, Pratt, Ames, 33rd Street, Fontenelle, Hartman-Redman, Laurel, Redick, Forest Lawn Avenue, State and McKinley, sufficiently maintaining local circulation.

The West Alignment is the farthest west of the three basic alignments and, like the Central Alignment, tends to attract traffic from areas to both sides of the freeway. Thirtieth Street is relieved of traffic as well, but not as effectively as by the Central or East Alignments. The interchanging location and configuration provides good service to both local traffic and arterial traffic.

A review of the V/C map for the West (27th-28th) Alignment (FIGURE V-6) indicates the following streets will operate unsatisfactorily at Levels E or F in 1995:

Level E: Diagonal Road — 30th to Pershing Dr.
State Street — Mormon Bridge Road to North Freeway
Hartman-Redman — 42nd to 48th Street
Fontenelle Blvd. — Ames to Bedford
Lake Street — 30th to 40th Street
Abbott Drive — Avenue H to Eppley Field

Level F: Pershing Drive — Read to 16th
30th Street — Ames to Grand
Hartman-Redman — 48th to 52nd Street
Fontenelle Blvd. — Bedford to Radial Highway
Lake Street — 24th to 30th Street

The total length of streets operating at Level E in the general corridor is 12.8 lane-miles, and at Level F, 7.4 lane-miles. These figures are lower than those for the Central or East Alignments. Of the three basic alignments, the location of the West Alignment is such that it maximizes system performance.

The West Alignments, like the Central Alignments, provide a direct connection to U.S. 73 north of I-680 and furnish a good connection between I-480 and I-680.

No Build Alternative. The basic definition of the No Build System consists of the 1974 street network plus committed improvements which are the following: (1) Abbott Drive widening, Avenue H to 9th Street, (2) completion of the I-680 Mormon Bridge, (3) the North Freeway between Hamilton to Lake.

A review of the V/C map for the No Build (FIGURE V-8) indicates that the No Build system would function poorly, with nearly all of 30th Street operating at Level F. Parts of all major north-south streets are at Level F. A listing of those street segments in the general corridor area functioning unsatisfactorily at Levels E or F follows:

Level E: 16th Street — Abbott to Fort
40th Street — Ames to Bedford
Redman Ave. — 42nd to 48th
Abbott Drive — Locust to Eppley Airfield

Level F: Diagonal Rd. — 30th to Pershing
Pershing Drive — Diagonal Rd. to Florence Blvd.
30th Street — McKinley to Redick
Laurel to Lake
52nd Street — Mormon Bridge Road to Ames
Hartman Ave. — 48th to 52nd
Ames Ave. — Fontenelle Blvd. to 52nd
Fontenelle Blvd. — Ames to Radial Highway
Lake Street — 16th to Fontenelle
40th Street — Bedford to Lake
24th Street — Ames to Lake
Florence Blvd. — Ames to Spencer
16th Street — Fort to Lake
Locust St. — 16th to Abbott

The total length of streets operating at Level E is 6.5 lane-miles while that functioning at Level F is 44.6 lane-miles. The system capacity of the No Build

would be somewhat greater if the six improvements recommended from the **1995 COATS Plan** for this general corridor study area, other than the North Freeway and Airport Connector, were incorporated into a Modified No Build. These six improvements from the **1995 COATS Plan** are again listed as follows:

1. 40th Street — Lakes to Ames (widen from 2 to 4 lanes)

2. 42nd Street — Ames to Hartman-Redman (widen from 2 to 4 lanes)

3. Abbott Drive — 9th to 16th (widen from 2 to 4 lanes)

4. Hartman-Redman Arterial — North Freeway to 52nd (new 4 lane divided street)

5. Lake Street — 16th to Radial Highway (widen from 2 to 4 lanes)

6. Avenue H — 16th to Abbott (widen from 2 to 4 lanes and construct viaduct)

Allowing for increased system capacity which would be available if these six **1995 COATS Plan** system improvements were implemented, the total of streets operating at Level E would be about 3.0 lane-miles, and at Level F would be about 33.0 lane-miles.

Despite these improvements the following streets would be operating at Levels E or F in the Modified No Build:

30th St. — Lake St. to McKinley St.
Diagonal Rd. — 30th St. to John Pershing Dr.
John Pershing Dr. — Diagonal Rd. to 16th St.
16th St. — Abbott Dr. to Lake St.
Carter Blvd. — 16th St. to Florence Blvd.
Florence Blvd. — Lake St. to Ames Ave.
24th St. — Lake St. to Ames Ave.
Ames Ave. — Fontenelle Blvd. to 52nd St.
Fontenelle Blvd. — Ames Ave. to NW Radial Highway
52nd St. — Ames Ave. to Mormon Bridge Rd.

The above-mentioned recommended improvements in the general corridor area would likely have little beneficial traffic relief effect upon certain severely overloaded streets, namely 30th and 16th Streets along their entire lengths, and parts of 24th Street and Florence Bouldward.

Substantial improvements would be required on the above street segments in order to provide adequate traffic service. For instance, 30th St. would require removal of parking, widening to 64 feet, and prohibition of most left turns. This would be the minimum; a six-lane divided arterial would be more desirable. This would require a total right-of-way of at least 116 feet, necessitating acquisition of properties on one side of 30th St.

Pershing Drive would require widening from two to four lanes. Fontenelle Blvd. would need 4 lanes also. Florence Blvd. 16th St., and 24th St. would require the removal of parking and restriping for four lanes of traffic.

As no actual traffic assignment was performed on the Modified No Build will all improvements less the North Freeway and Airport Connector, only general comments can be made, regarding traffic flow patterns. For example, the improvement on 40th Street would roughly improve traffic service from Levels E and F to Levels A and B. A shifting of some traffic from over capacity Fontenelle (Level F) to undercapacity 40th Street would occur, but would not be substantial, based on available traffic assignments.

However, these street improvements could attract additional traffic from arterials in neighboring areas. This is a real possibility as few street improvements have been recommended in the **1995 Plan** for those parts of Omaha immediately west and south of the corridor study area. The fact of the matter is that the Modified No Build would simply not provide the needed street capacity, and consequently does not constitute a practical alternate to the Build alternates.

Summary

A comparative measure of each system's performance with respect to fast, safe and efficient transportation is the average vehicle operating speed. Two sets of these figures are available. One set is a tabulation from the various traffic assignments performed. The quotient of the system vehicle-miles of travel and vehicle-hours of travel for the metropolitan planning area yields an average metropolitan area vehicle operating speed. The travel speed can be related to a Level of Service which is representative of the entire metropolitan street system.

The second set of vehicle operating speeds is derived from the operating cost calculations discussed in APPENDIX T. Those calculations yielded an average operating cost per vehicle-mile in the immediate corridor study area. This cost related to a vehicle operating speed, and this operating speed in turn can be interpreted as a representative Level of Service. These figures were developed for three of the freeway alignments, the basic No Build Alternate, and for a Modified No Build which allows for recommended street improvements which could occur within the area of comparison.

These measures of operating speed and Level of Service for various alternative systems are summarized in the following table.

TABLE E-1 — OPERATING SPEEDS AND LEVELS OF SERVICE

Area	Alternate	Operating Speed	Level of Service
Metropolitan Planning Area	East	31.0	A
	Central (31st Avenue)	31.0	A
	West (27th-28th)	30.9	A
	No Build	22.8	C
Corridor Comparison Area	East	30.1	A
	Central (31st Avenue)	26.3	B
	West (27th-28th)	31.2	A
	No Build	14.2	E
	Modified No Build (With Recommended 1995 Surface Street Improvements)	15.1	D

It is evident from TABLE E-1 that any of the "Build" alternatives are superior to the No Build or Modified No Build Alternatives, both within the corridor study area, and throughout the metropolitan area.

Another observation can be made. Comparing the two Levels of Service for the No Build, it is seen that the No Build in the Corridor area operates at Level E while the metropolitan area No Build as a whole operates at Level C. This would indicate a deficiency in the street system in the corridor study area. With only two major arterial streets, 30th Street and Ames Avenue, serving the corridor, there is an inherent shortage of street capacity.

This point was demonstrated in TABLE E-1 and can be reiterated in the following table which summarizes the lane-miles of streets in the general corridor study area operating at Levels of Service E or F.

TABLE E-2 — LANE-MILES OF POORLY-OPERATING STREETS IN 1995 IN THE NORTH FREEWAY CORRIDOR STUDY AREA

Alternate System	Lane-Miles At Level E	Lane-Miles at Level F	Total
East	20.4	7.6	28.0
Central (31st Ave.)	14.6	11.4	26.0
West (27th-28th)	12.8	7.4	20.2
No Build	6.5	44.6	51.1
Modified No Build	3.0	33.0	36.0

The "Build" Alternatives exhibit superior traffic service compared to either the No Build or Modified No Build Alternatives. The West (27th-28th) Alignment and street system contains the fewest miles of poorly operating streets, while the Central (31st Avenue) and East Alignment systems are not far behind.

A number of factors should be considered in evaluating the various alternatives. They include: overall system efficiency, convenience of interchanging, general geometrics, freeway level of service, simplicity of driver decision points, and system continuity.

On the basis of these factors, the West (31st Avenue) Alignment most effectively provides fast, safe, and efficient transportation to the corridor and Greater Omaha. This statement is based on the facts that: this alignment provides more convenient accessibility to a greater area, provides the best system performance, operates with a satisfactory level of service, will best tend to minimize congestion at the 30th and Ames intersection, provides adequate relief to 30th Street, presents clear decision points to drivers, utilizes less severe changes in alignment, allows a somewhat less constrained interchange in the 30th-Ames vicinity, provides a smooth junction I-680 and direct continuity with U.S. 73, and permits most of the local access at I-680 to remain. Except for the potential for some congestion between Fontenelle and the Airport Connector, this alignment performs well. The Hartman Avenue Airport Connector is preferred over the Fort Street Connector because its location better serves the river bottoms, and will cause less disruption in local circulation.

The West (27th-28th) Alignment with the Hartman Avenue Airport Connector is the next most efficient alignment. Except for a long, sharp curve in the 30th and Ames directional interchange, a little tighter ramping at this location, and inherently more traffic through the 30th-Ames intersection, this alignment performs similarly to the West (31st Avenue) Alignment. The Fort Street Airport Connector is less desirable than the Hartman Airport Connector for the same reasons as previously stated.

The Central (31st Avenue) Alignment is the next most efficient in providing good traffic service. This is because it avoids sharp curvatures, will tend to minimize congestion at 30th and Ames, the interchange in the 30th-Ames area is simple, efficient, and provides fairly complete access, provides satisfactory system performance and good interchanging, the freeway level of service of operation is adequate, a good connection to I-680 and U.S. 73 is provided and maximum local access to I-680 and the freeway is available at the north end of the corridor. Again the Hartman Airport Connector is preferred for previously mentioned reasons.

The Central (27th-28th) Alignment performs similarly to the Central (31st Avenue) Alignment, except that the curvature between Ames and Laurel is more severe, the 30th and Ames/Hartman-Redman interchange is more complicated, and the likelihood exists for greater congestion at the 30th and Ames intersection.

The East Alignments have more direct access into the industrial lands near Eppley Airfield. By comparison, however, with the West and Central, the East Alignment is the least efficient of the Build Alternatives from a traffic service standpoint. It provides freeway accessibility to a smaller area, provides poorer access to the Minne Lusa-Florence area (partly through the removal of the existing I-680-30th Street interchange) and includes a less desirable interchange with I-680 and indirect continuity with U.S. 73.

The Hartman Avenue Airport Connector is preferred over the Fort Street Airport Connector because of the higher type design of the interchange with the North Freeway.

The No Build is the least efficient of all alternatives because, even if all recommended street improvements were made (except for the North Freeway), it offers poor traffic service, and no traffic relief to 30th Street, which would be severely congested. Substantial physical improvements to 30th St., Fontenelle Blvd., and John Pershing Dr. as well as removal of parking on Fontenelle Blvd., 16th St., and 24th St.

All of the Build Alternates have the capability of removing enough through traffic and local traffic from surface streets, without being over-capacity themselves, thus providing satisfactory traffic flow to the street system as a whole.

APPENDIX F.
OPERATION AND USE OF EXISTING HIGHWAY FACILITIES AND OTHER TRANSPORTATION FACILITIES DURING CONSTRUCTION AND AFTER COMPLETION

This criterion involves an evaluation of the disruption to any existing transportation facilities during and after the construction of the North Freeway and an Airport Connector. Affected transportation facilities include the existing and committed street system, the existing and proposed transit system, railroad lines, special route systems, and Eppley Airfield in terms of airport access.

The basis of analysis is a consideration of what impacts the implementation of the North Freeway would have on various elements of the total transportation system. These impacts are of two types: those which are of a temporary nature occurring during construction, and those of a continuing nature involving permanent changes.

Railroad Facilities

Three railroads which operate trackage in the North Omaha area will be affected to some extent by the proposed North Freeway alignments.

The Union Pacific operates a spur line north from the Locust Street area past Carter Park into the riverfront industrial area where considerable industrial development is anticipated. Any of the proposed Airport Connectors for the East, Central, or West Alignments would require a grade-separation over this line on the segment running north-south between 11th Street and 13th Street. Minor interruptions to service would occur only during construction of the bridges.

The Missouri Pacific Railroad has trackage lying along what would be Boyd Street from Commercial Avenue west to 30th where it curves to the southwest past the northwest corner of Adams Park. The East, Central (27th - 28th), and West (27th - 28th) alignments would require a railroad overpass be built at Boyd Street between 27th and 28th Streets. Staging of the overpass construction would be critical so as to provide nearly continuous operation to this main line trackage.

The Central (31st Ave.) and West (31st Ave.) Alignments would necessitate the construction of a railroad overpass across the freeway near John Creighton Boulevard and Sprague Street. This long skewed bridge will require proper construction staging to maintain service to this Missouri Pacific main line.

The third and most significantly affected railroad is the Chicago and Northwestern which operates

two lines in the study area, both originating from the Locust Street Yards.

The west line proceeds north climbing the bluffs along Commercial Avenue, turns west along Grand Avenue crossing 30th Street, then northwest along Redman Avenue toward Irvington. This line is in poor condition and receives little maintenance. The lone present customer is the Standard Iron Works at 30th Street. Because of duplication of service with other trackage in the area and poor condition, this line is being considered abandonment west of 30th Street.

The second line proceeds generally north between the bluffs and 16th Street. North of Read it swings parallel to 28th Street curving due west past Fillmore Park and M.U.D. to parallel McKinley Street. This trackage is in good condition and is used by several trains daily, including those servicing the O.P.P.D. Power Plant at Florence Boulevard and Pershing Drive.

The East Alignment would require a railroad overpass at Grand Avenue for the west line serving the one customer. Also, two new at-grade crossings on the proposed service roads would be needed. A trade-off is involved between the construction of an expensive railroad bridge to serve one customer and the possibility of purchasing that business if the purchase cost is less than that of a bridge. (Grade crossings on the service roads would be required only if the railroad remains west to 30th Street.

Further north either Airport Connector for the East Alignment would require a pair of bridges over the north line of the C&NW RR. Some interruption of service could be expected, but only during construction.

From a point south of Read Street north to Craig Street, the C&NW tracks will require relocation some 40 feet to the east to accommodate the proposed freeway configuration in this area. Proper staging of the relocation should minimize disruption.

Finally, from Bondesson Street to the west of 30th Street, the freeway will be elevated next to or over the C&NW Railroad right-of-way. Except for minor disruptions during construction, there should be no major problems. Along that segment directly over railroad right-of-way, piers would be spaced laterally to allow for additional trackage.

Also the East Alignment crosses over the main line just west of 30th Street on structures. Again, minor disruptions may occur during construction of these structures.

The Central (27th - 28th) and West (27th - 28th) Alignments both utilize portions of the C&NW west line right-of-way along Grand and Redman Avenues. Since the railroad is likely to eventually abandon this line, the use of the right-of-way is compatible with the freeway. Both of these alignments require the taking of the Standard Iron Works, the only customer on the line. Consequently, the railroad could drop the line not only to 30th, but on east to the Locust Street yards.

Similarly, the Central (31st Ave.) and West (31st Ave.) Alignments utilize the C&NW west line which is likely to be abandoned, so no incompatibility is present. The Airport Connectors for these two alignments will allow the C&NW west line to remain west to 30th Street to continue serving the Standard Iron Works.

The West and Central Alignments also cross over the C&NW north line paralleling McKinley Street on bridges. As before, minor interruptions could occur during construction. The two ramps at McKinley Street will require grade-crossings with the railroad, and the grade crossing at Mormon Bridge Road will be relocated to the west two blocks.

The Airport Connectors for the West and Central Alignments provide diamond interchanges at 16th Street. The two ramps on the west side of 16th Street on the Fort Street Airport Connector will require at-grade crossings with the C&NW north line. All the Airport Connectors for the West and Central Alignments will require bridges over the north line of the C&NW. Disruption should be minimal.

In summary, impact of the freeway alternates upon railroads is not severe. In no case will service be lessened. Part of the C&NW RR right-of-way on the west line is required for part of the Central and West Alternates, but this trackage is in poor condition and is likely to be abandoned. Several railroad overpasses and underpasses are required, but proper staging of construction should keep service interruptions to a minimum. Also, new at-grade railroad crossings will be required at spot locations as described above.

Airport Access

Air transportation is an important element of the total transportation system. Although it does no relate directly to the concerns of this study, the matter of airport access warrants some mention.

Under the No Build Alternate, the Airport would be served by Abbott Drive southeast toward downtown and I-480, and northwest to North Omaha and I-680. Cross streets connecting to Abbott are Locust Street to the near northside and Fort Street and Carter Boulevard which indirectly link up with Ames Avenue and West Omaha. Metropolitan access to the airport as it would exist under the No Build is not optimal. Under the Build Alternatives, a high-level access link to the Airport would be available. Abbott Drive still carries considerable traffic (Level E in 1995) between downtown and Eppley Airfield. However, traffic bound for Eppley from much of Omaha proper, outlying parts of Omaha, and the region will have a quicker, safer, and more direct path to reach the Airport.

Carter Boulevard and Fort Street in the Carter Lake area will be relieved of the through traffic going to and from the Airport. It is argued that a facility with the local and regional importance of Eppley Airfield should have more direct and less confusing access with a higher level of service than what is presently the case.

Any of the Build Alternatives, comprised of an Airport Connector and North Freeway, would provide such improved service while generally lessening traffic on surface streets in the vicinity of the Airport, as compared to the No Build.

Special Route Systems

This heading refers to a number of proposed route systems being considered for trucks, bicycles, motorcycles, and for hiking. With respect to the general area of North Omaha, only a truck route system and bike trails plan are involved.

The proposed truck routes presented in the fall of 1974 include what are considered to be the major streets in the study area: Ames Avenue, 16th Street, 30th Street, McKinley Street, I-680, Craig Avenue, Pershing Drive between Craig and 16th Street, Locust Street, and all of Abbott Drive.

None of the freeway alternates would disrupt this proposed system as all major streets will cross the freeway. In fact, the North Freeway will supplant this system, providing an alternative to City Streets for many trucks, especially those using 30th Street.

A general recreational plan was proposed in the fall of 1974 and included bicycle, motorcycle, horse and hiking trails. The bike trail plan was revised and publicized in January of 1975. It called for exclusive bike lanes on Martin Avenue/Fontenelle Boulevard, Minne Lusa Avenue, Paxton Boulevard and John Creighton Boulevard. Shared right-of-way was proposed for Belvedere Boulevard and Pershing Drive between Carter and Hummel Parks. Park paths were located in Carter, Adams, Fontenelle, Miller, and Dodge Parks.

None of the proposed alternatives would disrupt any of these proposed routings. In fact, the potential exists along parts of all the alternative freeway systems to develop bike trails in freeway or excess rights-of-way to extend the system to more parts of the City.

Construction Detouring and Traffic Circulation.

The construction of any one of the freeway alternates is bound to effect some changes in the street system, both temporary disruptions during construction and permanent changes once construction is completed. In a suburban or outlying area such considerations are less critical as communities are expected to develop around the freeway and street system. Such is not the situation in the case of the North Freeway. Here the requirement is that compatibility of the proposed freeway with the already present street system and urbanized areas be maximized. Therefore, consideration of disruptions both temporary and permanent to local and intra-city circulation is necessary.

With respect to the major street system, all freeway alternates generally will not delete any portion of what are considered the major arterial and collector streets in North Omaha. These streets are either interchanged with the freeway or are carried through the freeway right-of-way on a grade-separation. APPENDIX Z contains further discussion on the major street crossings.

APPENDIX Z also considers the need for additional grade-separation freeway crossings, based primarily on the requirements for adequate access to public and parochial schools from their attendance areas. In meeting this need, the need for crossings to provide good local circulation is met as well. A review

of the plates in PART V reveals the frequency of these crossings for each alternate system. Local circulation will not be as extensive with the freeway simply because many streets are tied off with cul-de-sacs or are connected into frontage streets. However, a reasonable compromise has been achieved in meeting crossing needs and holding construction costs down.

All of the alignments provide nearly the same number of crossings over or under the freeway, although the spacing and frequency varies, depending on the street system and crossing needs. Disruption of local circulation is comparable for all alignments, especially south of Grand Avenue. The East Alignment disrupts few streets north of Florence Boulevard, and the West Alignment does the same north of Ida Street. The Central Alignment is most disruptive in terms of street closures. The Hartman Airport Connector is superior to the Fort Airport Connector because it cuts through far fewer existing streets.

Temporary disruptions are those occuring during construction of the facility. They arise from the temporary closing of streets, detours and reroutings caused by freeway construction activity; for example utility adjustments, in and near the freeway right-of-way. The East System would involve major detours at 9 major street locations; the West and Central systems involve 7. The West and Central (31st Avenue) Routings plus their Airport Connectors cross 30th Street twice.

Given the magnitude in size and cost of the North Freeway, it is most likely to be constructed in two or three stages. This concept would have the effect of spreading the disruptions over a longer period of time and limiting the construction disruptions to the part of the freeway then currently under construction.

Despite this, intermittent or short interruptions to traffic are bound to occur at spot locations, especially those at which structures over or under the freeway are proposed. Advanced construction of these bridges, however, can allow main line construction to proceed without further disruptions to surface streets. Care should be taken in the scheduling of construction to provide an adequate number of cross-freeway access during construction, both to maintain local connections as well as to avoid the creation of traffic bottlenecks.

Attention will also be necessary in the routing and hours of operation of heavy trucks and construction equipment as regard the maintaining of reasonably good traffic flow and safety on surface streets.

The end points of the various stage construction segments discussed in detail in APPENDIX I are also a factor to consider in the temporary impacts of construction. The principal area of concern is at the end of the first stage of construction near the crossroads of the corridor at 30th Street and Ames Avenue.

There are disadvantages to stopping at Ames for the East, West (27th - 28th), and Central (27th - 28th) Alignments. In so doing, heavy demands, including left turns from 30th to eastbound Ames will be placed upon the 30th & Ames intersection. Left turns are presently prohibited on several approaches because of sight distance, geometrics, and heavy volumes. Stopping at Ames along these alignments could cause a temporary worsening of traffic problems at this major intersection.

The West (31st Avenue) and Central (31st Avenue) alignments could be expected to have an analogous problem; that is, a heavy left turn demand from Ames to northbound 30th. This turn is presently prohibited and is compensated for by a jogging maneuver to Meredith Avenue one block north of Ames. Similar, but less severe, congestion could be expected to occur in this case also.

Optimally, the end of the first stage of construction would involve a connection to 30th Street. Depending on the alternative finally chosen, this could amount to one of the following courses of action: (1) for the East Alignment, completion of the North Freeway to the proposed Hartman-Redman Arterial and and Construction of the Hartman-Redman Arterial between 24th and 30th Streets, or (2) for any of the West or Central Alignments, construction of the North Freeway to a point north of Ames with temporary ramps to 30th Street.

No other similar temporary traffic problems are foreseen for other stage construction termini.

Although the alternates vary somewhat in their impacts to the street system in the form of temporary disruptions and permanent changes, no critical distinction can be made.

Transit Facilities.

Metro Area Transit (MAT) currently operates several lines in the North Omaha area. These are the following:

No. 5 — South 33rd — North 33rd

No. 6 — Florence — 13th

No. 8 — Grand — South 10th

No. 9 — Minne Lusa — South Omaha

No. 27 — North Omaha

No. 30 — East Omaha

MAT is in the process of reviewing existing routes and coverages, the result of which will be the formulation of an "L-grid"1| of routes with slight revisions in some routes, extensions of others, and changes in the type of service provided. These improvements are not finalized at this time.

Preliminary routing maps indicate that changes will not be substantial in terms of route coverage. Since most lines follow major streets which will not be disrupted by the freeway, none of the alignments will disrupt existing or proposed bus routings. Those portions of routes on minor or collector streets will not be disrupted since a review of these streets indicates they all will have crossings over or under the freeway. Consequently, none of the proposed freeway alignments presents any difficulties of a permanent nature to the existing or proposed bus routes. However temporary detours may be required during freeway construction at spot locations.

Another aspect of the impact of the freeway on transit is the contract provision to "study the possible use of exclusive bus lanes, off-line stations at interchanges and connections to existing or possible bus routes."

Such a transit facility, if implemented, could be in the form of two separate bus travel lanes in the median area between the two vehicular roadways, or it could be the innermost travel lane in each direction marked for exclusive bus use. A third possibility would be to have no special provision for buses. It would merely operate on the regular traffic lanes along with the rest of the traffic.

Several alternatives for additional capacity in the freeway right-of-way whether it be for transit or additional traffic lanes, are considered in the following discussion.

South of Lake Street, the freeway section to be constructed in 1975 consists of six through traffic lanes with no median reserved for future expansion. Traffic analysis conducted in this study indicated that auxiliary lanes would be desirable between Hamilton and Lake Street interchanges. In any case, no median space has been reserved south of Lake Street on the North Freeway, nor has it been reserved specifically for transit on the rest of Omaha's freeway system.

North of Lake Street, the freeway cross-section has two three-lane roadways in each direction, each with 10-foot inside and outside shoulders, and 30-foot clear space between the edge of the outside lane and the bridge abutments. The bridge at Lake Street is planned as a two-span bridge with a center pier. Approximately 45 feet has been retained **between** the shoulders for future expansion of corridor capacity, except on the East Alignment north of Clay St. (See FIGURE V-9 and related text).

North of Lake Street where this study is involved, several arrangements are possible. Traffic analyses indicate that six traffic lanes are generally required for the North Freeway from Lake Street north to the interchange with the Hartman-Redman Arterial for the West and Central Alignments, and to the Airport Connector interchange on the East Alignment. North of these points four traffic lanes should be sufficient for the most part.

Three basic questions regarding the special provision for a transit facility in the freeway right-of-way are as follows: (1) What physical form should this facility take? (2) How are connections to existing or future transit lines to be accomplished, and how frequent should they be? and (3) How far north should such a special facility proceed?

A functional breakdown of the possibilities is useful at this point. A bus facility in the freeway right-of-way

1| "L-grid" refers an arrangement of bus routes in which most routes would run east-west or north-south for much of their route, and then would run north-south or east-west, respectively, on their downtown leg, thus forming a system of "L-shaped" routes.

could be either non-preferential or preferential in nature.

In a non-preferential usage, busses would use the regular freeway travel lanes and receive no special consideration. Thus bus travel times would be shortest during off-peak hours and would increase as traffic increases. Service levels would be the same as those for regular vehicular traffic, that is, the buses would be subject to delay and congestion during peak hours and could not offer a lower travel time.

Preferential treatment of bus transit along a freeway could be a separate or shared roadway either in the median area of the freeway or along one side of the freeway.

Possible preferential freeway treatments which would give priority to bus transit operations can be summarized with their advantages and disadvantages as in TABLE F-1. Non-preferential treatment in which buses would flow with regular vehicular traffic is an additional option.

Within each general type of treatment there are options. These principally relate to the consideration to be given to connections between the freeway transit service and local surface bus service. This involves the second basic question — namely what type of transfer points, if any, are to be used, and how many should there be. The answer to this question depends in part on what concepts Metro Area Transit (MAT) and MAPA find to be most satisfactory and compatible with ridership demands. It is agreed that the reservation of median space for future development is a healthy concept that will likely find utilization in the future.

Generally, the transfer between freeway and surface streets can be handled two ways. One would be to have stations in the median. Connections to surface buses would be made via steps and escalators for handicapped or elderly persons. The express buses would remain on their freeway travel lanes.

The other approach is to have buses leave the freeway via special ramps from the priority bus lanes, or via weaving maneuvers to transfer points to the side of the freeway at or near major streets. These buses would then re-enter the freeway, or continue on surface streets with local stops, depending on the kind of service to be provided.

TABLE F-1

POSSIBLE PREFERENTIAL FREEWAY TREATMENTS FOR BUS TRANSIT 2]

Treatment	Advantages	**Disadvantages**
1. Reserved bus lanes in freeway median.	Separation from vehicular traffic. Potential conversion to reversible traffic lanes if usage by transit is unjustified.	Extra cost, wider right-of-way. Not practical for short segments. Requires special bus ramps for local access, or requires transfer stations; or creates serious bus weaving problems across traffic lanes. Design problems at complex interchanges.
2. Reserved bus lanes to one side of main line.	Separation from vehicular traffic. Stations or transfer points can be located to side of freeway.	Extra cost, wider right-of-way. Not worthwhile for short segments. Would require costlier freeway access ramps on one side, as well as special bus ramps.
3. Reservation of vehicular median lanes for peak-hour transit usage, either peak hour flow or contraflow direction.	Requires little ROW, unless special median ramps are used. Potential conversion to traffic lane. Less costly to implement.	Would cause serious weaving problems across traffic, or would require special ramps and/or stations. Weaving problems at complex interchanges. Practical only where there are at least three lanes in each direction. Would require enforcement to keep regular vehicular traffic out of reserved lanes.
4. Reservation of special transit lanes nearest to the median, but not separated from regular traffic lanes.	Would not diminish existing vehicular capacity. Compatible with use by vehicular traffic at later date.	Would cause serious weaving problems across traffic lanes, or would require special ramps and/or stations. Usage by regular vehicular traffic could be problem. Wider right-of-way.

2] **Bus Use of Highways: State of the Art,** NCHRP Report 143, Highway Research Board.

Tied to this is the question of station frequency. This is a function partly of the type of service that such a special transit facility is intended to provide, and partly to the demand that can be generated and induced to utilize the service.

A related issue is the question of how far north should such a facility extend. Perhaps a better wording would be, "Along how much of the final two or three alignments, and the airport connector, is there a demand for this type of facility and how frequent should transfer points be to best serve this demand?"

Also, the problem of compatibility north of Lake Street where this study begins, and the south of Lake Street where no provision has been made for median expansion, in either vehicular or transit modes, must be resolved.

Any allowance in cross-sectional design made for this special bus facility should optimally be compatible with the option to possibly add a traffic lane to both vehicle roadways to provide maximum flexibility in the ultimate development of this transportation corridor.

Discussions with MAT officials indicate an endorsement of the reserved median concept for some sort of future transit usage. As far as compatibility with serving transit ridership, attracting new ridership, and providing best service to the most people, MAT favors the West and Central alignments over the East Alignment. This is primarily because of the introduction of the freeway express bus service directly into residential areas where most transit demand originates.

It is recommended that Metro Area Transit and MAPA

be consulted during the final design phase of the freeway development to insure compatibility of the freeway with the potential transit facility, in whatever form it may assume. This coordination between concerned agencies is necessary to the proper development of this multi-modal corridor.

SUMMARY

In view of these considerations, the alternates are ranked as follows going from best to worst in terms of operation and use of existing transportation facilities during and after construction:

1)	East	with Hartman Airport Connector
2)	West (27th - 28th)	with Hartman Airport Connector
2)	Central (27th - 28th)	with Hartman Airport Connector
4)	West (31st Avenue)	with Hartman Airport Connector
4)	Central (31st Avenue)	with Hartman Airport Connector
6)	East	with Fort Airport Connector
7)	West (27th - 28th)	with Fort Airport Connector
9)	West (31st Avenue)	with Fort Airport Connector
9)	Central (31st Avenue)	with Fort Airport Connector
11)	No Build	

APPENDIX G.
CONSTRUCTION AND ENGINEERING COSTS

Construction costs are one major consideration in the selection of a highway facility location. However, the impact of inflation has put the actual valve of a cost estimate in a questionable light. Cost increases of 20% to 35% per year are not uncommon in today's construction industry. Therefore, in an effort to make the information obtained from this construction cost estimate as meaningful as possible, July 1974 construction costs were used to give an accurate picture of the relative differences between the alignments if built at that time. The actual future construction costs can be obtained for any date desired by applying the actual or projected cost index change for that period.

UNIT COSTS

The unit costs used in this estimate were derived from **Building Construction Cost Data 1974** published by Robert Snow Means Company, Inc. These unit costs were adjusted for local variations and further refined by comparison to recent bids on construction projects in the Omaha Area so that they give a reasonable value for the summer of 1974.

QUANTITIES

The quantity figures to which unit prices were applied to determine construction costs were taken from carefully prepared plans of the various alternates.

The items included in this cost analysis were consolidated into nine categories:

1. Clearing and Grubbing.
2. Utility Adjustments.
3. Earthwork.
4. Drainage Structures.
5. Surfacing, Base and Shoulders.
6. Frontage Roads and Connectors.
7. Bridges and Retaining Walls.
8. Signing, Landscaping and Appurtenances.
9. Contractors Profit, Engineering and Legal Fees, and Contingencies.

The items included in each of these categories are as follows:

Clearing and Grubbing includes all work required to clean the construction sight before construction.

The demolition and removal costs of structures were calculated based on an average single story or an average 2-story structure as determined by the studies made for the relocation portion of this report. These figures include demolition and removal from the site of all major structures and out buildings and their foundations.

The removal and disposal of all paving and sidewalks were included as a separate item.

Estimates for clearing and grubbing costs included removal of all fencing, minor structures, shrubbery, and trees.

All removal, replacement, and new structures relating to railroad facilities were also included in this category.

Utility Adjustments. The major utilities which will be required to relocate are water, gas, electricity and telephone. The respective utility companies will likely be responsible for the relocation costs of facilities located on the public right-of-way. Facilities located on private property are included in this estimate as the utility company would be entitled to reimbursement for these relocations. All sanitary and storm sewers relocations are also included in this estimate. An estimate of utility relocation costs likely to be borne by the respective utilities is given separately in this appendix.

Earthwork quantities were calculated on the basis of the centerline profiles of existing and proposed grades with no allowance for transverse grade. The items included under earthwork were excavation, overhaul, compaction and borrow. Borrow included the buying, loading, and hauling of material with allowances for the length of haul.

Drainage Structures. Items included under this heading were all items required to install the proposed freeway's drainage system including storm sewer, manholes, catch basins and pumping stations, as well as excavation and backfill for these items. Where sewers were rerouted under the freeway, costs for inverted siphons were calculated.

Separate drainage facilities were assumed for the entire length of the freeway with storm water carried to major trunk sewers only. The study area contains many combination storm and sanitary sewers and no effort was made to separate existing facilities. However, the new freeway storm sewers and the existing storm sewer system are segregated as much as possible to facilitate any future separation efforts.

Surfacing Base and Shoulders. Surfacing consists of 10" reinforced portland cement concrete pavement with 6" cement treated base. Shoulders are 7" reinforced concrete surface, with integral curb-and-gutter used in depressed or at-grade sections of the freeway.

Frontage Roads and Connectors. This item includes earthwork grading and paving required for the construction of all frontage roads or upgrading of streets required by the construction of the freeway.

Bridges and Retaining Walls. This item includes construction of bridges, retaining walls, and any miscellaneous structures and all items associated with them.

Signing, Landscaping, and Appurtenances. This category includes signing, overhead sign structures, landscaping, barrier curb, cable guard rail, lighting, fencing, and traffic signals.

Contractor's Profit, Engineering, Legal Fees and Contingencies. This item was calculated as being 30% of the total of the above costs.

CONSTRUCTION COST ANALYSIS

An itemized summary of the construction cost estimate is presented in TABLE G-1. These costs reflect the total "Systems Costs" for the North Freeway, the Airport Freeway and the section of the Hartman-Redman Arterial required to make the systems comparable.

TABLES G-2, G-3, and G-4 show the cost breakdown for the sections of each alignment. These tables

can be used to segregate any section or entire component for detailed comparison.

From the systems standpoint, the estimated construction costs range from $56.9 million for the West (27th-28th) Alignment with the Fort Airport Connector, to $74.9 million for the East Alternates with the Hartman Airport Connector. At a range of $18 million, this difference is mostly attributable to the East Alignment as no other alignment exceeds $60 million. This difference, as TABLE G-1 indicates, is due to the high structure costs of the East Alternates. These higher costs are due to two factors. The first factor is the freeway-to-freeway interchange at I-680, which because of its proximity to the Mormon Bridge, McKinley, 30th Street, the Chicago & Northwestern Railroad, and Fillmore Park, requires larger expenditures for elevated structures and earthwork that is unnecessary with the West and Central Alignment interchanges with I-680. This fact accounts for 2.5 million dollars.

The second factor causing the remaining 15 million dollars cost differential is the use of elevated structures from Read to Fillmore. Here the higher cost of elevated structures and earth fill were required to provide as low right-of-way relocation costs as possible by utilizing railroad right-of-way air rights.

TABLE G-1 is helpful in making observations as to the relative cost of the various options such as the Fort and Hartman Airport Connectors or the 27th-28th Street Route and the 31st Avenue Route. TABLE G-1 indicates that the system construction cost of the Fort Airport Connector is always lower than the Hartman Airport Connector and ranges from $1.1 million for the West (31st Ave.) or Central (31st Avenue) Alignments to $2.7 million for the West (27th-28th) or Central (27th-28th) Alignments.

The 27th-28th Street and 31st Avenue options are more complicated to analyze because these options are dependent on the Airport Connector. With the Fort Airport Connection, the 27th-28th Street Alignments are the least expensive by $1.1 million for the Central, and $0.6 million for the West. However, with the Hartman Airport Connector, the 31st Avenue Alignments are the least expensive by $0.5 million

TABLE G-1

Construction Cost Estimate

	East Fort Airport Connector	East Hartman Airport Connector	Central 27-28th St. Route Fort Airport Connector	Central 27-28th St. Route Hartman Airport Connector	Central 31 Ave. Route Fort Airport Connector	Central 31 Ave. Route Hartman Airport Connector	West 27-28th St. Route Fort Airport Connector	West 27-28th St. Route Hartman Airport Connector	West 31 Ave. Route Fort Airport Connector	West 31 Ave. Route Hartman Airport Connector
1. Clear & Grub	$1,925,500	$1,774,500	$2,261,400	$2,247,100	$2,151,100	$1,939,200	$2,027,900	$2,013,600	$2,162,300	$1,950,200
2. Utility Adjustments	1,339,700	1,339,700	1,541,300	1,739,700	1,744,900	1,804,900	1,612,200	1,810,700	1,815,900	1,876,000
3. Earthwork	9,524,700	9,682,000	10,241,900	10,422,800	10,327,000	10,509,000	9,674,400	9,855,300	9,706,900	9,888,900
4. Drainage Structures	3,821,000	3,789,000	4,255,900	4,379,400	3,749,600	3,834,800	4,282,200	4,405,700	3,751,900	3,840,100
5. Surfacing, Base, and Shoulders	5,025,800	4,819,400	6,107,300	6,143,200	6,868,100	6,915,900	5,942,400	5,978,300	6,567,700	6,615,500
6. Frontage Roads and Connectors	389,700	295,800	417,400	319,200	503,900	405,700	498,000	399,700	604,200	506,000
7. Bridges and Retaining Walls	31,958,300	33,761,600	17,039,700	18,588,400	17,362,700	18,041,500	17,176,900	18.730,800	17,087,900	17,765,000
8. Signing, Landscaping and Appurtenances	2,129,300	2,160,200	2,416,200	2,552,500	2,422,500	2,522,800	2,527,700	2,664,000	2,532,200	2,632,500
9. Engineering and Legal Fees Major Contractor's Profit and Contingencies	16,834,100	17,286,500	13,284,200	13,918,300	13,538,700	13,792,300	13,122,800	13,751,700	13,268,900	13,522,200
TOTAL	$72,948,100	$74,908,900	$57,565,300	$60,310,600	$58,668,500	$59,767,100	$56,864,500	$59,609,800	$57,497,900	$58,596,400

TABLE G-2: CONSTRUCTION COST ESTIMATE FOR EAST ALIGNMENT

Section	East Alignment Plus Fort Airport Connector	East Alignment Plus Hartman Airport Connector
NORTH FREEWAY		
Lake to Ames	$10,026,900	$10,026,900
Ames to 24th	5,062,900	5,062,900
24th to Redick and to 16th	6,936,700	9,396,100
Redick to Craig	18,769,000	18,769,000
Craig to I-680	24,172,500	24,172,500
SUBTOTAL	$64,968,000	$67,427,400
AIRPORT FREEWAY 16th to Abbott	$ 6,125,600	$ 5,627,000
HARTMAN-REDMAN ARTERIAL		
East Alt. to 42nd	$ 1,854,500	$ 1,854,500
TOTAL	$72,948,100	$74,908,900

TABLE G-3: CONSTRUCTION COST ESTIMATE FOR GENERAL ALIGNMENT

Section	Central (27th-28th) Plus Fort Airport Connector	Central (27th-28th) Plus Hartman Airport Connector	Central (31st Ave.) Plus Fort Airport Connector	Central (31st Ave.) Plus Hartman Airport Connector
NORTH FREEWAY				
Lake to Ames	$10,026,900	$10,026,900	$12,970,400	$12,970,400
Ames to Redick and to 24th	15,150,600	15,150,600	—	—
Ames to Redick and to 30th	—	—	9,674,800	9,674,800
Redick to State	6,728,900	6,728,900	6,728,900	6,728,900
State to McKinley	4,206,900	4,206,900	4,206,900	4,206,900
McKinley to I-680	11,149,200	11,149,200	11,149,200	11,149,200
SUBTOTAL	$47,262,500	$47,262,500	$44,730,200	$44,730,200
AIRPORT FREEWAY				
30th to 16th	—	—	$ 7,287,900	$ 8,820,900
24th to 16th	$ 3,652,400	$ 6,832,100	—	—
16th to Abbott	6,061,700	5,627,300	6,061,700	5,627,300
SUBTOTAL	$ 9,714,100	$12,459,400	$13,349,600	$14,448,200
HARTMAN-REDMAN ARTERIAL				
Central Alt. to 42nd Street	$ 588,700	$ 588,700	$ 588,700	$ 588,700
TOTAL	$57,565,300	$60,310,600	$58,668,500	$59,767,100

TABLE G-4: CONSTRUCTION COST ESTIMATE FOR WEST ALIGNMENTS

	West (27th-28th) Plus Fort Airport Connector	West (27th-28th) Plus Hartman Airport Connector	West (31st Ave.) Plus Fort Airport Connector	West (31st Ave.) Plus Hartman Airport Connector
NORTH FREEWAY				
Lake to Ames	$10,026,900	$10,026,900	$12,970,400	$12,970,400
Ames to Fontenelle and to 24th	13,480,700	13,480,700	—	—
Ames to Fontenelle and to 30th	—	—	7,535,000	7,535,000
Fontenelle to Curtis	3,784,700	3,784,700	3,784,700	3,784,700
Curtis to State	5,452,300	5,452,300	5,452,300	5,452,300
State to McKinley	3,256,600	3,256,600	3,256,600	3,256,600
McKinley to I-680	11,149,200	11,149,200	11,149,200	11,149,200
SUBTOTAL	$47,150,400	$47,150,400	$44,148,200	$44,148,200
AIRPORT FREEWAY				
30th to 16th	—	—	$ 7,287,900	$ 8,820,900
24th to 16th	$ 3,652,400	$ 6,832,100	—	—
16th to Abbott	6,061,700	5,627,300	6,061,700	5,627,300
SUBTOTAL	$ 9,714,100	$12,459,400	$13,349,600	$14,448,200
TOTAL	$56,864,500	$59,609,800	$57,497,900	$58,596,400

for the Central and $1.0 million for the West.

TABLES G-2, G-3, and G-4 can be used to help clarify the cost differentials discussed above and also to locate their origin. However, a word of caution is required. Care must be taken in selecting sections with common end points or the results of the comparison will be erroneous.

Comparing the Central (27th-28th) Alignment to the Central (31st Ave.) Alignment, one must choose a section from Lake to Redick and include a common Airport Connector. The comparison is given in the following table.

TABLE G-5: COMPARISON OF CONSTRUCTION COST ESTIMATES FOR THE CENTRAL (27th-28th) AND (31st AVE.) ALIGNMENTS

	Central (27th-28th) with Fort Airport Connector	Central (31st Ave) with Fort Airport Connector
Lake to Ames	$10,026,900	$12,970,400
Ames to Redick	15,150,600	9,674,800
North Freeway Cost	$25,177,500	$22,645,200
Airport Connector Cost	3,652,400	7,287,900
	$28,829,900	$29,933,100

31st Avenue	$ 29,933,100
27th-28th Street	$-28,829,900
Difference	$ 1,103,200

In this case, the 27th-28th Street Section is 1.1 million dollars cheaper for the entire system. Notice, however, that the North Freeway portion is actually 2.5 million dollars more expensive than the 31st Avenue Section.

In a similar comparison using the Central Alignment with the Hartman Airport Connector the 31st Avenue Section was found to be most economical, when considering either the entire system or the North Freeway alone. The relative difference in this case was found to be 0.5 million dollars for the system or 2.5 million dollars for the freeway alone.

From the above discussion and by studying TABLES G-1 through G-4, it is apparent that the Airport Connection creates the cost differential between the West and Central Alignments. Provisions to allow for freeway-to-freeway connections with the Airport Connector are responsible for about 4.8 million dollars of the cost of the North Freeway cost. This means that the "actual cost" to provide the Airport Freeway is about 5 million dollars higher than indicated on TABLES G-2, G-3 and G-4 and the North Freeway's cost is a similar amount lower.

Due to the differences in operating character, need, and potential funding, the influence of the cost of the Airport Connector on the cost of the North Freeway system selected (that is, a particular North Freeway Alignment and a particular Airport Connector) should be carefully considered.

In addition to the cost figures described above, there are additional costs in the area of utility relocations and adjustments. These costs are for the expenses of relocating water, gas, telephone, and electric utilities which are located within public right-of-way. Althouth these costs will likely be absorbed by the respective utilities, they are, nevertheless, costs which will be incurred because of the construction of the freeway. These additional utility relocation costs are summarized in TABLE G-6.

TABLE G-6
COST ESTIMATE OF UTILITY ADJUSTMENTS FOR UTILITIES LOCATED IN PUBLIC RIGHT-OF-WAY

Alignment	North Freeway	Airport Connector	Total
East and Fort St. Airport Connector	$504,000	$ 88,000	$592,000
East and Hartman Ave. Airport Connector	504,000	68,000	572,000
Central (27th-28th) and Fort St. Airport Connector	572,000	166,000	738,000
Central (27th-28th) and Hartman Ave. Airport Connector	572,000	94,000	666,000
Central (31st Ave.) and Fort St. Airport Connector	656,000	175,000	831,000
Central (31st Ave.) and Hartman Ave. Airport Connector	656,000	101,000	712,000
West (27th-28th) and Fort St. Airport Connector	546,000	166,000	712,000
West (27th-28th) and Hartman Ave. Airport Connector	546,000	94,000	640,000
West (31st Ave.) and Fort St. Ave. Airport Connector	632,000	175,000	807,000
West (31st Ave.) and Hartman Ave. Airport Connector	632,000	101,000	733,000

A review reveals that these additional costs range from $572,000 for the East Alignment and Hartman Ave. Airport Connector to $831,000 for the Central (31st Ave.) Alignment and Fort St. Airport Connector, a spread of $259,000. The magnitude and range of these additional utility costs is such that conslusions regarding cost estimates are not altered.

In summary, the West and Central Alignments are the least expensive in terms of construction and engineering costs, with each of the West Alignments just slightly lower than the corresponding Central Alignment in cost. The East Alignments, however, are significantly more expensive due to higher structural costs in the Read-Craig portion and in the I-680 interchange. The Hartman Airport Connector is more expensive than the Fort St. Airport Connector in all cases. The 27th-28th Street Route and the 31st Avenue Route are dependent upon the type and alignment of the Airport Connector.

It was noted that the estimated construction costs of the **system** (North Freeway and Airport Connector) were dependent on the Airport Connector and that a decision on the future of that facility would simplify the decision on the final North Freeway alignment.

APPENDIX H.
RIGHT-OF-WAY COSTS

The purpose of the right-of-way (ROW) cost estimate is to provide an indication of the total market value of the properties within the "construction limits" of each alternate freeway plan. As developed herein, the ROW costs are intended to be estimates for use in evaluating the various North Freeway Alternates. As such, these estimates should not be interpreted as being final appraisals for use in actual property purchases at some future date.

Because of the large number of properties involved, a detailed cost estimate of each individual parcel and its improvement was not made nor was it needed or desired at this stage of the freeway planning effort. Detailed appraisals would of course be conducted at some later year when property was actually being acquired.

The method used to develop the ROW cost estimate involved first the determining of the current market value (in 1974 dollars) of a sample number of properites. These cost values were then compared with the valuations appearing on the County Assessor's records and a ratio determined. The ratios were deemed applicable to similar properties in similar neighborhoods.

The work under this method was carefully conducted. Nevertheless, it is recognized that this technique would result in errors on individual properties (although in the overall analysis they should provide a good balance of any high and low estimates which in turn should produce accurate overall totals of the ROW costs on each freeway alternate).

For the sample properties, housing groups were selected in each of the areas traversed by the freeways. The basis for the groupings were on the Study Team's knowledge of the area, a study of the assessed dollar values per square foot per city block, and a review of the 1970 Census data on block group values. Other atypical properties representing churches, vacant lands, and commercial and industrial properties were also added. In total, over 176 properties were in the sample.

The Mid-City Business and Professional Association was employed to prepare the market value estimates for the selected sample properties. The estimates were obtained from a "windshield" survey of each sample parcel as correlated with recent sales data, current property listings, and area knowledge.

For our study purposes, the market value is defined as the highest estimated price the property will bring, if exposed for sale on the open market by a willing seller, allowing a reasonable time to find a willing buyer who buys with full knowledge of all the uses to which it is adapted and for which it is capable of being used.

The resultant comparison between the estimated market value and the assessor's value produced a series of ratios which were applied to the total listing of assessed values for properties within the "construction limits" of each freeway.

TABLES H-1 through H-3 show the ROW estimates for each freeway combination of the North and Airport Freeways. These estimated values are expressed in 1974 (September-October) dollars. Values are also stratified by the interchange-to-interchange subsections.

Analysis of TABLES H-1 through H-3 indicates that the East system is the least expensive in terms of right-of-way. The Central system appears most expensive with nearly twice the right-of-way costs of the East system. The West system is about midway between the other two alternates.

The 27th-28th Street Section requires more expensive right-of-way than does the 31st Avenue Section for either the Central or the West Alignments.

In all cases the Fort Airport Connectors are more expensive than the Hartman Airport Connectors with respect to right-of-way.

Looking at the North Freeway alone, without consideration for the Airport Connections, yields the same results as mentioned above.

The variation in costs between alignments can be explained by examining the nature of the land the respective route passes through. The Central Alignment passes through the most residential property and hence is the most expensive. The West Alignment passes through a large area of agricultural and undeveloped land as well as utilizing a section of the Chicago and Northwestern Railroad east of 30th Street, which reduces right-of-way costs below the Central costs. The East Alignment further reduces right-of-way cost by utilizing an area of agricultural land east of Florence Boulevard. Further north a section of City-owned land, adjacent to Pershing Drive and the air rights for a section of railroad right-of-way were used at no or low cost to the project.

The difference between the 27th-28th Street and 31st Avenue routes can be explained by the lower population density of the 31st Avenue section with its more abundant vacant land which yields a relatively inexpensive right-of-way cost.

This same reason applies to the difference between the Hartman and Fort Airport Connectors. The Hartman Section crosses mostly open land and yields a correspondingly low right-of-way cost.

TABLE H-1: RIGHT-OF-WAY COST ESTIMATE FOR EAST ALIGNMENT

Section	East Alignment Plus Fort Airport Connector	East Alignment Plus Hartman Airport Connector
NORTH FREEWAY		
Lake to Ames	$2,824,600	$2,824,600
Ames to 24th	1,781,000	1,781,000
24th to Redick and to 16th	1,655,000	1,191,200
Redick to Craig	261,200	261,200
Craig to I-680	792,800	792,800
Subtotal	$7,314,600	$6,850,000
AIRPORT FREEWAY		
16th to Abbott	$ 957,500	$ 596,149
TOTAL	$8,272,100	$7,446,949

TABLE H-2: RIGHT-OF-WAY COST ESTIMATE FOR CENTRAL ALIGNMENT

Section	Central (27th-28th) Plus Fort Airport Connector	Central (27th-28th) Plus Hartman Airport Connector	Central (31st Ave) Plus Fort Airport Connector	Central (31st Ave) Plus Hartman Airport Connector
NORTH FREEWAY				
Lake to Ames	$ 2,845,000	$ 2,845,000	$ 2,834,900	$ 2,834,900
Ames to Redick & to 24th	5,687,800	5,687,800	—	—
Ames to Redick & to 30th	—	—	3,709,600	3,709,600
Redick to State	3,686,600	3,686,600	3,686,600	3,686,600
State to McKinley	123,200	123,200	123,200	123,200
McKinley to I-680	103,900	103,900	103,900	103,900
SUBTOTAL	$12,446,500	$12,446,500	$10,458,200	$10,458,200
AIRPORT AIRPORT FREEWAY				
30th to 16th	—	—	$ 2,102,300	$ 2,008,300
24th to 16th	$ 856,800	$ 884,900	—	—
16th to Abbott	912,000	587,600	912,000	587,600
SUBTOTAL	$ 1,768,800	$ 1,472,500	$ 3,014,300	$ 2,595,900
TOTAL	$14,215,300	$13,919,000	$13,472,500	$13,054,100

TABLE H-3: RIGHT-OF-WAY COST ESTIMATE FOR WEST ALIGNMENT

Section	West (27th-28th) Plus		West (31st Ave) Plus	
	Fort Airport Connector	Hartman Airport Connector	Fort Airport Connector	Hartman Airport Connector
NORTH FREEWAY				
Lake to Ames	$ 2,845,000	$ 2,845,000	$ 2,834,900	$2,834,900
Ames to Fontenelle & to 24th	3,921,000	3,921,000	—	—
Ames to Fontenelle & to 30th	—	—	1,789,600	1,789,600
Fontenelle to Curtis	1,199,400	1,199,400	1,199,400	1,199,400
Curtis to State	1,650,500	1,650,500	1,650,500	1,650,500
State to McKinley	99,000	99,000	99,000	99,000
McKinley to I-680	103,900	103,900	103,900	103,900
SUBTOTAL	$ 9,818,800	$ 9,818,800	$ 7,677,300	$ 7,677,300
AIRPORT FREEWAY				
30th to 24th	—	—	$ 2,102,300	$ 2,008,300
29th to 16th	856,800	884,900	—	—
16th to Abbott	912,000	587,600	912,000	587,600
SUBTOTAL	$ 1,768,800	$ 1,472,500	$ 3,014,300	$ 2,595,900
TOTAL	$11,587,600	$11,281,300	$10,691,600	$10,273,200

APPENDIX I.
STAGE CONSTRUCTION

Historically, stage construction has provided a means of controlling both the physical and monetary disruptions of a major project. However, there are other factors both for and against stage construction that should be considered.

The arguments for construction of the entire freeway at one time are simple. In the first place, the overall cost of the project will be reduced because of the elimination of the need to construct temporary facilities and the use of inefficient construction procedures to accommodate stage construction.

Secondly, some of the detrimental effects to the property owner within the right-of-way would be reduced if the project were built outright. Consider the elderly person wishing to retire to a warmer climate or a person wishing to move to a different city. These people would be unable to find a buyer for their property on the open market because of the proposed construction and the state would be unable to purchase their property unless they were located within the area involving the next stage of construction. Each stage would require from four to six years to complete. Thus both the hardships to the residents and the cost of the project would be spread over a longer time period.

Arguments for stage construction are also of both a social and financial nature and are very strong. From the relocation standpoint, construction should be scheduled so as not to create the need for a major part of the relocation at any one time. A large number of relocations might overtax the capabilities of the relocation offices of the state and city. The supply of suitable replacement housing would unnecessarily decrease and the cost of such housing would increase causing hardship on the people being relocated.

Presently the demand for the freeway is greater toward the south where traffic is more congested. The construction of the freeway could be accomplished in stages as they are needed beginning in the south and proceeding north.

Realistically, the financial impact of a project approaching 90 million dollars would be too great for a one-time expenditure, especially when considering the city's share. Therefore it is obvious that some type of stage construction will be necessary.

In considering the factors mentioned above, it is recommended that the number of construction stages be kept to a minimum to reduce the adverse effects of stage construction. Two stages would be ideal for the North Freeway; however, construction in three stages seems more attainable in light of financial considerations.

The East Alignment is the simplest to deal with in regard to stage construction because it offers very little flexibility. Based on traffic demand, construction for all alternates should begin at Lake and proceed north. The length of the first stage for the East Alignment (also for the West and Central) is highly dependent on the status of the proposed Hartman-Redman Arterial. If this new arterial is to be constructed in the foreseeable future the first freeway section should be constructed to the arterial. However, if the arterial is not in the foreseeable construction picture, then future construction to Ames would be sufficient.

The completion of the Hartman-Redman Arterial should be considered as having a **major impact** on this project and efforts for its development should be made to provide for its connection with the North Freeway.

If the freeway is built only to Ames, special consideration will be required to avoid congesting traffic in the 30th and Ames area. New signalization including left turns on the southbound leg of 30th Street and possibly the reconstruction of the intersection would be required.

As need dictates or as finances are available, the next section of the East Alignment to be built should be from either Ames (or 24th assuming a Hartman-Redman Arterial) to Craig where traffic could easily be diverted back to 30th Street. The interchange for the Airport Freeway could be terminated at 16th St. with a temporary at-grade interchange. The Airport Freeway could then be connected, when required, on east to Abbott Drive.

The section of the East Alignment from Craig to I-680 including the interchange would form the last section for stage construction on the East Alignments.

For the Central Alignments the section from Lake to Ames for either the 31st Avenue or 27th-28th routes will be the first in demand. The section just north of Ames to Redick should, like the East Alignment, be keyed to the Hartman-Redman Arterial construction.

The section from Redick to State was included in the cost estimates on a separate section because construction could be stopped at State. However, the section from State to McKinley is quite short and its construction would provide a great deal of continuity not provided by stopping at State. Therefore, construction from Redick to McKinley is recommended as one stage.

A feature provided with the Central and West Alignments allows for the stage construction of the freeway-to-freeway interchange with I-680 without any loss of access in the interim. The construction of only the inside lanes of the freeway which connect to McKinley with an at-grade intersection would provide access to the freeway from McKinley, U. S. 73, and I-680 until traffic justified the completion of the freeway-to-freeway interchange.

The completion on any portions of the Airport Freeway could be considered independent of the staging of the Central Alignment. Either the North Freeway or the Airport Freeway could be connected to the existing arterial system at 30th Street (for the 31st Avenue Route) or at 24th (for the 27th-28th Street Route) and therefore could be constructed independently.

The West Alignment is very similar to the Central and will require similar staging. The section from Lake St. to Ames Ave. is the same for the West as for the Central.

Ames Ave.-to-Fontenelle Blvd. would provide a second stage of suitable size for stage construction. Including the section from Fontenelle to Curtis with the section from Ames to Fontenelle should be considered if the finanaces and replacement housing are available. This would complete a high percentage of the necessary relocation at a small incremental construction cost and allow the people to reestablish themselves at an early date.

The section from Curtis to State should be included with the section from State to McKinley for the West Alignment. This would provide a much higher level of access without a large expenditure. The final construction of the interchange could be provided in sections by constructing the ramps as they are needed.

The Airport Connectors for the West Alignment are the same as for the Central and are subject to the same considerations as discussed above.

The use of stage construction will cause several problems that will have the tendency of raising the cost level of complication of construction. Some of the more prominent of these problems are outlined below.

Detouring and temporary connections at the end of each stage will have to be carefully considered in final design. As mentioned above, the area around 30th and Ames will require special attention to avoid creating a point of congestion.

Utility relocation should be accomplished in such a way as to avoid creating problems during the next stage of construction. In some cases, notably storm sewers, changes should be made outside the construction area as required for a given stage in order to avoid costly reconstruction at a future date.

As mentioned above the relocation of households within the corridor can have negative impacts from either multi-stage or single-stage construction. However, since the multi-stage concept is more feasible financially, some mitigation measures to overcome the disadvantages of this type of scheduling are necessary. The means to overcome the problem of stranding home owners within the potential future right-of-way area for many years is available under existing advanced right-of-way acquisition laws. It is therefore **strongly recommended** that advanced right-of-way acquisition funds be utilized to purchase hardship cases throughout the length of the corridor as soon as possible after the freeway alignment has been selected. This recommendation is subject to funding limitations, and the constraint that actual construction must follow advance acquisition of right-of-way within a ten-year period on Federally-funded projects.

One of the major problems caused by stage construction will be the management of earthwork. For example the 27th-28th Street Route from Lake to Ames will have over 2 million cubic yards of excess material. Other sections such as the Airport Connectors will require this material for fill. Provisions for either the wasting of excess cut and the purchase of new fill material at a future date, or provision to store the material and reuse it in the future will have to be made if stage construction is utilized.

The cost estimates for this project were based on excavation of materials in cut session, hauling to fill sections, and then compaction. This would require construction of the North Freeway to at least Grand and at the same time construction of the Airport Connector. This method of construction required one excavation of materials in cut section, hauling to yards and one dumping and compacting operation. Any deviation from this method will be more costly.

The cost of purchasing new land to acquire fill material is substantially more expensive than the storing and reuse option. Therefore, it is recommended that land required for future stages of construction be purchased and the excess cut be stored for future use.

TABLE I-1: STAGE CONSTRUCTION FOR EAST ALIGNMENT

Priority	Freeway Stages	Total Construction, Right-of-Way, and Relocation Costs (in millions) With Fort Airport Connector	With Hartman Airport Connector
	NORTH FREEWAY		
1.	Lake to Ames	$15.7	$15.7
2.	Ames to Craig and to 16th	37.6	39.1
3.	Craig to I-680	25.5	25.5
	Subtotal	$78.8	$80.3
4.	AIRPORT FREEWAY		
	16th to Abbott	$ 7.8	$ 6.2
	HARTMAN-REDMAN ARTERIAL		
	East Alignment to 42nd St.	1.9	1.9
	NON-RESIDENTIAL RELOCATION COSTS*	0.4	0.3
	TOTAL	$88.9	$88.7

* No breakdown is available on a section-by-section basis for this cost item.

SUMMARY

The construction of the North Freeway in two sections (the first from Lake to the proposed Hartman-Redman Arterial, and the second from the Arterial to I-680) would be preferable. This would minimize the adverse impacts of stage construction and provide the greatest amount of service for the period before the freeway is completed.

Realistically, however, construction of the North Freeway in three to four stages will be more attainable from the financial and relocation standpoints. The recommended stage construction sections are presented in TABLES I-1 through I-3, along with their total costs for construction, right-of-way, and relocation. A breakdown of these costs may be found in APPENDICES G, H, and U.

The Airport Connector could be constructed in one

stage with any of the North Freeway alternates. The critical section of the Airport Freeway is to construct a direct, efficient connection between the top and bottom of the bluffs; i.e., from the North Freeway to 16th Street.

A priority is assigned each freeway section in the stage construction tables. The priority order proceeds northward from Lake along the North Freeway. The Airport Connector is given a lower priority than the North Freeway primarily because of its lesser traffic demands. The exception would be the directional ramps at the West or Central and I-680 Interchange (McKinley to I-680) which could be constructed after the Airport Freeway.

TABLE I-2: STAGE CONSTRUCTION FOR CENTRAL ALIGNMENT

		Total Construction, Right-of-Way, and Relocation Costs (in millions)			
		Central (27th - 28th)		Central (31st Ave.)	
Priority	Freeway Stages	Fort Airport Connector	Hartman Airport Connector	Fort Airport Connector	Hartman Airport Connector
	NORTH FREEWAY				
1.	Lake to Ames	$15.7	$15.7	$18.5	$18.5
2.	Ames to Redick and to 24th	25.0	25.0	—	—
2.	Ames to Redick and to 30th	—	—	16.2	16.2
3.	Redick to McKinley	16.1	16.1	16.2	16.2
5.	McKinley to I-680	11.3	11.3	11.2	11.2
	SUBTOTAL	$68.1	$68.1	$62.1	$62.1
4.	AIRPORT FREEWAY				
	30th to Abbott	—	—	$19.0	$19.0
	24th to Abbott	$12.8	$14.5	—	—
	HARTMAN-REDMAN ARTERIAL				
	Central Alignment to 42nd Street	$ 0.6	$ 0.6	$ 0.6	$ 0.6
	NON-RESIDENTIAL RELOCATION COSTS*	$ 0.5	$ 0.5	$ 0.6	$ 0.6
	TOTAL	$82.0	$83.7	$82.3	$82.3

* No breakdown is available on a section-by-section basis for this cost item.

TABLE I-3: STAGE CONSTRUCTION FOR WEST ALIGNMENT

		Total Construction, Right-of-Way, and Relocation Costs (in millions)			
		West (27th - 28th)		West (31st Ave.)	
Priority	Freeway Stages	Fort Airport Connector	Hartman Airport Connector	Fort Airport Connector	Hartman Airport Connector
	NORTH FREEWAY				
1.	Lake to Ames	$15.7	$15.7	$18.5	$18.5
2.	Ames to Curtis and to 24th	26.4	26.4	—	—
2.	Ames to Curtis and to 30th	—	—	16.8	16.8
3.	Curtis to McKinley	11.3	11.3	11.3	11.3
5.	McKinley to I-680	11.3	11.3	11.2	11.2
	SUBTOTAL	$64.7	$64.7	$57.8	$57.8
4.	AIRPORT FREEWAY				
	30th to Abbott	—	—	$19.0	$19.0
	24th to Abbott	$12.8	$14.5	—	—
	HARTMAN-REDMAN ARTERIAL				
	West Alignment to 42nd Street	—	—	—	—
	NON-RESIDENTIAL RELOCATION COSTS*	$ 0.5	$ 0.5	$ 0.6	$ 0.6
	TOTAL	$78.0	$79.7	$77.4	$77.4

*No breakdown is available on a section-by-section basis for this cost item.

APPENDIX J.
EDUCATION FACILITIES

OVERVIEW

The Omaha School District has had, for many years, a stated policy of locating schools within a reasonable walking distance for the children in each attendance district. Under this "neighborhood school building policy", each elementary school serves a neighborhood with approximately 600 students or less depending upon the density of population; each junior high school serves from four to six or seven elementary districts; and each senior high school serves two to four or more junior high school districts.

If it is necessary to establish alignments which divide recognized neighborhoods or school attendance districts, it will also be necessary to provide pedestrian crossings and perhaps some vehicular crossings at more than the usual intervals along the highway. The access should probably be by overpass since tunnels and underpasses have been found to be undesirable and the existing ones in the city are being phased out.

Fourteen public elementary and five parochial school parish attendance districts lie either partly or wholly within the corridor area. Overlapping these areas are three junior high and five senior high school attendance districts.

Attached are tables showing the schools, the addresses, number of staff personnel, and enrollments for each of the schools in the corridor area.

Approximately 16,000 school children attend these schools. It is estimated that about 13,000 live in the corridor area and the remaining 3,000 live in these parts of the attendance districts adjacent to the corridor. A total of approximately 80,000 children are enrolled in the public schools of the Omaha School District and the parochial schools of the Catholic Archdiocesan Schools. More than 18 percent of the total enrollment is in the North Freeway Corridor. It is extremely important that selection of Freeway alignments take these factors into consideration.

NORTH FREEWAY IMPACTS

As part of the development stages for each freeway alignment, the travel paths to schools and the neighborhood circulation patterns were studied. The purpose was to locate bridge crossings of the freeway which would serve to lessen the "barrier" impacts and aid in reestablishing local pedestrian and vehicle travel patterns following the freeways construction. Such crossings would also serve churches, bicycle routes, fire and police protection and other community services and activities. APPENDIX Z expounds upon the recommended bridge crossings, all but one of which will accommodate pedestrians and vehicles.

In general, the negative impacts to education facilities are few with any of the proposed North and Airport Freeway Alternates. Attendance travel lines will not be adversely impacted due to the bridge crossing locations.

None of the public schools are taken within the construction limits of the freeway. The Central and West Alignments along 31st Avenue would be adjacent to Druid Hill School. However, the freeway is in a depressed section below ground level and does not present a noise or aesthetic problem to this older school complex.

The Central Alignment also passes adjacent to Florence Elementary. The school building is located far enough from the freeway that noise levels are acceptable. A portion of excess right-of-way could be added to the school's playground.

Among the parochial schools, Dominican High along with the Holy Angels Church would be within the right-of-way limits of the Central (27th - 28th) and the West (27th - 28th) Alignments and of the Airport Connectors associated with the Central (31st Ave.) and West (31st Ave.) Alignments. The East Alignment misses this small high school.

The Fort Street Airport Connector passes beside St. Theresa School at 14th and Ogden. Traffic forecasts are so low that noise will have little impact from the adjacent elevated freeway.

Overall, the freeway alignments are not significantly different from the No Build or each other in their impact on schools. In a ranking, the East Alignment plus Hartman Airport Connector would be equal to the No Build followed by the East plus Fort Airport Connector. The West and Central Alignments would then be listed.

TABLE J-1

PUBLIC SCHOOLS WITH ATTENDANCE AREAS WHOLLY OR PARTLY IN NORTH FREEWAY CORRIDOR 1973-1974

Street, Address	Construction Date Original Building	Professional Staff	Enrollment
Elementary			
Lake, 2410 No. 19th St.	1888	14	190
Lothrop, 2212 Lothrop	1892	34	650
Kennedy, 2906 No. 30th St.	1910	28	625
Clifton Hill, 2811 No. 45th St.	1917	26	560
Fairfax, 3708 No. 40th St.	1910	4	50
Druid Hill, 3030 Spaulding	1917	18	350
Saratoga, 2405 Meredith	1926	30	605
Monmouth Park, 4508 No. 33rd St.	1903	21	460
Sherman, 5618 No. 14th St.	1926	24	480
Wakonda, 4845 Curtis	1962	24	560
Miller Park, 2758 Ellison	1912	28	615
Minne Lusa, 6905 No. 28th St.	1922	23	565
Florence, 7902 No. 36th St.	1962	23	530
Ponca, 11300 No. Post. Rd.	1963	8	220
TOTAL		305	6,460

TABLE J-2

PUBLIC HIGH AND MIDDLE SCHOOLS WITH ATTENDANCE AREAS PARTLY OR WHOLLY IN NORTH FREEWAY CORRIDOR 1973-1974

School, Address	Construction Date Original Building	Professional Staff	Enrollment
Junior			
Horace Mann Junior High 3720 Florence	1959	67	1,200
McMillan Junior High 3802 Redick	1958	69	1,400
Martin Luther King Middle School 3706 Maple	1973	37	800
TOTAL		173	3,400

TABLE J-3

PUBLIC SENIOR HIGH SCHOOLS WITH ATTENDANCE AREAS PARTLY OR WHOLLY IN NORTH FREEWAY CORRIDOR AREA 1973-1974

Senior			
North High School 4323 No. 37th St.	1924	105	1,890
Benson High School 5120 Maple	1926	90	1,640
TOTAL		195	3,530

TABLE J-4

PAROCHIAL SCHOOLS WITH ATTENDANCE AREAS WHOLLY OR PARTLY IN NORTH FREEWAY CORRIDOR 1973-1974

School, Address	Professional Staff	Enrollment
Elementary		
Holy Name, 2901 Fontenelle	22	480
St. Theresa, 1423 Ogden	5 Est.	150
Blessed Sacrament, 30th and Curtis	21	445
St. Philip Neri, 8200 No. 31st. St.	10	280
St. Richard, 4318 Fort	16	350
Sacred Heart, 2205 Binney	11	200
TOTAL	85	1,905
Secondary		
Dominican High School 4725 No. 28th St.	15	225
Notre Dame Academy (Closed Spring 1974) 3501 State St.	24	220
Rummel High School (Now Roncalli High) 6401 Redick	28	475
TOTAL	67	920

TABLE J-5

SUMMARY-ENROLLMENTS IN PUBLIC AND PAROCHIAL SCHOOLS IN NORTH FREEWAY CORRIDOR 1973-1974

Schools	Number of Schools	Professional Staff	Enrollment
Elementary			
Public	14	305	6,460
Parochial	5	85	1,905
Junior High or Middle			
Public	3	173	3,400
Senior High or Secondary			
Public	2	195	3,530
Parochial	3	67	920
TOTAL	27	825	16,215

APPENDIX K.
RELIGIOUS INSTITUTIONS AND ACTIVITIES

Three churches are directly in the path of the East Alignment between Lake Street and Ames Avenue: (1) Church of God in Christ at 2760 Lake, (2) New Light Baptist Church at 27th and Pratt, and (3) Mt. Moriah Church of God in Christ at 3915 North 28th Street.

North of Ames, the East Alignment passes adjacent to the Power House Church of God in Christ at 2553 Browne Street, Holy Angels Church at 2720 Fowler, and about 400-500 feet from the Pearl Memorial-Asbury United Methodist Parish at 2319 Ogden Street. No other churches will be taken by the East Alignment.

With the East Alignment, the Fort Street Airport Connector will take the Asbury United Methodist Church at 5226 North 15th Street and will border the St. Therese of the Child Jesus Church at 5316 North 14th Avenue, presenting potential noise problems. The Hartman Airport Connector takes no churches.

The 27th-28th Segment of the Central and Western Alignments, between Lake Street and Grand Avenue, will have the same impact as the Eastern Alignment, taking the Church of God in Christ at 2760 Lake Street, the New Light Baptist Church at 27th and Pratt, and the Mt. Moriah Church of God in Christ at 3915 North 28th Street. The Fort Airport Connector for the Central and Western Alignments will take the Asbury United Methodist Church at 5226 North 15th Street and will border the St. Therese of the Child Jesus Church at 5316 North 14th Avenue. In addition the West (27th-28th) and Central (27th-28th) Alignments' interchanges with the Airport Connector will require the taking of Holy Angels Church at 2720 Fowler Avenue. It is the largest and most substantial church structure affected by the alignments. Although its membership is decreasing, the architecture of the church is very unique and should be preserved if possible. The other church structures are wooden and with one exception appear to be in good condition.

The 31st Avenue Segment of the Central and West Alignments between Lake Street and Ames Avenue will pass close to the (1) Sharon Seventh Day Adventist Church at 3036 Bedford Street (within 50 feet on a diagonal and 200 feet on the east), (2) Mt. Nebo Baptist Church at 3211 Pinkney Street (about 250 feet from the freeway) and the (3) New Hope Deliverance Church at 3190 Ames Avenue (about 100 feet from the freeway), and (4) the Western Alignment will also border the Jehovah's Witness Fontenelle Congregation at 5465 Fontenelle Boulevard. In all four cases, the freeway may present noise problems.

No direct negative impacts to attendance areas of the remaining churches are foreseen as the proposed bridge crossings (APPENDIX Z) will maintain access to these churches, most of which have small neighborhood-oriented congregations. The West Alignment passes Pleasant Hill Cemetery on 42nd St. but involves none of the existing cemetery. Farther to the north the West Alignment would require the taking of a small part of Forest Lawn Cemetery. This area presently contains no grave sites.

APPENDIX L.
PUBLIC HEALTH AND SAFETY

Fire Protection

To assess the impact of the alignments on fire protection, dicussions were held with the Chief and Assistant Chief of the Omaha Fire Department and a staff member of the City Planning Department. It was judged that the crossings as outlined in APPENDIX Z are adequate, with the proviso that 30th Street must be kept open as a fire access route. The Eastern Alignment was considered least disruptive to fire service as it now exists. The Western Alignment would also not be disruptive to fire service while the Central Alignment would cause greater problems for the fire department. Access to and from the freeway alignments was also judged as adequate.

Location of fire stations in relation to the alignments was not a major consideration. It is planned that a consolidation of fire stations in the area will take place over the next few years.

Several suggestions for improving fire protection and emergency service were made by the fire chief. It was suggested that each interchange, where possible, have a locked emergency entrance gate for which a key would be provided each piece of fire equipment for access to the freeway to serve emergencies on the freeway. This suggestion was prompted by current problems with back-up traffic which occur when emergencies arise on the interstates. It was further suggested that pay telephones be installed for each mile of freeway to provide communication for emergency break-downs, accidents, and so forth, and that the telephone locations be easily identifiable. If this were done, no persons would ever be more than one-half mile from a telephone on the freeway route. It was also suggested that where a fire hydrant is located near the right-of-way fence, the fence should be painted red to indicate the location. If fire hydrants were located outside the right-of-way, but adjacent to the fence between access points, fire service could be provided by one company of equipment rather than two, as is now the case.

Police Protection

Regardless of the alignment chosen, the North Freeway will divide several cruiser districts in the North Freeway Corridor, many of which are "active" in terms of cruiser calls. To assess the importance of this, the Crime Analyst for the Omaha Police Department was contacted. Discussions indicated that cruiser districts can be redefined and should not be considered a major obstacle in the choice of alignments, particularly since the cruiser districts under consideration (101, 103, 104, and 105 for the Eastern Alignment and 103, 151, and 152 for the Central and Western Alignments) cause little change in the command structure (e.g., all cruiser districts in the 100's are under the command of one sergeant and all districts in the 150's are under the command of another sergeant.

To insure that the freeway alignments contribute to the quality and quantity of protection, crossings and accessibility to the freeway were major concerns. Conversations with the Crime Analyst who, in turn, discussed the freeway alignments and crossings with the uniformed policemen most acquainted with the area, indicated that the crossings as described in APPENDIX Z were adequate for police protection purposes. Access to and from the freeway was considered important at the following locations: (1) Eastern Alignment: Fort and Craig Streets, (2) Central Alignment: Redick Street and (3) Western Alignment: 42nd Streets. The plans now include on/off access at or within the near vicinity of these locations.

The Director of the Public Safety Communications unit of the City was also contacted. Crossings, as outlined in APPENDIX Z, were judged adequate and all recommendations for access to and from the freeway are currently included in the plan.

Hospitals, Medical Clinics, and Ambulance Service

Currently, the North Freeway Area is served by the old Immanuel Hospital site at 34th and Fowler Avenues, which provides emergency service to area residents. The alignments will not hinder access in the immediate vicinity of the old hospital. Crossings and freeway accessibility must be provided for ambulance service. As in the case of police and fire vehicles, the planned crossings and interchanges will provide sufficient mobility and flexibility for ambulance service. In fact, all three alignments will reduce travel time for those persons living north and south of the hospital.

Similarly, when Creighton Hospital is completed, the freeway alignments will aid the north-south flow of traffic to and from that hospital and from the ambulance service sites (the closest being the Omaha Ambulance Service located at 2531 North 16th Street).

Staff members at the Health Planning Council of the Midlands reviewed the alignments and indicated they had no objections to any of the three concerning the impact on hospitals, ambulance service, medical clinics, and nursing homes. The alignments do not conflict with any planned changes in medical services in the area.

APPENDIX M.
NEIGHBORHOOD IMPACTS

In the discussion which follows, the neighborhood impacts are subdivided into two sections. The first section covers the neighborhood studies done early in the corridor study to provide inputs into locating potential freeway routes. The second section assesses the impact of each selected freeway alignment upon cohesive neighborhood areas.

INITIAL STUDY — EDGES AND COHESIVE AREAS

In the initial stages of the North Freeway Corridor Study, the objectives were to become familiar with the study area and uncover those facts which would aid in locating potential freeway alignments.

There are many considerations involved in selecting a possible freeway alignment. One which is very important to the preliminary stages is to determine the urban fabric the corridor, in the hope of finding places where the facility would best conform, do as little damage to the livability of the areas, and possibly act as a catalyst for improving the neighborhoods and communities it passes near or through.

There are two categories of characteristics which are sought — edges and areas. **Edges** in city planning are geographic or cultural boundaries which, if strong, are sure to form boundaries between living areas or activity centers. Edges are good in the urban setting if they are not too disruptive. They give the population a point of reference so they can identify the area they live in and thus the people can develop a sense of "place". It is generally agreed that a sense of place adds to contentment within the urban living environment and offers an incentive for the residents so feeling to improve their "place." A freeway is usually a strong edge, as are railroads, heavily traveled streets, industrial or commercial districts, a large park or cemetery, a river or a bluff. It is both good urban theory and good common sense to try to find an existing edge upon which to superimpose a facility like a freeway which in itself would be an edge.

Areas Referred to here are those geographic territories used for living or other activity and which have cohesiveness and an identity which can be recognized by the typical resident of the area and by outsiders who are reasonably familiar with the city. It is technically sound to avoid cutting a cohesive area when possible. However, such areas seldom line up and an expressway of any appreciable length will likely conflict with one or more cohesive areas regardless of the route chosen. The objective is to do as little such cutting as is feasible.

In Omaha at present there are many Community Councils in various states of organization. Within the corridor study area most of these councils have areas of operation which more nearly approach the size of a classical neighborhood rather than a community.

The classical neighborhood is a design technique used in developing new towns and in analyzing the adequacy of elementary school and small park and playground distribution in older urban areas. The classical neighborhood is large enough for one

elementary school, has its own local shopping at its edge, its own local recreation space, and has the through traffic going around it rather than through it. It is defined by a barrier such as a trafficway, or large expanses of open type land. Many areas within the developed city defy identification as neighborhoods except by arbitrary definition.

In the older urban areas, schools are usually not properly located for this theory, often being on the major traffic streets rather than the maximum distance from them. Boundaries are often hard to distinguish and must be arbitrarily assigned. Heavy traffic streets are often found cutting through what would otherwise be a definite neighborhood. Under these latter conditions the careful placement of a freeway can often help to define neighborhoods for future development.

It is realized at the outset that the classical definition of a neighborhood will not be completely satisfied in this sector of the city. The criteria are as follows:

Sharp boundaries. These include such features as bluffs, large parks and cemeteries, railroads and major traffic arterials.

Homogeneous and stable property development. This factor is more nebulous and includes such things as housing types and quality, and the localized standard of upkeep.

Stable population. Instability of population can be interpreted as a symptom, rather than a cause, of the lack of residential area cohesion.

Identity by residents and outsiders. If a resident gives the name of the neighborhood he identifies with and the outsider recognizes this name as being associated with a geographic area, then there is a strong presumption of area cohesion.

Where there is weak neighborhood organization, particularly where a contributing factor is a lack of identity because of a lack of geographic boundaries, a freeway can be used as a basis for providing missing links in identity.

The concept of "turf" is important in sustaining neighborhood action. When people can define the boundaries of their living area, it is easier for them to organize for preservation and improvement. Progress can be measured over the entire area with the freeway forming a boundary. In this way, lack of progress on the other side of the freeway does not reflect adversely upon the target neighborhood.

With a freeway comes interchanges and with interchanges there is a concentration of traffic and an optimization of access to land. With optimum access, it is easier to develop strong shopping and community service nodes. Individual businesses will be strengthened and thus, so is the entire node. Nearby neighborhoods can identify with this strong node and thus the cohesiveness and stability of the neighborhoods can be enhanced.

Rebuilding of neighborhoods and service nodes in the Northeast section of Omaha will be a high priority activity for the decade following the completion of a substantial portion of the North Expressway.

There are a number of strong edges identifiable in the general corridor. These are identifiable by class as follows.

Miller, Adams and Fontenelle Parks are all of sufficient size to offer the characteristics of an edge on two or more axes.

Forest Lawn Cemetery provides a barrier for about three-fourths of a mile on an east-west axis and about a half a mile on a north-south axis.

Fort Omaha provides a barrier equivalent to the large parks with its greatest effect on the north-south axis.

The Chicago and Northwestern Railroad branch line forms a barrier along Grand Ave. west along Redman Ave. Between 20th and 30th Streets its influence is felt on a east-west axis, while west of 30th Street the axis is principally northwest-southwest.

The Missouri Pacific Railroad, south of Ames, forms an east-west barrier from about 16th to 30th Streets and thence its axis is from northeast to southwest. In addition to the tracks, there is considerable industrial development along it, thus reinforcing its prominence as a barrier.

The bluff to the east of Florence Boulevard forms a barrier from just south of Ames to Craig, where the waterworks, the Missouri River, I-680, and the Chicago & Northwestern Railroad supplant the barrier effect to the east and north of Florence.

Rough, unsewered land forms a break in development to the southeast and the northeast of Forest Lawn Cemetery. These edges do not need to be permanent, but are likely to persist for several years or longer.

The sharp valley to the south of Forest Lawn Avenue provides a moderate east-west edge west of 30th Street.

Omaha Public Schools elementary school attendance district boundaries are rarely fixed so that they cannot be adjusted. In fact, most attendance districts in the corridor cross heavily traveled streets such as 30th Street and Ames Avenue. It is significant that south of the Missouri Pacific RR, the attendance district lines coincide with a direct northward extension of the existing freeway segment.

Catholic school attendance areas coincide with Parish boundaries. The Parish boundaries in this section of the city tend to be squared off with the cardinal points of the compass and do not recognize natural edges except at the Missouri River. The west edge of the Blessed Sacrament Parish lines up well with the edge associated with Forest Lawn Cemetery to the north of this parish.

There are a number of strong areas identifiable as follows.

Florence is by far the most prominent and easily defended homogeneous area in the general corridor. It has sharp boundaries on all but the south and has a history of identity and unity predating the City of Omaha. The north boundary is Interstate 680; the west, Forest Lawn Cemetery; the east, the Missouri River and the power plant and waterworks on its bank; the south, the draw south of Forest Lawn Avenue and an indefinite extension of this draw east to Florence Boulevard (the boundary between Florence and Minne Lusa). The long standing cohesiveness of this neighborhood makes it inadvisable to consider locating an expressway other than on its extreme edge. Thirtieth Street cuts the neighborhood and forms the backbone of its commercial district. As disruptive as the traffic is, it has not effectively divided the area into two neighborhoods. All institutional influences cross this arterial.

Minne Lusa has more physical attributes of a real neighborhood than any other within the general corridor, although it is small in population size. For some analytical purposes it could be attached to Florence. The north boundary is the beginning of Florence; the west, 30th Street; the east, the bluff along Florence Blvd.; the south, Miller Park. It has its own elementary school and the housing type, age and quality are remarkably similar.

The **Miller Park** Neighborhood is well defined on three sides. On the north it is bounded by Miller Park; on the east by the bluff; and on the west by Fort Omaha and 30th Street. It has its own elementary school and has an active community council. The south boundary is more difficult to identify. The school attendance area stops at Fort Street and the housing types change a bit there. Yet the Chicago and Northwestern Railroad provides a better boundary and Ames even farther to the south another option. To avoid leaving housing area fragments, the boundary could be even farther south at the Missouri-Pacific Railroad. These last comments point up the character of the southern part of this neighborhood. It is definitely in transition and is now badly fragmented. A freeway intrusion into the southern portion, at least south of the Chicago and Northwestern Railroad could be tolerated and a new neighborhood identity could be developed extending from the cohesive portion of the neighborhood to the freeway as a southern boundary.

High Point is a small, tight, identifiable residential enclave southwest of Florence. It is bounded on the north by the draw near Forest Lawn Avenue; the southeast by Martin Avenue; and the west by the edge of development. A known cohesive factor is a neighborhood swimming pool. People refer to their district of residence as High Point. There is little need for invading this enclave because of its topography, but in any event all but its edge should be avoided.

There is a neighborhood defined by edges with **Belvedere** School as its center. The south boundary is Redman Avenue and the Chicago and Northwestern tracks; the east, Fort Omaha and 30th Street; the north, Florence and High Point. There is no clear ending on the west but by 43rd Street the western cross-section becomes quite narrow due to undeveloped land west of 42nd Street and the northward trend of Redman Avenue. The type of development is quite homogeneous and the properties are well kept indicating a stable neighborhood. It would be inadvisable to try to locate a freeway anywhere in this area except across its western edge. Both the Catholic and Public Schools have attendance boundaries along 42nd Street.

Central Park is a defined area so named because of the activity of its Community Council (now dormant) which began as a result of neighborhood quality concern within the Central Park School PTA. Its boundaries are 30th Street on the east; Ames Avenue on the south and the Chicago and Northwestern Railroad on the north. The west boundary is outside of the general study corridor at 52nd Street. The most likely encroachment of a freeway alignment is at the east and northerly edge. At these two places the integrity of the neighborhood is not compormised.

The **Northwest** Community Counsil is active and represents a large area south of Ames and west of 30th Street extending well out of the general corridor study area. The edges in this area are Fontenelle and Adams Parks and the Missouri-Pacific Railroad. None of these are on an axis suitable for North Freeway consideration. The far northeast corner is not well integrated with the remainder of the residential area and could be cut into if there were any other compelling reasons for locating a route in this direction.

South of Ames Avenue and east of 30th Street is a long residential area which for several decades has been referred to as the **Near Northside.** This name has come to refer to a black ethnic group which dominates the population composition, as much as a geographic place. In the last decade, although the population is predominantly black, it has ceased to be the primary black residential area. This population has moved north and west until only about a quarter of Omaha's black population is in this corridor. North 30th Street has been a barrier for definition, but this is not very strong because of the location of two schools and a major park on the street and its unifying influence as a commercial street. A freeway not over three or four blocks to the east of 30th Street could easily substitute as a neighborhood boundary, while changing very little of what neighborhood cohesion might exist. A splinter of residential area would remain between the freeway and 30th St. North and south there are no clear boundaries to divide this large area into neighborhoods. What cohesion does exist is centered on school-oriented groups and the boundaries of their action-oriented efforts do not effectively divide the area. The challenge for the Near Northside is to build a neighborhood structure for the future, possibly using the North Freeway and its interchanges as influences in achieving meaning and organization to the residential areas.

In addition to the above, the following considerations for locating the North Freeway are made.

An alignment heading north from the present terminus of right-of-way ownership at 27th and Lake Streets should skirt 30th and Ames at an adequate distance so that this node can develop into a healthy business center to adequately represent the Northeast section of the city. This suggests that if going directly north past Ames Avenue, the alignment should be sufficiently east of the new library in the 2800 block of Ames so as not to interfere with that facility.

Elementary school boundaries can be adjusted to fit a freeway alignment, but it is interesting to observe that from Lake to the Missouri-Pacific the boundaries tend to fall near 27th Street. On the west side of 30th Street these boundaries tend to fall near the Chicago and Northwestern RR tracks along Redman Ave. Both Catholic and Public School boundaries are on 42nd Street north of Redman Avenue. These boundaries coincide with the location of parts of the proposed freeway alignments.

In the preparation of the above analysis, interviews were conducted with the following groups and organizations: Omaha Public Schools, Catholic Diocese of Omaha, North Omaha Community Development , Omaha City Planning Department, Miller Park Community Council, Northwest Community Council, Central Park Community Council, and several North Omaha residents and businessmen.

NEIGHBORHOOD IMPACTS OF ALTERNATES

The East Alignment conforms well with the edges and cohesive areas of the neighborhood groupings.

Between Lake and Ames, the East Alignment does separate a 3-block wide area on the freeway's side from the remainder of the Near Northside cohesive area. In an attempt to reconnect the residential areas on both sides of the freeway, six bridge crossings are included in the East Alignment. These crossings should lessen the severing impacts of the freeway for the 20-block length between Lake and Ames. The crossings are located at key residential streets leading to schools and to other community services on both 30th and 24th Streets.

Between Ames Ave. and Florence Boulevard, the East Alignment bisects the southeastern one-third of the Miller Park Neighborhood Area, separating it from its more northern area. Four bridge crossings of the freeway will maintain the access links of the major streets. It should also be noted that the freeway may not physically be as bisecting as a map may indicate since the same vicinity is now bisected by the Chicago and Northwestern Railroad.

North of Florence Boulevard, the East Alignment conforms exactly with the east edges of the Minne Lusa and Florence neighborhoods.

Of all the alternates, the Central Alignment most poorly conforms to neighborhood edges and bisects the most neighborhood areas. South of Ames, the Central (27th-28th) Alignment is the same as just described for the East. Again, the six freeway crossings are intended to reconnect the 3 by 20 block segment with the remainder of the Near Northside Neighborhood.

The Central (31st Avenue) Alignment conforms fairly well with the eastern edge of the Northwest Community Council as well as near Fort Omaha with a short edge of the Central Park Neighborhood.

The area defined as Belvedere would be directly severed by the Central Route. The four freeway crossings will aid in reconnecting this area but will not replace the fine residential homes removed from the core of the Belvedere area in the construction of the freeway.

Farther north, the Central Alignment separates two small areas from the large Florence and High Point cohesive areas.

The West Alignment is the same as the Central Alignment south of Fort Omaha. From 30th Street on north, the West Alignment follows directly along the edges defined by the Chicago and Northwestern Railroad, 42nd Street, and Forest Lawn Cemetery.

Of the Airport Connectors, the Hartman Alignment follows the northern edge of the residential area in the flood plain. Although these homes now have very loose bonds, a Fort Street Alignment would end any possibilities of forming a solid residential neighborhood in the flood plain just north of Levi Carter Park.

Overall, the East Alignment causes the least physical disruption to major neighborhood areas. The West Alignments are close seconds. Poorest are the Central Alignments. For the Airport Freeway, a Hartman Alignment is far superior to a Fort Street Route.

Related analyses on neighborhoods regarding the extent affected housing units and relocation can be found in APPENDIX U.

APPENDIX N.
UTILITIES

An inventory of the extent and location of public service utilities was performed for each of the various alternative North Freeway alignments in the study corridor. This was done to provide an indication of the amount of disruption to utilities that would arise from construction of the North Freeway, and to provide a cost estimate of those utility relocations that would be borne as part of the project cost.

To accomplish the task of assessing the impacts of the project on utilities, the following public and non-public utilities were researched or contacted:

- City of Omaha Public Works Department — Sanitary and Storm Sewers
- Metropolitan Utilities District — Natural Gas and Water
- Northwestern Bell Telephone — Telephone Service
- Omaha Public Power District — Electric Service
- Mobil Oil Corporation — Pipeline
- Williams Brothers Pipe Line Co. — Pipeline
- National Cooperative Refinery Association (NCRA) — Pipeline
- Northern Propane Gas Co. (Norgas) — Bottled Gas

It was determined that utility relocation costs would likely be the responsibility of each respective utility except in the case of sanitary and storm sewers, and

for other utilities where their facilities are not located on public right-of-way, but on easements through private property. These exceptions must be absorbed as part of the construction cost of the North Freeway, and a utility relocation cost was calculated for these utility relocations which are directly chargeable to project costs. These costs and those which will likely be absorbed by the utilities are estimated in APPENDIX G.

The extent of disruption was investigated for all utilities since the relocation constitutes a disruption and expense to some party.

The various utilities servicing the North Omaha area do not anticipate the installation of any new major trunk utilities as most of the area is fully developed. Exceptions are the industrial parks being developed along Abbott Drive west of the Airport, and the far northern end of the study corridor. In these areas, service additions would be limited to local-type distribution systems.

Substantial utility relocation will be generally necessary for all depressed freeway sections, especially for underground utilities. Sections at-grade or elevated will affect underground utilities to a lesser extent, but may necessitate certain overhead utility relocations.

Generally, overhead power utilities will require relocation or adjustments to provide sufficient clearance over the freeway. Minor overhead phone lines can be handled similarly or sometimes buried under the freeway. Underground telephone conduits can be lowered below the freeway or carried across nearby bridges. This is a costly task usually involving the resplicing of many wires for the temporary service and relocated conduit. Gas and water underground pressure utilities will generally have to be lowered to provide clearance for the freeway. This is usually not a problem, except for large distribution conduits where service capacity needs to be provided for elsewhere in the system. Gravity sewers can be handled, depending on the circumstances, by reconstruction in a new location; by lowering the sewer to pass under the freeway; by maintaining a downhill slope, to tie back into the sewer on the other side of the freeway; and by constructing an inverted siphon. Drainage of the freeway proper is covered in APPENDIX G.

The impact of the North Freeway to the various utilities is summarized for sections of each alternate alignment in the following discussion.

EAST ALIGNMENT

Lake to Ames. Water utilities disrupted in this section include thirteen 6-inch and one 10-inch local service lines, and a 48-inch distribution main. At least two of the minor lines would not need replacement. The other affected lines can be relocated under the depressed freeway section.

Sanitary and storm sewers are combined in this area. Two large sewers, 36-inches at Binney and 48-inches at Spencer, disrupted by the freeway, can be carried under the freeway at Binney Street by means of an inverted siphon. At Sprague Street, two large sewers cross the right-of-way. The Minne Lusa Relief Sewer is deep enough so as to present no major difficulty. The other sewer is a 7 by 8 foot conduit near the surface. Since the East Alignment crosses the path of this sewer again north of Ames, either two inverts will be required, or about eight blocks in length of the sewer will be relocated to the west side of the freeway. The latter approach appears to be the more economical solution when considering serving of other sewers in the area feeding into this larger sewer. A new sewer will be required along the west side of the freeway from Sprague south to Binney to intercept east-west sewers in this area.

Electric power relocations in the Lake to Ames area involve a 69 KV (Kilovolt) wood pole transmission line along Sahler Street, which can be carried over the depressed freeway. Local distribution lines too numerous to mention are also involved, but will not present a major difficulty.

Telephone utilities of major consequence are those conduits placed underground. Numerous overhead phone lines will be affected as well, but are not as difficult to relocate as are the underground conduits. Buried cables are also located in the area, but are not a severe problem. The primary concern is with the conduits. In this area, a conduit which will need relocation is located under Bristol Street.

Gas utilities in the Lake to Ames area involve about sixteen minor service lines which should pose no major relocation problem.

A spot location in this section which requires special consideration is the Northern Propane Gas Co. (Norgas) facility on the east and west side of 27th Street between Sahler Street and the Mirrouri Pacific tracks. This plant stores propane gas in tanks, and bottles it into smaller containers for sale to residential and commercial customers. In this sense, it can be considered as a utility. The proposed alignment would require the taking of their facilities on the west side of 27th Street, which include offices, warehouse, garage, and loading dock where gas from storage tanks across the street is transferred into a temporary holding tank, then into the smaller containers. Loss of this part of their operation would amount to closing of their operation. Options would be to acquire property adjacent to the storage yard and construct new facilities, subject to zoning contingencies, or to relocate elsewhere in the metropolitan area. Discussions with the City Planning Department indicate that this type of facility would be acceptable in any industrial-type land use area.

There is no disruption to pipelines in this part of the study corridor.

Ames to 25th. Water utilities affected are a 16-inch main under Ames Avenue and about eight 6-inch local service lines, none of which will present major problems.

Sanitary and storm sewer relocations in this area involve the continuation of the relocated 8 foot sewer, as discussed in the Lake to Ames Section, northward to Larimore where it would tie into the existing sewer. An inverted siphon under the freeway at this point would connect with a collector sewer on the east side of freeway running south under 27th St. toward Ames.

Electric utilities affected are a 69 KV wood pole transmission line along Grand Avenue, which can be carried over the depressed freeway. Numerous local distribution lines should not present a major problem.

Telephone conduit relocations in this area will be significant. Conduits are located under Ames and Fowler. These are two of several conduits in the 30th and Ames area, running to the 30th Street Central Office. The Ames conduit is the smaller of the two, but both will be moderately difficult to move. In addition, numerous overhead lines of minor consequence are affected.

Gas utility relocation will be a major concern. About eight local service lines will not be critical, but under Grand Avenue and the C&NW right-of-way are four large lines. These are 8 and 12-inch high pressure lines, and 12 and 16 inch low pressure lines. In addition, on the north side of Grand Avenue between 26th and 27th Streets is a gas governor station housed in a small building. This facility will require relocation.

No pipelines are affected by the freeway in this area.

25th to Redick (and to 16th Street on the East). Water utilities disrupted will include about six small local service lines, a 36-inch distribution pipe under 24th Street, and a 12-inch line under Florence Boulevard. The disrupted lines can be relocated underneath the freeway as required.

No major sanitary or storm sewer relocations are encountered, with the exception of the North Interceptor, a 6-foot pressure sewer paralleling the Chicago and Northwestern Railroad right-of-way. Structural footings for bridges over the railroad will have to be placed to avoid the sewer.

Electric utilities affected are two 69 KV wood pole transmission lines running north-south along what would be 20th Street, about half way between the bluffs and the C&NW R.R. tracks. Just south of Redick, the two lines turn to parallel the railroad. These power lines will probably be subject to substantial relocation. In addition, there are several local service lines west of the bluffs which will present minor problems.

The major disruption to phone utilities is an underground conduit under 24th Street which will require relocation. Other phone lines should not pose substantial problems.

Gas utilities affected are only four local service lines west of Florence Boulevard. The Fort Street Airport Connector crosses over three other minor gas pipes, but will pass over these on an elevated section.

No pipe lines are affected in this area.

Redick to Craig. In this area the freeway would cross a 12-inch water line at Read, and a 36-inch line under Florence Boulevard, and a few small lines. However, since the freeway will be elevated in this area the disruption to water lines will be minimal.

Sanitary and storm sewers affected include primarily the North Interceptor Sewer running along the C&NW tracks, and a three foot sewer running along the railroad tracks south from Craig to 26th Street to Minne Lusa Avenue. Freeway structural footings will have to be placed to avoid these utilities.

Electric lines disrupted by the freeway are two 69 KV wood pole transmission lines running along the

C&NW tracks between Redick and Read Street. North of Read, they continue into the O.P.P.D. power plant. These lines will have to be relocated to accommodate the elevated freeway.

No major telephone utilities are disrupted. Some overhead lines will have to be moved because the freeway is elevated in this area.

Gas lines involved are a 12-inch high pressure line under Read Street west to Florence Blvd., then north under Florence Boulevard, then under Scott, 26th, and Weber Streets. Also, lines cross under the C&NW tracks from Florence to the O.P.P.D. plant. As the freeway is elevated, these lines should not be affected greatly if structural footings are judiciously located.

Two pipelines are located in this area under Read Street west to the C&NW Railroad tracks; thence north paralleling the tracks. With an elevated freeway section, the pipelines should not be affected severely, Some relocation may be necessary due to the railroad relocation in this area and structural footings. The Mobil pipeline runs from the west along Weber Street under Florence Boulevard, the railroad, and Pershing into O.P.P.D. property and should not be affected.

Craig to I-680. Small water conduits under Craig, 30th, and 28th Avenue can be retained as the freeway is elevated. A small line under Mormon Street can be abandoned as its service area is taken by the freeway. The 12-inch and 16-inch lines under Grebe and State Street respectively should be unaffected. One 48-inch distribution line under 28th Avenue and two under 29th Street coming from the MUD water treatment plant on the east side of the C&NW RR. tracks can be undisturbed with proper placement of structural footings for the elevated freeway section through this vicinity. The loop ramp to eastbound I-680 over the Missouri River will be elevated on structure. The footings this elevated ramp should be placed to avoid two 16-inch and one 6-inch line in the vicinity of McKinley Avenue and 30th Street, the area just south of the Florence Mill. The rest of the interchange ramping passes over several lines under McKinley Avenue, but should not disturb them. A 6-inch line along 35th will be abandoned north of I-680. No services in the area of the proposed horseshoe ramp at U.S. 73 would be affected.

Numerous sanitary and storm sewers are traversed by the freeway in this section, but as the freeway is to be elevated on earth fill or structures, the principal concern is to place necessary structural footings so as to clear these sewers. The sewers involved are generally less than 3 feet in diameter, except for the Mill Creek enclosed conduit which is 14 feet. West of the 30th-I-680 area, no significant problems arise with sewers from the proposed freeway ramps.

Electric utilities of a major nature disrupted by the freeway are a 69 KV wood pole transmission line which runs west on Craig from the O.P.P.D. power plant. This line again crosses the proposed alignment on 29th Street at the C&NW RR. tracks to a substation at 30th Street and Diagonal Road. At both locations where this line crosses the right-of-way, it will have to be relocated to provide proper clearances. The loop ramp to I-680 eastbound again will have to avoid the transmission substation at 30th and Diagonal Road, and some relocation may be required for two 69 KV wood pole transmission lines running to the west and south of the substation. In addition, there are several 13.8 KV underground distribution cables in the vicinity of the substation that may be affected by the loop ramp. The main line of the freeway encounters a segment of 161 KV steel tower transmission line from Clay Street west to a point west of 31st Street where the alignment crosses over the C&NW RR tracks. In this area, it appears that two towers will require relocation and that two others will require raising. In addition to these major concerns, numerous minor lines may require some adjustments as well.

The major telephone utilities involved are an underground conduit underneath 30th Street from Florence to north of I-680 and a conduit running from 30th Street west along McKinley Road to Mormon Bridge Road. Proper placement of structural footings for the elevated freeway in this area will minimize disruption. Numerous local lines are affected also.

Gas utilities affected include about six small local lines serving properties in the right-of-way area between Craig and Bondesson, or crossing this area. Those lines crossing can be maintained as the freeway. A 12-inch high pressure line running north on doned since their service areas are in the right-of-way. A 12-inch high pressure line running north of 28th Street, then west on Sheffield Street may require a short relocation to maintain accessibility. A 4-inch line running under 28th Avenue north, then west under Bondesson may require a similar slight relocation. Two 12-inch lines under 29th and 30th Streets and an 8-inch line under McKinley can remain undisturbed with proper placement of structural footings. The remainder of the interchange does not impact gas utilities.

The two pipelines, Williams Bros. and NCRA, north of Craig Street, lie under either side of 28th Street and should not be seriously affected, although they may be under greater cover due to the sideslope of the elevated freeway section. At State Street, the NCRA pipeline heads west. The Williams Bros. pipe line continues north along the east side of the C&NW tracks. North and west of Clay Street, it may require some relocation due to freeway structural footings.

Fort St. Airport Connector. East of 16th Street, about 9 small water lines are crossed by the freeway, but the earthfill elevated section should not distrub these. A 12-inch line running north to Fort under 14th Avenue, then east under Fort, may require relocation between 14th Avenue east to about 13th Street.

East of 16th Street, the elevated freeway section does not significantly disrupt sanitary or storm sewers.

Electric utilities of a major nature are the 69 KV wood pole transmission line on the east side of 16th Street, which will require adjustment to accommodate the elevated freeway. Paralleling 9th Street is a 161 KV steel tower transmission line which will necessitate the relocation of one or two towers and the adjustment in elevation of two others, in order to provide sufficient vertical clearance over the elevated freeway section. Minor local service lines will need adjustments as well.

No major telephone facilities are disturbed except for several local service lines which may require modifications.

A 12-inch gas line under 16th should be unaffected. Several small local service lines along Fort Street will require little or no adjustment.

Williams Bros. and NCRA pipelines run under 13th Street, and should be unaffected as the freeway is on fill in this section. If complete access is desired, the lines could be relocated one block east to the underpass for the Union Pacific Railroad.

Hartman Airport Connector. The only water line crossed by this segment is a 6-inch water line under 16th Street which will be unaffected.

The utilities impacts for electric, sewer, telephone, gas and pipeline utilities are the same as those for the Fort St. Alignment, discussed in the preceding section.

CENTRAL ALIGNMENT

Lake to Ames along 27th Street. The impact of this segment of the freeway to water, gas, electric, telephone, and pipeline utilities and the Norgas facility is the same as for the Lake to Ames section of the East Alignment.

Two large sewers, 36 inches at Binney and 48 inches at Spencer, disrupted by the depressed freeway section, can be carried under the freeway at Binney Street by means of an inverted siphon. At Sprague Street, two large sewers cross the right-of-way. The Minne Lusa Relief Sewer is deep enough to clear the depressed freeway. The other sewer is a 7 by 8 feet conduit nearer the surface. Since this sewer is crossed twice by freeway alignments in this case, once by the main line at Sprague, and again on 27th Street by the Airport connector, the most practical solution is to retain the basis sewer and construct inverted siphons at both crossings to accommodate the depressed freeway sections. A new sewer will be required along the west side of the freeway from Sprague south to Binney to intercept east-west sewers in this area.

Ames to 35th Street & Redman for 27th Street Alignment (and east to 25th on the Airport Connector). Several large water mains will require relocation under the freeway including a 16-inch line under Ames, a 48-inch main under 28th Avenue, a 48-inch main under 33rd Street, a 36-inch main under Saratoga near 33rd Street, a 48-inch main running just south of the C&NW tracks between 33rd Street and 34th Avenue and a 54-inch main underneath 34th Avenue and 34th Street. About five 6-inch local lines would be affected. Also, the segment of the Airport Connector east to 25th Street will require adjustments for six other minor lines.

Sanitary and storm sewer relocations in this area include a relocation to the east side of the freeway of the 8-foot sewer under 27th Street between Meredith and Templeton, at which point an inverted siphon will carry it under the Airport Connector to resume its present grade and course. A new sewer will be necessary on the west side of the freeway from Fowler south to Ames, passing under the freeway at Ames by means of an inverted siphon. An inverted siphon will also be needed to carry an 8½ by

10 foot sewer under the freeway at 30th Street. Other minor sewer adjustments will be necessary also.

Major electric lines distrubed are a 69 KV wood pole transmission along Grand Avenue which will require relocation to cross both the mainline just west of 30th Street and the Airport Connector near 27th Street. A 13.8 KV underground distribution line under 30th Street between Saratoga and Larimore will be relocated to accommodate the depressed freeway section. The alignment narrowly misses a distribution substation on the northwest corner of 30th and Larimore. In fact, an eastbound off-ramp is routed onto Larimore to avoid relocation of the substation. Numerous other local service lines will require relocation.

Several major underground telephone conduits are disturbed, including those under Ames Avenue, Fowler Avenue, 30th Street, and 33rd Street. The number of conduits in the area is due to the proximity of the freeway to the 30th Street Central Office at 30th and Fowler. This magnitude of disruption is considerable and will be costly. In addition, several local service lines will have to be rerouted or relocated.

Gas lines affected include about 6 local service lines between Ames and 30th which are not a major problem. However, along 30th between Larimore and Saratoga, and along Grand east of 30th are a number of large low pressure and high pressure gas mains which would require relocation. These are as follows: Under 30th between Larimore and Grand, three 12-inch lines, one of which is high pressure, under 30th from Grand to Saratoga 12-inch low pressure and 8-inch high pressure lines, and under Grand east of 30th Street, 12 and 8-inch high pressure lines, and 16 and 12-inch low pressure lines. Substantial relocation of these lines would be necessary. Further west a portion of an 8-inch line under 31st Avenue and Grand west of 31st Avenue will require moving. Two 12-inch lines under Saratoga and Redman Avenues near 33rd Street will require relocation to the north. These same two lines may also need to be lowered between 33rd Avenue and 35th Street where the freeway swings north over Redman Avenue. A 6-inch line under 34th Street will likewise need to be lowered. Lines under 33rd Avenue and 34th Avenue south of the railroad will merely need to be shortened as part of their service areas are taken.

The segment of the Airport Connector east to 25th Street has considerable impact on gas lines as well. Again 8 and 12-inch high pressure lines and 12 and 16-inch lines under 27th north of Grand will require relocation, as will a gas governor station between 26th and 27th Streets on Grand Avenue. In summary, the disruption to gas utilities in this area is substantial.

There are no pipelines located in this area.

Lake to Ames (along the 31st Avenue Alignment). Water utilities disrupted include a 48-inch main which runs north to 27th Street, west on Binney, then north on 28th Avenue. Two crossings, and lowerings, of the main can be avoided by running a new main along the east side of the freeway between 27th Street at Binney to 28th Avenue near Bristol. However, a 36-inch main under Binney Street would have to be lowered to cross under the freeway. A 48-inch main under Creighton Boulevard north to Sahler, then west will similarly be crossed twice by the freeway, and with a depressed freeway section it would have to be lowered in both locations. An alternative is to construct about 7 blocks of new main along the west side of the freeway. Besides these major water lines, there are about 18 6-inch lines crossed by the freeway which would require abandonment or relocation.

Sanitary and storm sewers affected by the freeway are many. A 12-inch line going north on 30th, then east on Spencer, will then be routed south along the west side of the freeway to a 36-inch line in Binney Street which will pass under the freeway by means of an inverted siphon to 27th Street and Binney where it feeds into a 7-foot sewer. A 3-foot sewer increasing to 4-feet runs south on 30th to Spencer, then east to 27th Street feeding into the 7-foot sewer. It will require rerouting along the east side of the freeway between 30th and Pinkney to Spencer at 28th Street. A 7 by 8-foot sewer under Creighton Boulevard will require relocation along the west side of the freeway from Pinkney to Spaulding, then crossing to the east side of the freeway via an inverted siphon to resume its normal course. The Minne Lusa Relief Sewer will pass under the depressed freeway, but its top may require reinforcing. A small sewer will be needed along the west side of the directional interchange from Larimore south to Taylor to intercept sewers running east-west.

Electric utilities disrupted are 69 KV wood pole transmission lines running along Creighton Boulevard and along Sprague Street. These will require some adjustments where they cross the freeway and the north-south line along 31st Avenue may require shifting from the west to the east side of the street. A 13.8 KV underground distribution line under 28th Avenue would have to be lowered. Numerous local service lines affected by the freeway would require adjustments also.

Principal telephone conduits disrupted are those under 28th Avenue and another which runs under Bristol west to 30th, north on 30th to Emmet and west on Emmet. The conduit under 28th Avenue will have to be lowered, which the other conduit will have to be rerouted as well as lowered to pass under the freeway. Local telephone lines will require relocation or replacement in addition to the above relocations.

Gas utility relocations in this area include one 12-inch main under 30th Street, 12 and 8-inch mains under Creighton Boulevard, and about 20 4-inch local service lines, none of which should present major problems.

There are no pipelines in this part of the study area.

Ames to 35th Street and Redman for 31st Avenue Alignment (and East to 25th Street for the Airport Connector). Water utilities requiring relocation are a 10-inch line under Ames Avenue, a 48-inch main under 33rd Street, a 36-inch main under Saratoga at 33rd Street, a 48-inch main south of the C&NW tracks between 33rd Street and 34th Avenue, and a 54-inch main running under 34th Street and Avenue. The Airport Connector to the east will require the lowering of a 48-inch main in 28th Avenue as well. About 11 6-inch lines will require adjustments or abandonment as well.

Sanitary and storm sewers modifications include an 8½ by 10-foot sewer which will require slight relocation near Larimore and 31st Avenue, and an inverted siphon under the Airport Connector at 30th Street. An inverted siphon will also be necessary to carry the 8-foot sewer in 27th Street under the Airport Connector. Several other minor sewer adjustments will be necessary. As mentioned in the previous section, a new small sewer will be needed on the west side of the directional interchange from Larimore south to Taylor to intercept east-west sewers in this area.

Electric utilities disrupted are 13.8 KV underground distribution lines under Fowler Avenue and 30th Street between Grand and Srartoga. A 69 KV wood pole transmission line running north on 31st Avenue, then east on Grand will have to be relocated to the southeast along the east side of the directional interchange. Several local service lines will need adjustments also.

Underground telephone conduits under Fowler Avenue and 30th Street will have to be lowered for the depressed freeway section. A conduit running under 33rd Street north, then west on Redman Avenue will require relocation to the south and west of the freeway between 33rd Street at Grand to 35th Street at Redman. Numerous local service lines will require adjustments.

Gas lines affected by the depressed freeway section include 6 and 12-inch lines under Fowler Street, an 8-inch line under 31st Avenue north, then west on Grand, two 12-inch lines under Saratoga and Redman and three 4-inch local service lines. The Airport Connector will require relocation of a 12-inch low pressure and an 8-inch high pressure line under 30th between Grand and Saratoga, 2, 12 and 16-inch lines under 27th Street, and three other 4-inch lines. A governor station on the north side of Grand Avenue between 26th and 27th Streets will probably require relocation or special design considerations. the four large lines in Grand Avenue should be undisturbed.

No pipelines are located in this area.

Redman Avenue to Redick Avenue. Water lines affected are a 16-inch line under Hartman Avenue, 6-inch lines under Nebraska and Kansas Avenues, and 8-inch line under Curtis Street. These can be carried under the freeway if necessary to maintain service.

Sanitary and storm sewers affected are limited to a three-foot sewer under Laurel which will have to be carried across the freeway by means of an inverted siphon. A seven foot sewer north of Redman should pass under the freeway with no disruption.

Electric utilities affected are all of the local distribution type, with no transmission or major distribution lines disturbed.

No underground telephone conduits are located in this area. Telephone relocations will be limited to local service lines.

Minor 4" gas lines under Jaynes, Hartman, Kansas, Curtis, and Nebraska and an eight-inch line under Redick are the extent of relocations of gas utilities.

No pipelines are located in this area.

Redick to State. About a dozen 6 and 8-inch water lines will be crossed by the freeway. Some can be abandoned, others relocated or abandoned, a few will be undisturbed. No major problems in this area. A 54-inch main under 34th and Ernst may or may not require relocation as the freeway is on fill at this point.

Sewer relocations are minimal. An eight-inch sewer under 35th at Newport will be rerouted under Newport to Martin. The freeway does not disrupt any other sewers in this area with the proposed grade. The natural drainage course along Forest Lawn Ave. will be crossed by the elevated freeway at this point.

No major electric utilities are encountered here. Only local service lines will be disrupted and will require relocation.

No major telephone utilities are disrupted in this area. Only local service lines are involved.

Major gas mains under Martin Avenue, 18 and 12-inch lines, should be undisturbed. The 12-inch main under 34th and Ernst Streets may require relocation to the east of the freeway. About 12 other 6, 4 and 2-inch lines will require some rerouting or elevation changes.

The Mobil Oil pipeline crosses the alignment at 34th Street and Weber. Preliminary profiles indicate it may have to be lowered a few feet to clear the freeway.

State to I-680. Water lines under State Street, 6 and 12-inch pipes, will require adjustment to clear the freeway. 24 and 36-inch mains on McKinley Road should be undisturbed as the freeway is elevated here. The relocation of Mormon Bridge Road to the west may require the relocation of the 24-inch main under Mormon Bridge Road. No other lines are affected.

No significant sewer disruption occurs in this area since the area is undeveloped. The freeway will pass over Mill Creek near McKinley St.

Major electric utilities affected are a 69 KV wood pole transmission line running along McKinley west, then south on Mormon Bridge Road, which will have to be relocated to properly clear the elevated freeway at this point. Three 161 KV steel tower transmission line towers will require raising to clear the elevated freeway. A few local service lines will require adjustments also.

Major telephone utilities affected are limited to an underground conduit along McKinley Street which should be undisturbed as the freeway is elevated here. A few local service lines may also require adjustments.

Gas utilities in this area are limited to an 8-inch line under McKinley which should be undisturbed, and to a 6-inch line which may be moved to the west to the relocated Mormon Bridge Road right-of-way.

Two pipelines, Williams Bros. and NCRA, are located to the south of and parallel to the C&NW tracks. They should be undisturbed with proper placement of structural footings.

25th to 16 (for Fort Street and Hartman Airport Connectors). Water utilities disrupted will include about six small local service lines, a 36-inch distribution line under 24th Street, and a 12-inch line under Florence Boulevard. The disrupted lines can be relocated under the freeway as required.

No major sanitary or storm sewer relocations are necessary. However, structural footings for bridges over the railroad will have to be placed so as to avoid the North Interceptor Sewer, 6 feet in diameter, paralleling the C&NW tracks. A few minor sewers will require adjustments.

Electric utilities affected are two 69 KV wood pole transmission lines running north-south along what would be 20th Street, about halfway between the bluffs and the C&NW tracks. Just south of Redick these lines parallel the railroad on to the north. These lines will probably require relocation and raising to clear the Airport Connectors. In addition, a few local service lines will require relocation also.

The major disruption to phone utilities is on underground conduit under 24th Street which will require relocation. Other phone lines should not pose substantial problems.

Gas utilities affected are four local service lines west of Florence Boulevard. The Fort Street Airport Connector crosses over three other minor lines on an elevated section and these lines can remain in place or be abandoned as necessary.

No pipelines are affected in this area.

Fort Street Airport Connector (16th to Abbott). Same as for East Alignment — Fort Street Airport Connector.

Hartman Airport Connector (16th to Abbott). Same as for East Alignment — Hartman Airport Connector.

WEST ALIGNMENT

Lake to Ames along 27th Street. Same as for Central Alignment.

Ames to 35th for 27th Street Alignment and to 25th Street on the Airport Connector. Same as for Central Alignment.

Lake to Ames along 31st Avenue. Same as for Central Alignment.

Ames to 35th for 31st Avenue Alignment and to 25th Street on the Airport Connector. Same as for Central Alignment.

Fort Street Airport Connector from 16th to Abbott. Same as for Central Alignment Fort Street Airport Connector.

Hartman Airport Connector from 16th to Abbott. Same as for Central Alignment Hartman Airport Connector.

State to I-680. Same as for Central Alignment.

35th to Fontenelle Blvd. Impacts to water utilities are minimal as the freeway is elevated or at-grade in this area.

The alignment crosses over an 8-foot sewer near Fontenelle Blvd. but the elevated section should cause little problem.

Relocation of electric utilities will be limited to local service lines.

An underground telephone conduit paralleling the freeway along Redman, then crossing at Fontenelle Blvd. should be undisturbed in this area. Some local service lines will require modifications.

Gas utilities are not significantly affected. Lines under 36th and 37th Street will require adjustments as part of their service areas are taken. The 6-inch line under Fontenelle should be undisturbed.

No pipelines are located in this area.

Fontenelle Blvd. to Curtis. A 16-inch water main under Hartman Avenue may require lowering. Six 6-inch lines crossing the freeway will need lowering or will have to be abandoned.

East-west sewers under Vernon, Curtis, and Nebraska will be brought to a common point at 42nd and Curtis. From there the sewer will be lowered to pass under the freeway, then will tie into the existing sewer under Curtis at a point east of 40th Street.

Local service electric lines are the only power facilities affected.

Eight 4-inch gas lines cross the right-of-way and will require lowering vs. abandonment, depending on system considerations.

No pipelines are located in this segment.

Curtis to State. About six 6-inch water lines will require lowering or removal. No mains are affected.

No major sanitary or storm sewer difficulties are encountered here.

Only local service telephone lines will require adjustments in this area.

No major electric utilities are affected. Local service lines will require adjustments.

Five 4-inch gas lines and one 8-inch gas line under Redick will require lowering or removal.

The Mobile Oil pipeline crosses the alignment about 300 feet north of Read Street. Preliminary profiles indicate that the freeway will be in a fill section in this area causing no disruption.

State to I-680. Same as for Central Alignment.

Fort and Hartman Airport Connectors. Same as for the Central Alignment.

NO BUILD ALTERNATE

The No Build Alternative will have no impact upon utilities in the North Omaha area.

SUMMARY

The East Alignment is the least disruptive alternative with the exception of the No Build, although it encounters the most problems with electric utilities. Three major water lines will require relocation, as will four underground conduits or cables. Several gas lines, high and low pressure, lines as well as a gas governor station are impacted along Grand Avenue, but, this alternate is least severe in this regard.

About six major sewer modifications are necessary. Two of these are inverted siphons while the others are new collector lines or relocated sewers. Electric utility disruptions include about six wood pole transmission lines and two locations, on either Airport Connector and near Fillmore Park, where steel towers will require relocation. Pipelines may require minor relocations. This alignment also takes part of the Norgas facility which packages bottled gas.

The Central and West Alignments are summarized together as their net impact on utilities is nearly the same. This is the case since these alignments vary basically only between Redman Avenue and State Street where very few major utilities are located. Either of these two alignments impacts about three times the major water mains as the East Alignment, mainly in the vicinity of 33rd and Redman. Sewer relocations involve three major inverted siphons for each alignment, two minor inverted siphons on the Central and one minor inverted siphon on the West, and a few new collector lines. Electric utility disruptions for either involve steel tower relocations on either Airport Connector and near McKinley Street, and four or five wood pole transmission line relocations. Whereas the East involves four buried telephone conduits or cable relocations, the West and Central require six of these complex adjustments. Besides encountering numerous high and low pressure gas lines in the 30th and Grand vicinity, any of the West or Central Alignments require the taking of a gas governor station on Grand Avenue. In addition, the Central (27th-28th) and West (27th-28th) Alignments require the purchase of part of the Norgas bottled gas facility.

Summarily, the Central (27th-28th) and Central (31st Ave.) Alignments have very nearly the same net impact on utilities, as do the West (27th-28th) and West (31st Ave.) Alignments. The East Alignment affects only the electric utilities to a greater extent, and this additional impact involves principally wood transmission lines, which are much less troublesome to relocate than are the steel towers. All of the possible freeway alternatives impact the steel towers to about the same extent, the East slightly more so. With respect to water, sewer, and gas utilities the East Alignment is less disruptive because it does not require a directional interchange in the 30th and Ames vicinity, where extensive sewer, water, gas, and telephone utilities are located.

Specific estimates of utility relocation costs are located in APPENDIX G. An approximate indication of the relative impact of each of the freeway alternates (only five are listed as the two airport connectors are comparable for each alternate) upon each of the utilities discussed is given in TABLE N-1. The relative impact of each alignment upon a particular utility is indicated by a number from 1 to 4. Each line is totaled to provide an indication of the disruption to utilities caused by each alignment.

As TABLE N-1 shows, the East Alignment disrupts utilities to a somewhat lesser extent, while all of the West and Central Alignments are very nearly comparable. The No Build Alternative, of course, causes no disruption to utilities.

TABLE N-1 — RELATIVE IMPACT ON UTILITIES

UTILITY IMPACT (1 least to 4 most disruptive)

Alignment	Water	Sewer	Electric	Telephone	Gas	Total
East	1	2	4	2	2	11
Central (27th - 28th)	3	3	3	3	3	15
Central (31st Ave.)	4	3	3	3	3	16
West (27th - 28th)	3	3	3	3	3	15
West (31st Ave.)	4	3	3	3	3	16

APPENDIX O.
NOISE ANALYSIS

OVERVIEW

Noise has been defined many times as unwanted sound. Minnesota has recently enacted a law wherein noise is defined as "any sound not occurring in the natural environment, including, but not limited to, sounds emanating from aircraft, highways, industrial, commercial, and residential sources." During the course of the corridor noise study, this definition became highly applicable.

There are many ways to measure noise; however, the sound level in decibels as measured on the A-scale (dBA) of a standard level meter was selected as being statistically indistinguishable from the best psychologically derived measure in its reliability as a predictor of human response to roadway noise. Noise levels and an example of these levels are shown below.

Decibels	
140	Threshold of pain
130	50 HP siren at 100 feet
120	Jet takeoff at 200 feet
110	Rock-N-Roll Band at 30 feet
100	Power Lawn Mower at 20 feet
90	Motorcycle at 40 feet
80	Small Outboard Motor at 40 feet
70	Automobile at 20 feet
60	Normal Speaking Voice
50	Quiet Urban Daytime
40	Quiet Urban Nighttime

The design noise levels which must be met for various types of land uses along the roadway are set forth in the noise standards of the Federal Highway Administration. 1| These noise levels are as follows:

1| **Federal Highway Program Manual,** Vol. 7, Ch. 7, Sect. 3, U.S. Department of Transportation, Federal Highway Administration (Formally PPM 90-2).

Land Use Category	Description of Land Use	Design Noise Level — L10
A	Lands in which serenity and quiet are of extraordinary significance such as amphitheaters and quiet park spaces.	60 dBA (Exterior)
B	Residences, motels, hotels, public meeting rooms, churches, schools, libraries, hospitals, picnic areas, recreation areas, playgrounds, parks.	70 dBA (Exterior)
C	Developed lands, properties not included in A or B above.	75 dBA (Exterior)
D	Undeveloped land. Must conform to probable future development pattern of land use.	
E	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals and auditoriums (interior)	55 dBA (Interior)

There are no Category A lands within the sphere of influence of the existing and proposed North Freeway. The majority of the existing and proposed land uses along the Freeway fall within Category B. The remaining commercial and office uses fall within Category C.

There are three dimensions to the measurement of noise: intensity, frequency and duration. The first two of these are measured by the use of the unit dBA, whereas, the third dimension, duration, is measured by use of the temporal distribution, expressed as L10. L10 is the sound pressure level in dBA exceeded 10% of the time.

Two ways for determining the L10 level have been approved by the Federal Highway Administration. These methods are:

1. National Cooperative Highway Research Program Report 117, **Highway Noise: A Design Guide for Highway Engineers,** 1971.

2. DOT Transportation Systems Center Report DOT-TSC-FHWA-72-1, **Manual for Highway Noise Prediction,** March 1972.

A computer program was developed by the Michigan State Highway Department that uses the above approved method (No. 1) thereby allowing the user to rapidly determine L50 and L10 noise levels at any specified distances from the highway using any combination of the design options available. This program was a very valuable tool used for predicting the noise level along the corridor route.

For the North Freeway alternates, the Nebraska Department of Roads used the Michigan computer program for developing 1995 L10 noise level forecasts. These 1995 forecasts are shown in the form of noise contours in FIGURES O-1 through O-3. The contours provide a general indication of the noise intensities along the proposed freeway alternates.

Traffic noise eminating from heavily used roadways is one of the most common forms of noise pollution. Therefore changes in traffic patterns caused by construction of new road systems or the restructing of old, must be critically evaluated for their affects on the noise quality of the environment. To make a proper evaluation, however, it is necessary to consider four basic criteria:

(1) Estimation of noise quality around each proposed system.

(2) Usage or classification of areas affected by critical increases in levels of noise.

(3) Evaluation of possible attenuation measures in impacted areas.

(4) Estimation of noise levels at pertinent sites in the study area if no change in the system occurs.

The possible construction of the Omaha North Freeway demands that all criteria listed above be discussed in order to arrive at an objective conclusion concerning the noise quality of North Omaha as it relates to the presence or absence of the North Freeway.

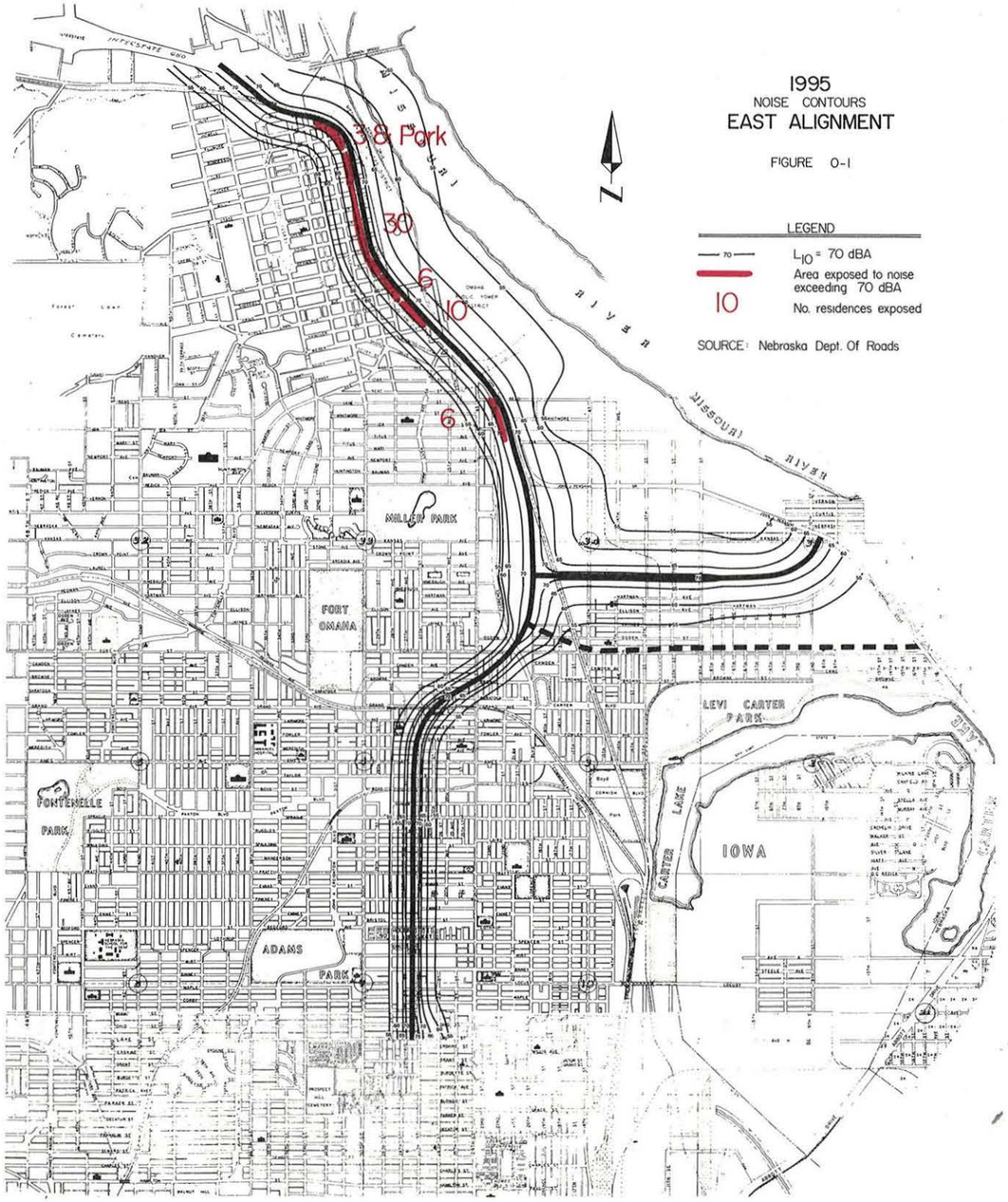
NOISE PROJECTION — NORTH FREEWAY ALTERNATES

The noise-effects of the three basic alternate North Freeway alignments were evaluated to locate those areas where special noise abatement steps are warranted. The noise sensitive sites that were selected were based on the Noise-Land Use Relationship listed above from the FHWA standards.

Each alignment is discussed in a similar manner thus allowing simple comparisons and overall evaluations. The alignment discussion begins with TABLE O-1 which contains a breakdown of each freeway alignment into segments and the land uses having noise levels exceeding the L10 standard. Also, the table lists the predicted 1995 alignment-generated L10 noise level, its comparison with the exterior-design noise levels, and an estimate of the existing noise level of the area. It should be noted at this time that the figures listed in the land use columns are based on

TABLE O-1
LAND USES WITH NOISE LEVELS IN EXCESS OF NOISE STANDARD

Freeway Alternate & Segments	Affected Land Use	1995 Predicted L10 dBA	Maximum Design Noise Level	1974 Existing Noise Level (L10)
East Alignment				
Fillmore to Clay	3 homes Fillmore Park	71 to 74	70	55 to 65
Clay to Sheffield	30 homes	71 to 72	70	53 to 63
Sheffield to Forest Lawn	6 homes	71 to 74	70	55 to 65
Idledale Lane	8 homes	71 to 74	70	50 to 58
26th & Weber	2 homes	71 to 72	70	53 to 63
Ida to Read	6 homes	71 to 74	70	63 to 73
Central Alignment				
Mormon to Craig	32 homes	71 to 74	70	42 to 50
Ernst to Ida	43 homes	71 to 74	70	51 to 61
Himebaugh to Fort	88 homes	71 to 74	70	48 to 58
West Alignment				
Mormon to Young	11 homes	71 to 74	70	42 to 50
Craig to Girard	5 homes	71 to 74	70	42 to 50
Fontenelle to 36th	49 homes	71 to 74	70	53 to 63
Binney to Lake	15 homes	71 to 74	70	54 to 64



1995
NOISE CONTOURS
EAST ALIGNMENT

FIGURE 0-1

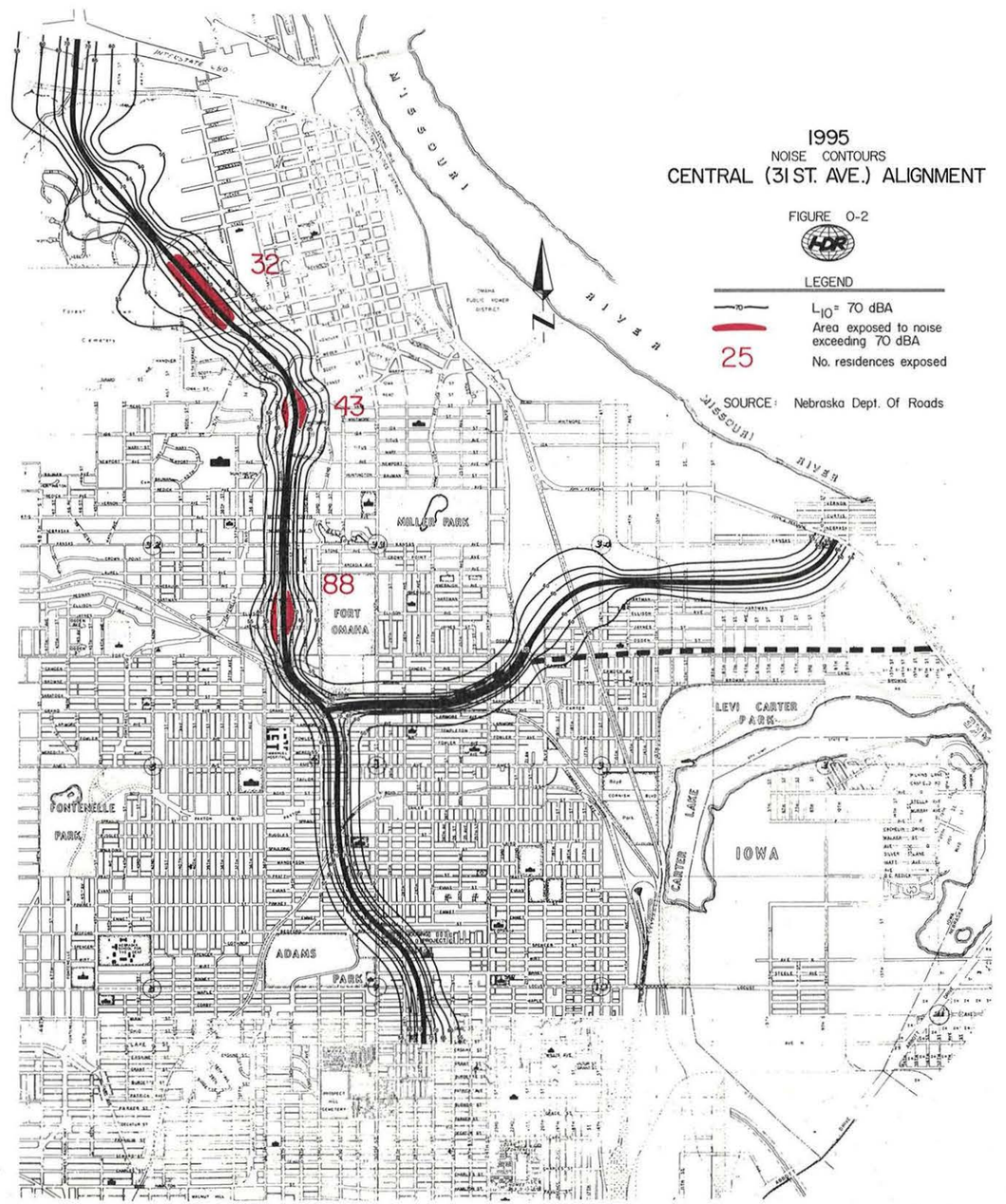
LEGEND

70 — L_{10} = 70 dBA

Area exposed to noise exceeding 70 dBA

10 No. residences exposed

SOURCE: Nebraska Dept. Of Roads



1995
NOISE CONTOURS
CENTRAL (31ST. AVE.) ALIGNMENT

FIGURE 0-2

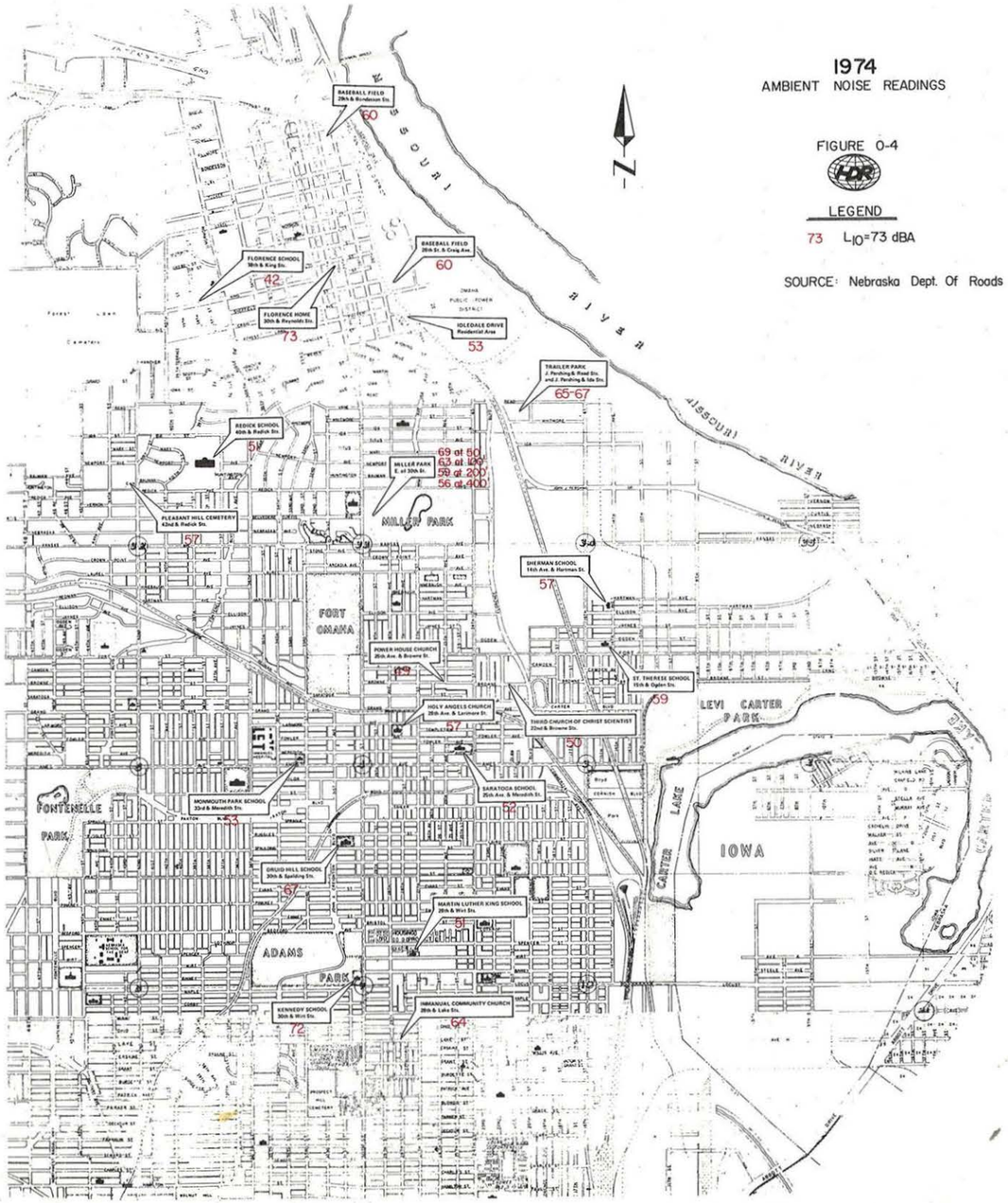
LEGEND

70 — L_{10} = 70 dBA

Area exposed to noise exceeding 70 dBA

25 No. residences exposed

SOURCE: Nebraska Dept. Of Roads



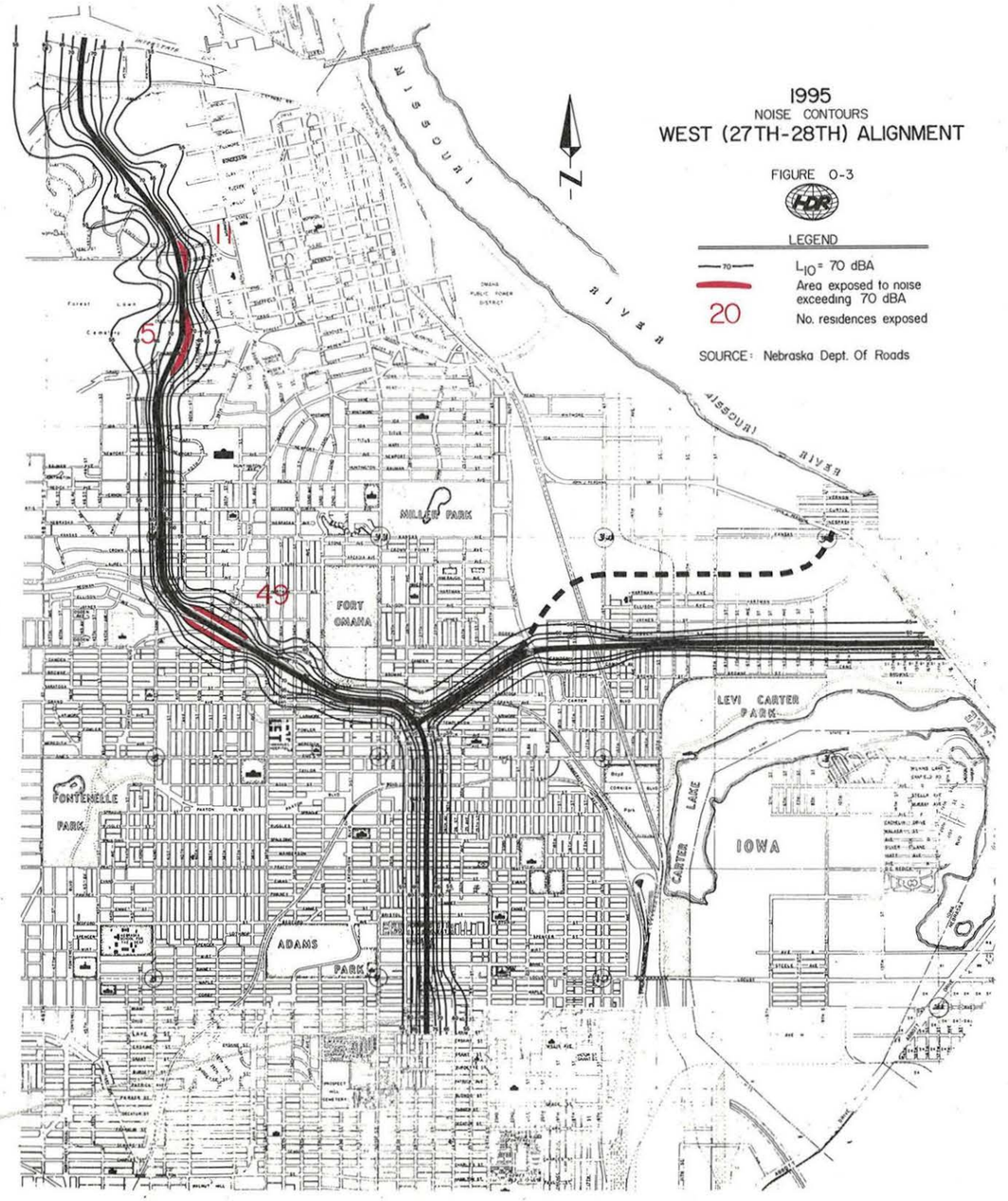
1974
AMBIENT NOISE READINGS

FIGURE 0-4

LEGEND

73 L_{10}=73 dBA

SOURCE: Nebraska Dept. Of Roads



1995
NOISE CONTOURS
WEST (27TH-28TH) ALIGNMENT

FIGURE 0-3

LEGEND

70 — L_{10}= 70 dBA

Area exposed to noise exceeding 70 dBA

20 No. residences exposed

SOURCE: Nebraska Dept. Of Roads

preliminary-design centerlines and construction limits. The existing noise levels in the TABLE O-1 are based on ambient noise measurements that were taken in November of 1974. The locations of the measurements can be found in FIGURE O-4. Ambient noise measurements were not taken at each specific land use area listed in the tables but enough measurements were taken in various land use categories to allow an estimate to be made in the form of an existing noise level range as has been listed in the table.

The noise impact of an area can be defined simply as the resultant of a comparison of the existing noise level of that area with its projected noise level due to the implementation of an additional noise source in that area. Therefore, areas of concern are not only those that exceed the FHWA design noise levels but also areas where the existing noise is substantially increased as a result of the proposed North Freeway. The degree of noise impact from each of the proposed alignments can be determined for any area by comparing the predicted noise levels (FIGURES O-1 thru O-3) with the existing noise levels (based on FIGURE O-4 and similar land use categories).

NOISE ABATEMENT MEASURES

Various methods have been developed for reducing noise from existing exterior-noise sensitive areas. They are:

(a) Barrier walls of earth, wood, or concrete.

(b) Depressed or elevated roadways.

(c) Landscape shielding, using a dense growth of trees and vegetation (100 ft. thick, minimum)

(d) Realigning the freeway away from noise sensitive areas.

(e) Purchasing of additional right-of-way thus eliminating the heavily impacted areas.

Noise abatement measures are being considered where predicted noise levels exceed design levels. Also, consideration is given to the achievement of lower noise levels in those developed areas which will be subjected to large increases over existing noise levels, thus, minimizing the adverse effect. However, the decision to implement noise abatement measures into all adversely affected areas lies in a much broader area than simply the proper attenuation of noise. Case-by-case judgements must be made which include weighing the costs and effects of the noise abatement measure considered against the benefits which can be achieved as well as against other conflicting values such as economic reasonableness, aesthetic impact, air quality, highway safety, and other similar values. The final decisions will be based on a systematic and consistent assessment of the overall public interest.

NO BUILD ALTERNATIVE

Traffic noise along 30th Street will increase with time in the event no new systems are built through the end of this century and assuming conventional vehicle design persists. Projections indicate that traffic volumes on 30th will range from 26,000 vehicles per day (VPD) to 41,000 VPD (PART V, FIGURE V-7). In addition, portions of 40th Street and 16th Street will have volumes approaching or exceeding volumes now carried by 30th Street.

TABLE O-2 is designed to show comparisons between predicted 1995 30th Street noise levels assuming completion of any of the three alignments or the No Build alternate. As can be seen, each alignment has a substantial effect on the predicted 30th Street noise levels. This is due simply to the significant decrease in projected traffic volumes along 30th Street resulting from any of the three alignments. A similar situation could also be sighted for any of the other existing north-south arterials.

SUMMARY

Traffic noise in North Omaha will continue to be a problem no matter which plan is implemented. As far as problem areas are concerned, more will be challenged by 70 dBA noise in the No Build plan than any of the three Build Alternatives.

Noise pollution is a very difficult problem to evaluate. The social damage that it can cause is hard to evaluate as is the damage to the physical health of human beings and wildlife. There is, however, sufficient evidence to indicate that excessive noise is highly undesirable and should therefore be moderated whenever possible.

After an analysis of the three alignments, it can be said that the East Alignment has the lesser noise conflict, with 55 dwellings and a park exceeding the L10 exterior-design noise level standards in comparison to 163 dwellings with the Central Alignment and 80 dwellings with the West Alignment. Also, the same results can be seen after a similar comparison between the predicted noise levels of each alternate and existing noise levels. This result is for the most part, due to the location of each alignment with the East Alignment being located in more undeveloped and industrial oriented zones.

The No Build alternate has the potential of impacting more sensitive areas with higher noise levels than any of the three Build Alignments. The projected 1995 traffic volumes show capacity or near capacity traffic on 30th Street and numerous other north-south arterials in the North Omaha vicinity. The North Freeway is designed to minimize these excessive traffic loads and in turn minimize excessive noise in the noise sensitive areas (schools, churches, etc.) near these arterials.

TABLE O-2
PREDICTED 1995 30th STREET NOISE LEVELS

Reference Segment along 30th	Distance from 30th St.	30th St. No Build	30th St. with East Alignment	30th St. with West Alignment	30th St. with Central Alignment
Lake-Spencer	100'	78	73	74	74
	200'	73	68	69	69
Spencer-Ames	100'	79	73	75	74
	200'	74	68	69	68
Ames-C&NW RR	100'	78	74	77	74
	200'	73	68	71	68
C&NW RR-Laurel	100'	78	74	72	71
	200'	73	68	66	65
Laurel-Redick	100'	77	71	73	71
	200'	72	65	67	65
Redick-Martin	100'	78	71	72	71
	200'	73	65	68	65
Martin-Craig	100'	79	70	72	72
	200'	74	65	67	67
Craig-State	100'	80	72	73	72
	200'	74	67	68	67
State-I-680	100'	78	72	75	73
	200'	73	66	69	67

APPENDIX P.
AESTHETICS

Introduction

Aesthetics has probably been the most neglected aspects of highway planning even through there have always been various beautification schemes and more recently, considerable effort to regulate highway advertising. In some instances beautiful highways have been constructed, but their scenic qualities have usually been the result of remarkable natural surroundings. An encouraging spin-off of the environmental movement of the late sixties has been an increased awareness of the quality of the landscape. In particular, there has been much concern about the urban environment and its lack of aesthetic quality. There is, of course, no way the urban landscape can be discussed without approaching significantly the topic of transportation systems. A large urban area is, after all, the product of an elaborate transportation system designe to provide rapid movement of people and material over a large area. The proposed North Freeway in Omaha is a classic example of this since it involves the

projected needs of an urban area to move people and goods between the environs of the city and its core. One of the greatest challenges in this endeavor is to design and construct an efficient system that is visually pleasing to those that live or work near it and also to those who use it.

General Discussion

An impartial observer would classify the aesthetics of high-level highway systems into four components:

1. Quality and design of basic construction.
2. Quality and design of highway appurtenances.
3. The advantageous use of natural landscape
4. Post-construction landscaping.

These components combine together to give a system its visual appeal — or lack of it — so that a discussion of each, and a collective discussion of all, are necessary in a complete evaluation of aesthtics.

High-level highway systems have traditionally been designed for efficient and safe movement of traffic. Governmental specifications provide explicit details of interchange requirements, safety factors and sign placement. Therefore, during the past twenty-five years, highway systems have been more and more complex but they have also become fixed in design and unimaginative. The grey concrete piers of bridges and the chainlink fences along the right-of-way and occasionally in medians are bleak and confining, especially during cloudy, stormy weather, so that the total feeling on a highway system of this type is one of depression. It is likely that the uninteresting, boring, and bleak surroundings contributes to driver impatience and depression, and consequently to the accident rate. The problem that must be solved is one of integrating traffic and design requirements with pleasing aesthetic treatment. This is, to be sure, a difficult problem because the constraints imposed by traffic considerations often have a tendency to stifle architectural creativity.

No solid reason really exists, however, which would impede innovation and imagination in designing new systems, and indeed some are in existence. For example, some designs have incorporated changes in the concrete portion of highway structures in an attempt to make them more pleasing and this is highly recommended in this instance. In fact, the most desirable situation would involve concrete structures which are white and highly textured (sand blasted or similar), with steel fittings and supports painted in a contrasting color. Designs of posts and piers should explore the use of catenary (parabolic) arches and buttresses. Arches could support raised structures perpendicular to their axis or parallel with them. Buttressed columns utilizing geometric designs might also be interesting and visually gratifying. Pedestrian overpasses, where present, should also go beyond their ability to simply perform a function and should combine form and function in order to lend support to the system.

Other things to be considered in the design phase would be the multiple use of space under overpasses or other elevated structures, and in excess right-of-way. These "dead spaces" are usually unattractive and hard to maintain so that development of some other use should definitely be considered. An alternative to the bottom sides of overpasses involves a creative effort with landscaping material and hardy plants to make these spaces more attractive to on-road observers.

Highway appurtenances include such things as light posts, sign bridges, and roadside curbs. With respect to these, the conventional light posts are probably the most offensive. These usually line the interstate highways in urban areas in the monotonous pattern that detrimentally clutters the landscape. There can be no argument about the need for highway lighting in urban areas. The new tower lighting fixtures, however, are much less distracting to the driver, and greatly enhance the appearance of the freeway, in both their simplicity and their pleasing effect. Combersome sign bridges are also unsightly in many respects. Again their necessity is obvious but designs which incorporate a smooth, sleek appearance are the most desirable while truss-like structures should be avoided as much as possible. Smaller appurtenances such as curbs and other barriers should be streamlined to blend into the entire system.

The standard chain link right-of-way fences is another obvious need from the safety standpoint. However, suitable landscaping treatments could improve its appearance. It may be desirable at certain locations to actually set the fence away from the actual right-of-way limits to allow usage by the public as linear parks, bike paths, "tot" lots, or simply attractively landscaped sitting areas.

The advantageous use of the natural landscape involves the positioning of highway systems in such a way that maximum views of dramatic topography can be achieved. In areas of high scenic values, highways have always been constructed to provide considerable exposure to the landscape. In cities, however, this has been grossly neglected and many highway systems have been constructed through blighted areas with the result that the highway serves only the utilitarian purpose of moving traffic. The result has largely been ugly highways and cities. It would seem that all areas have scenic quality but only if some care is taken to promote what is present.

Post-construction landscaping has always been a part of highway construction activities but not to the extent that a great deal of creative thinking was utilized. Traditional landscaping of highways has given most prominent consideration to maintenance rather than to aesthetics. In this regard landscape planners have adopted the practice in the past that right-of-way areas were to be planted and cleanly mowed to give the appearance of residential lawns. More recently, considerable research has been undertaken to explore the possiblilities of using native vegetation in right-of-ways as a conservation practice. This is a definite step in the right direction and one which should be developed in any new highway system including those in urban areas.

The advantageous use of natural landscapes and the aesthetic design of new highways are specific areas which must be approached in detail for each new highway system. These details will be addressed in the discussions of North Freeway Alternates that follows.

North Freeway — West and Central Alternates

The West and Central Alignments are so similar in terms of their aesthetics that they can be discussed together. These two corridors are located in total urban and residential regions through most of their distances. In these areas corridor widths must by necessity be minimal and therefore not much leeway exists for promoting visual quality.

The main emphasis in congested areas must then be on off-road viewing by residents living or moving near the system. To achieve this, construction activities should minimize the cutting of trees especially in the waste spaces near interchanges. In addition, earth berms should be densely planted with trees and these should probably include a dense planting of junipers. Sloping or grassy places should be seeded in some type of prairie grass such as little bluestem. If prairie grasses are not utilized, combinations of ornamental and smaller native trees should be planted. In all of these situations, mowing should not be needed assuming a good growth of shrubs and grasses is achieved.

The Central and West Alignments are very similar north of State St. and it is in this area that aesthetic considerations become most important. The corridor in this area is surrounded by scenic bluffs, covered for the most part by deciduous trees. The on-road view traveling either direction should be quite good. Northbound will have a considerable amount of forests in view and the southbound traffic a horizon view of Metropolitan Omaha. In order to complement the views it would be advantageous to widen the medians between north and south traffic to allow the planting of large trees. The end result, of course, a slightly split alignment and higher cost but the gain in and off road appearance would be considerable.

North Freeway — East Alignment

The East Alignment might be rated slightly higher than the West and Central in terms of on-road visual quality. The southern and central sectors of this alignment course through residential and industrial areas. The northern sector near Florence does provide an interesting view of the Missouri River, its bluffs and the skyline of Omaha. However, the period of time a motorist would be in this favorable viewing situation is very short. Off-road visual quality might also be more of a problem in the East Alignment than in the others. The lack of topographic relief on the floodplain portion of the corridor and the quality of the urban environment in the southern portion provide little in the way of raw materials for the design of a dramatic roadway.

Probably the most pliable section of the Eastern Alignment as far as off-road visual quality is concerned is the raised portion near Florence. This portion coincides with the area of high quality on-road viewing so that the finished product of this piece of the highway might prove to be very dramatic in all respects.

There are fewer options for landscaping and promoting new parks but there is an interesting possibility of creating a linear park along the base of the bluffs where the roadway crosses the floodplain. This alignment could provide some interesting road-

side recreation with the very steep and wooded Missouri River bluffs acting as a backdrop. If the park were long enough some bike trails or similar features might be constructed but its most prominent use would be a recreation-picnic area.

In addition, there is the potential of some recreational facility in the loop ramp of the interchange with I-680.

The topography and placement of the East Alignment does not make a split alignment feasible as in the case of the West and Central Alternates.

Airport Connectors

The Airport Connectors are located on the flat Missouri River floodplain and border the projected industrial park. The connectors must be considered very important as far as aesthetic quality is concerned since they would give some visitors their first impressions of Omaha and the State of Nebraska. It would seem to be advisable then to create a highway system which gives the user or observer an impression of progressive and creative thinking. To achieve the proper image it might be necessary to erect fountains, develop lakes, or construct a monument or sculpture symbolizing the State and City. It might be useful to develop a "theme" approach such as "progressive stability" or "pioneer spirit" and build the connector to suit the theme. It would also be advisable to make a great effort to produce a beautifully landscaped right-of-way to complement the environment. Whatever course of action is taken with the Airport Connector it should include the concept of introducing newcomers to Omaha in particular and Nebraska in general.

Summary of Recommendations

1. Parabolic or catenary arches should be utilized in the design of structures. If arches are not practical or possible, designs should then include buttressed or flared piers and some combination of geometric figures to break up the solid concrete appearance.

2. Concrete piers should be constructed of white, sand-blasted concrete or something similar.

3. Pedestrian overpasses should be constructed of transparent or translucent materials and partially enclosed.

4. Consideration should be given multiple use of space under overpasses and elevated structures.

5. The newer tower light posts should be incorporated into the design.

6. Chainlink fences should receive suitable landscaping treatment to better blend them into the surroundings.

7. Native grasses and trees should be utilized in landscaping and these should not be mowed except close to the roadway itself.

8. Utilization of excess parcels of right-of-way should be pursued for development as parks, playgrounds, recreational and community facilities, and other suitable activities.

9. Slightly split alignments should be considered at the northern end of the West and Central Alignments.

10. A linear park could be established along the bluffs west of the East Alignment.

11. Maximum effort must be given to the Airport Connectors to make these an impressive introduction to Omaha and Nebraska from Eppley Airfield.

APPENDIX Q.
MULTIPLE USE OF SPACE

Overview

The aesthetics discussion in APPENDIX P, the evaluation of "Multiple Use of Space" is aimed at the potentials each freeway alternate offers toward the joint use of right-of-way. Emphasis here is in having multiple uses linked with adjacent freeway land uses to reduce and eliminate the barrier like character which freeways can exhibit. Consequently, multiple use of right-of-way can be both a fringe benefit of urban freeway construction and a useful tool in freeway design, and in planning for urban community service needs.

Numerous articles, reports, and papers have been published on this subject.1,2] Most are oriented toward the transportation rights-of-way in the large metropolitan cities of the nation. It is these locations where land costs and increased demands for community facilities have justified the economics for using freeway air-rights for commercial and office land uses, or for using median areas for transit and other non-highway transportation uses.

In addition to these applications, another area of multiple use overlaps with the factors of Aesthetics (APPENDIX P) and Parks and Recreation (APPENDIX W). This is associated with the potentials for open spaces, public recreation facilities, bicycle trails, playgrounds, parks, attractive treatments of highway appurtenances, and other related features which can be done with excess segments of freeway rights-of-way.

In reviewing what has been done or proposed with multiple use in other cities, not all of the concepts can be directly applied to the settings of the North Freeway and of Omaha. Thus, such literary reviews serve more to stimulate ideas which could be applied to the freeway developments in Omaha.

1] **Highway Joint Development and Multiple Use,** Federal Highway Administration, February 1970.

2] **Multiple Use of Lands Within Highway Rights-of-Way,** National Cooperative Highway Research Program Report 53, Highway Research Board, 1968.

There is one publication, however, which has some direct applications to the North Freeway. In the 1969-70 time period, the Omaha Planning Department coordinated a study3] of the multiple uses of the I-480 right-of-way in Downtown Omaha. This report addressed such elements as architectural consideration, commercial land use proposals, joint use policies, and usage of interprofessional teams in highway projects.

The five primary recommendations from this study were:

A. **To Pursue the Joint-Use Concept.** The City, State and Federal agencies should officially endorse the joint-use concept and actively encourage its implementation.

B. **To Lease Joint-Use Space.** It would be desireable to retain ultimate control of public lands with the governmental agencies and to have recommended minimum leases of 40-50 years of non-highway uses of right-of-way.

C. **To Establish a Disposition Procedure.** A definite procedure should be developed and adopted by the City, State and Federal agencies concerned with joint-use concepts.

D. **To Establish Criteria to Guide Selection for Highest and Best Joint-Use Development.** The design guide criteria in the report should be adopted.

E. **To Use Interprofessional Teams.** The formulation of a joint-use program should be done through the interprofessional team approach.

The three government units should pursue a North Freeway joint-use program. That basic planning approach applied to I-480 should likewise be done for the North Freeway during its final design, right-of-way purchase and construction stages. Such an effort should be done as part of the City's Comprehensive Planning Program with cooperative involvement from the State and Federal governmental units and the local business and community groups.

POTENTIAL FOR MULTIPLE USE OF SPACE

With direct regard to the North Freeway, there are

3] **I-480 Joint Use Study,** Omaha City Planning Department.

several points which should be noted. First, the use of air rights over the freeway is possible, particularly south of Grand Avenue where the freeway will be in a "cut" or "depressed" roadway section below ground level. The feasibility of using air rights does appear economical in some central city areas where land values are high or vacant lands are limited. An example is the proposed Creighton University Parking Garage over the North Freeway.

Second, the freeway alternates do provide for a 44 foot wide median area which can be used for special transit bus lanes, other transit uses, or landscaping. Actual planning for transit usage of this median rests primarily with the Nebraska Department of Roads, the Metro Area Transit Authority, the City of Omaha, and the Omaha-Council Bluffs Metropolitan Area Planning Agency.

Third, the right-of-way limits indicated in the concept drawings of this report have been kept to those lands which are absolutely necessary for the freeway itself. This was done to minimize the taking of housing units. Since small residential lots are the predominate land parcels involved, large excess right-of-way land areas are not generally produced. However, all excess rights-of-way, large or small, can and should be made usable whether that use is for open space or an active use.

Fourth, parts of the freeway routings do make use of two railroad corridors for either right-of-way or air rights usage.

Fifth, because of the predominating residential character of the study area, the North Freeway's potential for multiple use of space would appear to be restricted primarily to open space, playground, and recreational needs of the community. Detailed planning for these facilities rests primarily with the Omaha Planning and the Omaha Parks and Recreation Departments. Some right-of-way areas, however, do possess commercial or industrial related joint use potential with adjoining lands.

With the above in mind, the proposed alternates are discussed below from the standpoint of their potential and their impacts upon multiple use of space.

East Alignment. Between Lake and Ames, the East has little excess right-of-way as the freeway is effectively using all of the space between 27th and 28th streets.

Two narrow land pieces are available for playgrounds only. One extends from Binney to Miami on the westside of the East Alignment. The approximate size is 75 feet by 950 feet. It would serve both sides of the freeway since Binney will be a freeway crossing. Tennis and basketball courts could be included.

A second area is a small strip adjacent to Spencer Homes. It is on the westside of the East Route between Spencer Street and Spencer Court.

Special bicycle trails do not seem practical, because of the available local streets and narrow freeway right-of-way. From Ames to 24th, there are no sizeable excess right-of-way parcels. The six diamond interchange ramps, the high volume frontage roads, and the intersecting major streets, (Ames, Railroad Arterial, 24th) are not conductive to playgrounds or other related uses directly adjacent to the East Alignment.

From 24th to Florence Blvd., the diagonal crossing of these city blocks by the East Route creates many triangle-shaped right-of-way pieces usable for "tot" lots or small playgrounds.

From Florence Blvd. to Read, the East right-of-way requires the partial taking of the rear portions of the residential lots addressed on Florence Blvd. Since these lots are excessively deep in footage and extended from the bluff top to the flats below the bluff, the potential exists for purchasing all of the flood plain rear portions of these lots for right-of-way.

The excess right-of-way could be developed as a linear park and open space area along the west side of the freeway. The area is large enough for 2 or 3 baseball diamonds, tennis courts, picnic area, and related activities. The numerous trees and field segments of these lots together offer considerable potential. Over 40 acres would be available. An access road would connect to Florence Blvd. about 300 feet south of Read St.

A negative aspect of this concept, however, is the fact that Miller Park and Carter Park are both in very close proximity, and have active recreational uses.

From Read to Craig, a small triangle of land would be left on the east side of the freeway, south of Craig, and west of John Pershing Drive. Because of its size and isolation, it should be developed as an open space area for John Pershing Drive, which is proposed as part of a parkway in the Riverfront Program.

From Craig northward to Fillmore, the East Alignment is on an earthfill between 28th St. and 28th Ave. Costwise, this is the best economic solution for constructing the freeway. The freeway, however, could be placed upon structure with all or parts of the 10 block space under the freeway, being used for a linear park for Florence or for light industry.

The industry concept seems logical, since it is adjacent to the railroad line, and presently there are a small factory, an auto salvage yard, and a City Maintenance Yard. However, such industry uses would not be compatible with the residential area west of the East Alignment and east of 30th St.

The linear park would connect to and expand the proposed Florence Library site and Fillmore Park. Such a park could meet any Florence recreation needs and would be a compatible buffer with and between all adjacent land uses.

At Fillmore Park, the East Alignment proposes to use 10 to 20 feet of the outfield of the baseball field which comprises nearly all of this park's area. The approximate 30 foot vertical clearance under the East Freeway structure is more than adequate for "playable" fly balls during a game.

An approximate square block area just north of the proposed Florence Library site could be very effectively used as park of the total Library/Fillmore Park Site. Part of this additional block would be crossed by the East Alignment. Thus, the area under the freeway could be used for off-street parking, tennis courts or basketball courts.

Along I-680, several possibilities exist. Within the North Freeway I-680 Interchange, the small tracts around McKinley and 30th St. could have usage for commercial services. Within the loop ramp on the northside of I-680, the hillside could serve as a picnic area or rest stop area, since an existing frontage road presently provides access to this and could remain intact.

At the new loop at the US 73/I-680 Interchange, a commercial or small industry use could be developed.

In summary, the East Alignment has the following potential multiple uses of the freeway right-of-way.

1. Wide median for initial landscaping and future transit usage.
2. Two small playgrounds near Spencer and near Binney in the section from Lake to Ames.
3. Small "tot" lots on triangular parcels in section from 24th to Florence Blvd.
4. Large open space and active recreation area in the section from Florence Blvd. to Read St. west of the freeway to the bluffs.
5. An open space triangle at Craig and J. Pershing.
6. Limited possible use of all or part of the area under the freeway from Craig to Fillmore for recreation and/or light industry, if the freeway can be placed upon structure rather than earthfill.
7. Expansion of the Florence Library and Recreation Center by joint use of air rights for freeway and recreation uses under the freeway.
8. Partial use of the Chicago & Northwestern Railroad right-of-way from south of Read to north of Craig and along Fillmore Park.
9. Use of the North Freeway/I-680 Interchange loop ramp area for a picnic or rest stop area.
10. Use of the US 73/I-680 Interchange loop ramp area for commercial or industry use.

Central Alignment. Between Lake and Ames, the Central (27th-28th) routing has the same limited potentials as the East, that is, playgrounds at Spencer and from Binney to Miami on the west side of the freeway.

The Central (31st Ave.) offers more potential multiple uses between Lake and Ames. Due to the diagonal crossing of the city blocks, triangular parcels of excess right-of-way offer the possibilities as small "tot" lots and playgrounds. One such area lies south of Binney, west of 27th St., and east of the freeway. A second area is located south of Binney, east of 28th St., and west of the freeway. Both sites are accessible from either side of the North Freeway via the bridge crossing at Binney.

Another multiple use potential is at the Martin Luther Day Care Center on Wirt Street. Excess right-of-way

would exist between the Center and the Freeway which could be used effectively for playground or building expansion. The excess right-of-way would also form a connection for the Center between Wirt and Spencer Streets.

Continuing with the 31st Ave. Routing, considerable excess right-of-way will be available at the present concrete block plant on John A. Creighton Blvd. This area could be used as a multi-family housing site, possibly as replacement housing.

North of Ames, the North Freeway/Airport Connector interchange has several sizeable tracts of excess right-of-way on its perimeter. These tracts could be usable as tennis court areas.

Examples are: a) with the 27th - 28th Route, a large area south of the freeway, north of Larimore, between 31st and 33rd, and b) with the 31st Ave. Route, a medium size area north of Larimore and to the east and south of the freeway frontage road connecting Ames to 30th.

From Grand at 33rd to Martin Ave., the Central Alignment offers no multiple use of space possibilities.

At the junction of Forest Lawn Ave. and North Ridge Dr., the existing "tot" lot which could remain under the freeway could be expanded.

At King St., some excess right-of-way on the east of the Central Alignment could be added to the Florence School playground.

South of State St., the area between the freeway and the cemetery could function as a small park.

North of State St. to McKinley, the potential exists to spread the freeway directional roadways apart in order to widen the median for an open space and aesthetic treatment.

In summary, the Central Alignment has the following potential multiple uses of the freeway right-of-way.

1. Wide median for initial landscaping and tween State St. and McKinley for open space

2. With the 27th-28th routing,
   a. Two small playgrounds near Spencer and near Binney in the section from Lake to Ames.
   b. A tennis court area at Larimore and the southside of North Freeway/Airport Connector interchange.

3. With 31st Ave. Routing,
   a. Small "tot" lots on triangular parcels left by diagonal crossing of the street grid.
   b. Playgrounds at Binney of both sides of freeway.
   c. Additional playground area onto Martin Luther King Day Care Center.
   d. Multi-family housing on the concrete block plant site.
   e. Tennis court area on Larimore and southeast of North Freeway/Airport Connector interchange.

4. Use of a short section near Fort Omaha of the Chicago & Northwestern Railroad right-of-way for the freeway.

5. "Tot" lot under the freeway at Forest Lawn Ave. and North Ridge Drive.

6. Addition to Florence School playground.

7. Small park and picnic area south of State St. between the freeway and Forest Lawn Cemetery.

8. Spreading apart of freeway directions between State St. and McKinley for open space and aesthetic treatment.

West Alignment. For either a 31st Ave. or 27th-28th St. Routing, the West Alignment offers the same potentials for multiple use of space as the Central.

Between Fontenelle Blvd. and Redick, there are little or no useable tracts of right-of-way for uses other than aesthetic improvement.

South of State St., the area between the freeway and the cemetery could be used for a park and picnic area.

North of State St. to McKinley, the same spreading of the freeway roadways as proposed for the Central Alignment could also be done for open space and aesthetic treatment.

In summary, the West Alignment has the following potential multiple uses of the freeway right-of-way.

1. Wide median for intital landscaping and future transit usage.

2. With the 27th-28th Routing;
   a. Two small playgrounds near Spencer and near Binney in the section from Lake to Ames.
   b. A tennis court area at Larimore and the south side of the North Freeway/Airport Connector interchange.

3. With 31st Ave. Routing:
   a. Small "tot" lots on triangular parcels left by the diagonal crossing of the street grid.
   b. Playgrounds at Binney of both sides of freeway.
   c. Additional playground area onto Martin Luther King Day Care Center.
   d. Multi-family housing on the concrete block plant site.
   e. Tennis court area on Larimore and southeast of North Freeway/Airport Connector interchange.

4. Northwestern Railroad right-of-way for the freeway.

5. Small park and picnic area south of State St. between the freeway and Forest Lawn Cemetery.

6. Spreading apart of freeway roadways between State St. and McKinley for open space and aesthetic treatment.

Airport Connectors. Overall, neither the Hartman or Fort Alignments offer significant multiple use potentials, but they do have some possibilities.

With the Central and West alignments, the Airport Connectors from 30th to 16th diagonally cross several city blocks. The triangular parcels of excess right-of-way could be used for small playgrounds, basketball courts, or small neighborhood parks.

Comparison. Among the North Freeway alternates, the East Alignment offers greater potential for multiple use of space than do the Central or West. This conclusion is based upon the joint freeway-railroad use of right-of-way and the recreation and park potential uses between Florence Blvd. to I-680.

Among the 31st Ave. and 27th-28th routings of the Central and West, the 31st Ave. path is far superior in the number of potential multiple uses.

The Hartman Airport Connector the Fort Street Airport Connector offer essentially the same potential for multiple use of space.

APPENDIX R.

AIR POLLUTION ANALYSIS

The evaluation of the potential air pollution impacts of the study alternatives involves several factors including forecast traffic volumes, air circulation, vehicle emission rates, and Federal legislative controls on vehicle emission rates.

Of the several air pollutants emitted by conventional automobiles, carbon monoxide (CO) is the most predominant, is considered a valid indicator of the general level of pollutants, and is the most practical automotive-associated pollutant to measure. A recent Government study, **Air Quality Manual** 1], relating Post-1975 vehicle emissions as a function of vehicle speed indicates that hydrocarbon and carbon monoxide emissions tend to decrease as vehicle speed increases, while nitrogen oxides are independent of vehicle speeds.

An important factor in the dispersion of pollution is the depth of the air layer through which pollutants mix. The following evaluation determined the likelihood of stagnation occurring in the Omaha area as follows:

"The low mixing depth on winter mornings, coupled with increases in coal consumption and residential space heating with natural gas, can be expected to

1] **Air Quality Manual,** Interim Report, Federal Highway Administration, April 1972.

cause periodic high concentrations of pollutants during times of low wind speeds. Prolonged periods of stagnation, with low mixing depths and a little wind, are rarely seen in the study area." 2]

In the effort to evaluate the potential of a North Freeway inducing vehicle pollutants in excess of the adopted regional air quality standards, data from the Omaha-Douglas County Health Department monitoring station at 11th and Dodge Streets in Omaha was obtained. The station is the only CO monitoring point in the metropolitan area and the only one measuring CO. It was placed at a location which would likely yield a typical worst case reading. The location is at the eastern edge of the Omaha Central Business District, not far removed from a metal smelter, a railroad yard and a warehouse district. There is a high concentration of both automobile and heavy truck traffic on nearby streets.

The data was obtained from a period of observation from January 1, 1974, to March 14, 1974, and was selected to coincide with the worst case meteorological conditions of winter when the mixing depth is lowest and calms or light winds are most common.

Out of a total of 1,752 hourly observation records (FIGURE R-1), the highest hourly reading was 16.5 ppm CO, and that did not persist. The longest period exceeding the primary standard of 9 ppm was for 7 hours. The 8 hour average for this period was 12 ppm. The primary standard was exceeded for three hours on three occasions; for two hours on eight occasions and for one hour on eleven occasions.

Of the 1,752 observations, 847 or 48% were of two ppm or less and 542 were of 2.5 to 4 ppm. The cumulative percentages are: 48% two or less; 79% four ppm or less; 91% six ppm or less; 96% eight ppm or less, and 98% of ten ppm or less.

For the Omaha-Council Bluffs Region, the primary air quality standard (necessary to protect public health) as promulgated by the Environmental Protection Agency is that the Carbon Monoxide (CO) levels not exceed 9 ppm for a 24-hour average; 9 ppm for any continuous 8 hour period; and, 35 ppm for any 1 hour. 3]

2] **"Report for Consultation on the Metropolitan Omaha Interstate Air Quality Control Region,** U.S. Department of Health, Education & Welfare, 1970.

3] Environmental Protection Agency, **Federal Register April 30, 1971.**

Following the procedures of the **Air Quality Manual,** the Nebraska Department of Roads prepared the air quality contour maps presented in FIGURES R-2 through R-4. These contours are indicative of CO concentrations which would arise from peak-hour freeway traffic volumes on the various North Freeway Alignments under the worst wind-dispersion conditions.

Analyses indicated that the highest levels of CO would occur in 1980, based on Federal vehicle emission guidelines and an estimate of the 1980 traffic volumes which would prevail in the hypothetical situation that the entire freeway was completed by that year. Beyond 1980, although traffic volumes would increase, the effect of vehicle emission controls actually causes a reduction in the levels.

A review of the air quality contours shows that nowhere on any of the alternates does the sum of the freeway-generated CO levels and the presumed ambient CO level (3.5 ppm) even approach the one-hour maximum of 35 ppm.

Because the calculated concentrations represent a peak hour condition which occurs for only a few hours a day, and periods of prolonged air stagnation are rare in the Omaha area, it is doubtful the 9 ppm per continuous 8-hour period standard would be exceeded.

Moreover, the North Freeway will not be a reality by 1980. Consequently, there is no possibility of attaining the worst conditions presented in FIGURES R-2 through R-4. None of the freeway alignments even approach any of the air quality standards.

TABLE R-1 indicates the quantities of CO produced by each alternate, including the No Build, within the general freeway corridor study area. The Central Alignment produces less than the East or West Alignment, but all three are nearly equal. The No Build is seen to be about 20% lower, but this is mainly because much traffic is shifted outside the corridor study area to which these calculations are limited.

Referring to TABLE E-1 in APPENDIX E, it is seen that any form of No Build yields an operating speed and level of service much lower than that for any of the Build Alternatives. Based on this lower operating speed and the fact the CO emission levels are directly related to vehicle operating speeds, it is seen that the No Build should generate CO levels somewhat higher than any of the Build Alternates.

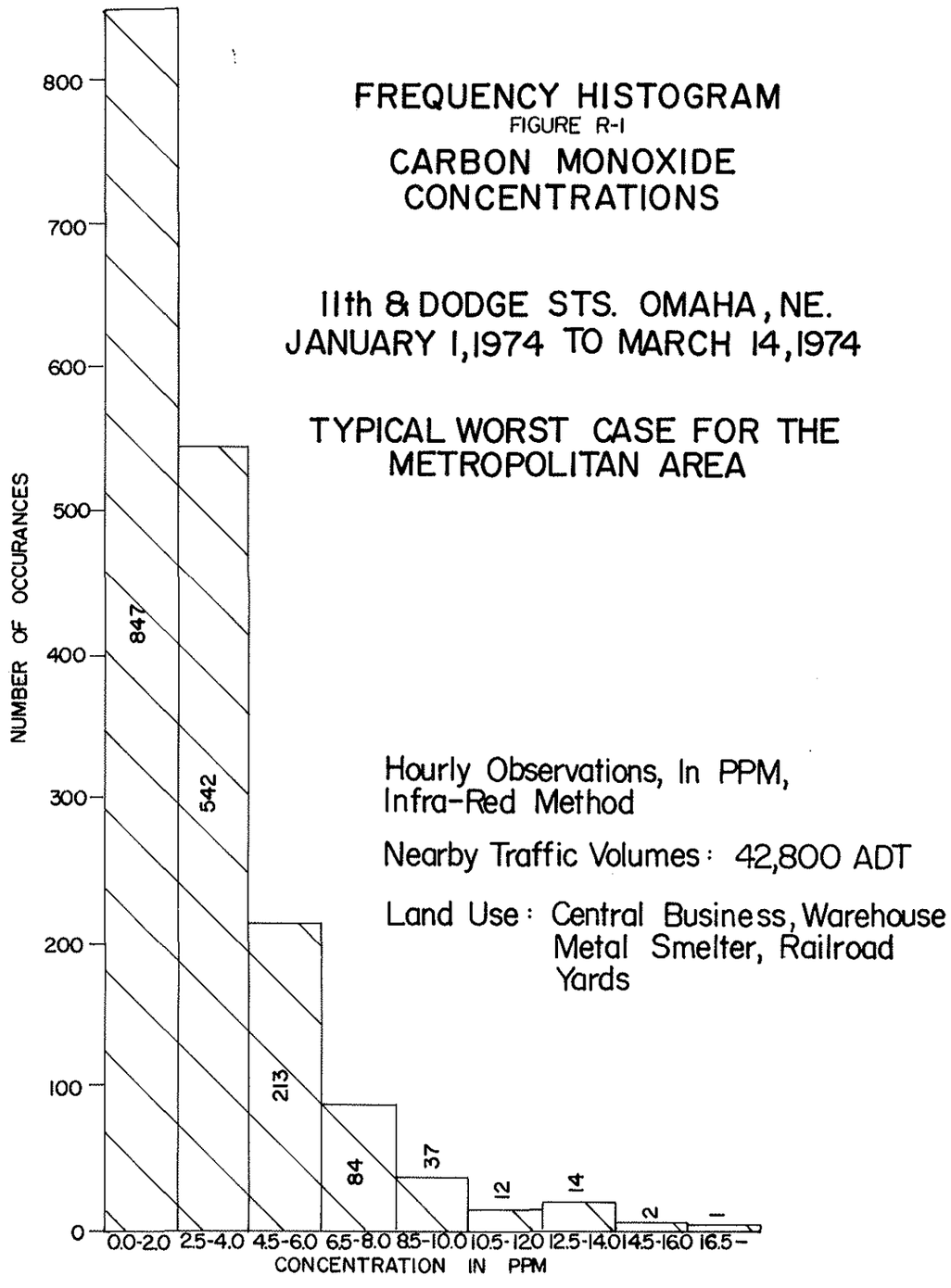


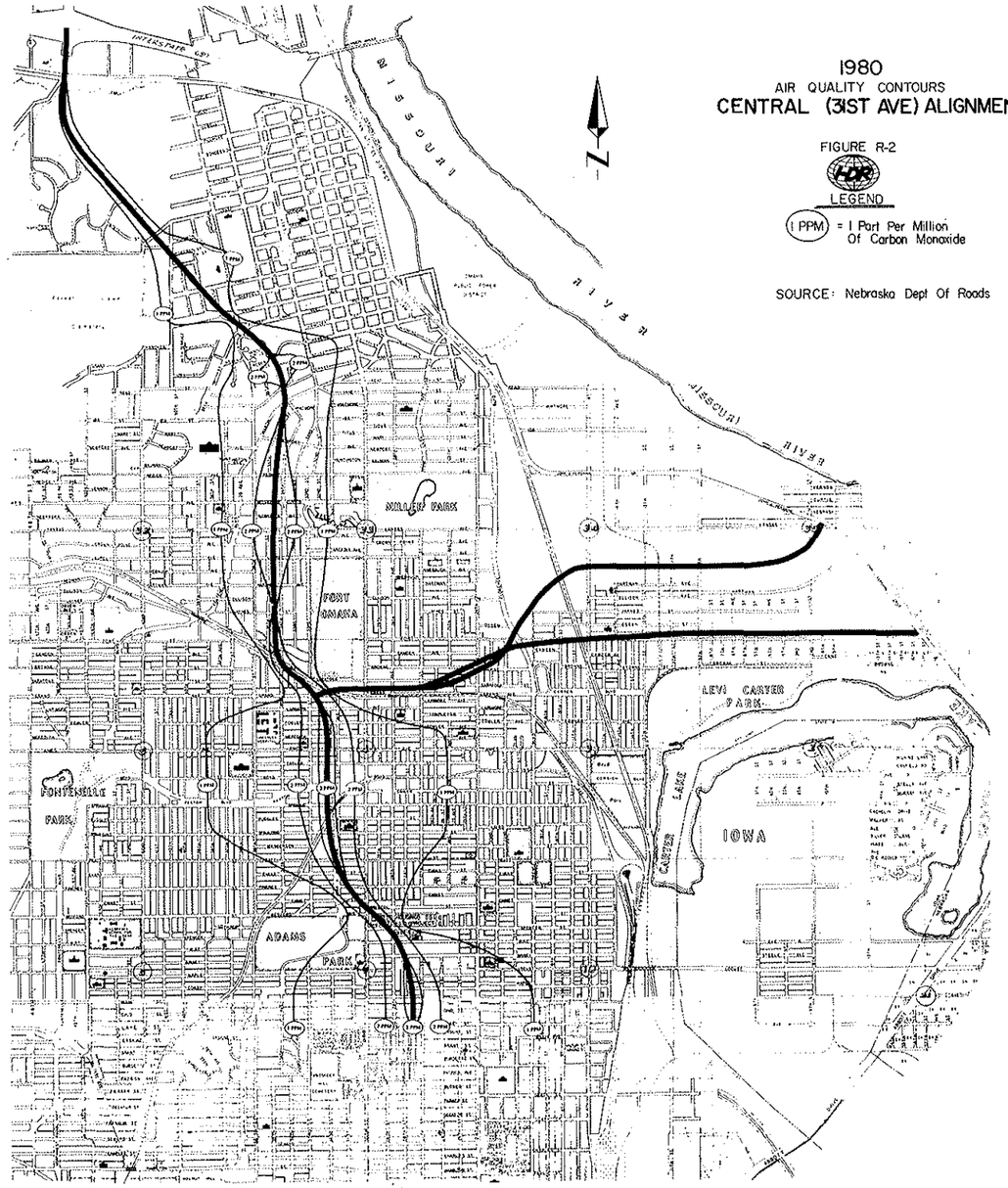
TABLE R-1

1995 EMISSIONS FOR NORTH FREEWAY CORRIDOR STUDY AREA

Alignment	VM/day 1] City Streets	VM/day 1] Freeway	Lbs. CO/day 2] City Streets	Lbs. CO/day 2] Freeway	Lbs. CO/day 2] Total
East	318,815	380,097	3,794	2,965	6,759
Central	333,994	282,254	3,975	2,202	6,177
West	375,454	308,734	4,468	2,408	6,876
No Build 3]	441,060	27,744	5,249	216	5,465

1] VM = Vehicle-Miles
2] CO = Carbon Monoxide
3] Because of street congestion, No Build System in Study Area has lower total traffic than the Build Alternates. Such traffic is distributed over other streets (as the Radial Highway) outside the Study Area.

City and State governments must carefully evaluate each proposed highway system in terms of its affect on air quality. In the case of proposed North Freeway Alignments, these affects are minimal. Since none of the Build Alternates approaches the CO emission standard maximums, they are ranked as being basically equivalent. The performance of the No Build in terms of air quality is less effective than any of the Build Alternates.



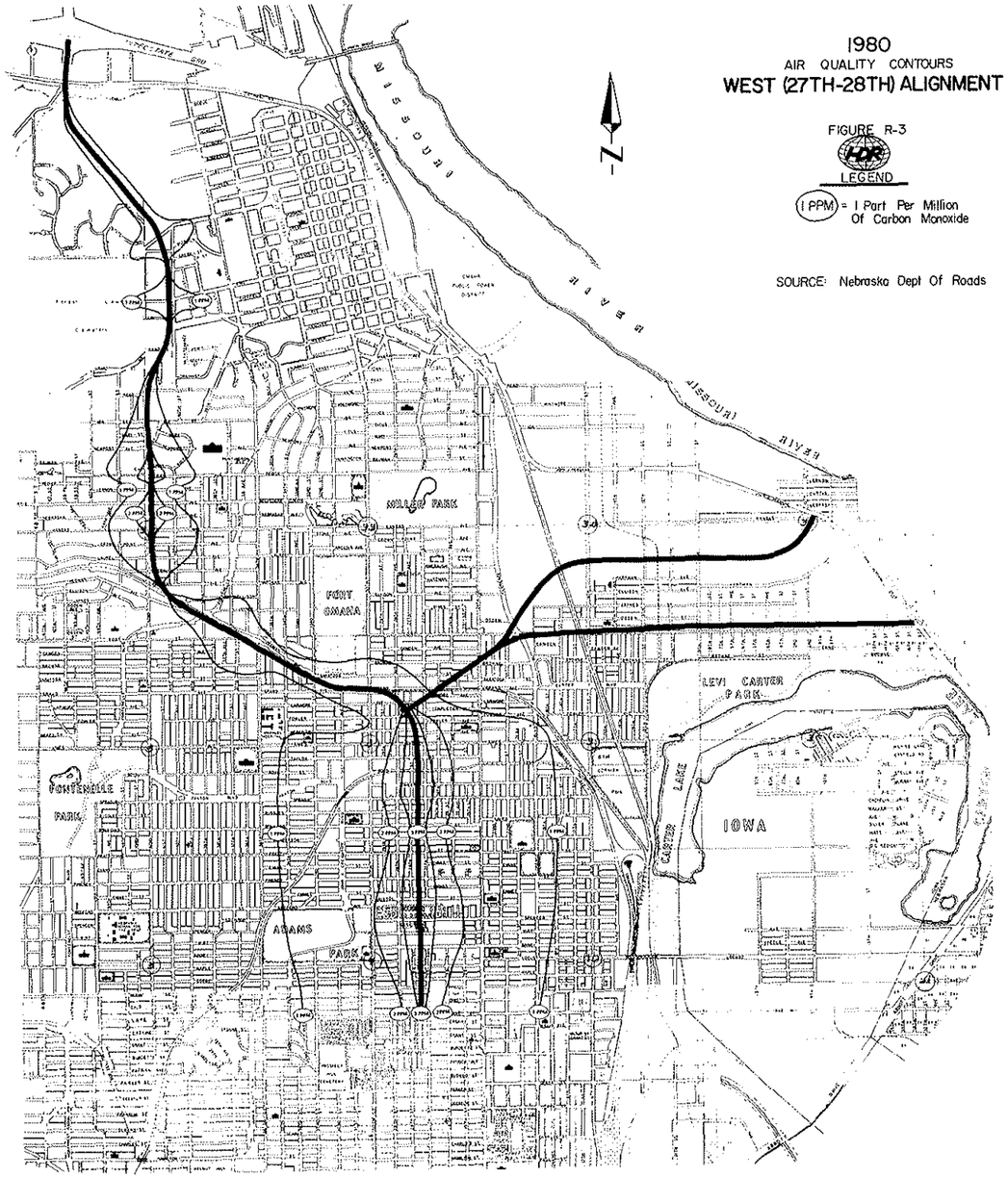
1980
AIR QUALITY CONTOURS
CENTRAL (31ST AVE) ALIGNMENT

FIGURE R-2

LEGEND

(1 PPM) = 1 Part Per Million Of Carbon Monoxide

SOURCE: Nebraska Dept Of Roads



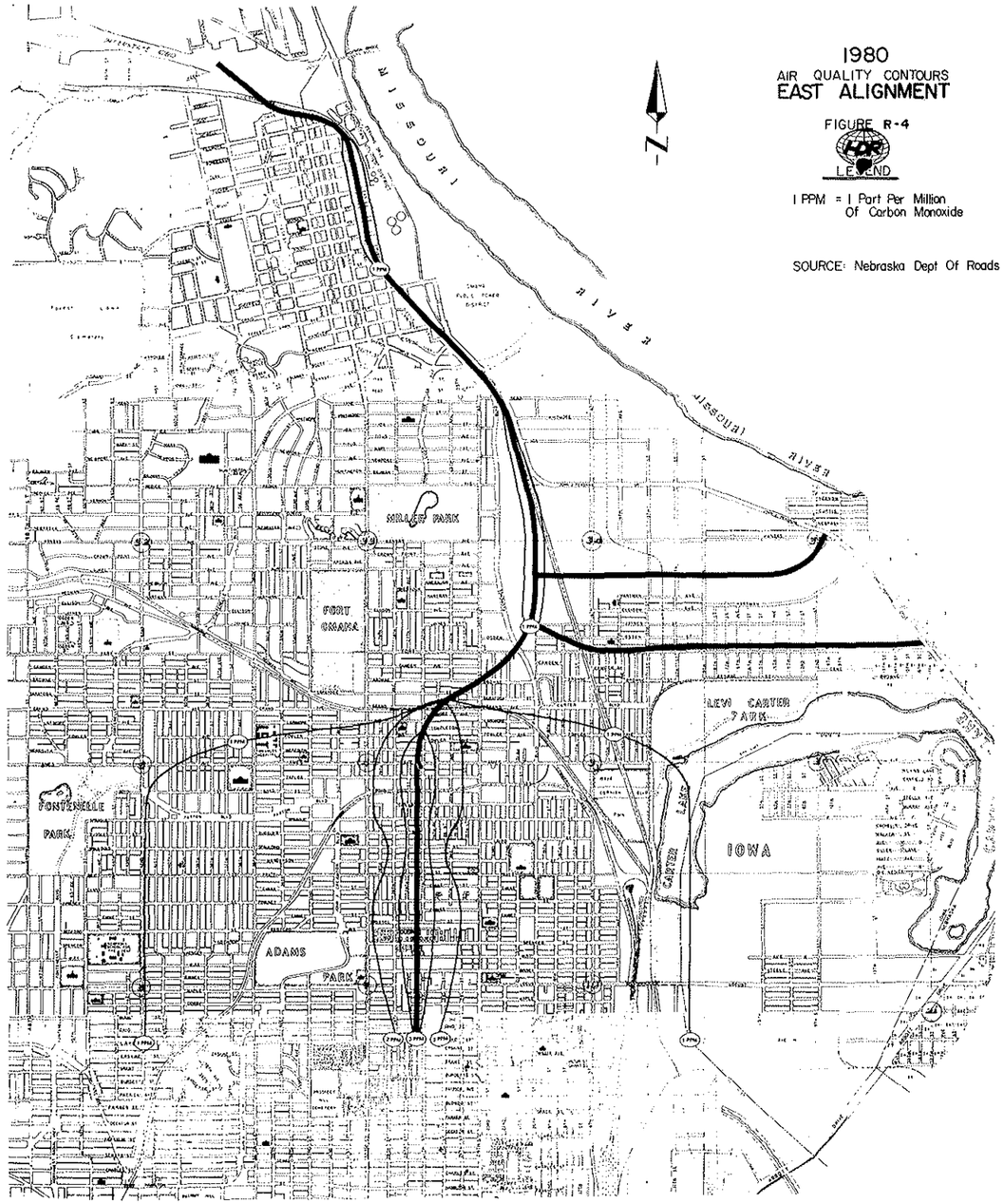
1980
AIR QUALITY CONTOURS
WEST (27TH-28TH) ALIGNMENT

FIGURE R-3

LEGEND

(1 PPM) = 1 Part Per Million Of Carbon Monoxide

SOURCE: Nebraska Dept Of Roads



1980
AIR QUALITY CONTOURS
EAST ALIGNMENT

FIGURE R-4

LEGEND

1 PPM = 1 Part Per Million Of Carbon Monoxide

SOURCE: Nebraska Dept Of Roads

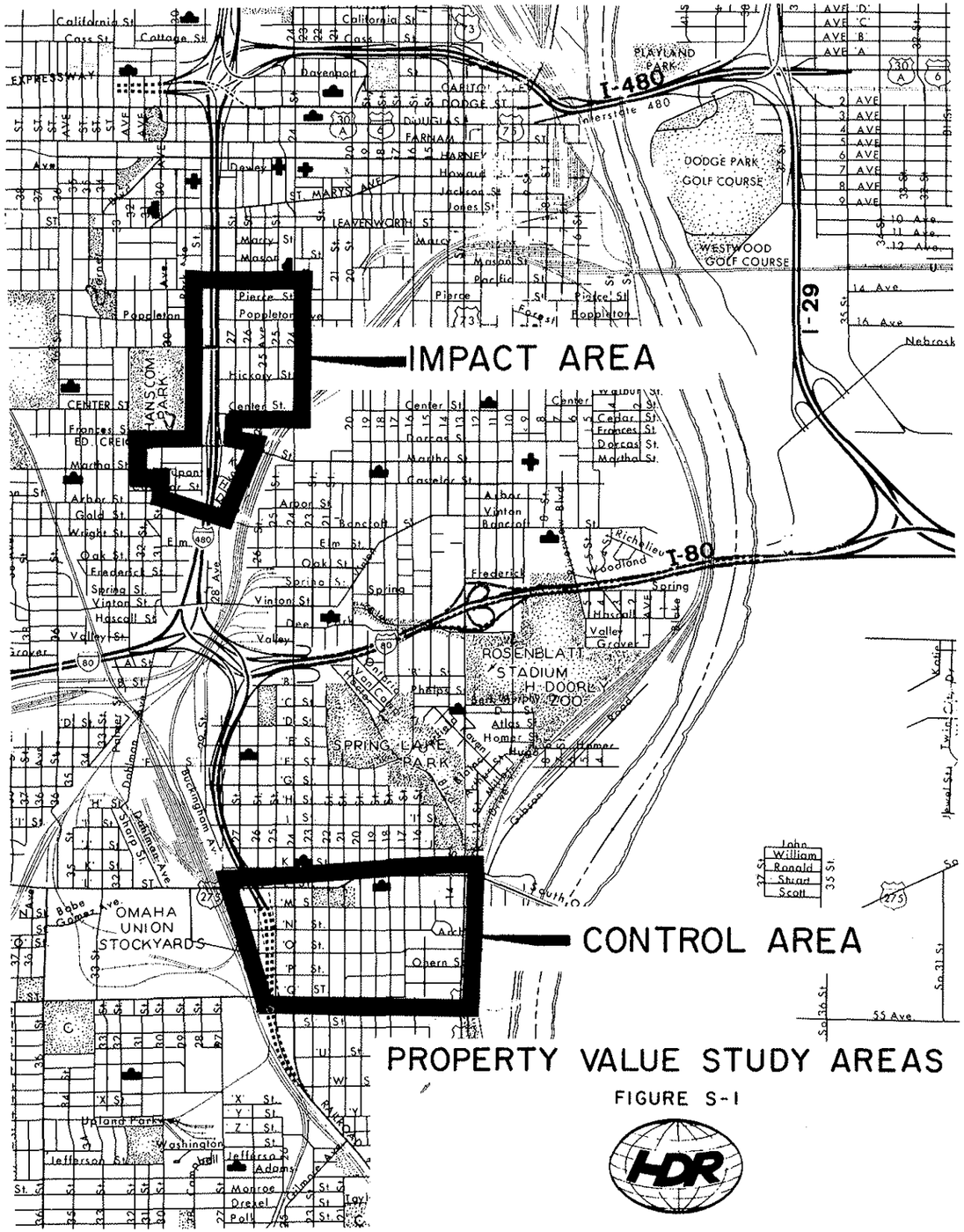
APPENDIX S.

EFFECTS ON TAX BASE AND PROPERTY VALUES

To provide a basis for estimating the likely impact of the North Freeway on property values, a designated area affected by construction of I-480 was analyzed to determine property values before and after the expressway was constructed. A "before expressway/after expressway" comparison was set up for an "impact area" adjacent to I-480 and for a "control area" further removed from the influence of I-480. The impact area abuts I-480 and extends from Bancroft to Pacific Streets (FIGURE S-1). The control area lies between L and Q Streets and between the Missouri River and 26th Street. To provide a before and after comparison, property values were calculated for 1960 and 1974. The growth in property values in the impact and control areas was then examined under the assumption that the differential can be attributed "largely" to the expressway.

Ideally, the control area should be identical in composition and potential to the impact area in the "before and pre-expressway period". Also factors influencing the impact and control areas should be the same throughout the study period with the exception of the freeway influence in the impact area. If these conditions hold, the difference in the property values observed in the two groups over the study period would be attributable to the expressway. Realistically, a matching of control and study areas can never be obtained because of differences initially and over a period of time in zoning, stability of various land uses, and the demographic character of the residents in both areas. Therefore requirements are reduced to assure that control and study areas are reasonably comparable and unlikely to have been affected by factors other than the freeway. In Omaha the impact and control areas (FIGURES S-1 and S-2) are assumed to be comparable, and to display similar characteristics to major parts of the North Omaha Corridor Area.

The impact and control areas coincide closely with census tracts 27 and 33 respectively (FIGURE S-2). In 1960, both census tracts had average housing values of $8,200. But 1970, average housing value for the impact area dropped to $8,100 while it increased to $8,400 for the control area. Nearly 9 out of every 10 housing units were built in 1939 or earlier. Finally, median family incomes lagged behind the Omaha average being $8,261 in the impact area and $8,451 in the control area in 1970. For purposes of comparison, census tracts 3, 6, 7, 10 (representing a major part of the North Omaha Freeway Corridor) had similar housing and income characteristics (FIGURE S-2). In 1960, the average housing value was $8,900 in the corridor tracts and, by 1970, the average value had fallen to $7,857. Nearly 9 out of every 10 housing units were built in 1939 or earlier. Median family income was $7,071 in 1970. In short, all three areas are characterized by low incomes, old housing units, and low housing values. These characteristics of each area are presented both for 1960 and 1970 in TABLES S-1 and S-2.



PROPERTY VALUE STUDY AREAS

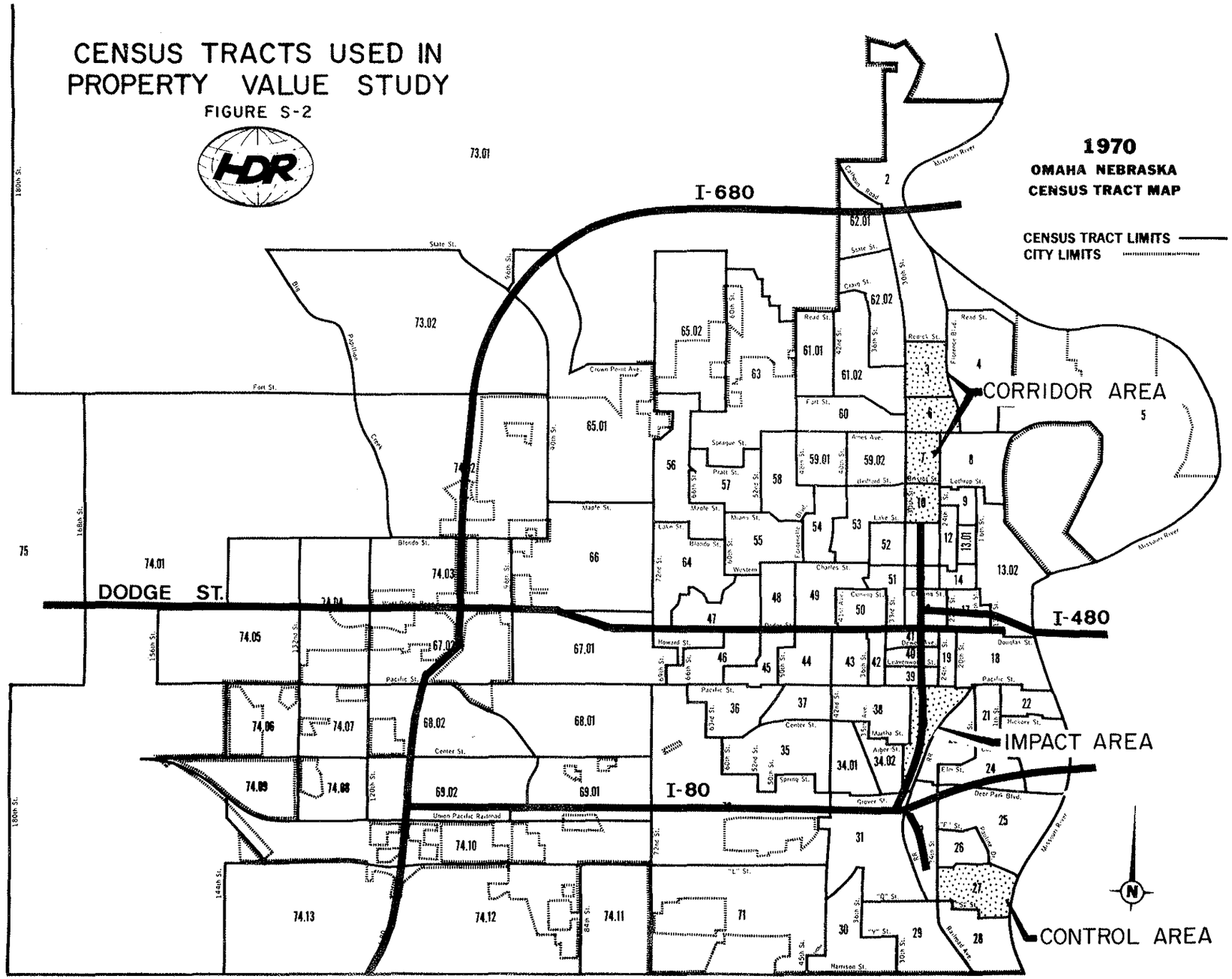
FIGURE S-1

Using census figures limits the comparison of the three areas to owner-occupied units and does not take into account unimproved land or commercial and industrial property. The information most useful for this study would be the records of bona fide sales of each property in each time period. Since this was unavailable, an approximation of actual value (assessed value) of property before and after the expressway was used.

The I-480 freeway between Bancroft and Pacific Streets was completed during the period 1964-1965. Since property values may have been affected before actual construction, the assessed value of property four years prior to building the freeway was used. Therefore, assessment values were examined in 1960 and 1974 (a time of sufficient length before and after the construction period to capture the full freeway effect). Records from the Assessor's office did not break out property by class (residential, commercial and industrial) in 1960. Hence, it was decided to make comparisons at two different levels. First, property values in subdivisions adjacent to the expressway with land zoned for residential use only were compared with subdivisions thus zoned in the control area (TABLES S-3 and S-4). Comparisons were likewise made between subdivisions zoned for residential and commercial land use. These comparisons are presented in TABLE S-5 and S-6.

Findings and Conclusions

The data gathered from the assessors files show that the impact on property values (hence tax revenues) will be different depending on the class of property. In subdivisions zoned for residential use, land value



increased nearly 20 percentage points more in the impact area than in the control area over the period of time 1960-1974. However, residential property improvements actually declined 4 percentage points in the impact area but increased by 19 percentage points in the control area. As a result, total property value increased 16 percentage points more in the control area than in the impact area. The conclusion drawn from this analysis is that the I-480 freeway contributed very little to residential property values — and probably had a negative effect.

On the other hand, when subdivisions zoned for both residential and commercial use are compared, the greatest change in value occurs in the impact area (TABLES S-5 and S-6). In the impact area land values were 41 percentage points over land values in the control area. Improvements were up 11 percentage points and overall total property values were 13 percentage points higher in the impact area than in the control area.

The evidence shows that the impact will be different on different classes of property. If the differences presented herein can be assumed to reflect the effect of the freeway, it is one of perhaps negative impact on residential property. On the other hand, land zoned for commercial and non-residential uses is estimated to receive considerable benefits from an expressway. The overall evidence suggests that property zoned commercial in major portions of the Corridor will be enhanced significantly by the North Freeway.

On this basis, the East Alignment is judged to have the lowest negative impact upon fewer residential properties since it would have a shorter length of residential frontage than the West or Central Alignments, whether or not the Airport Connectors are considered. The Hartman Airport Connector has a less severe impact than the Fort St. Airport Connector in all cases. The impact of the freeway upon commercial property values is considered to be a positive and beneficial one. No distinctions are made between the alternates in this regard.

The reader should note that inferences made in this study are legitimate only for areas having reasonably similar characteristics. In those portions of the corridor that are quite different from the impact and control areas one can speculate that the effect is likely to be different. However, studies in other communities do suggest that property values and hence local tax revenues are enhanced most in those areas where land is located on frontage roads and where land is zoned for commercial rather than residential use.1]

1] "Land Value Impacts of Expressways in Dallas, Houston and San Antonio, Texas" **Highway Research Record** Bulletin 227.
National Research Council, Washington D.C., 1959, pp.50-65.

TABLE S-1

CHARACTERISTICS OF IMPACT AND CONTROL AREAS: 1960-1970

	Control Area (Tract 27)		Impact Area (Tract 33)	
	1960	1970	1960	1970
Housing Units	1,067	1,001	1,541	1,047
Owner occupied	603 (56.5%)	534 (53.3%)	803 (52.1%)	549 (52.4%)
Units Built 1939 or Earlier	974 (91.3%)	879 (87.8%)	1,495 (97.0%)	952 (91.0%)
Median Value of Housing (owner-occupied)	$8,200	$8,400	$8,200	$8,100
Median Family Income	5,663	8,451	5,304	8,261

TABLE S-2

CHARACTERISTICS OF OMAHA AND MAJOR PORTIONS OF FREEWAY CORRIDOR AREA: 1960 and 1970

	Omaha		North Freeway Corridor South of Redick (Tracts: 3, 6, 7 & 10)	
	1960	1970	1960	1970
Housing Units	97,276	117,960	4,457	4,176
Owner Occupied	56,251 (57.8%)	67,136 (56.9%)	2,820 (63.3%)	2,300 (55.1%)
Units Built 1939 or Earlier	67,951 (69.9%)	54,293 (46.0%)	3,970 (89.1%)	3,143 (75.3%)
Median Value of Housing (owner-occupied)	$11,700	$ 14,400	$8,906*	$7,857*
Median Family Income	6,315	10,208	5,565*	7,071*

*Assumes median and mean are equal.

TABLE S-3

IMPACT AREA SUBDIVISIONS WITH PROPERTY ZONED ONLY FOR RESIDENTIAL USE: 1960 and 1974

	1960			1974		
	Land	Improvements	Total	Land	Improvements	Total
Levy's Addition	$ 8,010	$ 47,610	$ 55,620	$ 18,090	$ 57,230	$ 75,320
Scully's Addition	15,670	65,370	81,040	32,050	101,960	134,010
Shull's Addition	10,120	32,380	42,500	17,680	55,160	72,840
Clarks' Place	57,220	315,970	373,190	109,520	264,180	373,700
Arbor Place*	33,870	143,350	177,220	42,310	101,790	144,100
Total	$124,890	$604,680	$729,570	$219,650	$580,320	$799,970
Percentage Change 1960-1974	75.9%	-4.0%	9.7%			

*Arbor Place had a total of $4,170 of Land Zoned Commercial in 1974.

TABLE S-4

CONTROL AREA SUBDIVISIONS WITH PROPERTY ZONED ONLY FOR RESIDENTIAL USE: 1960 and 1974

	1960			1974		
	Land	Improvements	Total	Land	Improvements	Total
Linwood Park	$31,650	$159,850	$191,500	$ 63,570	$233,180	$296,750
Freeman's Addition to South Omaha	5,370	35,230	40,600	13,200	39,350	52,550
Maxwell's Addition to South Omaha	7,020	23,040	30,060	9,490	28,020	37,510
Fairview Addition	14,230	73,290	87,520	16,250	74,100	90,350
Westerfield Addition to South Omaha	17,860	52,580	70,440	20,440	59,180	79,620
Nicholson's Addition to South Omaha	23,000	116,600	139,660	32,035	114,990	147,025
Total	$99,130	$460,650	$559,780	$154,985	$548,820	$703,805
Percentage Change 1960-1974	56.3%	19.1%	25.7%			

TABLE S-5
IMPACT AREA SUBDIVISIONS WITH PROPERTY ZONED FOR RESIDENTIAL AND COMMERCIAL USE: 1960 and 1974

	1960			1974		
	Land	Improvements	Total	Land	Improvements	Total
Dupont Place	$102,490	$498,640	$601,130	$151,010	$468,695	$619,705
Woodlawn Addition	20,750	43,690	64,440	20,490	53,515	74,005
Shull's Addition	87,840	403,320	491,160	138,680	435,375	574,055
Shull's 2nd Addition	367,310	1,737,520	2,104,830	570,660	2,048,915	2,619,575
Shull's 4th Addition	14,020	49,730	63,750	16,610	53,030	69,640
Total	$592,410	$2,732,900	$3,325,310	$897,450	$3,059,530	$3,812,880
Percentage Change 1960-1974	51.5%	12.0%	14.7%			

TABLE S-6
CONTROL AREA SUBDIVISIONS WITH PROPERTY ZONED FOR RESIDENTIAL AND COMMERCIAL USE: 1960 and 1974

	1960			1974		
	Land	Improvements	Total	Land	Improvements	Total
South Omaha 1st Addition	$526,140	$1,554,830	$2,080,970	$522,520	$1,545,430	$2,067,950
McGavocks & O'Keefe Addition	70,620	448,830	519,450	135,340	432,150	567,490
Total	$596,760	$2,003,660	$2,600,420	$657,860	$1,997,580	$2,635,440
Percentage Change 1960-1974	10.2%	1.3%	1.4%			

APPENDIX T.
MAINTENANCE AND OPERATION COSTS

The total cost of a facility cannot be determined until both the initial cost and the continuing operating and maintenance costs have been considered.

MAINTENANCE COSTS

For freeways, such as are being studied here, the major maintenance costs are associated with paved surfaces, bridge, and drainage structure repairs, lighting costs both for maintenance and power, erosion control, snow removal, mowing, and litter control. The magnitude of these costs are dependent on the quantity of the particular items as well as the traffic loads to which the freeway is subjected. Thus a small narrow roadway that carries a low volume of traffic will obviously have lower maintenance cost than a heavily-traveled freeway.

The "Build" alternatives are compared below for their freeway maintenance costs which would be added to the total maintenance dollars to be expended on the street system. Because sufficient data could not be compiled on the individual surface streets to make a meaningful comparison, surface street maintenance costs have been excluded. In general, however, street maintenance costs are proportional to roadway traffic. Therefore, surface street maintenance costs could be expected to be less if a freeway is built because of the shift of much traffic from surface streets to the freeway.

Maintenance costs for various types of facilities and surfacing were obtained from the Public Works Department of the City and from the district engineer for the Nebraska Department of Roads. These unit costs were applied to the various systems being studied and are presented in TABLE T-1. No attempt was made to project costs to future dollars. The values shown are in terms of 1974 summer dollars. The unit costs used in this analysis were based on yearly maintenance cost per lane mile and were $2,900 for hard-surfaced city streets and $2,000 for concrete freeway roadways.

TABLE T-1 indicates that maintenance costs are highest for the East Alignment primarily due to its greater lane mileage in the I-680 interchange. The Central Alignment is the second most expensive section while the West has the lowest maintenance costs.

The Fort Alignment has the lowest maintenance costs of the Airport Connectors except with the East Alignment where the Hartman Route is the least expensive.

With the Central Alignment, the 27th-28th Street Route and the 31st Avenue Route have similar maintenance costs. For the West Alignments, the costs are also similar but comparatively lower than those for the Central.

TABLE T-1
MAINTENANCE COSTS

	Cost in $/Yr.
East Alignment	
With Fort Airport Connector	$110,800
With Hartman Airport Connector	108,400
Central Alignment	
With 27th-28th St. Route and Fort Airport Connector	89,900
With 27th-28th St. Route and Hartman Airport Connector	94,300
With 31st Avenue Route and Fort Airport Connector	89,400
With 31st Avenue Route and Hartman Airport Connector	93,900
West Alignment	
With 27th-28th St. Route and Fort Airport Connector	81,000
With 27th-28th St. Route and Hartman Airport Connector	85,400
With 31st Avenue Route and Fort Airport Connector	84,900
With 31st Avenue Route and Hartman Airport Connector	89,400

OPERATING COSTS

Operating costs consist of the costs to the road user in operating his vehicle on the street system. These costs are a function of the total miles driven, the running speed, the number of stops, the time required enroute, the accident rate and the degree of comfort and convenience.

The problem of finding a comparable basis in order to make an analysis emerged in the operating cost evaluation. Part of the problem arises because traffic data exists for only the major streets in the system. Therefore, the effects of traffic using local streets cannot be included. To overcome this problem, a fixed network of streets common to all alternates and having known traffic patterns was selected for this analysis. The selected streets were those with classifications of Major Street or higher as shown in the current 1995 Transportation Plan.

To this basic network, each of the three freeway corridors were than added to form the three systems analyzed below. For each link in these systems the traffic volume and street capacity were used to compute the 1995 operating speed. This speed was in turn used to compute operating costs 1] per section and the total system cost was then determined.

In conjunction with this cost, the total vehicle mileage of the systems was computed. It was found that the total vehicle mileage varied for the different systems, indicating that the systems have a different "vehicular attraction." Thus, the total operating costs could not be compared for the different systems. To overcome this, the total system operating cost was divided by the total vehicle mileage yielding the average cost per vehicle mile driven in the system. This figure is comparable for all systems studied.

The results of this analysis are shown in TABLE T-2. It is apparent that the West Alignment is the most efficient with an operating cost of $0.1745 per mile. This efficiency is not due to a higher use of the freeway as might be expected as the West Alignment carries a smaller percentage of the system traffic than either the Central or the East Alignments. In this case the increased efficiency seems attributable to a general lessening of congestion throughout the system. The East System was the second most efficient and except for the above mentioned discrepancy is similar to the West. The Central Alignment provides the lowest efficiency of the three systems.

The No Build appears on TABLE T-2 but is not directly comparable to the other systems, within the corridor study area. This is because the performance of the No Build regarding traffic service is so poor that some traffic is forced out of the study area to other major streets (Cuming St., Northwest Radial Highway). Conversely, the North Freeway Alignments likely attract some traffic through the corridor which might otherwise not pass through the corridor. These facts account for the 147,000 to 230,000 difference in daily vehicle-miles travelled within the corridor study area.

Despite the lower vehicle-miles travelled in the study area with the No Build, the operating cost is roughly double that of the Build Alternates, and the total operating cost within the study area is about 40% higher.

The COATS 1995 Interim Transportation Plan, with freeway systems as described above and the No Build Alternative (1974 Existing plus Committed System) were compared with respect to operating costs on the same cost schedule as used above. This analysis showed that all three proposed freeway systems functioned similarly with an equal amount of travel, 12.7 million daily vehicle-miles, at a 31.0 mph average system speed. The operating cost per mile driven would average $0.1004. The No Build System would carry daily 13.2 million vehicle-miles of travel at a 22.8 mph average system speed, yielding an operating cost of $0.1527 per mile traveled.

The No Build Alternative and the three basic Build Alternates were compared on a regional basis as well to determine overall metropolitan area operating costs. The area of comparison in this case is the general urbanized Omaha-Council Bluffs Area, including the eastern two-thirds of Douglas County, the City of Council Bluffs in Pottawattamie County, and a portion of Sarpy County including Papillion and Bellevue.

TABLE T-2

OPERATING COSTS

Area of Comparison	Daily Vehicle Miles Travelled (Miles)	Total Daily Operating Cost ($)	Operating Cost per Vehicle Mile ($/mile)
STUDY AREA			
East Alignment	698,912	129,856	.1859
Central Alignment	616,248	129,803	.2106
West Alignment	684,188	119,396	.1745
No Build	468,804	176,690	.3769
GREATER OMAHA AREA			
East Alignment	12,745,706	1,279,669	.1004
Central Alignment	12,701,671	1,275,248	.1004
West Alignment	12,707,638	1,275,847	.1004
No Build	13,243,555	2,022,291	.1527

Referring to TABLE T-2, it is seen that the Build Alternates function nearly identically, with 12.7 million daily vehicle-miles travelled at an average system speed of 31.0 mph. This yields an operating cost per mile of about $0.10. The No Build system would carry 13.2 million daily vehicle-miles of travel at an average speed of 22.8 mph, yielding an operating cost of about $0.15 per mile.

This figure for the No Build is about 50% higher than the Build Alternates. The difference in total operating cost is nearly $750,000 per day.

This difference would not be as great with a Modified No Build (as discussed in the latter part of APPENDIX E), nor would it be totally erased.

SUMMARY

In terms of Maintenance Costs the East Alignments total about $109,000 per year. The Central Alignments are $17,000 lower, about $92,000 per year. The West Alignments are about $7,000 lower than the Central Alignments, at about $85,000 per year. On this basis the West and Central Alignments have the lowest maintenance costs while the East Alignment is over 15% more costly.

With respect to Operating Costs, the Build Alternates are nearly equivalent both on a corridor and system-wide basis. The No Build incurs considerably greater operating costs.

1] Cost of Vehicle Operation as Related to Speed New Mexico Highway Dept. 5-24-65. Unpublished.

APPENDIX U.

RELOCATION IMPACT

Purpose and Background

This appendix discusses the relocation impact of the North Freeway alignments. Included are: (1) relocation assistance provisions, (2) characteristics of dislocated residents (including the total number of people and households as well as the number of elderly, blacks, and female headed households displaced by each alternative), and (3) residential and non-residential relocation costs. Details of the methodology used to estimate the characteristics of the displaced population, their housing, and the relocation costs are reported at the end of this memorandum.

Relocation assistance for federally funded freeway projects is governed by the Federal Uniform Relocation Assistance and Real Property Acquisition Policy Act of 1970. This law provides for several types of payments to residents. Section 202 (a) provides for payment for actual moving expenses, or for an allowance based on the number of rooms of furniture which may be up to $500 (including a $200 dislocation allowance). Since most moves are local and less than $500, most people choose the allowance.

A displaced owner-occupant is entitled to receive an amount of money equal to the difference between the price the government paid for the home and a "reasonable cost of a comparable replacement dwelling", including increased interest costs and closing costs. But this relocation payment is limited to $15,000 under Section 203.

Tenants, or home owners who do not purchase a replacement home, or those who have not lived in their home for at least 90 days prior to the government's purchase offer, are entitled to a relocation payment equal to the difference between their current rent and the cost of renting an equivalent dwelling unit for a four year period. But this payment is limited to $4,000 under Section 204.

There is an additional option for tenants who wish to purchase a home, but this sum is limited to $4,000 also. Recent experience of the Omaha Housing and Community Development Department on other relocation projects is that approximately 90% of those dislocated retain their status as either owners or renters. This is somewhat higher than reported in recent studies in Texas and Ohio which found that 50% of the displaced tenants became home owners. 1]

The law also states that replacement housing must be "decent, safe, and sanitary" in a no less desirable area "at rents or prices within the financial means of the families and individuals displaced." Requiring "decent, safe, and sanitary" housing has meant that many of those dislocated have upgraded their housing. For example, a recent study of residents displaced by freeways in Texas indicated that almost three-fourths had upgraded their housing. 2]

Section 206 of the law requires that comparable replacement housing be available before the project can proceed to construction. This has been interpreted to mean that the maximum relocation payment under Sections 203 and 204 can be exceeded; it even has been interpreted to mean that new replacement housing may have to be built.

Characteristics of Dislocated Residents

The data presented in TABLES U-1 through U-4 as summarized in TABLE U-5 indicate the extent to which the various freeway alternatives dislocate the residents of the area. If an airport connection is included in the plan, the freeway will dislocate between 1,846 and 3,323 people and between 596 to 1,063 households depending upon the route chosen.

Despite this range, the impact of the various freeway route alternatives upon the black population does not vary significantly with the route. Using 1970 population estimates, the number of blacks that would be dislocated ranges from 1,002 to 1,154. In contrast the impact upon whites varies sharply (by route). The Eastern Alignment using the Hartman Airport Connector will displace 737 whites while the Central Alignment combined with the Fort Street Airport Connector will displace more than three times as many whites (2,270).

1] Jesse L. Buffington, "Economic Consequences of Freeway Displacement to Residents Relocated Under the 1968 and 1970 Relocation Programs," **Transportation Research Record 481** (1974), p.34.

2] **Ibid.,** p.35.

TABLE U-1

RESIDENTIAL DISPLACEMENT: EAST ALIGNMENT

Segment	Location	No. of Dwelling Units	Population	Blacks	Elderly	Female Heads of Household	Average Income
A	Lake-Ames	290	853	801	104	67	$ 6,446
B	Ames-25th	170	603	262	80	28	11,385
Ca	25th-Redick-Fort & 16th	91	275	55	32	9	10,565
Cb	25th-Redick-Hartman & 16th	61	177	46	24	8	10,320
D	Redick-Craig	14	47	—	7	1	13,129
E	Craig-I-680	59	159	—	26	4	13,478
East Alignment Using Fort (A, B, Ca, D, E)		624	1,937	1,118	249	109	9,207
East Alignment Using Hartman (A, B, Cb, D, E)		594	1,839	1,109	241	108	9,113
East & Fort Airport Connector		701	2,161	1,119	281	116	9,256
East & Hartman Airport Connector		596	1,846	1,109	242	108	9,123

TABLE U-2

RESIDENTIAL DISPLACEMENT: CENTRAL ALIGNMENT

Segment	Location	No. of Dwelling Units	Population	Blacks	Elderly	Female Heads of Household	Average Income
Aa	Lake-Ames (31st Ave.)	300	738	673	141	68	$ 8,125
Ab	Lake-Ames (27th-28th)	292	855	797	103	67	6,414
Ba	Ames-Redick (31st Ave.)						
1	Fort & 16th	479	1,614	340	211	64	11,873
2	Hartman & 16th	490	1,625	331	218	64	11,965
Bb	Ames-Redick (27th-28th)						
1	Fort & 16th	478	1,522	342	189	59	11,938
2	Hartman & 16th	497	1,559	343	198	60	12,011
C	Redick-State	202	705	14	60	12	14,844
DE	State-I-680	5	17	—	1	—	15,400
Central Alignment (31st Ave.) Using Fort Airport Connector (Aa, Ba1, C, DE)		986	3,074	1,027 33%	413	144	11,359
Central Alignment (31st Ave.) Using Hartman Airport Connector (Aa, Ba2, C, DE)		997	3,085	1,018 33%	420	144	11,410
Central Alignment (27th-28th) Using Fort Airport Connector (Ab, Bb1, C, DE)		977	3,099	1,153 37%	353	138	10,906
Central Alignment (27th-28th) Using Hartman Airport Connector (Ab, Bb2, C, DE)		996	3,136	1,154 37%	362	139	10,962
Central (31st Ave) and Fort Airport Connector		1,063	3,298	1,028	445	151	11,236
Central (31st Ave.) and Hartman Airport Connector		999	3,092	1,018	421	144	11,411
Central (27th-28th) and Fort Airport Connector		1,054	3,323	1,154	385	145	10,814
Central (27th-28th) and Hartman Airport Connector		998	3,143	1,154	363	139	10,964

TABLE U-3

RESIDENTIAL DISPLACEMENT: WEST ALIGNMENT

Segment	Location	No of Dwelling Units	Population	Blacks	Elderly	Female Heads of Households	Average Income
Aa	Lake-Ames (31st Ave.)	300	738	673	141	68	$ 8,125
Ab	Lake-Ames (27th-28th)	292	855	797	103	67	6,414
Ba	Ames-Fontenelle (31st Ave.)						
1	Fort & 16th	337	1,134	309	158	51	10,953
2	Hartman & 16th	348	1,145	299	166	51	11,111
Bb	Ames-Fontenelle (27th-28th)						
1	Fort & 16th	356	1,108	319	148	47	11,040
2	Hartman & 16th	375	1,144	320	156	48	11,183
C	Fontenelle-Curtis	110	355	18	23	7	13,888
D	Curtis-State	94	329	12	18	4	15,901
EF	State-I-680	4	13	—	1	—	15,400
West Alignment (31st Ave.) Using Fort (Aa, Ba1, C, D, EF)		845	2,569	1,012 39%	341	130	10,902
West Alignment (31st Ave.) Using Hartman (Aa, Ba2, C, D, EF)		856	2,580	1,002 39%	349	130	10,967
West Alignment (27th-28th) Using Fort (Ab, Bb1, C, D, EF)		856	2,660	1,146 43%	293	125	10,382
West Alignment (27th-28th) Using Hartman (Ab, Bb2, C, D, EF)		875	2,696	1,147 43%	301	126	10,457
West (31st Ave.) and Fort Airport Connector		922	2,793	1,013	373	137	10,798
West (31st Ave.) and Hartman Airport Connector		858	2,587	1,002	350	130	10,970
West (27th-28th) and Fort Airport Connector		933	2,884	1,147	325	132	10,322
West (27th-28th) and Hartman Airport Connector		877	2,703	1,147	302	126	10,461

TABLE U-4
RESIDENTIAL DISPLACEMENT: AIRPORT CONNECTORS (16th St.-Abbott)

Segment	No. of Dwelling Units	Population	Blacks	Elderly	Female Heads of Household	Average Income
Hartman	2	7	—	1	—	$12,100
Fort	77	224	1	32	7	9,653

TABLE U-5

RESIDENTIAL DISPLACEMENT: SUMMARY

Alignment	No. of Dwelling Units	Population	Blacks	Elderly	Female Heads of Household	Average Income
East and Fort	701	2,161	1,119	281	116	$ 9,256
Central (31st Ave.) and Fort Airport Connector	1,063	3,298	1,028	445	151	11,236
Central (27th-28th) and Fort Airport Connector	1,054	3,323	1,154	385	145	10,814
West (31st Ave.) and Fort Airport Connector	922	2,793	1,013	373	137	10,798
West (27th-28th) and Fort Airport Connector	933	2,884	1,147	325	132	10,322
East and Hartman Airport Connector	596	1,846	1,109	242	108	9,123
Central (31st Ave.) and Hartman Airport Connector	999	3,092	1,018	421	144	11,411
Central (27th-28th) and Hartman Airport Connector	998	3,143	1,154	363	139	10,964
West (31st Ave.) and Hartman Airport Connector	858	2,587	1,002	350	130	10,970
West (27th-28th) and Hartman Airport Connector	877	2,703	1,147	302	126	10,461

The data in these tables indicate that route alternatives involving the Hartman Airport Connector dislocate fewer people than the Fort Street Connector. This is true for each category of population analyzed — black, elderly, and households headed by a female.

In addition, the data indicate that for each population group except blacks, the East Alignment will dislocate fewer people than the Central or Western alignment. For example, using the Hartman Airport Connector, the East Alignment will displace 1,846 people compared to 2,587 or 2,703 for the West Alignment (depending on whether the Lake to Ames segment runs along 27th-28th Streets or swings over to 31st Avenue) and 3,092 or 3,143 people for the Central Alignment. Similarly fewer elderly and households headed by females will be dislocated by the East Alignment (242 elderly and 108 female-headed households compared to the West Alignment's 302-350 and 126-130, and the Central Alignment's 363-421 elderly and 139-144 female-headed households). This relationship between alignments is also true if the Fort Street Airport Connector is used.

But the fewest blacks will be dislocated by the West Alignment using the 31st Avenue Route between Lake and Grand Streets (where the alternate routes merge).

It should also be noted, however, that average median family income is lowest for the East Alignment using the Hartman Airport Connector ($9,123) — i.e., more families with low incomes are affected by this alignment. Approximately 40% (238-266) of the households dislocated by the East Alignment live on blocks where the median income is below $8,000; this compared to 19-26% (189-272) for the Central Alignment, and 22-29% (189-272) for the West Alignment.

TABLE U-6

RESIDENTIAL RELOCATION AND MOVING COSTS: EAST ALIGNMENT

Segment	Location	UNITS Total	Homes at Legal Max.	Rentals at Legal Max.	COSTS Relocation	Moving	Total
A	Lake-Ames	290	140	136	$2,750,120	$124,180	$2,874,300
B	Ames-25th	170	70	41	1,913,726	75,560	1,989,286
Ba	25th-Redick-Fort & 16th	91	14	18	808,018	36,880	844,989
Ca	25th-Redick-Hartman & 16th	61	6	16	480,336	24,400	504,736
D	Redick-Craig	14	9	—	199,510	6,300	205,810
E	Craig-I-680	59	20	—	513,379	23,530	536,909
East Alignment Using Fort (A, B, Ca, D, E)		624	253	195	6,184,753	266,450	6,451,203
East Alignment Using Hartman (A, B, Cb, D, E,)		594	245	193	5,857,071	253,970	6,111,041
East and Fort Airport Connector		701	269	223	6,861,479	297,310	7,158,789
East and Hartman Airport Connector		596	245	193	5,886,271	254,810	6,141,081

Residential Relocation Costs

The data in TABLES U-6 through U-9 as summarized in TABLE U-10 indicate that the East Alignment involves the least residential relocation and moving expenses, while the Central Alignment is the most expensive. It also shows that the Hartman Airport Connector has less residential relocation and moving expenses than does the Fort Street Airport Connector. The cheapest route with respect to relocation costs, therefore, is the East Alignment using the Hartman Airport Connector; residential relocation and moving expenses for that route totals $6.1 million compared to $8.0 million and $8.3 million for the West Alignment using the 31st Avenue and 27th-28th Street Routings respectively, and $8.8 million and $9.0 million respectively for the two Central Alignment alternatives. The costs for residential relocation and moving for the alternatives using the Fort Street Airport Connector show a similar relationship. The East Alignment is cheapest ($7.2 million) compared to the West ($8.7 million or $9.0 million) and the Central ($9.6 million or $9.7 million).

These costs do not include the cost of relocation assistance (information, counseling, and other services) which is currently estimated at approximately $250 per case. This could add up to $250,000 to relocation costs, should this responsibility be contracted to a local government agency at current costs.

The tables also indicate the number of units that were calculated at the maximum relocation allowance permitted under Sections 203 and 204 ($15,000 for owner-occupied units and $4,000 for rental units). These data provide an indicator of the potential increased costs, under Section 206. Final relocation costs cannot be determined without conducting a detailed study involving each family's relocation needs and the actual availability of replacement housing at the time of relocation.

TABLE U-7

RESIDENTIAL RELOCATION AND MOVING COSTS: CENTRAL ALIGNMENT

		UNITS			COSTS		
Segment	**Location**	**Total**	**Homes at Legal Max.**	**Rentals at Legal Max.**	**Relocation**	**Moving**	**Total**
Aa	Lake-Ames (31st Ave.)	300	121	138	$2,574,066	$127,050	$2,701,116
Ab	Lakes-Ames (27th-28th)	292	140	138	2,761,425	124,900	2,886,325
Ba	Ames-Redick (31st Ave.)						
1	Fort & 16th 1]	479	128	103	4,519,335	205,020	4,724,355
2	Hartman & 16th 2]	490	124	107	4,446,372	209,690	4,656,062
Bb	Ames-Redick (27th-28th)						
1	Fort & 16th 3]	478	105	113	4,408,168	203,370	4,611,538
2	Hartman & 16th 4]	497	105	119	4,418,584	211,480	4,630,064
C	Redick-State	202	2	7	1,330,187	88,580	1,418,767
DE	State-I-680	5	1	2	34,992	2,350	37,342
Central Alignment (31st Ave.) Using Fort (Aa, Ba1, C, DE)		986	252	250	8,458,580	423,000	8,881,580
Central Alignment (31st Ave.) Using Hartman (Aa, Ba2, C, DE)		997	248	254	8,385,617	427,670	8,813,287
Central Alignment (27th-28th) Using Fort (Ab, Bb1, C, DE)		977	248	260	8,534,772	419,200	8,953,972
Central Alignment (27th-28th) Using Hartman (Ab, Bb2, C, DE)		996	248	266	8,545,188	427,310	8,972,498
Central (31st Ave.) and Fort Airport Connector		1,063	268	278	9,135,306	453,860	9,589,166
Central (31st Ave.) and Hartman Airport Connector		999	248	254	8,414,817	428,510	8,843,327
Central (27th-28th) and Fort Airport Connector		1,054	264	288	9,211,498	450,060	9,661,558
Central (27th-28th) and Hartman Airport Connector		998	248	266	8,574,388	428,150	9,002,538

1] Section from N. Freeway at 30th to Fort at 16th represents Airport Connector and involves 189 units and $2,003,685 total costs.

2] Section from N. Freeway at 30th to Hartman at 16th represents Airport Connector and involves 200 units and $1,935,392 total costs.

3] Section from N. Freeway at 24th to Fort at 16th represents Airport Connector and involves 67 units and $594,568 total costs.

4] Section from N. Freeway at 24th to Hartman at 16th represents Airport Connector and involves 86 units and $613,094 total costs.

TABLE U-8

RESIDENTIAL RELOCATION AND MOVING COSTS: WEST ALIGNMENT

		UNITS			COSTS		
Segment	Location	Total	Homes at Legal Max.	Rentals at Legal Max.	Relocation	Moving	Total
Aa	Lake-Ames (31st Ave.)	300	121	138	$2,574,066	$127,050	$2,701,116
Ab	Lake-Ames (27th-28th)	292	140	138	2,761,425	124,900	2,886,325
Ba	Ames-Fontenelle (31st Ave.)						
1	Fort & 16th 1]	337	117	70	3,463,365	144,470	3,607,835
2	Hartman & 16th 2]	348	113	74	3,390,402	154,130	3,544,532
Bb	Ames-Fontenelle (27th-28th)						
1	Fort & 16th 3]	356	111	92	3,551,436	139,480	3,690,916
2	Hartman & 16th 4]	375	111	98	3,561,852	159,880	3,721,732
C	Fontenelle-Curtis	110	9	13	874,781	47,200	921,981
D	Curtis-State	94	5	2	707,884	40,520	748,404
EF	State-I-680	4	—	1	17,992	1,830	19,822
West Alignment (31st Ave.) Using Fort (Aa, Ba1, C, D, EF)		845	252	224	7,638,088	361,070	7,999,158
West Alignment (31st Ave.) Using Hartman (Aa, Ba2, C, D, EF)		856	248	228	7,565,125	365,740	7,930,865
West Alignment (27th-28th) Using Fort (Ab, Bb1, C, D, EF)		856	265	246	7,913,518	366,220	8,279,738
West Alignment (27th-28th) Using Hartman (Ab, Bb2, C, D, EF)		875	265	252	7,923,934	374,330	8,298,264
West (31st Ave.) and Fort Airport Connector		922	268	252	8,315,814	391,930	8,706,744
West 31st Ave.) and Hartman Airport Connector		858	248	228	7,594,325	366,580	7,960,905
West (27th-28th) and Fort Airport Connector		933	281	274	8,590,244	397,080	8,987,324
West (27th-28th) and Hartman Airport Connector		877	265	252	7,953,134	375,170	8,328,304

1] See Footnote 1 on TABLE U-7
2] See Footnote 2 on TABLE U-7
3] See Footnote 3 on TABLE U-7
4] See Footnote 4 on TABLE U-7

TABLE U-9

RESIDENTIAL RELOCATION AND MOVING COSTS: AIRPORT CONNECTORS (16th Street-Abbott)

	UNITS			COSTS		
Segment	Total	Homes at Legal Max.	Rentals at Legal Max.	Relocation	Moving	Total
Hartman 1]	2	—	—	$ 29,200	$ 840	$ 30,040
Fort 2]	77	16	28	676,726	30,860	707,586

1] See Footnotes 2 and 4 on either TABLE U-7 or U-8
2] See Footnotes 1 and 3 on either TABLE U-7 or U-8

TABLE U-10

RESIDENTIAL RELOCATION AND MOVING COSTS: SUMMARY

	UNITS			COSTS		
Alignment	Total	Homes at Legal Max.	Rentals at Legal Max.	Relocation	Moving	Total
East and Fort Airport Connector	701	269	223	$6,861,479	297,310	$7,158,789
Central (31st Ave.) and Fort Airport Connector	1,063	268	278	9,135,306	453,860	9,589,166
Central (27th-28th) and Fort Airport Connector	1,054	264	288	9,211,498	450,060	9,661,558
West (31st Ave.) and Fort Airport Connector	922	268	252	8,314,814	391,930	8,706,744
West (27th-28th) and Fort Airport Connector	933	281	274	8,590,244	397,080	8,987,324
East and Hartman Airport Connector	596	245	193	5,886,271	254,810	6,141,081
Central (31st Ave.) and Hartman Airport Connector	999	248	254	8,414,817	428,510	8,843,327
Central (27th-28th) and Hartman Airport Connector	998	248	266	8,574,388	428,150	9,002,538
West (31st Ave.) and Hartman Airport Connector	858	248	228	7,594,325	366,580	7,960,905
West (27th-28th) and Hartman Airport Connector	877	265	252	7,953,134	375,170	8,328,304

It should be noted, however, that the actual relocation expenses could be less than calculated in this analysis — for example a number of people might accept smaller replacement units because they own homes that are too large for their needs (e.g., their family circumstances have changed with children moving away or spouse deceased). In addition, recent experience in Omaha has indicated that some relocation housing may be available at costs below the guideline averages.

Nevertheless, the data suggest that there will be a need for increased subsidized housing if replacement dwellings are to be found within the requirements imposed by the Uniform Relocation Assistance and Real Property Acquisition Policy Act of 1970.

The size and tenure of the dwelling units (i.e., owner-occupied or rented) that would be displaced are indicated in TABLES U-11 through U-14 and summarized in TABLE U-15. The data utilize the average size for owner-occupied and tenant occupied dwellings for the census blocks affected by the freeway right-of-way. For example, the West Alignment (using the 27th-28th Street Route and including the Hartman Airport Connector) will displace eight owners from blocks in which the average size of owner occupied housing units was four rooms; similarly it will displace 221 homeowners from blocks in which the average size of housing units was five rooms, 259 where the average was six rooms, and 41 from seven-room average blocks. In addition, it will displace 205 tenants from blocks in which the average size of tenant occupied housing units was four rooms, another 107 tenants from five-room average blocks, and 12 from six-room average blocks.

TABLE U-11

HOUSING NEEDS CREATED BY FREEWAY DISPLACEMENT: EAST ALIGNMENT

		OWNER-OCCUPIED							RENTED						
			Number of Rooms						Number of Rooms						
Segment	Location	Total	3	4	5	6	7	Total	3	4	5	6	7	Total
A	Lake-Ames	290	—	—	—	113	34	147	—	113	30	—	—	143
B	Ames-25th	170	—	—	23	91	8	122	—	13	23	12	—	48
Ca	25th-Redick-Fort & 16th	91	—	1	37	11	6	55	—	33	3	—	—	36
Cb	25th-Redick-Hartman & 16th	61	—	1	15	9	6	31	—	28	2	—	—	30
D	Redick-Craig	14	—	—	8	—	6	14	—	—	—	—	—	—
E	Craig-I-680	59	3	4	15	17	1	40	16	3	—	—	—	19
East Alignment Using Fort (A, B, Ca, D, E)		624	3	5	83	232	55	378	16	162	56	12	—	246
East Alignment Using Hartman (A, B, Cb, D, E)		594	3	5	61	230	55	354	16	157	55	12	—	240
East and Fort Airport Connector		701	7	23	110	234	55	429	16	175	69	12		272
East and Hartman Airport Connector		596	3	5	63	230	55	356	16	157	55	12	—	240

TABLE U-12

HOUSING NEEDS CREATED BY FREEWAY DISPLACEMENT: CENTRAL ALIGNMENT

		OWNER-OCCUPIED							RENTED						
			Number of Rooms						Number of Rooms						
Segment	Location	Total	3	4	5	6	7+	Total	3	4	5	6	7+	Total
Aa	Lake-Ames (31st Ave.)	300	—	14	23	123	—	160	—	92	39	6	3	140
Ab	Lake-Ames (27th-28th)	292	—	—	—	113	34	147	—	116	29	—	—	145
Ba	Ames-Redick (31st Ave.)													
1	Fort & 16th	479	—	22	162	114	26	324	—	54	78	23	—	155
2	Hartman & 16th	490*	—	17	151	113	31	312	—	55	76	23	—	154
Bb	Ames-Redick (27th-28th)													
1	Fort & 16th	478	—	25	140	153	1	319	—	59	86	14	—	159
2	Hartman & 16th	497*	—	20	130	156	6	312	—	62	85	14	—	161
C	Redick-State	202	—	—	97	78	7	182	—	6	5	9	—	20
DE	State-I-680	5	—	—	—	1	2	3	—	—	1	—	1	2
Central Alignment (31st Ave.) Using Fort (Aa, Ba1, C, DE)		986	—	36	282	316	35	669	—	152	123	38	4	317
Central Alignment (31st Ave.) Using Hartman (Aa, Ba2, C, DE)		997*	—	31	271	315	40	657	—	153	121	38	4	316
Central Alignment (27th-28th) Using Fort (Ab, Bb1, C, DE)		977	—	25	237	345	44	651	—	181	121	23	1	326
Central Alignment (27th-28th) Using Hartman (Ab, Bb2, C, DE)		996*	—	20	227	348	49	644	—	184	120	23	1	328
Central (31st Ave.) and Fort Airport Connector		1,063	4	54	309	318	35	720	—	165	136	38	4	343
Central (31st Ave.) and Hartman Airport Connector		999*	—	31	273	315	40	659	—	153	121	38	4	316
Central (27th-28th) and Fort Airport Connector		1,054	4	43	264	347	44	702	—	194	134	23	1	352
Central (27th-28th) and Hartman Airport Connector		998*	—	20	229	348	49	646	—	184	120	23	1	328

* Includes 24 mobile homes not otherwise included in this table.

TABLE U-13

HOUSING NEEDS CREATED BY FREEWAY DISPLACEMENT: WEST ALIGNMENT

Segment	Location	OWNER-OCCUPIED Total	Number of Rooms 3	4	5	6	7	RENTED Total	Number of Rooms 3	4	5	6	7	Total
Aa	Lake-Ames (31st Ave.)	300	—	14	23	123	—	160	—	92	39	6	3	140
Ab	Lake-Ames (27th-28th)	292	—	—	—	113	34	147	—	116	29	—	—	145
Ba	Ames-Fontenelle (31st Ave.)													
1	Fort & 16th	337	—	9	114	76	25	224	—	57	38	18	—	113
2	Hartman & 16th	348*	—	5	103	75	30	213	—	57	36	18	—	111
Bb	Ames-Fontenelle (27th-28th)													
1	Fort & 16th	356	—	9	102	115	1	227	—	65	52	12	—	129
2	Hartman & 16th	375*	—	5	92	118	6	221	—	67	51	12	—	130
C	Fontenelle-Curtis	110	—	3	66	—	—	69	—	22	19	—	—	41
D	Curtis-State	94	—	—	61	26	—	87	—	—	7	—	—	7
EF	State-I-680	4	—	—	—	2	1	3	—	1	—	—	—	1
West Alignment (31st Ave.) Using Fort (Aa, Ba1, C, D, EF)		845	—	26	264	227	26	543	—	171	104	24	3	302
West Alignment (31st Ave.) Using Hartman (Aa, Ba2, C, D, EF)		856*	—	22	253	226	31	532	—	171	102	24	3	300
West Alignment (27th-28th) Using Fort (Ab, Bb1, C, D, EF)		856	—	12	229	256	36	533	—	203	108	12	—	323
West Alignment (27th-28th) Using Hartman (Ab, Bb2, C, D, EF)		~~875*~~ 877	—	8	~~219~~ 221	259	41	527	—	205	107	12	—	324
West (31st Ave) and Fort Airport Connector		922	4	26	282	254	28	594	—	171	117	37	3	328
West (31st Ave.) and Hartman Airport Connector		858*	—	22	255	226	31	534	—	171	102	24	3	300
West (27th-28th) and Fort Airport Connector		933	4	30	256	258	36	584	—	216	121	12	—	349
West (27th-28th) and Hartman Airport Connector		877*	—	8	221	259	41	529	—	205	107	12	—	324

* Includes 24 mobile homes not otherwise included in this table.

TABLE U-14

HOUSING NEEDS CREATED BY FREEWAY DISPLACEMENT: AIRPORT CONNECTORS (16th Street-Abbott)

Segment	OWNER-OCCUPIED Total	Number of Rooms 3	4	5	6	7	RENTED Total	Number of Rooms 3	4	5	6	7	Total
Hartman	2	—	—	2	—	—	2	—	—	—	—	—	—
Fort	77	4	18	27	2	—	51	—	13	13	—	—	26

Even though these data reflect the average size of the units on a census block, there is still a considerable range of sizes that will be displaced by each freeway route. Each freeway route will require four-, five-, six- and seven-room houses as replacement housing. Although owner occupied housing is more likely to be five and six rooms, while rented housing is more likely to four and five rooms.

TABLE U-15 also presents data on the availability of replacement housing in these categories. The data are from the 1970 Census and represent vacant units that were for sale or rent at the time of the enumeration. It indicates that in 1970, at least, there were sufficient three-room, four-room, and seven-room houses in Omaha to accommodate the displaced homeowners (if we assume that the homes taken are the same size as the average home on the census block). But regardless of the route, the number of vacant six-room houses was less than the number of owners displaced from six-room houses; and the number of five-room houses available was adequate only for the East Alignments, and the West Alignment using the 27th-28th Street Route with the Hartman Airport Connector. But since freeway construction would be phased over a number of years, not all replacement units would be needed at once. Current availability of replacement housing is not a crucial factor in this analysis of impact.

The data also indicate that there are enough vacant rental housing units with adequate distribution of size to accommodate tenants displaced by each of the freeway routes.

It should be noted, however, that some of the available housing listed in the 1970 census exceeded current guideline costs. Data on the geographical distribution of vacant housing units, drawn from a recent study of housing in the Riverfront area, indicate that approximately 30% of the vacancies in the Douglas County area occurred in the four housing sub-areas affected by the North Freeway, and an additional 21% occurred in four sub-areas contiguous to this area. 3] But the location of these units may not be a critical consideration since the survey of North Freeway residents also indicated that only one-fifth (19%) indicated a preference for relocation within the same neighborhood (35% said they preferred location elsewhere and 46% indicated they had no opinion). 4]

Relocation efforts take place within the housing market, and a sudden influx of potential buyers (or renters) because of the relocation of residents of even a segment of the freeway can distort the price of replacement housing (e.g. the Lake to Ames segment will displace approximately 300 families). Special note should be taken that the East Alignment and the 27th-28th Street routing of the Central and West alignments will displace 57 units of public housing owned by the Omaha Housing Authority at Spencer Homes. The 31st Avenue Routing of the Central and West alignments will take 64 units in this development.

3] Data recalculated from Center for Applied Urban Research, **Housing and Community Development in the Nebraska-Iowa Riverfront Development Project Area, 1973.** (Omaha, 1973), pp.31-61.

4] See APPENDIX B.

TABLE U-15

HOUSING NEEDS AND AVAILABILITY*: SUMMARY

Alignment	Total	OWNER-OCCUPIED Number of Rooms 3	4	5	6	7+	Total	RENTED Number of Rooms 3	4	5	6	7+	Total
Eastern and Fort Airport Connector	701	7	23	110	234	55	429	16	175	69	12	—	272
Central (31st Ave.) and Fort Airport Connector	1,063	4	54	309	318	35	720	—	165	136	38	4	343
Central (27th-28th) and Fort Airport Connector	1,054	4	43	264	347	44	702	—	194	134	23	1	352
Western (31st Ave.) and Fort Airport Connector	922	4	26	282	254	28	594	—	171	117	37	3	328
Western (27th-28th) and Fort Airport Connector	933	4	30	256	258	36	584	—	216	121	12	—	349
Eastern and Hartman Airport Connector	596	3	5	63	230	55	356	16	157	55	12	—	240
Central (31st Ave.) and Hartman Airport Connector	999**	—	31	273	315	40	659	—	153	121	38	4	316
Central (27th-28th) and Hartman Airport Connector	998**	—	20	229	348	49	646	—	184	120	23	1	328
Western (31st Ave.) and Hartman Airport Connector	858**	—	22	255	226	31	534	—	171	102	24	3	300
Western (27th-28th) and Hartman Airport Connector	877**	—	8	221	259	41	529	—	205	107	12	—	324
Housing Units Available	4,114	57***	109	226	108	226	726	1,199	1,018	729	280	162	3,388

* Source for availability data: U.S. Bureau of Census, **Metropolitan Housing Characteristics, Table C-9.**

** Includes 24 mobile homes not otherwise included in this table.

*** Includes 1-3 room units.

Non-Residential Relocation Expenses

Relocation assistance payments are also provided for non-residential properties. Businessmen are entitled to their actual moving expenses, or if they decide not to continue their business, they are entitled to a payment equal to their average annual net income for the previous two years, with a maximum payment of $10,000. For purposes of this analysis, all non-residential property (including several churches) were assumed to be relocating. At the request of the Center for Applied Urban Research, the Relocation Section of the Omaha Housing and Community Development Department made preliminary estimates of the moving expenses for each of the non-residential properties and these are used in this analysis.

These estimates are shown only for an entire route alternative rather than by route segment because of the small number of properties involved. TABLE U-16 indicates that the East Alignments have the lowest non-residential relocation costs; since they also have the lowest residential relocation costs, the differential between the East Alignments and the other freeway alternatives becomes larger. Using the Hartman Airport Connector as an example, the East Alignment's total relocation cost is $6.5 million compared to $8.5 million for the West Alignment and $9.4 million for the Central Alignment (using the less expensive 31st Avenue Routing).

Conclusions

This analysis of the relocation impact of the North Freeway alternatives has focused upon the three major route alternatives, which when combined with two airport connections and two routes for the southern section involves ten route alternatives.

But still another option exists — that of not building the freeway. Although this option has been omitted from all tables and the previous text in this report, it clearly has the least relocation impact and cost, although a Modified No Build could possibly introduce relocations with any extensive street widenings.

Aside from the zero relocation impact of the No Build option, the data presented here can be summarized as follows:

- The Hartman Airport Connector has less relocation cost and impact than the Fort Street Airport Connector.

• The East Alignment has less relocation cost and impact than the West or Central Alignment.

• The East Alignment using the Hartman Connector displaces 596 dwelling units with approximately 1,846 people. Of this, 1,109 are black, 242 are elderly, and there are 108 households headed by a female. In contrast the West Alignment will displace approximately 262 to 281 more units with 741 to 857 more people, 60 to 108 more elderly, and 18 to 22 more female-headed households depending on whether the 27th-28th Street routing is used below Ames or the 31st Avenue route is used. Using 1970 population data, the 31st Avenue Route will displace fewer blacks than the East Alignment (or the 27th-28th Street routes) — but the western expansion of the black neighborhood since 1970 brings this conclusion into doubt.

• The Central Alignment involves the most displacement. Using the Hartman Airport Connector, the Central Alignment will displace almost 1,000 families with approximately 3,100 people, of whom 1,018 to 1,154 are black, 363 to 421 are elderly, and 139 to 144 are females who head a household.

• Relocation costs reflect this. Total relocation and moving costs vary from $6.5 million for the East Alignment combined with the Hartman Airport Connector, compared to $8.5 million or $8.8 million for the West Alignment and $9.4 million or $9.5 million for the Central Alignment. Use of the Fort Street Airport Connector raises these costs to $7.6 million (East), $9.3 million or $9.5 million (West), and $10.2 million (Central.)

Additional relocation costs may be incurred under Section 206 of the Federal Uniform Relocation Assistance Act which has been interpreted to permit larger payments than stated elsewhere in the Act and used in the preceeding analysis. For example, on the East Alignment using the Hartman Airport Connector relocation payments were calculated at the maximums allowed in Sections 203 and 204 for 438 families or 73%; on the West Alignment it ranged from 476 to 517 families and on the Central Alignment it was 502 to 514 (more than half of those dislocated). Some of those dislocated will be faced with increased expenses not covered under the Federal or State relocation assistance laws (e.g. payments to renters are limited to 4 years, and under Nebraska state law increased property taxes are covered for only the first 3 years). This suggests the need for subsidized housing, especially when the number of lower income families are considered (approximately 40% of the families displaced by the East Alignment live on blocks in which the median income is below $8,000). In addition, some public housing is taken by each of the freeway alignment alternatives.

• If the 1970 vacancies exist currently, it would be sufficient for the replacement housing needed — with the exception of a shortage of six-room homes for sale and five-room homes (except on the East Alignments and the West (27th-28th) Alignment — including the Hartman Airport Connector, where the replacement demand is less than the 1970 supply). But whether these homes meet the requirement for "decent, safe, and sanitary" housing is unknown, although there are grounds for pessimism (e.g., many of the vacancies are in areas with older home stock). Approximately half of the 1970 vacancies are within the North Freeway Area or adjacent neighborhoods (but only a small portion of residents expressed a desire to relocate within their same neighborhood).

This summary must also note several methodological limitations. The actual impact (in terms of costs and consequences) of the freeway alternatives may differ from those presented here for several reasons. This analysis relied on aggregate data, in many instances (e.g., characteristics of the population and the size of the dwelling units were based on data for the entire census block rather than on the actual units to be displaced). It also used a variety of estimates — e.g., averages (for income and rent), guidelines (for replacement costs), and samples (the market value was based on multipliers developed from a sampling of properties by one realtor). In addition the North Freeway Area is dynamic. The situations at the time of the collection of the original data, at the time of this analysis, at the time of the decision concerning the freeway alternatives, and at the time the relocation program begins are different.

TABLE U-16

NON-RESIDENTIAL AND TOTAL RELOCATION COSTS: SUMMARY

Segment Location	Non-Residential	Residential	Total
East and Fort Airport Connector	$402,750	$7,158,789	$ 7,561,539
Central (31st Ave.) and Fort Airport Connector	600,200	9,589,166	10,189,366
Central (27th-28th) and Fort Airport Connector	498,000	9,661,558	10,159,558
West (31st Ave.) and Fort Airport Connector	574,200	8,706,744	9,280,944
West (27th-28th) and Fort Airport Connector	483,000	8,987,324	9,470,324
East and Hartman Airport Connector	336,200	6,141,081	6,477,281
Central (31st Ave.) and Hartman Airport Connector	590,450	8,843,327	9,433,777
Central (27th-28th) and Hartman Airport Connector	508,500	9,002,538	9,511,038
West (31st Ave.) and Hartman Airport Connector	564,450	7,960,905	8,525,355
West (27th-28th) and Hartman Airport Connector	493,500	8,328,304	8,821,804

Methodology and Operational Definitions

1. **Number of Dwelling Units Taken**

Routes of freeways were plotted on cadastral maps. Tax Assessors' records were than checked to determine whether the lots were vacant or whether they had improvements on them. Vacant lots, exempt property, commercial, and industrial property as noted in their records were listed, as well as whether the lot was zoned for single family or multiple residence. The number of units in a multiple dwelling was determined by checking the address in **Polk's City Directory** and **Northwestern Bell's Street Address Telephone Directory for Omaha.**

2. **Value of Home**

The value of the home as listed in the Tax Assessors' records was multiplied by a factor based on the ratio of current market value to assessed value. Current market value was based on sample of properties in 19 locations distributed along the routes. The representativeness of the sample of properties was based on examination of the value of homes on the block chosen as listed in the 1970 Census compared to that value for adjacent blocks. The market value was determined by the Mid City Business and Professional Association from the North Omaha area. These ratios were then clustered based on similarity and geographic proximity and an average multiplier for these areas was used. On this basis seven multipliers were used: 1.62 for property south of Ames; 1.52 for properties between Ames and Fort/Florence; 1.59 for the Fort and Hartman connectors and for the sparsely settled area south of the bluff on the East Alignment (approximately Ida Street); 1.15 for the East Alignment north of this point; 1.29 for property from Ames to 42nd Street, south of the railroad; 1.07 for property north of the railroad and west of Fontenelle to Redick on West Alignment; and 1.35 for the Central Alignment north of the railroad, and for the West Alignment north of Redick. The higher multiplier (1.62) south of Ames may be due to the fact that a special re-assessment lowering the assessed values had taken place in this area during 1973. Official assessments as of December 1973 were used as the base. It should be noted that actual acquisition and relocation costs are based on market value at the time of purchase.

3. **Number of Rooms**

This information was needed for the analysis of relocation costs in order to determine the size of replacement housing required. The same size (in terms of rooms) dwelling unit were used for both acquisition and replacement. Under the Relocation Act, this need not be so. A family is entitled to be relocated in a dwelling unit deemed large enough to accommodate his family, but no person has to move to a smaller home (i.e., a family living in crowded conditions must be relocated to a larger dwelling unit, but a person with more space than necessary — for example a widow living in a large home — cannot be forced into a smaller unit). The data on room size was taken from the 1970 Census which gives the average number of rooms for owner-occupied housing units and for renter-occupied units for census blocks. Averages are available for most, but not all blocks, since averages are not calculated when there are less than five units on a block. Where data were unavailable, the average of the averages for contiguous blocks was used (this circle of contiguous blocks was expanded in a similar fashion if data was still not reported). The use of average size on a census block, assumes that all homes on the block can be considered the same; but since the homes on a block usually vary in value, it is unlikely that all homes on a block are the identical size. Although this assumption is realistic for calculations of relocation cost, it is less useful in determing the actual impact of the freeway alternatives on the housing market.

4. **Replacement Costs**

These costs were derived from the current "Guideform Schedule of Average Prices of Comparable Sales Housing in Locality" used by the Omaha Housing and Community Development Department in its relocation work. The guideline provides an average price (the mean for a range of prices) for homes of different bedroom size and square footage. Each home was assumed to be a unit of medium size; the number of bedrooms was assumed to be two less than the total number of rooms listed as the average number of rooms for units on the census block. This official guideline is based on market value as gathered from the multiple listing service, two large realtors who are not members of this service, and privately placed listings with the Relocation Section.

5. **Relocation Cost (owner-occupied units)**

The relocation cost used in this analysis was the replacement cost minus the value of the home with a maximum of $15,000 as established by Section 203 of the Federal law. Other relocation costs allowed within the $15,000 maximum payment but not included in this analysis include an amount to compensate for differences between old and new mortgage interest rates, and certain closing costs on the replacement dwelling. The former is extremely difficult to determine from the secondary "sources" of data used in this analysis (i.e., without access to records for the individual homes). Closing costs are usually less than $50 according to the recent experience of the Relocation Section of the Omaha Housing and Community Development Department.

6. **Occupancy Status**

Whether the home was owner-occupied or a rental was determined from the Tax Assessors' records. If the address of the property and the address of the person listed as owner were the same, the home was considered as owner-occupied; if different, the home was considered as rented. Whether a unit was occupied or vacant at this data was not considered in this analysis — i.e., all units were assumed to be occupied.

7. **Rent Payment**

The 1970 Census includes average contract rent for each census block. Where they did not calculate average rents because less than five units were involved, the average rents for contiguous census blocks was used. An inflation factor of 6% was used to convert 1970 rents to August 1974 values. This was based on the inflation rate for rental housing for Kansas City as reported by the Bureau of Labor Statistics.

8. **Replacement Rent**

These costs were derived from the Omaha Housing and Community Development Department's "Guideform Schedule of Average Prices of Comparable Rental Housing in Locality." The average price (calculated by the Department from the price range listed) for medium-size units was used in the analysis. The number of bedrooms was assumed to be two less than the number of rooms listed in the census data.

9. **Relocation Cost (rentals)**

Under the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 renters may receive payments to meet the increasing cost of renting a replacement dwelling for a period of up to four years. Calculations based on income are permitted to aid very low income individuals. But a maximum payment of $4,000 is permitted under Section 204. Income was not considered in this analysis as those with very low incomes generally were already at the maximum payment. An additional option available for renters who wish to purchase a home or owners who wish to become renters was not considered in this analysis in view of the experience of the Omaha Relocation Section that approximately 90% of the people maintain their status as owners or renters.

10. **Moving Expenses (residential)**

Residents — both owners and renters — are entitled to actual "reasonable" moving expenses or fixed amount based on the number of rooms, whether the unit is furnished or not. For this analysis, the fixed schedule of payments for unfurnished units was used, which has a maximum payment of $340 for a three-room unit (the smallest unit found in our analysis) and $500 for an eight-room unit.

11. **Relocation and Moving Costs (mobile homes)**

If a mobile home is moved to another site, the owner is treated as a tenant — i.e., he receives the difference between his current rent for his mobile home site and his new one for a four year period. He also receives his actual moving expenses for his mobile home and its contents, but he may prefer the scheduled allowance which includes $100-$300 additional for moving the mobile home. If the mobile home cannot be moved, the owner is treated as a home owner — i.e., he receives the difference between the market value of his mobile home and the cost of a replacement unit. The analysis used here is based on the assumption that 50% of the units could be moved to another mobile home site, while the other half would involve the purchase of a replacement unit. Based on examples provided by the Relocation Section of the Omaha Housing and Community Development Department, the difference between the resale value of the mobile home and the price for a replacement unit was estimated at $7,550, and moving expenses were assumed to be for a four-room unit in which the tenant did not have his own furniture ($250 including the dislocation payment). For the other half of the cases, moving expenses were based on the assumption of owning their own furniture ($380 payment) plus the expenses of moving a medium size mobile home ($175). Total relocation costs on the Hartman connection for the Central and Western alignments for these mobile homes was estimated at $100,260.

12. **Population Displaced**

The 1970 Census lists the total population for each census block. The number of people on a block considered to be displaced is proportional to the number of housing units on that block (as reported by the census) to be acquired for the freeway right-of-way. In other words, if the number of units taken constitutes 50% of the units on the block, then 50% of the population was considered displaced. This assumes that population is uniformly distributed on a block, which may be incorrect given that the sizes of lots and homes may vary within a block. (Population residing in group quarters were excluded from all calculations, except when the entire block was in a freeway route.)

The use of 1970 Census data need not be considered a serious deficiency since the date for property acquisition and relocation of residents is at some not yet known date in the future. The discrepancy between the use of 1970 data for housing units on a block and the use of 1973 date for housing units to be acquired is minor (although in several instances more homes were scheduled to be acquired than were accounted for by the Bureau of the Census; in these instances 100% of the block's population was considered as displaced).

13. **Blacks**

The 1970 Census lists the proportion of a block's population that is Negro. The number of these blacks considered to be displaced is proportional to the number of housing units on that block that are to be acquired. This assumes equal and uniform distribution, and does not take into consideration varying sizes of lots, units, or families.

14. **Elderly**

The 1970 Census lists the proportion of a block's population that is 62 years of age or older. The number of these elderly considered to be displaced is proportional to the number of housing units on that block that are to be acquired.

15 **Female Head of Family**

The 1970 Census lists the number of families headed by a female for each census block. The number of these families considered to be displaced is proportional to the number of housing units on that block that are to be acquired.

16. **Income**

Income data used in this analysis were 1974 projections of median family income made by a marketing firm. Their projections are reported for census enumeration districts which are composed of census blocks. The estimate for the entire enumeration district is used.

APPENDIX V.

ECONOMIC ACTIVITY AND EMPLOYMENT

One impact of the alignments will be to displace several business establishments and employees of the respective businesses. In many instances, the establishments in the path of the freeway are small (e.g., beauty shops in the home), but in a few cases the employment impact will be fairly substantial. TABLE V-1 presents a general summary for each of the alignments. It should be noted that displacement of firms does not necessarily cause a loss of jobs as firms that relocate may keep the same work force.

Depending on the airport connection chosen, the East Alignments will displace from eight to ten businesses. If the Fort Airport Connector is chosen, a total of ten business establishments will be displaced. Major businesses affected will be Phillips Basket Company, Roe Machine and Pattern Works, and Northern Propane Gas. An estimated 86 employees will be affected by displacement of business establishments.

The Central Alignment will displace from 21 to 24 business firms. If the Fort Airport Connector and the 27th-28th Segment between Lake Street and Ames Avenue are chosen, the alignment will displace 21 business establishments and an estimated 118 employees. Major employers displaced will be Albert & Son Fine Food Inc., Northern Propane Gas, and Edinger-Wyckoff. If the Fort Airport Connector and the 31st Ave. Segment between Lake Street and Ames Avenue are chosen, 24 business establishments and an estimated 156 employees will be displaced. Major employers displaced will be Albert & Son Fine Food Inc., Edinger-Wyckoff, and Ideal Concrete Products. The Hartman Airport Connector will result in the displacement of 22 businesses with the 27th-28th Segment between Lake Street and Ames Avenue and 23 businesses with the 31st Ave. Segment. The employment impact, however, will be less with an estimated 98 employees displaced by the 27th-28th Segment and 123 employees displaced by the 31st Ave. Segment. The major employers displaced by the Hartman Airport Connection and 27th-28th Segment will be Northern Propane Gas and Edinger-Wyckoff, while the 31st Ave. Segment will take Ideal Concrete Products and Edinger-Wyckoff.

The West Alignment will displace from 17 to 19 business establishments, and from 96 to 152 employees. If the Fort Airport Connector and the West (27th-28th) Segment between Lake Street and Ames Avenue are chosen, 17 firms and an estimated 116 employees will be displaced. Major employers displaced will be Albert & Son Fine Food Inc., Northern Propane Gas, and Edinger-Wyckoff. If the West (31st Ave.) Segment is chosen in conjunction with the Fort Airport Connector, 19 establishments and 152 employees will be displaced. Major establishments affected will be Ideal Concrete Products, Albert & Son Fine Food Inc., and Edinger-Wyckoff. If the Hartman Airport Connector and the 27th-28th Segment between Lake Street and Ames Avenue are chosen, 18 firms and an estimated 96 employees will be displaced. Edinger-Wyckoff and Northern Propane Gas will be the major firms displaced. If the 31st Ave. Segment is chosen, 18 firms and 119 employees will be affected. Ideal Concrete Products and Edinger-Wyckoff will be the major employment sources displaced.

TABLE V-1

NUMBER OF BUSINESS ESTABLISHMENTS AND EMPLOYEES DISPLACED BY ALIGNMENTS

	Alignments	Firms	Employees
1.	East Alignment with Fort Airport Connector	10	86
2.	East Alignment with Hartman Airport Connector	8	57
3.	Central (27th-28th) Alignment with Fort Airport Connector	21	118
4.	Central (31st Ave.) Alignment with Fort Airport Connector	24	156
5.	Central (27th-28th) Alignment with Hartman Airport Connector	22	98
6.	Central (31st Ave.) Alignment with Hartmen Airport Connector	23	123
7.	West (27th-28th) Alignment with Fort Airport Connector	17	116
8.	West (31st Ave.) Alignment with Fort Airport Connector	19	152
9.	West (27th-28th) Alignment with Hartman Airport Connector	18	96
10.	West (31st Ave.) Alignment with Hartman Airport Connector	18	119

Several industrial foundation tracts are available in Omaha and offer adequate space for industrial firms displaced by the North Freeway. The smaller retail trade firms and service-oriented firms should have little difficulty finding alternative locations for business. This is particularly true in light of the exodus of firms from the area since 1960. Finally, those businesses operating from private homes will most likely be moved to the new residence.

In addition to the displacement of business firms it should be noted that the West and Central Alignments — if the 27th-28th Segment between Lake Street and Ames Avenue is chosen — will affect Dominican High School. It is likely that most of Dominican's 22 employees can be transferred.

The North Freeway will have a larger economic impact than the displacement of business establishments and employees. All three alignments will provide valuable linkages of residential areas with the Central Business District (CBD), Eppley Airfield, and I-680. In doing so, one group that will be immediately affected is the CBD worker. In 1970, the Benson and Florence areas had large concentrations of commuters to the Central Business District (FIGURE V-1). With the completion of the North Freeway link, traffic will average 40-45 miles per hour south of Hartman Street and 45-50 miles per hour from Hartman Ave. north to I-680. This is expected to attract commuters away from the urban street network, reducing peak period congestion problems. Consequently, commuters to the CBD from Benson and Florence will respectively find either reduced traffic time via the Freeway or reduced traffic time via the street network. In either event, the Freeway will provide an inducement to live in Benson, Florence, or in other parts of the North Freeway Corridor and work in the CBD.

The Freeway will also make northwest Omaha almost as accessible (in terms of time) to the CBD as southwest Omaha is now. As FIGURE V-1 illustrates, southwest Omaha is currently a heavy producer of commuter traffic to the CBD, largely because I-80 provides the accessibility. The North Freeway should provide similar linkages for residents living in the

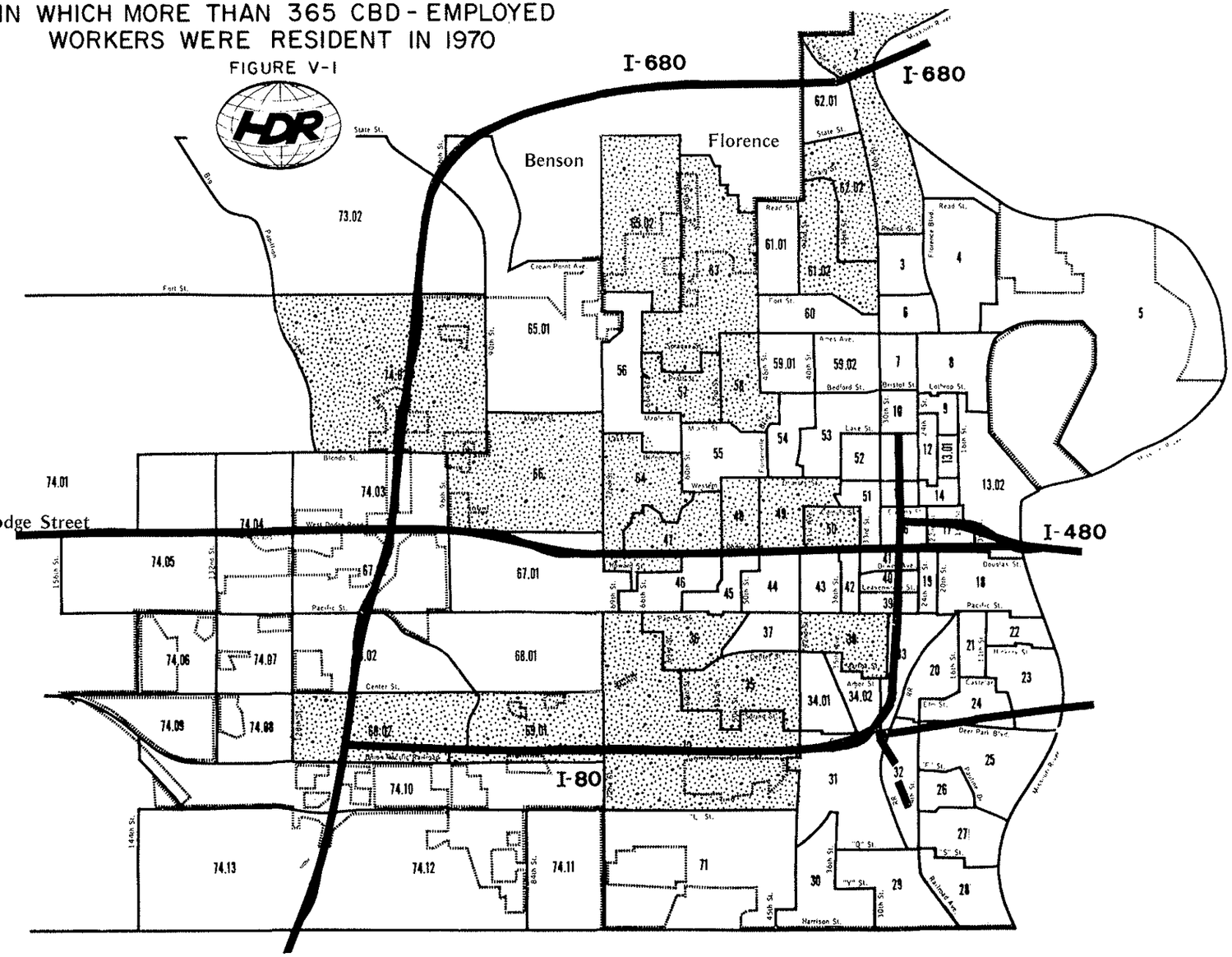
north and northwest portions of Omaha. Similarly, commuters in the outlying counties (e.g., Washington, Dodge, and Harrison) will also be aided. Overall, the North Freeway will provide a stimulus for changing residential patterns, particularly in the north and northwest portions of the city.

Although the North Freeway Area is primarily residential, the freeway will provide opportunities for expanded commercial and industrial activity. The linkages of the Central Business District, Eppley Airfield, and I-680 with the proposed Omaha Industrial Foundation Riverfront Industrial Park (Sec. 35-16-13, Douglas County) and the Upland Industrial District, Omaha, Nebraska (Sec. 27-16-13 and Sec. 34-16-13, Douglas County) can provide a valuable stimulus for attracting industry to the area. The Airport Plaza Industrial Site (Sec. 21-75-44 and Sec. 28-75-44, Pottawattamie County) should also benefit by the freeway. Recent research of ten study areas concerning the influence of central city radial freeways on manufacturing location decisions indicates that assembling land and creating the local street and utilities infrastructure, when carried out in coordination with freeway planning and implementation, is clearly a most effective means for providing industrial development opportunities.1] Yet as the research report also points out, the existence of a freeway alone will not necessarily bring in new industry. It does represent, however, an opportunity upon which a community may or may not be able to capitalize as additional development prerequisites must also be met. In the case of the industrial parks in the North Omaha area, the problem of assembling large parcels of land has already been taken care of (e.g. 273 acres in the OIF Riverfront Industrial Park and 250 acres in the Upland Industrial District). It remains a community decision as to whether more industry is a desirable goal. If the answer is affirmative, the freeway will be a valuable tool to meet the objective.

The North Freeway should not be viewed as the panacea for revitalizing the commercial well-being of the North Omaha area. Exceptions to this may be found in the Florence and Benson Business Districts, where improved traffic flow may induce more customers from the surrounding locale. Overall, however, the problems encountered by commercial establishments in the area are larger and more complex than can be solved by a freeway. Figures on retailing show a net loss of 215 retailing establishments over the 1964-1973 period for the area east of 42nd Street and north of Dodge Street, roughly equivalent to the North Freeway Corridor Area. This loss can be directly associated with a declining population base in the area. To the extent community development efforts via provisions of the Better Communities Act and via the Riverfront Development projects are implemented in this area, the freeway will provide an important structural component for revitalization.

1] Hamer, Siler, George Associates. **The Influence of Central City Radial Freeways on Manufacturing Locational Decisions,** (prepared for the U.S. Department of Transportation, Federal Highway Administration, Office of Program and Policy Planning, Socio-Economic Studies Division, October, 1973) pp. xii and xiii.

OMAHA CENSUS TRACTS
IN WHICH MORE THAN 365 CBD - EMPLOYED
WORKERS WERE RESIDENT IN 1970
FIGURE V-1



APPENDIX W.
RECREATION AND PARKS

The East Alignment from Lake Street to Ames Avenue will run two blocks from a playground at 4001 North 26th Street. Further north, the alignment will take in the vicinity of 28th and Craig Streets an undedicated softball diamond on the corner of M.U.D. property.

Part of the Fillmore Park, a 2½ acre park at 29th and Fillmore, is in the path of the East Alignment. The park presently consist of a baseball field and a playground. Plans call for elevating the freeway over the railroad right-of-way, with the possibility that up to 15 feet of the freeway deck may extend over the baseball diamond's outfield. Discussions with officials from the City Parks, Recreation and Public Property Department indicate opposition to any plan which would require using any part (on or over) of the Park including air space over it.

Plans are well on the way to construct the Florence Library and Recreation Center, an $850,000 project, which would be on the block adjacent to the present Park. The limited number of park facilities and the lack of any other major parks in the area were pointed out as reasons for saving all of Fillmore Park. Further, the fact that the demand for softball and baseball facilities is growing while the supply in the area appears limited was pointed out as another reason for not infringing on the Fillmore Park facilities. Other than Fillmore Park, City officials from the Parks, Recreation and Public Property Department have no objections to any of the three alignments.

The Central and West Alignments will have little impact on parks and playgrounds. If the 31st Ave. Segment of the Lake Street to Ames Avenue alternative is chosen, however, Adams Park, a 60 acre park at Bedford and Paxton Boulevard, would be about one block from the freeway at the closest point. Some noise and air pollution problems may arise. Similarly, Spaulding Playground at 31st and Spaulding will border the freeway and encounter potential noise and air pollution problems. Further north, the West Alignment will pass within one block of the Crown Point Park, a two acre park at 43rd and Laurel Avenue. The western boundary of the freeway will be east of 42nd Street so no major problems are anticipated.

The potential for using excess right-of-way for park and recreation uses does exist. This potential which is best on the East and West Alignments covers such possible uses as playgrounds, picnic areas, open space, ball fields and other activities. APPENDIX Q discusses this in more detail.

An additional item to be addressed under the impact to parks concerns to City's "boulevards". Many years ago, the City had established certain streets as boulevards, with wide rights-of-way, for use in connecting the City's major parks. These boulevards in the study area include Paxton, John Creighton, Fontenelle, Florence, and Belvedere. Parts of John Pershing Drive is also included in this system. All of the boulevards are maintained presently by the Parks Division of Omaha.

The East Alignment crosses Florence Boulevard near Fort Street and again at its terminus into John Pershing Drive. Its Airport Connectors cross no boulevards.

Between Lake and Ames, the Central (27th-28th) crosses no boulevards, while the Central (31st Ave.) follows John Creighton Boulevard and crosses Paxton Boulevard. With the latter case, Creighton Boulevard is relocated as a frontage road on the Central's west side to maintain continuity with Paxton. With the remainder of the Central Alignment, Belvedere Boulevard is crossed. The Airport Connectors cross Florence Boulevard near Fort Street.

The West Alignment between Lake and Ames is the same as for the Central. North of Ames, the West crosses Fontenelle. The Airport Connectors cross Florence Boulevard at Fort Street.

Brief summary opinions by the Omaha Legal Department relate that prior court decision have defined "boulevards" as public roadways with ". . . characteristics that differentiate the boulevard from an ordinary street, such as greater width, length, and a provision for giving it a parklike appearance by reserving spaces at the sides or center for shade trees and ornamental lighting . . . Under some circumstances, 'boulevard' has been said to be equivalent of 'parkway', and 'street or highway' "1]

In summary, the major issues of the park impacts reflect on current park disruptions. As such, the West and Central (27th-28th) would be the best alternates. This conclusion is drawn from their lack of direct impact upon parks and minimal impact to the boulevards. The West and Central (31st Ave.) alignments are next due to the potential impacts to John Creighton Boulevard. Then comes the No Build. The East Alignment is last due to the potential conflicts at Fillmore Park.

1] Inter-office Communication, November 21, 1974, by V. W. Vance, Omaha Assistant City Attorney, with reference to **11Corpus Juris Secundum 532.**

APPENDIX X.
GENERAL ECOLOGY

Introduction

The corridor study area for the North Freeway can generally be divided into three habitat groups: (1) forest-covered bluffs; (2) Missouri River floodplain; (3) broken pasture-rangeland. Each of these habitats exists in a matrix of high intensity urban development. As a consequence of the urbanization in the corridor area all three habitat groups have been severly altered and disrupted and must now be considered as essentially urban environment. Construction activities associated with the North Freeway will not disrupt significantly any major ecological habitat group.

The most unique habitat in terms of replacement value is the bluff-forest located mostly in the northwestern portion of the study area. These forests, which may take as long as 75 years to develop, represent the western limit of the eastern deciduous forests which follow along the bluffs of the Missouri River and its tributaries. Some of the more common trees include the bur oak, red oak, hackberry, elm, sycamore and basswood. These trees are not specifically limited to the bluffs but are also found intermittently throughout the non-bluff residential portions of the study area.

Before urbanization, the Missouri River forests provided habitat for a wide variety of wildlife. But the impact of urbanization has limited the types of wildlife to those that can form compatible associations with intensive human activity. The organisms which have made this adjustment include mostly perching, song bird species and smaller mammals, notably the fox squirrel and the cottontail rabbit. Larger mammals such as the white-tail deer and the coyote are not compatible although some occassional individuals will enter, or live in, the corridor area from time to time.

Discussion of Habitats and Alignments

All alignments will, of course, affect the trees of the area but the West Alignment will have the most adverse effect since it skirts or passes directly through the bluff-forests in the northwest portion of the study area. The Central Alignment would have a significant, though lesser effect, and the East would have the least impact. The impact on trees could, of course, be lessened if building sites were not stripped bare but rather designed to take advantage of the groves wherever possible such as in ramp areas, medians, and drainways. These recommendations are made with the understanding that trees could not remain standing in places where vehicle safety would be impaired.

The flood-plain habitat in the study area is essentially totally disrupted. A levee along the western bank

of the Missouri River does not allow the flooding necessary to maintain a natural flood-plain habitat. In addition, most of these bottom lands have been utilized for industrial locations, residential housing, recreational areas (Carter Lake Park), and agriculture. The remaining unused lands are "rough lands" and mostly taken by grasses, shrubs (weeds) and volunteer trees (cottonwood and others). The only alignment which affects the flood-plain habitat, other than the Airport Connectors, is the East Alternate. Since the flood-plain no longer retains any undisturbed habitat it is somewhat obvious that the impact of a highway corridor would be negligible and may, in fact, be beneficial. The subject of benefits from new construction may be suspect to some who are not in favor of any new highway construction but in this particular case, proper planning and design could definitely improve the area at least from the perspective of the human inhabitants. The preceding comments can be applied equally to the Airport Connectors in their traverse of the flood plain.

The last terrestrial habitat is quite small and perhaps could have been incorporated into another part of this discussion except that it really does not fit anywhere but as an entity in itself. This habitat includes the open, rolling, grass-rangeland that occurs in the northwestern portion of the study area near Forest Lawn Cemetery. From a strictly biological viewpoint, this area is quite interesting in that it forms an ecotone community when associated with the bluff-forests mentioned previously. Ecotones, in normal situations, are characterized by great species diversity because they tend to mix populations from two contrasting habitats (e.g. grasslands and forests). The ecotone in this instance is no exception although urban encroachment has diminished its capacity considerably. The West Alternate is the only corridor that would approach this ecotone area but its course is more or less tangent to it (on the east side of Forest Lawn) so that the impact is likely to be minimal.

A last observation concerning the terrestrial habitats and the highway corridors involves the spin-off category of strip commercial or residential development on the areas surrounding the chosen alternate. In all cases the approach of this analysis has assumed that the forests, ecotones and other habitats will remain as they are presently except for the single change of the highway corridor and its accesses. This is, of course, an unrealistic perspective since there is little likelihood that Omaha and its suburbs will remain in a static condition. Speculation on future developments which are derived at the expense of the natural environment are somewhat beyond the realm of the analysis. The preservation of green belts or open land and forests outside the right-of-way is the responsibility of the City and State governments and the people of Metropolitan Omaha. The task of setting aside "natural" or green space should, however, coincide with the planning of the Freeway and efforts should be made to incorporate green belts into the development of the North Omaha region.

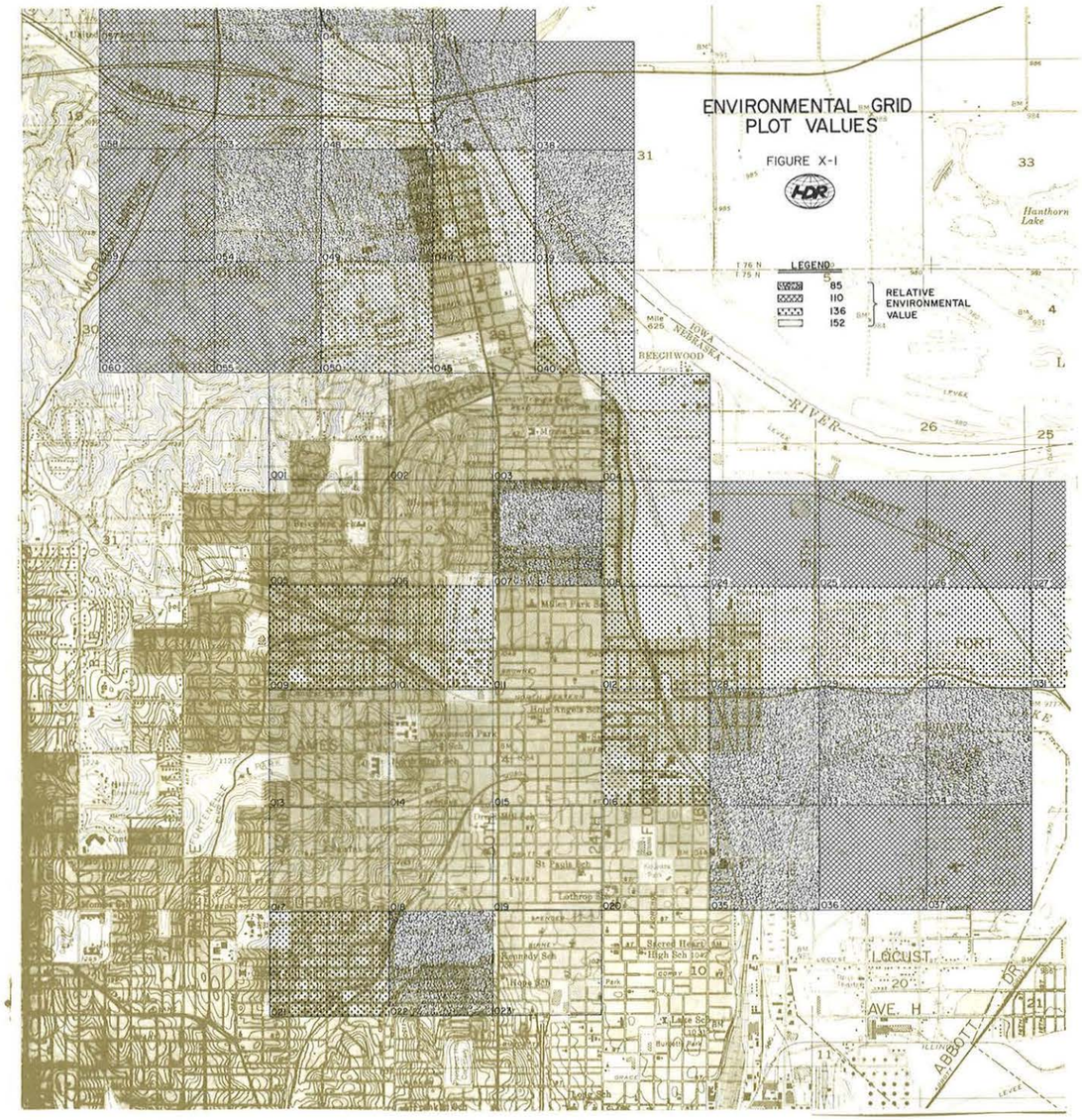
Quantitative Description

The quantitation of environmental impacts is quite difficult especially if there is a desire to use objective methods. For example, one human perspective may be very favorable to a desert community where another might be highly unfavorable and neither of these views takes into consideration the "desires" of the animal and plant populations being evaluated. For several years, various authors and institutions have proposed many methods for making objective evaluations. One of these, Smith 1], does so on the basis of supply and demand for habitat. Under completely natural conditions this method will yield valuable information concerning the "desires" of the populations involved in an impact area. However, the study area associated with the North Freeway is totally disrupted from its strictly natural condition, so that in this case it was necessary to utilize a system based on habitat supply (i.e. quantity of habitat) and replacement values. Replacement values are simply relative quantities which indicate the length of time needed to replace a given habitat in a one hundred year cycle. For example, the woodlands in this study could be replaced in about 63 years so that their replacement value is given as 63/100 or 0.63.

Estimates of habitat quantity in the study zone were made by a standard statistical grid plot analysis using square grid plots of 2640 ft. A quantitative summary of the results is given below.

Habitat Type	Approx. % Occurrence
Grass-Cropland (scattered suburban)	39
Woodlands	9
Water and Wet Marsh	4
Parkland (formal)	2
Urban	46

1] Smith, W. L., "Rational Location of a Highway Corridor: A Probabilistic Approach," **Highway Research Record No. 348** 1971, Highway Research Board.



An important consideration in any land use analysis are the unique or rare portions of the environment. One way of expressing "rareness" is to measure the probability of supply and subtract the result from 100. (For example, if an object makes up 1% of a sample; its "rareness" is equal to 99% since its probability of supply equals 0.01 and its "rareness" then equals 0.99). The advantage in using this "rareness" expression is that it highlights areas of minimal supply that might be preserved.

As far as the North Omaha study area is concerned, the habitat requiring the greatest replacement time is woodland (0.63) with formal parklands (0.50) second. The "rarest" habitat is formal parkland at 0.98, with water and wet marsh second at 0.96.

With the variables of replacement and rareness calculated, a relative value for the purpose of comparison can be generated by computing the products of the "rareness" and replacement variables. The

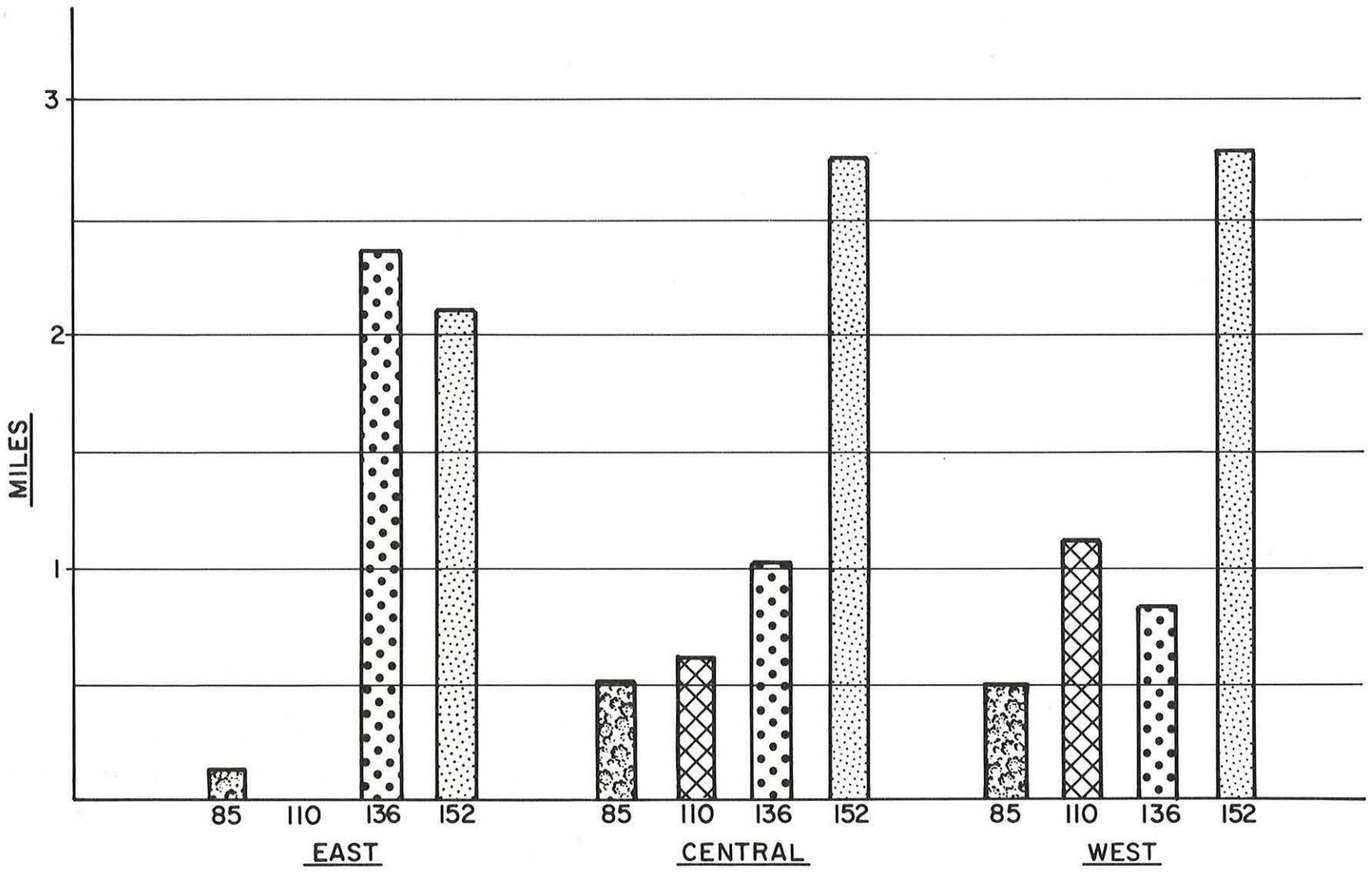


FIGURE X-2

RELATIVE ENVIRONMENTAL VALUE VERSUS MILEAGE

relative value for each habitat evaluated, along with its replacement variable and "rareness" variable are given below.

Habitat	"Rareness" Variable	Replacement Variable	Relative Value
Grass-Cropland	0.61	0.13	0.079
Woodlands	0.91	0.63	0.573
Water-Wet Marsh	0.96	0.13	0.125
Parkland	0.98	0.50	0.490
Urban	0.54	0.05	0.027

FIGURE X-1 graphically illustrates the composite values of each grid plot with each of the alternates superimposed on the surface. As would be expected, woodland areas, parks, and water have the most significant composite scores and are thus considered to be most important. The least significant values are the densely populated residential and industrial areas. These values are strictly related to the non-human community and must **not** be interpreted as being beneficial, harmful to, or indicative of the quality of life of the human population.

To gain a more favorable comparison of the alternates, a histogram (FIGURE X-2) was compiled to compare the miles traversed in each value system by each alternate. In this illustration it is apparent that the East Alignment has nearly all of its mileage located within the two least significant grid plots and only a small length occurring in the most significant category. The West and Central Alignments appear to be nearly equal (FIGURE X-2).

There are, of course, many other environmental considerations which must be evaluated before selecting a preferred route but the numerical quantities do suggest the eastern corridor as being most desirable.

APPENDIX Y.
NATURAL AND HISTORIC LANDMARKS

Natural and Historic Landmarks through the study area were inventoried and are shown on FIGURE Y-1. The authority for these choices is largely that of the Nebraska State Historical Society, although conversations with several Omahans with considerable interest and knowledge of local history were also utilized. The State Society sent excerpts from their 1971 publication, **Historic Preservation in Nebraska,** and of a typed list of locations noted by field crews during recent summer surveys. These sites are described as having "sufficient significance for possible nomination to the **National Register of Historic Places",** and "may merit eventual nomination to the Register".

The East Alignment will have the greatest impact on historical landmarks. In the Florence area, the Weber Mill and Market Square will be directly affected. While the Old Florence Depot and the Water Works Mansion will not be taken, they will be in the vicinity of the proposed route.

The Weber Mill located at 9102 North 30th Street was purportedly constructed by the Mormons in 1846-47. The existing mill is neither the original structure nor at the original location. The original mill was located on Mill Creek with a pond and raceway somewhat upstream from the present location and was built by the Mormons at the time of their Winter Quarters stay. Later, it was taken apart and carried west with them.

The historic significance of the existing Weber Mill could probably be associated more with the history of Florence as a major economic influence than to the original Mormon Mill.

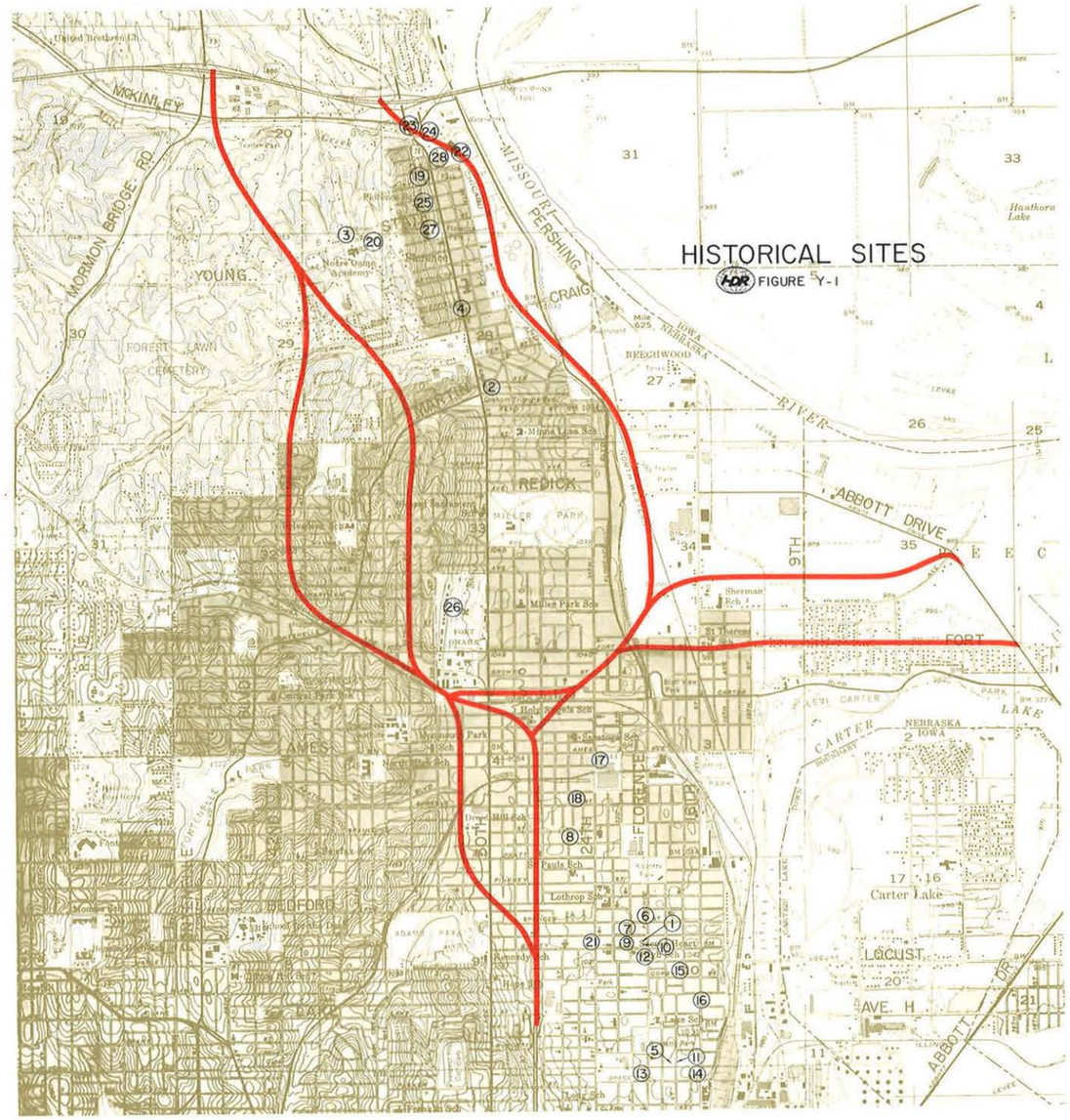
The East Alignment requires that the Weber Mill be relocated. This fact, however, could be a positive impact as the existing location is not appropriate for a historic monument. The location of several other historic structures in the vicinity would suggest the possibility of integrating the various structures into a historic park.

Unless restoration of some type is begun in the near future, the Weber Mill might not be in existance long enough to be a consideration for this project.

Market Square as the name implies was at one time a center of local commerce. Today, it exists as a little league baseball field and Park (Fillmore Park). The East Alignment would require some of the air rights over this park but probably no land for the construction of bridge piers. The use of air rights should not disrupt the existing use of this area. However, any future use as a part of a historical site would be of questionable value.

The Old Florence Depot was moved to its existing location as part of the M.U.D. treatment plant expansion. Its proximity to the Water Works Mansion makes this area suitable for some type of historical site development. This area would not be required as right-of-way but its suitability as a park adjacent to an elevated freeway section would be questionable.

The Central and Western alignments impact only one site that could be considered of historic interest. The southwest corner of Fort Omaha would be required by the interchange with the Airport Connector and the proposed Hartman-Crown Point Arterial (C. & N.W. R.R.). The portion of Fort Omaha required is a maintenance and warehouse area and does not contain structures of historical significance.



1. Essie A. Hayes Res.
   (Kountz Res.)
   2003 Binney

2. Fred Schallert Res.
   (Henry B. Neef Res.)
   2884 Iowa Street

3. Thompson Res.
   (Lantry Res.)
   3524 State)

4. Foster P. Wright Jr. Res.
   7623 North 31st Street

5. Terrace Apartments
   2024-2018 North 16th

6. Jacob Williams Res.
   1905 Lothrop

7. 2022 Wirt
   2210 Wirt
   2024 Wirt

8. Spaulding Apt.
   (Sanders Res.)
   3824 North 24th Street

9. Ada Blue Care Home
   2024 Binney

10. 1924 Binney

11. 2124 North 16th

12. 1921 Binney

13. Nonie Anders Res.
    2004 North 19th Street

14. Ye Old Junke Shop
    2025 North 16th Street

15. 2816 North 16th Street

16. Old Wright Printing Building
    2623 North 16th Street

17. Nashua Corp.
    Omaha Street Railway Co.
    2323 Ames

18. Diamond Back Bar
    4102 North 24th Street

19. Omaha Public Library—Florence
    Branch and City Recreation Department
    Florence Building and Hummell Hall
    8702 North 30th Street

20. Mormon Pioneer Statue
    3301 State

21. Sacred Heart Church
    22nd and Binney

22. Water Works Mansion

23. Old Weber Mill

24. Old Rail Road Depot

25. Florence Bank
    8502 North 30th

26. Fort Omaha

27. Florence Square

28. Market Square

APPENDIX Z.
RECOMMENDED FREEWAY CROSSINGS

RECOMMENDED CROSSINGS BASED UPON SCHOOL ATTENDANCE AREAS.

This discussion provides recommended freeway crossings for purposes of providing access to area schools. It is not addressed to overpasses or underpasses that might be required for purposes other than school travel (e.g., other public facilities or major traffic arteries). In addition, it assumes the current school attendance area boundaries are permanent.

EAST ALIGNMENT

Elementary Schools. The East Alignment beginning at Lake Street, will run along the eastern boundary of the Kennedy and Druid Hill School Attendance Areas, and the western boundary of the Conestoga and Lothrop Attendance Areas, and therefore will not interfere with access to these schools. But about 24 blocks (in the area bounded by Boyd Street on the South, Browne Street on the North, 28th Street on the East, and 30th Street on the West) of the Saratoga Attendance Area will be cut off from its school. A crossing at Ames Avenue is therefore recommended.

North of Ames Avenue, the alignment will generally run along the eastern edge of the developed areas of the Miller Park, Minne Lusa, and Florence Attendance Area. It will isolate about one or two blocks in the southeastern portion of the Miller Park Attendance Area. A crossing at 24th Street is recommended. It will also isolate about six blocks in the northeastern portion of the Minne Lusa Attendance Area (Iowa to Forest Lawn and 25th to 28th Streets) and a crossing at Craig Avenue is recommended if there are homes remaining in this corner.

The Airport Connector will isolate the Sherman School from either the northern portion of its Attendance Area or the southern portion depending on which of the two alternatives is selected. A crossing at 16th Street will be needed if the Hartman Connector is chosen. Crossings at 16th Street and 9th Street will be needed if the Fort Connector is chosen.

Secondary Schools. The East Alignment will affect the Horace Mann Jr. High Attendance Area by separating the school from the western part of the attendance area. An overpass will be needed at Binney Street.

The East Alignment will also affect McMillan Jr. High School by isolating students in the Sherman Elementary Attendance Area from the school. Therefore overpasses will be needed at Ames Avenue for the latter group and at 24th Street and Read Street for Sherman.

This alignment will also affect the North High School Attendance Area by cutting the Saratoga and Sherman Attendance Areas from the North High School Attendance Area. Crossings, therefore, will be needed at Ames Avenue, 24th Street, and Read Streets to serve these students attending North High School.

Parochial Schools. The East Alignment will affect Sacred Heart, Dominican High, and St. Philip Neri schools. Crossings at Binney Street and Bristol Street are recommended for Sacred Heart and at Ames and 24th Street for Dominican High. A crossing at Craig Avenue is recommended for St. Philip Neri.

The Airport Connectors will affect St. Therese. A crossing at 16th Street is recommended for the Hartman Connector, and crossings at 16th Street and 9th Street are recommended for the Fort St. Connector.

CENTRAL ALIGNMENT

Elementary Schools. If the 27th-28th Segment between Lake Street and Ames Avenue is used, a crossing at Ames Avenue will be necessary, as noted above.

If the 31st Ave. Segment is used, the Druid Hill Attendance Area will be divided in half, with the freeway running within a block of the school. A crossing is recommended at Spaulding Street. This segment also divides a portion of the Monmouth Park Attendance Area, passing close to the School. A crossing is

recommended at Ames Avenue.

North of Ames Avenue, the alignment will follow 33rd Street, splitting off about twelve blocks of the eastern portion of the Belvedere School Attendance Area. A crossing at Curtis Avenue for the Belvedere School is recommended. The western portion of the Minne Lusa School Attendance Area is also affected. A crossing at Martin Avenue is recommended.

Further north, Florence School will be separated from the southwest portion of its Attendance Area, and crossings would be needed at 36th Street and King Street. The latter crossing could be pedestrian only. The northwestern portion of the attendance area also will be isolated and a crossing at State Street will be needed.

The Airport Connectors will isolate a portion of the Saratoga School Attendance Area and require a crossing at 27th Street. Several blocks in the southeast corner of the Miller Park Attendance Area would be isolated from the school. If there are any homes remaining in this area, a crossing at 24th Street will be necessary. The Airport Connector will isolate the Sherman School from either the northern or southern portion of its attendance area depending on which of the two alternatives is selected. A crossing at 16th Street will be needed for the Hartman Connector, and crossings at 16th Street and 9th Street will be needed for the Fort Connector.

Secondary Schools. The Central Alignment will bisect the McMillan Jr. High Attendance Area, separating the eastern portion of the Florence School Attendance Area and the Minne Lusa, Miller Park, and Sherman School Attendance Areas from the Junior High School. Therefore crossings will be needed at Ames Avenue, Laurel Avenue, Redick Avenue and Martin Avenue. Access from the eastern portion of the Florence Attendance Area will be blocked and the crossings at 36th Street will aid these students. The same crossing will also provide access for these attendance areas to North High School.

Both the (27th-28th) Segment and the (31st Ave.) Segment will isolate Horace Mann Jr. High School from the Kennedy School Attendance Area and a crossing will be necessary at Binney Street.

Parochial Schools. If the 27th-28th Segment between Lake Street and Ames Avenue is used, Sacred Heart and Dominican High schools will be affected. Crossings at Binney Street and Bristol Street are recommended for Sacred Heart. Dominican High will be eliminated by the alignment.

If the 31st Ave. Segment is used, crossings at Binney Street and Spaulding Street are recommended for Sacred Heart, and a crossing at Ames Avenue is recommended for Dominican High.

North of Ames Avenue, the alignment will affect Blessed Sacrament and St. Philip Neri schools. A crossing at Curtis Avenue is recommended for Blessed Sacrament, and crossings at King Street (pedestrian), 36th Street, and State Street are recommended for St. Philip Neri.

The Airport Connectors will affect Dominican High if the 31st Ave. Segment is used. A crossing at 27th Street will be needed. The Airport Connector will also affect St. Therese. A crossing at 16th Street is recommended for the northern alternative, and crossings at 16th Street and 9th Street are recommended for the southern alternative.

WEST ALIGNMENT

Elementary Schools. If the 27th-28th Segment is used, a crossing at Ames Avenue will be necessary, as noted above.

If the 31st Ave. Segment is used, the Druid Hill School Attendance Area will be divided in half, with the freeway running within a block of the school. A crossing is recommended at Spaulding Street. The alignment will also divide a portion of the Monmouth Park School Attendance Area, passing close to the school. A crossing is recommended at Ames Avenue.

North of Ames, the alignment will isolate the northern section of the Monmouth Park School Attendance Area — about six blocks will be affected. A crossing is recommended at 33rd Street. Since the alignment will follow the railway right-of-way, the boundary between Belvedere and the Central Park School Attendance Area will not be affected. Similarly, the western boundary of Belvedere School Attendance and the eastern boundary of Wakonda School will not be affected.

The alignment, passing through the eastern section of the Forest Lawn Cemetery, will affect those living north of the cemetery and west of 40th Street. These residents will be isolated from the Florence School Attendance Area. A crossing at State Street is recommended. An area south of the Cemetery will be isolated and a crossing at Hanover Street is recommended if there are any homes in this area.

The Airport Connectors will isolate a portion of the Saratoga School Attendance Area and require a crossing at 27th Street. Several blocks in the southeast corner of the Miller Park Attendance Area would be isolated from its school. If there are any homes remaining in this area, a crossing at 24th Street will be necessary. The Airport Connector will isolate the Sherman School from either the northern or southern portion of its attendance area depending on which of the two alternates is selected. A crossing at 16th Street will be needed for the Hartman Connector and crossings at 16th Street and 9th Street will be needed for the Fort Connector.

Secondary Schools. The West Alignment will affect McMillan Jr. High School by separating the school from Wakonda and Central Park School Attendance Areas. Crossings will be needed at Redick Avenue, 39th Street, and at State Street.

The West Alignment will also separate the Wakonda and Belvedere School Attendance Areas and the western portion of the Florence Attendance Areas from North High School. The same crossings noted above will serve to bring their students to North High.

The 31st Ave. Segment of the West Alignment will separate North High School from the Saratoga Attendance Area. A crossing at Ames Avenue will be necessary.

Both the 27th-28th Segment and the 31st Ave. Segment will isolate Horace Mann Jr. High School from the Kennedy School Attendance Area and a crossing at Binney Street is recommended.

Parochial Schools. If the 27th-28th Segment is used, Sacred Heart and Dominican High will be affected. Crossings at Binney Street and Bristol Street are recommended for Sacred Heart. Dominican High will be eliminated by the alignment.

If the 31st Ave. Segment is used, crossings at Binney Street and Spaulding Street are recommended for Dominican High. A crossing at State Street is recommended for those St. Philip Neri students living north of Forest Lawn Cemetery and west of 40th Street.

The Airport Connectors will affect Dominican High if the 31st Ave. Segment is used. A crossing at 27th Street will be needed. The Airport Connectors will also affect St. Therese. A crossing at 16th Street Street is recommended for the Hartman Connector and crossings at 16th Street and 9th Street will be needed if the Fort Connector is chosen.

SUMMARY 1]

The East Alignment will require crossings at: Binney Street, Bristol Street, Ames Avenue, 24th Street, Read Street, and Craig Avenue. The connection to the airport will require a crossing at 16th Street. If the Fort St. Connection is chosen, a crossing will also be needed at 9th Street.

The Central Alignment using the 27th-28th Segment will require crossings at: Binney Street, Bristol Street, Ames Avenue, Laurel Avenue, Curtis Avenue, Redick Avenue, Martin Avenue, 36th Street, King Street and State Street.

The Central Alignment using the 31st Ave. Segment will require crossings at: Binney Street, Spaulding Street, Ames Avenue, Laurel Avenue, Curtis Avenue, Redick Avenue, Martin Avenue, 36th Street, King Street and State Street.

The West Alignment using the 27th-28th Segment will require crossings at: Binney Street, Bristol Street, Ames Avenue, 33rd Street, 39th Street, Redick Avenue, Hanover Street and State Street.

The West Alignment using the 31st Ave. Segment will require crossings at: Binney Street, Spaulding Street, Ames Avenue, 33rd Street, 39th Street, Redick Avenue, Hanover Street and State Street.

The Airport Connector for either the Central or West Alignments will require crossings at: 27th Street, 24th Street, and 16th Street. If the Fort St. Connector is chosen, a crossing at 9th Street is also recommended.

1] Draft copies were distributed to the Study Team,Omaha Public School's Research Department, and the Chancellor of the Catholic Archdiocese. Their suggestions for changes in the recommended crossings have been incorporated into this analysis.

TABLE Z-1

Crossings Needed to Aid Access to Schools: East Alignment

EAST ALIGNMENT

CROSSINGS	SCHOOL'S ACCESS AIDED
Binney Street	Horace Mann Jr. High/Sacred Heart
Bristol Street	Sacred Heart
Ames Avenue	Saratoga/North High/McMillan Jr. High / Dominican High
24th Street	Miller Park/McMillan Jr. High/North High / Dominican High
Read Street	McMillan Jr. High/North High
Craig Avenue*	Minne Lusa/St. Philip Neri
Airport Connectors	
16th Street**	Sherman/St. Therese
9th Street***	Sherman/St. Therese

* Recommended only if there are homes remaining in the Northeast corner of the attendance area.
** Recommended for both the Hartman and Fort Connectors.
*** Recommended for the Fort St. Connector.

TABLE Z-2

Crossings Needed to Aid Access to Schools: Central Alignment

CENTRAL ALIGNMENT

CROSSINGS	SCHOOL'S ACCESS AIDED
27th-28th Segment	
Binney Street	Horace Mann Jr. High/Sacred Heart
Bristol Street	Sacred Heart
Ames Avenue	Saratoga/North High/McMillan Jr. High
31st Ave. Segment	
Binney Street	Horace Mann Jr. High/Sacred Heart
Spaulding Street	Druid Hill/Sacred Heart
Ames Avenue	Monmouth Park/North High/McMillan Jr. High/Dominican
Main Central Alignment	
Laurel Avenue	McMillan Jr. High/North High
Curtis Avenue	Belvedere/Blessed Sacrament
Redick Avenue	McMillan Jr. High/North High
Martin Avenue	Minne Lusa/McMillan Jr. High/North High
36th Street	Florence/McMillan Jr. /North High/St. Philip Neri
King Street*	Florence/St. Philip Neri
State Street	Florence/St. Philip Neri
Airport Connectors	
27th Street	Saratoga
24th Street**	Miller Park
16th Street***	Sherman/St. Therese
9th Street****	Sherman/St. Therese

* Pedestrian only.
**Recommended only if there are homes remaining in the Southeast corner of the attendance area.
*** Recommended for both the Hartman and Fort Connectors.
**** Recommended for the Fort Connector.

TABLE Z-3

Crossings Needed to Aid Access to Schools: West Alignment

WEST ALIGNMENT

CROSSINGS	SCHOOL'S ACCESS AIDED
27th-28th Segment	
Binney Street	Horace Mann Jr. High/Sacred Heart
Bristol Street	Sacred Heart
Ames Avenue	Saratoga
31st Ave. Segment	
Binney Street	Horace Mann Jr. High/Sacred Heart
Spaulding Street	Druid Hill/Sacred Heart
Ames Avenue	Monmouth Park/North High/Dominican High
Main West Alignment	
33rd Street	Monmouth Park/North High
39th Street	North High/McMillan Jr. High
Redick Avenue	McMillan Jr. High/North High
Hanover Street*	Florence
State Street	Florence/McMillan Jr. High/North High/St. Philip Neri
Airport Connectors	
27th Street	Saratoga
24th Street**	Miller Park
16th Street***	Sherman/St. Therese
9th Street****	St. Therese.

* Recommended only if there are any homes in the area South of Forest Lawn Cemetery and North of Read Street which is the southern boundary of the Florence Attendance Area.
** Recommended only if there are homes remaining in the Southeast corner of the attendance area.
*** Recommended for both Hartman and Fort Connectors.
**** Recommended for the Fort Connector.

RECOMMENDED FREEWAY CROSSINGS BASED UPON TRAFFIC FLOW AND SERVICE

The proposed freeway alignments were analyzed with respect to traffic flows and the future street system to establish locations for bridge crossings of the freeway. All arterials and major streets as stated in the **COATS 1995 INTERIM TRANSPORTATION PLAN** (April, 1974) were included as being of primary importance to the street system. Other streets with collector characteristics as well as local circulation characteristics are also included to minimize the barrier effect created by an urban freeway and maximize traffic flow and service between residential areas adjoining the freeway.

East Alignment

Bridge crossings are to be provided at all interchange locations. These interchanges are located at major arterial streets and for the East Alignment are located at Lake, Ames, the proposed Hartman-Redman Arterial and at Craig. The Airport Connectors for the East Alignment have interchanges at 9th and Fort or at 9th and Hartman.

Major arterials that will cross but will have no direct connection to the freeway are 24th Street, Florence Boulevard, Read Street, 25th Street, 30th Street and McKinley.

From the traffic flow standpoint, additional crossings should be located at Binney, Pratt, Sprague and Grebe. Spencer in conjunction with Bedford is contained in the 1995 COATS Plan as a minor street. However, Spencer's narrow width together with the need for school access further south dictated the construction of a bridge crossing at Binney instead of Spencer.

Crossings at Pratt and Sprague are recommended to provide needed local access and circulation.

The crossing at Grebe is recommended in order to provide access to the "working entrance" of the MUD water treatment facility in this area.

The airport connectors would require a crossing at 16th Street for either alignment in addition to the 9th Street interchange mentioned above. Interchanges could not be provided at 16th Street because of the proximity of the 24th and Redman interchange.

Central Alignment

Interchange locations for the Central Alignment will be located at Lake, Ames, 30th Street, the proposed Hartman-Redman Arterial, Redick and State. Other major arterial streets that cross but are not connected to the freeway are 30th Street on the 31st Avnue section, Martin Avenue and Forest Lawn Avenue.

Between Lake and Ames on the Central Alignment, other minor streets crossing the freeway to provide local access and circulation are Binney, Pratt and Sprague on the 28th Street section or Binney and Spaulding on the 31st Avenue section.

Further north, Laurel, Curtis and North Ridge Drive, cross the freeway.

The Airport Connectors for the Central Alignment will provide the same interchanges and crossings on either the Fort or the Hartman alternate. However, some difference occurs between crossings for the Airport Connectors of the 28th Street Section and the 31st Avenue Section.

For the Airport Connectors to the 28th Street section of the Central Alignment interchanges will be provided at 16th Street. Major arterials will cross at 24th Street, Florence Boulevard and 9th Street but will have no connection with the freeway.

In addition to these interchanges and crossings, the 31st Avenue Section of the Central Alignment will have a crossing at 27th Street that would not connect to the freeway.

Analysis of both the 31st Ave. and 27th-28th sections of the Central Alignment revealed that no crossing at 33rd and Grand could be provided with this combination because of topographic considerations. This crossing is recommended to retain the existing Monmouth Park school boundaries. However, the area separated consists only of two square blocks in this case it seems more appropriate to change the school boundaries.

West Alignment

South of 33rd and Grand the West Alignment would have the same interchange locations and street crossings as the Central Alignment.

North of Grand, interchanges will be located at 33rd, Fontenelle, Curtis, Redick and State. Other minor streets that will cross the freeway but will not connect are Laurel and Hanover and Forest Lawn Ave.

The Airport Connectors for the West Alignment are the same as those for the Central as mentioned above.

SUMMARY ON RECOMMENDED BRIDGE CROSSINGS

Based upon the above analyses for schools and for traffic flow, the following freeway crossings in TABLE Z-4 are recommended and are shown in the sketch plans for the freeway alternates in PART V of the corridor report. All of these crossings are intended to be vehicular/pedestrian in design with the exception of the King St. crossing on the Central Alignment which is pedestrian only.

With these recommended crossings, access travel paths severed by the construction of the freeway will be reestablished. As such, the crossings will function significantly by maintaining travelways to schools and neighborhoods as well as for fire, police, and other community services and activities.

TABLE Z-4

SUMMARY — RECOMMENDED BRIDGE CROSSINGS

East Alignment

Lake to I-680

Lake Street

Binney Street

Bristol Street

Pratt Street

Sprague Street

Ames Avenue

Proposed Hartman-Redman Arterial

24th Street

Florence Boulevard

Read Street

25th Street

Craig Avenue

Grebe Street

30th Street

McKinley Street

Airport Connectors

16th Street

9th Street

Central Alignment

Lake to Grand (27th-28th Routing)

Lake Street

Binney Street

Bristol Street

Pratt Street

Sprague Street

Ames Avenue

30th Street

Lake to Grand (31st Ave. Routing)

Lake Street

Binney Street

30th Street

Spaulding Street

Ames Avenue

Grand to I-680

Laurel Avenue

Curtis Avenue

Redick Avenue

Martin Avenue

North Ridge Drive/Forest Lawn Avenue

King St. (Pedestrian Only)

State Street

McKinley Street

Central Alignment (Continued)

Airport Connector (27th-28th North Freeway Routing)

24th Street

Florence Boulevard

16th Street

9th Street

Airport Connector (31st Ave. North Freeway Routing)

30th Street

27th Street

24th Street

Florence Boulevard

16th Street

9th Street

West Alignment

Crossings South of Grand Avenue

Same as Central Alignment

Crossings North of Grand Avenue

33rd Street

Fontenelle Boulevard

Laurel Avenue

Curtis Avenue

Redick Avenue

Hanover Street

Forest Lawn Ave.

State Street

McKinley Street

Airport Connectors

Same as Central Alignment

APPENDIX AA.

NORTH OMAHA EXPRESSWAY: SURVEY OF PUBLIC OPINION [1]

Introduction

This APPENDIX analyzes the results of a telephone survey of 502 men and women living in the City of Omaha, interviewed during the first week of December 1974. [2] Interviews are conducted by members of the staff at the Center for Applied Urban Research. The survey was undertaken as a follow-up study of the attitude survey of North Omaha residents conducted during the period June 15 through July 30, 1974, which is discussed in APPENDIX B.

A majority of respondents — three out of every four — are aware of the planning for a North Omaha freeway, while only half of the total respondents approve of the construction of such a freeway. The displacement of people, disruption of neighborhoods, fast, safe, efficient transportation, cost of building and maintaining the freeway, aesthetic value, effect on regional and community growth as well as noise and air pollution are considered equally important in planning for an expressway. These were among the major findings that emerged from the telephone survey of randomly chosen residents of Omaha.

1] "North Omaha Expressway: Survey of Public Opinion," **Review of Applied Urban Research,** Center for Applied Urban Research, University of Nebraska at Omaha; December 1974, Vol. 2, No. 12, pp. 6-7.

2] Omaha was divided into six geographical areas with 42nd Street and 72nd Street serving as east-west boundaries and Dodge Street serving as the north-south boundary. The area east of 42nd Street and north of Dodge is Northeast Omaha, the area east of 42nd Street and south of Dodge is Southeast Omaha, etc. Respondents were selected from the Omaha Telephone Directory using E. S. Pearson's Table of Random Sampling Numbers. The true values are within ±1.5 percent of calculated values at the 90 percent confidence level.

Important Factors in Planning a Freeway

Respondents were given a list of seven factors considered in planning a freeway and asked to rate them on the basis of their importance (0 = not important, 10 = very important). The results of the survey indicate that all seven factors are felt to be equally important. (TABLE AA-1)

Awareness

Three out of every four residents indicated an awareness of the planning currently being conducted for the North Omaha Freeway; but awareness varied significantly by area in Omaha. Respondents from Northeast and Northwest Omaha tend to be most aware of the planning as are male respondents and those under 35 years of age (see TABLE AA-2).

Build or No Build

When respondents were asked the question: "Shall the North Omaha Expressway be built?", 53% of the respondents indicated "yes", 19% "no" and the remainder indicated that they "did not know". Male respondents were more likely to indicate yes, as were the respondents living in the Northwest part of Omaha. Residents of Southcentral Omaha were least likely to indicate "yes", as were respondents of low income ($8,000 and under) families, and older respondents (55 and over). These findings were similar to those in the earlier survey. Respondents residing south of Dodge Street were less likely to favor the construction of a freeway and they were also more likely to express a "don't know" rather than a firm "yes" or "no" opinion. (TABLE AA-3)

Conclusion

This survey will enable the planners to learn the views of those living outside as well as within the North Omaha Corridor Area. The results lend little support to the importance of rating factors in planning an urban expressway. The attitude of "no build" is still strongest in Northeast Omaha, but fewer North Omaha residents appear to oppose the freeway today than was the case in June and July of 1974. In the city as a whole fewer than two out of every ten respondents favored "no build" and nearly three out of every ten are still "undecided" or "don't know".

TABLE AA-1

ATTITUDES ON EXPRESSWAY PLANNING FACTORS

In planning for an Expressway how would you rate the following factors on a scale from 0-10. (0 = not important, 10 = most important)

Factor	Number of Respondents	Aggregate Score	Average Score	Ranking
Displacement of people	499	3950	7.9	1
Disruption of neighborhoods	501	3713	7.4	5
Fast, safe, efficient transportation	499	3922	7.9	3
Cost of building and maintaining the freeway	491	3822	7.8	4
Aesthetic value (beauty)	501	3472	6.9	7
Effect on regional and community growth	495	3628	7.3	6
Noise and Air Pollution	496	3924	7.9	2

TABEL AA-2

NORTH FREEWAY AWARENESS

Are you aware of plans for the building of a North Omaha Freeway (Lake north to I-680)?

	Number of Respondents	Percent of Respondents		
		Yes	No	No Response
Total	501	77	22	1
Male	151	82	18	0
Female	344	74	24	2
Under 35	205	79	21	0
35-55	178	75	24	1
Over 55	116	76	20	4
Under $8,000	119	70	28	2
$8,000-$12,000	106	78	21	1
$12,000-$20,000	160	82	17	1
Over $20,000	68	79	19	2
No Response	48	67	31	2
Northeast	87	84	14	2
Southeast	85	72	26	2
Northcentral	88	74	24	2
Southcentral	61	77	23	0
Northwest	74	83	16	1
Southwest	106	73	27	0

TABLE AA-3

ATTITUDES ON BUILDING NORTH FREEWAY

Should the North Omaha Freeway be built?

	Number of Respondents	Percent of Respondents		
		Yes	No	Don't Know
Total	501	53	19	28
Male	151	60	16	24
Female	344	50	20	30
Under 35	205	54	17	29
35-55	178	59	17	24
Over 55	116	45	22	33
Under $8,000	119	47	24	29
$8,000-$12,000	106	62	11	27
$12,000-$20,000	160	58	20	22
Over $20,000	68	53	21	26
No Response	48	35	15	50
Northeast	87	53	28	19
Southeast	85	51	19	30
Northcentral	88	58	17	25
Southcentral	61	48	16	36
Northwest	74	66	15	19
Southwest	106	47	16	37

LIST OF TECHNICAL MEMORANDA

The following technical memoranda were prepared during the course of the North Freeway Corridor Study. Their purpose was to document findings, analyses, and conclusions for future reference in preparing the final corridor report.

Below is a complete listing of the technical memoranda. Copies are on file with the City of Omaha and the Nebraska Department of Roads.

LISTING OF TECHNICAL MEMORANDA*
North Freeway Corridor Study

TM No.		
1.	Edges and Homogenous Areas — W. B. Austin, HDR	January, 1974
2.	Environmental Analysis — AESCO	January, 1974
3.	Philosophical and Technical Basis of Environmental Quantitation — AESCO	June 25, 1974
4.	Northridge Drive — R. F. Ferguson, HDR	January 28, 1974
5.	Soils, Slopes — R. F. Ferguson, HDR	January 28, 1974
6.	Historical Sites — R. F. Ferguson, HDR	February 26, 1974
7.	Railroads — J. S. Schnettler, HDR	March 9, 1974
8.	Preliminary Environmental Evaluation — AESCO	March 25, 1974
9.	Population Characteristics — CAUR/UNO	March 13, 1974
10.	Assessed Value & Market Value of Selected Residential Properties in the North Freeway Corridor — CAUR/UNO	March 13, 1974
11.	Schools and Attendance Areas — CAUR/UNO	March 22, 1974
12.	Socio-Economic Impact Study: Community Involvement — CAUR/UNO	March 22, 1974
13.	Preliminary Alignments: General Engineering Description and Evaluation — R. Niedergeses, HDR	April 8, 1974
14.	Preliminary Reaction Statements on Environmental Quality of Theoretical Alternates — AESCO	April 8, 1974
15.	Reactions to Proposed Alternate Alignments (Socio-Economic) — CAUR/UNO	April 5, 1974
16.	Parks & Churches Affected by N. Fwy. Alignments — CAUR/UNO	May 3, 1974
17.	Preliminary Design Standards — J. S. Schnettler, HDR	May 13, 1974
18.	Consultant Recommendations for the Selected Alignments for Detailed Studies — J. H. Suttle, HDR	May 16, 1974
19.	Airport Connector (Environmental) — AESCO	May 24, 1975
20.	Environmental Aspects of the "No Build" Alternate — AESCO	June 20, 1974
21.	North Freeway Citizen Attitude Survey — CAUR/UNO	August 30, 1974
22.	Recommended Freeway Crossings Based Upon School Attendance Areas — CAUR/UNO	August 30, 1974
23.	Formation of A Consortium Group, Creighton University	September 4, 1974
24.	Recommended Freeway Crossings Based Upon Traffic Flow and Service, R. Niedergeses, HDR	September 4, 1974
25.	Developing A Weighted Rating System for Comparing Freeway Alternates, J. H. Suttle, HDR (This approach was not utilized in the final evaluation of the alternatives. A simpler summary approach was employed instead.)	November 18, 1974

*Authorship is indicated by the following abbreviations:
HDR — Henningson, Durham & Richardson, Inc.
AESCO — Associated Environmental Services Co., Lincoln, Nebr.
CAUR/UNO — Center for Applied Urban Research, University of Nebraska at Omaha

LIST OF REFERENCES

1. **COATS 1995 Interim Transportation Study,** Omaha-Council Bluffs Metropolitan Area Planning Agency, Report No. 108-1, May 1973 and April 1974.

2. **Omaha Metropolitan Area Transportation Study** (OMATS), Barton-Aschman Associates, Inc., May, 1970.

3. **Omaha Metropolitan Area Proposed Trafficway System, Volume III — Street and Highway Plan,** Howard Needles, Tammen and Bergendoff, January 1957.

4. **Interim Major Street Plan,** Part One — Section Four, Omaha Master Plan, Report No. 136, Omaha City Planning Board, December 1964.

5. **Federal Highway Program Manual,** Vol. 7, Ch. 7, Sect. 1, 2, and 5, U.S. Department of Transportation, Federal Highway Administration.

6. **Road Design Manual,** Nebraska Department of Roads, 1973.

7. **A Policy on Geometric Design of Rural Highways** (Blue Book), 1965, and **A Policy on Design of Urban Highways and Arterial Streets** (Red Book), 1973, American Association of State Highway Officials.

8. **Highway Capacity Manual, Special Report 87,** Highway Research Board, 1965.

9. "Capacity Analysis Techniques for Design of Signalized Intersections". Reprinted from **Public Roads, A Journal of Highway Research,** Vol. 34, Nos. 9 and 10, August 1967 and October 1967, U.S. Department of Transportation, Federal Highway Administration.

10. **Building Construction Cost Data 1974,** Robert Snow Means Company, Inc.

11. **I-480 Joint Use Study,** (circa 1970), Omaha City Planning Department.

12. Jesses L. Buffington, "Economic Consequences of Freeway Displacement to Residents Relocated Under the 1968 and 1970 Relocation Programs", **Transportation Research Record 481,** 1974.

13. **Housing and Community Development in the Nebraska-Iowa Riverfront Development Project Area, 1973,** Center for Applied Urban Research, University of Nebraska at Omaha.

14. Hamer, Siler, George Associates, **The Influence of Central City Radial Freeways on Manufacturing Locational Decisions.** Prepared for U.S.D.O.T., Federal Highway Administration, October 1973.

15. "Land Value Impacts of Expressways in Dallas, Houston, and San Antonio, Texas", **Highway Research Record 227,** 1959, Highway Research Board.

16. **Air Quality Manual,** Vol. I and II, April 1972 Interim Report, U.S. Department of Transportation, Federal Highway Administration.

17. **Airport Freeway Terminus Study,** Report No. 177, Omaha City Planning Department (circa 1974).

18. **North Omaha Recreation and Culture,** Missouri Riverfront Development Program Sub-Element B 308, prepared by the Community Design Center, College of Architecture, University of Nebraska at Lincoln.

19. **North Omaha Community Development (NOCD) 701 Comprehensive Plan.** Contact Omaha City Planning Department.

20. **Parks, Recreation, Open Spaces Master Plan,** Report No. 170, Omaha City Planning Department (circa 1973).

21. **Land Use and Program Developement Report,** Henningson, Durham, and Richardson, April 1975.

22. "North Omaha Expressway: Survey of Public Opinion", **Review of Applied Urban Research,** Center for Applied Urban Research, University of Nebraska at Omaha, Vol. 2, No. 12, Dec. 1974.

23. **Air Quality Manual,** Interim Report, Federal Highway Administration, April 1972.

24. **Report for Consultation on the Metropolitan Omaha Interstate Air Quality Control Region,** U.S. Department of Health, Education & Welfare, 1970.

25. **Federal Register,** Environmental Protection Agency, April 30, 1971.

26. "Rational Location of a Highway Corridor: A Probabilistic Approach," **Highway Research Record No. 348,** Smith, W. L., 1971, Highway Research Board.

27. **Highway Joint Development and Multiple Use,** Federal Highway Administration, February 1970.

28. **Multiple Use of Lands Within Highway Rights-of-Way,** National Cooperative Highway Research Program Report 53, Highways Research Board, 1968.

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