

CONGESTION MANAGEMENT TASK FORCE  
EXECUTIVE SUMMARY  
October 10, 1996

Pursuant to a direction in the 1994 Comprehensive Plan for Lincoln-Lancaster County, the Congestion Management Task Force was organized in February, 1995 to study the following 6 high impact corridors:

South 27th, South 40th, South 48th, and South 56th, all from "O" Street on the north to Nebraska Highway 2 on the south; South Cotner Street from 56th to "O"; and Holdrege Street from 27th to 48th Street.

The Task Force was composed of 16 members, 8 of whom were representing or affiliated with neighborhood organizations which include areas which include the high impact corridors. The Task Force was charged with three major tasks:

- 1) Study all options for facilitating the flow of traffic through the high impact corridors. This should also include consideration of alternatives for mitigating the impacts such alternatives would have on the adjacent neighborhoods.
- 2) Recommend specific alternatives for improving traffic flow within the areas and any associated impact mitigation options.
- 3) Recommend the trigger mechanism for determining the conditions under which such transportation system improvements are to be undertaken. This entails identifying the measures to be used in determining if, when, and what street improvements would occur within these corridors.

The charge also included development of a program for the City which would meet the goal of reducing or preventing traffic congestion and improve air quality.

The Task Force met for 20 months and unanimously agreed upon this final report. Consultants were hired to assist the Task Force, and many members of the City staff, with involvement of the Department of Roads and other public departments, were represented and involved.

The Task Force proposes 3 sets of recommended actions related to the high impact corridors. The first group relates to improvements which should be initiated now, without regard to whether the trigger is met. The second group relates directly to the trigger mechanism. The third group relates to neighborhood considerations which will facilitate the ability of the affected neighborhoods to adjust to the improvement.

Group I: Minimal Impact Alternatives. The Task Force recommends that the Group I improvements be implemented as soon as possible to determine what impact they will have on traffic conditions, and to help defer or negate the need to widen the high impact corridors to 4 or 5 lanes. The Group I, Minimal Impact Alternatives, are as follows:

- The top priority of the Task Force is that the interior grid system should be improved to the 2 + 1 (two through lanes plus a continuous left-turn median lane) design on the following streets: 13th Street from South Street to Arapahoe, 33d Street from South Street to Hwy 2; 40th Street from "O" Street to Hwy 2 (where not); 48th Street from Calvert Street to Hwy 2; 56th Street from South Street to Randolph Street and Pioneers from Hwy 2 to 56th Street.

- Install a more responsive traffic signal system. While once state of the art, the current system needs upgrading.
- Implement intersection improvements which might affect traffic flow on any of the high impact corridors. Intersections where bottlenecks are found should be improved. WSA/HWS recommended remedial action at a number of intersections: 27th & O; 27th & A; 27th & Hwy 2; 40th & Normal; 40th & Sheridan; 40th & Hwy 2; 48th & "O"; 48th & Normal; 56th & Pioneers; 56th & Elkcrest; 56th & Normal; 56th & Hwy 2; and 56th/Cotner/Randolph.
- Complete the inner ring road system:
  - 70th (north to Havelock Ave, south to Pine Lake Rd.
  - 84th Street (north to Hwy 6, south to Hwy 2)
  - Old Cheney Road (Hwy 2 to 84th Street)
  - Pine Lake Road (14th St. to Hwy 2)
  - Pioneers Blvd. (56th to 84th Streets)
  - 14th Street (Old Cheney Rd. to Pine Lake Rd.)
- Study the one-way pairing of 56th Street and Cotner Blvd. between Randolph Street and R Streets.
- TSM/TDM strategies should be continuously implemented where feasible.
- Implement a truck route plan for through truck traffic where feasible.

Group II: **The Trigger Approach.** The key action by the Task Force was the adoption of 18 mph as the average speed to be used as the threshold trigger for initiating a study phase that could result in street improvement projects, and 16 mph average speed being the point at which study recommendations will be implemented. The goal is to not remain below 16 mph as the average speed on a corridor segment. Verifiable data must be used to make these decisions and a collaborative process developed involving the Planning and Public Works Departments, neighborhood residents, utility companies and other affected parties.

The Task Force recommends that "average speed" be substituted for "Level of Service" to determine congestion on the high impact corridors. Adoption of a trigger mechanism uses a demonstrated need for the improvement, and avoids the traditional "build it and they will come" approach of traffic engineering. The Report describes a staging process to be incorporated into the Comprehensive Plan which specifies actions to deal with congestion measured on the corridor.

Group III: **Minimizing Neighborhood Impacts.** The Task Force recognizes the need to preserve the quality of life in Lincoln's inner city neighborhoods. Strategies are recommended to minimize the impacts of street improvements on neighborhoods, including recommendations involving: tree replacement; landscaping and design; notice at appropriate times to home buyers that these streets may potentially need widening in the future; impacts on the properties most directly affected by the projects; preventing traffic encroachment into neighborhoods; consideration of constructing a super arterial roadway; and consideration of safety issues.

THE MAYOR'S  
CONGESTION MANAGEMENT TASK FORCE  
FINAL REPORT  
FOR  
THE CITY OF LINCOLN, NEBRASKA

October 10, 1996

## CONGESTION MANAGEMENT TASK FORCE

TO: MAYOR MIKE JOHANNNS, LINCOLN CITY COUNCIL AND LINCOLN-LANCASTER COUNTY PLANNING COMMISSION

### I: INTRODUCTION

The 1994 Comprehensive Plan for Lincoln-Lancaster County (the "1994 Plan" or the "Plan") recognizes a need to continue undertaking improvements to the existing street network - including the potential future widening of arterials in the established areas of the city. It further recognizes that the influences of sustained growth and existing patterns of travel behavior will place added demands on the transportation system.<sup>1</sup>

The Plan directs the Transportation Department, in conjunction with the Planning Department, with the assistance of a consultant and a broad based community committee, to examine the full range of transportation alternatives and means for minimizing their negative impacts. Pursuant to this directive, the Congestion Management Task Force (the "Task Force") was organized to study six "high impact corridors": South 27th, South 40th, South 48th, and South 56th, all from "O" Street on the north to Nebraska Highway 2 on the south; South Cotner Street from 56th to "O"; and Holdrege Street from 27th to 48th Street (the "high impact corridors" or "corridors").

On February 28, 1995, the Task Force conducted its first meeting with 16 members who were appointed by Mayor Mike Johanns.<sup>2</sup> The Task Force was directed to take a detailed look at the question of potential street widening within the older areas of Lincoln, with three major tasks:

- 1) Study all options for facilitating the flow of traffic through the high impact corridors. This should also include consideration of alternatives for mitigating the impacts such alternatives would have on the adjacent neighborhoods.
- 2) Recommend specific alternatives for improving traffic flow within the areas and any associated impact mitigation options.
- 3) Recommend the trigger mechanism for determining the conditions under which such transportation system improvements are to be undertaken. This entails identifying the measures to be used in determining if, when, and what street improvements would occur within these corridors.

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<sup>1</sup> 1994 Plan, p. 103.

<sup>2</sup> The members of the Task Force who adopted its final report are identified on Appendix A.

The charge also included development of a program for the City which would meet the goal of reducing or preventing traffic congestion and improve air quality.

During the 20 month period that the Task Force met, consulting groups were hired for two different studies. One was a consulting group consisting of Wilbur Smith & Associates and HWS ("WSA/HWS"), who provided local traffic and municipal engineering assistance. The other was a consulting group consisting of DeWild Grant Reckert and Snyder and Associates ("DGR"), who studied and recommended changes to the signal system affecting the high impact corridors.

II: ANALYSIS OF CHARGE STATEMENT

The Task Force had considerable discussion and some disagreement about the breadth and scope of its charge. Some of the key issues were the following:

1. Whether any other streets could be considered for improvement projects as a solution to congestion on the high impact corridors. The Task Force requested clarification of this issue from the Mayor's office, and the response in a letter dated March 15, 1996, is included as Appendix B. While the Task Force was generally limited to reviewing the high impact corridors, the WSA/HWS report and the Task Force recommends some improvements outside the study area, such as the "ring road" concept. Other alternatives outside the study area were mentioned but were not discussed in any detail.
2. Whether the high impact corridors are "congested", and how congestion should be measured or determined. Should a higher level of congestion be tolerated within the built-up environment than in the developing areas on the fringe of the City? Should some congestion be tolerated as a realistic result of urban living - especially through inner city neighborhoods and during peak driving hours?
3. Whether the public perceives that the only true solution would be construction of a major north-south arterial with a 45 or 55 miles per hour speed limit. The Task Force was very interested in a solution which would have a material impact on average traffic speeds to actually achieve a true solution to any congestion problem. It would be consistent with a perceived public objective to construct such a roadway. Such a solution might be a super-arterial (i.e., a 4-lane divided, or a limited access roadway).<sup>3</sup>

There was favorable sentiment on the Task Force to "do this right", once and

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<sup>3</sup> See discussion in the minutes of the Task Force meeting on June 15, 1995, and modeling conducted by the Planning Department and described by Mike Brienza on September 14, 1995. Also see WSA Consultant report at 58.

for all. However, the cost of a superarterial project could be prohibitive<sup>4</sup>. The Task Force sought clarification from the Mayor's Office whether such a solution was feasible. The Mayor indicated that a super-arterial was not feasible<sup>5</sup>, and the Task Force focused its attention on making the high impact corridors work as well as possible as, generally, 35 miles per hour arterials.

4. Whether the transportation grid system could or should be modified to improve the performance of the high impact corridors. Congestion is experienced at intersections because the north-south high impact corridors intersect with east-west arterials, such as "O" Street, Normal Boulevard, A and South Streets, and Highway 2. Holdrege Street intersects with north 27th, 33rd, and 48th Streets in the study area. With the grid system, it may be practically impossible to significantly improve north-south traffic flow on these corridors unless signalization priority is given to a selected north-south corridor, or the grid system is modified in some material way, whether through the construction of overpasses or a super-arterial. The 56th/Randolph/Cotner intersection consists of three arterials which makes signal prioritization significantly more difficult. Significant changes (other than some signalization enhancements) involving the grid system were considered to be beyond the charge of the Task Force.

### III: BACKGROUND; CHANGED CONDITIONS

A. 1994 Plan; High Impact Corridors. The Plan as adopted defers any improvements on the high impact corridors until completion of the work of this Task Force. No improvements are budgeted for these corridors in the 6-year capital improvements program ("CIP"). In addition, the Plan states that no widening will be approved on these corridors until the following Phase 1 projects are completed: (1) 70th Street from Highway 2 to Pioneers Boulevard; (2) 84th Street from Highway 2 to South Street; (3) Old Cheney Road from Highway 2 to 84th Street; (4) Pine Lake Road from 14th Street to Highway 2 and from 84th Street to 98th Street.<sup>6</sup> The Plan directs that there will be a report on the actual traffic impact that these improvements have on the road network prior to the inclusion of any of the impacted arterial street projects in the City's CIP or similar project programming. With these delays built into the Plan, it may be several years before any improvement studies could commence or any project affecting the high impact corridors could be added to the CIP even if the trigger mechanisms are met.

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<sup>4</sup> The Planning Department ran several traffic models requested by the Task Force. A summary of the models and the effect of the improvements were discussed at a Task Force meeting on September 14, 1995.

<sup>5</sup> See letter from Mayor Mike Johanns to the Congestion Management Task Force dated March 15, 1996, which is attached as Appendix B to this report.

<sup>6</sup> Plan at 106.

B. Comprehensive Plan Assumptions. Lincoln is a dynamic and growing City. Assumptions which were valid in 1994, when the Plan was adopted, may no longer be valid when the actual land uses approved since that date are compared to the assumptions upon which future traffic projections were made in the Plan. Some of the assumptions and modeling which form the basis for future traffic projections in the Plan and thus the WSA/HWS report include the following:

1. Rate of Population Growth. The Plan states that the City's population has been growing at a rate of 1.6% per year for the past three decades. If that rate of growth continues, the time frames for various development opportunities and the need for certain infrastructure and community facilities may be accelerated.<sup>7</sup>

The City-County Commons voted to utilize a rate of population increase of one percent per year as the basis for planning future land use and public service needs through the year 2010.<sup>8</sup> The 1996 amendments to the Plan indicate that the growth of the City may be exceeding the 1% annual projection assumed by the Commons for planning purposes, and the actual rate of growth of the City and Lancaster County is 1.3% in the 1990's. It is unknown what impact an accelerated rate of growth has on the high impact corridors, and no transportation models were run to determine the effect.

2. Commercial Projections. The Transportation Technical Report includes two assumptions which appear to be outdated: first, it projects commercial space at 27th Street and Pine Lake Road at 800,000 square feet. However, under the 1996 Plan amendments, the projections have increased to 1.3 million square feet, with additional residential.<sup>9</sup> Second, the 1996 Plan amendments include significant additional development in the area of north 27th and Superior for commercial, industrial and residential uses. It should also be noted that the Plan does not include Star City Shores, the water park recently opened at 27th Street and Highway 2. Further, the proximity of the south and east beltway to the City, and the amount of commercial development at 84th and Highway 2, could materially affect the high impact corridors.

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<sup>7</sup> Plan at 35.

<sup>8</sup> Plan at 35. Also see Transportation Technical Report at 8-9.

<sup>9</sup> The Southridge Development Traffic Impact Analysis Report dated May, 1996, and Addendums (June 19 and 24, 1996) project that upon buildout of this development at 27th and Pine Lake Road, that the resulting impacts on the transportation system as identified on the Plan is that it is not able to accommodate the increases in projected traffic. The transportation system fails (i.e., Levels of Service "E" and "F") along Old Cheney Road, Pine Lake Road, 14th Street, 27th Street and 56th Street at Highway 2. The models of this traffic report only studied the impact south of Highway 2, and therefore, did not study or model the impact on the high impact corridors north of Highway 2.

Commercial developments need to be realistically defined (i.e., maximum possible square footage) in the Plan. The Task Force discussed the tendency to continue to intensify development at commercial centers beyond the planned size, such as at Williamsburg and at Edgewood Shopping Center at 56th and Highway 2. Notwithstanding these changed conditions, there was no modeling to determine the effect of these changes in land use on the traffic on the high impact corridors. It is unknown what impact these and other significant changes in land use will have on the high impact corridors:

3. Level of Service. The Plan has set Level of Service ("LOS") C as the standard by which all intersections and arterials will be measured.<sup>10</sup> LOS C is considered to have a stable flow, moderate volumes, speed and maneuverability is more restricted but generally determined by traffic conditions.

Lincoln has calculated the LOS of its intersections based on surveys conducted in the mid-1980's, and determined that it was 1,650 vehicles per hour per lane. As indicated in the WSA/HWS report, the 1994 HCM methodology and default saturation flow rates is 1,900 vehicles per hour per lane. WSA/HWS determined that Lincoln driving habits are much closer to the national norms of 1,900 vehicles per hour per lane. Generally, this means that Lincoln drivers drive faster and are more aggressive than they were several years ago, and have driving habits similar to other large cities.

Based on this finding, WSA/HWS made a recommendation, which was accepted by the Task Force, that the LOS of each intersection in the study area be redetermined based on current driving habits (i.e., 1,900, instead of 1,650, vehicles per hour per lane). This has the effect of showing an improved LOS for many intersections notwithstanding the fact that there have been no physical changes to the street or intersections, and nothing else has changed other than, apparently, the driving habits of the people who drive on Lincoln's streets.

C. Summary of Assumptions. With the uncertainty associated with the various assumptions related to the Plan, and the constant changes in land uses and projects under consideration, the Task Force adopted a motion at its meeting on June 29, 1995, which sets forth the common assumptions of the charge statement: (1) the 1994 Plan will be the guide for the Task Force as it relates to projected land uses; (2) the Task Force will consider a planning period of 20-30 years; (3) minimum impact alternatives should be considered first before a high impact corridor is considered for widening; and (4) the Task Force will develop trigger mechanisms for construction or improvements to the corridors.

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<sup>10</sup> Level of Service is defined in the Highway Capacity Manual ("HCM"). Level of Service C was established as the threshold against which alternative system improvements were to be tested. Street segments exceeding the modeled level of service threshold then become candidates for improvement and more detailed study. Also see Transportation Technical Report at 46.

#### IV: MINIMAL IMPACT ON NEIGHBORHOODS; COLLABORATIVE PROCESS

Historically, Lincoln's political leaders have been sensitive to the neighborhoods in the study area as it relates to widening. As indicated in the WSA/HWS report, the approach directed to the Task Force is conceptually different than that applied to traditional traffic planning. Instead of building improvements based on projected future needs, which is the traditional approach, no improvements would be studied or constructed until an objective measure has been triggered - the trigger mechanism. There would be a need and demand demonstrated by the driving public, which would be verified by actual traffic counts.

Planning in general, and in the study area in particular, is difficult since improvement projects must be planned many years in advance. Many planning variables are subject to continual change - the rate of population growth, land uses, driving habits, street improvements, occupancy per vehicle, fuel prices, air quality - to name a few. There is a need to make improvements which achieve the needs of the community as a whole, while not impacting the affected neighborhood any more than is reasonably necessary.

The means to address concerns about property values by residents should be considered a priority. Present policy is inadequate for dealing with large scale street widening projects. Fair and equitable compensation for homeowners who are directly affected by street widening projects should be considered. This should include discussion of compensation for proximity damages, and availability of grant funds or city funds for owner occupied homes to provide for landscaping, privacy fences, berms and other outdoor improvements to mitigate the impacts of noise and air pollution and other negative impacts associated with increased traffic.

There is no way to insure that the result will minimally impact the neighborhood. Improvement projects must move forward when there is a verifiable demonstrated need. In developed neighborhoods, it is practical to give the affected neighborhoods an opportunity to comment on ways that the project could minimally affect the neighborhood. While the City must adhere to the laws and consistent standards applicable to all projects, the impact can be minimized if the neighborhood is given an opportunity to be involved in the process at a meaningful stage. The Task Force believes that there is a need to develop a fair, collaborative process that ensures continued community input.<sup>11</sup>

There is also a need to validate computer projections with an ongoing program of verification with actual data. The results of these studies must be expressed in a manner which is comprehensible to the public to enhance meaningful input. It is noteworthy that

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<sup>11</sup> See discussion of the application of average speed as a trigger under Article V below, the Group II improvements, subsection B, "Application of Average Speed Trigger."

average speed and intersection delay are now seen as a good way to measure congestion instead of traditional volume/capacity method.

V: THE PROCESS: AN INCREMENTAL APPROACH

The Task Force has developed three sets of recommended actions related to the high impact corridors. The first group relates to improvements which should be initiated now, without regard to whether the trigger is met. In many instances, these steps should have a favorable effect on traffic flow in the city in general, with some improvement to be recognized on the study corridors. The second group relates directly to the trigger mechanism. The third group relates to neighborhood considerations which will facilitate the ability of the affected neighborhoods to adjust to the improvement.

Group I: Minimal Impact Alternatives. It is the intent of the Task Force that the Group I improvements be implemented as soon as possible to help defer or negate the need to widen the high impact corridors to 4 or 5 lanes.<sup>12</sup> In particular, the Task Force requests prior to making a decision to widen any high impact corridor, that the City first endeavor to:

- 2+1 lane the following streets: 13th Street from South Street to Arapahoe, 33d Street from South Street to Hwy 2; 40th Street from "O" Street to Hwy 2 (where not); 48th Street from Calvert Street to Hwy 2; 56th Street from South Street to Randolph Street and Pioneers from Hwy 2 to 56th Street.
- Install a more responsive traffic signal system, as noted in the DGR report.
- Implement the intersection improvements which might affect traffic flow on any of the high impact corridors, as noted in the WSA/HWS report.
- Complete the inner ring roads, which has the potential to alleviate traffic congestion on the interior grid system.
- Study the one-way pairing of 56th Street and Cotner Blvd. between Randolph Street and R Streets.

The City should endeavor to complete these projects to determine what impact they will have on traffic conditions on the high impact corridors.

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<sup>12</sup> It should be noted that improvements projects which are identified in the Plan must be fiscally constrained (see Federal Regulations at 450.322(b)(11) regarding the Metropolitan Planning and the Transportation Plan).

#### 1. Build Interior Arterials to 2+1 Design.

The top priority of the Task Force is that the interior grid system should be improved to the 2+1 (two through lanes plus a continuous left-turn median lane) design. This will promote smoother and safer traffic flow. The 2+1 design, by providing less interrupted traffic flow, works especially well with a well-managed signalization system. The City Council has already authorized the Public Works Department to widen existing arterials to 32 feet as part of resurfacing projects and this should be pursued.<sup>13</sup> Where impacts from even minor widening would be severe, 30 feet should be considered as an acceptable width.

2. Signalization Optimizations. Priority should also be given to improvement of the City's signalization system. While once state of the art, the current system needs upgrading. As recommended by DGR, the City should buy new equipment and software to provide a traffic-responsive system. The cost of such a system would likely be less than widening just a mile of road, yet would provide great benefits during both peak and off-peak hours in the form of faster average speeds and smoother, less frustrating travel. The DGR recommendation that the system be monitored annually is critical to the effectiveness of this strategy and to the use of the trigger mechanism. Speed and delay on all major roadways and the intersections within the "built environment" (shown as a red line on figure 31 of the 1994 Plan) should be measured regularly to provide the best possible information.

3. Intersection Improvements. Intersections where bottlenecks are found should be improved. WSA/HWS recommended remedial action at a number of intersections: 27th & O; 27th & A; 27th & Hwy 2; 40th & Normal; 40th & Sheridan; 40th & Hwy 2; 48th & "O"; 48th & Normal; 56th & Pioneers; 56th & Elkcrest; 56th & Normal; 56th & Hwy 2; and 56th/Cotner/Randolph. There may be a number of additional problem intersections throughout the City which should be improved, but which were outside the scope of the consultant's study. Often the simple addition of a right-turn lane (such as at 56th & "A" for north-bound 56th Street traffic) can make a difference with little impact and for little money.

#### 4. Complete Inner Ring Roads.

- 70th (north to Havelock Ave, south to Pine Lake Rd.
- 84th Street (north to Hwy 6, south to Hwy 2)
- Old Cheney Road (Hwy 2 to 84th Street)
- Pine Lake Road (14th St. to Hwy 2)
- Pioneers Blvd. (56th to 84th Streets)

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<sup>13</sup> Resolution No. 72686, approved on March 23, 1989.

- 14th Street (Old Cheney Rd. to Pine Lake Rd.)<sup>14</sup>

Completing these projects will produce a robust grid system of medium- and higher- speed roads around the built-up areas of the City. In addition, these roads will connect with the newly improved or already improved roads on the north and west; Cornhusker Hwy, Superior Street; 9th and 10th Streets; I-180; I-80; and the Salt Valley Roadway. Intersections of these roads with each other should be improved to facilitate easier turning and merging movements. The intersection of 10th and Van Dorn is a prime example of an inner ring road intersection needing future improvement. The speed limits on these inner ring roads could generally be higher than on the interior arterials to encourage the movement of traffic around the built environment.

5. TSM/TDM. The strategies for increasing Lincolniters' use of public transit and encouraging carpooling outlined in the Congestion Management Program prepared by WSA/HWS should be implemented immediately. The public education campaign that accompanies these strategies should include information about using alternate routes such as the beltways and inner ring roads.

6. Implement Truck Route Plan. Routing through truck traffic around the City as much as possible will improve the flow of automobile traffic in the interior of the City. To this end, truck route signs should be posted to let truck drivers know what the preferred (and usually faster) routes are. The construction of south and east bypasses would be most helpful in keeping the through truck traffic off of some of the inner ring roads needed to move local traffic efficiently.

7. Special Projects. 56th and Cotner Blvd between Randolph and "R" Street should be considered for one-way pairing. Only a block apart at "O" Street, pairing these streets would provide three through lanes in each direction with minimal impact on the surrounding area. By connecting them at "R" Street, they provide easy access to and from Gateway Mall. Because such pairing would yield as many lanes as widening Cotner Blvd., such widening should become unnecessary.

#### Group II: The Trigger Approach

The key action by the Task Force was the adoption of 18 mph average speed as the trigger for initiating a study that could result in street improvement projects, with 16 mph being the point at which the study recommendations will be implemented. The 18

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<sup>14</sup> The Task Force also recommends that Highway 2, from Van Dorn to 14th Street, be designated as a ring road. However, this segment is only scheduled for improvement in the 1-20 year program in the Plan. See Plan at 99. Acceleration of the timing of this improvement would facilitate the concept of a continuous inner ring road system.

mph trigger would be the average speed on a corridor with a 35 mph free flow speed.<sup>15</sup> If the average speed remains or drops below 18 mph on a corridor segment, it may be considered for widening to 4 or 5 lanes.

A. Average Speed. Traffic engineers have many different measures of traffic. The Task Force reviewed several different measures, including Level of Service, which is perhaps the most common measure. The Task Force was concerned that Level of Service is difficult to understand when expressed only with a letter (e.g., A to F) to identify how a street segment or intersection was performing.

As a result of a workshop on December 1, 1995, the Task Force settled on "average speed" as the favored measure, instead of level of service. "Average speed," also referred to as the "Mean Travel Speed", is a value calculated for a segment of roadway by dividing the segment length by the mean travel time of the number of test runs made along that segment. Another favored measure is intersection delay measured as the average time it takes a motorist to go through a signalized intersection. The Task Force concluded that average speed was less abstract than level of service; it was more objective and more meaningful to the public, and easier for them to relate to how it actually affects their lives.<sup>16</sup>

Adoption of a trigger mechanism also avoids the traditional "build it and they will come" philosophy or approach to traffic engineering. Traditionally, traffic engineering uses the volume and capacity of a street as a measure of congestion to determine whether a widening project should be initiated. Planners look at future land uses, combined with

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<sup>15</sup> "Free flow speed" is a speed attained by a vehicle along a segment of roadway under conditions of uninterrupted travel but influenced by the posted speed limit. For example, if the posted speed limit is 35 mph, but the driving public perceives that the free flow speed is or should be higher or lower (i.e., 38 or 32 mph) for a particular segment, then the break point for a trigger mechanism would be higher or lower than 18 mph. The Task Force assumed that the free flow speed is the same as the posted speed limit, and since most of the corridors have a 35 mph speed limit, 18 mph was selected as the trigger mechanism. On a street with a higher or lower posted speed limit, such as 56th Street south of Normal Boulevard, the trigger may need to be adjusted accordingly, provided that a posted speed limit is not increased or decreased for a purpose of changing a trigger otherwise applicable to a corridor segment. See Appendix D which demonstrates the average speed which corresponds to different Levels of Service based on a 35 mph speed limit. Also see Chapter 4 of Manual of Transportation Engineering Studies, 1994 Edition, and Chapter 11 of Highway Capacity Manual, 1994 Update.

<sup>16</sup> Actually, "average speed" is a component of "level of service." Each level of service, from A to F, has a corresponding average speed which designates the change in speed on the corridor. For example, if the free flow speed of a corridor is 35 mph, Level of Service C ends, and Level of Service D begins, at 18 mph. See Appendix D.

the volume and capacity of a street, to determine the increase in volume after the land uses are completed. If the street does not appear to have sufficient capacity, the street is scheduled for improvements in an effort to have road capacities match the timing of land use changes. There is no opportunity to determine whether the improvements were actually, or would ever be, needed, because the improvements are constructed before the need is actually measured or exists.

B. Application of Average Speed Trigger. The Task Force approved 18 mph as the average speed to be used as the threshold trigger for a project to go into the study phase with 16 mph average speed being the point at which study recommendations will be implemented. The goal is to not remain below 16 mph as the average speed on a corridor segment.<sup>17</sup> The actual average speed on the high impact corridors as measured by DGR during the morning and evening peak traffic periods is demonstrated on Appendix E.

The 18 mph trigger must be placed in context, and the Task Force approved a staging process to be followed if the trigger is met. The steps include the following:

i. Evaluate the corridor or street segment which has been identified by the 18 mph trigger to determine what is causing the decline in average speed. The corridor evaluation should include measurement of both peak period speed and off-peak average speed as well as measurement of intersection delays. Such information will allow determination of how important various factors (i.e., roadway congestion and intersection delays) are to the performance of the corridor segment. A corridor evaluation should include consideration of all information relevant to the traffic flow on the corridor with attention to whether the decreased performance is a temporary or chronic condition and whether the roadway or the intersections are responsible.

ii. If the corridor evaluation concludes that the decline in average speed below 18 mph is stable and reliable, a Corridor Improvement Study should begin. The identified corridor will be added to the Comprehensive Plan as a year 2015 study. A Corridor Improvement Study will be undertaken collaboratively, with involvement from the Public Works and Planning Departments, neighborhood residents, utility companies, and other affected parties.<sup>18</sup>

The Corridor Improvement Study will consider the characteristics of traffic flow on the corridor and determine what specific actions, if any, should be taken to improve traffic flow. The preferred alternatives identified in the Corridor Improvement Study should include a projected improvement of the average speed

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<sup>17</sup> See Table II-10 of WSA/HWS report, p. 31. Potential long range (2015) improvements are described in Table V-2 of WSA/HWS report at p. 61.

<sup>18</sup> See WSA/HWS Report at 82-83 for a discussion of how to involve the various interested parties in a corridor improvement study.

on the corridor and the cost of related improvements to permit a reasonable cost/benefit analysis to be made by decision makers. All options are to be considered in the Corridor Improvement Study, including those of accepting minor congestion as the most cost-effective action and major roadway construction.

If the preferred alternatives identified in the Corridor Improvement Study include substantial financial costs and if the average speed in the corridor drops below 16 mph,<sup>19</sup> then the corridor segment should be selected for inclusion in the 6-year capital improvements program (6-year CIP).

Travel and delay will be monitored on the high impact corridors at regular intervals. Monitoring of these parameters is preferred to take place in the first quarter of the year, to assess how traffic moves in comparison to the trigger mechanisms. These field measurements are to occur when the streets are clear of snow and ice, during a non-holiday season. Once it has been confirmed that the trigger has been met along portions of a corridor, a Corridor Improvement Study is to be initiated. A Corridor Improvement Study may be conducted either with or without a Plan revision. A suggested process would be: (1) a corridor evaluation concludes that a Corridor Improvement Study is warranted; (2) then Public Works & Utilities recommends to the Mayor and City Council requesting permission to proceed with a Corridor Improvement Study. All of these steps should include appropriate involvement of the Planning Commission and Planning Department. An integral part of a Corridor Improvement Study includes a public involvement element. This element provides for appropriate group process techniques (e.g. focus groups, task force, nominal group technique) to consider issues, assess need, and evaluate options in restoring a higher level of service for traffic along the corridor. When a Corridor Improvement Study concludes that construction is needed outside of the existing right of way, a change in the Plan is required before a project can be approved as a Capital Improvement Project.

A description of the methodology for conducting time and delay studies is described in technical publications. Development of a procedures document with a review by SPAC or similar committee is appropriate.

iii. The Corridor Improvement Study will include a process to verify the data which has indicated that the 18 mph threshold trigger has been reached. Similarly, the Corridor Improvement Study will verify that average speed on the corridor segment has dropped below 16 mph before a project would be moved to somewhere in the 6-year CIP.

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<sup>19</sup> As discussed under Article III, section A of this report, the 1994 Plan includes certain street improvements which are directed to be improved before improvements are to be budgeted for the high impact corridors. Also see Plan at 106.

iv. The affected neighborhood organizations and households on the corridors will be notified early in the Corridor Improvement Study phase that the trigger has been met, and that improvements are being studied, including the possibility of widening. The affected neighborhoods will be permitted to participate in the process to make recommendations which might reduce any adverse effect of the project. It should be noted that the involvement of the neighborhoods is not intended to delay or rethink the necessity of the Corridor Improvement Study, which is governed by the trigger mechanism.

v. The process whereby neighborhood involvement is encouraged needs to be developed. It is possible that some modifications to the citizen advisory committees and round tables presently used by various City/County departments could accomplish this objective.

vi. The Corridor Improvement Study should identify the portion of the corridor which needs to be improved to maximize the benefit on improving average speeds. For example, improvements might be limited to intersections which are causing the most congestion and materially affecting the entire corridor. Delay at intersections is another measure of congestion which is included in the HCM.

The Comprehensive Plan should be revised with the following policy statements to implement the process described in paragraphs i - vi above:

A. Clarify that "projects" in the Plan and the Capital Improvement Program (CIP) might be a Corridor Improvement Study, a "project development area", or a "construction project". Any type of project might be suggested by the Public Works Department for inclusion in any Annual Review of the Plan or CIP, within the established four step process which begins on page 81 of the Plan.

B. Establish a policy in the Plan that precludes the acquisition of ROW in a Corridor Improvement Study or a "project development area" but authorizes ROW acquisition in a "construction project".

C. Establish a policy that all corridors which fall to an average speed of 18 mph should be proposed, at a minimum, for inclusion in Step 1 (Year 2015 Street and Road Network) as a Corridor Improvement Study or a "project development area".

D. Establish a policy that all Corridor Improvement Studies and "project development areas" first consider all improvements which do not require the acquisition of additional ROW, before a "construction project" is included in the 1-20 Year Road Program or the CIP.

E. Establish a policy that all corridors which fall below an average speed of

16 mph and for which right-of-way acquisition has been recommended by the relevant Corridor Improvement Study should be proposed, as a minimum, for inclusion as a "construction project".

C. Benefits of Trigger Approach. As previously discussed, there are many dynamics and variables in the planning process. Adoption of the 18 mph trigger offers maximum flexibility to process of traffic planning. If traffic increases and the trigger is reached sooner, then an improvement project can be added to the 6-year CIP and move forward sooner. Use of a trigger does not depend on building roadways ahead of the need. Instead, use of a trigger will be responsive to the affected neighborhood, and provide a balance to the community as a whole to satisfy its reasonable traffic needs.

D. Expected Improvements in Level of Service/Average Speed. 18 mph is the speed which corresponds to the dividing line between LOS C and LOS D on a street with a 35 mph free flow speed, according to the HCM. Based on the 1994 Plan, and subject to changing conditions and the various land uses and assumptions discussed earlier which were not available to WSA/HWS, they projected that the 18 mph trigger will not be reached during the planning period, and therefore, no major widening would be necessary on the high impact corridors.

Improvements in average speed, even with a major widening, might be relatively modest in the study area due to the grid design and many signalized intersections. Lincolntes may not really see a dramatic improvement in average traffic speed unless the super arterial concept is utilized.

#### Group III: Minimizing Neighborhood Impacts.

The Task Force recognizes the need to preserve the quality of life in Lincoln's inner city neighborhoods. The following strategies are recommended to minimize the impacts of street improvements on neighborhoods.

1. Tree Replacement. A program of tree maintenance and replacement should be coordinated with utility companies and the Parks and Recreation Department to provide as long as possible a lead time in developing a new canopy along an affected corridor. After a Corridor Improvement Study has been completed and major construction has been recommended, trees should be planted at locations based on a new setback. LES should be required to replace trees damaged by their projects. Provisions for the tree plantings on private property by creating special easements may be necessary.

2. Landscaping and Design. As the study/design phase of a project is undertaken, the design should include making the project as visually and aesthetically pleasing as reasonably possible. Buffers, plantings, lighting and other design features should be planned with the involvement of neighborhood residents.

3. Notification. All of the study corridors should continue to be identified in the Plan as high impact corridors with the intended result that home buyers are notified that these streets may potentially need widening in the future. Signs or markers should be placed at intersections or along corridors when they enter the study/design phase to alert neighborhood residents.

4. Fairness Issue. Other issues besides dollar cost should be considered when a project is planned. Lot size that would remain after a widening, comparative lot sizes on both sides of a street, and availability of open land on one side of a street are examples of issues which should also be considered. There is more at stake than simply how much right-of-way the City can legally take without compensating an adjacent property owner and how cheaply the project can be done. In some cases whole properties may need to be acquired to "do it right" with adequate buffers and landscaping.

5. Preventing Traffic Encroachment into Neighborhoods. Strategies which minimize traffic encroachment into neighborhoods should be implemented. Use of barriers may be necessary to discourage drivers looking for a shortcut through a residential area.

6. Super Arterial. Perhaps the most forward looking and comprehensive solution to relieving congestion on the high impact corridors would be the construction of a super arterial roadway. The impetus behind this roadway would be to create a system of which Lincoln could be proud, and which could serve Lincoln's needs far beyond the year 2015. It could be created with a ROW sufficient to provide for safe pedestrian facilities, bike lanes and a sufficient landscaping buffer, all of which could be considered an asset to the neighborhood rather than a less effective "compromise" negatively impacting the entire community.

7. Safety Issue. If traffic is encouraged on arterials running through established neighborhoods, a new, pedestrian-friendly policy on school crossings must be discussed.

VI:

#### OTHER RECOMMENDATIONS

A. Verifiable Data. A major widening project on any of the study corridors could materially affect a neighborhood. Since the project is initiated by an objective measure, the 18 mph average speed trigger, it is important that the data used to determine the average speed be accurate and verifiable. The Task Force recommends that, subject to budget considerations, there be regular verification of the average speed and overall performance of the high impact corridors. It is important to establish a consistent methodology and base of data against which to measure future performance of the corridors and routinely compare it to other neighborhood corridors in the City.

B. Future Widening. The Task Force does not agree or disagree with the WSA/HWS conclusion that 27th and 56th Streets are the corridors that are most likely to

need future widening should trigger points be reached.

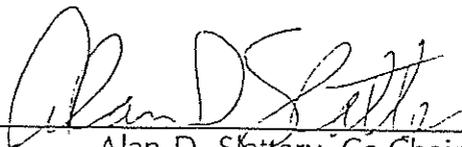
C. Other Use of the Trigger Concept. The Task Force makes the following recommendation as a general guideline: that average speed, as a trigger concept, be applied to all arterial streets in the built environment and that if the trigger is tripped, it is evidence of a problem and the street should be designated as a study street and so designated in the Plan.

D. Significant Land Use Changes. In the event that a large development project or a large land use change (both of which would be substantial traffic generators) were to occur, Planning and Public Works should initiate a study to determine impact on affected arterial streets including those in the built environment, if appropriate. If necessary, modifications to the transportation portion of the Plan would be made (including identification of additional right-of-way needs). This is not intended to circumvent the trigger mechanism on the high impact corridors.

DATE OF ADOPTION: October 10, 1996



S. Beth Goble, Co-Chair



Alan D. Slattery, Co-Chair

## Appendices

- A. Names of Task Force members
- B. Mayor's letter re: charge statement
- C. Ring Roads
- D. Chart demonstrating relationship between average speed and level of service.
- E. Figure 1 and Figure 2 from the DGR report dated October, 1996.

APPENDIX A  
CONGESTION MANAGEMENT TASK FORCE  
MEMBERS ADOPTING THE FINAL REPORT

OCTOBER 10, 1996

Beth Goble, Co-Chair

Alan D. Slattery, Co-Chair

Ray Ayars

Jerre Bovett

Bob Bryant

Jonathan Cook

Bill Danley

Don Jensen

James Foote

Patricia Newman

Sam Olson

George Williamson

Lloyd Hinkley

Bud Cuca

Paul Tegeler

Tim Francis

LIAISONS:

STAFFING:

City Council

Linda Wilson

Department of Public Works

Richard Erixson

Rick Haden

Larry Worth

Steve Masters

Virendra Singh

Sheri Schaaf

Shannon Ideus

Planning Commission:

Ann Bleed

Bruce Bailey

Department of Planning

Tim Stewart

Kent Morgan

Mike Brienzo

Mayor's Office

Lori McClurg

# LINCOLN

APPENDIX B  
(1 of 2)



## NEBRASKA'S CAPITAL CITY

OFFICE OF THE MAYOR

March 15, 1995

MIKE JOHANNIS, MAYOR

To: Members of the Congestion Management Task Force

Dear Task Force Members:

I have been asked by the Task Force Chairs to address two "policy" questions which are important in your upcoming discussions:

1. Should the CMTF consider a "super arterial" as a possible alternative solution for congestion?
2. Is it appropriate for the CMTF to recommend improvements of or widening on streets other than the study corridors?

The following are my thoughts in this regard....

### Question #1

It is my understanding that a "super arterial" is a 4-lane divided roadway, with an additional, adjacent two-lane roadway functioning as a "frontage" road. Berms, with landscape treatments, would be located between these two roadways. Such a roadway would be expected to accommodate the vehicle trips within the particular corridor where it is constructed, and possibly affect adjacent corridors. However, it is my understanding that the traffic congestion on other corridors may not be adequately reduced. Thus, consideration of other alternatives is additionally important. The costs, both direct and indirect, would be substantial, and would be difficult to justify when compared to the potential benefit expected. Direct financial costs of such potential roadways have been estimated by HWS, as follows:

- ◆ 27th Street, South St. - Highway 2 = \$15,695,000
- ◆ 27th Street, "O" St. - Highway 2 = \$40,221,000
- ◆ 40th Street, "O" St. - Highway 2 = \$31,298,000

APPENDIX B  
(2 of 2)

The City of Lincoln expects to budget approximately \$10,000,000 next year for the total city roadway improvement program, comprised of arterial/residential resurfacing, intersection projects, repaving projects, emergency/safety projects, and plans preparation/ROW /construction of various roadways throughout Lincoln. The construction of a "super arterial" roadway would result in the commitment of a disproportionate share of the City's total street construction budget to that roadway, at the detriment to other necessary road improvements. Indirect costs, i.e., purchase/displacement of homes and businesses, resultant from the construction of such a "super arterial" were also addressed by HWS, as follows:

- ◆ 27th Street, South St. - Highway 2 = 53 homes displaced
- ◆ 27th Street, "O" St. - Highway 2 = 129 homes and 10 businesses displaced.
- ◆ 40th Street, "O" St. - Highway 2 = 138 homes displaced

The magnitude of the displacements resultant from construction of a "super arterial" roadway is extremely high, and would have a substantial adverse impact on the entire area in which the roadway was located.

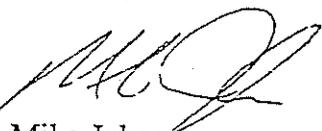
I would suggest that the CMTF focus upon solutions which are more cost effective as the recommendations resultant from the CMTF efforts will be reviewed and considered by the entire community. Subsequently, decision-making bodies will then be in a position to consider those alternatives.

Question 2

Our need as a community is to delineate how we will serve transportation needs through the corridors. Considerable public discussion involving the Planning Commission and City Council has already taken place through the Comprehensive Planning process. The Comprehensive Plan identified specific corridors that should be studied, and that task was assigned to the CMTF. CMTF efforts should be directed specifically to those study corridors that are identified in the Comprehensive Plan.

Please accept my sincere appreciation for your time and effort in participating in CMTF meetings. As you can appreciate, there are no easy solutions to the mitigation of traffic congestion. You are making significant progress towards a plan and approach that meets future transportation needs in these corridors, while also considering the interests of property owners and neighborhoods. I look forward to receiving your recommendations and ideas in this regard.

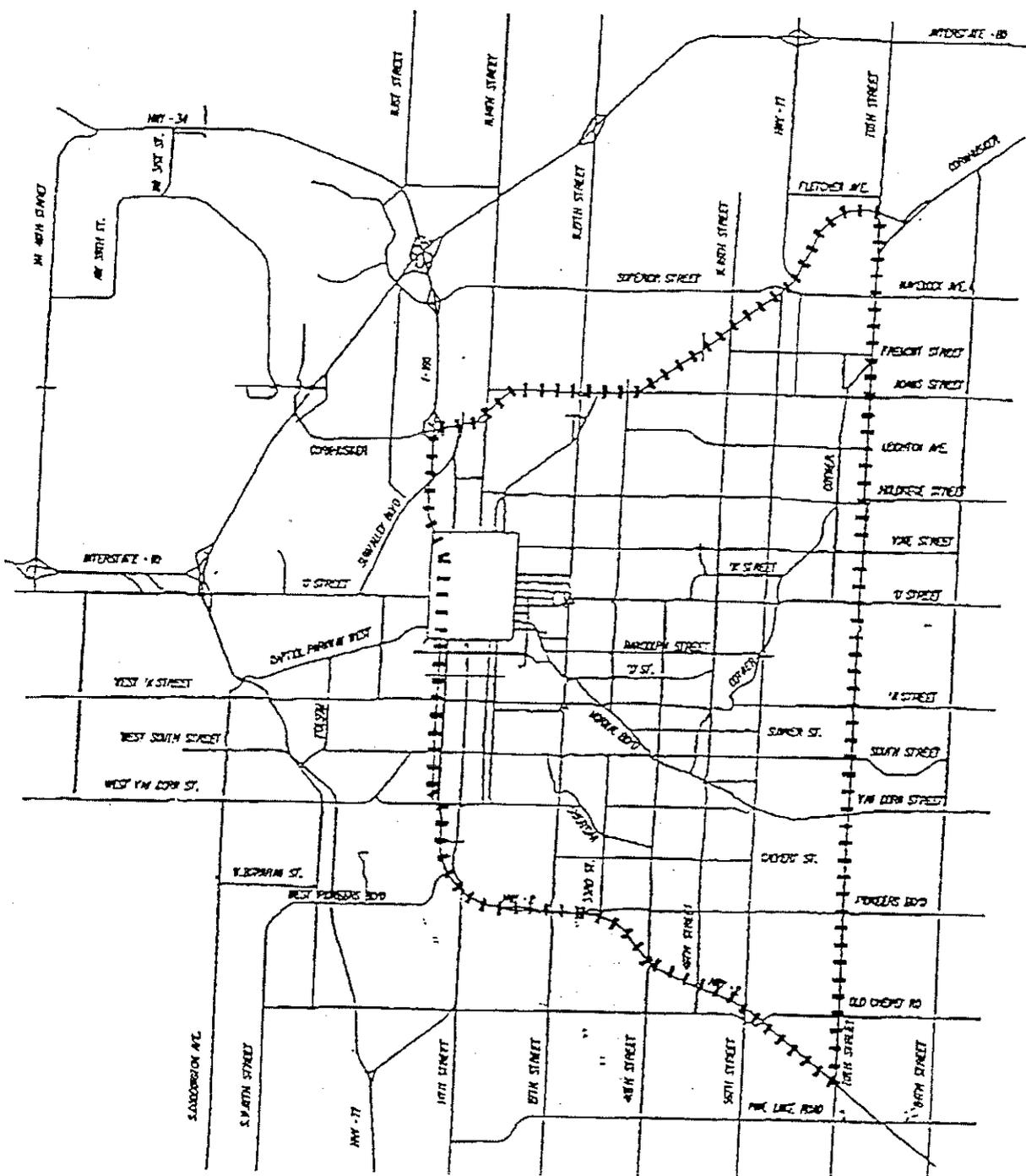
Sincerely,



Mike Johanns  
Mayor

cc: Steve Masters - Public Works Dept.

APPENDIX C.



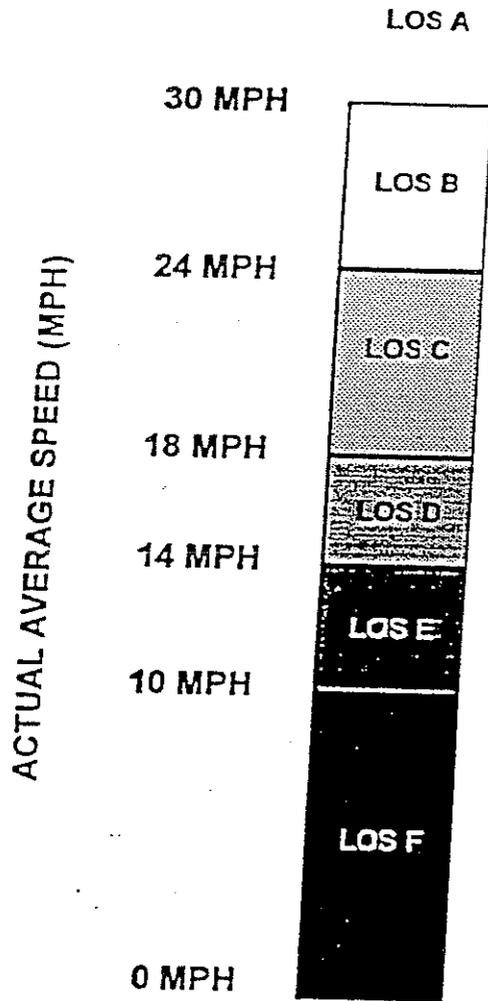
**LEGEND**

----- INNER RING ROADS

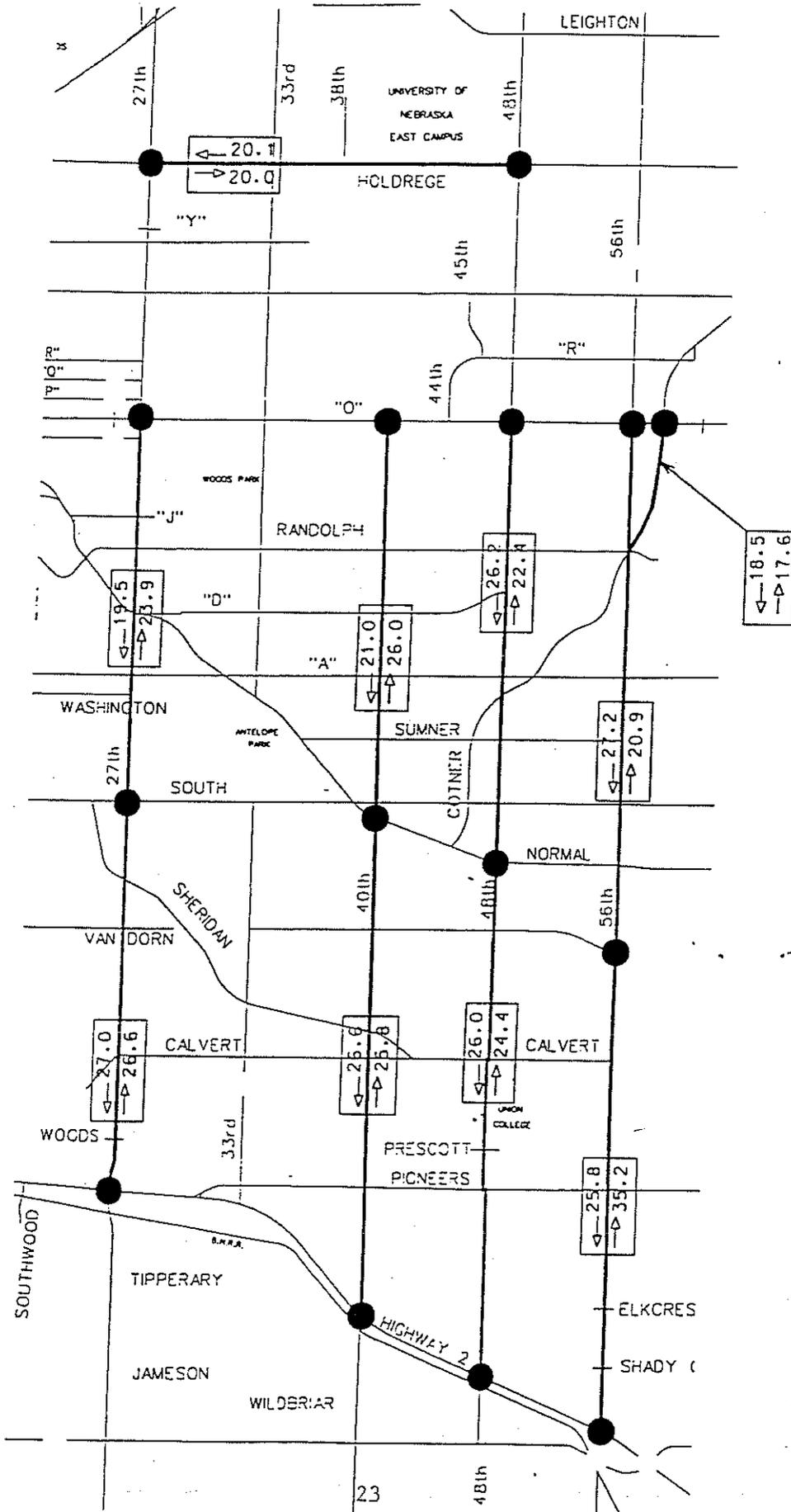
FIGURE V-3  
INNER RING DEVELOPMENT

APPENDIX D

LEVEL OF SERVICE FOR ARTERIAL STREET  
WITH 35 MPH FREE FLOW SPEED



APPENDIX E  
 (1 of 2)  
 FIGURE 1  
 AVERAGE SPEED (mph)  
 AM PEAK



APPENDIX E

(2 of 2)

FIGURE 2  
AVERAGE SPEED (mph)  
PM PEAK

