Appendix

APPENDIX A

MUNICIPALITY CIRCULATION ANALYSIS

Appendix A contains the circulation analysis conducted by the Municipality of Anchorage Planning Department. A synopsis of the analysis findings is provided in Chapter III, along with recommendations for circulation system improvements that reflect these findings.

Municipality of Anchorage

MEMORANDUM

DATE: August 12, 1982

TO: Bruce Phelps, Physical Planning Manager

FROM: Steven Fisher, Transit Planner

SUBJECT: Recommendations on Downtown Circulation

A. Existing Circulation Pattern

The consultant report presented some information on the present downtown street pattern. This pattern is characterized by a 5th-6th couplet and a 3rd-4th couplet east of 'C' Street as the primary east-west traffic streets. The A-C, I-L, Ingra-Gambell couplets carry the heaviest volumes of north-south traffic. Other streets perform a local distribution function within the Core area. Ninth Avenue which marks the southern boundary of the Downtown Core carries a large volume of traffic as well. The present street system works under a volume to capacity basis, but is plagued by intersection problems both during peak hours and at midday. The 5th-6th couplet approaches service level E-F during the peak hour at the Gambell-Ingra intersection. E Street has a severe problem at 6th Avenue caused by left turning movements compounded by demand for access to the Penney's Garage. Ninth Avenue also has intersections problems caused by turning movements at major intersections. Traffic Engineering in the past has advocated an E-G couplet to Ninth to reduce the E Street problem and to accommodate

future growth in trips. Prohibition of left turns and removal of parking on E Street could resolve the present problem but also would be confusing to motorists.

B. Future Trip Volumes

Downtown traffic will grow as employment increases. The growth of employment in Downtown was estimated and used in the UTPS model package developed by the U.S. Department of Transportation. The table below shows how growth in downtown vehicle trips-ends relate to growth in employment.

	1980	2001	% Growth
Downtown Employment:	11,705	21,322	82
Downtown Trip Ends:	52,763	97,353	85

It should be noted that these estimates do not include outbound trips or trips passing through the Downtown area.

C. 2001 - No-Build Alternative

The first option tested was to try and accommodate predicted year 2001 trip volumes within the present Downtown street system. The process of assigning trips to streets was carried out by hand assignment and using the UTPS model.

The results were similar with the hand assignment showing slightly more severe results. For the sake of this analysis we will use the UTPS assignment because of the programs greater capacity to optimize trip patterns. The transit mode split is assumed at 12%. Map 1 highlights problem areas under the No-Build scenario. The 5th-6th couplet will carry in excess of 35,000 vehicles daily. Ninth Avenue run into problems east of Cordova. North-South streets with severe congestion problems include, E, G, and Cordova. There is good reason to believe the model is optimistic

at some intersections because it does not account for turning movement delays.

The no-build scenario is probably unacceptable for two reasons: 1) Streets cannot operate over capacity. In reality trips on links over capacity would appear on other local streets that are going to be emphasized for pedestrian orientation or possibly the trips would not be made which will hurt downtown economically. 2) Limiting circulation options will limit the effectiveness of what can be done for pedestrians. Despite improvements in transit most downtown trips will still continue to use the automobile. Portland found that its downtown ridership growth stabilized when it achieved a 30% mode split. The diffuse nature of residential patterns made improvement above this mode split a huge investment. However, the growth in transit ridership, implementation of a downtown couplet system with computerized signals and the construction of a downtown bypass actually allowed the conversion of downtown automobile space into pedestrian space. Downtown employment increased by over 60% during that time period.

D. Alternative 2

This alternative eliminates problems on north-south streets by assuming the A-C couplet and E-G couplet. It improves conditions on 5th-6th by starting to assume trips will use streets further south. Thus, congestion on 9th Avenue becomes worse and there is a considerable increase to traffic on 10th Avenue. Map 2 highlights this alternative. Not shown on the map is 15th Avenue which now has a traffic problem. This is also assuming a grade separated 15h Avenue. Another run of this alternative which eliminates 10th Avenue (simply meaning no increase in traffic will be tolerated on 10th) puts more pressure on both 9th and 15th.

This alternative should be viewed cautiously. The A-C couplet is going ahead, an E-G couplet is easy to implement in the technical sense,

but grade separation of 15th Avenue at Seward may be difficult. As stated before the model may be understating the problem on 9th Avenue at intersections. In other words, the problems on 9th and 15th seen in this alternative may actually be worse than depicted in the model.

There is still a problem on 5th and 6th but it is somewhat alleviated by pushing the traffic into the residential neighborhood south of downtown. This also allows a high degree of pedestrian improvements on 4th Avenue and F Street. More pedestrian improvements, if desired, can be accommodated on D Street.

The reason Alternative 2 is not successful in alleviating traffic congestion is because downtown streets work as a system. The E-G couplet and pedestrian improvements on 4th Avenue have increased traffic on 9th Avenue and to some extent on 15th, yet this alternative provides no means of addressing this increase in traffic.

E. Alternative 3

This alternative adds a 7th-8th couplet to the improvements in Alternative 2. As Map 3 shows the addition of the 7th-8th couplet to the street system does not provide much relief to the network. It takes some pressure off 5th, 6th, 9th and 15th Avenues but not enough to appreciably balance the downtown street system. In fact, the model only assigns enough vehicles to 7th and 8th to reach less than 45% of the streets capacity. The traffic congestion found in Alternative 2 particularly on 9th and 15th Avenues as they approach the Seward Highway still persist in this alternative.

H. Alternative 4

This option includes the 4th Avenue pedestrian improvements, the A-C and E-G Couplets, and addition of a peak hour travel lane on 5th, 9th and 15th Avenue intersection improvements.

This option would still leave an afternoon peak hour congestion problem on 6th Avenue and intersection problems at major streets crossing the Seward Highway. This is based on manual traffic assignments and model runs of earlier alternatives.

The 9th and 15th Avenue improvements would consist of left turn bays or a left turn lane. These improvements would address the problems of future traffic volumes far more effectively than a 7th and 8th Couplet because both 9th and 15th are through streets that are more attractive to automobile traffic.

I. Seward Highway Connections

The impact of improvements to the Seward Highway and connections to the Glenn Highway will also affect downtown circulation. Long range plans for Seward Highway call for grade separation of intersections south of 13th Avenue. The Gambell-Ingra Couplet as an extension of the Seward Highway mark the eastern boundary of Downtown. The connection of the Seward Highway to the Glenn Highway at the intersections of Gambell-Ingra, 3rd, 4th, 5th and 6th Avenues is the subject of a separate study. It is likely that the radii of these intersections will require additional taking of right-of-way. It is advisable to prepare for this eventuallity by requiring setback standards for new construction in this area to minimize the taking of structures. The Downtown Plan cannot address the issue of sebacks in this area further until decisions on the Northside Corridor Study are made, but it can point out the need for plan review and strict enforcement of existing codes for new projects in this area.

J. Recommendations

The analysis of alternative downtown circulation options leads to the following recommendations. The impacts of these recommendations are also listed below.

It should be recognized that these improvements work as a package. If only some of the recommendations are implemented the result will be to move traffic congestion to another location rather than to address the entire downtown street system. The purpose of these recommendations are to maximize access to downtown for pedestrians, transit and automobiles. What the traffic circulation recommendations accomplish are to allow pedestrian improvements on 4th Avenue and F Street while addressing a traffic problem that will occur on 5th and 6th Avenues. This has been accomplished without simply moving the problem to another location.

1) Implement pedestrian improvements on 4th Avenue.

   Impacts

   - Encourages street activity that is conducive for small retail business activity
   - Enhances appearance of downtown streetscape
   - Reinforces Town Square concept
   - Discourages through traffic on 4th Avenue
   - Increases pressure on 5th-6th Avenues

2) Implement E-G Couplet to the 9th Avenue initially to two lanes with parking on both sides but retaining space to expand to a three lane facillity.

   Impacts

   - Eliminates north-south traffic flow problems in the downtown core especially on E Street thereby increasing effectiveness of pedestrian amenities program

- Relieves pressure on east-west streets by performing a distribution function

- Slight (less than 1000 ADT) increase of traffic on E and G Streets between 9th and 15th

- Puts more pressure on 9th Avenue compounding intersection problem

3) Intersection improvements on 9th and 15th Avenues by adding a left turn lane or left turn bays.

Impacts

- Relieves pressure for both through and local trips from 5th-6th and traffic displaced from 4th Avenue

- Relieves pressure on 10th Avenue and residential streets between 9th and 15th

- Requires taking of land from the Park Strip or private land on the northside of 9th Avenue

- Right-of-way impacts on 15th Avenue

4) Preserve street space on 5th and 6th and create a peak hour traffic lane on 5th Avenue by restricting parking during peak hours.

Impacts

- Allows 5th and 6th Avenues to perform the function of being the major east-west traffic streets in downtown

- Creates short term parking supply on 5th Avenue for midday shopping

- Does not allow for sidewalk extensions on opposing street sides

5) Review of new construction in areas around Gambell and Ingra Streets and

adoption of setback standards when Northside Corridor Alternative is selected.

Impacts

- Mitigate right-of-way impacts of the Northside Corridor Project

- Gives property owners and developers warning of the liklihood of a transportation project in this area

- Difficult to give developers a time frame for project development and construction

K. Timing of Improvements

The recommendations listed in Section J should be timed in a manner that coincides with major downtown developmetns and to recognize the systematic nature of the improvements.

The implementation of a peak hour traffic lane on 5th Avenue should coincide with the completion ofthe Convention Center, Performing Arts Center, and the Town Square. These projects are scheduled for completion in 1984-85. The E-G couplet should also be implemented at this point, while intersection improvements on 9th Avenue between L and A Streets ae going to be needed when this occurs. This also coincides with completion of the A-C couplet project. Other improvements further east on 9th and on 15th will depend on decisions made in the Seward Highway Corridor.

In summary the improvements should begin in 1984 with the following actions:

- Peak hour lane on 5th Avenue
- Implementation of the E-G couplet
- Intersection improvements on 9th Avenue between A and L

APPENDIX B

PROPOSED ADDENDA TO THE CBD COMPREHENSIVE DEVELOPMENT PLAN
DOWNTOWN NUMBER 1
PROJECT ALASKA R-20
ANCHORAGE, ALASKA

Seismic Risk Siting Evaluation

The hazards identified in the 1979 Harding Lawson report are based on known historical maximums, and extrapolated maximums based on similar ground conditions. Little or no evaluation of the likelihood of the future occurrence of the particular ground failure phenomena identified in the report was provided. However, one of the critical aspects of establishing land use guidelines in hazard-prone areas is the evaluation of the risks to the community presented by those hazards. That is, the hazards may be real, but the risks to individuals, or to the community in general, may be small - and in many situations, acceptable. It is in this area of the total earthquake engineering scheme - risk evaluation - that further work and evaluation should be undertaken, and required in the downtown area.

The following procedure generally is used for the complete seismic evaluation of a site and structure:

1) Evaluation of the regional and local seismicity of the area surrounding a site (i.e., how many earthquakes and of what size occur, and how often?);

2) Identification of the seismically induced geological and geotechnical hazards at the site (i.e., faulting, slope failure, ground cracking, liquefaction);

3) Evaluation of the risk associated with development of the site in light of the local seismicity and geo-hazards (i.e., what is the likelihood that slope failure or liquefaction will occur at the site during the life of the structure?);

4) Determination of the level of acceptable risk to the community, the Municipality, and developers (i.e., what is an acceptable annualized cost in lives and dollars for exposure to those hazards?);

5) Establishment of design criteria for structures considered for the site based on the acceptable risk or exposure; and

6) Design and construction of the structure to satisfy the acceptable criteria.

This procedure should be required for all buildings over 2 stories in height. This procedure was used as part of the siting process for the planned State Office Complex. Although the process was used for a specific building and a specific site, it is generally a more cost effective procedure when performed on an area-wide basis. This analysis should be conducted for the entire downtown area.

Portions of a seismic risk evaluation process that would be applicable to the Municipality as a whole, already have been partially completed through the siting study for the State Office Complex and the 1979 Geotechnical Hazards Study. The recommended next step for the Municipality in dealing with land use guidelines, siting criteria, and seismic loading

criteria for structures within the Municipality, is to have a seismic risk analysis performed for the area. An analysis of this nature would quantify the exposure to life and property due to earthquakes, and establish acceptable levels of seismic risk within the community. Rational decisions based on current techniques, rather than speculation, could then be made to mitigate the potential for loss of life and property damage to levels of risk acceptable to the community.