
I-5 SOUTHBOUND ACCESS ALTERNATIVES STUDY

Executive Summary and Recommendations

**Prepared By
ACCESS ADVISORY TASK FORCE**



**CITY OF PORTLAND
OFFICE OF TRANSPORTATION
BUREAU OF PLANNING
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I-5 Southbound Access Alternatives Study

EXECUTIVE SUMMARY AND RECOMMENDATION

INTRODUCTION

This Executive Summary contains a summary of the study purpose, process and findings from the I-5 Southbound Access Alternatives Study and the recommendation of the Access Advisory Task Force (AATF) appointed to direct the study. The *Recommendation of the Access Advisory Task Force* is presented first, followed then by sections referred to as *Study Purpose*, *Study Process*, *Preliminary Evaluation*, *General Findings and Conclusions*, and *Summary of Benefits and Impacts*. The basic contents of each of these sections is briefly discussed below.

The *Recommendation of the Access Advisory Task Force* section sets out the Task Force majority's basic conclusions from this study and its recommendation to the City Council. The preparation of a Minority Report is underway and will be forwarded to the City Council under a separate cover.

The *Study Purpose* section describes the background, intent and objectives of the study as derived from previous actions, communications and study work scope approvals by the City Council.

The *Study Process* section provides a general description of the manner in which the study was composed, managed and conducted, including the preparation of technical findings and AATF review.

The *Preliminary Evaluation* is the initial AATF assessment of the draft study findings developed for public review and comment prior to final deliberations of the AATF.

The *General Findings and Conclusions* were developed to assist the AATF in the preparation of final recommendations by compiling a summary of the fundamental findings, including a general assessment of the alternatives as a whole as well as each of the "Promising Alternatives".

The *Summary of Benefits and Impacts* identifies the positive and negative features of each of the "Promising Alternatives" using a set of tables. A list of the chapters of the final report and other materials prepared for the study is listed at the end of this document, each of which provides substantially more detail on the various study findings.

A map of the "Promising Alternatives" that have been developed through the study process is attached. These five basic alternatives and associated options were derived from the application of various screening and evaluation criteria to an original list of

over twenty alternatives. This sorting process is briefly described in the *Study Process* section of this document.

The *Summary of Evaluation Process Matrix*, which is also attached, provides a comprehensive comparison of the "Promising Alternatives" and associated options in summary form. This matrix compares the alternatives based on various performance, technical and implementation characteristics.

RECOMMENDATION OF THE ACCESS ADVISORY TASK FORCE

The charge of the Access Advisory Task Force (AATF), as understood by the Task Force majority, is to recommend to City Council viable options for providing the Central Eastside Industrial District (CEID), and particularly its commercial delivery vehicles, with improved access to I-5 southbound. The majority recommends the Water Avenue ramp (Alternative 4.1) to the City Council as the only alternative that fulfills this charge because the ramp would provide improved access to the entire CEID. The other alternative that the AATF considered at great length-- the Ross Island Bridge Route-Major Improvements (Alternative 3.3)-- would serve a very limited amount of CEID traffic, and traffic forecasts indicate that the improvement would not attract additional CEID traffic from the freeway access routes. This recommendation is submitted with accompanying materials that describe the range of alternatives considered and the study findings.

This Recommendation is based upon a compilation of all the relevant background materials and technical analyses assembled for the study, presentations and responses provided by project staff, public comments and testimony received by the AATF during the course of the study and discussions among AATF members conducted as part of regular meeting business. This recommendation provides the majority of the Task Force findings from this study and its recommendation to the City Council.

STUDY PURPOSE

The purpose of the I-5 Southbound Access Alternatives Study is to identify and evaluate alternative freeway access routes and supporting improvements to I-5 southbound from the CEID of the Central City of Portland. Improved access to I-5 southbound has been identified as a need in various policy statements and programs. The primary goal of improved freeway accessibility is to accommodate the commercial traffic services supporting the Central Eastside industrial land use base.

This study is intended to focus on basic access alternatives that may be available with the Eastbank Freeway mainline in its current location. The alternatives studied are intended to range from potential new ramp locations to low cost/low impact options such as improved arterial street access to existing freeway ramps.

In 1980, the City approved the East Marquam Ramps project proposed by ODOT which includes the Water Avenue Ramp as a means of freeway access for the Central Eastside. Since that time, however, the Eastbank Freeway has been the subject of numerous studies and public review processes - some of which involved potential relocation or removal of the freeway, some involved issues concerning the Water Avenue Ramp.

The most recent public review process conducted by the City was the *Willamette River Eastbank Review* completed in December, 1993. This process resulted in the City Council withdrawing support for construction of the Water Avenue Ramp and instead recommending, among other activities, initiation of a feasibility study of alternative freeway access routes for the Central Eastside. The I-5 Southbound Access Alternatives Study is intended to fulfill this directive.

STUDY PROCESS

The I-5 Southbound Access Alternatives Study was designed to be primarily a technical analysis of alternatives, with oversight provided by the Access Advisory Task Force (AATF). The nine members of the AATF were appointed by Mayor Katz and Commissioner Hales, who oversees the Bureau of Planning.

The AATF conducted business through nine meetings between February and October, 1995, including a general Public Meeting on August 30 in which public testimony was received. All regular meetings were open to the public and public comments were heard as part of each agenda. Written comments from the public were also received through September 7.

A transportation planning and engineering consultant was retained to provide technical expertise for the AATF. The consultant selection and work program was approved by the City Council. The Bureau of Planning provided lead staff assistance to the AATF and was responsible for public involvement activities of the study. The Office of Transportation provided management of the technical work of the study, including management of the consultant, and production of the study reports.

The study process began with the establishment of basic study assumptions and clarification of relevant background issues, including land use and transportation plans, and population and employment estimates, assumed highway and transit facilities, etc. This and all study methods and products were reviewed and approved by the AATF.

An original list of over twenty concept alternatives were reviewed by the AATF. This original list is referred in the study as the "Universe of Alternatives" and contains all alternatives ever suggested through previous technical studies or public processes on this subject, plus those developed through this study process. The alternatives were classified into distinct categories based on similarity of features or magnitude of impact.

Then various *screening criteria* were applied to the Universe of Alternatives to develop a shorter list of "Promising Alternatives" for further study. These screening criteria were intended to assure that the alternatives met various study framework requirements and also provided a basic assessment of general performance, technical and implementation characteristics. At least one alternative from each of the categories (Transportation System Management, Major Improvements to Existing Routes, Minor Improvements to Existing Routes, etc..) was included in the list of "Promising Alternatives", assuming that study framework requirements were met.

Then the "Promising Alternatives" were compared using various *evaluation criteria*. These criteria included the initial screening criteria (evaluated in more detail) plus additional criteria addressing performance, technical and implementation characteristics. The range of evaluation criteria employed for this study are listed along the top axis of the attached *Summary of Evaluation Process Matrix*. Five basic "Promising Alternatives" and associated options are evaluated in this document. They are:

- Ross Island Bridge Route TSM - Minor Improvements - Alternative 3.2
- Ross Island Bridge Route - Major Improvements - Alternative 3.3A/B1/B2
- Water Avenue Ramp - Alternative 4.1
- Morrison Viaduct (Morrison Br.) Ramp - Alternative 4.3A/B
- Madison Viaduct (Hawthorne Br.) Ramp - Alternative 4.4

Project staff has identified each of the "Promising Alternatives" as "feasible" (see discussion under *General Findings and Conclusions*). The Oregon Department of Transportation (ODOT) also reviewed the alternatives and study findings and found that although many of the alternatives exhibited design problems (some major) that would require resolution, agreed that each of the alternatives could not be discarded as not feasible, except for the Madison Viaduct (Hawthorne Br.) Ramp Alternative (Alt. 4.4).

Upon review of the "Promising Alternatives" by the AATF, the *Preliminary Evaluation* as discussed below was prepared. Following an assessment of the public testimony and comments, and final study findings, the AATF Recommendation was developed for submittal to the City Council.

PRELIMINARY EVALUATION

The *Preliminary Evaluation* of the "Promising Alternatives" by the Access Advisory Task Force described below is the initial AATF assessment of the draft study findings developed for public review and comment prior to final deliberations of the AATF. The intent of the Preliminary Evaluation was to generate public discussion of the study process and initial study findings. Three distinct alternatives were identified as "most promising" by

the AATF at that point in the study process, and each were of sufficient difference to invite comparison of the benefits and concerns.

The result of the Preliminary Evaluation was a recommendation by the AATF to forward the three following alternatives for the purpose of broad public review at this point in the study process:

- **Water Avenue Ramp - Alternative 4.1**
- **Ross Island Bridge Route - Major Improvements - Alternative 3.3B2**
- **Ross Island Bridge Route TSM- Minor Improvements - Alternative 3.2 (only in association with other alternatives)**

Although other alternatives of the "New I-5 Ramps" category may or may not ultimately be determined as "feasible alternatives", the Water Avenue Ramp Alternative (Alt. 4.1) was identified by the AATF as the preferred alternative in this category, given the Evaluation Criteria (see *Summary of Evaluation Process Matrix*). This alternative involves a new southbound ramp from SE Water Avenue, near SE Salmon Street, directly to I-5.

The Ross Island Bridge Route was identified by the AATF as the only feasible set of alternatives within the "Major Improvements to Existing Routes" category, given the Screening Criteria developed earlier in the study process. Within this set of alternatives, the AATF identified Alt. 3.3B2 as the preferred concept project design, which involves a direct southbound ramp connection, with signalization, from the King-Grand Viaduct to the Ross Island Bridge. The AATF acknowledges that design modifications may be required to refine this project concept.

The Ross Island Bridge Route (Alt. 3.2) also was identified by the AATF as the only feasible alternative within the "Minor Improvements to Existing Routes" category, given the initial Screening Criteria process. This alternative involves minor transportation system management improvements (TSM) along the current Ross Island Bridge access route. This project concept may include signalization, signing, striping, minor roadway construction and other arterial improvements along this route. The AATF identified this alternative as a set of supportive improvements in association with the other alternatives, but not as a sufficient alternative by itself.

Following an assessment of the public testimony and comments received at the Public Meeting and the open comment period which followed, along with a final assessment of the study findings, the AATF Recommendation was developed for submittal to the City Council for consideration of action.

GENERAL FINDINGS AND CONCLUSIONS

The list of *General Findings and Conclusions* was developed to assist the AATF in the preparation of final recommendations by compiling – as clearly as possible – the most salient and fundamental findings and conclusions germane to the comparison of alternatives and the decision-making process.

- Improved connections from the Central Eastside Industrial District (CEID) to I-5 South and the Sunset Freeway are not needed for “volume and capacity” reasons (i.e., they are not needed to relieve peak period traffic congestion); rather, the improved connections are needed to provide the *basic accessibility* to the regional freeway system that is essential for CEID viability and vitality.
- CEID freeway access improvements are needed primarily to serve commercial traffic and goods movement, not to provide additional capacity for commuter traffic. The primary need for the freeway access improvements is during the periods of greatest commercial activity, which occur during midday periods when traffic congestion is not the overriding pervasive concern it is during peak hours.
- Each of the alternatives evaluated are physically and operationally “feasible;” i.e., each can be built and operated. Exceptions to design standards may be required for project approvals, but such exceptions are within reasonable limits and/or have been previously applied elsewhere. Each alternative has its benefits and impacts, and different parties – agencies, groups, individuals – will place different levels of importance on those benefits and impacts.

The level of analysis and extent of project development comprised by this study were limited. Specific design revisions and enhancements to address problems identified can and should be developed during the next phase of project development.

Ross Island Bridge Route TSM / Minor Improvements - Alternative 3.2

The Ross Island Bridge Route TSM/Minor Improvements improve CEID access to I-5 South and the Sunset Hwy by providing improved existing routes from southbound McLoughlin Blvd (ML King) and the south CEID to the Ross Island Bridge. Arterial improvements may include: King-Division Ramp, 7th-8th Connection, 8th Ave. Upgrade, 8th/Powell Signal.

- The minor improvements on routes from the south CEID to the Ross Island Bridge would serve a very limited amount of CEID traffic. Forecasts also indicate that the improvements would attract only a minor amount of CEID traffic from other current freeway access routes, such as across the Morrison and Hawthorne Bridges to SW Front Avenue in Downtown.
- The main beneficiaries of these improvements would be the businesses in the “Southern Triangle” portion of the CEID, through which southbound ORE99E/ ML

King traffic is currently directed enroute to westbound US26/Ross Island Bridge via SE 8th Avenue.

- The attractiveness and utility of the Ross Island Bridge as a CEID freeway access route can be enhanced by improvement of westside connections from the bridge to I-5 and to I-405.

Ross Island Bridge Route - Major Improvements - Alternatives 3.3A/B1/B2

The Ross Island Bridge Route Major Improvements all improve CEID access to I-5 South and the Sunset Hwy by providing an improved direct connection from southbound McLoughlin Blvd (ML King) to the Ross Island Bridge.

- The direct connection from southbound McLoughlin Blvd (ML King) to the Ross Island Bridge would serve a very limited amount of CEID traffic, and traffic forecasts indicate that the improvements would not attract additional CEID traffic from other freeway access routes.
- The new McLoughlin-Ross Island Bridge connection (ramp and/or signal) would meet a long-standing need to improve the ORE99E/US26 "Interchange." The main beneficiaries of these improvements would be the businesses in the "Southern Triangle" portion of the CEID, through which southbound ORE99E/ML King traffic is currently directed enroute to westbound US26/Ross Island Br. via SE 8th Avenue.
- The attractiveness and utility of the Ross Island Br. as a CEID freeway access route can be enhanced by improvement of westside connections from the bridge to I-5 and to I-405.

New I-5 Ramps - Alternatives 4.1, 4.3A/B, 4.4

The "New Ramp" alternatives all provide a new southbound I-5 on-ramp located between the Morrison and Hawthorne Bridges in the vicinity of the existing Water Ave off-ramp. Each of these alternatives is discussed individually below.

- All of the "New Ramp" alternatives provide freeway access directly from the CEID (without use of surface streets outside of the district).
- None of the "New Ramp" alternatives put additional traffic onto the freeway system. All traffic forecasted to use the various "New Ramp" alternatives would otherwise use other existing ramps and surface street connections; forecasted volumes on the new ramps are balanced by equivalent volume reductions on other ramps (e.g., Hood St on-ramp to southbound I-5, Clay St on-ramp to the Sunset Highway).

- All of the “New Ramp” alternatives would attract heavy p.m. peak hour volumes, and would need to be metered.
- All of the “New Ramp” alternatives are costly and are of use only with the existing alignment of I-5.
- Each of the “New Ramp” alternatives are discussed individually below:

Water Avenue Ramp - Alternative 4.1

- Ramp connection is to local CEID streets (access is dispersed among several collector streets in the CEID); ramp will not attract significant volume of non-CEID traffic, but all ramp traffic will use local streets.
- Ramp access crosses railroad mainline at-grade, and will be affected by crossing closures.

Morrison Viaduct (Morrison Br.) Ramp - Alternative 4.3A/B

- The signalized left turn alternative (4.3A) does not have adequate capacity for p.m. peak hour volumes, and as a result, left turns onto the ramp would have to be prohibited during the p.m. peak.
- Ramp connection is on a main arterial and will attract more non-CEID traffic than the Water Ave Ramp.
- The direct ramp alternative (4.3B) would require removal of existing buildings and the existing ramp from the Morrison Bridge to Water Ave.

Madison Viaduct (Hawthorne Br.) Ramp - Alternative 4.4

- Slow-speed left-side merge onto I-5 mainline at entrance to Marquam Bridge weave/diverge area creates serious traffic conflicts and safety concerns.
- Construction of Madison Viaduct Ramp would physically preclude construction of McLoughlin – I-5N Ramps.
- Ramp connection on viaduct will attract more non-CEID traffic than the Water Avenue Ramp.
- Ramp traffic conflicts with the high-use transit, pedestrian and bicycle routes to the Hawthorne Bridge.

SUMMARY OF BENEFITS AND IMPACTS

Ross Island Bridge Route Improvements

Alt. 3.2 A. TSM/Minor Improvements: various arterial access route improvements

Alt. 3.3 B. Major Improvements (Eastside): SB McLoughlin to WB Ross Island Br.

Alt. 3.3 C. Major Improvements (Westside): New connection to NB I-405

Positive Features	Negative Features
<u>A. TSM/Minor Improvements</u> • Modest cost, implementation in short time frame; • CEID I-5 access avoids Marquam Bridge congestion; • CEID access to Ross Island Bridge improved (no stops to I-5); • Improvements useful with Eastbank Freeway relocation.	<u>A. TSM/Minor Improvements</u> • CEID freeway access affected by Ross Island Bridge congestion; • Signals affect Powell and McLoughlin traffic; • CEID to Sunset Hwy. access not improved; • Does not improve access for large portion of CEID.
<u>B. Major Improvements (Eastside)</u> • CEID to I-5 access avoids Marquam Bridge congestion; • CEID access to Ross Island Bridge improved (no stops to I-5); • Improvements useful with Eastbank Freeway relocation.	<u>B. Major Improvements (Eastside)</u> • Medium cost/impact; • CEID freeway access affected by Ross Island Bridge congestion; • Operational conflict (weave) with I-5N-McLoughlin ramp traffic; • CEID to Sunset Hwy. access not improved; • Does not improve access for large portion of CEID; • May require rerouting 8th Ave to Powell Blvd. traffic.
<u>C. Major Improvements (Westside)</u> • CEID to Sunset Hwy. access avoids congestion on Marquam Bridge and downtown street system; • Improvements useful with Eastbank Freeway relocation.	<u>C. Major Improvements (Westside)</u> • Moderately high cost/impact; • Major traffic circulation effects for South Portland area; • CEID to Sunset access affected by Ross Island Bridge congestion; • Operational conflicts with I-405 off-ramps; • Does not improve access for large portion of CEID.

SUMMARY OF BENEFITS AND IMPACTS (CON'T.)

Alt 4.1 Water Ave Ramp

Positive Features	Negative Features
• Provides direct freeway access (southbound I-5 <u>and</u> Sunset); • Provides direct freeway access for Eastbank subarea of CEID; • Does not attract thru traffic from east; • Implementation in relatively short time frame due to previous work.	• Medium cost; • Waterfront impact; • CEID freeway access does not avoid Marquam Bridge congestion; • Ramp access requires at-grade crossing of RR mainline for most traffic; • Improvements removed with Eastbank Freeway relocation.

Alt 4.3A/B Morrison Viaduct (Morrison Br.) Ramp

Positive Features	Negative Features
• Provides direct freeway access (southbound I-5 <u>and</u> Sunset); • Serves all of CEID via King-Grand; • Avoids railroad crossing conflicts.	• Medium cost/impact and long implementation timeframe; • Waterfront impact; • CEID freeway access affected by congestion at Morrison Bridgehead; • Signal would affect Morrison Br, traffic.

Alt. 4.4 Madison Viaduct (Hawthorne Br.) Ramp

Positive Features	Negative Features
• Provides direct freeway access (southbound I-5 <u>and</u> Sunset); • Serves all of CEID via King-Grand; • Avoids railroad crossing conflicts.	• Medium cost/impact and long implementation timeframe; • Impacts elements of Eastbank Master Plan; • Severe traffic operational impacts on freeway, with slow-speed left side ramp merging directly into southbound Marquam Bridge weave; • Precludes construction of McLoughlin – I-5N Ramps; • CEID freeway access affected by congestion at Hawthorne Bridgehead; • Conflicts with major bicycle, pedestrian and transit activity on Hawthorne Br.

STUDY DOCUMENTS

The following study documents were prepared for the I-5 Southbound Access Alternatives Study. These technical memos and other documents provide the background for the summary of findings contained in this Executive Summary. These documents have been assembled as the chapters and other contents of the final report.

- Background Issues and Assumptions
- Universe of Potential Alternatives
- Screening and Evaluation Criteria
- Initial Screening of Alternatives
- Geographic Distribution of Central Eastside Industrial District Trips
- Travel Analysis of Alternatives
- Case Study Interviews of Central Eastside Businesses
- Estimated Commercial Vehicle Activity
- Railroad Grade Crossing Activity - Southern Pacific Railroad Mainline
- Summary of Basic Findings and Conditions
- Review of Alternatives by Oregon Department of Transportation
- Review of I-5 Southbound Access Alternatives Study by METRO
- I-5 Southbound Access Alternatives Study- Land Use/Development Impacts by City of Portland - Bureau of Planning
- I-5 Southbound Access - Impact Analysis Matrix on Eastbank by City of Portland - Portland Parks and Recreation
- Summary of Testimony at Public Meeting - August 30, 1995
- Written Communications from Public

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FIGURE 1

I-5 SOUTHBOUND ACCESS ALTERNATIVES STUDY

"PROMISING ALTERNATIVES"

ROSS ISLAND BR. ROUTE - TSM (MINOR IMPROVEMENTS) - ALTERNATIVE 3.2 (NOT SHOWN)
ROSS ISLAND BR. ROUTE - MAJOR IMPROVEMENTS - ALTERNATIVES 3.3A, 3.3B1 AND 3.3B2
WATER AVENUE RAMP - ALTERNATIVE 4.1
MORRISON BRIDGE/VIADUCT RAMP - ALTERNATIVE 4.3A AND 4.3B
HAWTHORNE BRIDGE/MADISON VIADUCT - ALTERNATIVE 4.4

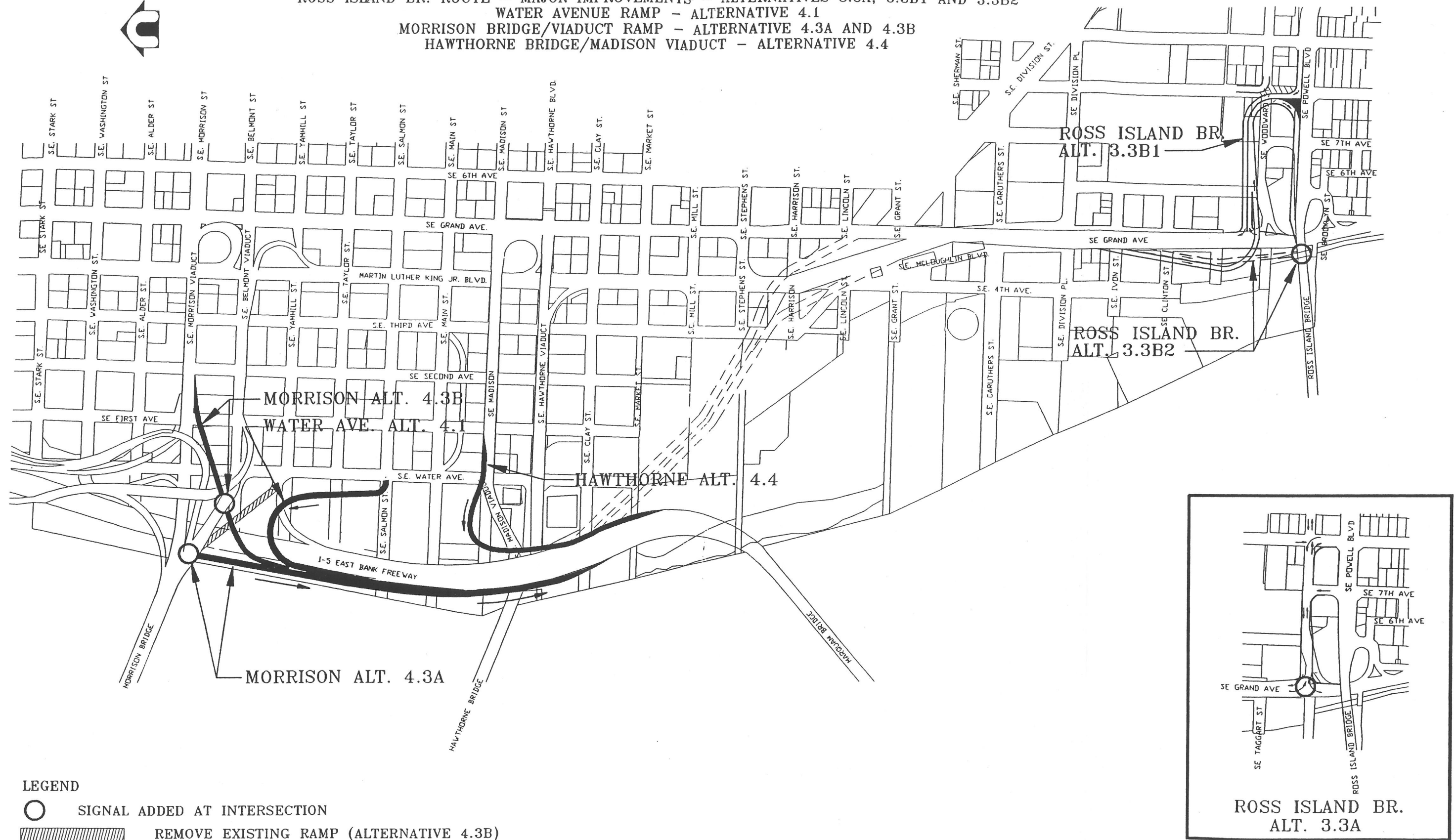


FIGURE 2
I-5 SOUTHBOUND ACCESS ALTERNATIVES STUDY
SUMMARY OF EVALUATION PROCESS

ALTERNATIVE	PERFORMANCE CHARACTERISTICS					EVALUATION CRITERIA														IMPLEMENTATION CHARACTERISTICS					Feasibility	RECOMMENDED TO CARRY FORWARD
	Service Area	Travel Time	Waterfront Impacts	External Impacts	Development/Land Use	PHYSICAL FEATURES		OPERATIONAL FEATURES				MODAL CONFLICTS		Freeway Removal/Relocation	Comparative Costs	Time Frame	Operational/Economic Life	Constructability								
						Structure Conflicts	Geometric Design	Congested Locations	Truck Speeds	Standards	Safety Issues	Rail Crossing	Bus/Bicycle/Pedestrian													
	What CEID area has improved access: South, Central or North?	Is the travel time from the Central Eastside Industrial District to I-5 southbound improved over TSM (Alternative 3.2)?	Will the alternative preserve the waterfront's functional and visual characteristics?	Will freeway access traffic avoid travel through other districts?	Will the activities supported and changes induced be compatible with the CEID?	Does the alternative avoid major structure conflicts and obstructions?	Does the alternative avoid geometric design problems?	Does the route avoid severely congested locations?	Do truck speeds match normal main line traffic speeds in the off-peak period?	Does the facility meet current highway design standards?	Are new safety problems and existing high accident locations avoided?	Does the route avoid significant rail crossing conflicts?	Will the route avoid major modal conflicts?	Is the alternative compatible with freeway relocation?	What are the comparative costs between projects?	**Is the time frame required for alternative completion Short, Medium, or Long?	Relative to traffic problems in the CEID, is the alternative's operational/economic life Short, Medium, or Long?	Is this alternative physically feasible and what are the issues?								
	S, C or N	From 6th & Main to I-5 & Hood Ave. Ramp	(comments)	(comments)	(comments)	(comments)	(comments)	(Level of service in 2010)	(mph)	(comments)	(location)	(Light or Heavy Rail)	(comments)	(comments)	(Dollars)	Short, Medium or Long	Short, Medium or Long	(comments)								
Transportation System Management/Minor Improvements to Existing Routes																										
Ross Island Bridge Alternative 3.2 Route upgrades, slip ramp, signalization, signing and re-striping.	S C	NO (Base Case)	YES	NO	YES	YES	YES	NO	YES	YES	NO	NO	YES	YES	\$2,000,000	Short	Short	YES	Yes	No						
Access is improved for the South and Central parts of the CEID.	5'15" off-peak / 8'10" peak	No impacts	Traffic will still use the central city bridges and streets.	Marginal level of noticeable land use impacts.	There are no conflicts or obstructions with this option.	There are no major geometric changes for this option.	West end of the Ross Isl. Br. connection to I-5 is at capacity. Intersection of SE 8th Ave. & Powell at capacity. Ross Isl. Br. at capacity.	SE Powell is designed to accommodate truck acceleration.	The facility would meet highway design standards.	All access traffic would pass through the intersection of Woodward St. & 8th Avenue. Some access traffic would pass through the intersections of MLK & Clay St., Grand Avenue & Clay St., and MLK & Taylor Street.	Freight and Amtrak rail conflict at Division & 8th.	Minor: Ross Island Bridge (Powell Blvd.) is a bike route. Grand Ave. below viaduct is a proposed pedestrian and bike route.	*This option does not affect Eastbank freeway relocation.	This includes signing, intersection signalizing and route improvements. No right-of-way purchase would be required by this option.	1 to 5 years for completion.	Congestion problems will still plague this route. S.E. Powell Blvd. will be at capacity before 2010. I-5 southbound access ramps will be at capacity.	Requires minor improvements to existing routes. Access time is not much improved from CEID.									
Major Improvements to Existing Routes																										
Ross Island Bridge Alternative 3.3A Install a left turn signal on McLoughlin Ave. at SE Woodward St.	S C	NO	YES	NO	YES	YES	YES	NO	YES	NO	NO	YES	YES	YES	\$25,000,000	Medium	Medium	YES	Yes	No						
Access is improved for the South and Central parts of the CEID.	7'30" off-peak / 10'30" peak	No functional impacts. New ramps will be within view from trail along railroad right-of-way.	Some traffic will still use the central city bridges and streets.	Enhances current activities and redevelopment in the Southern Triangle subarea. Would have limited impacts on other areas of CEID.	Impacts a parking lot between SE 6th and SE Grand Ave.	Geometric design problems are minimal.	Intersection of SE 8th Ave. & Powell at capacity. West end of the Ross Isl. Br. connection to I-5 is at capacity. Ross Isl. Br. at capacity.	SE Powell is designed to accommodate truck acceleration.	Capacity problems may be mitigated by widening McLoughlin.	All access traffic would pass through the intersection of Woodward St. & 8th Avenue. Some access traffic would pass through the intersections of MLK & Clay St., Grand Avenue & Clay St., and MLK & Taylor Street.	Reduces conflicts. Most Ross Island bridge access traffic crosses over the railroad on the MLK/Grand Ave. viaduct.	Minor: Ross Island Bridge (Powell Blvd.) is a bike route and a pedestrian route.	This option does not affect Eastbank freeway relocation.	Acquire part of parking area adjacent to Woodward St. Includes Grading, paving, and adding a signal to McLoughlin Ave. and Woodward Street. Includes reconstruction of MLK/Grand Ave. Viaduct (a \$20,000,000 cost).	5 to 15 years for completion.	Congestion problems will be incurred on this route. Ross Island Bridge will be at capacity by 2010.	Widening and placing a traffic signal on SE Grand Ave and SE Woodward St. Requires reconstruction of MLK/Grand Ave. Viaduct.									
Ross Island Bridge Alternative 3.3B1 Build a ramp from SE Grand Ave. to SE Woodward St.. Traffic would merge with SE Powell Blvd. via an acceleration lane.	S C	NO	YES	NO	YES	NO	YES	NO	YES	YES	NO	YES	YES	YES	\$40,000,000	Medium	Medium	YES	Yes	No						
Access is improved for the South and Central parts of the CEID.	7'00" off-peak / 9'18" peak	No functional impacts. New ramps will be within view from trail along railroad right-of-way.	Some traffic will still use the central city bridges and streets.	Enhances current activities and redevelopment in the Southern Triangle subarea. Would have limited impacts on other areas of CEID.	Impacts two buildings west of Grand, between Ivan & Taggart. Impacts a building west of 8th, between Powell & Taggart exit.	Geometric design problems are minimal.	West end of the Ross Isl. Br. connection to I-5 is at capacity. Ross Isl. Br. at capacity.	SE Powell can be designed to accommodate truck acceleration lanes. Mainline speed is 40 mph.	The facility would meet highway design standards.	Some access traffic passes through the intersection of MLK & Clay St., Grand Avenue & Clay St., and MLK & Taylor Street.	Reduces conflicts. Most Ross Island traffic crosses over the railroad on the MLK/Grand Ave. Viaduct.	Minor: Ross Island Bridge (Powell Blvd.) is a bike route and a pedestrian route.	This option does not affect Eastbank freeway relocation.	Includes reconstruction of MLK/Grand Ave. Viaduct (a \$20,000,000 cost).	5 to 15 years for completion.	Congestion problems will be incurred on this route. Ross Island Bridge will be at capacity by 2010.	This may require rerouting SE Woodward St., SE 8th, and SE 6th Ave. traffic. It reduces north bound McLoughlin by two lanes to provide right turn storage. Requires reconstruction of MLK/Grand Viaduct.									
Ross Island Bridge Alternative 3.3B2 Build a ramp from SE Grand Ave. directly to SE Powell Blvd. creating a signalized intersection.	S C	NO	YES	NO	YES	NO	YES	NO	NO	NO	NO	YES	YES	YES	\$35,000,000	Medium	Medium	YES	With Difficulty	No						
Access is improved for the South and Central parts of the CEID.	8'15" off-peak / 9'43" peak	No functional impacts. New ramps will be within view from trail along railroad right-of-way.	Some traffic will still use the central city bridges and streets.	Enhances current activities and redevelopment in the Southern Triangle subarea. Would have limited impacts on other areas of CEID.	Impacts two buildings west of Grand, between Ivan & Taggart. Impacts a building west of 8th, between Powell & Taggart exit.	Geometric design problems are minimal.	West end of the Ross Isl. Br. connection to I-5 is at capacity. Ross Isl. Br. at capacity. Intersection created at SE Powell and SE Grand Ave. ramp would be over capacity.	Requires stopping mainline traffic at signal for trucks to make right turn. Mainline speed is 40 mph.	Problems may be faced in order to meet safety and capacity standards on SE Powell Boulevard.	Some access traffic would pass through the intersection of MLK & Clay St., Grand Avenue & Clay St., and MLK & Taylor Street. Signal may increase rear end collisions.	Reduces conflicts. Most Ross Island traffic crosses over the railroad on the MLK/Grand Ave. Viaduct.	Minor: Ross Island Bridge (Powell Blvd.) is a bike route and a pedestrian route.	This option does not affect Eastbank freeway relocation.	Includes reconstruction of MLK/Grand Ave. Viaduct (a \$20,000,000 cost).	5 to 15 years for completion.	Congestion problems will be incurred on this route. Ross Island Bridge will be at capacity by 2010.	Requires a traffic signal at intersection with SE Powell Blvd. Requires modification to existing MLK/Grand Ave. Viaduct and existing Ross Isl. Br. at connections.									
I-5 Access Ramps																										
Water Avenue Alternative 4.1 Construct ramp from Water Ave. at Salmon directly to I-5 southbound.	S C N	YES	NO	YES	YES	YES	YES	YES	NO	YES	NO	NO	YES	NO	\$23,000,000	Short	Medium	YES	Yes	Yes						
The I-5 Southbound ramp is centrally located and will serve the entire CEID.	3'35" off-peak / 4'10" peak	Substantial functional and visual impacts for waterfront. Requires fill and/or pilings in the river. The Eastbank Riverfront Park Plan assumed future presence of this ramp.	Most traffic originates in the CEID.	Enhances current activities in the Eastbank subarea of the Industrial Sanctuary. Inhibits riverfront redevelopment plans. Effects of new access would not extend beyond CEID.	There are no conflicts or obstructions with this option.	There are no geometric design problems with this option.	The CEID access traffic is dispersed among several locations.	Truck ramp speed is 45 mph. Freeway mainline speed is 55 mph.	The facility would meet highway design standards.	Some access traffic would pass through the intersection of Taylor & MLK and Clay & Grand.	Freight and Amtrak conflict. Most traffic must cross Southern Pacific Railroad main line at grade. 6 minutes of normal maximum delay may be expected per vehicle when trains are present.	Minor: Water Avenue and Clay St. are proposed bike routes and pedestrian routes.	Freeway relocation would impact new ramp.	Includes Right-of-way, easement, and addition of merge lane to I-5.	1 to 5 years for completion.	Marquam bridge will be at capacity by 2010.	No physical issues conflict with the construction of this ramp.									
Morrison/I-5 Interchange Alternative 4.3A Build a ramp from a new signaled intersection at the end of the Morrison Br. directly to I-5 southbound.	S C N	YES	NO	NO	YES	YES	YES	NO	NO	NO	NO	YES	YES	NO	\$20,000,000	Medium	Medium	YES	With Difficulty	No						
The I-5 Southbound ramp is centrally located and will serve the entire CEID.	3'20" off-peak / 4'25" peak	Similar impacts as with Water Ave. Ramp, but may extend zone of impact further to the north. This ramp alternative is not addressed in the Eastbank Riverfront Park Plan.	Traffic is attracted from other districts.	Supports current activities and may enhance redevelopment along the Commercial Corridors and Industrial Heartland subarea of CEID. May impact riverfront redevelopment plans.	There would be no conflicts with existing structures.	Geometric design problems are minimal.	Must reduce Morrison WB traffic to one lane to provide left turning bay storage to I-5. The signal at the intersection would be over capacity. Requires access through congested bridgehead routes.	Truck ramp speed is 45 mph. Freeway mainline speed is 55 mph.	Required standards not met for capacity and part time restrictions.	Access traffic would pass through the intersections of Grand & Morrison, and Grand & Belmont. Signal may increase rear end collisions.	Most ramp access traffic avoids conflict by using Morrison bridge viaduct over the Southern Pacific Railroad.	Minor: Additional traffic will affect 1 bus route (No. 15). The Morrison Bridge is a pedestrian route.	Freeway relocation would impact new ramp.	Includes right-of-way. This would use the existing Water Avenue Ramp right-of-way.	5 to 15 years for completion.	Marquam bridge will be at capacity by 2010.	Reduces WB Morrison St. traffic by one lane to provide left turn storage. Requires left hand turn from Morrison St. signal at Morrison and Belmont St., structural modification of Morrison St. and Belmont St. viaducts at merge, and new pedestrian access.									
Morrison/I-5 Interchange Alternative 4.3B From a left hand ramp on the Morrison St. Viaduct and through a signal at Belmont, traffic would access I-5 southbound.	S C N	YES	NO	NO	YES	NO	YES	NO	NO	NO	NO	YES	YES	NO	\$25,000,000	Medium	Medium	YES	With Difficulty	No						
The I-5 Southbound ramp is centrally located and will serve the entire CEID.	4'00" off-peak / 4'30" peak	Similar impacts as with Water Ave. Ramp, but may extend zone of impact further to the north. This ramp alternative is not addressed in the Eastbank Riverfront Park Plan.	Traffic is attracted from other districts.	Supports current activities and may enhance redevelopment along the Commercial Corridors and Industrial Heartland subarea of CEID. May impact riverfront redevelopment plans.	Conflicts with existing off ramp from the Morrison Bridge to Water Avenue. Requires building removal.	Geometric design problems are minimal.	Creates a left hand weave on Morrison St. With a two lane ramp, it is near capacity at the traffic signal. Requires access through congested bridgehead routes.	Truck ramp speed is 45 mph. Freeway mainline speed is 55 mph.	Standards not met for capacity. A two lane on-ramp would not provide adequate storage for freeway access.	Access traffic would pass through the intersections of Grand & Morrison, and Grand & Belmont.	Most ramp access traffic avoids conflict by using Morrison bridge viaduct over the Southern Pacific Railroad.	Minor: Additional traffic will affect 1 bus route (No. 15). The Morrison Bridge is a pedestrian route.	Freeway relocation would impact new ramp.	Requires building removal and EB Morrison St. to Water Ave. Ramp removal. Signal would be added to Belmont St. Viaduct. This cost includes right-of-way purchase.	5 to 15 years for completion.	Marquam bridge will be at capacity by 2010.	Requires a two lane ramp with a traffic signal at Belmont. The Morrison Bridge to Water Avenue off-ramp (for eastbound traffic) would need to be removed.									
Hawthorne/Madison Viaduct Alternative 4.4 A ramp would be built from SE Madison directly to the Marquam Br. ramps to access I-5 southbound.	S C N	YES	YES	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	\$15,000,000	Medium	Medium	YES	With Difficulty	No						
The I-5 Southbound ramp is centrally located and will serve the entire CEID.	2'55" off-peak / 4'0" peak	Minimal functional or visual impacts from trail along waterfront. Conflicts with potential buildings and public activity areas identified in Eastbank Riverfront Park Plan.	Traffic is attracted from other districts.	Similar land use impacts as with Morrison Ramp. But secondary impacts may result from not building McLoughlin Ramps due to increased traffic volumes on MLK Blvd. and Grand Ave.	Conflict with existing Marquam Bridge columns. Precludes construction of the McLoughlin ramps to and from I-5.	Left hand merge of traffic joining I-5 Southbound.	Marquam Br. expected to operate at capacity. Weaving on I-5 projected to operate poorly. Requires access through congested bridgehead routes.	Truck ramp speed is 35 mph. Freeway mainline speed is 55 mph.	Ramp could only be constructed to 21 feet wide. This is below the highway design standard of 26 feet. Additionally, this is a left hand entrance ramp, not acceptable by highway design standards.	This option has a left hand entrance to I-5. Access traffic would pass through the intersections of Grand & Madison, Grand & Hawthorne, Grand & Clay, and MLK & Taylor.	Most ramp access traffic avoids conflict by using Hawthorne bridge viaduct over the Southern Pacific Railroad.	Major: Interferes with pedestrian and bicycle routes on Madison. Removes bus stop. Additional traffic will affect 9 bus routes (No. 4,10,14,6,31,32,33,63,99X).	Freeway relocation would impact new ramp.	Includes right-of-way purchase.	5 to 15 years for completion.	Marquam bridge will be at capacity by 2010.	Conflicts with the future McLoughlin Ramps. Reduces WB Madison St. traffic to one lane to provide right turn storage.									
*Note: Assumes relocation to SE 1st Ave. corridor																										

*Note: Assumes relocation to SE 1st Ave. corridor.

**Note: Assumes that funding is available.

[Note: High speed rail is considered using the existing heavy rail corridor.

[Note: The left side ramp (Option A) may require removal of the existing off-ramp from the Morrison Bridge to Water Avenue.

[Note: The left turn ramp (Option B) requires retention or removal of the off-ramp from the Morrison Bridge to Water Avenue.

[Note: The central point used for the CEID was SE 6th Avenue and SE Main Street. The point where the Hood Avenue on-ramp enters I-5 was the I-5 Southbound point.

NOTE: For larger copy of this Evaluation Matrix, please call the City of Portland - Office of Transportation at 823-7707

I-5 SOUTHBOUND ACCESS ALTERNATIVES STUDY

**Prepared By
ACCESS ADVISORY TASK FORCE**



**CITY OF PORTLAND
OFFICE OF TRANSPORTATION
BUREAU OF PLANNING
November 1995**

I-5 Southbound Access Alternatives Study

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EXECUTIVE SUMMARY AND RECOMMENDATION

INTRODUCTION

This Executive Summary contains a summary of the study purpose, process and findings from the I-5 Southbound Access Alternatives Study and the recommendation of the Access Advisory Task Force (AATF) appointed to direct the study. The *Recommendation of the Access Advisory Task Force* is presented first, followed then by sections referred to as *Study Purpose*, *Study Process*, *Preliminary Evaluation*, *General Findings and Conclusions*, and *Summary of Benefits and Impacts*. The basic contents of each of these sections is briefly discussed below.

The *Recommendation of the Access Advisory Task Force* section sets out the Task Force majority's basic conclusions from this study and its recommendation to the City Council. The preparation of a Minority Report is underway and will be forwarded to the City Council under a separate cover.

The *Study Purpose* section describes the background, intent and objectives of the study as derived from previous actions, communications and study work scope approvals by the City Council.

The *Study Process* section provides a general description of the manner in which the study was composed, managed and conducted, including the preparation of technical findings and AATF review.

The *Preliminary Evaluation* is the initial AATF assessment of the draft study findings developed for public review and comment prior to final deliberations of the AATF.

The *General Findings and Conclusions* were developed to assist the AATF in the preparation of final recommendations by compiling a summary of the fundamental findings, including a general assessment of the alternatives as a whole as well as each of the "Promising Alternatives".

The *Summary of Benefits and Impacts* identifies the positive and negative features of each of the "Promising Alternatives" using a set of tables. A list of the chapters of the final report and other materials prepared for the study is listed at the end of this document, each of which provides substantially more detail on the various study findings.

A map of the "Promising Alternatives" that have been developed through the study process is attached. These five basic alternatives and associated options were derived from the application of various screening and evaluation criteria to an original list of

over twenty alternatives. This sorting process is briefly described in the *Study Process* section of this document.

The *Summary of Evaluation Process Matrix*, which is also attached, provides a comprehensive comparison of the "Promising Alternatives" and associated options in summary form. This matrix compares the alternatives based on various performance, technical and implementation characteristics.

RECOMMENDATION OF THE ACCESS ADVISORY TASK FORCE

The charge of the Access Advisory Task Force (AATF), as understood by the Task Force majority, is to recommend to City Council viable options for providing the Central Eastside Industrial District (CEID), and particularly its commercial delivery vehicles, with improved access to I-5 southbound. The majority recommends the Water Avenue ramp (Alternative 4.1) to the City Council as the only alternative that fulfills this charge because the ramp would provide improved access to the entire CEID. The other alternative that the AATF considered at great length-- the Ross Island Bridge Route-Major Improvements (Alternative 3.3)-- would serve a very limited amount of CEID traffic, and traffic forecasts indicate that the improvement would not attract additional CEID traffic from the freeway access routes. This recommendation is submitted with accompanying materials that describe the range of alternatives considered and the study findings.

This Recommendation is based upon a compilation of all the relevant background materials and technical analyses assembled for the study, presentations and responses provided by project staff, public comments and testimony received by the AATF during the course of the study and discussions among AATF members conducted as part of regular meeting business. This recommendation provides the majority of the Task Force findings from this study and its recommendation to the City Council.

STUDY PURPOSE

The purpose of the I-5 Southbound Access Alternatives Study is to identify and evaluate alternative freeway access routes and supporting improvements to I-5 southbound from the CEID of the Central City of Portland. Improved access to I-5 southbound has been identified as a need in various policy statements and programs. The primary goal of improved freeway accessibility is to accommodate the commercial traffic services supporting the Central Eastside industrial land use base.

This study is intended to focus on basic access alternatives that may be available with the Eastbank Freeway mainline in its current location. The alternatives studied are intended to range from potential new ramp locations to low cost/low impact options such as improved arterial street access to existing freeway ramps.

In 1980, the City approved the East Marquam Ramps project proposed by ODOT which includes the Water Avenue Ramp as a means of freeway access for the Central Eastside. Since that time, however, the Eastbank Freeway has been the subject of numerous studies and public review processes - some of which involved potential relocation or removal of the freeway, some involved issues concerning the Water Avenue Ramp.

The most recent public review process conducted by the City was the *Willamette River Eastbank Review* completed in December, 1993. This process resulted in the City Council withdrawing support for construction of the Water Avenue Ramp and instead recommending, among other activities, initiation of a feasibility study of alternative freeway access routes for the Central Eastside. The I-5 Southbound Access Alternatives Study is intended to fulfill this directive.

STUDY PROCESS

The I-5 Southbound Access Alternatives Study was designed to be primarily a technical analysis of alternatives, with oversight provided by the Access Advisory Task Force (AATF). The nine members of the AATF were appointed by Mayor Katz and Commissioner Hales, who oversees the Bureau of Planning.

The AATF conducted business through nine meetings between February and October, 1995, including a general Public Meeting on August 30 in which public testimony was received. All regular meetings were open to the public and public comments were heard as part of each agenda. Written comments from the public were also received through September 7.

A transportation planning and engineering consultant was retained to provide technical expertise for the AATF. The consultant selection and work program was approved by the City Council. The Bureau of Planning provided lead staff assistance to the AATF and was responsible for public involvement activities of the study. The Office of Transportation provided management of the technical work of the study, including management of the consultant, and production of the study reports.

The study process began with the establishment of basic study assumptions and clarification of relevant background issues, including land use and transportation plans, and population and employment estimates, assumed highway and transit facilities, etc. This and all study methods and products were reviewed and approved by the AATF.

An original list of over twenty concept alternatives were reviewed by the AATF. This original list is referred in the study as the "Universe of Alternatives" and contains all alternatives ever suggested through previous technical studies or public processes on this subject, plus those developed through this study process. The alternatives were classified into distinct categories based on similarity of features or magnitude of impact.

Then various *screening criteria* were applied to the Universe of Alternatives to develop a shorter list of "Promising Alternatives" for further study. These screening criteria were intended to assure that the alternatives met various study framework requirements and also provided a basic assessment of general performance, technical and implementation characteristics. At least one alternative from each of the categories (Transportation System Management, Major Improvements to Existing Routes, Minor Improvements to Existing Routes, etc..) was included in the list of "Promising Alternatives", assuming that study framework requirements were met.

Then the "Promising Alternatives" were compared using various *evaluation criteria*. These criteria included the initial screening criteria (evaluated in more detail) plus additional criteria addressing performance, technical and implementation characteristics. The range of evaluation criteria employed for this study are listed along the top axis of the attached *Summary of Evaluation Process Matrix*. Five basic "Promising Alternatives" and associated options are evaluated in this document. They are:

- **Ross Island Bridge Route TSM - Minor Improvements - Alternative 3.2**
- **Ross Island Bridge Route - Major Improvements - Alternative 3.3A/B1/B2**
- **Water Avenue Ramp - Alternative 4.1**
- **Morrison Viaduct (Morrison Br.) Ramp - Alternative 4.3A/B**
- **Madison Viaduct (Hawthorne Br.) Ramp - Alternative 4.4**

Project staff has identified each of the "Promising Alternatives" as "feasible" (see discussion under *General Findings and Conclusions*). The Oregon Department of Transportation (ODOT) also reviewed the alternatives and study findings and found that although many of the alternatives exhibited design problems (some major) that would require resolution, agreed that each of the alternatives could not be discarded as not feasible, except for the Madison Viaduct (Hawthorne Br.) Ramp Alternative (Alt. 4.4).

Upon review of the "Promising Alternatives" by the AATF, the *Preliminary Evaluation* as discussed below was prepared. Following an assessment of the public testimony and comments, and final study findings, the AATF Recommendation was developed for submittal to the City Council.

PRELIMINARY EVALUATION

The *Preliminary Evaluation* of the "Promising Alternatives" by the Access Advisory Task Force described below is the initial AATF assessment of the draft study findings developed for public review and comment prior to final deliberations of the AATF. The intent of the Preliminary Evaluation was to generate public discussion of the study process and initial study findings. Three distinct alternatives were identified as "most promising" by

the AATF at that point in the study process, and each were of sufficient difference to invite comparison of the benefits and concerns.

The result of the Preliminary Evaluation was a recommendation by the AATF to forward the three following alternatives for the purpose of broad public review at this point in the study process:

- **Water Avenue Ramp - Alternative 4.1**
- **Ross Island Bridge Route - Major Improvements - Alternative 3.3B2**
- **Ross Island Bridge Route TSM- Minor Improvements - Alternative 3.2 (only in association with other alternatives)**

Although other alternatives of the "New I-5 Ramps" category may or may not ultimately be determined as "feasible alternatives", the Water Avenue Ramp Alternative (Alt. 4.1) was identified by the AATF as the preferred alternative in this category, given the Evaluation Criteria (see *Summary of Evaluation Process Matrix*). This alternative involves a new southbound ramp from SE Water Avenue, near SE Salmon Street, directly to I-5.

The Ross Island Bridge Route was identified by the AATF as the only feasible set of alternatives within the "Major Improvements to Existing Routes" category, given the Screening Criteria developed earlier in the study process. Within this set of alternatives, the AATF identified Alt. 3.3B2 as the preferred concept project design, which involves a direct southbound ramp connection, with signalization, from the King-Grand Viaduct to the Ross Island Bridge. The AATF acknowledges that design modifications may be required to refine this project concept.

The Ross Island Bridge Route (Alt. 3.2) also was identified by the AATF as the only feasible alternative within the "Minor Improvements to Existing Routes" category, given the initial Screening Criteria process. This alternative involves minor transportation system management improvements (TSM) along the current Ross Island Bridge access route. This project concept may include signalization, signing, striping, minor roadway construction and other arterial improvements along this route. The AATF identified this alternative as a set of supportive improvements in association with the other alternatives, but not as a sufficient alternative by itself.

Following an assessment of the public testimony and comments received at the Public Meeting and the open comment period which followed, along with a final assessment of the study findings, the AATF Recommendation was developed for submittal to the City Council for consideration of action.

GENERAL FINDINGS AND CONCLUSIONS

The list of *General Findings and Conclusions* was developed to assist the AATF in the preparation of final recommendations by compiling – as clearly as possible – the most salient and fundamental findings and conclusions germane to the comparison of alternatives and the decision-making process.

- Improved connections from the Central Eastside Industrial District (CEID) to I-5 South and the Sunset Freeway are not needed for “volume and capacity” reasons (i.e., they are not needed to relieve peak period traffic congestion); rather, the improved connections are needed to provide the *basic accessibility* to the regional freeway system that is essential for CEID viability and vitality.
- CEID freeway access improvements are needed primarily to serve commercial traffic and goods movement, not to provide additional capacity for commuter traffic. The primary need for the freeway access improvements is during the periods of greatest commercial activity, which occur during midday periods when traffic congestion is not the overriding pervasive concern it is during peak hours.
- Each of the alternatives evaluated are physically and operationally “feasible;” i.e., each can be built and operated. Exceptions to design standards may be required for project approvals, but such exceptions are within reasonable limits and/or have been previously applied elsewhere. Each alternative has its benefits and impacts, and different parties – agencies, groups, individuals – will place different levels of importance on those benefits and impacts.

The level of analysis and extent of project development comprised by this study were limited. Specific design revisions and enhancements to address problems identified can and should be developed during the next phase of project development.

Ross Island Bridge Route TSM / Minor Improvements - Alternative 3.2

The Ross Island Bridge Route TSM/Minor Improvements improve CEID access to I-5 South and the Sunset Hwy by providing improved existing routes from southbound McLoughlin Blvd (ML King) and the south CEID to the Ross Island Bridge. Arterial improvements may include: King-Division Ramp, 7th-8th Connection, 8th Ave. Upgrade, 8th/Powell Signal.

- The minor improvements on routes from the south CEID to the Ross Island Bridge would serve a very limited amount of CEID traffic. Forecasts also indicate that the improvements would attract only a minor amount of CEID traffic from other current freeway access routes, such as across the Morrison and Hawthorne Bridges to SW Front Avenue in Downtown.
- The main beneficiaries of these improvements would be the businesses in the “Southern Triangle” portion of the CEID, through which southbound ORE99E/ ML

King traffic is currently directed enroute to westbound US26/Ross Island Bridge via SE 8th Avenue.

- The attractiveness and utility of the Ross Island Bridge as a CEID freeway access route can be enhanced by improvement of westside connections from the bridge to I-5 and to I-405.

Ross Island Bridge Route - Major Improvements - Alternatives 3.3A/B1/B2

The Ross Island Bridge Route Major Improvements all improve CEID access to I-5 South and the Sunset Hwy by providing an improved direct connection from southbound McLoughlin Blvd (ML King) to the Ross Island Bridge.

- The direct connection from southbound McLoughlin Blvd (ML King) to the Ross Island Bridge would serve a very limited amount of CEID traffic, and traffic forecasts indicate that the improvements would not attract additional CEID traffic from other freeway access routes.
- The new McLoughlin–Ross Island Bridge connection (ramp and/or signal) would meet a long-standing need to improve the ORE99E/US26 “Interchange.” The main beneficiaries of these improvements would be the businesses in the “Southern Triangle” portion of the CEID, through which southbound ORE99E/ML King traffic is currently directed enroute to westbound US26/Ross Island Br. via SE 8th Avenue.
- The attractiveness and utility of the Ross Island Br. as a CEID freeway access route can be enhanced by improvement of westside connections from the bridge to I-5 and to I-405.

New I-5 Ramps - Alternatives 4.1, 4.3A/B, 4.4

The “New Ramp” alternatives all provide a new southbound I-5 on-ramp located between the Morrison and Hawthorne Bridges in the vicinity of the existing Water Ave off-ramp. Each of these alternatives is discussed individually below.

- All of the “New Ramp” alternatives provide freeway access directly from the CEID (without use of surface streets outside of the district).
- None of the “New Ramp” alternatives put additional traffic onto the freeway system. All traffic forecasted to use the various “New Ramp” alternatives would otherwise use other existing ramps and surface street connections; forecasted volumes on the new ramps are balanced by equivalent volume reductions on other ramps (e.g., Hood St on-ramp to southbound I-5, Clay St on-ramp to the Sunset Highway).

- All of the “New Ramp” alternatives would attract heavy p.m. peak hour volumes, and would need to be metered.
- All of the “New Ramp” alternatives are costly and are of use only with the existing alignment of I-5.
- Each of the “New Ramp” alternatives are discussed individually below:

Water Avenue Ramp - Alternative 4.1

- Ramp connection is to local CEID streets (access is dispersed among several collector streets in the CEID); ramp will not attract significant volume of non-CEID traffic, but all ramp traffic will use local streets.
- Ramp access crosses railroad mainline at-grade, and will be affected by crossing closures.

Morrison Viaduct (Morrison Br.) Ramp - Alternative 4.3A/B

- The signalized left turn alternative (4.3A) does not have adequate capacity for p.m. peak hour volumes, and as a result, left turns onto the ramp would have to be prohibited during the p.m. peak.
- Ramp connection is on a main arterial and will attract more non-CEID traffic than the Water Ave Ramp.
- The direct ramp alternative (4.3B) would require removal of existing buildings and the existing ramp from the Morrison Bridge to Water Ave.

Madison Viaduct (Hawthorne Br.) Ramp - Alternative 4.4

- Slow-speed left-side merge onto I-5 mainline at entrance to Marquam Bridge weave/diverge area creates serious traffic conflicts and safety concerns.
- Construction of Madison Viaduct Ramp would physically preclude construction of McLoughlin – I-5N Ramps.
- Ramp connection on viaduct will attract more non-CEID traffic than the Water Avenue Ramp.
- Ramp traffic conflicts with the high-use transit, pedestrian and bicycle routes to the Hawthorne Bridge.

SUMMARY OF BENEFITS AND IMPACTS

Ross Island Bridge Route Improvements

Alt. 3.2 A. TSM/Minor Improvements: various arterial access route improvements

Alt. 3.3 B. Major Improvements (Eastside): SB McLoughlin to WB Ross Island Br.

Alt. 3.3 C. Major Improvements (Westside): New connection to NB I-405

Positive Features	Negative Features
<u>A. TSM/Minor Improvements</u> • Modest cost, implementation in short time frame; • CEID I-5 access avoids Marquam Bridge congestion; • CEID access to Ross Island Bridge improved (no stops to I-5); • Improvements useful with Eastbank Freeway relocation.	<u>A. TSM/Minor Improvements</u> • CEID freeway access affected by Ross Island Bridge congestion; • Signals affect Powell and McLoughlin traffic; • CEID to Sunset Hwy. access not improved; • Does not improve access for large portion of CEID.
<u>B. Major Improvements (Eastside)</u> • CEID to I-5 access avoids Marquam Bridge congestion; • CEID access to Ross Island Bridge improved (no stops to I-5); • Improvements useful with Eastbank Freeway relocation.	<u>B. Major Improvements (Eastside)</u> • Medium cost/impact; • CEID freeway access affected by Ross Island Bridge congestion; • Operational conflict (weave) with I-5N-McLoughlin ramp traffic; • CEID to Sunset Hwy. access not improved; • Does not improve access for large portion of CEID; • May require rerouting 8th Ave to Powell Blvd. traffic.
<u>C. Major Improvements (Westside)</u> • CEID to Sunset Hwy. access avoids congestion on Marquam Bridge and downtown street system; • Improvements useful with Eastbank Freeway relocation.	<u>C. Major Improvements (Westside)</u> • Moderately high cost/impact; • Major traffic circulation effects for South Portland area; • CEID to Sunset access affected by Ross Island Bridge congestion; • Operational conflicts with I-405 off-ramps; • Does not improve access for large portion of CEID.

SUMMARY OF BENEFITS AND IMPACTS (CON'T.)

Alt 4.1 Water Ave Ramp

Positive Features	Negative Features
• Provides direct freeway access (southbound I-5 <u>and</u> Sunset); • Provides direct freeway access for Eastbank subarea of CEID; • Does not attract thru traffic from east; • Implementation in relatively short time frame due to previous work.	• Medium cost; • Waterfront impact; • CEID freeway access does not avoid Marquam Bridge congestion; • Ramp access requires at-grade crossing of RR mainline for most traffic; • Improvements removed with Eastbank Freeway relocation.

Alt 4.3A/B Morrison Viaduct (Morrison Br.) Ramp

Positive Features	Negative Features
• Provides direct freeway access (southbound I-5 <u>and</u> Sunset); • Serves all of CEID via King-Grand; • Avoids railroad crossing conflicts.	• Medium cost/impact and long implementation timeframe; • Waterfront impact; • CEID freeway access affected by congestion at Morrison Bridgehead; • Signal would affect Morrison Br, traffic.

Alt. 4.4 Madison Viaduct (Hawthorne Br.) Ramp

Positive Features	Negative Features
• Provides direct freeway access (southbound I-5 <u>and</u> Sunset); • Serves all of CEID via King-Grand; • Avoids railroad crossing conflicts.	• Medium cost/impact and long implementation timeframe; • Impacts elements of Eastbank Master Plan; • Severe traffic operational impacts on freeway, with slow-speed left side ramp merging directly into southbound Marquam Bridge weave; • Precludes construction of McLoughlin – I-5N Ramps; • CEID freeway access affected by congestion at Hawthorne Bridgehead; • Conflicts with major bicycle, pedestrian and transit activity on Hawthorne Br.

STUDY DOCUMENTS

The following study documents were prepared for the I-5 Southbound Access Alternatives Study. These technical memos and other documents provide the background for the summary of findings contained in this Executive Summary. These documents have been assembled as the chapters and other contents of the final report.

- Background Issues and Assumptions
- Universe of Potential Alternatives
- Screening and Evaluation Criteria
- Initial Screening of Alternatives
- Geographic Distribution of Central Eastside Industrial District Trips
- Travel Analysis of Alternatives
- Case Study Interviews of Central Eastside Businesses
- Estimated Commercial Vehicle Activity
- Railroad Grade Crossing Activity - Southern Pacific Railroad Mainline
- Summary of Basic Findings and Conditions
- Review of Alternatives by Oregon Department of Transportation
- Review of I-5 Southbound Access Alternatives Study by METRO
- I-5 Southbound Access Alternatives Study- Land Use/Development Impacts by City of Portland - Bureau of Planning
- I-5 Southbound Access - Impact Analysis Matrix on Eastbank by City of Portland - Portland Parks and Recreation
- Summary of Testimony at Public Meeting - August 30, 1995
- Written Communications from Public

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FIGURE 1
I-5 SOUTHBOUND ACCESS ALTERNATIVES STUDY
"PROMISING ALTERNATIVES"

ROSS ISLAND BR. ROUTE - TSM (MINOR IMPROVEMENTS) - ALTERNATIVE 3.2 (NOT SHOWN)
 ROSS ISLAND BR. ROUTE - MAJOR IMPROVEMENTS - ALTERNATIVES 3.3A, 3.3B1 AND 3.3B2
 WATER AVENUE RAMP - ALTERNATIVE 4.1
 MORRISON BRIDGE/VIADUCT RAMP - ALTERNATIVE 4.3A AND 4.3B
 HAWTHORNE BRIDGE/MADISON VIADUCT - ALTERNATIVE 4.4

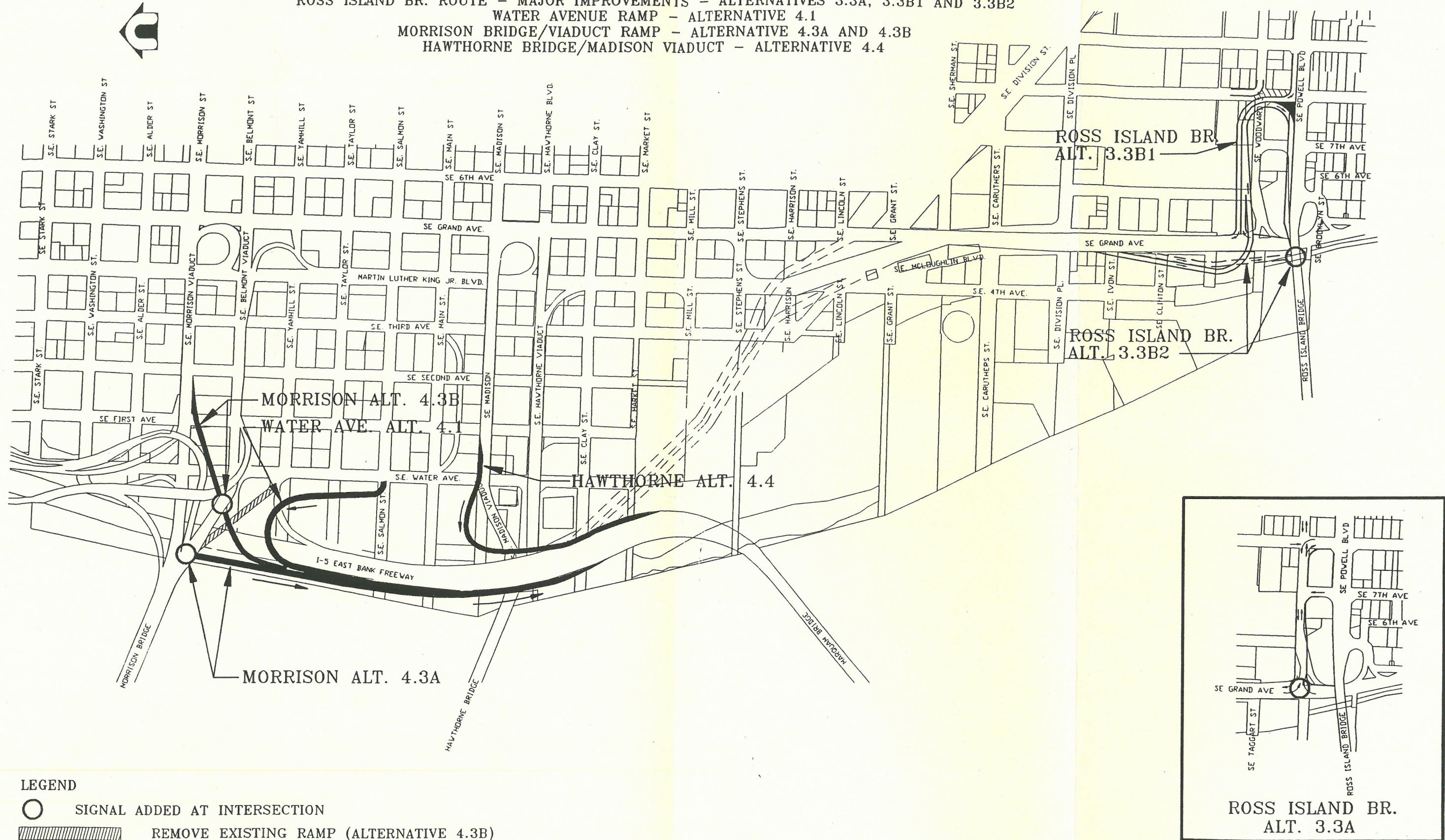


FIGURE 2
I-5 SOUTHBOUND ACCESS ALTERNATIVES STUDY
SUMMARY OF EVALUATION PROCESS

ALTERNATIVE	PERFORMANCE CHARACTERISTICS					TECHNICAL CHARACTERISTICS										IMPLEMENTATION CHARACTERISTICS					Feasibility	RECOMMENDED FORWARD
	Service Area	Travel Time	Waterfront Impacts	External Impacts	Development/Land Use	PHYSICAL FEATURES		Congested Locations	OPERATIONAL FEATURES		Safety Issues		MODAL CONFLICTS		Freeway Removal/Relocation	Comparative Costs	Time Frame	Operational/Economic Life	Constructability			
						Structure Conflicts	Geometric Design		Truck Speeds	Standards	Rail Crossing	Bus/Bicycle/Pedestrian										
	What CEID area has improved access South, Central or North?	Is the travel time from the Central Eastside Industrial District to I-5 southbound improved over TSM (Alternative 3.2)?	Will the alternative preserve the waterfront's functional and visual characteristics?	Will freeway access traffic avoid travel through other districts?	Will the activities supported and changes induced be compatible with the CEID?	Does the alternative avoid major structure conflicts and obstructions?	Does the alternative avoid geometric design problems?	Does the route avoid severely congested locations?	Do truck speeds match normal main line traffic speeds in the off-peak period?	Does the facility meet current highway design standards?	Are new safety problems and existing high accident locations avoided?	Does the route avoid significant rail crossing conflicts?	Will the route avoid major modal conflicts?	Is the alternative compatible with freeway relocation?	What are the comparative costs between projects?	**Is the time Frame required for alternative completion Short, Medium, or Long?	Relative to traffic problems in the CEID, is the alternative's operational/economic life Short, Medium, or Long?	Is this alternative physically feasible and what are the issues?				
	S, C or N	From 6th & Main to I-5 & Hood Ave. Ramp	(comments)	(comments)	(comments)	(comments)	(comments)	(Level of service in 2010)	(mph)	(comments)	(location)	1 (Light or Heavy Rail)	(comments)	(comments)	(Dollars)	Short, Medium or Long	Short, Medium or Long	(comments)				
Transportation System Management/Minor Improvements to Existing Routes																						
Ross Island Bridge Alternative 3.2	S C	NO (Base Case)	YES	NO	YES	YES	YES	NO	YES	YES	NO	NO	YES	YES	\$2,000,000	Short	Short	YES	Yes	No		
Route upgrades, slip ramp, signalization, signing and re-striping.	Access is improved for the South and Central parts of the CEID	5:15" off-peak / 8:30" peak	No impacts	Traffic will still use the central city bridges and streets	Marginal level of noticeable land use impacts.	There are no conflicts or obstructions with this option	There are no major geometric changes for this option	West end of the Ross Isl. Br. connection to I-5 is at capacity. Intersection of SE 8th Ave. & Powell at capacity. Ross Isl. Br. at capacity	SE Powell is designed to accommodate truck acceleration	The facility would meet highway design standards	All access traffic would pass through the intersection of Woodward St. & 8th Avenue. Some access traffic would pass through the intersections of MLK & Clay St., Grand Avenue & Clay St., and MLK & Taylor Street.	Freight and Amtrak rail conflict at Division & 8th.	Minor: Ross Island Bridge (Powell Blvd.) is a bike route. Grand Ave. below viaduct is a proposed pedestrian and bike route.	*This option does not affect Eastbank freeway relocation	This includes signing, intersection signalizing and route improvements. No right-of-way purchase would be required by this option.	1 to 5 years for completion.	Congestion problems will still plague this route. SE Powell Blvd. will be at capacity before 2010. I-5 southbound access ramps will be at capacity	Requires minor improvements to existing routes. Access time is not much improved from CEID.				
Major Improvements to Existing Routes																						
Ross Island Bridge Alternative 3.3A	S C	NO	YES	NO	YES	YES	YES	NO	YES	NO	NO	YES	YES	YES	\$25,000,000	Medium	Medium	YES	Yes	No		
Install a left turn signal on McLoughlin Ave. at SE Woodward St.	Access is improved for the South and Central parts of the CEID	7:30" off-peak / 10:30" peak	No functional impacts. New ramps will be within view from trail along railroad right-of-way.	Some traffic will still use the central city bridges and streets.	Enhances current activities and redevelopment in the Southern Triangle subarea. Would have limited impacts on other areas of CEID.	Impacts a parking lot between SE 6th and SE Grand Ave.	Geometric design problems are minimal.	Intersection of SE 8th Ave. & Powell at capacity. West end of the Ross Isl. Br. connection to I-5 is at capacity. Ross Isl. Br. at capacity.	SE Powell is designed to accommodate truck acceleration.	Capacity problems may be mitigated by widening McLoughlin.	All access traffic would pass through the intersection of Woodward St. & 8th Avenue. Some access traffic would pass through the intersections of MLK & Clay St., Grand Avenue & Clay St., and MLK & Taylor Street.	Reduces conflicts. Most Ross Island bridge access traffic crosses over the railroad on the MLK/Grand Ave. viaduct.	Minor: Ross Island Bridge (Powell Blvd.) is a bike route and a pedestrian route.	This option does not affect Eastbank freeway relocation.	Acquire part of parking area adjacent to Woodward St. Includes Grading, paving, and adding a signal to McLoughlin Ave. and Woodward Street. Includes reconstruction of MLK/Grand Ave. Viaduct (a \$20,000,000 cost).	5 to 15 years for completion.	Congestion problems will be incurred on this route. Ross Island Bridge will be at capacity by 2010.	Widening and placing a traffic signal on SE Grand Ave and SE Woodward St. Requires reconstruction of MLK/Grand Ave. Viaduct.				
Ross Island Bridge Alternative 3.3B1	S C	NO	YES	NO	YES	NO	YES	NO	YES	YES	NO	YES	YES	YES	\$40,000,000	Medium	Medium	YES	Yes	No		
Build a ramp from SE Grand Ave. to SE Woodward St. Traffic would merge with SE Powell Blvd. via an acceleration lane.	Access is improved for the South and Central parts of the CEID	7:00" off-peak / 9:18" peak	No functional impacts. New ramps will be within view from trail along railroad right-of-way.	Some traffic will still use the central city bridges and streets.	Enhances current activities and redevelopment in the Southern Triangle subarea. Would have limited impacts on other areas of CEID.	Impacts two buildings west of Grand, between Ivan & Taggart. Impacts a building west of 8th, between Powell & Taggart exit.	Geometric design problems are minimal.	West end of the Ross Isl. Br. connection to I-5 is at capacity. Ross Isl. Br. at capacity.	SE Powell can be designed to accommodate truck acceleration lanes. Mainline speed is 40 mph.	The facility would meet highway design standards.	Some access traffic passes through the intersection of MLK & Clay St., Grand Avenue & Clay St., and MLK & Taylor Street.	Reduces conflicts. Most Ross Island traffic crosses over the railroad on the MLK/Grand Ave. Viaduct.	Minor: Ross Island Bridge (Powell Blvd.) is a bike route and a pedestrian route.	This option does not affect Eastbank freeway relocation.	Includes reconstruction of MLK/Grand Ave. Viaduct (a \$20,000,000 cost).	5 to 15 years for completion.	Congestion problems will be incurred on this route. Ross Island Bridge will be at capacity by 2010.	This may require rerouting SE Woodward St., SE 8th, and SE 6th Ave. traffic. It reduces north bound McLoughlin by two lanes to provide right turn storage. Requires reconstruction of MLK/Grand Viaduct.				
Ross Island Bridge Alternative 3.3B2	S C	NO	YES	NO	YES	NO	YES	NO	NO	NO	NO	YES	YES	YES	\$35,000,000	Medium	Medium	YES	With Difficulty	No		
Build a ramp from SE Grand Ave. directly to SE Powell Blvd. creating a signalized intersection.	Access is improved for the South and Central parts of the CEID	8:15" off-peak / 9:43" peak	No functional impacts. New ramps will be within view from trail along railroad right-of-way.	Some traffic will still use the central city bridges and streets.	Enhances current activities and redevelopment in the Southern Triangle subarea. Would have limited impacts on other areas of CEID.	Impacts two buildings west of Grand, between Ivan & Taggart. Impacts a building west of 8th, between Powell & Taggart exit.	Geometric design problems are minimal.	West end of the Ross Isl. Br. connection to I-5 is at capacity. Ross Isl. Br. at capacity. Intersection created at SE Powell and SE Grand Ave. ramp would be over capacity.	Requires stopping mainline traffic at signal for trucks to make right turn. Mainline speed is 40 mph.	Problems may be faced in order to meet safety and capacity standards on SE Powell Boulevard.	Some access traffic would pass through the intersections of MLK & Clay St., Grand Avenue & Clay St., and MLK & Taylor Street. Signal may increase rear end collisions.	Reduces conflicts. Most Ross Island traffic crosses over the railroad on the MLK/Grand Ave. Viaduct.	Minor: Ross Island Bridge (Powell Blvd.) is a bike route and a pedestrian route.	This option does not affect Eastbank freeway relocation.	Includes reconstruction of MLK/Grand Ave. Viaduct (a \$20,000,000 cost).	5 to 15 years for completion.	Congestion problems will be incurred on this route. Ross Island Bridge will be at capacity by 2010.	Requires a traffic signal at intersection with SE Powell Blvd. Requires modification to existing MLK/Grand Ave. Viaduct and existing Ross Isl. Br. at connections.				
I-5 Access Ramps																						
Water Avenue Alternative 4.1	S C N	YES	NO	YES	YES	YES	YES	YES	NO	YES	NO	NO	YES	NO	\$23,000,000	Short	Medium	YES	Yes	Yes		
Construct ramp from Water Ave. at Salmon directly to I-5 southbound.	The I-5 Southbound ramp is centrally located and will serve the entire CEID.	3:35" off-peak / 4:10" peak	Substantial functional and visual impacts for waterfront. Requires fill and/or pilings in the river. The Eastbank Riverfront Park Plan assumed future presence of this ramp.	Most traffic originates in the CEID.	Enhances current activities in the Eastbank subarea of the Industrial Sanctuary. Inhibits riverfront redevelopment plans. Effects of new access would not extend beyond CEID.	There are no conflicts or obstructions with this option.	There are no geometric design problems with this option.	The CEID access traffic is dispersed among several locations.	Truck ramp speed is 45 mph. Freeway mainline speed is 55 mph.	The facility would meet highway design standards.	Some access traffic would pass through the intersection of Taylor & MLK and Clay & Grand.	Freight and Amtrak conflict. Most traffic must cross Southern Pacific Railroad main line at grade. 6 minutes of normal maximum delay may be expected per vehicle when trains are present.	Minor: Water Avenue and Clay St. are proposed bike routes and pedestrian routes.	Freeway relocation would impact new ramp.	Includes Right-of-way, expropriation, and addition of merge lane to I-5.	1 to 5 years for completion.	Marquam bridge will be at capacity by 2010.	No physical issues conflict with the construction of this ramp.				
Morrison/I-5 Interchange Alternative 4.3A	S C N	YES	NO	NO	YES	YES	YES	NO	NO	NO	NO	YES	YES	NO	\$20,000,000	Medium	Medium	YES	With Difficulty	No		
Build a ramp from a new signaled intersection at the end of the Morrison Br. directly to I-5 southbound.	The I-5 Southbound ramp is centrally located and will serve the entire CEID	3:20" off-peak / 4:25" peak	Similar impacts as with Water Ave. Ramp, but may extend zone of impact further to the north. This ramp alternative is not addressed in the Eastbank Riverfront Park Plan.	Traffic is attracted from other districts.	Supports current activities and may enhance redevelopment along the Commercial Corridor and Industrial Heartland subareas of CEID. May impact riverfront redevelopment plans.	There would be no conflicts with existing structures.	Geometric design problems are minimal.	Must reduce Morrison WB traffic to one lane to provide left turning bay storage to I-5. The signal at the intersection would be over capacity. Requires access through congested bridgehead routes.	Truck ramp speed is 45 mph. Freeway mainline speed is 55 mph.	Required standards not met for capacity and part time restrictions.	Access traffic would pass through the intersections of Grand & Morrison, and Grand & Belmont. Signal may increase rear end collisions.	Most ramp access traffic avoids conflict by using Morrison bridge viaduct over the Southern Pacific Railroad.	Minor: Additional traffic will affect I bus route (No. 15). The Morrison Bridge is a pedestrian route.	Freeway relocation would impact new ramp.	Includes right-of-way. This would use the existing Water Avenue Ramp right-of-way.	5 to 15 years for completion.	Marquam bridge will be at capacity by 2010.	Reduces WB Morrison St. traffic by one lane to provide left turn storage. Requires left hand turn from Morrison St. signal at Morrison and Belmont St. structural modification of Morrison St. and Belmont St. viaducts at merge, and new pedestrian access.				
Morrison/I-5 Interchange Alternative 4.3B	S C N	YES	NO	NO	YES	NO	YES	NO	NO	NO	NO	YES	YES	NO	\$25,000,000	Medium	Medium	YES	With Difficulty	No		
From a left hand ramp on the Morrison St. Viaduct and through a signal at Belmont, traffic would access I-5 southbound.	The I-5 Southbound ramp is centrally located and will serve the entire CEID	4:00" off-peak / 4:30" peak	Similar impacts as with Water Ave. Ramp, but may extend zone of impact further to the north. This ramp alternative is not addressed in the Eastbank Riverfront Park Plan.	Traffic is attracted from other districts.	Supports current activities and may enhance redevelopment along the Commercial Corridor and Industrial Heartland subareas of CEID. May impact riverfront redevelopment plans.	1 Conflicts with existing off ramp from the Morrison Bridge to Water Avenue. Requires building removal.	Geometric design problems are minimal.	Creates a left hand weave on Morrison St. With a two lane ramp, it is near capacity at the traffic signal. Requires access through congested bridgehead routes.	Truck ramp speed is 45 mph. Freeway mainline speed is 55 mph.	Standards not met for capacity. A two lane on-ramp would not provide adequate storage for freeway access.	Access traffic would pass through the intersections of Grand & Morrison, and Grand & Belmont.	Most ramp access traffic avoids conflict by using Morrison bridge viaduct over the Southern Pacific Railroad.	Minor: Additional traffic will affect I bus route (No. 15). The Morrison Bridge is a pedestrian route.	Freeway relocation would impact new ramp.	Requires building removal and EB Morrison St. to Water Ave. Ramp removal. Signal would be added to Belmont St. Viaduct. This cost includes right-of-way purchase.	5 to 15 years for completion.	Marquam bridge will be at capacity by 2010.	Requires a two lane ramp with a traffic signal at Belmont. The Morrison Bridge to Water Avenue off-ramp (for eastbound traffic) would need to be removed.				
Hawthorne/Madison Viaduct Alternative 4.4	S C N	YES	YES	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	\$15,000,000	Medium	Medium	YES	With Difficulty	No		
A ramp would be built from SE Madison directly to the Marquam Br. ramps to access I-5 southbound.	The I-5 Southbound ramp is centrally located and will serve the entire CEID	2:55" off-peak / 4:00" peak	Minimal functional or visual impacts from trail along waterfront. Conflicts with potential buildings and public activity areas identified in Eastbank Riverfront Park Plan.	Traffic is attracted from other districts.	Similar land use impacts as with Morrison Ramp. But secondary impacts may result from not building McLoughlin Ramps due to increased traffic volumes on MLK Blvd. and Grand Ave.	Conflict with existing Marquam Bridge columns. Precludes construction of the McLoughlin ramps to and from I-5.	Left hand merge of traffic joining I-5 Southbound.	Marquam Br. expected to operate at capacity. Weaving on I-5 projected to operate poorly. Requires access through congested bridgehead routes.	Truck ramp speed is 35 mph. Freeway mainline speed is 55 mph.	Ramp could only be constructed to 21 feet wide. This is below the highway design standard of 26 feet. Additionally, this is a left hand entrance ramp, not acceptable by highway design standards.	This option has a left hand entrance to I-5. Access traffic would pass through the intersections of Grand & Madison, Grand & Hawthorne, Grand & Clay, and MLK & Taylor.	Most ramp access traffic avoids conflict by using Hawthorne bridge viaduct over the Southern Pacific Railroad.	Major: Interference with pedestrian and bicycle routes on Madison. Removes bus stop. Additional traffic will affect bus routes (No. 4,10,14,6,31,32,33,63,99X).	Freeway relocation would impact new ramp.	Includes right-of-way purchase.	5 to 15 years for completion.	Marquam bridge will be at capacity by 2010.	Conflicts with the future McLoughlin Ramps. Reduces WB Madison St. traffic to one lane to provide right turn storage.				

*Note: Assumes relocation to SE 1st Ave. corridor.
**Note: Assumes that funding is available.
1) Note: High speed rail is considered using the existing heavy rail corridor.
2) Note: The left side ramp (Option A) may require removal of the existing off-ramp from the Morrison Bridge to Water Avenue.
3) Note: The left turn ramp (Option B) requires revision or removal of the off-ramp from the Morrison Bridge to Water Avenue.
4) Note: The central point used for the CEID was SE 6th Avenue and SE Main Street. The point where the Hood Avenue on-ramp enters I-5 was the I-5 Southbound point.

NOTE: For larger copy of this Evaluation Matrix, please call the City of Portland - Office of Transportation at 823-7707

I-5 Southbound Access Alternatives Study

Chapter I

INTRODUCTION

STUDY PURPOSE

The purpose of the I-5 Southbound Access Alternatives Study is to identify and evaluate alternative freeway access routes and supporting improvements to I-5 southbound and Hwy. 26 westbound from the Central Eastside district of the Central City of Portland. Although identified as a need in various policy statements and programs, there is currently no designated or distinguishable route for this traffic activity. The primary goal of improved freeway accessibility via a designated route is to accommodate the commercial traffic services supporting the Central Eastside industrial land use base.

A broad range of alternative freeway access plans for this area have been proposed and analyzed in previous studies and public review processes. Some of the proposals have included relocation or removal of the I-5 freeway mainline. Many of these alternatives would likely be difficult engineering challenges to design and construct, require substantial funding to implement and may have unpredictable impacts or disruption. This study is intended to focus on basic access alternatives that may be available with the Eastbank Freeway mainline in its current location. The various alternatives are intended to range from potential new ramp locations to low cost/low impact options such as improved arterial street access to existing freeway ramps.

The basic objectives of the overall study process are as follows:

- Conduct transportation planning and reconnaissance level civil engineering analyses of alternative I-5 southbound access routes.
- Evaluate each alternative with a common set of technical criteria such as construction and operations feasibility and cost.
- Develop a list of feasible alternatives and recommendations for future actions.
- Conduct the overall study process in a cooperative manner with the public, City and State agencies and with on-going related projects.
- Identify any implementation issues and future work required for refinement of feasible alternatives.
- Complete work in a timely manner.

STUDY MANAGEMENT

The I-5 Southbound Access Alternatives Study is designed to be primarily a technical analysis of alternatives, with oversight provided by the Access Advisory Task Force (AATF). The nine members of the AATF were appointed by Mayor Katz and Commissioner Hales, who oversees the Bureau of Planning.

The AATF conducted business through nine scheduled meetings between February and October, 1995, including a general Public Meeting on August 30 in which public testimony was received. All regular meetings were open to the public and public comments were heard as part of each agenda. Written comments from the public were also received through September 7.

A transportation planning and engineering consultant was retained to provide technical expertise for the AATF. The lead consultant for the study is David Evans and Associates, Inc. with Robert Bernstein, Consulting Transportation Engineer/Planner, and Sverdrup Civil and Structural Engineers as sub-consultants. The consultant selection and work program was approved by the City Council. The Bureau of Planning provided lead staff assistance to the AATF and was responsible for public involvement activities of the study. The Office of Transportation provided management of the technical work of the study, including management of the consultant, and production of the study reports.

STUDY PROCESS

The study process began with the establishment of basic study assumptions and clarification of relevant background issues, including assumed land use and transportation plans, population and employment projections, assumed highway, arterial and transit facilities, etc. This and all study methods and products were reviewed and approved by the AATF.

An original list of over twenty concept alternatives were reviewed by the AATF. This original list is referred in the study as the *Universe of Alternatives* and contains all alternatives ever suggested through previous technical studies or public processes on this subject, plus those developed through this study process. The alternatives were classified into distinct categories based on similarity of features or magnitude of impact.

The *Universe of Alternatives* included the following general categories: No Action, Transportation Systems Management, Major Improvements and Minor Improvements to Existing Routes, New (direct access) Ramps, combined use of a Light Rail Transit Bridge (as part of the South-North Transit Corridor), and Freeway Relocation options of the Eastbank Freeway.

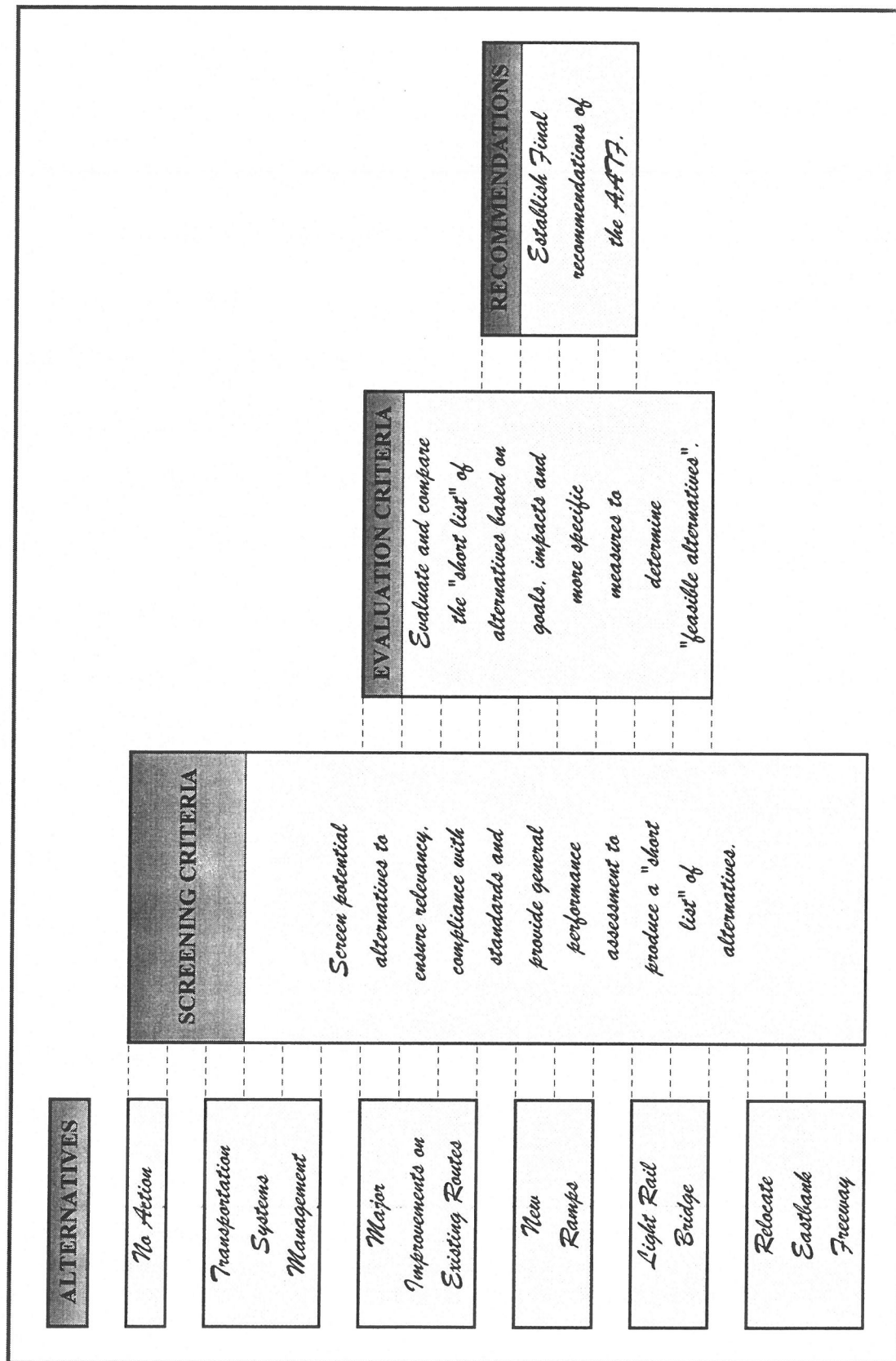


Figure I.1 Process to Evaluate Alternatives

Various *screening criteria* were then applied to the *Universe of Alternatives* to develop a shorter list of "Promising Alternatives" for further study. These screening criteria were intended to assure that the alternatives met various study framework requirements and also provided a basic assessment of general performance, technical and implementation characteristics. At least one alternative from each of the categories was included in the list of "Promising Alternatives", assuming that study framework requirements were met.

Then the "Promising Alternatives" were compared using various *evaluation criteria*. These criteria included the initial screening criteria (evaluated in more detail) plus identification of additional performance, technical and implementation characteristics found with each of the alternatives. Some of the Evaluation Criteria used in comparing the alternatives included service area, travel time, land use/development impacts, external impacts, waterfront impacts, design and safety issues, traffic operations issues, modal conflicts, constructability and rough cost estimates. (see *Summary of Basic Findings and Conclusions* and the *Evaluation Process Matrix* in Chapter XI)

Upon review of the "Promising Alternatives" by the AATF, a *Preliminary Evaluation of Alternatives* was prepared for public review and comment prior to final deliberations of the AATF. The intent of the Preliminary Evaluation was to generate public discussion of the study process and initial study findings. Following an assessment of the public testimony and comments, and final study findings, the Summary of Findings and AATF Recommendation was developed for submittal to the City Council.

STUDY BACKGROUND

The segment of the Interstate 5 freeway that is located in the Central Eastside district of the Central City of Portland, known locally as the Eastbank Freeway, has been the subject to a high level of public scrutiny over the past decade. The Eastbank Freeway, and the freeway system in general, provides the interstate and regional accessibility and mobility that is considered vital to economic development and business generation. The Central Eastside Industrial District, as all commercial districts with significant goods distribution functions, requires convenient accessibility to the freeway system.

However, the Eastbank Freeway has also been considered disruptive to the urban landscape of the Central City. The primary concerns relate to the proximity of the freeway and its connecting structures and ramps to the Willamette River and the riverbank area. Unlike the west bank of the river in the Central City, which features an attractive and active Waterfront Park that is focused on the amenities and uninterrupted views of the river, the East bank is dominated by the freeway.

In 1980, the City Council approved construction of a multiple phase East Marquam Interchange Ramps Project which included new access ramps to and from I-5 Southbound to serve the Central Eastside Industrial District. Environmental documents were completed and federal funding was approved and assigned for construction of this project. The planned access ramps of this project serving the Central Eastside are known locally as the Water Avenue Ramps.

However, since that time the project as a whole, and the proposed southbound access ramps in particular, have not received the broad public consensus necessary to allow final design and construction activities to begin. Including the initial project development options of 1980, at least five separate rounds of public review processes have been conducted to investigate alternatives to the proposed freeway improvement project and the Water Avenue Ramps.

As part of the planning process for the *Central City Plan*, initiated in 1984, the presence of I-5 along the river front and its was identified through public testimony as a major negative feature. A consultant's investigation of this issue revealed various alternative freeway relocation corridors and a freeway "removal" option.

In 1988, the City Council established an *Eastbank Freeway Options Committee* and directs the preparation of a study of alternative freeway locations and designs. The Committee recommended relocating the Eastbank Freeway to a SE 1st Avenue corridor adjacent to the railroad mainline. Upon review, the City Council directed additional option studies. The membership of the Committee was expanded and was requested to investigate funding strategies for the relocation options.

In 1989 the expanded Options Committee again recommended relocating the freeway to a SE 1st Avenue corridor. However, because a reasonable funding strategy was not identified, the City Council terminated the options study process and directed ODOT to proceed with the original East Marquam Ramp project.

In 1992 the Oregon Department of Transportation (ODOT) began public involvement activities for updating the Environmental Documents for the Water Avenue Ramps project. At about that same time, the planning process began for *Eastbank Riverfront Park Master Plan*. The issue was raised before the City Council by various parties that the present location of the freeway severely limits the park master plan's potential. The City Council requested that ODOT delay environmental work on the project.

The most recent public review process conducted by the City concerning issues in some manner related to the freeway was known as the *Willamette River Eastbank Review*, completed in December of 1993. This process resulted in the City Council withdrawing support for construction of the Water Avenue Ramps and instead recommending, among other activities, initiation of a feasibility study of alternative freeway access routes for the Central Eastside.

The I-5 Southbound Access Alternatives Study is intended to fulfill this directive of identifying and evaluating alternative freeway access routes for the Central Eastside.

STUDY AREA AND CURRENT ACCESS

The primary area of interest for the I-5 Southbound Access Alternatives Study is the Central Eastside Industrial District (CEID) of the City of Portland. The CEID is generally bounded by the Banfield Freeway (I-84) on the north, Powell Boulevard on the south, SE 12th Avenue to the east and the Willamette River to the west. Figure I.2 shows the general location of the CEID. Figure I.3 displays the CEID and primary study area boundaries. Some of the alternatives selected for evaluation also include potential issues related to the Central City bridges and connections to I-5 and I-405 on the west side of the river.

Regional access to the study area from the west and south is currently provided by several Central City bridges - Morrison, Hawthorne, Burnside and Ross Island. McLoughlin Boulevard (OR 99E) provides access from the southeast. Powell Boulevard (US 26), along with I-84 provide the primary access routes from the east. Martin Luther King, Jr. Blvd. (MLK) and Grand Avenue provide access from the north.

Access from I-5 North approaches the district via the Morrison Bridge ramp system in the center of the study area. Access from I-5 South is provided primarily via the Water Avenue off-ramp. Access to I-5 South, which is the subject of this study, is currently accommodated via numerous routes, with most traffic using the Morrison and Hawthorne Bridges to Front Avenue in Downtown. To a lesser degree, the Ross Island Bridge and ramp system on its west end also provide access to I-5 South.

STUDY AREA AND LAND USE ACTIVITIES

Originally platted as part of East Portland in the 1860's, the CEID now serves as a primary location for manufacturing and distributing companies. More than a billion dollars of merchandise is bought and sold within the CEID annually. The Central Eastside is the largest of the eight Central City Districts, which include Downtown, North of Burnside, Goose Hollow, Northwest Triangle, Lower Albina, Lloyd Center Coliseum, and North Macadam (see Figure I.4).

The CEID contains over 1,600 companies, collectively employing over 18,000 people. Industrial land-use activities within the CEID consist of wholesaling, warehousing, distributing and manufacturing. The CEID provides goods and services for other districts of the Central City, as well as the Portland metropolitan area and beyond. Industrial zoning is predominantly general industrial with strategically placed heavy industrial and central employment zones. These designations allow the district to provide support services to optimize the industrial strength of the district.

Figure I.2
General Location of the CEID

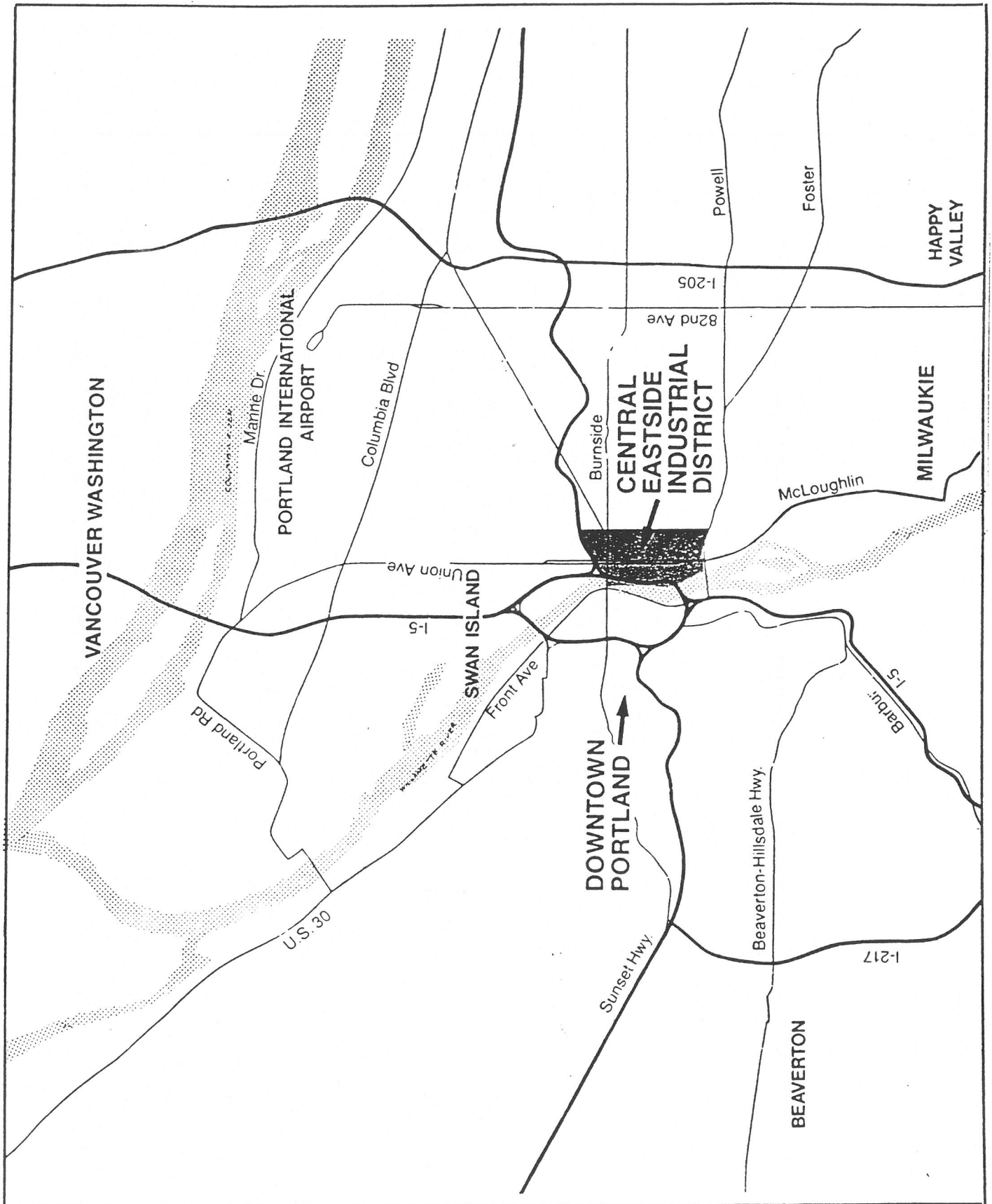


Figure I.3
Central Eastside Industrial District

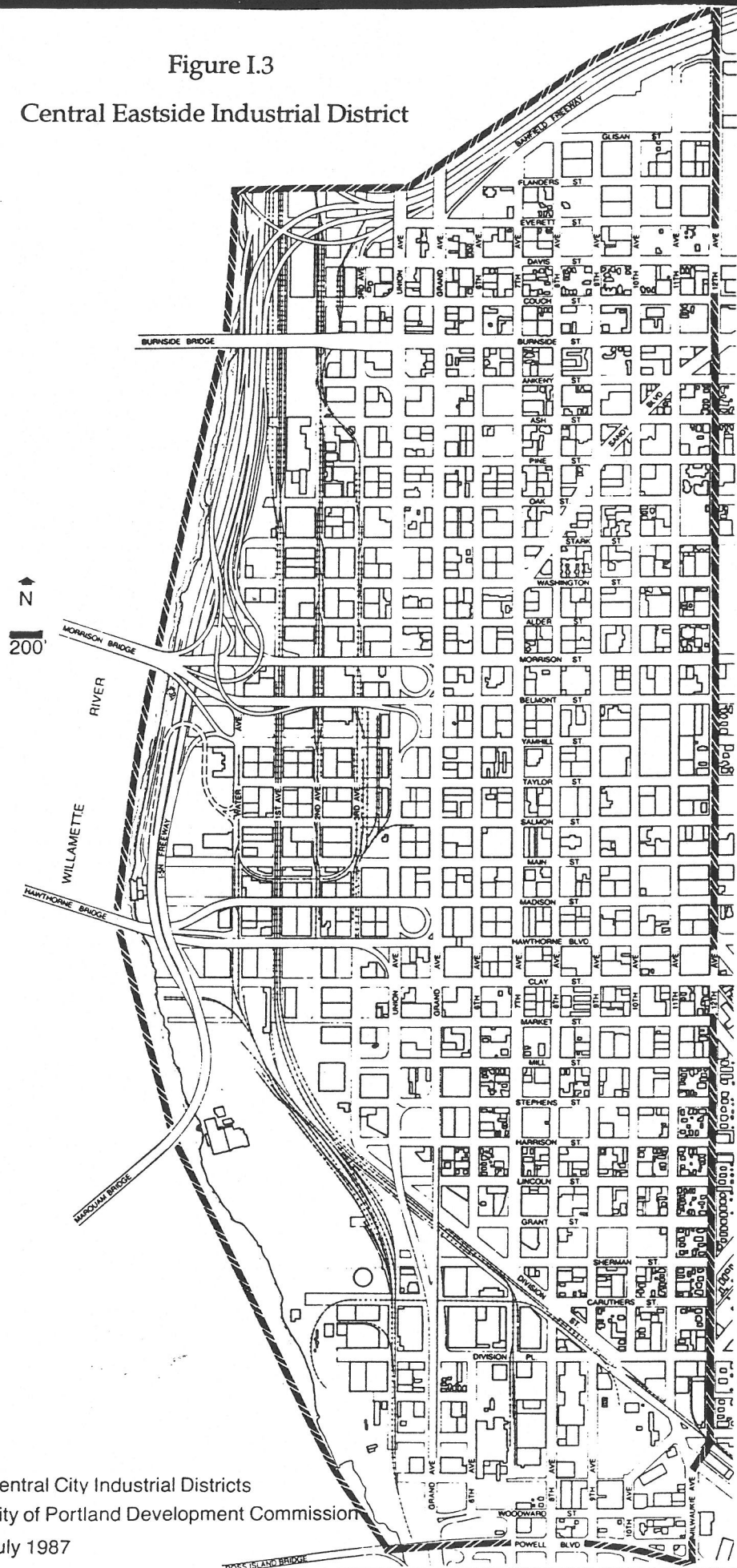
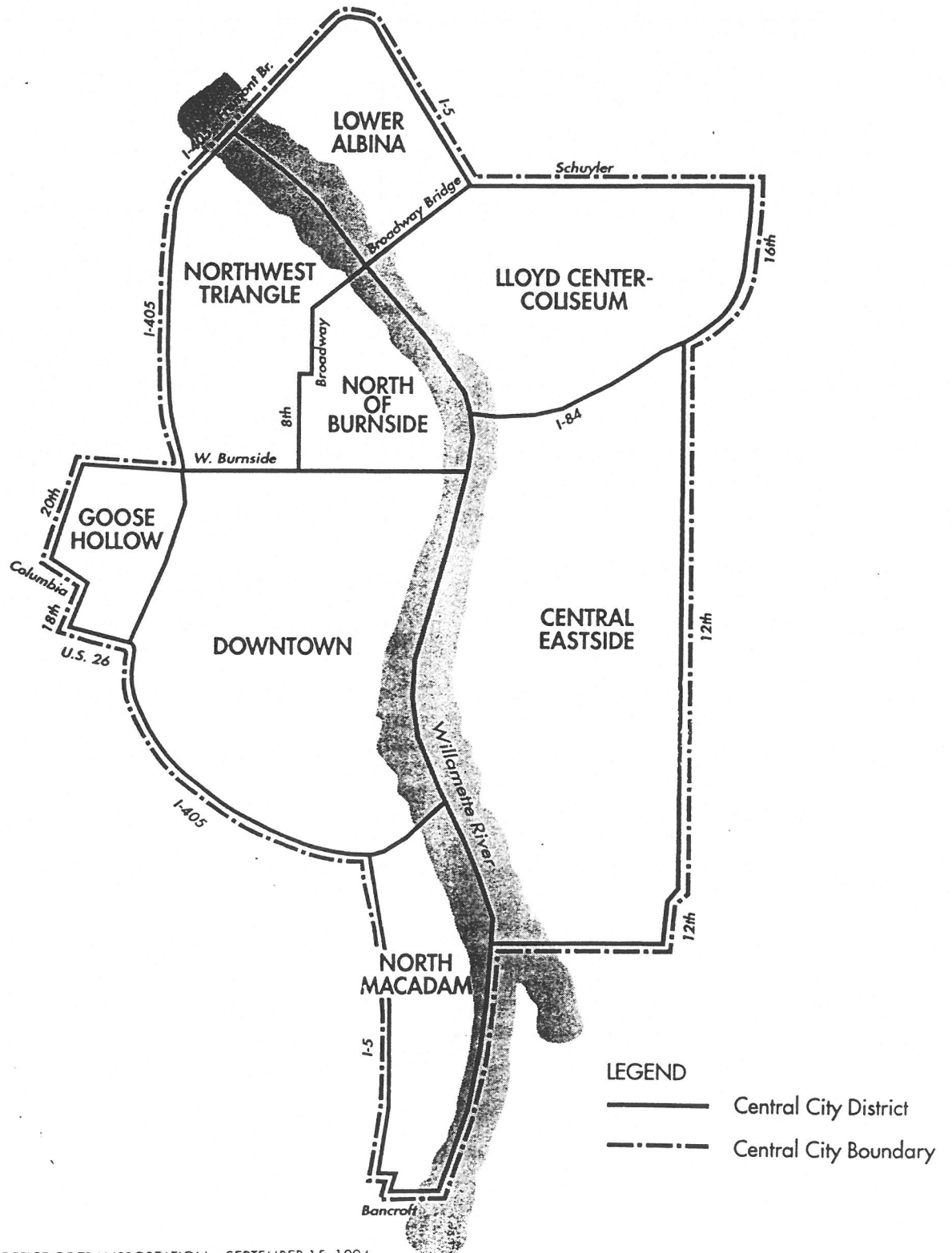


Figure I.4

Central City Districts



Manufacturing and processing plants in the district include dairy processing, wholesale bakers, metal plating, stamping and parts fabricating, window and door manufacturing, auto parts, electrical conversion products, machine tools, textile products, cardboard products, wire, and brass products. Numerous printing businesses in the area are rapidly growing in diversity and size. Produce houses located in the CEID occupy more than 260,000 square feet. Retail sales and services are concentrated along King-Grand and other arterial corridors. International trading companies are rapidly locating and expanding in the district. These firms benefit from the smaller parcels and the high level of business services provided in the CEID. Case study interviews of selected representative businesses in the area were conducted as part of the study to gain detailed information of specific access needs (see Chapter VIII).

The *CEID Development Plan* is designed in accordance with the Comprehensive Plan of the City of Portland. The Plan identifies development opportunities to provide strategic information to individuals and companies interested in locating in the District (See Figure I.5). The five sub-districts in the CEID are:

1. **The Eastbank District.** This area is the District's waterfront distribution center where rail, highway and local streets intersect to provide firms with a variety of transportation modes and access.
2. **The Commercial Corridors District.** These commercial arterials provide location for local service firms and large regional service and retail firms. Unique anchor locations exist for small class "A" signature office buildings. Residential activities are also an important component in these areas.
3. **The Southern Triangle District.** This area is the heavy industrial area of the district with rail, highway and water access available. Several large manufacturing campuses exist in this area.
4. **The Station L District.** The Oregon Museum of Science and Industry anchors the northern part of this waterfront sub-district with the southern part available for employment-generating facilities which can benefit from a waterfront location.
5. **The Industrial Heartland District.** This area encompasses the majority of land in the Central Eastside. It provides unique locations for specialized manufacturing and distribution companies. Firms benefit from a well developed internal street system and services.

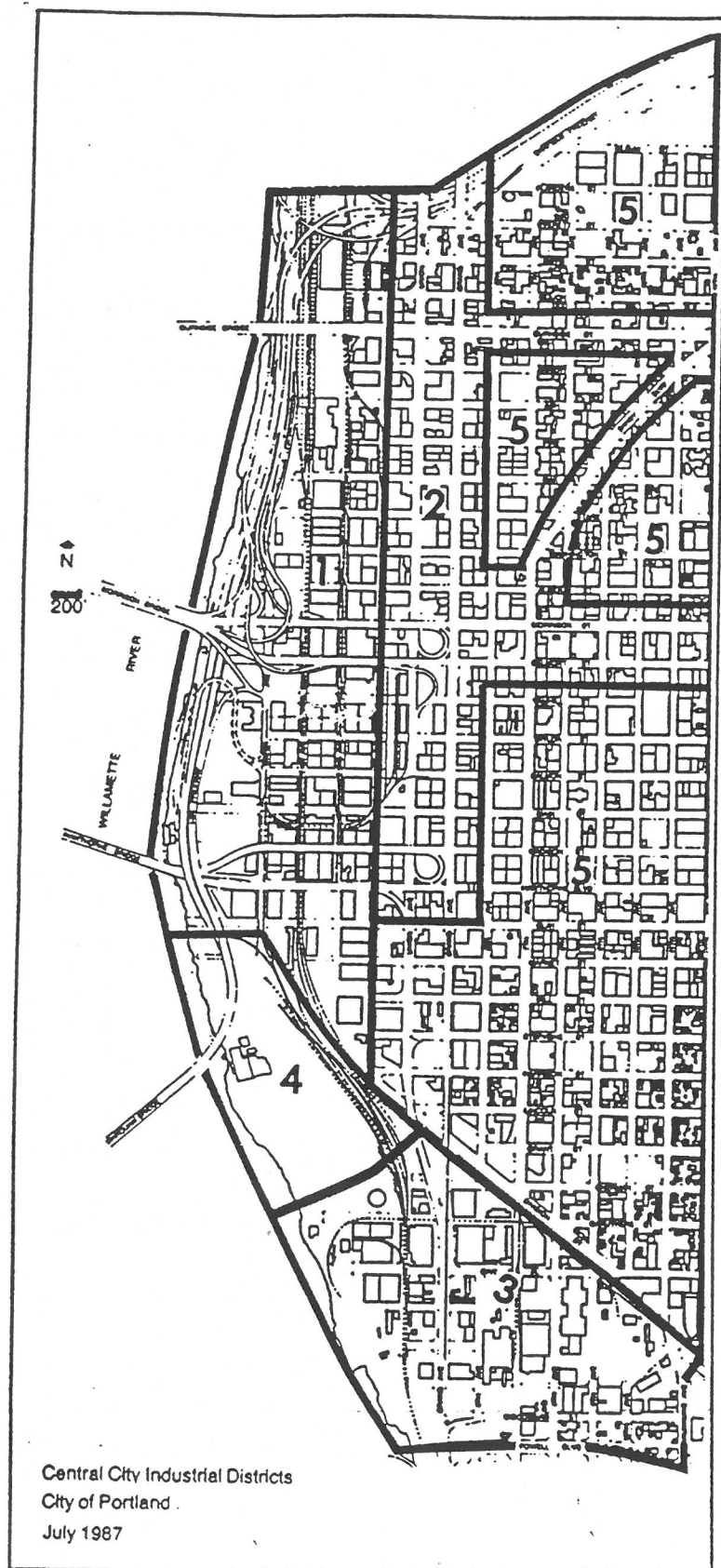


Figure I.5
Central Eastside
Subdistricts

The five subdistricts in the Central Eastside are:

1. **Eastbank:** This area is the District's waterfront distribution center where rail, highway and local streets intersect to provide firms with a variety of transportation modes and access.

2. **Commercial Corridors:** These commercial arterials provide location for local service firms and large regional service and retail firms. Unique anchor locations exist for small class "A" signature office buildings. Residential activities are also an important component in these areas.

3. **Southern Triangle:** This area is the District's heavy industrial area with rail, highway and water access available. Several large manufacturing campuses existing in this area.

4. **Station L:** The Oregon Museum of Science and Industry anchors the northern part of this waterfront subdistrict with the southern part available for employment-generating facilities which can benefit from a waterfront location.

5. **Industrial Heartland:** This area encompasses the majority of land in the Central Eastside. It provides unique locations for specialized manufacturing and distribution companies. Firms benefit from a well-developed system of transportation and services.

I-5 Southbound Access Alternatives Study

Chapter II

BACKGROUND ISSUES AND ASSUMPTIONS

There are several land use assumptions, transportation plans, and proposed road improvement projects that can affect the I-5 southbound access alternatives physically and operationally. Because these plans and projects affect the analysis and design of the alternatives, it has been important to establish the critical assumptions at the outset of the study. Without these critical assumptions the variety of alternatives identified would be too large and complex for adequate evaluation. The assumptions also provide a common basis for comparing the alternatives equally. Listed below are background assumptions regarding (a) land use and transportation plans, (b) road improvements that directly impact the alternatives, (c) road improvements that indirectly affect the alternatives, and (d) the development and design standards applied to the alternatives.

LAND USE, POPULATION AND EMPLOYMENT FORECASTS, AND TRANSPORTATION PLANS AND NETWORKS

The alternatives will be designed to be consistent and supportive with the City's Comprehensive Plan, Central City Plan, the Central City Transportation Management Plan (CCTMP), and the Urban Renewal Plan. Existing traffic forecasting models (EMME/2) by Metro and the City of Portland will be used. A base year of 1990 will be utilized for calibration and a forecast to the year 2010 (20 year projection) will be evaluated using the Regional Transportation Plan (RTP) and the "High Growth" assumptions of the CCTMP. The reason for using 1990 as the base year is the readily available data and model calibration.

FREEWAY/ARTERIAL SYSTEM IMPROVEMENTS WITH DIRECT IMPACT ON ALTERNATIVES

Eastbank Freeway Relocation

It will be assumed, for the purposes of this study, that there will be no major physical or operational relocation of the I-5 Eastbank Freeway. This study has been designed to investigate access alternatives that may be feasible with the freeway in its current location. If a decision is made, in the future, to relocate the Eastbank Freeway then the issue of Central Eastside access to southbound I-5 should be addressed within the context of the overall planning and design. It is beyond the scope of this study to

include analysis for a major project such as this. However, the AATF recognizes the possibilities of this long range alternative plan.

McLoughlin/I-5 North Ramps

The current Regional Transportation Plan (1995 Interim Federal RTP) includes the McLoughlin/I-5 North Ramps (Phase 4 of the East Marquam Interchange Project) and the Grand/King Viaduct Reconstruction. This project is also currently programmed in the Development Section of the *State Transportation Improvement Program* (1995 through 1998) for Final Environmental Documents in Year 2000. However, there is a significant degree of uncertainty as to the availability and timing of project funding for construction. Because the ramps (or their absence) will have a major physical or operational impact on the I-5 south-bound access alternatives, each alternative is designed, analyzed, and evaluated with and without the McLoughlin/I-5 North Ramps as appropriate.

Transit Facilities and Services Assumptions

Transit assumptions, including light rail transit improvements, will be based on the Central City Transportation Management Plan (CCTMP) assumptions. These are identical to the Regional Transportation Plan (RTP) assumptions. Even under the high growth scenario, these assumptions include high capacity transit service in the McLoughlin corridor to Downtown and through Central Eastside via the Hawthorne Bridge. Current alternatives being investigated for the South-North Light Rail Transit project include river crossings other than the Hawthorne Bridge.

The level of transit service assumed for this study will be comparable to the CCTMP and RTP assumptions. Fifteen percent of the trips generated by new development within the CEID will be transit and light rail oriented. With the inclusion of light rail service and several planned stops, it is assumed the CEID will achieve this 15% or higher level. This level of transit service will remain the same for the Central Eastside regardless of the final light rail corridor chosen.

Central Eastside Transportation Study

The Central Eastside Transportation Study (CETS) produced by the Portland Development Commission and the Office of Transportation in 1990 recommended numerous physical transportation concept improvements for the area for all modes--street and highway, transit, pedestrian and bicycle networks. These recommendations were adopted into the Transportation Element of the Comprehensive Plan of the City. Many of the recommended improvements have not yet been developed and will require further planning and engineering.

Of the numerous improvement recommendations, the two which will have the most significant impact on this study will be the Water Avenue Extension and the SE 8th and Powell Signal. The CETS recommendations will not be assumed as part of the base network for analysis purposes but will be considered in the definition and evaluation of certain freeway access alternatives, notably those in the southern part of the study area.

South Portland Circulation Study

The City is planning to update the *South Portland Circulation Study*, which will investigate improvements for the ramps and freeway connections at the west end of the Ross Island Bridge in an effort to reduce regional traffic movements on adjacent neighborhood streets. The I-5 Southbound Access Study includes alternatives that impact the west end of the Ross Island Bridge. However, the *1995 South Portland Circulation Study* will not be conducted before the *I-5 Southbound Access Alternatives Study* is completed. Connections to I-5 South or I-5 405 North discussed in the Study will only be analyzed for traffic modeling, not design. Suggested physical improvements will be considered herein but will not serve as an available alternative to be considered by the AATF.

FREEWAY AND ARTERIAL SYSTEM IMPROVEMENTS WITH INDIRECT IMPACT ON ALTERNATIVES

I-5 North (Greeley-Banfield) Improvements

The need for operational and safety improvements on I-5 North in the vicinity of the Lloyd District have been identified and acknowledged. The Development Section of the *State Transportation Improvement Program* (1995 through 1998) has the I-5 North project listed for Final Environmental Documents in Year 2000. Preliminary Project Development activities undertaken in 1987 produced design concepts that have been the basis of regional traffic modeling assumptions.

Traffic forecasting and analysis for the I-5 southbound access alternatives will assume that the identified I-5 freeway improvements between the Banfield and Fremont Bridge interchanges have been implemented. Although there is uncertainty when implementations are made, the direct impacts on the CEID area and on traffic volumes are very minimal in comparison to a large project. (i.e. The McLoughlin ramps, between SE Grand and SE Martin Luther King Boulevard).

I-405 Improvements

The need for operational and safety improvements on I-405 have also been acknowledged. The Reconnaissance Section of the *State Transportation Improvement*

Program (1995 through 1998) has a I-405 Reconnaissance Study listed but without a programmed initiation date. The study has not begun and therefore improvements have not yet been specified or programmed. For this reason, the traffic forecasting and analysis for the I-5 southbound access alternatives will assume that I-405 remains configured as it is today.

DEVELOPMENT STANDARDS AND ASSUMPTIONS

Improvement Standards

As part of the screening process, all improvement alternatives (roadway, ramp, intersection, and traffic control) will be evaluated based on operations, capacity, safety and geometric qualities. After screening, an in depth analysis will be applied for evaluation and identification of feasible alternatives. Current federal, state, and city standards for quality will be assumed and considered during the screening process.

For all alternatives, improvements (roadway, ramp, intersection, and traffic control) will be looked at based on operations, capacity, safety, and generic goals as part of the basis for screening. After screening an in depth analysis will be applied for evaluation and identification of feasible alternatives. Current federal, state, and city standards for quality will be assumed and considered during the alternative screening process.

Arterial System Impacts

Based on the alternatives chosen, impacts on arterial streets will be assessed for operational sufficiency including safety and capacity for the appropriate road authority (city or state). Standards for quality will be assumed as benchmarks for screening.

Internal Traffic Impacts

It is important to consider the amount of traffic attracted to the CEID. The increase of traffic within the area would only cause increased congestion and hamper accessibility by trucks. With this consideration, it is important to evaluate each alternative for its attraction of outside traffic through the CEID.

The CEID site transportation system assumes for all new development that 15% of the trips generated will be by carpool and 5% will be through walking and bicycling modes. The combination of these modes total 35% for new trips generated. Of the new trips generated by SOV, this leaves 65%.

Neighborhood Traffic Management

All alternatives shall incorporate traffic management actions, roadway, and traffic control improvements in a way that concentrates traffic at the source and minimizes use of traffic routes that extend into neighborhoods. These are necessary to address potential through traffic problems in the surrounding eastside residential area.

I-5 Southbound Access Alternatives Study

Chapter III

UNIVERSE OF ALTERNATIVES

An original list of over twenty concept alternatives and options were reviewed by the Access Advisory Task Force (AATF). This original list is referred in the study as the "Universe of Alternatives" and contains all alternatives ever suggested through previous technical studies or public processes on this subject, plus those developed through this study process. Many of these alternatives discussed below were suggested by the public as part of this study process or from previous work related to Eastbank Freeway issues.

The "Universe of Alternatives" is divided into six categories, based on project concept, magnitude, and common project characteristics. The six categories include: No Action, Transportation Systems Management, Major Improvements and Minor Improvements to Existing Routes, New (direct access) Ramps, combined use of a Light Rail Transit Bridge (as part of the South-North Transit Corridor), and Freeway Relocation options of the Eastbank Freeway.

NO ACTION - ALTERNATIVE 1

Continued use of existing routes: Ross Island Bridge, Hawthorne Bridge, Morrison Bridge to Front Avenue (to southbound I-5), and Clay Street (to westbound Sunset Highway). These routes are currently chosen by the truck drivers wishing to access southbound I-5 from the CEID. These choices are made based on recommendations from the shippers, other drivers, driver experience, and radio traffic reports.

This alternative provides a Base Case for evaluating other alternatives but would not provide improved access for the Central Eastside over current conditions

TRANSPORTATION SYSTEMS MANAGEMENT (TSM) - ALTERNATIVE 2

Transportation System Management (TSM) would involve small-scale, low-cost roadway, traffic information and traffic control improvements to facilitate truck movements on existing routes. Technical Appendix A explains these alternatives in greater detail. The TSM routes considered for improvement include:

- Ross Island Bridge Route,
- Hawthorne Bridge Route,
- Morrison Bridge Route,

- Burnside Bridge Route, and
- General TSM Improvements to all routes.

The assumption is that existing traffic volumes would not grow beyond today's volumes. Also, that rerouting truck traffic would have no adverse impacts on existing commuter traffic, and that access time to I-5 southbound is not taken into consideration. The fatal flaw in this assumption is that existing routes are not at capacity. Routing trucks to these routes would create more traffic problems, while hampering safe, easy, and timely access to I-5 southbound.

IMPROVEMENTS TO EXISTING ROUTES - ALTERNATIVE 3

Major or minor improvements to the existing routes include Ross Island Bridge access improvements, and improvements to Front Avenue and Clay Street. These alternatives would range from new signing to construction of new access ramps utilizing existing routes.

Capacity and Geometric Improvements to Front Avenue - Alternative 3.1

Major improvements on Front Avenue could include additional lanes, grade separations and ramps. However there are space constraints, policy, and plan conflicts which generally preclude these types of improvements on Front Avenue.

The presiding assumption is that expansion of Front Avenue would be easy and timely. However, many problems exist due to the existing structures in the area. To improve Front Avenue to current sight distance standards, geometric standards, and to accommodate current and future traffic volumes, it would require a significant amount of right-of-way purchase. Additionally, truck traffic would increase in an area of pedestrian access to the Tom McCall Waterfront Park, creating conflicts and safety concerns. These improvements conflict with the CCTMP for the Downtown District by increasing the amount of vehicle traffic in the area. Vehicular traffic circulation for the Downtown District is not a consideration in the CCTMP. The increased use of transit, bicycles and pedestrian access are of primary importance for the Downtown District.

Capacity and Geometric Improvements to Clay Street - Alternative 3.2

Clay Street is used for access to US 26 (Sunset Highway). Major improvements on Clay Street could include features such as additional lanes, grade separations and ramps. However there are space constraints, policy, and plan conflicts which generally preclude these types of improvements on Clay Street.

Again, the presiding assumption is that expansion and acquisition of Clay Street alignment would be an easy and timely process. However, many problems exist due

to the existing structures in the area. To improve Clay Street to current sight distance standards, geometric standards, and accommodate current and future traffic volumes, it would require a significant amount of right-of-way purchase. Additionally, truck traffic would increase in an area where there is much pedestrian traffic, creating safety concerns. These improvements conflict with the CCTMP for the Downtown District by increasing the amount of vehicle traffic in the area. Vehicular traffic circulation for the Downtown District is not even a consideration in the CCTMP. The increased use of transit, bicycles and pedestrian access are of primary importance for the Downtown District.

Note: Later in the study process "Alternative 3.2" was revised to refer to Minor Improvements to the Existing Ross Island Bridge Route.

Ross Island Bridge Route - Alternative 3.3

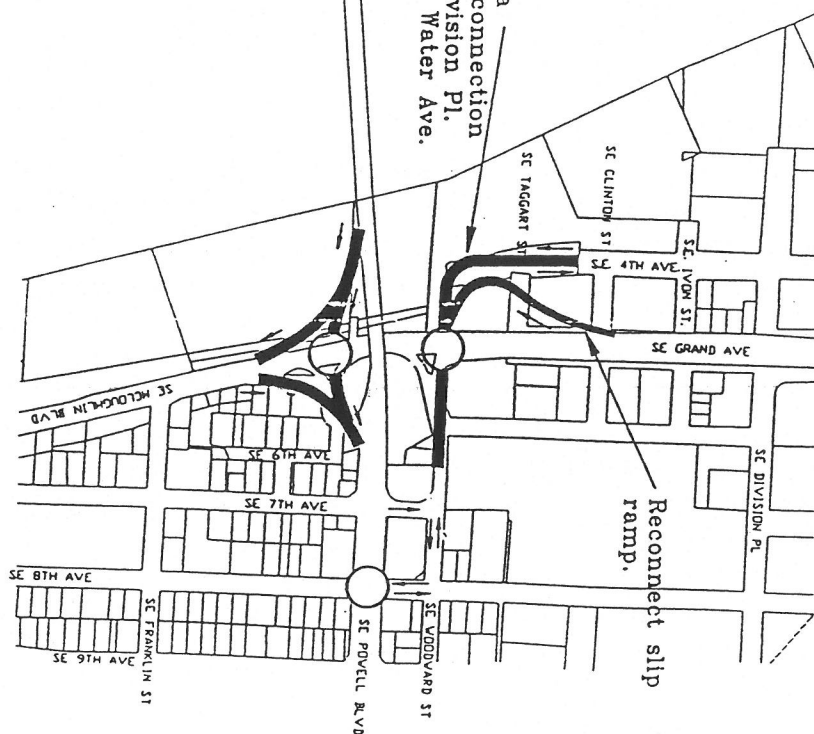
Major or minor improvements will be focused on the Ross Island Bridge Route instead of the Front Avenue and Clay Street routes due to physical space constraints, policy, and plan conflicts. This proposal would improve connections from the Central Eastside to the Ross Island Bridge, and from the Ross Island Bridge to southbound I-5 and westbound Sunset Freeway (via I-405). These improvements could include but are not limited to:

- signalize McLoughlin and Woodward (for southbound-eastbound left turns),
- signalize 8th and Powell,
- construct a Water Avenue extension,
- improve ramp connections from CEID to the Ross Island Bridge,
- improve ramps connecting the Ross Island Bridge to southbound I-5 and the access route to northbound I-405, and
- possible re-construction of the Ross Island Bridge when warranted or as part of the south-north light rail improvement.

Two improvement options were proposed for the Ross Island Bridge. Figure 3.1 (Alternative 3.3.3) shows a low-cost/low-impact improvement to the Ross Island Bridge on the east end. This option includes a signal at SE Woodward Street and SE McLoughlin Boulevard, a signal at SE 8th Street and SE Powell Boulevard, and signals at the SE McLoughlin Boulevard connection.

Two options exist for connections to SE Woodward Street the first is construction of the Taggart Street slip ramp and the second is a new connection to Water Avenue from Division Place with a ramp to the SE Woodward Street and SE McLoughlin Boulevard intersection. An extension of the right-hand acceleration lane onto the Ross Island Bridge would be required of both alternatives. The west end of the Ross Island Bridge is left unimproved.

○ Signal added at intersection

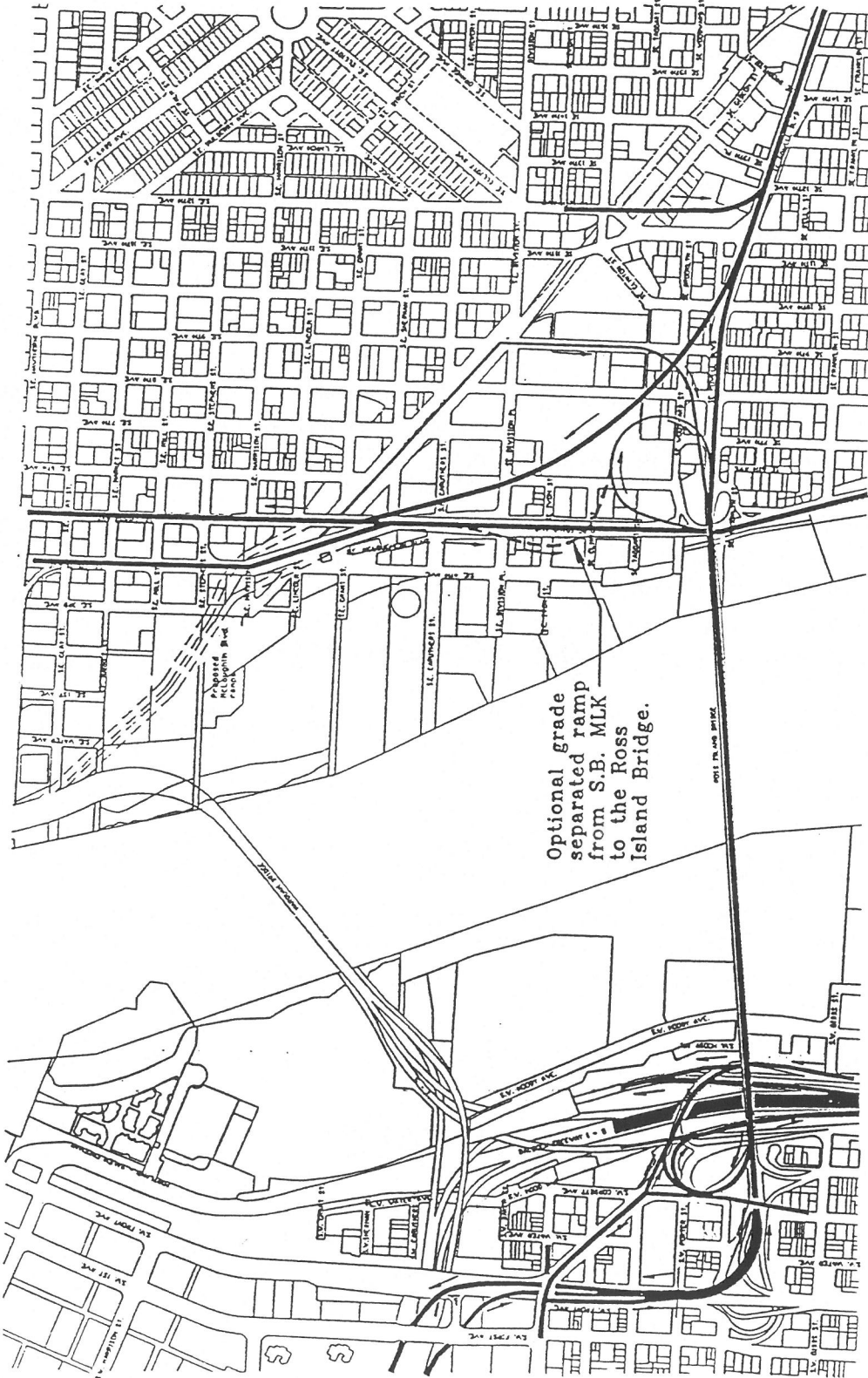


Add a
new connection
to Division Pl.
from Water Ave.

Reconnect slip
ramp.

deen
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FIGURE 3.1
ROSS ISLAND BRIDGE LOW COST ALTERNATIVE
(ALTERNATIVE 3.3.1)



Ross Island Bridge
West end
reconfiguration

FIGURE 3.2
ROSS ISLAND BRIDGE CONSTRUCTION ALTERNATIVE
(ALTERNATIVE 3.3.2)

This alternative assumes that traffic can be accommodated all through the designated route. However, from the EMME/2 model of the metro area, there will be significant constraints on the ramp to I-5 southbound on the west side of the Ross Island Bridge as well as that portion of I-5 just under the Ross Island Bridge by the year 2010.

The second improvement (Alternative 3.3.2) is shown in Figure 3.2. This is a reconstruction option which is a high-cost/high-impact alternative to both east and west ends of the Ross Island Bridge. This would require the construction of several ramps, one from southbound Martin Luther King Boulevard to SE Powell, northbound SE Powell to SE Grand Avenue, and a 9th street connection from Division to the Ross Island Bridge. The west end of the Ross Island Bridge would be reconfigured as well. This would include redirecting traffic on several ramps, demolishing the existing connection of Highway 99W with Front Avenue, routing traffic directly to Front Avenue from the Ross Island Bridge, and providing direct connections to and from I-405.

Again, this alternative assumes that traffic can be accommodated all along the Ross Island Bridge route to I-5 southbound. This notion is conceivable if the reconstruction of the west end of the Ross Island Bridge commences. Accommodation of future traffic volumes would be designed into the project creating easier access for I-5 southbound traffic. The problem with this alternative is that it is only in the preliminary conceptual stages. This would require additional right-of-way purchases and final design considerations which may take years to complete. The evaluation of the west end of the Ross Island Bridge is beyond the scope of this study. It is anticipated that the subject of the west end will be evaluated under the *South Portland Circulation Study* to commence after the completion of this report.

NEW RAMPS - ALTERNATIVE 4

Several ramp alternatives exist to allow the CEID traffic access to I-5 southbound. These alternatives include construction of ramps from Water Avenue to using other routes with direct ramp connections to I-5. Technical Appendix B contains a comprehensive summary of ramp access alternatives from previous proposals. A summary of these alternatives with figures, assumptions, and alternative problems is presented. Technical Appendix B provides a summary of each alternative.

Water Avenue Ramp - Alternative 4.1

Construct a ramp from Salmon Street or Water Avenue to southbound I-5. This alternative is the Phase 3 improvement of the East Marquam Interchange Project. Figure 3.3 shows the connection from Water Avenue to I-5. Detailed plans and specifications already exist for this project. In addition to the construction of this ramp, an esplanade for pedestrians and bicycles is included in the construction plans.

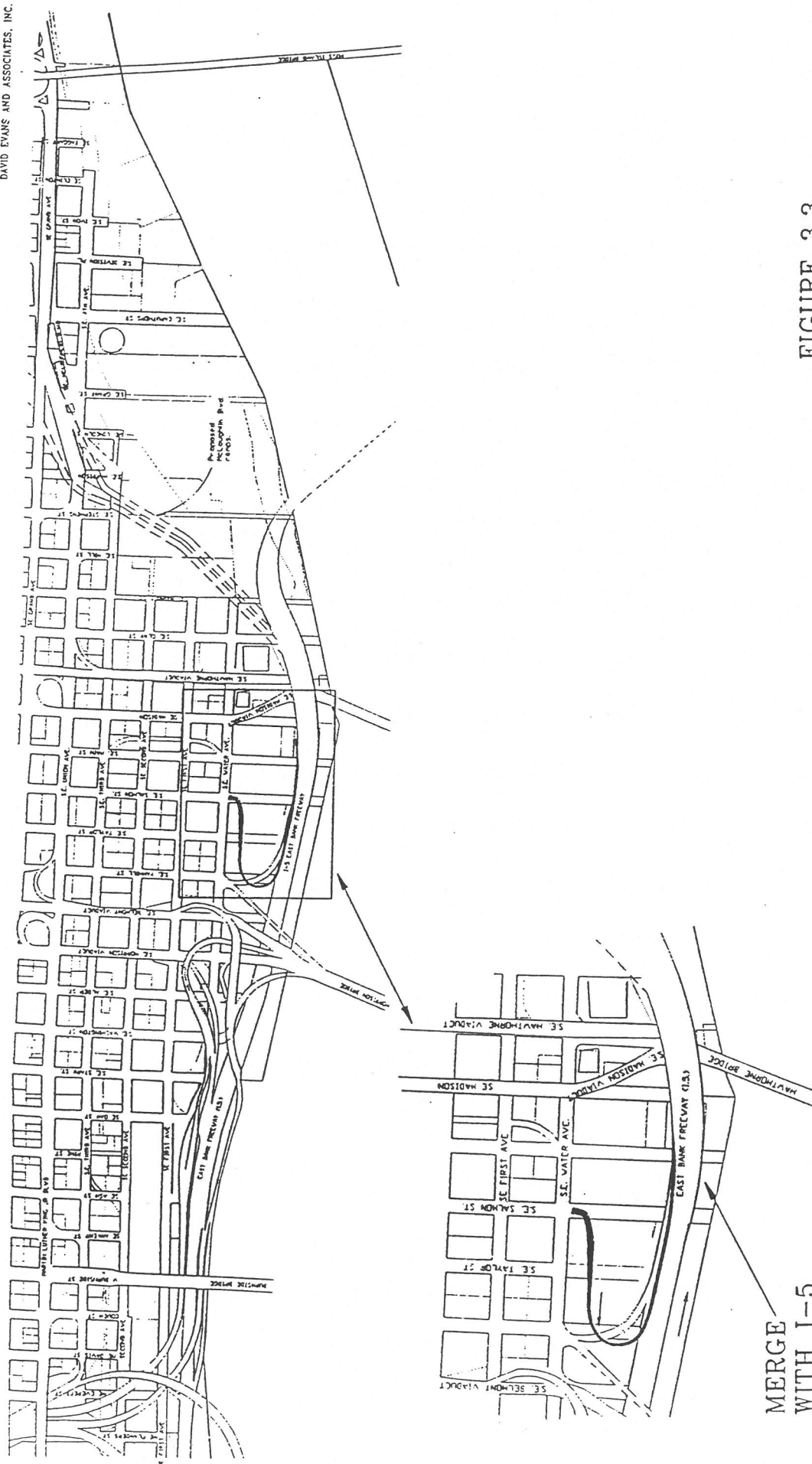


FIGURE 3.3
WATER AVENUE RAMP
(ALTERNATIVE 4.1)

✓
MERGE
WITH I-5

All technical design considerations have been accommodated with this alternative. Appropriate right-of-way is accommodated for access out of the CEID and directly onto I-5 southbound.

Marquam Bridge Ramp - Alternative 4.2

Alternative 4.2 would construct a ramp to the former Mt. Hood Freeway stub location at the east end of the lower (southbound) deck of the Marquam Bridge. This ramp would originate at SE Martin Luther King Boulevard and connect to the lower deck of the Marquam Bridge creating a left-hand weaving section. Figure 3.4 shows the proposed alternative. Under this alternative, this ramp would cross over the proposed McLoughlin Boulevard Ramps.

It is assumed that traffic could easily make the left hand weave and trucks will be at highway speeds after accelerating up the grade to the Marquam Bridge. This has been found to be difficult, if not impossible. It is documented that left hand weaves have 60% higher accident rates than normal right hand weaves. Additionally, trucks would not be at highway speeds upon reaching the top of the Marquam Bridge ramp.

Morrison /I-5 Interchange - Alternative 4.3

Two alternatives exist with the Morrison/I-5 interchange, also referred to as the Morrison Viaduct (Morrison Br.) Ramp. See Figure 3.5. Alternative 4.3A would require a turn signal placed at the intersection of the on-ramp and the east end of the Morrison Bridge. This ramp would use the right-of-way reserved for the Water Avenue on-ramp. Alternative 4.3B is a left hand diverge from Morrison Street. This would merge directly to I-5 southbound in the same area proposed for the Water Avenue Ramp.

Alternative 4.3A assumes that a signalized intersection can be accommodated and an access ramp to I-5 southbound would meet the required design standards. The right-of-way is already acquired, through the previous Water Avenue ramp alternative.

Alternative 4.3B assumes that the ramp can be constructed between the existing freeway access ramps and a left hand diverge is acceptable from the SE Morrison Viaduct. From a visual observation, it appears that a ramp might not make the required clearance between the existing ramps.

Hawthorne/Madison Viaduct Ramp - Alternative 4.4

Also referred to as the Madison Viaduct (Hawthorne Br.) Ramp, Alternative 4.4 is shown in Figure 3.6. This alternative proposes construction of a new ramp from the westbound viaduct approaching the Hawthorne Bridge to southbound I-5.

○ Signal added at intersection



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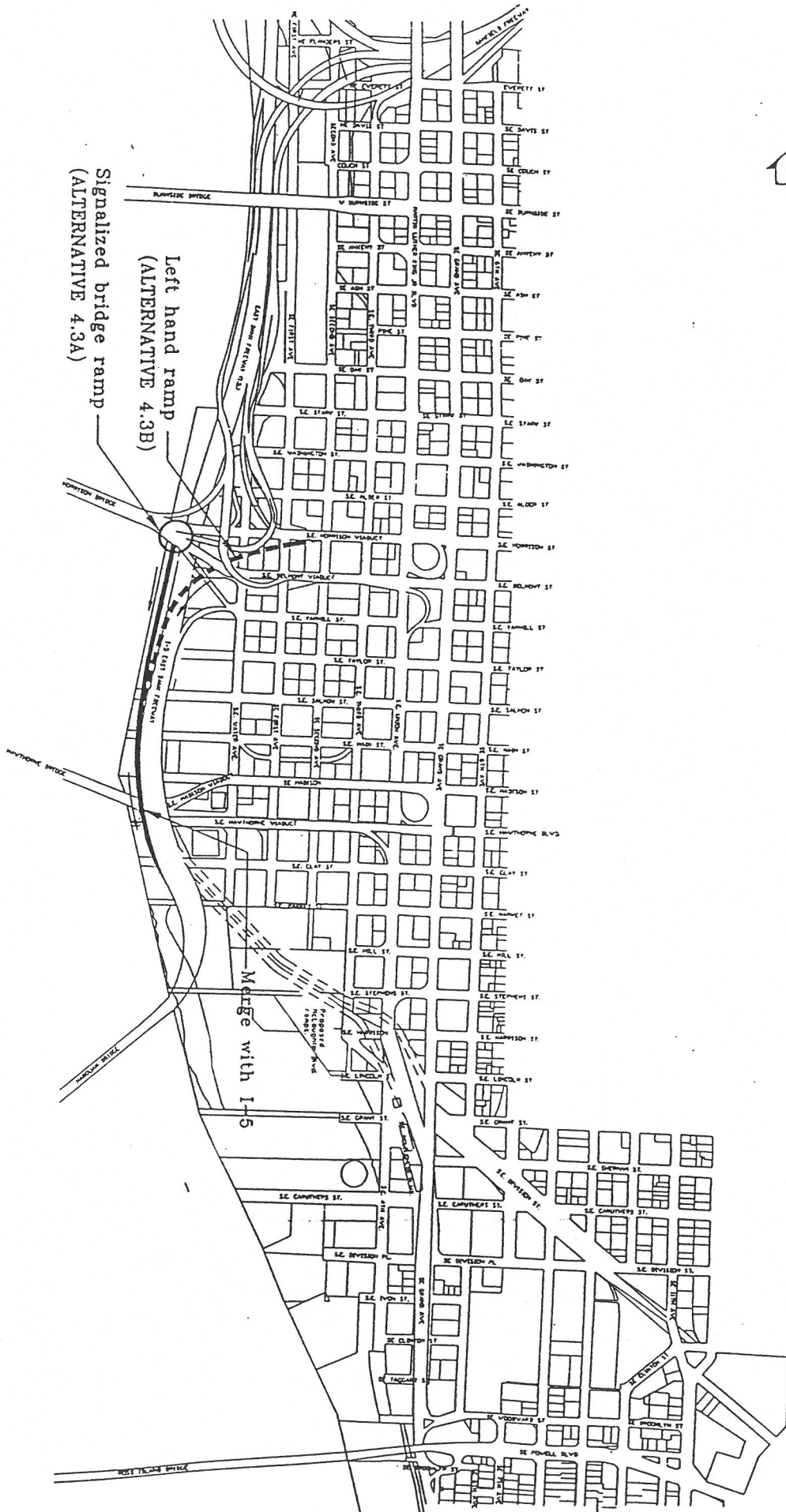
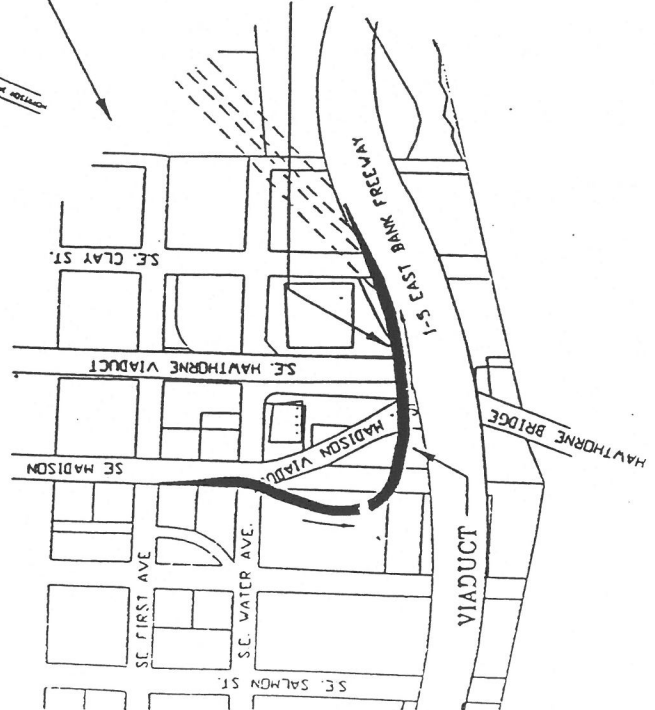
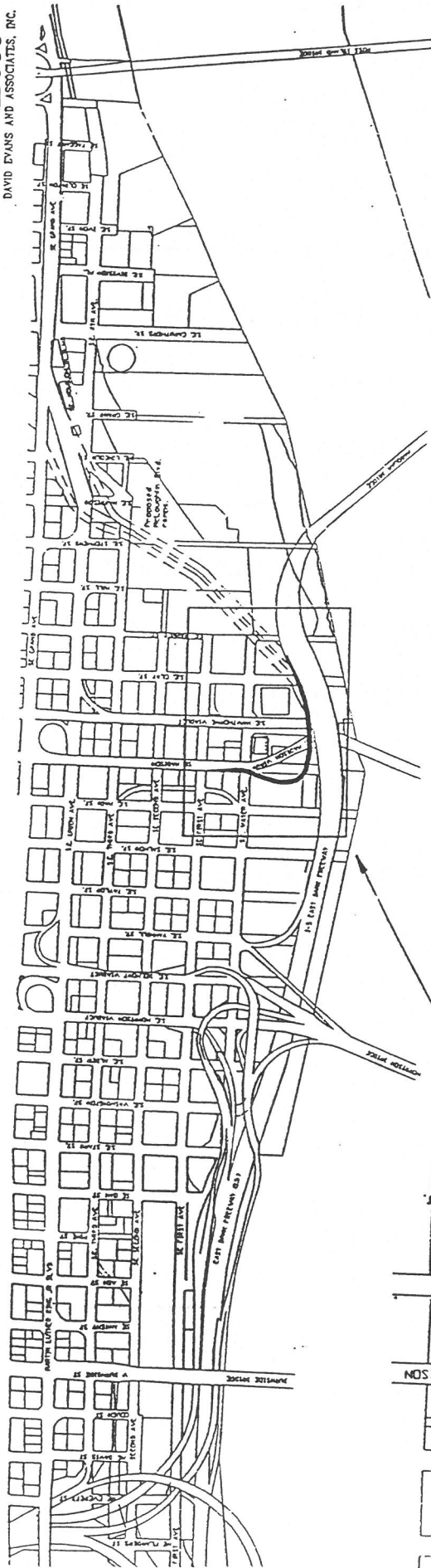


FIGURE 3.5
MORRISON BRIDGE AND I-5 INTERCHANGE
(ALTERNATIVE 4.3)

dean

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Left hand merge
with I-5 on the
Marquam Bridge

FIGURE 3.6
HAWTHORNE/MADISON VIADUCT RAMP.
(ALTERNATIVE 4.4)

Connection would be near the Mt. Hood Freeway stub (since removed) and would create a left-hand weaving lane with I-5 southbound.

It is assumed that the McLoughlin/I-5 North Ramps would not be constructed and a left hand weave would not inhibit traffic. SE Hawthorne Boulevard is designated as transit, pedestrian and bicycle routes, which may present conflicts with an increase in vehicle traffic on this route. Left hand entrance ramps are unfavorable by ODOT standards, and existing left hand entrance ramps have been phased out over the years due primarily to safety concerns.

King and Grand/I-84 Interchange - Alternative 4.5

Alternative 4.5 is shown in Figure 3.7. This proposes construction of a new SE Martin Luther King Boulevard (MLK) and SE Grand couplet, providing access from SE Grand Avenue to SE MLK to southbound I-5. A diverge from Grand Avenue would occur at the south abutment of the Grand Avenue Bridges (over I-84). The diverge ramp would be carried to a signal on Martin Luther King Avenue. After passing through the intersection a merge would take place with traffic from Glisan (accessing southbound I-5). Eventually traffic would merge with I-84/I-5 southbound traffic.

It is assumed that this option would provide access for CEID trucks. However, this is a significant out of direction distance for trucks to travel for I-5 southbound access. Additionally, trucks will be required to merge with I-84/I-5 southbound traffic at highly congested levels. This has been projected by the 2010 EMME/2 Metro model.

Flanders Street Ramp - Alternative 4.5

Alternative 4.6 is shown in Figure 3.8. This proposes construction of a new ramp from I-84 westbound, along Flanders Street under Grand Avenue and Martin Luther King Boulevard to connect to I-84/I-5 southbound ramp. Figure III-8 shows this alternative. A ramp from westbound I-84 would have direct access to Grand Ave. Traffic would be allowed to turn either from Grand Avenue or MLK and eventually merge with I-5 southbound ramps from I-84.

It is assumed that Flanders Street would provide access for CEID trucks. However, this is a significant out of direction distance for trucks to travel and access I-5 southbound. Additionally, trucks will be required to merge with I-84/I-5 southbound traffic at highly congested levels. This has been projected by the 2010 EMME/2 Metro model.

○ Signal added at intersection

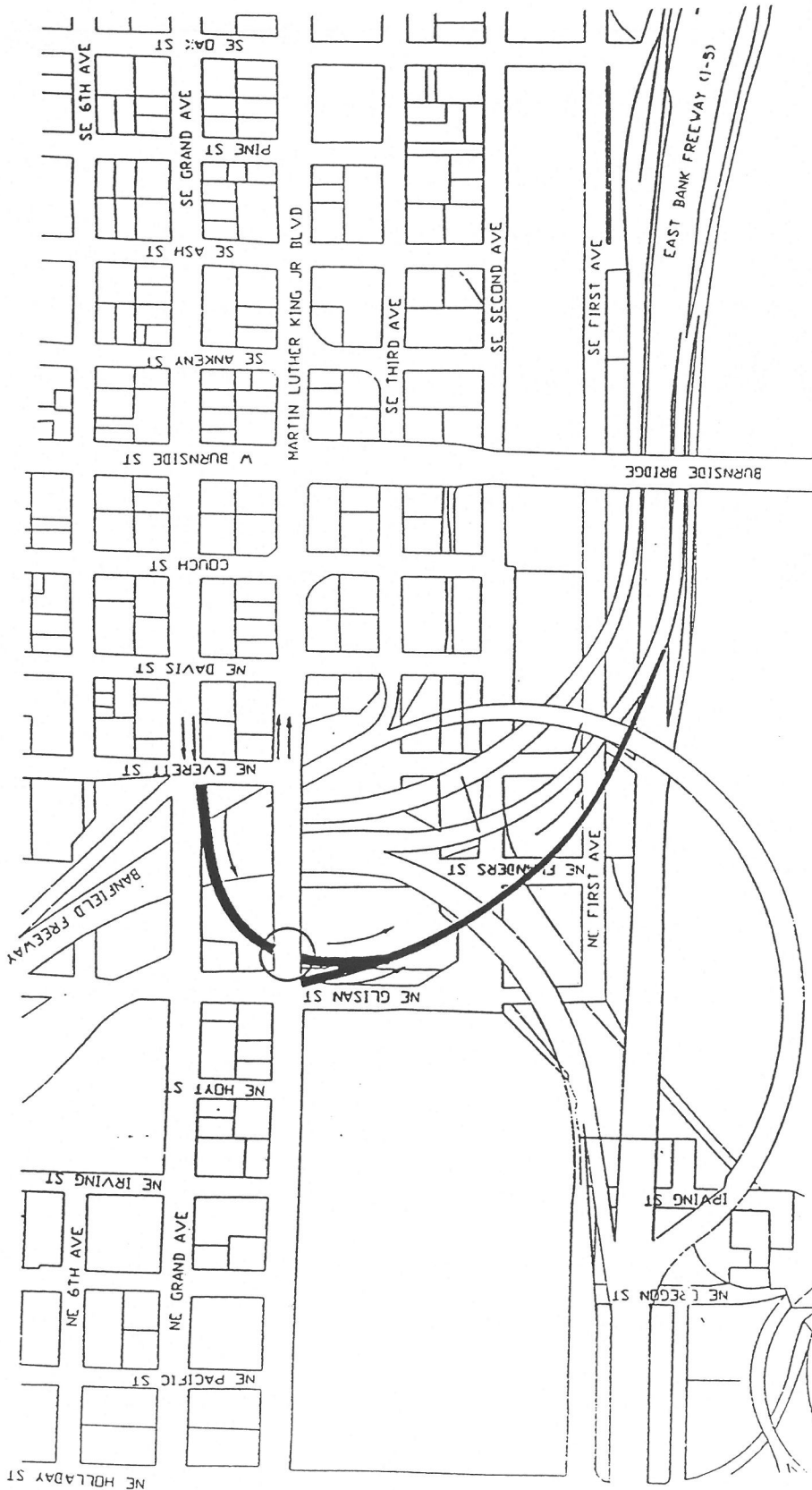
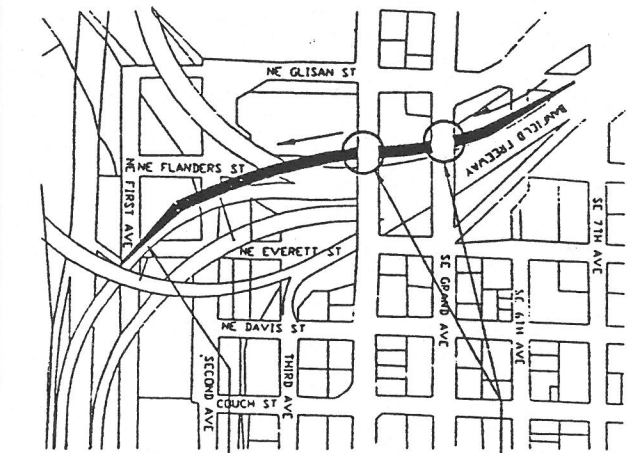


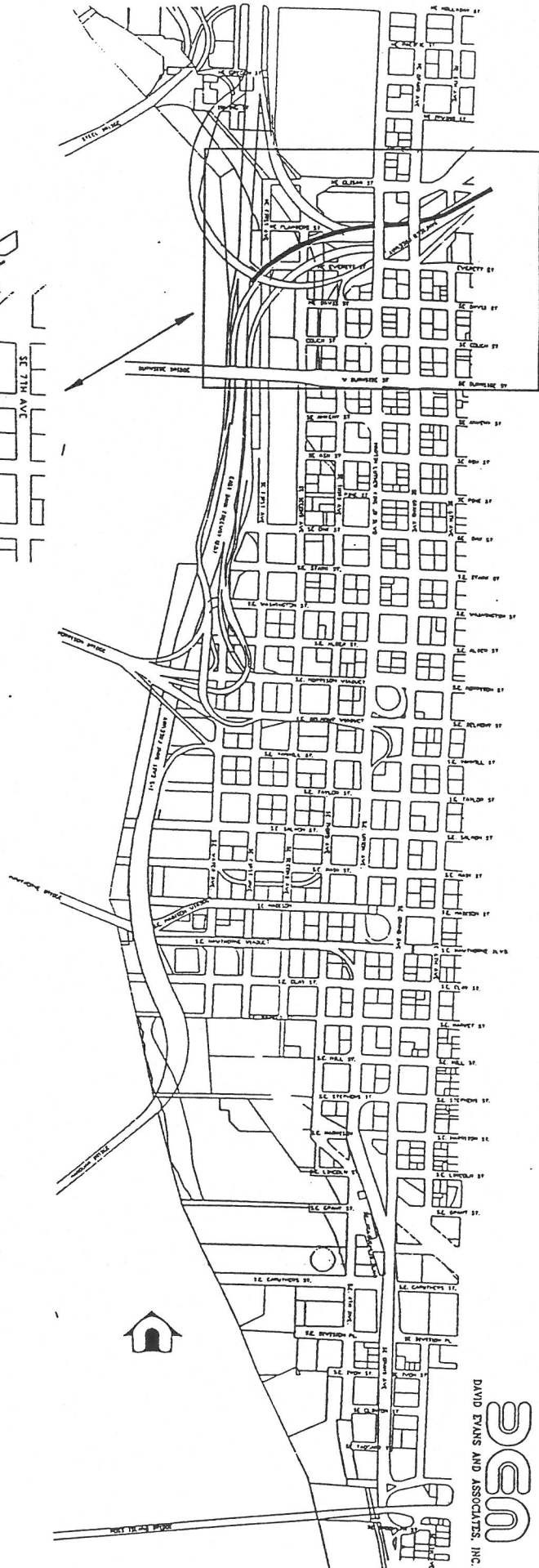
FIGURE 3.7
KING/GRAND/I-84 INTERCHANGE
(ALTERNATIVE 4.5)



Merge with
I-5 on ramp

At grade
intersections

○ Signal added at intersection



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FIGURE 3.8
FLANDERS STREET RAMP
(ALTERNATIVE 4.6)

LIGHT RAIL (LRT) BRIDGE - ALTERNATIVE 5

This alternative involves combining a new light rail transit bridge, as proposed in the South-North Transit Corridor Study, with a route for I-5 Southbound access including the necessary ramps from the Central Eastside. A basic design may be composed of a traffic lane or lanes on the transit bridge.

RELOCATION OF THE EASTBANK FREEWAY - ALTERNATIVE 6

Several options exist for the relocation of the Eastbank Freeway. These options include complete freeway demolition and reconstruction several blocks east of the current alignment, to depressing the freeway in its current location. Although the initial assumptions do not provide for freeway relocation, they are provided as information, should the relocation decision be made. The proposals are only schematically detailed and are shown in the accompanying figures. Technical Appendix C provides a summary of each proposed alternative.

For each of the following alternatives, it is assumed that funding would be available and that one of these options may be constructed in the future (beyond 20 years). A request for federal funds for removing a functional freeway and rebuilding it in a slightly different alignment may not be approved. Metro, ODOT or the City of Portland may have to provide the funding for a relocation project, which of this magnitude may also be difficult.

Construct the I-5 Freeway in a New Alignment - Alternative 6.1

Alternative 6.1 is shown in Figure 3.9. This option includes a Central Eastside ramp connection through the use of a split diamond interchange. Connection to and from I-5 would be made at the SE Morrison and Belmont viaducts. The freeway would remain in its current alignment north of the Burnside Bridge.

Freeway Relocation Between the Morrison and Marquam Bridges - Alternative 6.2

Alternative 6.2 is shown in Figure 3.10. This option would relocate the I-5 freeway between the Marquam and the Morrison bridges. This alignment is located west of Water Avenue but retains the existing free-flow directional access ramps at the east end of the Morrison Bridge.

I-5 Tunnel - Alternative 6.3

Alternative 6.3 is shown in Figure 3.11. The Eastbank Freeway would be placed below grade in its current alignment. A tunnel would be constructed under the

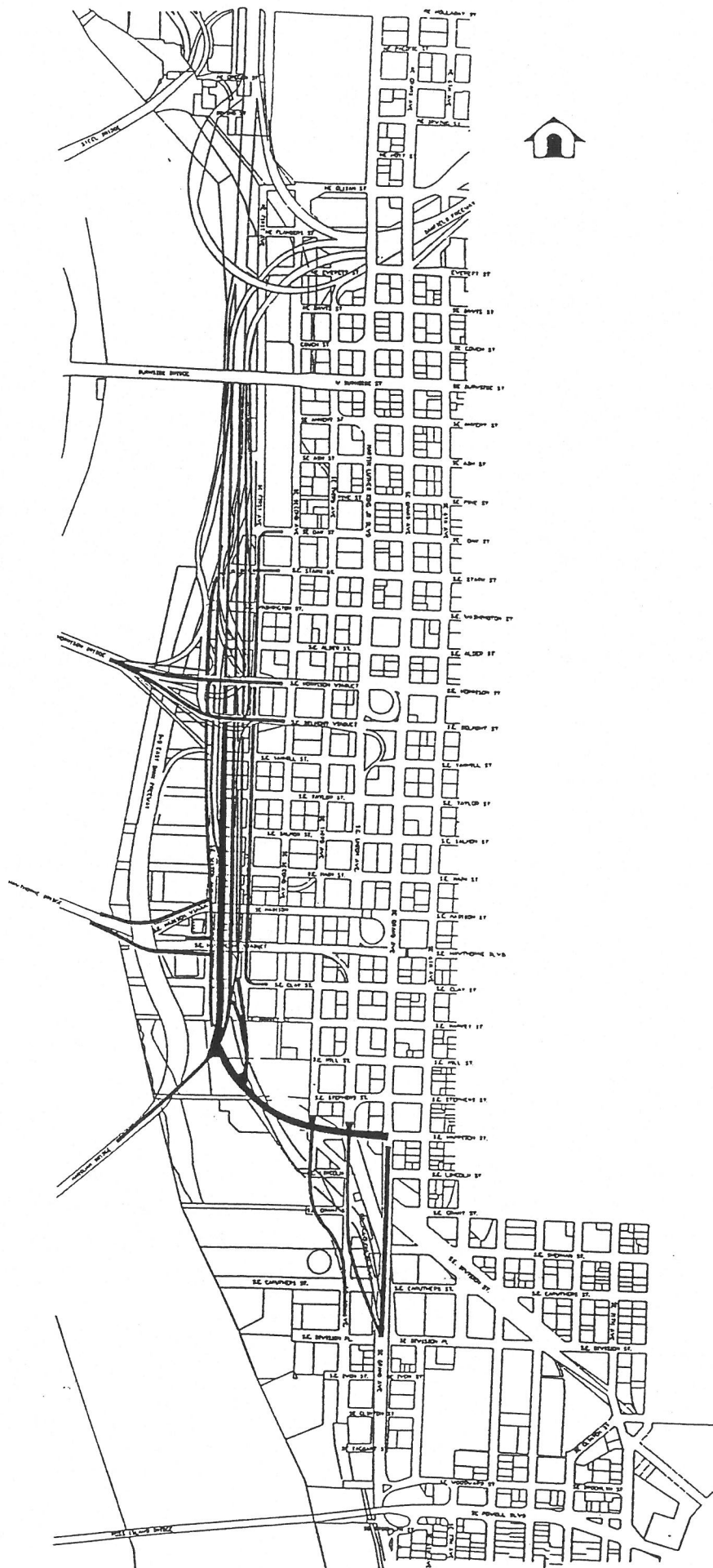


FIGURE 3.9
CENTRAL EASTSIDE FREEWAY RELOCATION
(ALTERNATIVE 6.1)

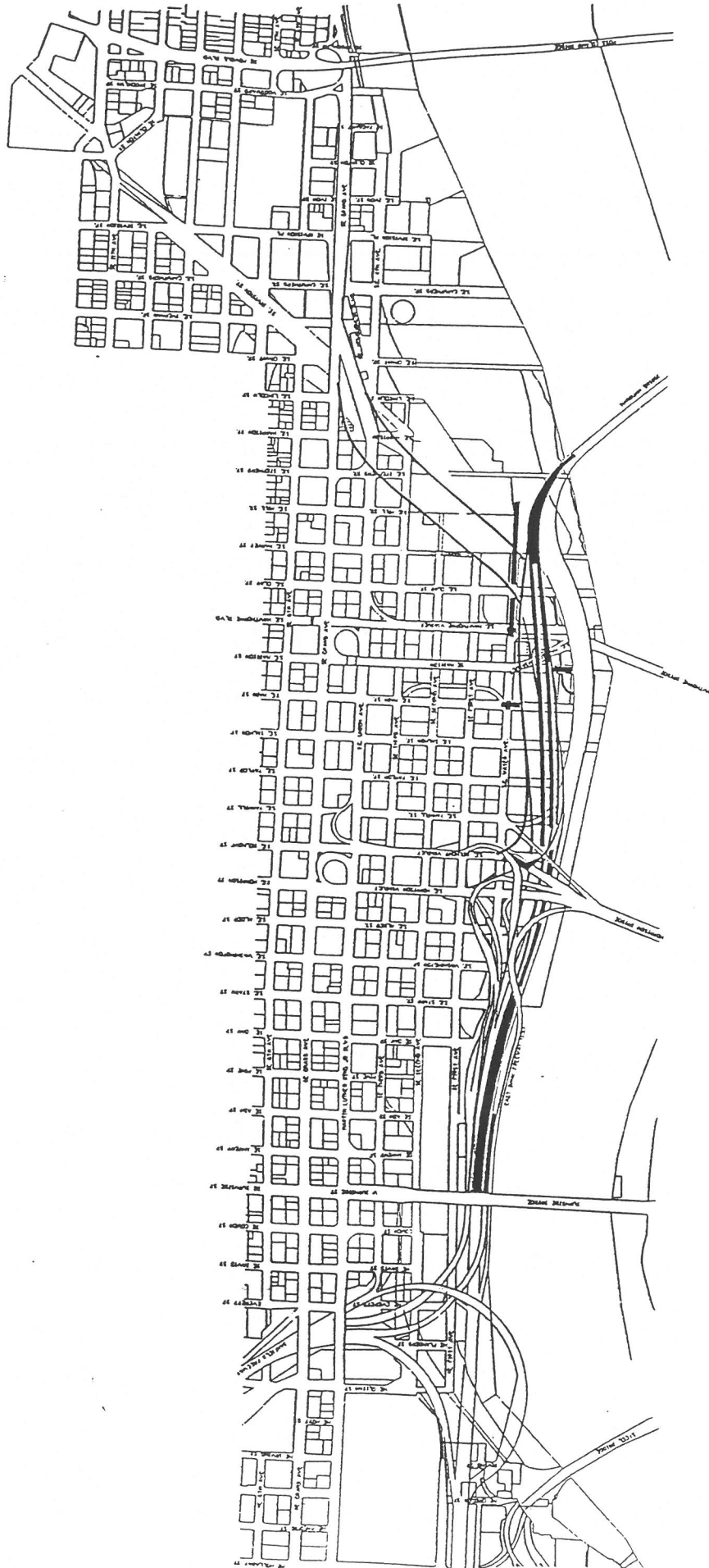


FIGURE 3.10
 FREEWAY RELOCATION BETWEEN
 MORRISON AND MARQUAM BRIDGES
 (ALTERNATIVE 6.2)



Willamette River where vehicles would enter on the west side of the river and exit on the east side, to the north of the Burnside Bridge. Access ramps would be built along the SE Morrison and Belmont viaducts where connections to I-5 are made below grade.

Depress the Eastbank Freeway - Alternative 6.4

Two alternatives exist with this configuration. Alternatives 6.4A and 6.4B are shown in Figure 13.12. Alternative 6.4A suggests relocation of I-5 to a SE 8th/9th corridor with the freeway mainline depressed below grade. All surface streets would remain at-grade. Access connections to I-5 would occur at SE MLK and SE Grand Avenue. Alternative 6.4B suggests relocating the Marquam to Banfield section of I-5 to a SE 1st/2nd corridor and depress I-5 below grade. The current alignment between the Banfield and Broadway would also be depressed below grade. Access connections would include a split-diamond interchange between Morrison and Belmont Streets.

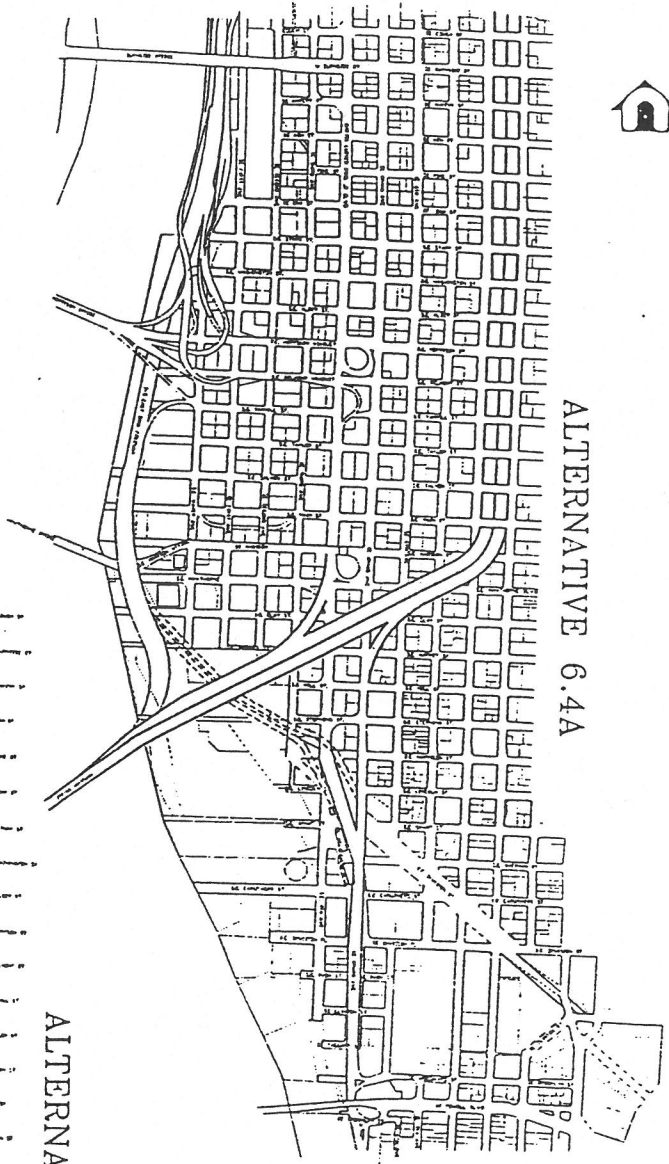
Reroute I-5 via I-405 - Alternative 6.5

Presuming I-5 is rerouted to I-405 and that the I-405 designation will cease to exist, several alternatives are proposed for CEID access. Figure 13.13 shows a plan view of this re-designation. Downgrading the existing Eastbank Freeway, removing some unnecessary freeway structures, and constructing a new arterial between I-84 and the Marquam Bridge would provide the CEID with safe and convenient access to and from I-5.

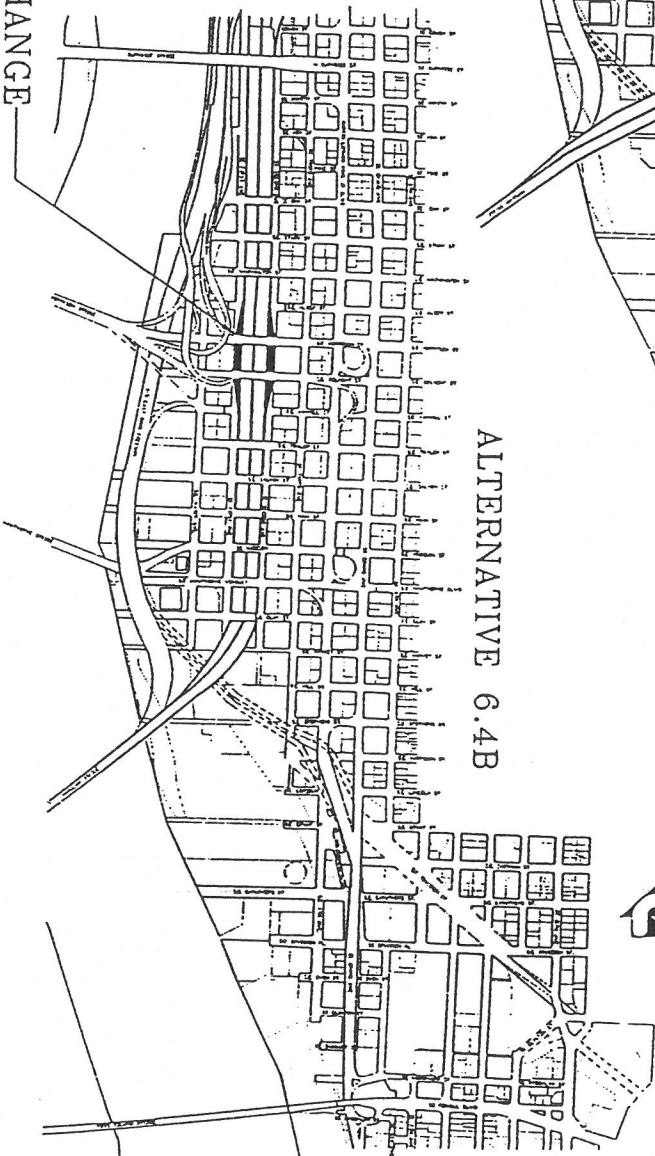
Alternative 6.5A (see Figure 13.14) suggests modifying the Marquam Bridge to a four lane boulevard connecting Harbor Way (on the west side) to SE MLK and SE Grand Avenue (on the east side). Alternative 6.5B (Figure 13.14) proposes that the lower level of the converted Marquam bridge become a two lane two way truck route connecting at the intersection of SE Clay Street and Water avenue. This truck route would function as an arterial between I-5 and I-84.



ALTERNATIVE 6.4A



ALTERNATIVE 6.4B



DIAMOND INTERCHANGE



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FIGURE 3.12
EASTBANK FREEWAY DEPRESSED BELOW GRADE
(ALTERNATIVE 6.4A AND 6.4B)



FIGURE 3.13
I-5 REROUTED VIA I-405
WITH AN I-84 ARTERIAL
(ALTERNATIVE 6.5)

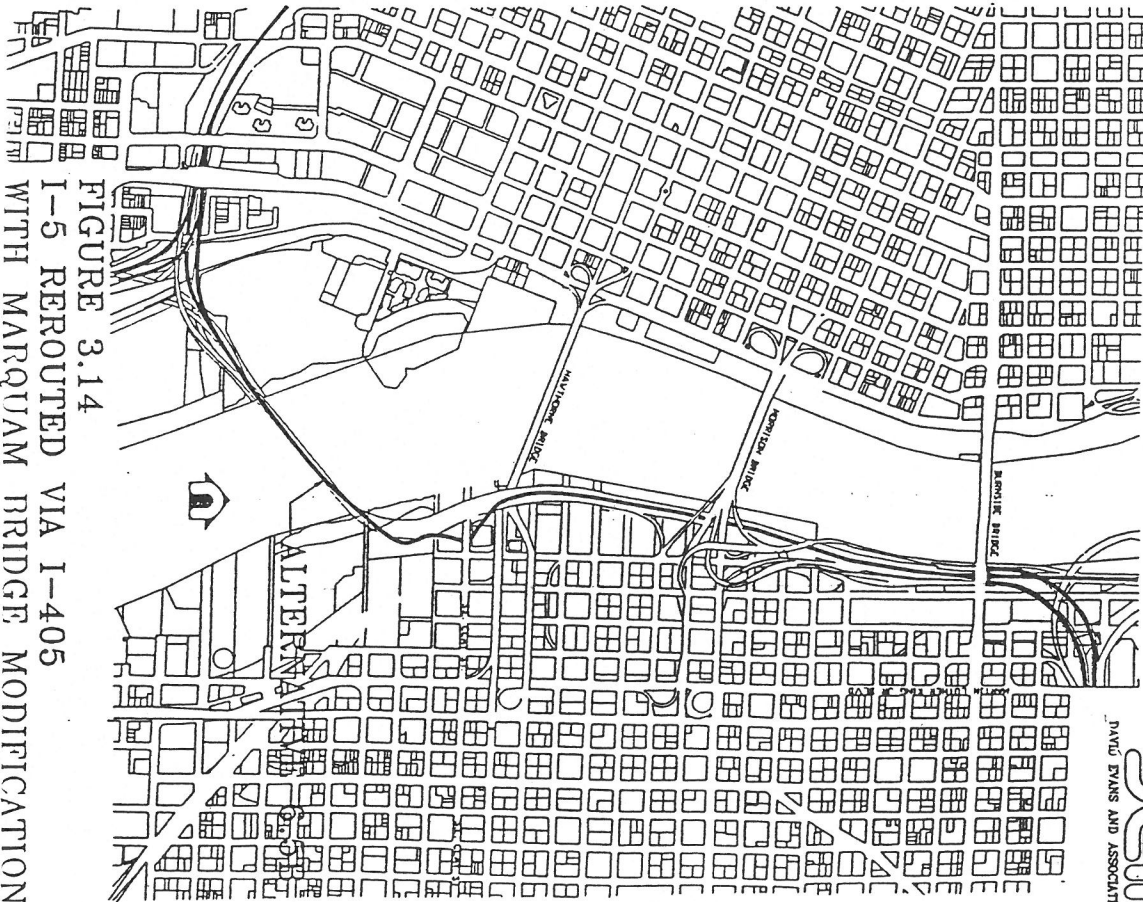
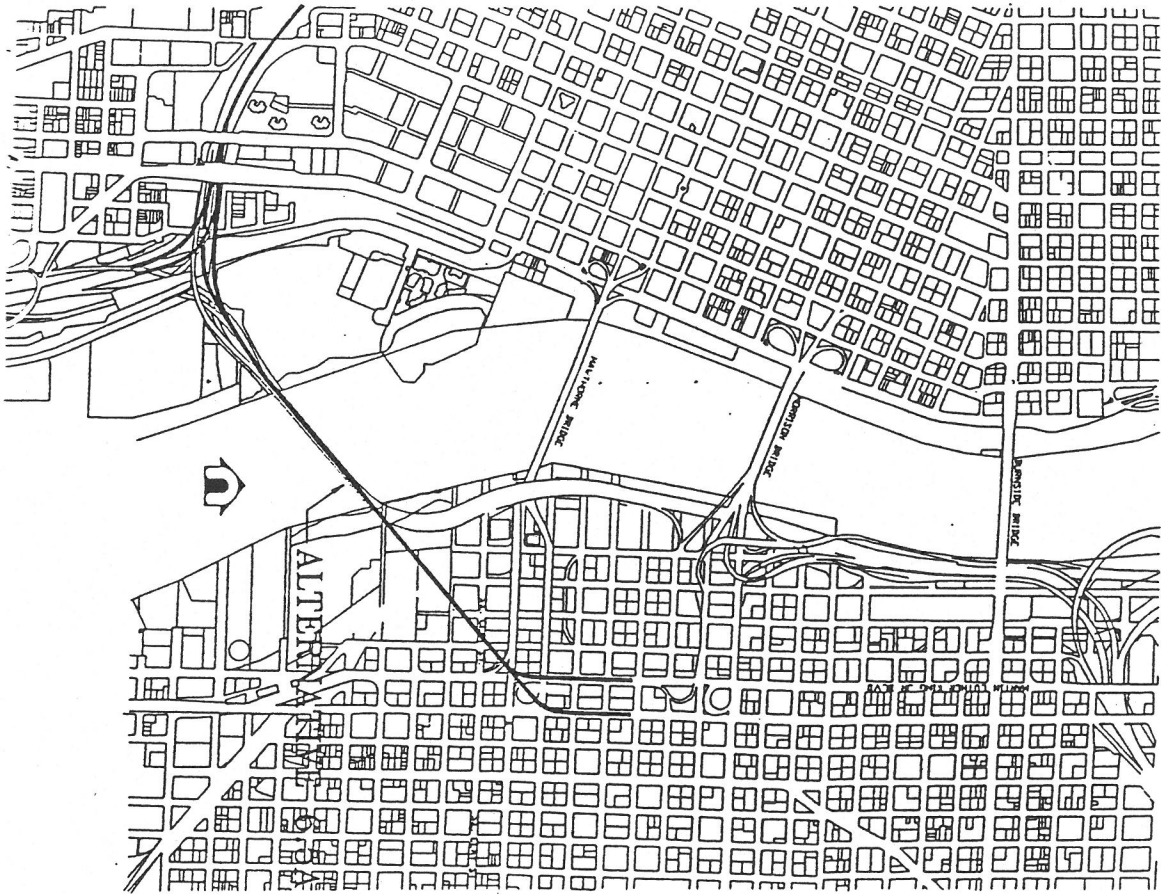


FIGURE 3.14
 I-5 REROUTED VIA I-405
 WITH MARQUAM BRIDGE MODIFICATION
 (ALTERNATIVE 0.5A & 0.5B)

I-5 Southbound Access Alternatives Study

Chapter IV

SCREENING AND EVALUATION CRITERIA

The purpose of developing and applying Screening Criteria and Evaluation Criteria are to identify the most "Promising Alternatives" from the "Universe of Alternatives" list. All of the potential alternatives have been screened to ensure relevancy with the intended study framework, compliance with basic technical standards and to provide an initial general performance assessment of the qualifying alternatives. The Screening Criteria are presented first, followed by the Evaluation Criteria

SCREENING CRITERIA

The purpose of developing and applying Screening Criteria is to develop a shorter list of "Promising Alternatives" for further study. The Screening Criteria assure that the alternatives meet various study framework requirements and also provide a basic assessment of general performance, technical and implementation characteristics. At least one alternative from each of the categories was included in the list of "Promising Alternatives", assuming that study framework requirements were met.

Study Framework

It is important to screen all potential alternatives to ensure relevancy with the study framework intended for the study. This subset of criteria involves the purpose statement and basic objectives defined for this study. The purpose of the study is to identify a range of alternative freeway access routes to I-5 South and Hwy. 26 that would serve the commercial traffic of the Central Eastside given the current alignment location of the freeway on the Eastbank. The Study Framework criteria, unlike the other criteria, are intended to be very basic and for the most part can be answered by a yes/no assessment. They are:

- **Central Eastside Access**
Is industrial and commercial access for the Central Eastside being provided without extensive use of surface streets in other Central City Districts?
- **Current Location of Freeway**
Does the I-5 freeway mainline remain in its current alignment or is the alternative compatible with the current freeway alignment?

- **Range of Alternatives**

Are all the project categories that meet the basic study framework represented?

Performance Characteristics

All Alternatives are also screened based on initial assessment of performance characteristics. This subset of criteria involves a general comparison of the transportation service being provided by the alternative. The purpose of this subset of criteria is to distinguish those alternatives that may otherwise be similar in respect to meeting basic technical standards. Other more extensive performance characteristics are applied in the Evaluation Criteria assessment stage of the study. The performance characteristics for screening are:

- **Travel Time**

How difficult in terms of time and distance is it to access I-5 southbound and the Sunset Highway?

- **Service Area**

What is the geographical extent of the Central Eastside that is being provided with improved access?

Technical Characteristics

Potential alternatives are also screened on an initial assessment of technical characteristics. This subset of criteria involves a general assessment of the technical feasibility of the alternatives given typical engineering design guidelines and professional judgment. The purpose of this subset of criteria is to identify any certain technical "fatal flaws" or problems that may need to be resolved by design modifications, if possible. Other more extensive technical characteristics are applied in the Evaluation Criteria assessment stage of the study. The technical characteristics for screening are:

- **Physical Features**

Are problems likely to be found with grades, curves, widths, structures or conflicts with other features?

- **Operational Features**

Are problems likely to be found with capacity constraints due to freeway weaves and merges, arterial delays, or conflicts with freight or passenger rail services?

- **Safety Issues**

Are new safety problems likely to be created or existing problems likely to be compounded?

Implementation Characteristics

All potential alternatives have also been screened based on an initial assessment of implementation characteristics. This subset of criteria involves a general assessment of the issues that are likely to be associated with implementing each of the alternatives. The purpose of this subset of criteria is to distinguish those alternatives that may otherwise be similar in respect to meeting basic technical standards. Again, other more extensive implementation characteristics have been applied in the Evaluation Criteria assessment stage of the study, notably an assessment of overall constructability of the alternative. The implementation characteristics for screening are:

- **Comparative Costs**
What is the order of magnitude cost and what are the high cost features?
- **Time Frame**
Would difficulties be present that would not allow implementation within a reasonable timeframe?

EVALUATION CRITERIA

Following the screening process, the most "Promising Alternatives" are evaluated using Evaluation Criteria. The purpose of the Evaluation Criteria are to provide a common set of criteria for comparing alternatives. Some of the same criteria as used in the screening process have been applied, but in more detail. In addition, other additional criteria have been applied. For this reconnaissance level study, a general evaluation in matrix form is used for some criteria rather an extensive evaluation of various impacts. (see *Summary of Basic Findings and Conclusions* and the *Evaluation Process Matrix* in Chapter XI) The Evaluation Criteria include:

Performance Characteristics

- **Service Area**
- in more detail than in Screening Process
- **Travel Time and Distances**
- in more detail than in Screening Process
- **Waterfront Impacts** (added to Performance Characteristics)
- functional and visual conflicts and issues

- **External Impacts** (added to Performance Characteristics)
- *traffic impacts on adjacent neighborhoods, other Central City districts or areas outside the immediate study area*
- **Development/Land Use Impacts** (added to Performance Characteristics)
- *activities supported and changes induced in the Central Eastside*

Technical Characteristics

- **Physical Features**
- *in more detail than in Screening Process, e.g. structural conflicts and geometric design features*
- **Operational Features**
- *in more detail than in Screening Process, e.g. congested locations, speeds, safety issues and standards*
- **Modal Conflicts** (added to Technical Characteristics)
- *transit, pedestrian, bicycle, truck , rail and general traffic*
- **Freeway Removal/ Relocation Impacts** (added to Technical Characteristics)
- *comparative physical or operational conflicts with removing or relocating the freeway in the future*

Implementation Characteristics

- **Comparative Costs**
- *in more detail than in Screening Process, e.g. cost estimates and high cost elements*
- **Time Frame**
- *in more detail than in Screening Process, e.g. estimated implementation period*
- **Operational/Economic Life**
- *in more detail than in Screening Process, e.g. utility of alternative relative to traffic problems*
- **Constructability** (added to Implementation Characteristics)
- *physical feasibility, phasing issues, conflicts with other planned facilities*

I-5 Southbound Access Alternatives Study

Chapter V

INITIAL SCREENING OF ALTERNATIVES

Based on application of the Screening Criteria to the “universal” list of alternatives, the following “Promising Alternatives” have been recommended for further study:

- **Ross Island Bridge Route - TSM / Minor Improvements - Alternative 3.2**
- **Ross Island Bridge Route - Major Improvements - Alternative 3.3**
- **Water Avenue Ramp - Alternative 4.1**
- **Morrison Viaduct (Morrison Br.) Ramp - Alternative 4.3**
- **Madison Viaduct (Hawthorne Br.) Ramp - Alternative 4.4**

It is also recommended that the remainder of the alternatives not be studied further as part of this study. These include:

- No Action (Alt. 1)
- Hawth.-Morr.-Burnside Br. Route TSM and Non-Route-Specific TSM (Alt. 2)
- Major Improvements on Front Ave Route (Alt. 3.1)
- Major Improvements on Clay St Route (Alt. 3.2)
- Marquam Bridge Ramp (Alt. 4.2)
- King-Grand Interchange (Alt. 4.5)
- Flanders St Ramp (Alt. 4.6)
- Combined LRT Bridge (Alt. 5)
- Eastbank Freeway Relocation (Alt. 6)

The “pros” and “cons” of the alternatives recommended for further study are summarized below. Following this, reasons for not recommending the other alternatives for further study are summarized. Attached to this report is a *Matrix of Alternatives* which summarizes the Screening Criteria process and findings.

PROPOSED STUDY ALTERNATIVES

Ross Island Bridge Route TSM / Minor Improvements - Alternative 3.2

Positive Features	Negative Features
• Low cost, implementation in short time frame	• Provides little improvement for freeway access

Ross Island Bridge Route - Major Improvements - Alternative 3.3

Alt. 3.3. A. Limited Improvements: signal and other limited improvements

Alt. 3.3. B. Major Improvements (Eastside): SB McLoughlin to WB Ross Island Br.

Alt. 3.3. C. Major Improvements (Westside): New connection to NB I-405

Positive Features	Negative Features
<u>A. Limited Improvements</u> • Low cost, implementation in short time frame • Serves CES via King (no out-of-direction travel) • CES I-5 access avoids Marquam Bridge weave • CES access to RI Bridge improved (no stops to I-5)	<u>A. Limited Improvements</u> • CES freeway access affected by Ross Is. Bridge congestion • Signals affect Powell and McLoughlin traffic • CES Sunset Fwy access not improved
<u>B. Major Improvements (Eastside)</u> • Serves CES via King (no out-of-direction travel) • CES I-5 access avoids Marquam Bridge weave • CES access to Ross Is. Bridge improved (no stops to I-5)	<u>B. Major Improvements (Eastside)</u> • Medium cost/impact • CES freeway access affected by Ross Is. Bridge congestion • Operational conflicts with McLoughlin-I-5N ramps • CES Sunset Fwy access not improved
<u>C. Major Improvements (Westside)</u> • Serves CES via King (no out-of-direction travel) • CES Sunset Fwy access avoids downtown congestion	<u>C. Major Improvements (Westside)</u> • Medium cost/impact • Major traffic circulation effects for South Portland area; may attract additional through traffic to Ross Is. Bridge • CES Sunset Fwy access affected by Ross Is. Bridge congestion • Operational conflicts with I-405 off-ramps

Water Avenue Ramp - Alternative 4.1

Positive Features	Negative Features
• Provides direct freeway access (southbound I-5 <u>and</u> Sunset) • Provides direct freeway access for west side of CES • Does not attract through traffic from beyond the CES • Implementation in relatively short time frame due to previous work	• Medium cost • Waterfront impact • CES freeway access does not avoid Marquam Bridge weave

Morrison Viaduct (Morrison Br.) Ramp - Alternative 4.3A

Positive Features	Negative Features
• Provides direct freeway access (sb I-5 <u>and</u> Sunset) • Serves CES via King-Grand	• Medium cost/impact; medium-length implementation timeframe • Waterfront impact • CES freeway access affected by congestion at Morrison Bridgehead • Out-of-direction for south side of CES • Signal would affect Morrison Bridge traffic

Madison Viaduct (Hawthorne Br.) Ramp - Alternative 4.4

Positive Features	Negative Features
• Provides direct freeway access (southbound I-5 <u>and</u> Sunset) • Serves CES via King-Grand	• Medium cost/impact; medium-length implementation timeframe • Severe traffic operational impacts, with slow-speed ramp merging directly into sb Marquam Bridge weave • Potential physical conflict with McLoughlin – I-5N Ramps • CES freeway access affected by congestion at Hawthorne Bridgehead • Conflicts with bicycle, pedestrian, and transit routes

ALTERNATIVES NOT RECOMMENDED FOR FURTHER STUDY

No Action - Alternative 1

Primary reason(s) for not pursuing: Does not improve Central Eastside (CES) freeway access, and therefore does not meet the basic study objectives. Furthermore, for the purposes of this study, the No Action Alternative is virtually the same as the TSM alternatives.

Hawthorne, Morrison, Burnside Bridge route TSM and Non-Route-Specific TSM - Alternative 2

Primary reason(s) for not pursuing: These alternatives will provide little improvement over current CES freeway accessibility, and they do not address the impacts of CES use of downtown streets.

Major Improvements on Front Ave. Route - Alternative 3.1, and Major Improvements on Clay St. Route - Alternative 3.2

Primary reason(s) for not pursuing: These alternatives do not fit the study framework, as they will provide little improvement over current CES freeway accessibility, they encourage/facilitate CES use of downtown streets, and they could attract additional eastside through traffic to the Hawthorne and Morrison Bridges.

Marquam Bridge Ramp - Alternative 4.2

Primary reason(s) for not pursuing: This alternative was found to have serious problems for feasible implementation due to safety problems with inadequate merge and weave distances, physical conflicts with existing bridge columns, the ramp would be require a steep grade (7%+) and would likely preclude construction of the McLoughlin Ramps. To accommodate the ramp, significant reconstruction of the east end of the Marquam Br., may be required or one lane on the bridge would need to be eliminated. (This alternative is evaluated in more detail in a separate technical memo in the Appendix).

King-Grand Interchange - Alternative 4.5, and Flanders St Ramp - Alternative 4.6.

Primary reason(s) for not pursuing: These alternatives do not meet the basic study objectives, because they only serve the northern portion of the CES. Furthermore, the main purpose of these alternatives would be to serve the Lloyd Center area, and both alternatives would significantly impact traffic circulation and operations on King-Grand. Proper analysis and evaluation of the alternatives would require extensive analysis of traffic circulation and access

needs in the Lloyd Center and Coliseum areas and in surrounding neighborhoods. It will be neither possible nor appropriate to undertake such an analysis – and its public involvement needs – as part of the I-5 Southbound Access Alternatives Study; however, these alternatives can be considered as “supplementary” components of the study alternatives.

LRT Bridge - Alternative 5

Primary reason(s) for not pursuing: This alternative cannot be analyzed or evaluated until bridge location alternatives are defined, and it is unlikely and unanticipated that the location alternatives will be defined within the timeframe of this study.

Eastbank Freeway Relocation - Alternative 6

Primary reason(s) for not pursuing: These alternatives do not fit the study framework as directed by the work program and endorsed by the Access Advisory Task Force (AATF). These alternatives cannot be properly analyzed or evaluated within the context of this study anyway; The issue of CES access can and should be evaluated only as elements of specific freeway relocation alternatives.

FIGURE 1 I-5 SOUTHBOUND ACCESS ALTERNATIVES STUDY "PROMISING ALTERNATIVES"

ROSS ISLAND BR. ROUTE - TSM (MINOR IMPROVEMENTS) - ALTERNATIVE 3.2 (NOT SHOWN)
ROSS ISLAND BR. ROUTE - MAJOR IMPROVEMENTS - ALTERNATIVES 3.3A, 3.3B1 AND 3.3B2
WATER AVENUE RAMP - ALTERNATIVE 4.1
MORRISON BRIDGE/VIADUCT RAMP - ALTERNATIVE 4.3A AND 4.3B
HAWTHORNE BRIDGE/MADISON VIADUCT - ALTERNATIVE 4.4

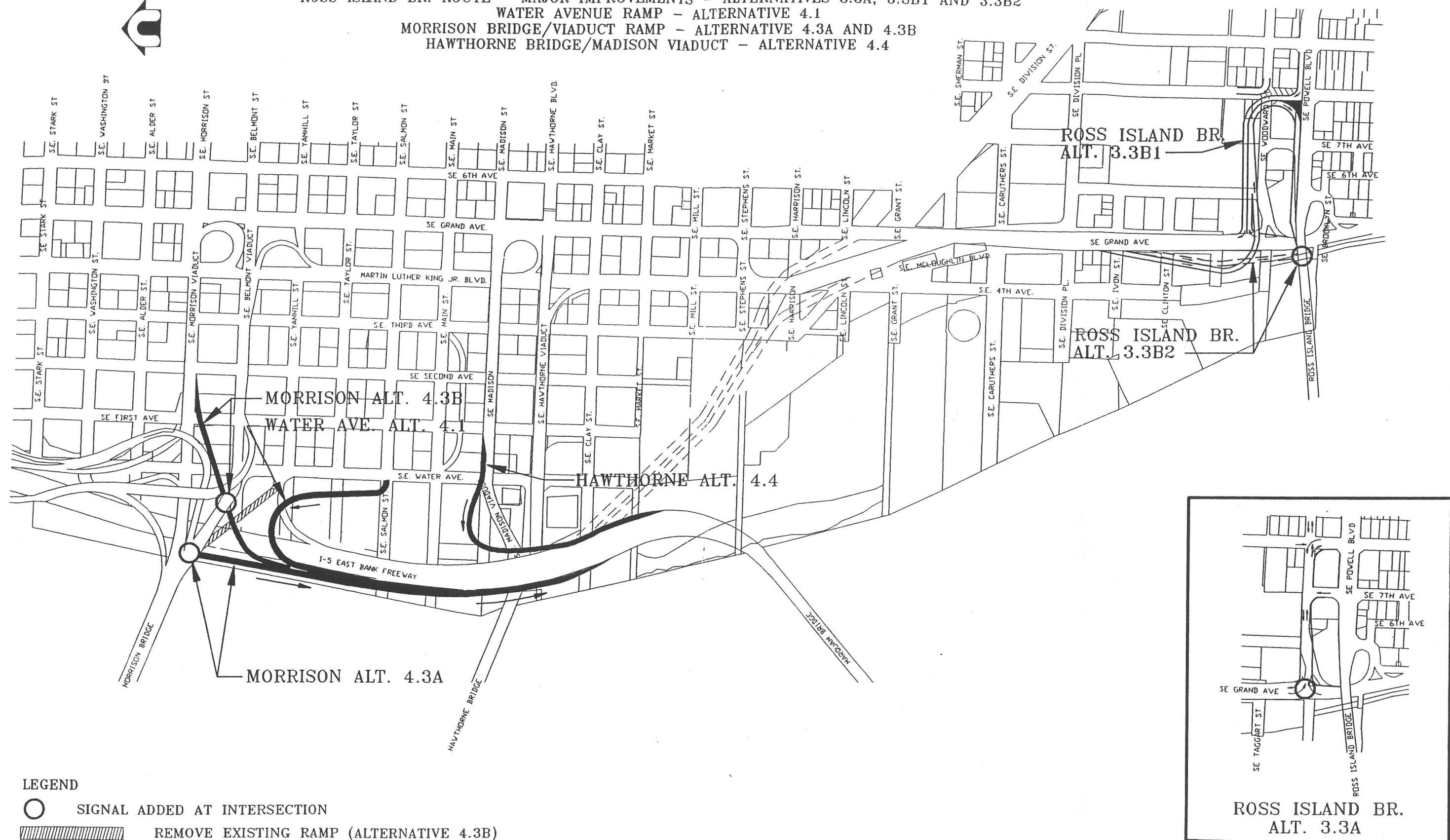


FIGURE 5.1

I-5 SOUTHBOUND ACCESS ALTERNATIVES STUDY MATRIX OF ALTERNATIVES

	SCREENING CRITERIA																
	Study Framework		Performance Characteristics					Technical Characteristics					Implementation Characteristics			SUMMARY	
	Central Eastside Access	Current Location of Freeway	Travel Time		Travel Distance		Service Area	Physical Features		Operational Features		Safety Issues	Comparative Costs	Time Frame	Operational/ Economic Life	Range of Alternatives	Recommendations
ALTERNATIVE	Is access for the CE being provided without extensive use of other surface streets in other districts?	Does I-5 remain in its current alignment?	Is travel time to I-5 improved over current conditions?	Is travel time to the Sunset Freeway improved over current conditions?	Is travel distance to I-5 improved over current conditions?	Is travel distance to the Sunset Freeway improved over current conditions?	What CE area has improved access: South, Central or North?	Does new alignment appear to avoid major structures and obstructions?	Does new alignment meet geometric design standards?	Are significant network delays and capacity constraints avoided?	Does most CE traffic avoid at grade crossings of high speed, heavy, or light rail alignments?	Does the alternative reduce or eliminate existing safety problems?	Are comparative costs Low, Medium, or High?	Is the time frame required for alternative completion Short, Medium, or Long?	Relative to traffic problems in the CE, is the alternative's operational/economic life Short, Medium, or Long?	Are all the project categories that meet the basic study framework represented?	Will the project move to the next level of analysis?
	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	S, C or N	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	\$0 < Low < \$20 Million \$20 < Medium < \$50 Million \$50 Million < High	1 < Short < 5 years 5 < Medium < 15 years 15 Years < Long	1 < Short < 10 years 10 < Medium < 20 years 20 Years < Long	Yes/No	Yes/No
No Action																	
No Build	No	Yes	No	No	No	No	none	Yes	Yes	No	No	No	Low	Short	Short	Yes	No
Transportation System Management																	
Ross Island Bridge Route	Yes	Yes	Yes	Yes	No	Yes	S C	Yes	Yes	No	Yes	No	Low	Short	Short	Yes	Yes
Hawthorne Bridge Route	No	Yes	Yes	Yes	No	No	C	Yes	Yes	No	Yes	No	Low	Short	Short	Yes	No
Morrison Bridge Route	No	Yes	Yes	Yes	No	No	C	Yes	Yes	No	Yes	No	Low	Short	Short	Yes	No
Burnside Bridge Route	No	Yes	Yes	Yes	No	No	N	Yes	Yes	No	No	No	Low	Short	Short	Yes	No
Non-Route Specific TSM Improvements	na	Yes	No	No	No	No	none	Yes	Yes	No	unknown	No	Low	Short	Short	Yes	No
Major Improvements to Existing Routes																	
Capacity and Geometric Improvements to Front Avenue	No	Yes	Yes	Yes	No	Yes	C	No	No	No	Yes	Yes	High	Long	Short	Yes	No
Capacity and Geometric Improvements to Clay Street	No	Yes	Yes	Yes	No	Yes	C	No	No	No	Yes	Yes	High	Long	Short	Yes	No
Ross Island Bridge Improvements	Yes	Yes	Yes	Yes	Yes	Yes	S C	No	Yes	No	Yes	Yes	Medium	Medium	Medium	Yes	Yes
New Ramps																	
Water Avenue Ramps	Yes	Yes	Yes	Yes	Yes	Yes	S C N	Yes	Yes	Yes	No	Yes	Medium	Short	Medium	Yes	Yes
Marquam Bridge Ramps	Yes	Yes	Yes	Yes	Yes	Yes	S C	Yes	No	No	Yes	No	High	Medium	Medium	Yes	No
Morrison/I-5 Interchange	Yes	Yes	Yes	Yes	Yes	Yes	S C N	Yes	Yes	Yes	Yes	Yes	Medium	Medium	Medium	Yes	Yes
Hawthorne/Madison Viaduct Ramps	Yes	Yes	Yes	Yes	Yes	Yes	S C N	No	No	Yes	Yes	No	Medium	Medium	Medium	Yes	Yes
King/Grand/I-84 Interchange	No	Yes	Yes	Yes	No	No	N C	Yes	Yes	No	Yes	No	Medium	Medium	Medium	Yes	No
Flanders Street Ramp	No	Yes	No	No	No	No	N	Yes	Yes	No	Yes	No	Medium	Medium	Short	Yes	No
Greeley/ North Banfield Ramp Improvements	No	Yes	No	No	No	No	none	Yes	Yes	No	Yes	No	High	Medium	Short	Yes	No
Light Rail Bridge																	
Build New Bridge	unknown	Yes	unknown	unknown	unknown	unknown	unknown	unknown	unknown	unknown	unknown	Yes	High	Long	Long	Yes	No
Relocation of the Eastbank Freeway																	
Construct the Freeway in a New Alignment	unknown	No	Yes	Yes	Yes	Yes	S C N	No	unknown	Yes	Yes	Yes	High	Long	Long	Yes	No
Relocation Between the Morrison & Marquam Bridges	unknown	No	Yes	Yes	Yes	Yes	S C	No	unknown	Yes	Yes	Yes	High	Long	Long	Yes	No
I-5 Tunnel	unknown	No	Yes	Yes	Yes	Yes	S C N	No	unknown	Yes	Yes	Yes	High	Long	Long	Yes	No
Depress the Eastbank Freeway	unknown	No	Yes	Yes	Yes	Yes	S C N	No	unknown	Yes	Yes	Yes	High	Long	Long	Yes	No
Route I-5 via I-405	No	No	Yes	Yes	No	No	S C	No	unknown	No	Yes	Yes	High	Long	Long	Yes	No

I-5 Southbound Access Alternatives Study

Chapter VI

GEOGRAPHIC DISTRIBUTION OF CENTRAL EASTSIDE TRIPS

To answer some of the questions raised by the AATF that refer directly or indirectly to the travel patterns (i.e., origins and destinations) of Central Eastside Industrial District (CEID) traffic, a simple travel demand analysis was prepared. The analysis was based on the daily trip tables (i.e., the daily number of trips between origin-destination pairs) developed by the City's traffic forecasting model. To show the travel volumes and geographical distribution of trips to/from the CEID, these trip tables were aggregated into the following 10 "analysis districts:"

1. Central Eastside Industrial District
2. Downtown Portland
3. SW Portland
4. Tigard/Tualatin/Outer Southwest
5. Washington County
6. NW Portland
7. N Portland/NE Portland
8. SE Portland
9. Outer Eastside
10. Outer Southeast/East Clackamas County

The travel demand analysis focused on two types of trips: "total person-trips," which includes all trips made by all people for all purposes, and "attracted work trips," which includes commute trips to/from CEID jobs. The results of the CEID Travel Demand Analysis are compiled in Figure 6.1 and Figure 6.2.

As shown in the Table and Figure, a majority of CEID travel is oriented to N, NE, and SE Portland (55%). Another 12% of CEID trips are traveling to/from downtown Portland, with the remainder distributed evenly throughout the rest of the region. Employee work trips are also heavily eastside oriented, with over two thirds commuting from N/NE Portland (22%), SE Portland (20%), and East Multnomah County and Clackamas County (15%).

About 16% of total trips and 26% of employee commute trips are traveling to/from areas served by I-5 South or Sunset Fwy; these are the trips that would be served by improved CEID access to I-5 South and Sunset Fwy.

FIGURE 6.1

CEID TRIP DISTRIBUTION TABLE (YEAR 2010)

	<u>Total Daily Person Trips</u>		<u>Attracted Daily Work Trips</u>	
CEID Total	117,590	100%	32,530	100%
CEID Internal	3,420	3%	200	<1%
Downtown	14,530	12%	1,290	4%
SW Portland	8,830	8%	3,170	10%
Tigard-Tualatin-Outer SW	4,670	4%	2,500	8%
Washington Co	4,600	4%	2,480	8%
NW Portland	4,370	4%	1,060	3%
N/NE Portland	34,680	29%	7,270	22%
SE Portland	27,310	23%	6,410	20%
Outer Eastside	8,490	7%	4,830	15%
Outer SE/East Clackamas Co	6,680	6%	3,320	10%

16% of total trips and 26% of employee commute trips are traveling to/from areas served by I-5 South or Sunset Fwy (noted in bold print)

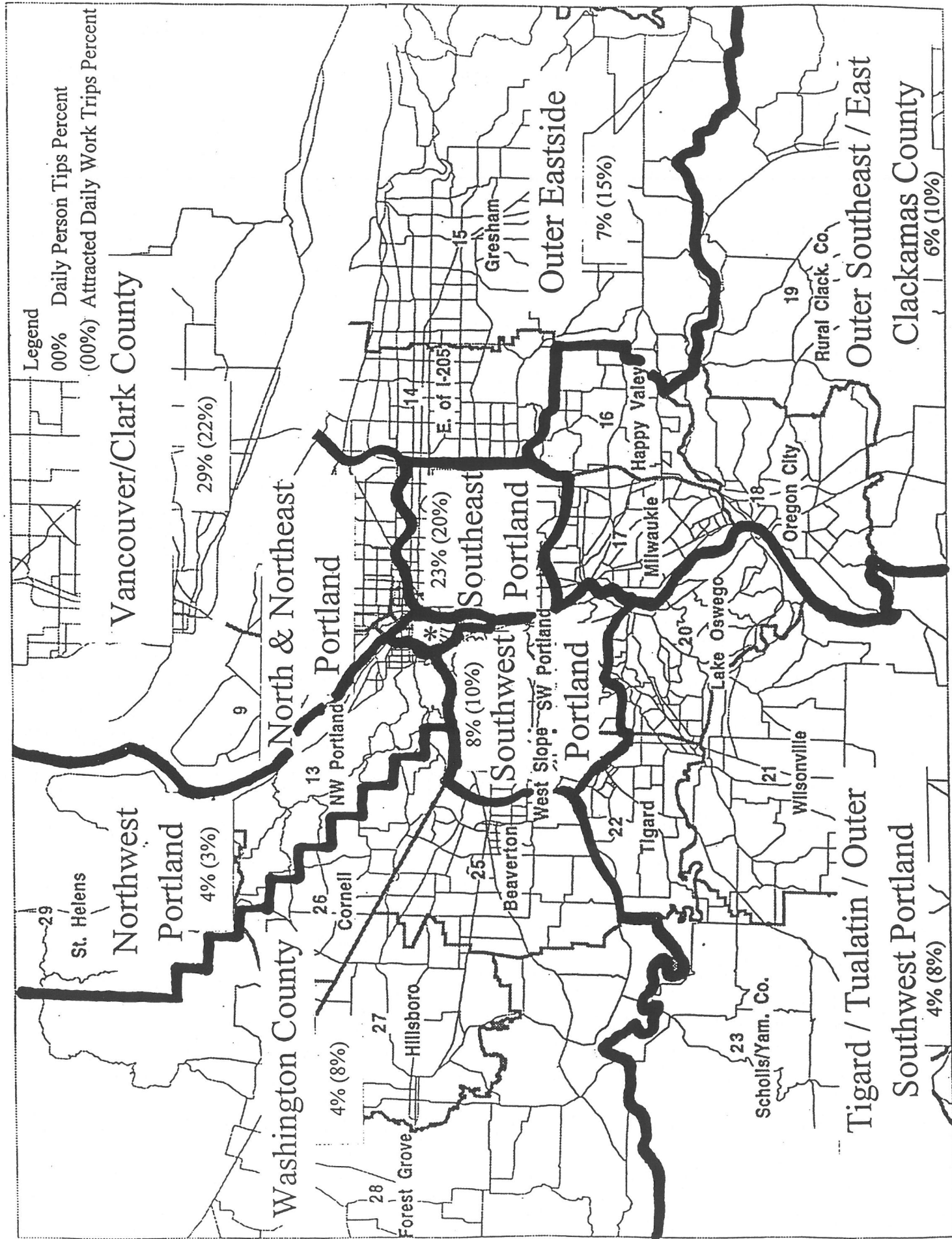


FIGURE 6.2: CEID TRIP DISTRIBUTION MAP (2010)

I-5 Southbound Access Alternatives Study

Chapter VII

TRAVEL ANALYSIS OF ALTERNATIVES

Questions have been asked about the forecasted usage and the impacts of the various I-5 southbound access alternatives on travel patterns in the Central City area. This analysis is intended to provide a comparison of the alternatives in terms of levels of traffic for the areas served and traffic routing patterns.

The I-5 access alternatives evaluated are shown on Figure 1. Figure 7.1 summarizes the traffic volumes and percentages of traffic by area (routing pattern) for existing bridges and the alternatives evaluated. All data is derived from the EMME/2 transportation data computer model. Assumptions used for the model runs were the Regional Transportation Plan (RTP) and "High Growth" scenario of the Central City Transportation Management Plan (CCTMP) for Year 2010.

It was also assumed that the McLoughlin/I-5 North ramps are not constructed (worst case scenario for traffic) except for one run for the Morrison/I-5 ramp which would be most impacted by the McLoughlin ramps. In reviewing this travel analysis it must be remembered that all of the traffic volumes were derived from the computer model and are not actual or absolute traffic volumes.

From the recent traffic count information available it appears that some of the model traffic volumes are comparable to what would actually be expected and some are conservative such as for the Woodward Street connection to the Ross Island Bridge. As a result the access alternatives should be reviewed relative to each other instead of based on the individual model traffic volumes.

All of the forecast traffic volumes are for the PM peak hour in the year 2010. Forecasted PM peak 2010 traffic volumes on the existing street network for each of the alternatives are shown on Figure 7.2. Figure 7.3 shows the forecast PM peak hour volumes for each of the alternatives. Figure 7.4 shows the street network PM peak hour volumes for the Morrison/I-5 ramp alternatives with and without the McLoughlin/I-5 N connections. The base condition network used for the analysis is the Ross Island Bridge TSM/Minor Improvements - Alternative 3.2. All travel times were measured and estimated using the center of the CEID at the intersection of SE 6th Avenue and Main Street to the Hood Avenue on-ramp entrance to I-5 southbound, south of the Marquam Bridge.

Travel analysis for each of the access alternatives is discussed as follows:

FIGURE 1
I-6 SOUTHBOUND ACCESS ALTERNATIVES STUDY
"PROMISING ALTERNATIVES"

ROSS ISLAND BR. ROUTE - TSM (MINOR IMPROVEMENTS) - ALTERNATIVE 3.2 (NOT SHOWN)
ROSS ISLAND BR. ROUTE - MAJOR IMPROVEMENTS - ALTERNATIVES 3.3A, 3.3B1 AND 3.3B2
WATER AVENUE RAMP - ALTERNATIVE 4.1
MORRISON BRIDGE/VIADUCT RAMP - ALTERNATIVE 4.3A AND 4.3B
HAWTHORNE BRIDGE/MADISON VIADUCT - ALTERNATIVE 4.4

DEEN
DAVID EVANS AND ASSOCIATES, INC.

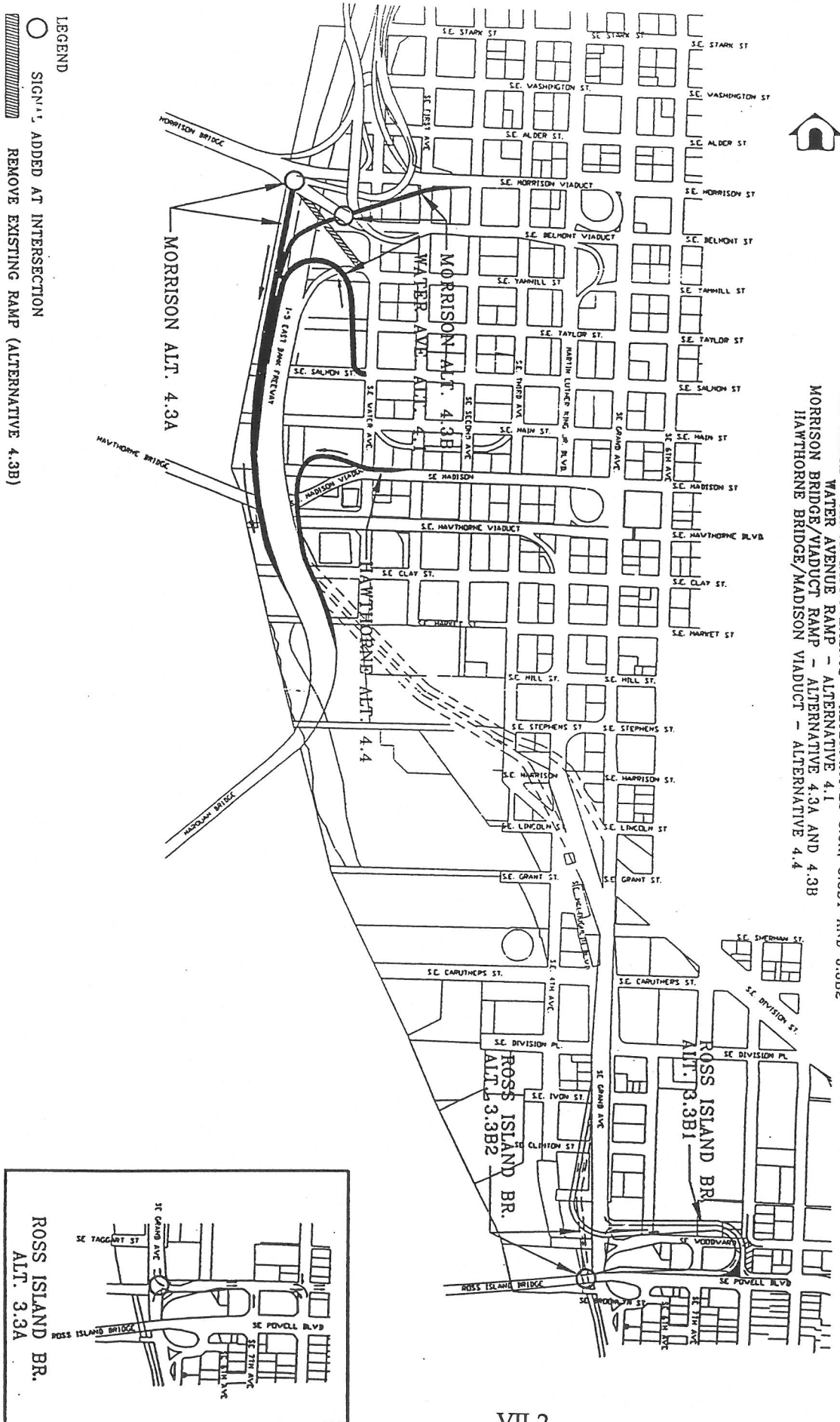


Figure 7.1
Traffic Volumes and Routing Patterns
Selected Link Analysis Worksheet
2010 P.M. Peak Hour

	Westbound Ross Island Bridge		Westbound Hawthorne Bridge		Westbound Morrison Bridge		Westbound 3-Bridge Total	
Total Volume	2530	100%	1020	100%	1870	100%	5420	100%
FROM								
CEID	590	23%	400	39%	460	25%	1450	27%
N/NE Portland--Clark Co.	10	0%	170	17%	520	28%	700	13%
SE Portland	1520	60%	270	26%	430	23%	2220	41%
Outer Eastside	130	5%	20	2%	280	15%	430	8%
Eastside Clackamas Co.	260	10%	130	13%	140	7%	530	10%
TO								
Downtown	380	15%	480	47%	1300	70%	2160	40%
SW Portland	1090	43%	220	22%	150	8%	1460	27%
Tigard--Lk Oswego--Outer SW	700	28%	180	18%	150	8%	1030	19%
Washington Co.	340	13%	140	14%	130	7%	610	11%
Northwest	70	3%	30	3%	170	9%	270	5%

	Woodward: McLoughlin to RI Br. Link (Alt. 3.3)		Water Ave Ramp (Alt. 4.1)		Morrison Viaduct Ramp (Alt. 4.3)		Madison Viaduct Ramp (Alt. 4.4)	
Total Volume	400	100%	940	100%	1570	100%	1410	100%
FROM								
CEID	160	40%	640	68%	780	50%	690	49%
N/NE Portland--Clark Co.	90	23%	130	14%	400	25%	180	13%
SE Portland	40	10%	160	17%	390	25%	440	31%
Outer Eastside	10	3%	0	0%	0	0%	0	0%
Eastside Clackamas Co.	100	25%	0	0%	0	0%	90	6%
TO								
Downtown	100	25%	60	6%	100	6%	120	9%
SW Portland	130	33%	310	33%	590	38%	430	30%
Tigard--Lk Oswego--Outer SW	70	18%	390	41%	560	36%	480	34%
Washington Co.	70	18%	190	20%	290	18%	330	23%
Northwest	30	8%	10	1%	20	1%	50	4%

	Ross Isl. Br. to I-405 Connection	
Total Volume	400	100%
FROM		
CEID	30	8%
N/NE Portland--Clark Co.	0	0%
SE Portland	250	63%
Outer Eastside	10	3%
Eastside Clackamas Co.	100	25%
TO		
Downtown	90	23%
SW Portland	30	8%
Tigard--Lk Oswego--Outer SW	10	3%
Washington Co.	210	53%
Northwest	60	15%

ROSS ISLAND BRIDGE - ALTERNATIVE 3.3A/B1/B2

According to the model forecasts (estimates) shown on Figure 7.5 there are over 700 vehicles per hour (vph) eastbound on Woodward Street with over 300 vehicles continuing eastbound east of 8th Avenue to 12th Avenue and approximately 400 vehicles turning right onto 8th Avenue to cross the Ross Island Bridge westbound. Of these 400 vehicles continuing onto the Ross Island Bridge, 250 are coming from McLoughlin Blvd. northbound and only 150 are coming from the CEID. These alternatives add approximately 400 vehicles over the base condition during the peak hour eastbound on Woodward Street as shown on Figure 7.6 with approximately 300 of these vehicles continuing eastbound east of 8th Avenue.

Most all of the additional traffic using the McLoughlin Blvd. southbound and Woodward Street connection is attracted off of other streets within the immediate area such as Division, 8th and 9th Streets. The differences on all of the bridges and streets in other areas is minimal including a less than 50 vehicle increase on the Ross Island Bridge during the peak hour. Other areas of the Central City are basically unaffected by the Ross Island Bridge alternatives.

A model run for a select (dummy) link for a direct connection to I-405 from the west end of the Ross Island Bridge was also made. The results are shown in Figures 7.7 and 7.8. There was less than a 100 vph increase on the Ross Island Bridge and less than a 100 vph decrease on the Marquam Bridge. Approximately 300 vph during the PM peak hour was taken off of the existing surface street US 26 route from the Ross Island Bridge westbound to I-405. This shows that if this link was provided it would for the most part be used by traffic from the existing US 26 route. This alternative did not substantially change traffic volumes on other streets in the CEID or Central City.

Both peak hour and off peak travel times for these alternatives do not improve as compared to the base condition travel times. A major factor in the travel times for the access alternatives are the signalized intersections on MLK and McLoughlin Blvd. The off-peak travel times were approximately seven minutes to eight and one half minutes. The PM peak travel times were approximately nine and one half minutes to ten and one half minutes. In summary the Ross Island Bridge alternatives have minimal impacts on traffic volumes, travel patterns outside of the immediate area (south CEID) and travel times.

WATER AVENUE RAMP - ALTERNATIVE 4.1

With this alternative there are approximately 950 vph using the ramp with 300 vehicles continuing on I-405 and 650 vehicles staying on I-5 southbound as shown in Figure 7.9. This alternative adds 500 vehicles to the Marquam Bridge shown in Figure 7.10. Traffic volumes during the peak hour are reduced by over 100 vph on

each the Morrison, Hawthorne and Ross Island Bridges with the largest reduction of approximately 250 vph on the Hawthorne Bridge. There are substantial shifts of traffic from the Central City bridges to the on-ramp. The reductions in traffic on the bridges are dispersed among the downtown streets with some (approximately 100 vph) reduction in PM peak hour traffic on SW Front Avenue. No other significant surface street traffic volume reductions were shown outside of the CEID.

Travel times were estimated to be approximately three and one half minutes during off-peak hours and 4 minutes during the PM peak hour. These travel times do not include any delay for the railroad grade crossing which could add over 6 minutes to the travel if a train is blocking the crossing. In summary the Water Avenue ramp alternative provides improvements in travel time, shifts traffic from local streets such as the Morrison, Hawthorne and Ross Island Bridges to the freeway (Marquam Bridge) and attracts very little traffic from outside the CEID.

MORRISON VIADUCT (MORRISON BR.) RAMP - ALTERNATIVE 4.3A/B

According to the model estimates, the traffic volumes for these alternatives without the McLoughlin - I-5N ramps, are approximately 1,550 vph using the ramp to I-5 southbound during the PM peak hour. This is shown in Figure 7.11. Approximately 600 vph southbound during the PM peak hour are added to the Marquam Bridge as shown in Figure 7.12.

With these alternatives there are also substantial shifts in traffic from the Central City bridges to the on-ramp. Traffic volumes are decreased approximately 200 vph westbound on the surface street bridges except for the Morrison Bridge where the decrease is approximately 350 vph. These alternatives have higher traffic volumes as compared to the Water Avenue ramp alternative and attract traffic from beyond the CEID because of the location and more direct connection into the major street network (MLK and Grand). Approximately 250 vph are attracted from north of the CEID on MLK Blvd.

With the McLoughlin - I-5N ramps constructed, approximately 1500 vph would use the Morrison ramp. Approximately 200 vph would be added to the Marquam Bridge as shown in Figure 7.13. This option only attracts approximately 100 vph from north of the CEID on MLK Blvd. Traffic volume decreases on the surface street bridges are not much as without the McLoughlin - I-5N ramps and range from approximately 150 vph westbound on the Ross Island Bridge to 200 vph on the Morrison Bridge. There are 400 to 600 vph decreases in traffic volumes on sections of MLK, Grand and 7th Avenue between the McLoughlin Blvd. ramps and Morrison Street.

These estimates show that if the McLoughlin - I-5N ramps are built the volume of traffic using the new Morrison/I-5 ramp would not change. However volumes on MLK, Grand and 7th Avenues and the Morrison/Belmont viaducts would drop as a result of through traffic being diverted to the McLoughlin - I-5N ramps.

Travel times were estimated to be approximately three and one half minutes during off-peak and four and one half minutes during the PM peak hour. In summary these alternatives provide for improvements in travel times, attract traffic from outside the CEID, increase traffic on Morrison Street westbound east of the Bridge and substantially decrease traffic on the surface street Central City bridges including the Morrison Bridge.

HAWTHORNE VIADUCT (HAWTHORNE BR.) RAMP - ALTERNATIVE 4.4

According to the model forecasts this alternative has approximately 1400 vph using the ramp to I-5 southbound during the PM peak hour as shown in Figure 7.14. As with the Morrison/I-5 ramp alternatives this alternative has a higher traffic volume than the Water Avenue alternative. Approximately 850 vehicles per hour are added to the Marquam Bridge as shown in Figure 7.15.

As with the Morrison/I-5 alternatives this alternative shifts a large volume of traffic to the streets approaching east of the bridge and takes substantial amounts of traffic off of the Central City bridges. Approximately 400 vph to 950 vph are added to Madison Street between 7th Avenue and the Hawthorne Bridge. This access alternative takes approximately 200 vph westbound off of the Morrison Bridge, 450 vph off of the Hawthorne Bridge and 250 vph off of the Ross Island Bridge. This alternative takes more traffic off the surface streets in the southern part of the CEID (SE Portland) than any of the other access alternatives. This alternative also attracts more traffic to I-405 northbound from the Marquam Bridge than any of the other alternatives.

Travel times for this alternative were approximately three minutes during the off-peak and four minutes during the PM peak. In summary this alternative provides for improvements in travel time, decreases traffic on the surface bridges and connecting streets except for adding a large amount of traffic to Madison approaching the Hawthorne Bridge from the east and attracts traffic from outside the CEID.

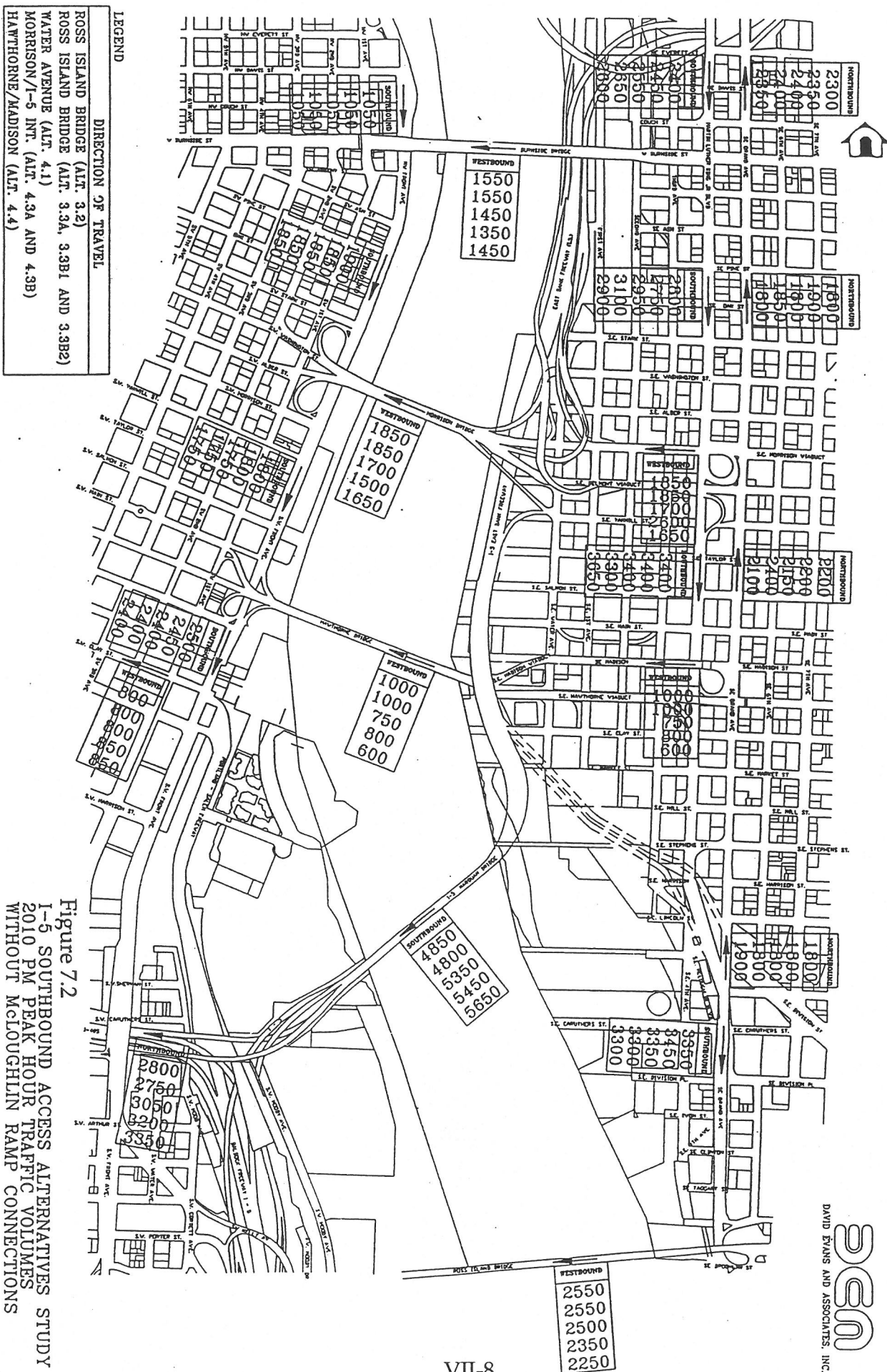
SUMMARY

The Ross Island Bridge access alternatives provide for minimal changes in travel patterns and no improvement in travel times. All of the I-5 ramp alternatives with direct access to I-5 provide for different changes in PM peak hour travel patterns and for improvements in the travel times from the center of the CEID (SE 6th Avenue and Main Street) to I-5 southbound at the Hood Avenue southbound on-ramp entrance to I-5 south of the Marquam Bridge.

The Morrison/I-5 ramp alternatives attract the most traffic with the Hawthorne/I-5 ramp attracting almost as much. Both the Morrison and Hawthorne/I-5 ramp alternatives add large amounts of traffic to the arterial street network in the CEID

approaching the ramps with the Hawthorne adding the most on the Hawthorne bridge viaduct and also on the Marquam Bridge (freeway).

The Water Avenue/I-5 ramp attracts the highest percentage of trips internally (approximately 70% as compared to 50%) from inside the CEID. In other words the Morrison and Hawthorne/I-5 ramp alternatives attract more traffic from outside the CEID. All of the I-5 new ramp alternatives also provide for substantial shifts of traffic off of the Central City bridges and street network with the Hawthorne/I-5 ramp providing the most relief.



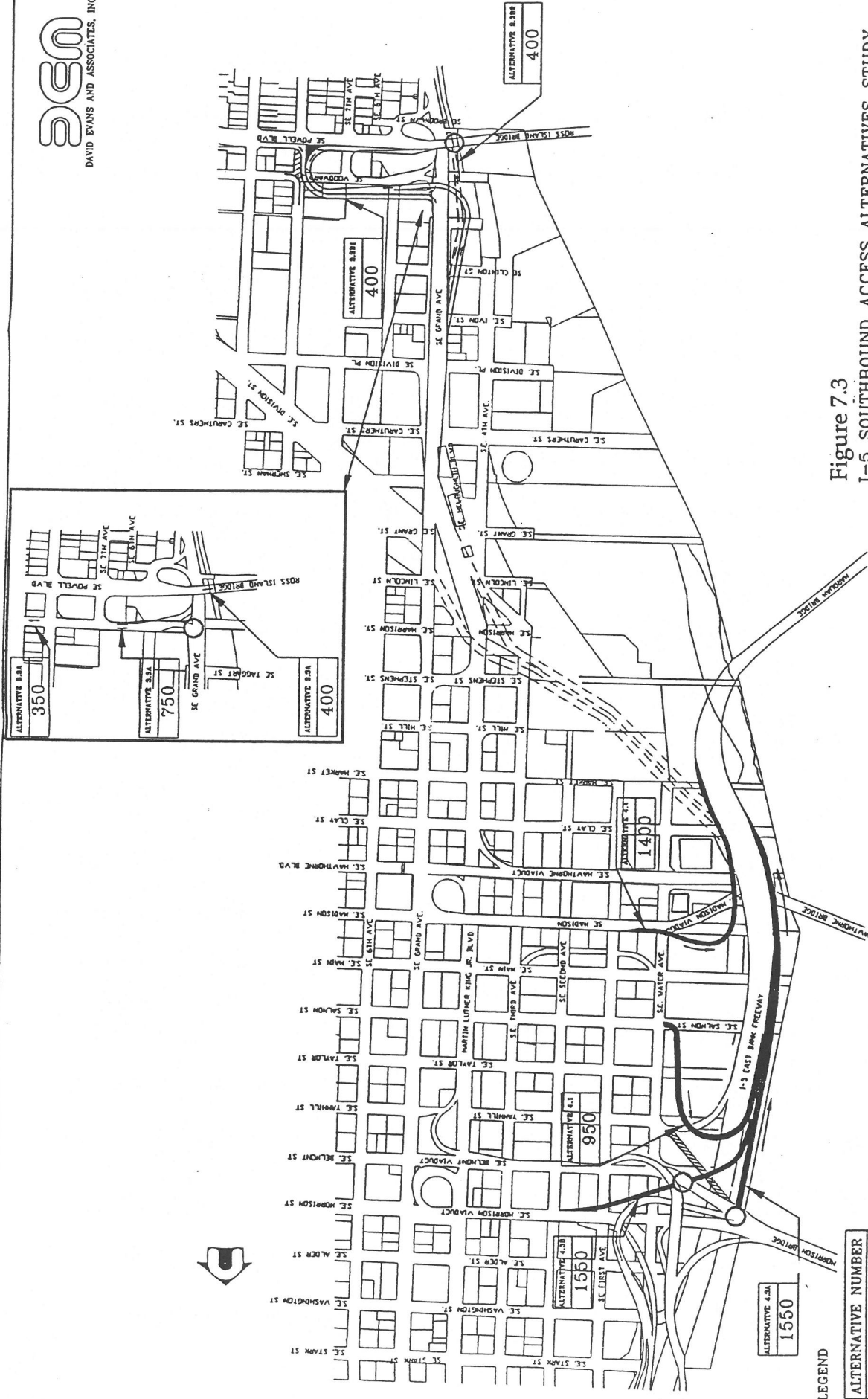
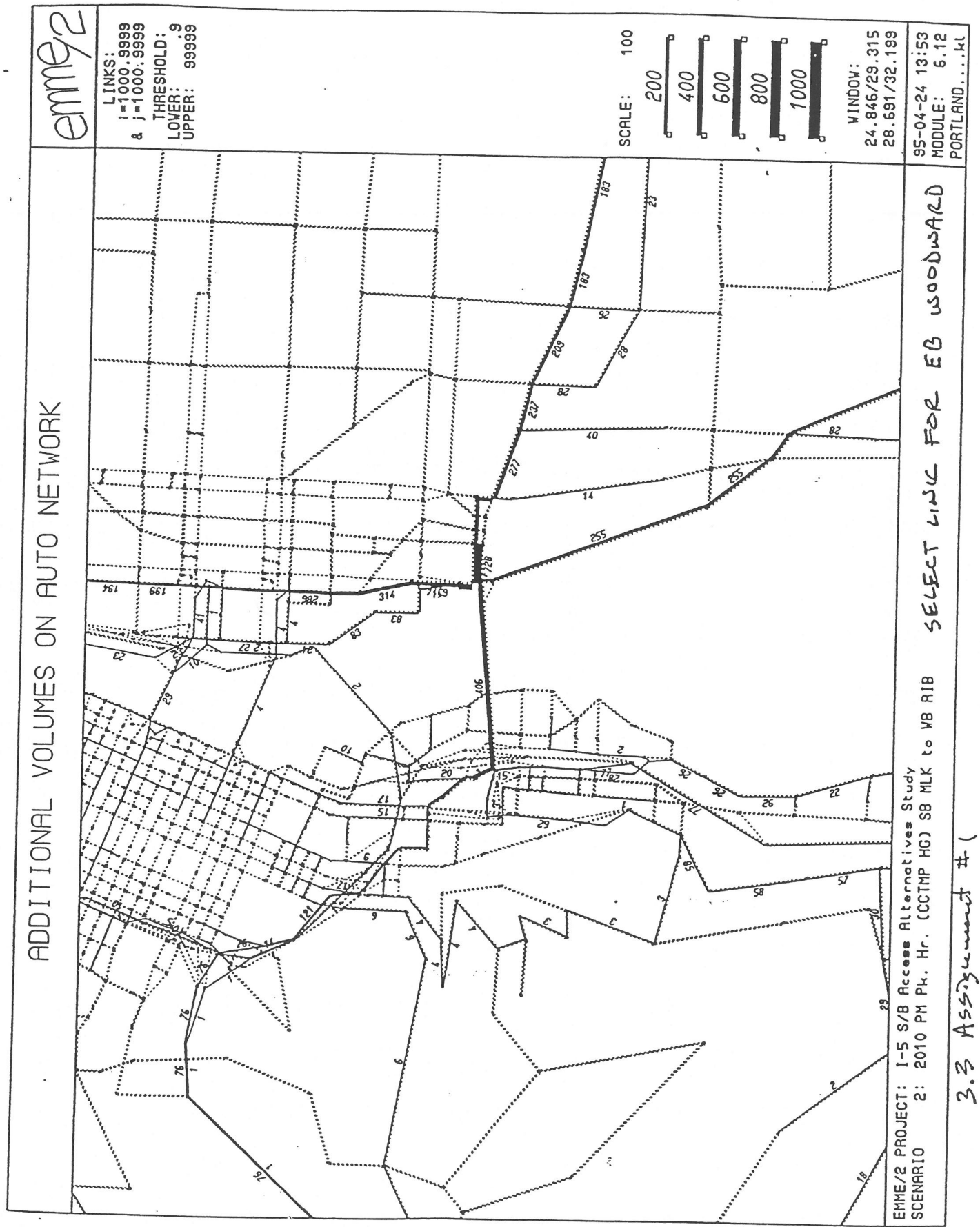


Figure 7.3
I-5 SOUTHBOUND ACCESS ALTERNATIVES STUDY
EACH ALTERNATIVE'S 2010 PM PEAK
HOURLY TRAFFIC VOLUMES
WITHOUT McLOUGHLIN RAMP



3.3 Assignment # (

Figure 7.5

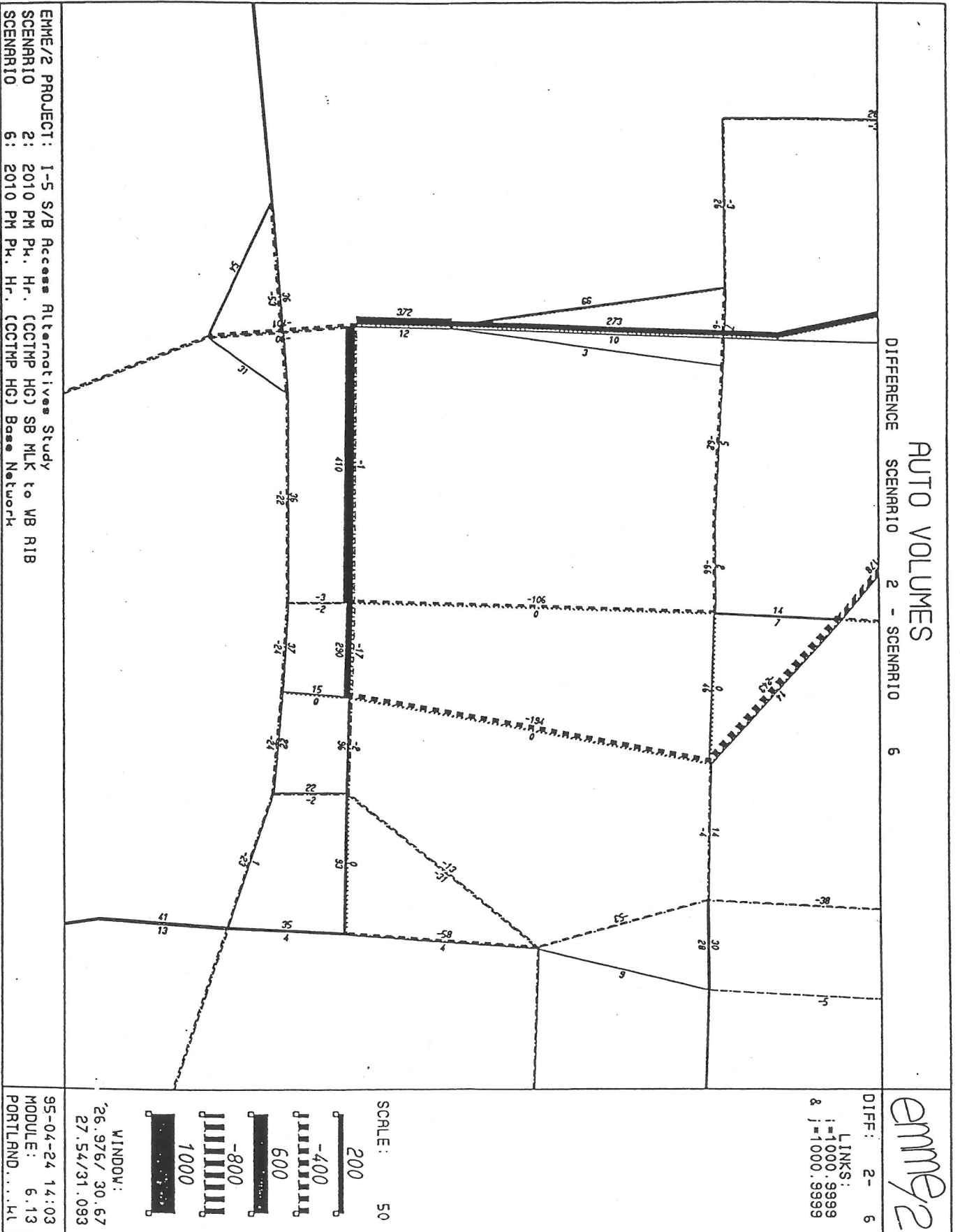
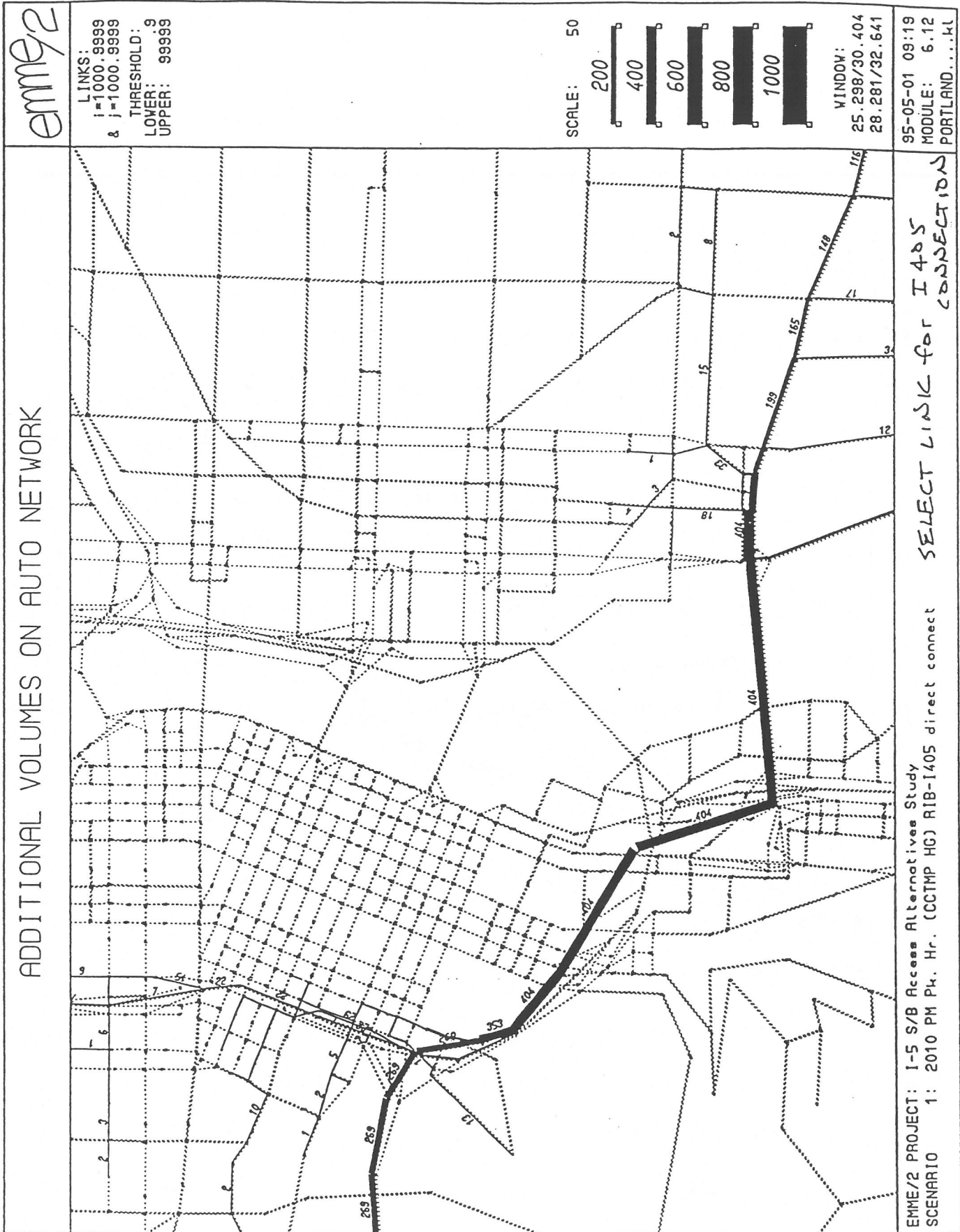


Figure 7.6



3.3 Assignment #2

Figure 7.7

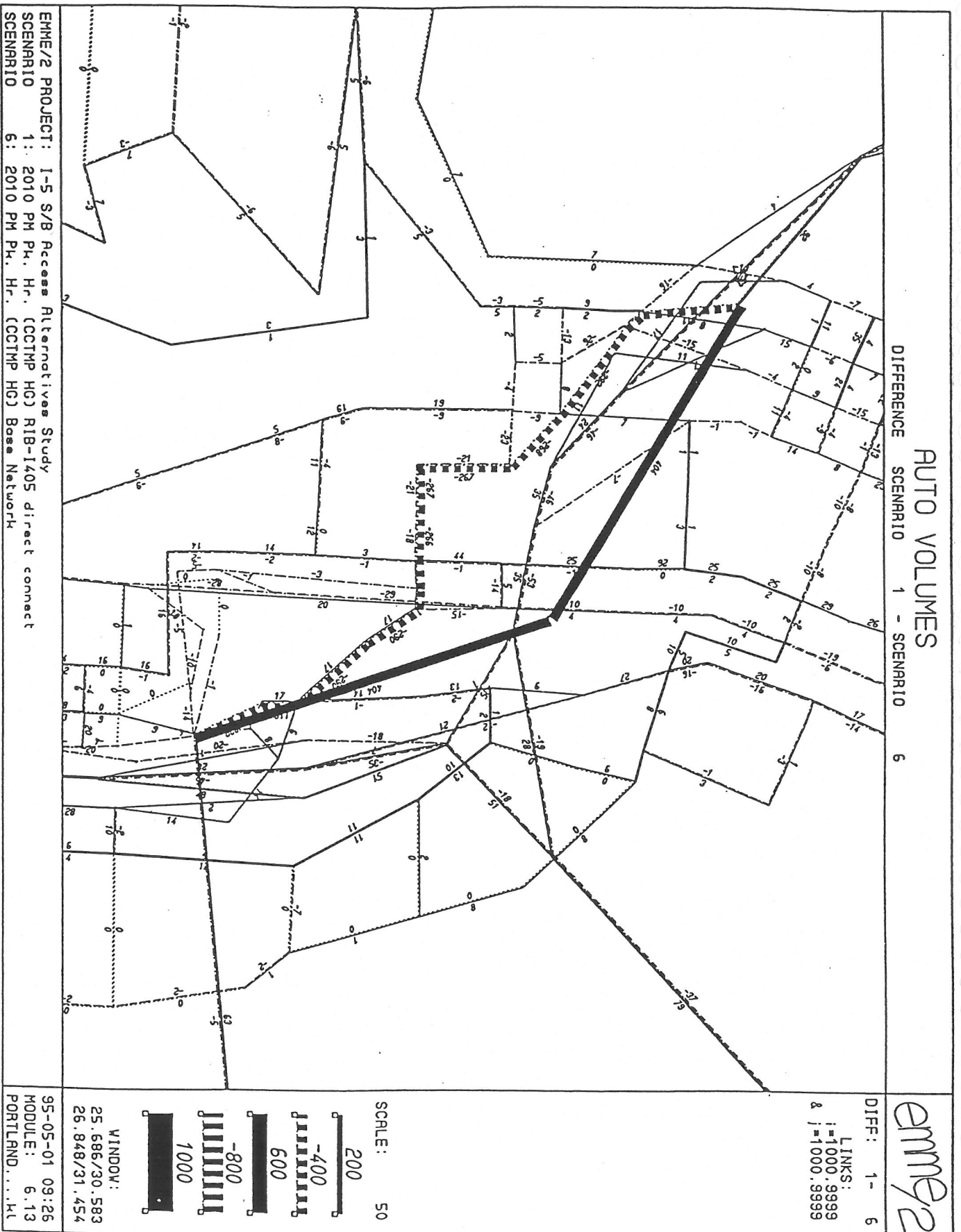


Figure 7.8

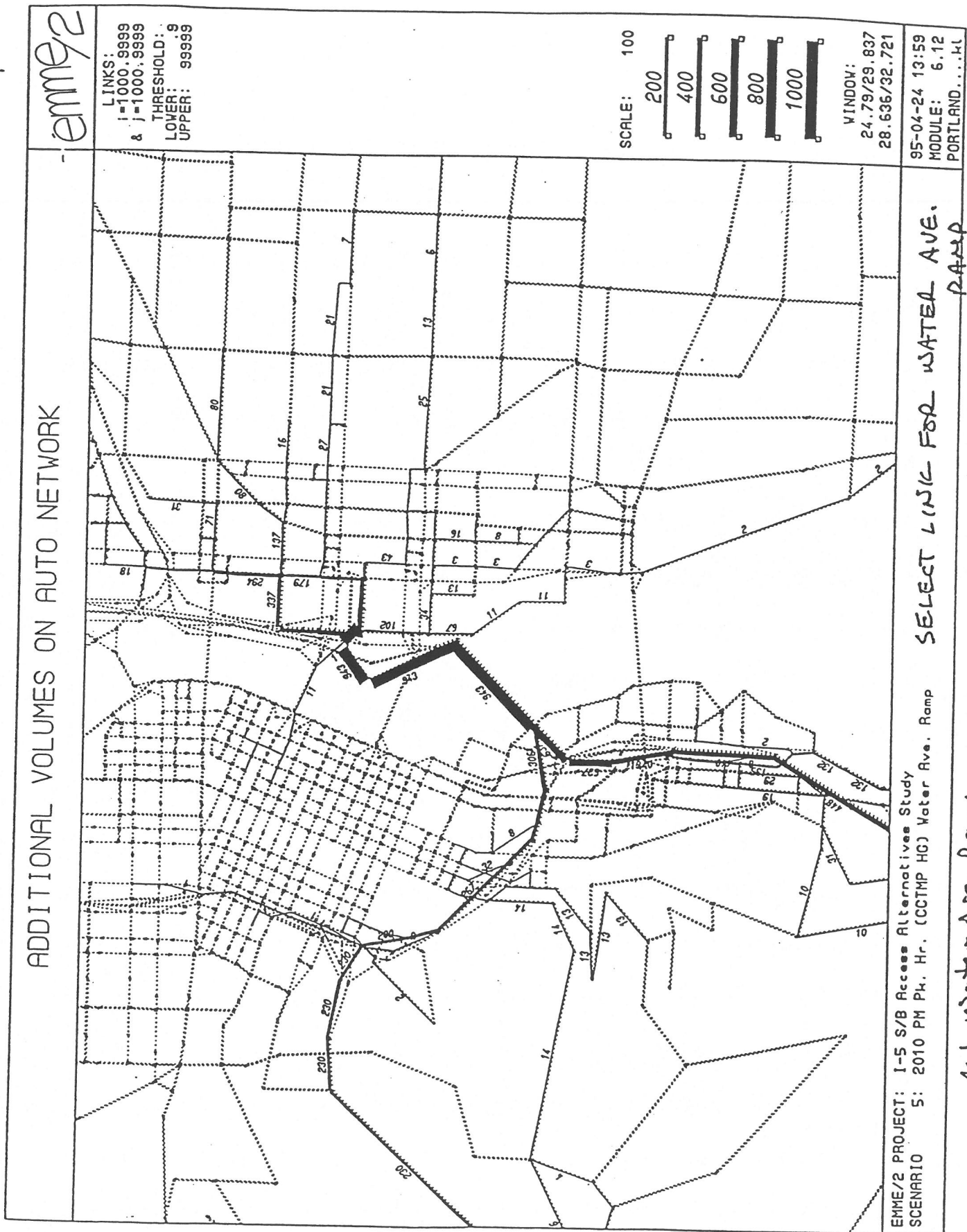


Figure 7.9

4.1 Water Ave. Ramp

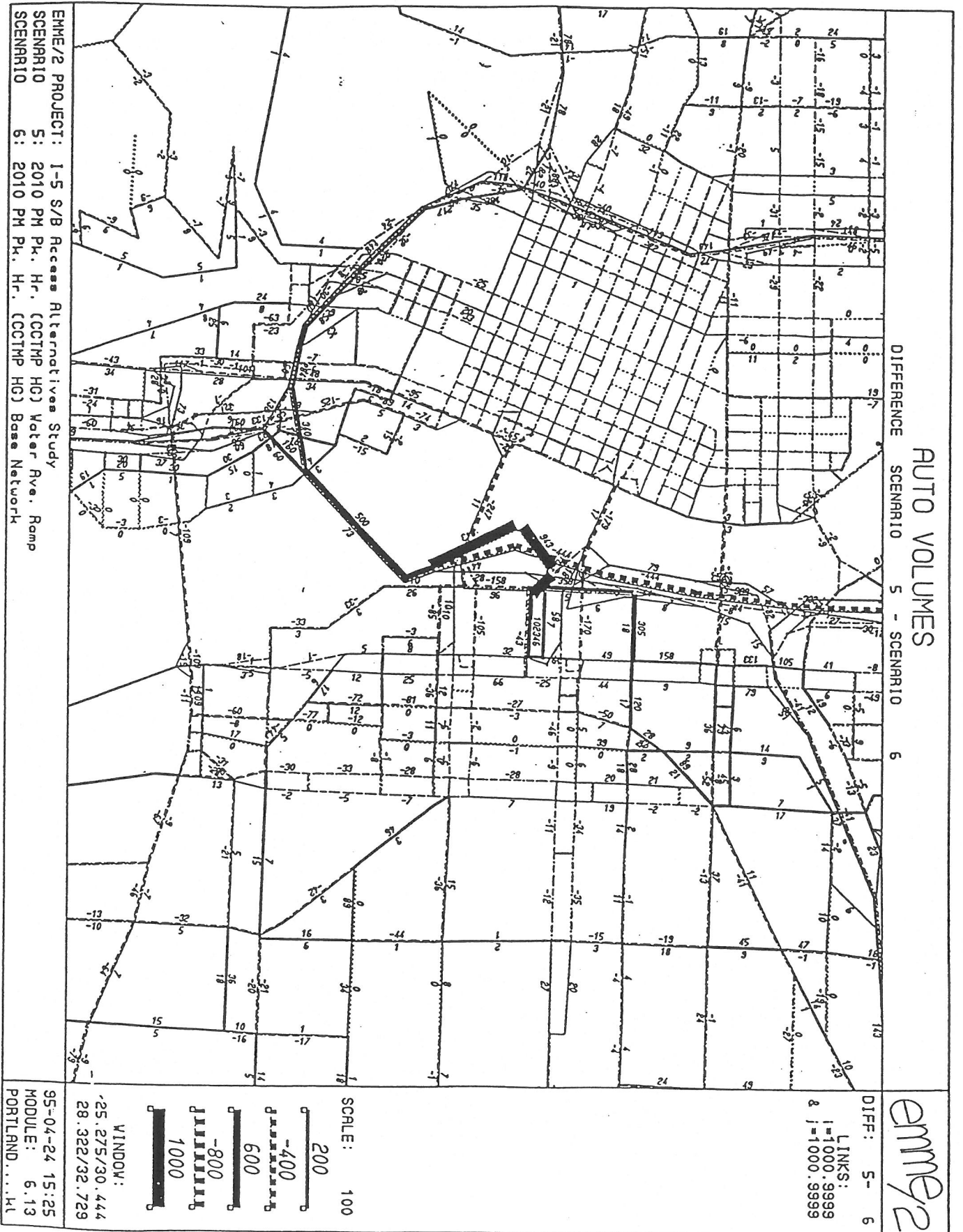


Figure 7.10

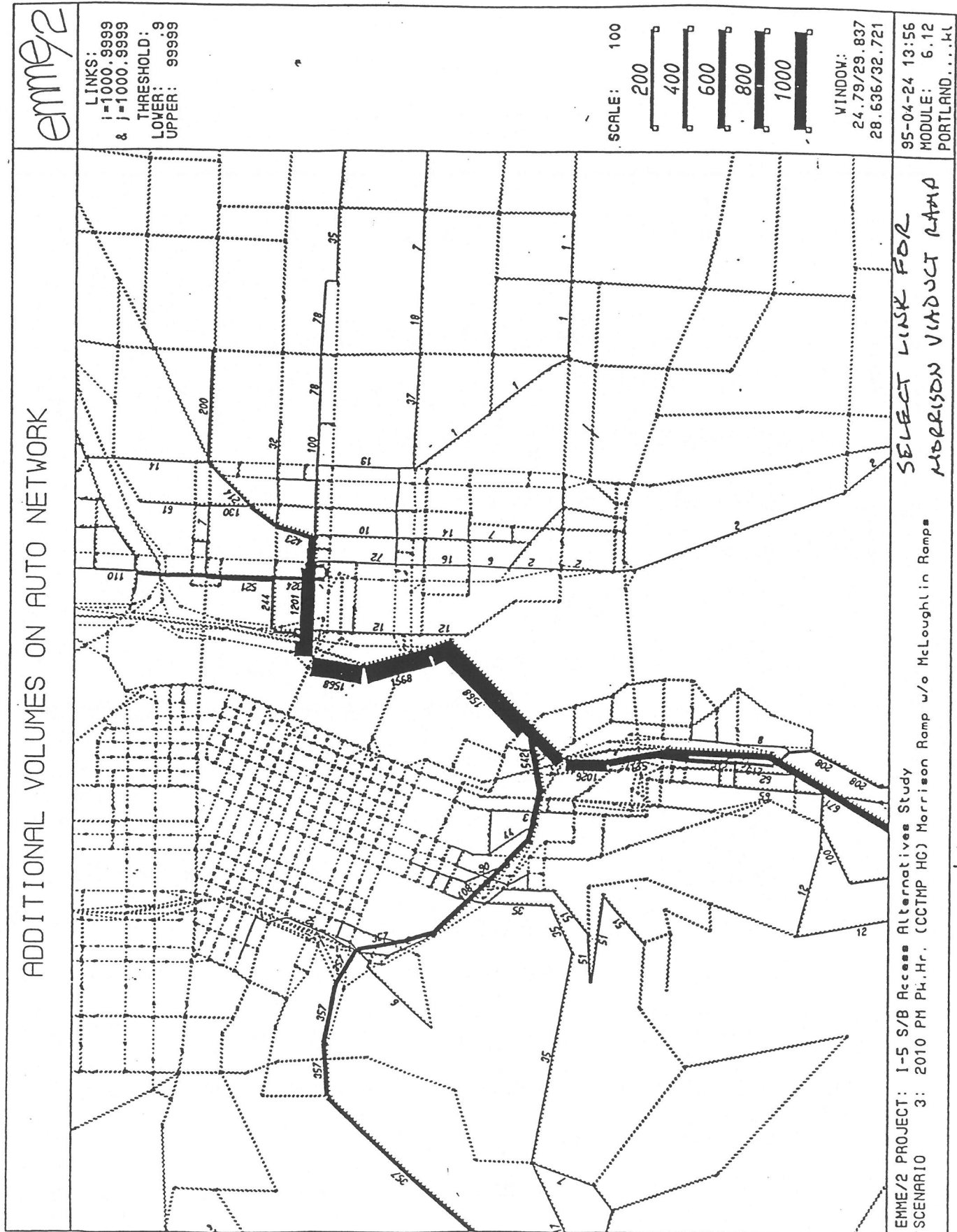


Figure 7.11

4.3 Assignment #A

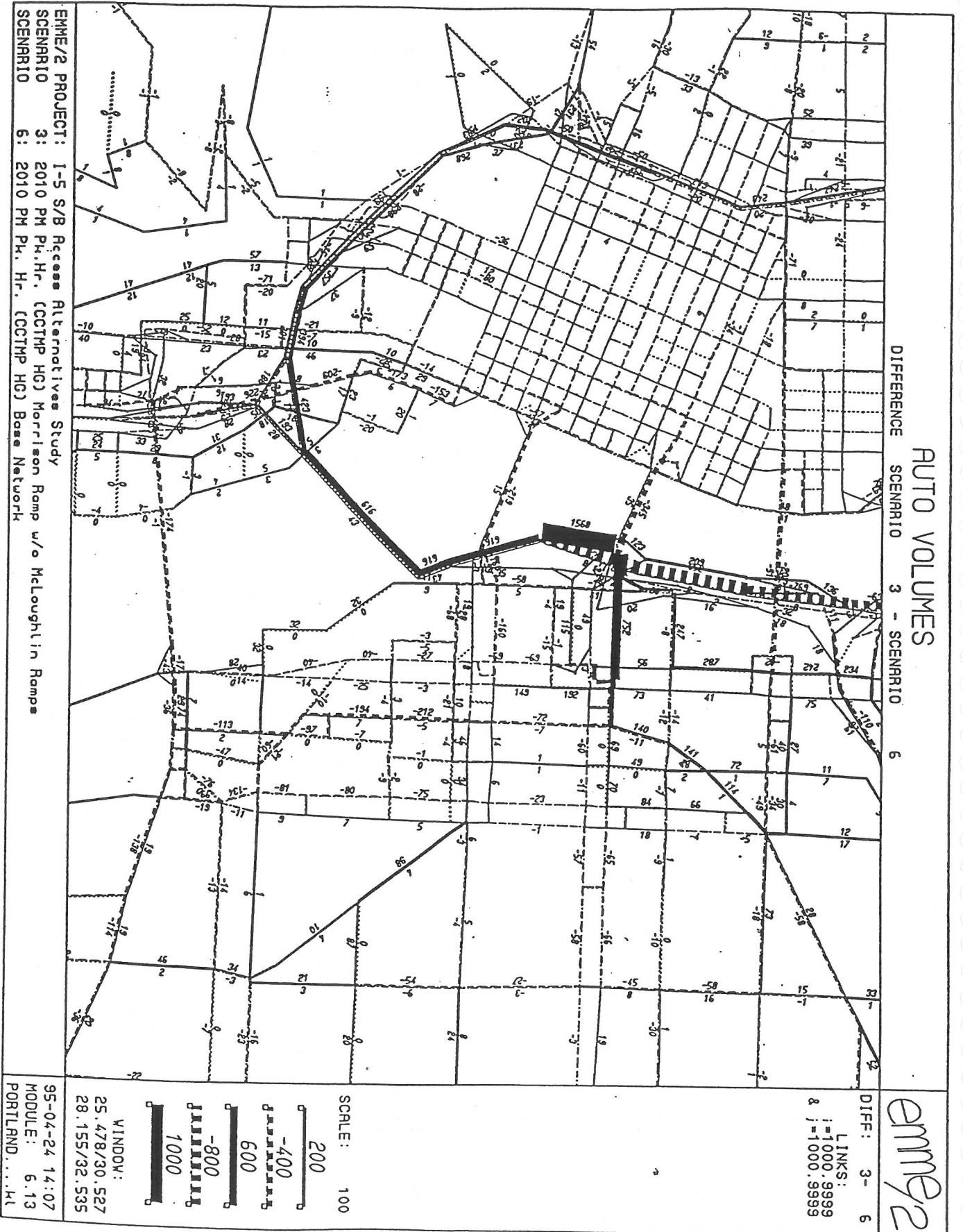


Figure 7.12

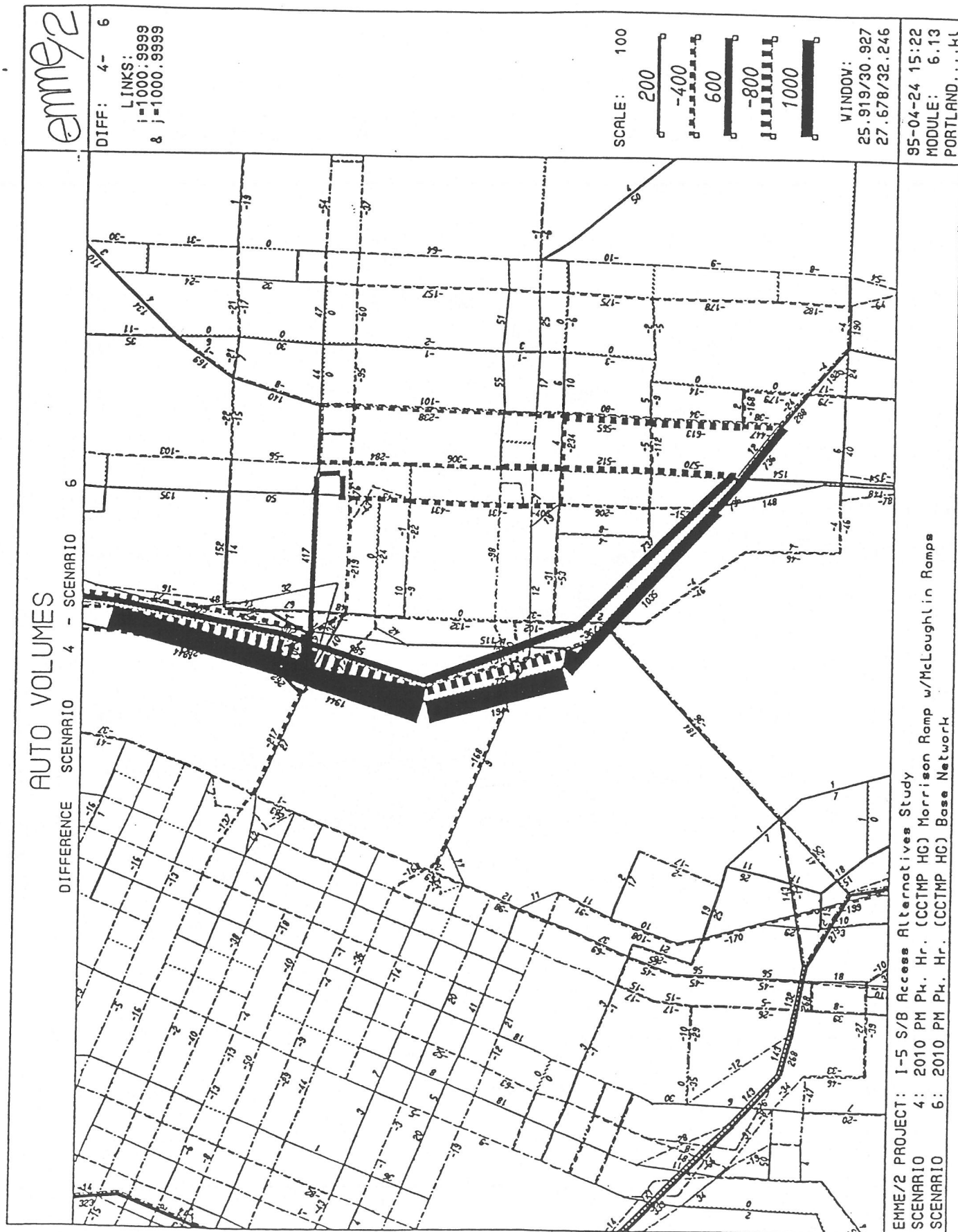
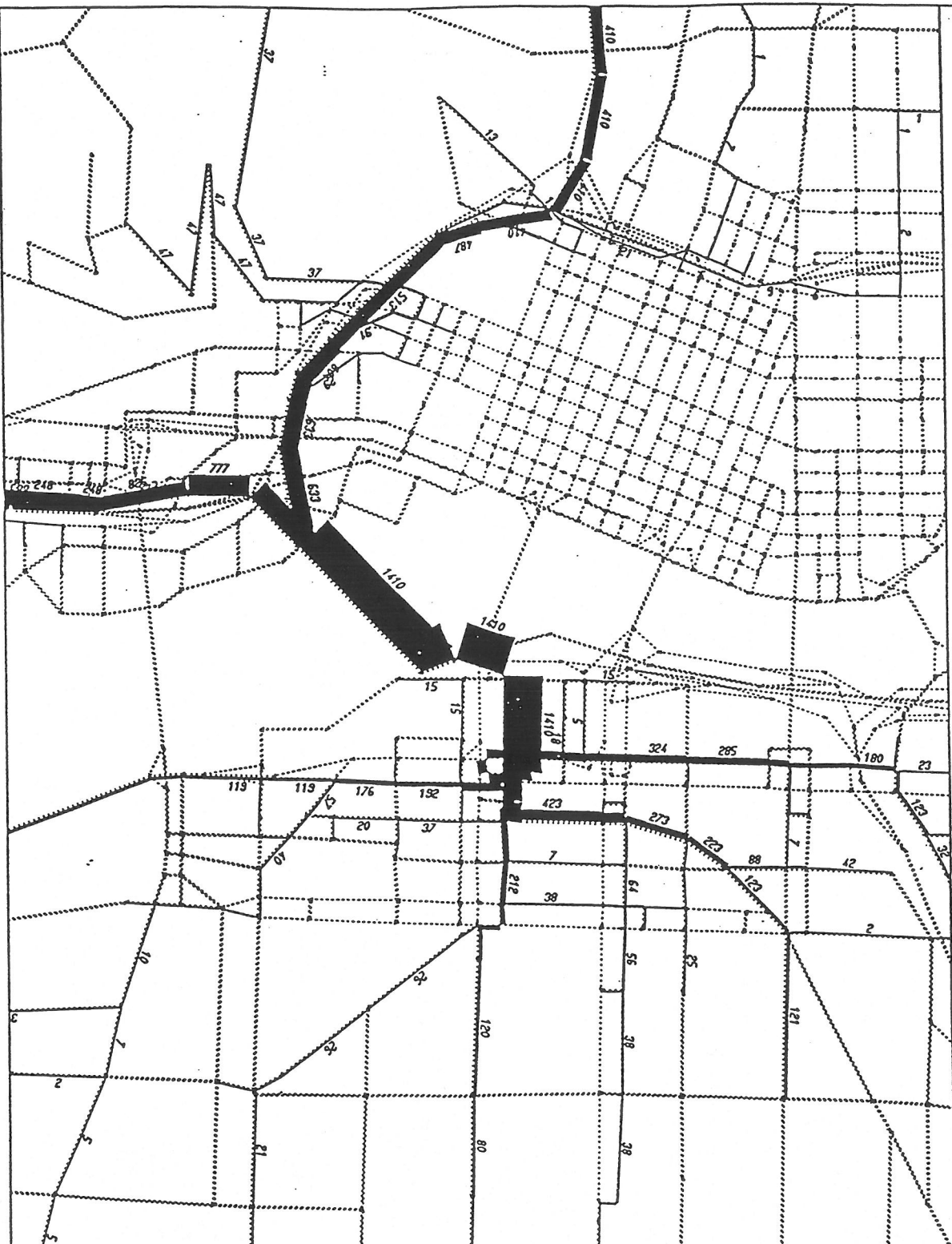


Figure 7.13

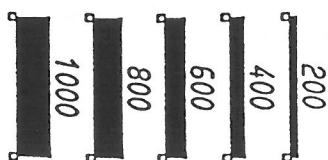
ADDITIONAL VOLUMES ON AUTO NETWORK

emme2

LINKS:
I=1000.9999
& J=1000.9999
THRESHOLD: 9
LOWER:
UPPER: 99999



SCALE: 50



WINDOW:
25.298/30.404
28.281/32.641

95-05-01 09:18
MODULE: 6.12
PORTLAND....hl

EMME/2 PROJECT: I-5 S/B Access Alternatives Study
SCENARIO 2: 2010 PM Pk. Hr. (CCTMP HG) Madison Ramp

SELECT LINK for MADISON RAMP

4.4 Madison Viaduct Ramp

Figure 7.14

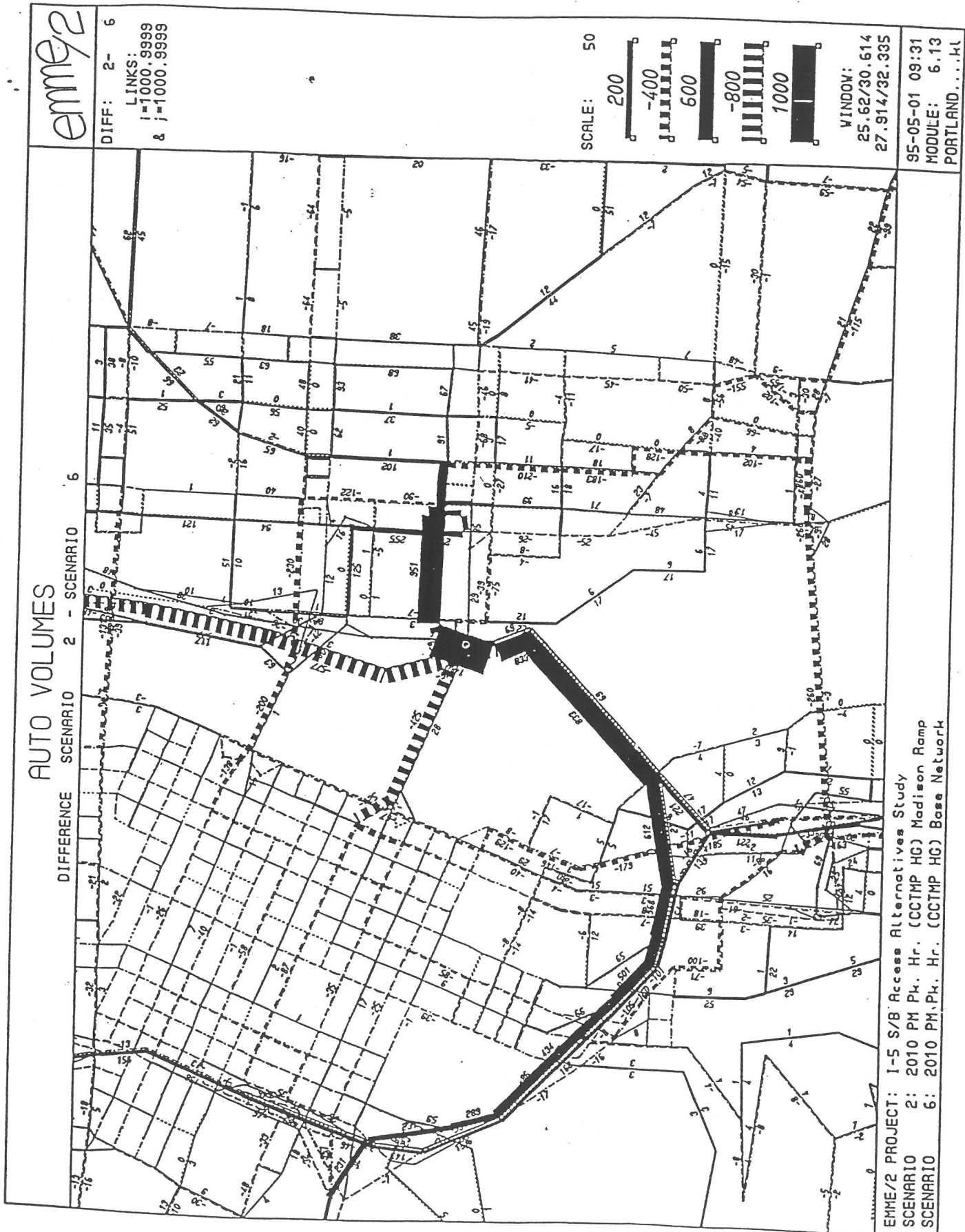


Figure 7.15

I-5 Southbound Access Alternatives Study

Chapter VIII

CASE STUDY INTERVIEWS

PURPOSE

The purpose of the Case Study interviews is to obtain detailed information on a small number of selected businesses that could be considered representative or "typical" firms in the Central Eastside Industrial District (CEID) concerning transportation patterns and accessibility issues. Initially the study was budgeted for 6 to 8 business to be surveyed. The number was later increased to 14 responding to the request of the Access Advisory Task Force (AATF) that a broader business representation for the CEID be provided.

Given the study timeline and budget, it was not possible to conduct a broader, more statistically valid survey. However, it was found that the firms selected as case studies provided valuable insight on the transportation constraints and decisions faced by businesses in the area.

APPROACH

A overview of the businesses operating in the Central Eastside finds a broad spectrum of industrial and commercial classifications. The primary activities are distribution, manufacturing, warehousing, product supply, industrial services and district-level retail services. Many of these CEID businesses are small in employment size and "incubator" small entrepreneurial ventures, but larger industrial businesses are also found. A representative range of these types of businesses were selected for interviews.

Another consideration in selecting firms for interviews is location within the district. Again, a representative range by location, were selected for interviews. The geographic sub-areas of the Central Eastside are the Eastbank, the Southern Triangle, the Industrial Heartland and the Commercial Corridors. Figure 8.1 delineates and describes the uses in these subdistricts.

It was considered important to have information from each of the subdistricts so the number of case studies was increased to represent a balance in geographic representation by the interviews. Businesses from the Station L subdistrict were not interviewed because all recent development activities (such as OMSI, PCC and PGE site) have prepared traffic studies which access information could be derived without specific interviews.

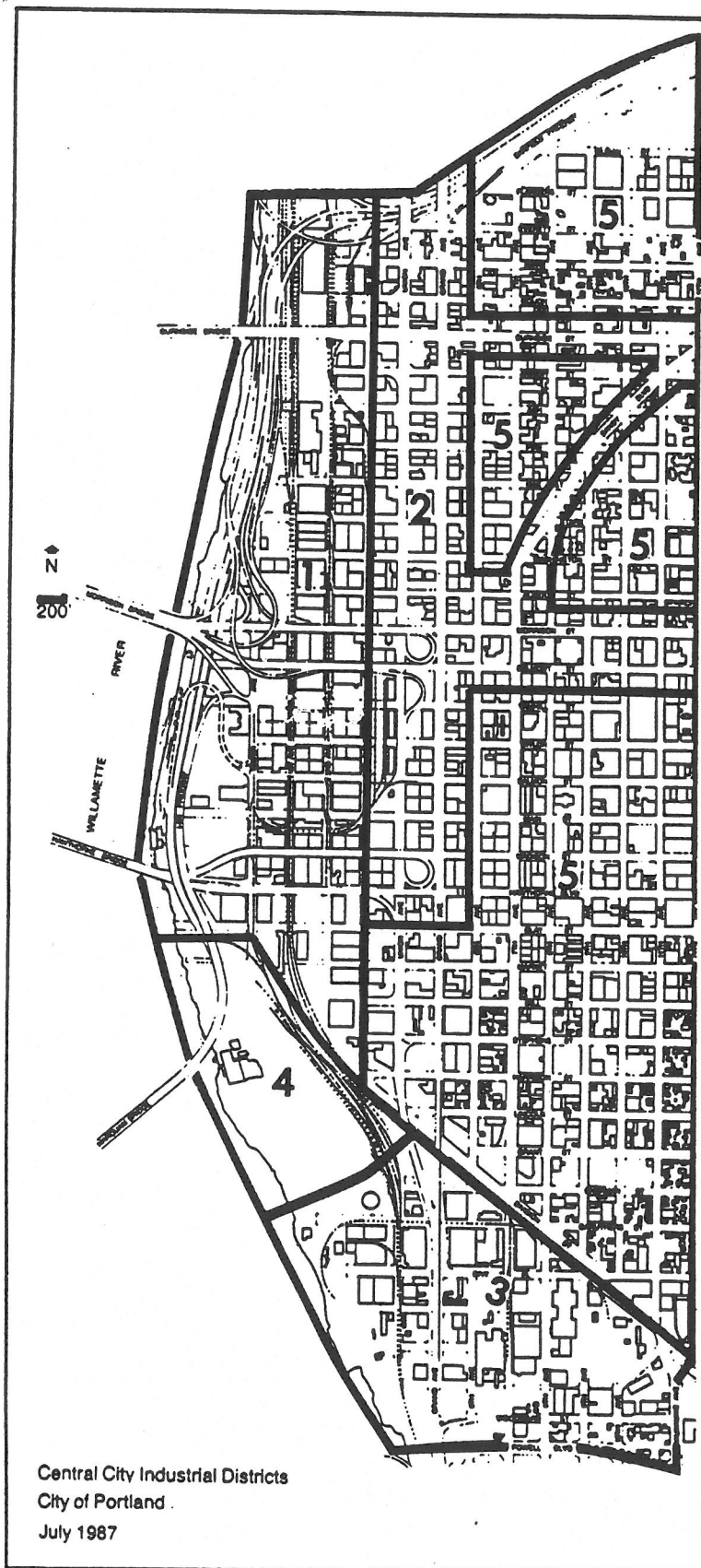


Figure 8.1

Central Eastside Subareas

The five subdistricts in the Central Eastside are:

1. **Eastbank:** This area is the District's waterfront distribution center where rail, highway and local streets intersect to provide firms with a variety of transportation modes and access.
2. **Commercial Corridors:** These commercial arterials provide location for local service firms and large regional service and retail firms. Unique anchor locations exist for small class "A" signature office buildings. Residential activities are also an important component in these areas.
3. **Southern Triangle:** This area is the District's heavy industrial area with rail, highway and water access available. Several large manufacturing campuses existing in this area.
4. **Station L:** The Oregon Museum of Science and Industry anchors the northern part of this waterfront subdistrict with the southern part available for employment-generating facilities which can benefit from a waterfront location.
5. **Industrial Heartland:** This area encompasses the majority of land in the Central Eastside. It provides unique locations for specialized manufacturing and distribution companies. Firms benefit from a well-developed system of transportation and services.

A third area of consideration is the market or service area claimed by various businesses. Market geography for the area firms range from specific local markets, to regional, west coast, national or international. Although a representative range, by market area, was considered for interviews, it was recommended that a focus be placed on those serving a regional market because of the transportation issues that may be relevant to this study.

An exact scientific approach in determining the selection firms was not employed. However, it was somewhat a speculative approach by staff on which firms should be interviewed based on the mix of activities, location, and market area. The diversity of firms was confirmed in the interview process.

FIRMS SELECTED FOR INTERVIEWS

Based on these general selection criteria, a list of the primary eleven firms were identified. Transportation Staff and PDC Staff made initial suggestions based on experience with Central Eastside land use and development issues and contacts established through the Central Eastside Industrial Council membership directory.

COMMITTEE REVIEW AND SUGGESTIONS

At the April 19th meeting, the AATF discussed the objectives and merits of the case study interviews and generally approved of the concept and approach suggested by project staff. It was agreed that rather than formal AATF review and approval of the list of firms and questions, project staff would facsimile this information to AATF members individually for feedback and ideas. A quick response time was requested to enable the interviews to begin in a timely manner.

Additional comments from AATF Members

Ted Grund identified his preference list of companies to be interviewed and suggested that the interview questionnaire include a opinion section. All the companies he suggested were included in the case study except Acme Tools because of the overlap in business type and geographic location with National Business Hardware. Additional opinion questions were added to the questionnaire to encourage the opinions and discussion of firm's long term goals. One question specifically asked was *what businesses feel would be best for the CEID as a whole in the next 10 to 15 years rather than focus on their own focus needs*. The purpose of adding the opinion questions is to aid the surveyor in business intent and case study data interpretation.

Margaret Kirkpatrick suggested a business that has left the CEID should be interviewed and a question asked to determine the reason for flight.

Mike Miller recommend consistency among the interviewees. He suggested CEO or designate should be interviewed. Case studies were interviewed with designated management staff, CEO, or designate. Mike Miller and John Bradshaw also recommended incorporating a family/historic business element into the interview process. C & L Tire Distributors and Burns Brothers Inc. were added to the list of firms to be interviewed in the case study both firms have a history in the CEID.

Karen Whitman felt the list of firms in the case study selection needed to include companies in the "people building" business. The Blazer Organization and OMSI were suggested as examples whose customers "come by car" and add to traffic concerns in the CEID. An opinion question was incorporated into the questionnaire that was asked about providing Light Rail Transit service to the CEID to determine employee and customer use. However, specific Station L subdistrict businesses were not incorporated into the case study because existing traffic studies are available on customer and employees access. Information on "people building" businesses is available through the Planning Bureau land use case files and can be provided to the AATF at their request. (see traffic studies in the PCC, OMSI, PGE, and Rose Quarter files)

All other AATF members submitted approval on the questionnaire and business list.

ADDITIONAL FIRMS ADDED TO CASE STUDY

A summary report of the eleven firms was presented to the AATF on May 24th. Task force members recommended three more firms surveyed to balance the geographic element of the study and to incorporate the growing trend of incubator businesses into the case study. The Industrial Heartland was a geographic area identified as needing further research and the case study was expanded with three more surveyed firms, two of which were identified as incubator businesses. (Wholesome & Hearty Foods and The Joinery) At final count fourteen businesses were interviewed, double the original number of proposed surveys. The result is a balanced Central Eastside Industrial District case study that is a good representation of business type, geographic locations, and product distribution markets.

FIRMS INTERVIEWED

The following is the final list of case study firms interviewed with a brief description on business type, geographic location, and market area. Figure 8.2 delineates the each firm's CEID subdistrict geographic location.

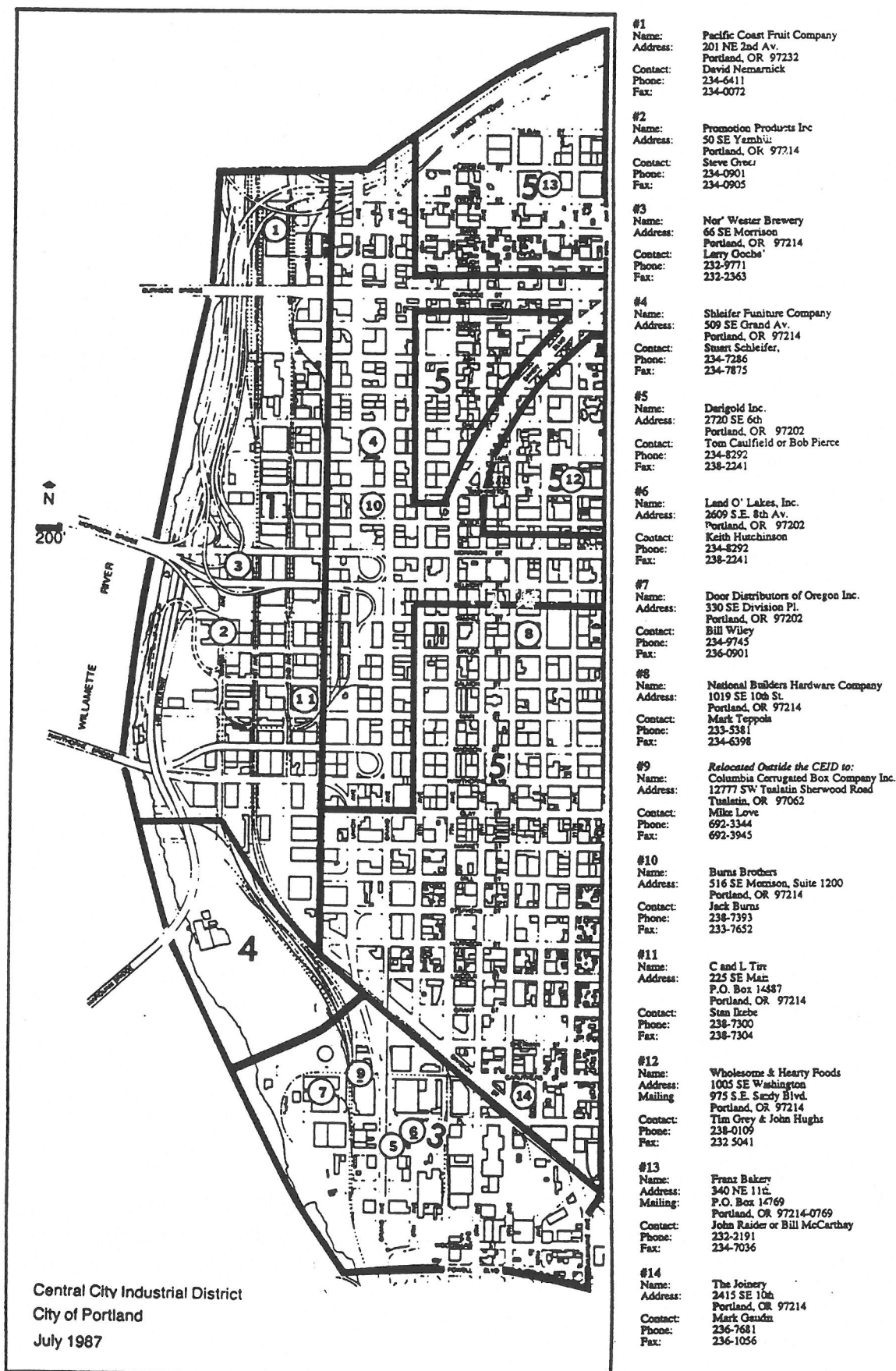
1. Pacific Coast Fruit

A produce wholesale distributor of fresh fruits and vegetables located in the Eastbank subdistrict serving the region. Final phase of building construction at company's new Eastbank subdistrict location completed in 1993. Pacific Coast

identified their primary market as the metropolitan region and are expanding their market in the Northwest. This is a 24 hour per day operation.

2. Promotion Products, Incorporated (PPI)
A mixed use specialized manufacturing/ business services of exhibits, displays, furniture, & fixtures. Company is located in the Eastbank subdistrict and it is primarily serves the Northwest, West coast, National business market, and National museums.
3. Nor' Wester Brewery (Willamette Valley Brewing Company)
A mixed use malt beverage manufacturer and retail-trade eating/drinking establishment located in the Eastbank subdistrict primarily serving the region and the West coast.
4. Shleifer Furniture Company
A retail operation located in the Commercial Corridors subdistrict primarily serving the region. Shleifer also has its furniture warehouse located on 2nd Avenue in the Eastbank subdistrict. Most deliveries are run from this location. Primary market area is the metropolitan region and a growing Washington County market was identified.
5. Darigold, Incorporated
A dairy product manufacturing and distribution operation located in the Southern Triangle subdistrict serving the region. This site is the company's main fluid milk producer for Darigold's West coast operation. This is a 24 hour a day operation with large amounts of heavy truck movements.
6. Land O' Lakes, Incorporated
A mixed use manufacturing/ wholesale-trade of farm supplies for feed and dairy cattle under the Darigold label. Primary market identified is the Pacific Northwest and Northern California. Company shares the site with Darigold. Land O' Lakes also has a similar feed operation under its own label in the Rivergate Industrial area.
7. Door Distributors of Oregon, Incorporated
A wholesale-trade company of door products located in the Southern Triangle subdistrict serving the metropolitan region and statewide construction market.
8. National Builders Hardware Company
A wholesale/retail construction hardware product supply operation located in the Industrial Heartland subdistrict for 17 years but has been operating in the CEID for over 40 years. Company's primarily market is serving the metropolitan region.

Figure 8.2
Location of Businesses for Case Study Interviews



9. Columbia Corrugated Box Company, Incorporated
A corrugated box manufacturer and distribution operation serving the metropolitan region. Three years ago, company moved from the CEID Southern Triangle subdistrict to a Tualatin Valley-suburban location.
10. Burns Brothers, Incorporated
A mixed use retail/ services for truck and automotive related repair and services. Associated mixed use also includes corporate headquarters for their international business supplying auto accessories and 19 full service truck stops in the western United States. Burns Bros. has been located in the Commercial Corridor subdistrict for 49 years. The company originally served the auto and trucking industry needs when 99E was the primary north-south route between the Pacific Northwest and Southern California, but has grown to become an international manufacturer of automotive accessories.
11. C & L Tire Distributors
A wholesale trade company in motor vehicle tire supplies. Company is the only wholesale tire distributor located in the CEID. This tire distributor use has been operating from this Eastbank subdistrict warehouse for 40 years and serving the Northwest and metropolitan region.
12. Wholesome and Hearty Foods
A mixed use of manufacturing-food preparation and wholesale trade of "Garden Burger" meatless patty grocery products. Company has its corporate headquarters and manufacturing facility at two locations in the Industrial Heartland subdistrict and its distribution warehouse in the Eastbank subdistrict. Primary market area expanded from regional market ten years ago to a health conscious National market. Company is considering relocation outside the CEID and working closely with Portland Development Commission on potential sites including Columbia Corridor locations.
13. Franz (U.S. Bakery)
A bakery and other baked goods manufacturing operation located in the Industrial Heartland subdistrict for 89 years. This is a 24 hour per day operation with large amounts of regional heavy truck movements and West coast long haul triple trailer truck movements to serve their primary market.
14. The Joinery
A manufacturer of high quality wood household furniture and fixtures. Company is the smallest case study operation surveyed in terms of site, building, and employees. Located in the Industrial Heartland subdistrict and primary market is entire region and growing National market in specialty mail order catalogue sales.

INTERVIEW QUESTIONS

The interview questions are based on the objective of obtaining the following information. The questionnaire was expanded into a eleven page format and a copy of the questionnaire is included in Technical Appendix E. The objectives are as follows:

1. Business Classification: Distribution, manufacturing, warehousing, product supply, industrial services, wholesale or retail services, mixed, etc.
2. Size: Number of employees, site and building size.
3. Market Area: Primary market areas, customer base and geographic areas of interaction.
4. Supplier Location: Geographic areas of interaction for primary supplies necessary for business operation.
5. Traffic Characteristics: Type and number of vehicles/trips; time of peak periods; parking/loading requirements; employee, customer, delivery trips; modes used (transit, bicycle, walk, etc.).
6. Transportation Characteristics: Origins/destinations and primary routes used, by trip purpose; Access attributes/problems for this business and the Central Eastside as a whole.
7. Opinions: Regarding transportation planning for the area and the freeway access alternatives in particular.
8. History/Location: Length of time at this location; reason for locating in the Central Eastside.

SUMMARY OF CASE STUDY FINDINGS

Business Classification

Case study businesses were grouped based on their primary Standard Industrial Code Classification. Under this classification 8 of the companies are involved in some sort of manufacturing, 6 are involved in wholesale trade, 3 in the retail trade, 2 in the services industry, 1 in the finance, real estate - holdings, and 5 companies were identified as a mixture of these uses.

Size

The employment size range from 10 to 230 employees. Five of the companies have 30 employees or less, two companies have between 40 and 60 employees, and seven

companies have 100 plus employees. The smallest company is The Joinery (10 employees) and the largest is a tie between Burns Brothers and Franz Bakery (230 employees). Darigold and Land O' Lakes who operate out of the same compound, have a combined 230 employees.

The building sizes range from 5,500 square feet to 400,000 square feet. The smallest building is the Joinery with 5,500 square feet, 3,800 on the ground floor and 1,700 square feet on the second level. The largest is the combined Darigold/Land O' Lakes building with 400,000 square feet and only 1/3 of the space is occupied. Ten of the companies have building sized at 100,000 square feet or less.

The site size acreage ranged from and 1/8 of an acre to 10.3 acres. The Joinery is the smallest site at under a 1/4 acre. The largest site is the shared Darigold/Land O' Lakes compound at 10.3 acres.

Market Area

More than three quarters of the companies identified the entire Portland Metropolitan Area as a primary market. Burns Brothers identified CEID as a its primary market for its truck and auto service center. Over half the companies identified the Northwest(OR, WA, & ID) as their primary or secondary market. and some business identified other markets such as Statewide in Oregon, West coast, Western U.S., National and International markets.

Supplier Location

In order to determine movement of supplies, a question was asked to determine primary supplier location providing one leg of the origin/destination truck traffic data question. Half of the business identified the geographic location of their suppliers is the Portland Metropolitan area. Half of the business also identified suppliers primary or secondary suppliers located Nationally. A small number business identified suppliers located in various regions such as statewide in Oregon, statewide in Washington, Northwest, West coast, Western U.S. and Internationally.

Traffic Characteristics

Product Distribution

All surveyed firms identified trucks as a primary mode of product distribution. However, two of the firms use a common carriers (Silver Eagle Trucking, TNT Reddaway, CF, etc.) for their product distribution and freight costs are paid by the customer. These two firms indicated their product distribution as customer pickup on questionnaire because freight costs are passed through directly to the customer.

On the questionnaire, most businesses indicated the use of heavy trucks for product distribution. (from 3 to 7 axle trucks) Businesses involved in large amount of local product distribution identified the use of bobtail trucks (2-3 axle medium sized

trucks) However, business operating on a 24 hour per day schedule maintained their owned fleet and use heavy and medium sized trucks and have a high number of truck trip movements. Businesses include Darigold, Franz Bakery and Pacific Coast Fruit Company.

Peak Hours of Truck Activity

These companies operating around the clock identified heavy truck movements occur between 2:00 am and 6:00 am. Pacific Coast is an example of a midsize, 24 hour a day operation with a large vehicle fleet. The firm has a 40 vehicle fleet consisting of 16 semi-trucks and 24 bobtail trucks running at all hours. Darigold is an example of a large company with many wholesale delivery truck trips and large tanker interplant truck trips. Off peak hours are the common travel periods because heavy trucks can safely maneuver during these traffic free periods.

A large number of firms identified that most of their supplies are received in the morning and their product distribution occurring all day long. However, firms that ship via common carrier identified that product distribution is usually in the afternoon.

Most businesses identified customer peak periods to occur during 8:00 am to 11:00 am. There was not any specific weekday identified exhibiting peaking characteristics (Monday-Friday); however, most firms said business tapers off during the weekends. All the firms surveyed did not identify transit, walking, or bicycling as a primary mode of customer pickup.

While most businesses preferred not to deliver during the work commuter traffic peak hours (7:30-8:30 am & 4:30-6:30 pm) firms with heavy truck movements operating around the clock avoid these congestion periods. However, most business maintain standard hours and consider delivering in traffic as an unavoidable operating cost.

Average Number of Trips and Seasonal Variation

The range of total daily trips varied from 6 to 180 trips per day. A trip constitutes one departure and one arrival. Therefore a single delivery to a firm is considered two trips. Shleifer Furniture and The Joinery were identified as the smallest number of trips per day. The Largest number of trips per day is National Builders Hardware which included customer will call/showroom and low to moderate truck activity. The largest truck movements are Darigold/Land O' Lakes with 150 trips per day of major truck activity.

PPI identified that a seasonal peaking of product distribution occurs during the fall and winter trade shows. Semi-trucks will queue up around their warehouse to receive finished products from the Water Avenue on-site loading facility. Over half of the firms identified some sort of seasonal peaking but no one particular season stood out as a peak period. For example, Nor'Wester, Pacific Coast, and Wholesome & Hearty Foods identified an increase in business during the summer

months but Darigold had a decrease in business during the summer months. (Because of the loss of the school lunch program and decreased demand for lunch milk) C & L Tire Distributors said business picks up at the first snow fall and tapers off until the early spring.

Employee Mode Split

Almost three quarters of the business identified that 90% or greater of their employees choose to drive to work in a single occupant vehicle. 10% was the highest rating given by any firm to employee preference for transit or carpool use. (Pacific Coast, National Builders, Columbia Corrugated, and Wholesome & Hearty)

Parking and Loading Requirements

Almost all firms identified they had some special parking or loading requirement. Over half of the businesses provide employees and customers with off-street parking. Shleifer Furniture stated the importance of on-street parking for employees and customers and, "We have a limited size private lot...(we) do not want any on-street parking removed (Grand/ MLK) by any design option." Land O' Lakes identified on-street parking conflicts with commercial businesses on 8th Avenue and competing for a limited number of on-street parking spaces. C & L mentioned that downtown commuters park on-street in the CEID and, "Create competition for on-street parking spaces." Wholesome and Hearty Foods said, "It is difficult to find on-street parking in our neighborhood because surrounding businesses park their fleet of trucks on-street."

Most business in the CEID effect the right-of-way when their loading zones are in use. Over half of the businesses surveyed affect the right-of-way when trucks are loading/unloading. Under half of the businesses surveyed have an on-site loading facility. Over half of the surveyed business have loading zones adjacent to the right-of-way. PPI, located adjacent to the Water Avenue off-ramp, has safety concerns operating in the Water Avenue right-of-way. The facility is divided by Water Avenue with the production facility on the eastside of Water and warehouse on the westside. Employees consistently transfer freight across the right-of-way between their production and warehouse facility. PPI has observed traffic failing to stop at the control device located at the end of the off ramp and is concerned that an incident between a motorist and fork lift in the Water Avenue right-of-way is imminent.

Transportation Characteristics

The primary routes to and from the firms where broken down into streets, bridges, and freeway movements around the CEID.

Streets

The street movement showed a wide dispersal however MLK and Grand Avenue showed the highest use of access to the businesses interviewed. This MLK/Grand use reflects the importance of this north-south central transportation spine serving

the CEID. The wide dispersal also reflects the efficiency of the grid street system and its effectiveness in providing transportation routing options throughout the district. Half of the firms mentioned that when an unloading truck was blocking the street right-of-way, another routing option was not a cumbersome detour.

However, Wholesome and Hearty Foods mentioned the turning radius for heavy truck movements were more difficult by their production facility on 10th and Washington as compared to their distribution site on 2nd and Stark. Both subdistricts have similar right-of-way widths except the Industrial Heartland has on-street parking and sidewalks on both sides; where as the Eastbank area is paved from building to building. Difficulty with short radius maneuvers in the Industrial Heartland caused Wholesome and Hearty to route trucks around the subdistricts grid street system to align in the direction of a freeway on-ramp.

Bridges

The bridges showed usage based on geographic location. In the Southern Triangle subdistrict firms strongly identified the Ross Island and Marquam bridges. The Eastbank and Commercial Corridor subdistricts showed heavy usage of the Burnside, Morrison, Hawthorne and Marquam bridges. The Industrial Heartland showed wide dispersal of all bridges. Nor' Wester said many of their wholesale customer pickups did not need freeway off-ramp access and originated from another brewery downtown locations and frequently used the Burnside Bridge to their Eastbank production facility.

Eastbank, Commercial Corridor, and Industrial Heartland subdistrict companies mentioned current routing of their trucks over the Morrison and Hawthorne bridges to gain I-5 Southbound access through the downtown district. All firms mentioned the weaving difficulty on Front Avenue to align for Southbound freeway access. Southern Triangle subdistrict firms using the Ross Island Bridge mentioned the problems merging onto Powell Blvd. weaving difficulties on Hood Avenue accessing the I-5 southbound freeway on-ramp.

Freeways

The question on freeway and associated ramp usage showed a strong demand for the I-5 Northbound/ Water Avenue, I-84 Westbound/ Lloyd Blvd., off-ramps. I-5 southbound/ Belmont off-ramp was also identified as a option by many firms but because of the difficulty merging onto Belmont bridgehead, the tight turn and weaving movements on MLK, this is a difficult movement for heavy trucks.

Darigold said that because of this difficult movement on the Belmont exit, they will route southbound heavy trucks coming from Clark County down I-205 to Oregon City and up I-5 Northbound to use the Water Avenue off-ramp. These are Darigold's large interline tanker trucks are running during the peak auto periods 7:30 am to 6:30 pm. Darigold feels it is worth the extra time and mileage for a safer freeway egress onto the Water Avenue off-ramp.

Wholesome and Hearty Foods and Franz were the only businesses that indicated they primarily use the I-5 Southbound/Broadway and I-5 Northbound/Broadway Ramps. Other than these firms located in the northerly Industrial Heartland, this on /off-ramp option was not strongly indicated by remaining surveyed businesses.

No specific southbound freeway access was identified. There was a wide dispersal of surveyed firm's truck traffic seeking I-5 southbound access among the Wheeler Avenue, Ross Island, and downtown district freeway on-ramps. CEID firms operating heavy trucks to Washington County via the Sunset Highway did prefer to cross the Fremont Bridge and use the I-405 to gain westbound access. The bobtail and other medium duty trucks are maneuverable in traffic and have greater Sunset Highway routing options.

Opinions

Transportation Planning and Freeway Access Alternatives

When asked about the Water Avenue ramp, almost three quarters of the businesses strongly identified the need for the ramps. General comments included, "Like to see it happen," or "would improve southbound truck traffic freeway access." The remaining quarter made neutral comments, such as, "good planning, terrible implementation," or "idea is okay; however, company does not have a large demand to transport south."

When asked about I-5 Eastbank freeway relocation well over half the businesses strongly opposed the idea and the remaining businesses were neutral. Comments included strong opposition, "No! this would be a total disruption to business" and neutral comments included, "This is a community issue; however, construction would be disruptive to our business."

When asked about light rail transit service to the Central Eastside Industrial District half of the firms identified the service as a benefit. Of those firms in favor, almost all identified their employees would utilize the LRT service. A little under a quarter of the firms did not see a benefit of LRT service. One firm specifically identified the Station L subdistrict and OMSI as a patron of CEID light rail service. C & L Tire Distributors thought light rail service would reduce the number of downtown commuters using the on-street parking in the CEID.

Promising Alternatives

The firms were asked to comment, compare, or address how the four preferred alternatives would meet their needs. The surveyed firms were also asked to raise any issues in alternatives evaluation.

Morrison

The firms identified the Morrison Bridge interchange as a centrally located option in the CEID. Central location is an important attribute to the businesses surveyed.

However, other surveyed firms also raised the design concern of placing increased truck activity in the center of the district on MLK and Grand Avenue.

Water Ave.

A little over half of the firms liked or favored the Water Avenue ramp option. Comments made by Shleifer Furniture typify the response, "The design does not place large truck traffic, a characteristic of the Eastbank subdistrict, onto MLK and Grand to Gain I-5 southbound access via a bridgehead." A little under half of the surveyed firms did not have a strong opinion regarding this option. Examples of comments include Nor' Wester who said they have little truck activity heading south. Door Distributors said the ramp is centrally located in the CEID but hasn't any thoughts other than that. The Joinery simply stated, "No opinion."

Hawthorne

Regarding the Hawthorne option, one half of the firms had no major thoughts or concerns. A little over a quarter of the firms thought the central location is a benefit. Comments included: "OMSI would benefit by its close proximity"- Shleifer Furniture; "It is in close proximity to our site" - Darigold; "Hawthorne Bridge is the most under utilized bridge" - Wholesome and Hearty.

A few businesses identified potential design constraints with this option. Comments include: "Grade problems" - Burns Brothers; "Grade and truck acceleration concerns" - Door Distributors.

Ross Island

Regarding the Ross Island Bridge option, one half of the firms thought this option is the least practical or had concerns. Most concerns addressed that the bridge is at capacity or not designed for heavy truck traffic. PPI's comment is a typical example, "The Southern Triangle would benefit from this option; however, the bridge appears at capacity." Over a quarter of the businesses had no thoughts. Darigold and Land O' Lakes, who are located in the Southern Triangle, saw advantages with this option; however, they strongly identified the existing design constraints and traffic weaving concerns on Hood Avenue. C & L Tire Distributors thought that the Ross Island is a necessary option in the overall CEID transportation system. But was neutral on this option compared to the other preferred alternatives.

Company Long-Term Goals

When companies were asked about their long term goals and what transportation improvements would enhance their businesses, half of the firms stated better southbound access. Less than a quarter were neutral, but mentioned the need to reduce conflicts between auto and truck movements in the CEID. A few firms mentioned reducing through traffic in the Southern Triangle subdistrict and a few others said the system works fine leave it alone.

CEID Transportation Improvements

When asked what transportation improvements would be best for the CEID as a whole, over half the firms identified southbound freeway access. Pacific Coast and Columbia Corrugated identified the importance of localized Intermodal rail and truck freight movements. A few firms identified the need to reduce conflicts between autos traveling through the district and truck movements within the district. Individual firms identified the need for better I-84 connections without adding truck traffic to MLK or Grand Avenue corridor, rubberized railroad crossings to reduce road damage, and limiting driveway access to reducing the turning movements on heavily used streets - especially around bridgeheads.

When asked about attributes or problems for their company and the CEID transportation system as a whole, many surveyed firms strongly identified central location to the regional transportation system as the key attribute. Problems identified include MLK and Grand Ave. congestion and conflicts between truck movements and auto traffic moving through the CEID. Southbound freeway access was listed as a problem from businesses represented in all four subdistricts. Lack of southbound access is not a localized subdistrict geographic, market distribution, of business use type problem. All varieties of business types, market distribution areas, and locations identified lack of access as a disadvantage for the Central Eastside Industrial District.

History/ Location

Location

When asked how long business have been located at their present location, firms in the Eastbank subdistrict ranged from 8 to 25 years, Industrial Heartland 3 to 89 years, Commercial Corridor 50 year or greater, and the Southern Triangle subdistrict ranged from 20 to 60 years. Over three quarters of the firms surveyed have other locations. Six of the firms have locations in the Portland Metropolitan area, three firms had other CEID locations, (Burns Brothers, Shleifer, Wholesome and Hearty) three firms have locations in the Northwest and one firm have other international locations.

When asked why firms had chosen to locate in the CEID over half the companies surveyed specifically listed central location. The reoccurring response was "central location." comments included, "Close proximity to major freeways" - PPI; "It's a perfect location and we are the only wholesale tire distributor in the CEID" - C & L Tire; " "Good central location"- Nor' Wester.

Relocation

When asked if company was considering relocation under three quarters of the respondents said definitely not. Over a quarter of the firms said no but had identified items of concern. Comments included, "Unknown, but if relocation was necessary to reduce overhead, we would search for a jurisdiction based on lower taxes and sewerage costs" - Darigold; "We would search for a location with large

on-site parking, better freeway drive-by exposure and access" - Shleifer Furniture;
"Would look for location with less city (urban) and utility hassles" - Nor' Wester.

Columbia Corrugated

Columbia Corrugated moved from the CEID 3 year ago because of a desire for a large acre site with on-site loading facility. The firm wanted to consolidate its manufacturing and distribution facilities into a giant super site. The company had difficulty locating large site in the CEID. Discussions were on the table about the Lone Star site, but halted because of short time period necessary to close the option on the property.

Columbia Corrugated simply outgrew its CEID site with the increased demand for corrugated products required by their newest client, the high technology companies. Columbia Corrugated felt the 10 year CEID transportation future was uncertain and the problems of viable alternatives were far from being solved. A site was found in Tualatin and they are currently located on a 18 acre super site.

Two important factors were revealed with Columbia Corrugated's flight from the CEID. First the mileage to service existing accounts had increased 30% because of the suburban location in the Tualatin Valley. Second, the multimodal flexibility in the CEID was missed. With the advent of recycling, Columbia Corrugated does not currently have a rail spur line necessary to send scrap corrugated waste to the Albany Oregon recycling plant. Consequently the plant will only accept scrap material from rail cars. Currently Columbia Corrugated must pack their waste products into container trucks, haul it to a transfer station, and reload the scrap on rail cars. Both attributes realized in the CEID are missed by the company and lack of these attributes are adding to their current cost of production.

Wholesome and Hearty Foods

The company is currently searching for a larger site. The business has simply outgrown its current facilities. Like Columbia Corrugated, Wholesome and Hearty Foods is searching for a location to crate a supersite and incorporate the headquarters, production, and distribution facility. Both rail and freeway access were identified as important transportation characteristics for a new site. The company is currently exploring opportunities in the Portland Area with Portland Development Commission staff. The Columbia Corridor is an area of consideration.

Copies of each individual case study interview are available upon request. For copies contact:

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I-5 Southbound Access Alternatives Study

Chapter IX

ESTIMATED COMMERCIAL VEHICLE ACTIVITY

One of the primary issues of concern in evaluating alternative freeway access routes from the Central Eastside is the presence and volume of commercial vehicle services. As a means of estimating the volume of commercial vehicles that would use a new *on-ramp* from the Central Eastside various counts and observations were made of the current *off-ramp* activity at Water Avenue. It is expected that over a daily period the on-ramp volumes would approximate the off-ramp volumes. These estimates could reasonably be applied to any of the "New Ramp" Alternatives that are centrally located in the Central Eastside but would likely be more relevant for the Water Avenue Ramp Alternative (Alt. 4.1).

The Oregon Department of Transportation (ODOT) in Salem was contacted to help determine the traffic volume for the existing Water Avenue off-ramp. The traffic volume figure for 1994 was recently computed during the first part of May 1995. The 1994 Average Daily Traffic (ADT) for the Water Avenue off-ramp was 8100 vehicles per day (vpd).

The Oregon Draymen and Warehousemen's Association in connection with the Oregon Trucking Associations, Inc. conducted a survey of motor carriers who would use the proposed Water Avenue and McLoughlin Blvd. ramps to I-5. On October 27, 1993 the "Water Ave. and McLoughlin Blvd. Truck Traffic Survey" (copy attached) was submitted to the Willamette River Eastbank Advisory Committee by Mr. William Stewart from the Oregon Draymen & Warehousemen's Association.

It was reported that 61 carriers responded to the survey and that "We believe that the results of the survey represent less than one third of the actual volume on the affected areas." The survey sample truck volume for the Water Avenue on-ramp if in place was 2827 trips per week and 404 trips per day. Projected actual truck volumes based on the survey were reported to be 8481 trips per week and 1212 trips per day on the on-ramp.

To validate existing traffic volumes and to help better identify truck and commercial vehicle volumes one hour manual traffic counts were taken on the existing Water Avenue off-ramp during the AM and PM peak hours and during an off-peak hour. These counts included classification data on general purpose vehicles, light commercial vehicles and heavy commercial vehicles. The heavy commercial vehicle category included those vehicles larger than a pickup with a minimum of one set of rear dual wheels.

During the off-peak hour count from 10:30 to 11:30 AM on May 17, 1995 there was a total of 526 vehicles with 436 general purpose vehicles, 50 light commercial vehicles and 40 heavy commercial vehicles. The commercial vehicle percentage was approximately 17% with approximately 8% heavy commercial vehicles (trucks).

During the AM peak hour count from 7:30 to 8:30 AM on June 2, 1995 there was a total of 770 vehicles with 664 general purpose vehicles, 89 light commercial vehicles and 17 heavy commercial vehicles. The commercial vehicle percentage was approximately 14% with approximately 2% trucks.

During the PM peak hour count from 4:30 to 5:30 PM on May 17, 1995 there was a total of 698 vehicles with 649 general purpose vehicles, 17 light commercial vehicles and 32 heavy commercial vehicles. The commercial vehicle percentage was approximately 7% with approximately 5% trucks.

The normal percentage of trucks expected in the urban area would be about 5% of the daily traffic volume. The off peak truck percentage for the existing Water Avenue off-ramp was higher than average with the peak hour percentages at or below average. This perhaps reflects travel adjustments by businesses to avoid peak hour traffic congestion.

The PM peak hour volume for the new on-ramp movements would be expected to be complimentary to the AM peak hour volume for the Water Avenue off-ramp (770 vehicles). For the year 2010 the traffic model PM peak hour volume for the on-ramp was estimated to be 940 vehicles. The projected volume from the EMME/2 model does not appear to be high and may be conservative depending on the growth in the Central Eastside Industrial District.

Based on a 10% peak hour and the hourly counts the light commercial vehicle volume estimated for the on-ramp would be approximately 900 vpd. The heavy commercial vehicle volume is estimated to be approximately 400 vpd. The 1300 total commercial vehicle per day estimate for 1995 compares closely with the 1993 Oregon Draymen and Warehousemen's Association survey total of 1212 trips per day.

However the Oregon Draymen and Warehousemen's Association survey total appeared to be mostly heavy commercial vehicles while the hourly counts recently taken show the opposite in that most of the commercial vehicles were light commercial vehicles. The hourly counts also show that some of the heavy commercial traffic appears to be avoiding the peak hours. This would be considered a positive factor for any of the access alternatives to operate better as a result of fewer heavy commercial vehicles during the peak hours.

Oregon Draymen and Warehousemen's Association

AFFILIATED WITH OREGON TRUCKING ASSOCIATIONS, INC.

1444 S.E. HAWTHORNE BLVD.
PORTLAND, OREGON 97214

Willamette River Eastbank Advisory Committee Water Ave. and McLoughlin Blvd. Truck Traffic Survey

October 27, 1993

Submitted by
William Stewart,
Oregon Draymen & Warehousemen's Association

In connection with the Oregon Trucking Associations, Inc. we have conducted a survey of motor carriers who would use the proposed Water Avenue and McLoughlin Blvd. ramps to Interstate 5. The survey results represent a small percentage of the actual volume of truck traffic that would utilize the ramps but we believe that the survey does provide some idea of the types and volume of trucks in question.

61 carriers responded to the survey. The responding carriers are domiciled in Oregon and Washington. According the Oregon Public Utility Commission, 3587 carriers (common and private) are domiciled in the Portland metropolitan area alone. We believe that the results of the survey represent less than one third of the actual volume on the affected areas.

	truck trips per week/day	
	<u>Survey Volume</u>	<u>Projected Traffic Volume</u>
Water Ave Ramp.	2827/404	8481/1212
McLoughlin Blvd. Ramp	4362/623	13,086/1869

Carriers Represented in the Survey.

Major LTL Carriers.

Less than truckload (LTL) common carriers who provide transcontinental freight service to the major points in the US. The types of equipment used are primarily straight trucks and tractors with 28' van trailers.

Regional LTL Carriers.

Less than truckload common carriers who provide freight service to points in the Northwest and, in some cases, throughout the western US. The types of equipment used

are primarily straight trucks and tractors with 28' van trailers.

Specialized Carriers.

All other common carriers (for hire) who do not fit the above categories. This includes package carriers (e.g. UPS, Blue Max), truckload carriers (e.g. Market Transport, Interstate Distributor), local cartage carriers (e.g. Stewart Stiles, Mark VII), and a number of other types of carriers. Equipment used varies from step and package vans, to tractors with 48' and 53' trailers, to bulk tank trucks and trailers.

Private Carriers.

Motor carriers who carry their own products and, as a rule, do not provide for hire transportation. This includes petroleum carriers (e.g. Chevron, Star Oil), produce carriers (e.g. Gatto & Sons), Milk carriers (Darigold) and a wide variety of other types of carriers. Here again, equipment used varies from step and package vans, to tractors with 48' and 53' trailers, to bulk tank trucks and trailers.

Areas Served/Alternate Routes.

Water Avenue On-Ramp
to I 5 South.

The key area served is the central eastside industrial area itself.

The alternate routes to I 5 South are across the Morrison and Hawthorne bridges to Front Ave. and across the Ross Island bridge.

McLoughlin Blvd. Ramps
to/from I 5 North.

The major areas served include the industrial areas in SE Portland south of Powell Blvd, northern Milwaukie (This is a major public and private warehousing location - e.g. OLCC, Oregon Transfer, Holman Distribution, Rudie Wilhelm Warehousing) and the Southern Pacific Rail yard at SE 17th ave.

The prime alternate routes for this traffic are on Grand Ave. to the Morrison Bridge on ramp to I 5 North and from the Morrison Bridge off ramp from I 5 down Union Ave.

Company	Water Ave Ramp Traffic		McLoughlin Blvd Ramp Traffic		comments
	# of trips/wk	equipment type	# of trips/wk	equipment type	
<i>major LTL carriers</i>					
Roadway Express	25	straight trucks/28'&45' vans	13	straight trucks/28'&45' vans	
Yellow Freight	75	straight trucks/28' vans	50	straight trucks/28' vans	
ABF Freight Systems	30	straight trucks/28' vans	20	straight trucks/28' vans	
Consolidated Freightways	20	straight trucks/28' vans	40	straight trucks/28' vans	
<i>regional LTL carriers</i>					
TNT Reddaway	75	straight trucks/28' vans	600	straight trucks/28' vans	located in Milwaukee
Viking Freight System	40	straight trucks/28' vans	80	straight trucks/28' vans	
Oak Harbor Frt.	36	straight trucks/28' vans	40	straight trucks/28' vans	
Peninsula Trucklines	30	straight trucks/28' vans	20	straight trucks/28' vans	
Eastern Ore. Fast Freight	80	straight trucks/28' vans	80	straight trucks/28' vans	
TP Freight Lines	120	straight trucks/28' vans	400	straight trucks/28' vans	located in SE Portland
Silver Eagle	50	straight trucks/28' vans	30	straight trucks/28' vans	
WOSCA	20	straight trucks/28' vans	34	straight trucks/28' vans	
<i>specialized carriers</i>					
UPS - delivery	70	package vans	400	package vans	
UPS - TOFC	0 xxx		150	vans - 45' to 48'	uses SP rail yard
Harris Transportation	50	45' tank trucks	50	45' tank trucks	
Reed's Fuel & Trucking	30	28' & 48' vans/flats	45	28' & 48' vans/flats	
Stewart Stiles	40	straight trucks/28' vans	70	straight trucks/28' vans	
Rudie Wilhelm Whse Co.	10	48' vans	120	48' vans	located off McLoughlin Blvd.
Wilhem Trucking Co.	7	28' & 48' vans/flats	12	28' & 48' vans/flats	
IDI	10	28' & 48' vans/flats	20	48' vans/flats	
Portland Freight Service	10	48' vans	10	48' vans	
Oregon Transfer Co.	20	28' & 48' vans	200	28' & 48' vans	located off McLoughlin Blvd.
Brown Transfer	54	28' & 48' & 53' vans	54	28' & 48' & 53' vans	located in SE Portland
Blue Max Express	50	straight trucks	90	straight trucks	
Spencer Environmental Ser	25	straight trucks/28' vans	40	straight trucks/28' vans	
Interstate Distributor	56	48' & 53' vans	84	48' & 53' vans	
Market Transport, Ltd.	70	48' & 53' vans	150	48' & 53' vans	uses SP rail yard
Gresham Transfer Co.	20	28' & 48' vans/flats	75	28' & 48' vans/flats	
Total Transfer	5	48' & 53' vans/flats	10	48' & 53' vans/flats	
BTS Container	8	48' & 53' vans	20	48' & 53' vans	
Jet Delivery Service	10	28' & 48' vans/flats	20	28' & 48' vans/flats	
Pelletrox	10	48' & 53' vans/flats	6	48' & 53' vans/flats	
Lile International Cos.	20	straight trucks	10	straight trucks	
Mark VII Delivery Service	50	straight trucks/28' vans	45	straight trucks/28' vans	
McCracken Bros. Mlr. Frt.	10	48' & 53' vans	25	48' & 53' vans	

	Water Ave Ramp Traffic		McLoughlin Blvd Ramp Traffic		comments
Company	# of trips/wk	equipment type	# of trips/wk	equipment type	
Container Care	10	48' & 53' containers	50	48' & 53' containers	uses SP rail yard
Commercial Carriers	12	car hauler 40'	40	car hauler 40'	
<i>private carriers</i>					
Jubilz Corp	9	straight trucks	16	straight trucks	
Lumber Products Corp	20	48' & 53' vans/flats	5	48' & 53' vans/flats	
Dreyers Grand Ice Cream	5	straight trucks	15	straight trucks	
Boise Cascade	100	48' & 53' vans	300	48' & 53' vans	uses SP rail yard
Core Mark International	10	straight trucks/28' vans	15	straight trucks/28' vans	located off McLoughlin Blvd.
Portland Freightliner	12	straight trucks	12	straight trucks	
Chevron USA	40	28' & 48' tankers	150	28' & 48' tankers	
Star Oilco	20	28' & 48' tankers	30	28' & 48' tankers	
Gatto & Sons	75	straight trucks/28' vans	40	straight trucks/28' vans	located in SE Portland
Potter Webster Co.	75	straight trucks	40	straight trucks	located in SE Portland
Oregon Roofers	50	flatbed trucks	20	flatbed trucks	located in SE Portland
United Pipe-Clackamas	10	straight trucks	5	straight trucks	
Dealers Supply	150	48' & 53' flats	20	48' & 53' flats	located in SE Portland
EJ Bartells	5	straight trucks/28' vans	5	straight trucks/28' vans	
Westco Supply	5	28' & 48' tankers	5	28' & 48' tankers	
United Grocers	150	48' & 53' vans	250	48' & 53' vans	
Bar Supply	20	straight trucks/28' vans	25	straight trucks/28' vans	
Dairigold	225	straight trucks/28' vans	100	straight trucks/28' vans	located in SE Portland
Lynden Farms	15	straight trucks/28' vans	15	straight trucks/28' vans	
Burns Bros. Truck Stop	500	various	0	xxx	located in SE Portland
United Pipe-Tigard	3	straight trucks/flat	1	straight trucks/flat	
Carson Oil	20	straight trucks/28' tanks	30	straight trucks/28' tanks	
Amstead Farms	10	48' & 53' vans	40	48' & 53' vans	
Franz Bakery	40	straight trucks/28' vans	20	straight trucks/28' vans	located in NE Portland
Total by Category	Water Ave		McLoughlin Blvd.		# of carriers
Major LTL Carriers	150		123		4
Regional LTL Carriers	451		1284		8
Specialized Carriers	657		1796		25
Private Carriers	1569		1159		24
total trips per week	2827		4362		61
ave trips per day (7)	404		623		
ave trips per hour (24)	17		26		

I-5 Southbound Access Alternatives Study

Chapter X

RAILROAD MAINLINE GRADE CROSSING ACTIVITY

One of the evaluation criteria for the study concerns the issue of freeway traffic access conflicts with railroad operations. The Water Avenue on-ramp alternative in particular presents rail conflicts not present with the other "New Ramp" alternatives. The railroad crossing matter has been investigated to help quantify the impacts. This report is focused on the Southern Pacific Railroad (SPTCo.) mainline grade crossings between SE Stark and SE Clay Streets

The Southern Pacific Railroad has provided information on estimated train speeds, train lengths, and train frequencies so that was used to estimate the time each day that the railroad grade crossing would be expected to be blocked. It was found that the train speeds are approximately six mph over the Steel Bridge and approximately ten mph in the Central Eastside Industrial District. The average length of freight trains is estimated to be 87 cars with an average train car length of 57 feet this equates to an average freight train length of 5000 feet. There are an average of fourteen freight trains per day with seven in each direction.

Using the above information it was calculated that it takes the average freight train six minutes to clear the grade crossing, assuming no stoppage. In addition to the freight trains there are four Amtrak (passenger) trains per day. The Amtrak trains are estimated to be approximately 600 feet long and take under a minute to clear the grade crossing using the same estimated average speeds. The total estimated time for the railroad crossing to be blocked each day is 88 minutes or approximately an hour and a half.

By far the major portion of the delay is due to the freight trains which have random arrival times. Estimated daily traffic volume for this alternative would be approximately 8100 vehicles per day as obtained from the Oregon Department of Transportation for the Water Avenue Off-ramp in 1994. Although vehicle arrival rates are not random, one-way to get an estimate of vehicle delay is to also assume a random average arrival rate for vehicles. The average vehicle arrival rate is 338 per hour. This totals approximately 500 vehicle hours of delay per day.

A maximum normal delay of approximately six minutes would be expected for vehicles arriving at the same time as a freight train at the railroad crossing. Traffic signal cycle lengths are normally about one to two minutes so the maximum normal delay for vehicles stopped for trains is about four times the maximum delay at most traffic signals.

An order approving the at grade railroad crossing in this segment of the railroad mainline has been approved by the Public Utility Commission (PUC) as part of the SPTCo. SE First Avenue project. However, there may be some revisions required as a result of the American Disabilities Act requirements and a new PUC order may be required. This is not expected to have any impact on the Water Avenue alternative. PUC staff has informally indicated that a traffic volume changes that may result from a new Water Avenue on-ramp would likely not require a new PUC crossing order unless traffic safety was a concern resulting from traffic pattern or physical roadway changes at the railroad grade crossing.

A recent development that could have a significant impact on the railroad usage on the Southern Pacific track through the CEID is the merger of the Southern Pacific Railroad with the Union Pacific Railroad. Definite plans have not been established by the railroad at this time. ODOT staff indicated that it would not be expected that the railroad usage would go down and it may as much as double in the next 10 years.

Some of the factors in determining the expected usage include the increased use of the Brooklyn yard as a piggyback container center, possible rerouting of north-south Union Pacific rail traffic which currently goes east from Washington in Oregon and south via Ontario, Oregon, future usage of the Albina rail yard and the location of future locomotive repairs in Portland. The I-5 Southbound Access Study will be completed before the railroad plans are finalized and approved, but in summary it is expected that rail traffic is most likely to increase in the future although it can not be quantified at the present time.

I-5 Southbound Access Alternatives Study

Chapter XI

SUMMARY OF BASIC FINDINGS

The following list of basic findings and conclusions were derived from the technical analyses prepared for this study, AATF discussions, and other public input. The list is intended to assist the AATF in the preparation of final recommendations by compiling – as clearly as possible – the most salient and fundamental findings and conclusions germane to comparison of alternatives and the decision-making process. (A complete comparison of the alternatives is compiled in the Evaluation Matrices.)

GENERAL FINDINGS AND CONCLUSIONS

The list of *General Findings and Conclusions* were developed to assist the AATF in the preparation of final recommendations by compiling – as clearly as possible – the most salient and fundamental findings and conclusions germane to the comparison of alternatives and the decision-making process.

- Improved connections from the Central Eastside Industrial District (CEID) to I-5 South and the Sunset Freeway are not needed for “volume and capacity” reasons (i.e., they are not needed to relieve peak period traffic congestion); rather, the improved connections are needed to provide the *basic accessibility* to the regional freeway system that is essential for CEID viability and vitality.
- CEID freeway access improvements are needed primarily to serve commercial traffic and goods movement, not to provide additional capacity for commuter traffic. The primary need for the freeway access improvements is during the periods of greatest commercial activity, which occur during midday periods when traffic congestion is not the overriding pervasive concern it is during peak hours.
- Each of the alternatives evaluated are physically and operationally “feasible;” i.e., each can be built and operated. Exceptions to design standards may be required for project approvals, but such exceptions are within reasonable limits and/or have been previously applied elsewhere. Each alternative has its benefits and impacts, and different parties – agencies, groups, individuals – will place different levels of importance on those benefits and impacts.

The level of analysis and extent of project development comprised by this study were limited. Specific design revisions and enhancements to address problems identified can and should be developed during the next phase of project development.

Ross Island Bridge Route TSM / Minor Improvements - Alternative 3.2

The Ross Island Bridge Route TSM/Minor Improvements improve CEID access to I-5 South and the Sunset Hwy by providing improved existing routes from southbound McLoughlin Blvd (ML King) and the south CEID to the Ross Island Bridge. Arterial improvements may include: King-Division Ramp, 7th-8th Connection, 8th Ave. Upgrade, 8th/Powell Signal.

- The minor improvements on routes from the south CEID to the Ross Island Bridge would serve a very limited amount of CEID traffic. Forecasts also indicate that the improvements would attract only a minor amount of CEID traffic from other current freeway access routes, such as across the Morrison and Hawthorne Bridges to SW Front Avenue in Downtown.
- The main beneficiaries of these improvements would be the businesses in the "Southern Triangle" portion of the CEID, through which southbound ORE99E/ML King traffic is currently directed enroute to westbound US26/Ross Island Bridge via SE 8th Avenue.
- The attractiveness and utility of the Ross Island Bridge as a CEID freeway access route can be enhanced by improvement of westside connections from the bridge to I-5 and to I-405.

Ross Island Bridge Route - Major Improvements - Alternatives 3.3A/B1/B2

The Ross Island Bridge Route Major Improvements all improve CEID access to I-5 South and the Sunset Hwy by providing an improved direct connection from southbound McLoughlin Blvd (ML King) to the Ross Island Bridge.

- The direct connection from southbound McLoughlin Blvd (ML King) to the Ross Island Bridge would serve a very limited amount of CEID traffic, and traffic forecasts indicate that the improvements would not attract additional CEID traffic from other freeway access routes.
- The new McLoughlin–Ross Island Bridge connection (ramp and/or signal) would meet a long-standing need to improve the ORE99E/US26 "Interchange." The main beneficiaries of these improvements would be the businesses in the "Southern Triangle" portion of the CEID, through which southbound ORE99E/ML King traffic is currently directed enroute to westbound US26/Ross Island Br. via SE 8th Avenue.
- The attractiveness and utility of the Ross Island Br. as a CEID freeway access route can be enhanced by improvement of westside connections from the bridge to I-5 and to I-405.

New I-5 Ramps - Alternatives 4.1, 4.3A/B, 4.4

The "New Ramp" alternatives all provide a new southbound I-5 on-ramp located between the Morrison and Hawthorne Bridges in the vicinity of the existing Water Ave off-ramp. Each of these alternatives is discussed individually below.

- All of the "New Ramp" alternatives provide freeway access directly from the CEID (without use of surface streets outside of the district).
- None of the "New Ramp" alternatives put additional traffic onto the freeway system. All traffic forecasted to use the various "New Ramp" alternatives would otherwise use other existing ramps and surface street connections; forecasted volumes on the new ramps are balanced by equivalent volume reductions on other ramps (e.g., Hood St on-ramp to southbound I-5, Clay St on-ramp to the Sunset Highway).
- All of the "New Ramp" alternatives would attract heavy p.m. peak hour volumes, and would need to be metered.
- All of the "New Ramp" alternatives are costly and are of use only with the existing alignment of I-5.
- Each of the "New Ramp" alternatives are discussed individually below:

Water Avenue Ramp - Alternative 4.1

- Ramp connection is to local CEID streets (access is dispersed among several collector streets in the CEID); ramp will not attract significant volume of non-CEID traffic, but all ramp traffic will use local streets.
- Ramp access crosses railroad mainline at-grade, and will be affected by crossing closures.

Morrison Viaduct (Morrison Br.) Ramp - Alternative 4.3A/B

- The signalized left turn alternative (4.3A) does not have adequate capacity for p.m. peak hour volumes, and as a result, left turns onto the ramp would have to be prohibited during the p.m. peak.
- Ramp connection is on a main arterial and will attract more non-CEID traffic than the Water Ave Ramp.

- The direct ramp alternative (4.3B) would require removal of existing buildings and the existing ramp from the Morrison Bridge to Water Ave.

Madison Viaduct (Hawthorne Br.) Ramp - Alternative 4.4

- Slow-speed left-side merge onto I-5 mainline at entrance to Marquam Bridge weave/diverge area creates serious traffic conflicts and safety concerns.
- Construction of Madison Viaduct Ramp would physically preclude construction of McLoughlin – I-5N Ramps.
- Ramp connection on viaduct will attract more non-CEID traffic than the Water Avenue Ramp.
- Ramp traffic conflicts with the high-use transit, pedestrian and bicycle routes to the Hawthorne Bridge.

SUMMARY OF BENEFITS AND IMPACTS

Ross Island Bridge Route Improvements

Alt. 3.2 A. TSM/Minor Improvements: various arterial access route improvements

Alt. 3.3 B. Major Improvements (Eastside): SB McLoughlin to WB Ross Island Br.

Alt. 3.3 C. Major Improvements (Westside): New connection to NB I-405

Positive Features	Negative Features
<u>A. TSM/Minor Improvements</u> • Modest cost, implementation in short time frame; • CEID I-5 access avoids Marquam Bridge congestion; • CEID access to Ross Island Bridge improved (no stops to I-5); • Improvements useful with Eastbank Freeway relocation.	<u>A. TSM/Minor Improvements</u> • CEID freeway access affected by Ross Island Bridge congestion; • Signals affect Powell and McLoughlin traffic; • CEID to Sunset Hwy. access not improved; • Does not improve access for large portion of CEID.
<u>B. Major Improvements (Eastside)</u> • CEID to I-5 access avoids Marquam Bridge congestion; • CEID access to Ross Island Bridge improved (no stops to I-5); • Improvements useful with Eastbank Freeway relocation.	<u>B. Major Improvements (Eastside)</u> • Medium cost/impact; • CEID freeway access affected by Ross Island Bridge congestion; • Operational conflict (weave) with I-5N-McLoughlin ramp traffic; • CEID to Sunset Hwy. access not improved; • Does not improve access for large portion of CEID; • May require rerouting 8th Ave to Powell Blvd. traffic.
<u>C. Major Improvements (Westside)</u> • CEID to Sunset Hwy. access avoids congestion on Marquam Bridge and downtown street system; • Improvements useful with Eastbank Freeway relocation.	<u>C. Major Improvements (Westside)</u> • Moderately high cost/impact; • Major traffic circulation effects for South Portland area; • CEID to Sunset access affected by Ross Island Bridge congestion; • Operational conflicts with I-405 off-ramps; • Does not improve access for large portion of CEID.

SUMMARY OF BENEFITS AND IMPACTS (CON'T.)

Alt 4.1 Water Ave Ramp

Positive Features	Negative Features
• Provides direct freeway access (southbound I-5 and Sunset); • Provides direct freeway access for Eastbank subarea of CEID; • Does not attract thru traffic from east; • Implementation in relatively short time frame due to previous work.	• Medium cost; • Waterfront impact; • CEID freeway access does not avoid Marquam Bridge congestion; • Ramp access requires at-grade crossing of RR mainline for most traffic; • Improvements removed with Eastbank Freeway relocation.

Alt 4.3A/B Morrison Viaduct (Morrison Br.) Ramp

Positive Features	Negative Features
• Provides direct freeway access (southbound I-5 and Sunset); • Serves all of CEID via King-Grand; • Avoids railroad crossing conflicts.	• Medium cost/impact and long implementation timeframe; • Waterfront impact; • CEID freeway access affected by congestion at Morrison Bridgehead; • Signal would affect Morrison Br, traffic.

Alt. 4.4 Madison Viaduct (Hawthorne Br.) Ramp

Positive Features	Negative Features
• Provides direct freeway access (southbound I-5 and Sunset); • Serves all of CEID via King-Grand; • Avoids railroad crossing conflicts.	• Medium cost/impact and long implementation timeframe; • Impacts elements of Eastbank Master Plan; • Severe traffic operational impacts on freeway, with slow-speed left side ramp merging directly into southbound Marquam Bridge weave; • Precludes construction of McLoughlin – I-5N Ramps; • CEID freeway access affected by congestion at Hawthorne Bridgehead; • Conflicts with major bicycle, pedestrian and transit activity on Hawthorne Br.

FIGURE 1
I-5 SOUTHBOUND ACCESS ALTERNATIVES STUDY
"PROMISING ALTERNATIVES"

ROSS ISLAND BR. ROUTE - TSM (MINOR IMPROVEMENTS) - ALTERNATIVE 3.2 (NOT SHOWN)
 ROSS ISLAND BR. ROUTE - MAJOR IMPROVEMENTS - ALTERNATIVES 3.3A, 3.3B1 AND 3.3B2
 WATER AVENUE RAMP - ALTERNATIVE 4.1
 MORRISON BRIDGE/VIADUCT RAMP - ALTERNATIVE 4.3A AND 4.3B
 HAWTHORNE BRIDGE/MADISON VIADUCT - ALTERNATIVE 4.4

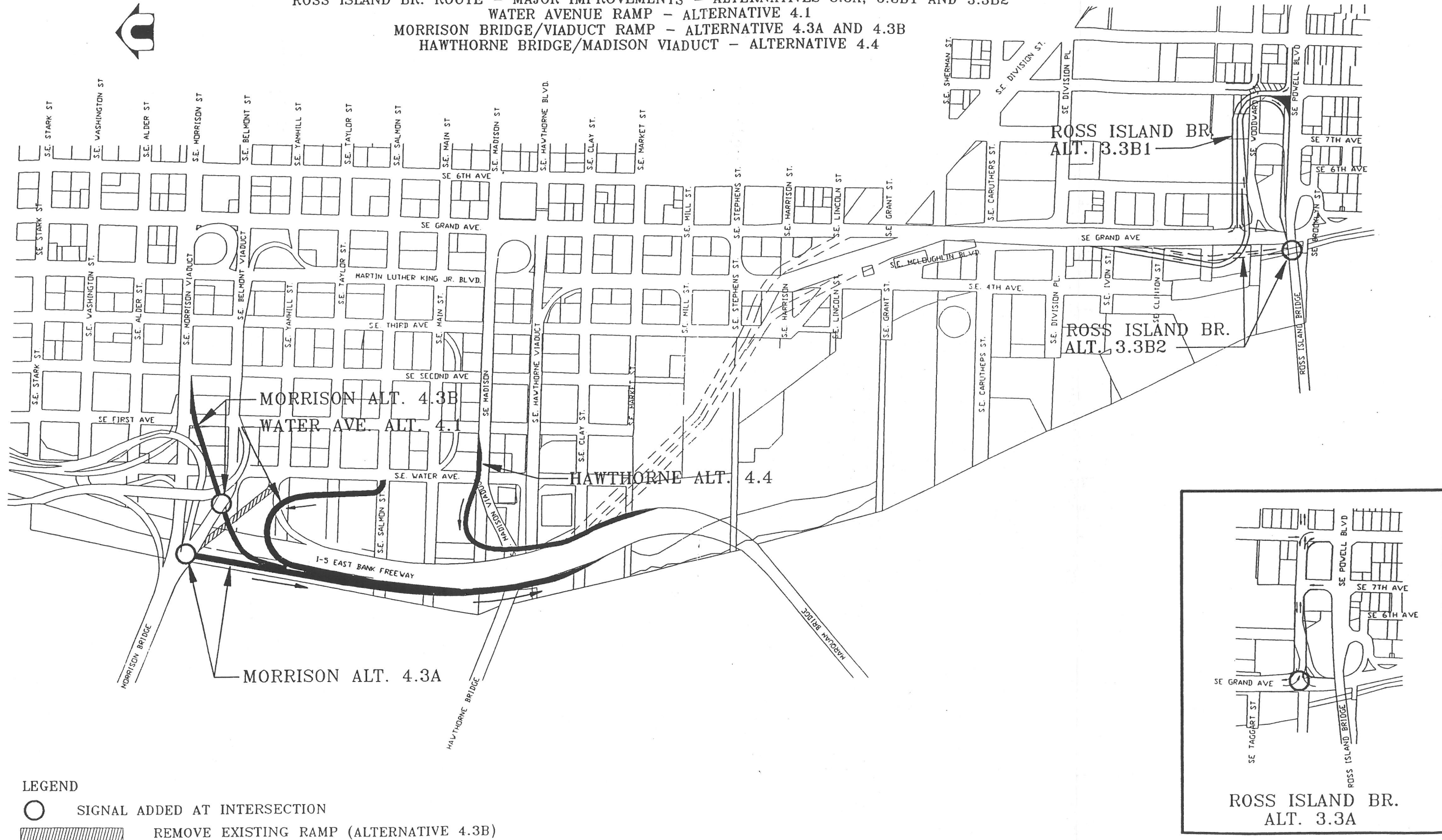


FIGURE 2
I-5 SOUTHBOUND ACCESS ALTERNATIVES STUDY
SUMMARY OF EVALUATION PROCESS

ALTERNATIVE	EVALUATION CRITERIA																			Feasibility	RECOMMENDED TO CARRY FORWARD
	PERFORMANCE CHARACTERISTICS					TECHNICAL CHARACTERISTICS															
	Service Area	Travel Time	Waterfront Impacts	External Impacts	Development/Land Use	PHYSICAL FEATURES		OPERATIONAL FEATURES				MODAL CONFLICTS		Freeway Removal/Relocation	IMPLEMENTATION CHARACTERISTICS						
						Structure Conflicts	Geometric Design	Congested Locations	Truck Speeds	Standards	Safety Issues	Rail Crossing	Bus/Bicycle/Pedestrian		Comparative Costs	Time Frame	Operational/Economic Life	Constructability			
	What CEID area has improved access: South, Central or North?	Is the travel time from the Central Eastside Industrial District to I-5 southbound improved over TSM (Alternative 3.2)?	Will the alternative preserve the waterfront's functional and visual characteristics?	Will freeway access traffic avoid travel through other districts?	Will the activities supported and changes induced be compatible with the CEID?	Does the alternative avoid major structure conflicts and obstructions?	Does the alternative avoid geometric design problems?	Does the route avoid severely congested locations?	Do truck speeds match normal main line traffic speeds in the off-peak period?	Does the facility meet current highway design standards?	Are new safety problems and existing high accident locations avoided?	Does the route avoid significant rail crossing conflicts?	Will the route avoid major modal conflicts?	Is the alternative compatible with freeway relocation?	What are the comparative costs between projects?	**Is the time frame required for alternative completion Short, Medium, or Long?	Relative to traffic problems in the CEID, is the alternative's operational/economic life Short, Medium, or Long?	Is this alternative physically feasible and what are the issues?			
	S, C or N	From 6th & Main to I-5 & Hood Ave. Ramp	(comments)	(comments)	(comments)	(comments)	(comments)	(Level of service in 2010)	(mph)	(comments)	(location)	1 (Light or Heavy Rail)	(comments)	(comments)	(Dollars)	Short, Medium or Long	Short, Medium or Long	(comments)			
Transportation System Management/Minor Improvements to Existing Routes																					
Ross Island Bridge Alternative 3.2 Route upgrades, slip ramp, signalization, signing and re-striping.	S C	NO (Base Case)	YES	NO	YES	YES	YES	NO	YES	YES	NO	NO	YES	YES	\$2,000,000	Short	Short	YES	Yes	No	
Access is improved for the South and Central parts of the CEID.		5:15* off-peak / 8:30* peak	No impacts.	Traffic will still use the central city bridges and streets.	Marginal level of noticeable land use impacts.	There are no conflicts or obstructions with this option.	There are no major geometric changes for this option.	West end of the Ross Isl. Br. connection to I-5 is at capacity. Intersection of SE 8th Ave. & Powell at capacity. Ross Isl. Br. at capacity.	SE Powell is designed to accommodate truck acceleration.	The facility would meet highway design standards.	All access traffic would pass through the intersection of Woodward St. & 8th Avenue. Some access traffic would pass through the intersections of MLK & Clay St., Grand Avenue & Clay St., and MLK & Taylor Street.	Freight and Amtrak rail conflict at Division & 8th.	Minor: Ross Island Bridge (Powell Blvd.) is a bike route and a pedestrian route.	*This option does not affect Eastbank freeway relocation.	This includes signing, intersection signalizing and route improvements. No right-of-way purchase would be required by this option.	1 to 5 years for completion.	Congestion problems will still plague this route. S.E. Powell Blvd. will be at capacity before 2010. I-5 southbound access ramps will be at capacity.	Requires minor improvements to existing routes. Access time is not much improved from CEID.			
Major Improvements to Existing Routes																					
Ross Island Bridge Alternative 3.3A Install a left turn signal on McLoughlin Ave. at SE Woodward St.	S C	NO	YES	NO	YES	YES	YES	NO	YES	NO	NO	YES	YES	YES	\$25,000,000	Medium	Medium	YES	Yes	No	
Access is improved for the South and Central parts of the CEID.		7:30* off-peak / 10:30* peak	No functional impacts. New ramps will be within view from trail along railroad right-of-way.	Some traffic will still use the central city bridges and streets.	Enhances current activities and redevelopment in the Southern Triangle subarea. Would have limited impacts on other areas of CEID.	Impacts a parking lot between SE 6th and SE Grand Ave.	Geometric design problems are minimal.	Intersection of SE 8th Ave. & Powell at capacity. West end of the Ross Isl. Br. connection to I-5 is at capacity. Ross Isl. Br. at capacity.	SE Powell is designed to accommodate truck acceleration.	Capacity problems may be mitigated by widening McLoughlin.	All access traffic would pass through the intersection of Woodward St. & 8th Avenue. Some access traffic would pass through the intersections of MLK & Clay St., Grand Avenue & Clay St., and MLK & Taylor Street.	Reduces conflicts. Most Ross Island bridge access traffic crosses over the railroad on the MLK/Grand Ave. viaduct.	Minor: Ross Island Bridge (Powell Blvd.) is a bike route and a pedestrian route.	This option does not affect Eastbank freeway relocation.	Acquire part of parking area adjacent to Woodward St. Includes Grading, paving, and adding a signal to McLoughlin Ave. and Woodward Street. Includes reconstruction of MLK/Grand Ave. Viaduct (a \$20,000,000 cost).	5 to 15 years for completion.	Congestion problems will be incurred on this route. Ross Island Bridge will be at capacity by 2010.	Widening and placing a traffic signal on SE Grand Ave. and SE Woodward St. Requires reconstruction of MLK/Grand Ave. Viaduct.			
Ross Island Bridge Alternative 3.3B1 Build a ramp from SE Grand Ave. to SE Woodward St. Traffic would merge with SE Powell Blvd. via an acceleration lane.	S C	NO	YES	NO	YES	NO	YES	NO	YES	YES	NO	YES	YES	YES	\$40,000,000	Medium	Medium	YES	Yes	No	
Access is improved for the South and Central parts of the CEID.		7:00* off-peak / 9:18* peak	No functional impacts. New ramps will be within view from trail along railroad right-of-way.	Some traffic will still use the central city bridges and streets.	Enhances current activities and redevelopment in the Southern Triangle subarea. Would have limited impacts on other areas of CEID.	Impacts two buildings west of Grand, between Ivan & Taggart. Impacts a building west of 8th, between Powell & Taggart exit.	Geometric design problems are minimal.	West end of the Ross Isl. Br. connection to I-5 is at capacity. Ross Isl. Br. at capacity.	SE Powell can be designed to accommodate truck acceleration. Mainline speed is 40 mph.	The facility would meet highway design standards.	Some access traffic passes through the intersection of MLK & Clay St., Grand Avenue & Clay St., and MLK & Taylor Street.	Reduces conflicts. Most Ross Island traffic crosses over the railroad on the MLK/Grand Ave. Viaduct.	Minor: Ross Island Bridge (Powell Blvd.) is a bike route and a pedestrian route.	This option does not affect Eastbank freeway relocation.	Includes reconstruction of MLK/Grand Ave. Viaduct (a \$20,000,000 cost).	5 to 15 years for completion.	Congestion problems will be incurred on this route. Ross Island Bridge will be at capacity by 2010.	This may require rerouting SE Woodward St., SE 8th, and SE 6th Ave. traffic. It reduces north bound McLoughlin by two lanes to provide right-turn storage. Requires reconstruction of MLK/Grand Viaduct.			
Ross Island Bridge Alternative 3.3B2 Build a ramp from SE Grand Ave. directly to SE Powell Blvd. creating a signalized intersection.	S C	NO	YES	NO	YES	NO	YES	NO	NO	NO	NO	YES	YES	YES	\$35,000,000	Medium	Medium	YES	With Difficulty	No	
Access is improved for the South and Central parts of the CEID.		8:15* off-peak / 9:43* peak	No functional impacts. New ramps will be within view from trail along railroad right-of-way.	Some traffic will still use the central city bridges and streets.	Enhances current activities and redevelopment in the Southern Triangle subarea. Would have limited impacts on other areas of CEID.	Impacts two buildings west of Grand, between Ivan & Taggart. Impacts a building west of 8th, between Powell & Taggart exit.	Geometric design problems are minimal.	West end of the Ross Isl. Br. connection to I-5 is at capacity. Ross Isl. Br. at capacity. Intersection created at SE Powell and SE Grand Ave. ramp would be over capacity.	Requires stopping mainline traffic at signal for trucks to make right turn. Mainline speed is 40 mph.	Problems may be faced in order to meet safety and capacity standards on SE Powell Boulevard.	Some access traffic would pass through the intersections of MLK & Clay St., Grand Avenue & Clay St., and MLK & Taylor Street. Signal may increase rear end collisions.	Reduces conflicts. Most Ross Island traffic crosses over the railroad on the MLK/Grand Ave. Viaduct.	Minor: Ross Island Bridge (Powell Blvd.) is a bike route and a pedestrian route.	This option does not affect Eastbank freeway relocation.	Includes reconstruction of MLK/Grand Ave. Viaduct (a \$20,000,000 cost).	5 to 15 years for completion.	Congestion problems will be incurred on this route. Ross Island Bridge will be at capacity by 2010.	Requires a traffic signal at intersection with SE Powell Blvd. Requires modification to existing MLK/Grand Ave. Viaduct and existing Ross Isl. Br. at connections.			
I-5 Access Ramps																					
Water Avenue Alternative 4.1 Construct ramp from Water Ave. at Salmon directly to I-5 southbound.	S C N	YES	NO	YES	YES	YES	YES	YES	NO	YES	NO	NO	YES	NO	\$23,000,000	Short	Medium	YES	Yes	Yes	
The I-5 Southbound ramp is centrally located and will serve the entire CEID.		3:35* off-peak / 4:10* peak	Substantial functional and visual impacts for waterfront. Requires fill and/or pilings in the river. The Eastbank Riverfront Park Plan assumed future presence of this ramp.	Most traffic originates in the CEID.	Enhances current activities in the Eastbank subarea of the Industrial Sanctuary. Inhibits riverfront redevelopment plans. Effects of new access would not extend beyond CEID.	There are no conflicts or obstructions with this option.	There are no geometric design problems with this option.	The CEID access traffic is dispersed among several locations.	Truck ramp speed is 45 mph. Freeway mainline speed is 55 mph.	The facility would meet highway design standards.	Some access traffic would pass through the intersection of Taylor & MLK and Clay & Grand.	Freight and Amtrak conflict. Most traffic must cross Southern Pacific Railroad main line at grade. 6 minutes of normal maximum delay may be expected per vehicle when trains are present.	Minor: Water Avenue and Clay St. are proposed bike routes and pedestrian routes.	Freeway relocation would impact new ramp.	Includes Right-of-way, easements, and addition of merge lane to I-5.	1 to 5 years for completion.	Marquam bridge will be at capacity by 2010.	No physical issues conflict with the construction of this ramp.			
Morrison/I-5 Interchange Alternative 4.3A Build a ramp from a new signaled intersection at the end of the Morrison Br., directly to I-5 southbound.	S C N	YES	NO	NO	YES	YES	YES	NO	NO	NO	NO	YES	YES	NO	\$20,000,000	Medium	Medium	YES	With Difficulty	No	
The I-5 Southbound ramp is centrally located and will serve the entire CEID.		3:20* off-peak / 4:25* peak	Similar impacts as with Water Ave. Ramp, but may extend zone of impact further to the north. This ramp alternative is not addressed in the Eastbank Riverfront Park Plan.	Traffic is attracted from other districts.	Supports current activities and may enhance redevelopment along the Commercial Corridor and Industrial Heartland subarea of CEID. May impact riverfront redevelopment plans.	There would be no conflicts with existing structures.	Geometric design problems are minimal.	Must reduce Morrison WB traffic to one lane to provide left turning bay storage to I-5. The signal at the intersection would be over capacity. Requires access through congested bridgehead routes.	Truck ramp speed is 45 mph. Freeway mainline speed is 55 mph.	Required standards not met for capacity and part time restrictions.	Access traffic would pass through the intersections of Grand & Morrison, and Grand & Belmont. Signal may increase rear end collisions.	Most ramp access traffic avoids conflict by using Morrison bridge viaduct over the Southern Pacific Railroad.	Minor: Additional traffic will affect 1 bus route (No. 15). The Morrison Bridge is a pedestrian route.	Freeway relocation would impact new ramp.	Includes right-of-way. This would use the existing Water Avenue Ramp right-of-way.	5 to 15 years for completion.	Marquam bridge will be at capacity by 2010.	Reduces WB Morrison St. traffic by one lane to provide left turn storage. Requires left hand turn from Morrison St., signal at Morrison and Belmont St., structural modification of Morrison St. and Belmont St. viaducts at merge, and new pedestrian access.			
Morrison/I-5 Interchange Alternative 4.3B From a left hand ramp on the Morrison St. Viaduct and through a signal at Belmont, traffic would access I-5 southbound.	S C N	YES	NO	NO	YES	NO	YES	NO	NO	NO	NO	YES	YES	NO	\$25,000,000	Medium	Medium	YES	With Difficulty	No	
The I-5 Southbound ramp is centrally located and will serve the entire CEID.		4:00* off-peak / 4:30* peak	Similar impacts as with Water Ave. Ramp, but may extend zone of impact further to the north. This ramp alternative is not addressed in the Eastbank Riverfront Park Plan.	Traffic is attracted from other districts.	Supports current activities and may enhance redevelopment along the Commercial Corridor and Industrial Heartland subarea of CEID. May impact riverfront redevelopment plans.	1 Conflicts with existing off ramp from the Morrison Bridge to Water Avenue. Requires building removal.	Geometric design problems are minimal.	Creates a left hand weave on Morrison St. With a two lane ramp, it is near capacity at the traffic signal. Requires access through congested bridgehead routes.	Truck ramp speed is 45 mph. Freeway mainline speed is 55 mph.	Standards not met for capacity. A two lane on-ramp would not provide adequate storage for freeway access.	Access traffic would pass through the intersections of Grand & Morrison, and Grand & Belmont.	Most ramp access traffic avoids conflict by using Morrison bridge viaduct over the Southern Pacific Railroad.	Minor: Additional traffic will affect 1 bus route (No. 15). The Morrison Bridge is a pedestrian route.	Freeway relocation would impact new ramp.	Requires building removal and EB Morrison St. to Water Ave. Ramp removal. Signal would be added to Belmont St. Viaduct. This cost includes right-of-way purchase.	5 to 15 years for completion.	Marquam bridge will be at capacity by 2010.	Requires a two lane ramp with a traffic signal at Belmont. The Morrison Bridge to Water Avenue off-ramp (for eastbound traffic) would need to be removed.			
Hawthorne/Madison Viaduct Alternative 4.4 A ramp would be built from SE Madison directly to the Marquam Br. ramp to access I-5 southbound.	S C N	YES	YES	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	\$15,000,000	Medium	Medium	YES	With Difficulty	No	
The I-5 Southbound ramp is centrally located and will serve the entire CEID.		2:55* off-peak / 4:0* peak	Minimal functional or visual impacts from trail along waterfront. Conflicts with potential buildings and public activity areas identified in Eastbank Riverfront Park Plan.	Traffic is attracted from other districts.	Similar land use impacts as with Morrison Ramp. But secondary impacts may result from not building McLoughlin Ramps due to increased traffic volumes on MLK Blvd. and Grand Ave.	Conflict with existing Marquam Bridge columns. Precludes construction of the McLoughlin ramps to and from I-5.	Left hand merge of traffic joining I-5 Southbound.	Marquam Br. expected to operate at capacity. Weaving on I-5 projected to operate poorly. Requires access through congested bridgehead routes.	Truck ramp speed is 35 mph. Freeway mainline speed is 55 mph.	Ramp could only be constructed to 21 feet wide. This is below the highway design standard of 26 feet. Additionally, this is a left hand entrance/ramp, not acceptable by highway design standards.	This option has a left hand entrance to I-5. Access traffic would pass through the intersections of Grand & Madison, Grand & Hawthorne, Grand & Clay, and MLK & Taylor.	Most ramp access traffic avoids conflict by using Hawthorne bridge viaduct over the Southern Pacific Railroad.	Major: Interferes with pedestrian and bicycle routes on Madison. Removes bus stop. Additional traffic will affect 9 bus routes (No. 4,10,14,6,31,32,33,63,99X).	Freeway relocation would impact new ramp.	Includes right-of-way purchase.	5 to 15 years for completion.	Marquam bridge will be at capacity by 2010.	Conflicts with the future McLoughlin Ramps. Reduces WB Madison St. traffic to one lane to provide right turn storage.			

*Note: Assumes relocation to SE 1st Ave. corridor.

**Note: Assumes that funding is available.

[Note: High speed rail is considered using the existing heavy rail corridor.

[Note: The left side ramp (Option A) may require removal of the existing off-ramp from the Morrison Bridge to Water Avenue.

The left hand ramp (Option B) requires revision or removal of the off-ramp from the Morrison Bridge to Water Avenue.

[1] Note: The central point used for the CEID was SE 6th Avenue and SE Main Street. The point where the Hood Avenue on-ramp enters I-5 was the I-5 Southbound point.

NOTE: For larger copy of this Evaluation Matrix, please call the City of Portland - Office of Transportation at 823-7707

I-5 Southbound Access Alternatives Study

Chapter XII

RECOMMENDATION

RECOMMENDATION OF THE ACCESS ADVISORY TASK FORCE

The charge of the Access Advisory Task Force (AATF), as understood by the Task Force majority, is to recommend to City Council viable options for providing the Central Eastside Industrial District (CEID), and particularly its commercial delivery vehicles, with improved access to I-5 southbound. The majority recommends the Water Avenue ramp (Alternative 4.1) to the City Council as the only alternative that fulfills this charge because the ramp would provide improved access to the entire CEID. The other alternative that the AATF considered at great length-- the Ross Island Bridge Route- Major Improvements (Alternative 3.3)-- would serve a very limited amount of CEID traffic, and traffic forecasts indicate that the improvement would not attract additional CEID traffic from the freeway access routes. This recommendation is submitted with accompanying materials that describe the range of alternatives considered and the study findings.

This Recommendation is based upon a compilation of all the relevant background materials and technical analyses assembled for the study, presentations and responses provided by project staff, public comments and testimony received by the AATF during the course of the study and discussions among AATF members conducted as part of regular meeting business. This recommendation provides the essence of the Task Force findings from this study and their basic communication as a group to the City Council.

I-5 Southbound Access Alternatives Study

Chapter XIII

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I-5 Southbound Access Alternatives Study

Appendix A

**REVIEW OF ALTERNATIVES
BY OREGON DEPARTMENT OF TRANSPORTATION**

July 3, 1995

RECEIVED
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Oregon

DEPARTMENT OF
TRANSPORTATION

Region 1

FILE CODE:

David C. Knowles, Director
Bureau of Planning
City of Portland
1120 S.W. 5th, Room 1002
Portland OR 97204-1966

RE: Your Letter of June 5, 1995
Access to I5 SB from Central Eastside

In response to your request, ODOT has evaluated the conceptual alternatives for providing access to I-5 southbound from the Central Eastside as developed by the Access Advisory Task Force. While these concepts raise many concerns, some major, there are some which could be mitigated but at a significant cost which may render the alternative unfeasible.

Alternative 3.3 A Ross Island Bridge

The alternative as proposed assumes little or no physical changes on Powell or Ross Island Bridge.

At the signalized intersection at Grand and Woodward the demand for the left turn would far exceed the capacity of the left turn lane. This would cause the intersection to be over capacity and the resulting congestion would be much worse than any other intersections on McLoughlin in this area.

Left turn storage would need to be long enough so vehicles do not back up into the through lanes. Southbound traffic would not be stopped by the traffic signal. This would create a speed differential between vehicles waiting to turn left and vehicles going straight through the intersection, thus introducing a safety concern. If a channelized intersection were constructed to physically separate the left turns from the through movements, it would require more distance and an even wider roadway and structure.

By providing the left turn from Grand to access the Ross Island Bridge at Eighth and Powell an additional 400 vehicles would be added to the 955 vehicles now entering at this point. It appears that this configuration could not accommodate the additional trips. The concern is that vehicles would back up into the intersection on McLoughlin.



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Accesses along Woodward would need to be evaluated for closure/mitigation.

This alternative adds vehicles to a weave section that is already over capacity between the Ross Island Bridge and the Hood Avenue on-ramp on the west side of the river.

Widening would be required for the left turn lane (with enough storage). This would require widening the viaducts. Any work affecting the structures would necessitate replacement of the viaducts. This structure is not currently scheduled for replacement. Currently there are no bike lanes or sidewalks on McLoughlin in this area. As part of an improvement this section would need to include bike lanes and sidewalks.

With the replacement of the viaducts, the construction cost for this alternative would be in the 25 million range.

Alternative 3.3 B1 Ross Island Bridge

The alternative as proposed assumes no widening of Ross Island Bridge

The merging of northbound and southbound traffic from McLoughlin on Woodward in a short distance heading into a 180 degree turn can be expected to cause major safety and congestion problems.

The project contained in the Regional Transportation Plan to add ramps from McLoughlin to I-5 could create a potential weave problem with this alternative.

Accesses on Woodward will be eliminated with this alternative. Traffic that currently accesses Woodward and coming from eighth north of Woodward would be diverted and probably access Powell via 7th. There is not sufficient information to evaluate impacts of this.

The ramp contained in this alternative would impact the viaduct. Again any structural work affecting the viaduct necessitates its replacement.

As with the previous alternative this alternative adds vehicles to a weave section that is already over capacity between the Ross Island Bridge and the Hood Avenue on-ramp on the west side of the river.

This alternative requires additional right-of-way and impacts buildings.

The cost of this alternative would be in the 40 million range.

Alternative 3.3 B2 Ross Island Bridge

The alternative as proposed assumed a signal would be installed at intersection of this proposed ramp and the Ross Island Bridge. A signal at this location would not require stopping eastbound traffic to allow the westbound movement from McLoughlin. A physical separation would be needed between eastbound and westbound traffic to eliminate the potential safety problems with the operation of the signal. This would require some widening of the Ross Island Bridge in the vicinity of this ramp connection. This ramp connection would have to be designed such that adequate truck turning radius would be provided.

It appears that this intersection would be over capacity causing congestion. If a dual right turn from the ramp were provided it may improve conditions slightly but would cause further widening of the ramp connection to provide turning radius for two turning lanes side by side.

The existing left turn movement eastbound to northbound at 10th Avenue is possible because of the gaps in westbound traffic provided by the signal at 11th/Milwaukie. The queuing from the new intersection of this proposed connection to the Ross Island Bridge may prevent this movement during heavy traffic periods.

As with the previous alternative this alternative adds vehicles to a weave section that is already over capacity between the Ross Island Bridge and the Hood Avenue on-ramp on the west side of the river.

Structural connection of the ramp to the north side without widening the Ross Island Bridge would be required.

The cost of this alternative would be in the 35 million range.

Alternative 4.1 Water Avenue Ramp

ODOT has studied this alternative extensively and have found it to be feasible both operationally and geometrically.

The estimated total cost for this alternative is 21 million. The design has already been completed and the right-of-way acquired.

Alternative 4.3 A Morrison Bridge Ramp

We are concerned about the placement of a new signalized intersection on the Morrison Bridge at the gore points of the ramps off of the bridge. This signalized intersection would be over capacity. The intersection would not stop the westbound traffic on the Morrison Bridge except for the left turn on to the ramp. This would create a speed differential between the vehicles slowing and stopping to turn left and the vehicles traveling through the intersection westbound onto the bridge.

Another concern would be in the eastbound direction. Vehicles currently change lanes just prior to the northbound on-ramp to I-5 in the area that this new signal would be located. The queuing from this signal would impact the lane changing maneuvers or create the possibility of lane changes in or just following the intersection.

Heading westbound from Martin Luther King Boulevard the on-ramp to northbound I-5 is on the right hand side of the roadway. Vehicles weave over two lanes to access this ramp. With the addition of the ramp to I-5 south at this location a weave between vehicles changing lanes to the right side to go northbound and vehicles changing lanes to the left side to go southbound would be created.

With any of the direct freeway ramp alternatives, ramp meters would be required. The purpose of ramp meters is to break up platoons of vehicles to lessen the impact of the vehicles entering the freeway allowing the freeway to function at its capacity.

The projected number of vehicles desiring to use this ramp would exceed the maximum ramp meter rate causing vehicles to back up into the intersection on the bridge. The placement of the ramp meter would need to be located away from the intersection to allow for storage of vehicles. During periods that the ramp meter is operating vehicles will be required to accelerate from a stopped condition onto an uphill grade to enter the freeway. Since there would not be sufficient acceleration vehicles would enter the freeway at a slower speed raising a safety concern of speed differential.

The alternative as proposed would not allow use of the ramp during peak hours. There are currently no ramps on the freeway system in Oregon with this prohibition. The left turn lane westbound to southbound onto the ramp would

need to be shut off for a few hours a day. This raises a safety concern for vehicles getting into and back out of this closed lane.

This alternative will eliminate the existing pedestrian ramp to the Morrison Bridge.

There are concerns on how to connect a ramp to the Morrison Bridge. Assuming that eastbound traffic on Morrison will be provided with a right turn movement, the structural supports for the turning radius could extend into the Willamette River. This raises concerns through the permitting process about encroachment in the Willamette Greenway.

This alternative appears to have equal or greater impacts than alternative 4.1 on the esplanade area.

With almost the entire length of this ramp being on structure the cost of this alternative would be in the 17 million range.

Alternative 4.3 B Morrison Bridge Ramp

As proposed this ramp would cross at-grade the ramp off the Morrison Bridge. This at-grade intersection would need to be controlled by a signal. A ramp meter would be needed to disperse the vehicles, that would be concentrated in groups by the signal, so they would enter the freeway at spaced intervals to prevent congestion on the freeway.

As in the previous alternative the demand for this ramp will exceed the maximum ramp meter rate. Concerns about the location of the ramp meter are similar to the previous alternative.

Operationally this alternative is more beneficial than the previous Morrison Bridge Ramp alternative (4.3A).

This alternative appears to have equal or greater impacts than alternative 4.1 on the esplanade area.

With almost the entire length of this ramp being on structure the cost of this alternative would be in the 23 million range.

Alternative 4.4 Hawthorne/Madison Viaduct Ramp

This alternative would introduce slow moving trucks onto the left side of the freeway on an uphill grade. These vehicles would also need to weave over to the right side of the freeway on a 4 to 5 percent grade to access I-5 southbound.

Geometrically, the ramp has a tight curve raising concerns of sight distance on the ramp itself. It appears that the ramp would need to begin farther east on Madison to provide a grade within the maximum allowed under our standards.

The existing physical constraints allows only a 21 foot wide structure for this ramp. With a parapet rail on each side two feet wide this leaves only enough room for a two foot inside shoulder, a 12 foot travel lane and a three foot outside shoulder.

This alternative would preclude the possibility of adding the McLoughlin ramps to I-5 at a future date.

The cost for this alternative would be in the range of 10 million.

The combination of slow moving vehicles entering from the left side, grade and weaving presents a safety concern that render this alternative not feasible.

Summary

Any of the Ross Island Bridge alternatives (3.3A, 3.3B1 and 3.3B2) would trigger further improvements on the west of the bridge. (Refer to South Portland Circulation Study for alternatives evaluated) The costs for these additional improvements on the west side are substantial and should be added to all of the Ross Island Bridge alternatives. Whether the total cost of all these related improvements are justified by the benefits accruing from improved truck access is a subsequent issue to be addressed.

Any of the alternatives that provide a direct ramp connection to I-5 will require Federal Highway Administration review. Many of the conceptual alternatives will require design exceptions.

Many of the concerns identified are related to safety or geometric considerations. While some of these concerns could be mitigated at significant additional cost, they still may not provide a desirable operational design.

I would like to reiterate that these comments are based on concepts rather than actual designs. Any design analysis of the alternatives would need to thoroughly address the expressed concerns.

The cost estimates are in today's dollars. The Water Avenue alternative or any other alternative is currently not contained in the ODOT's Transportation Improvement Program for either construction or development. It is contained in Metro's preferred project list for the Regional Transportation Plan update. However, it is not part of the financially constrained project list.

I would like to commend the city for taking a fresh look at options for this area. We look forward to working with you after you come to a consensus. If you have any questions or need any clarification of our comments, please contact Dennis Mitchell at 731-8218 or me at 731-8200.

A handwritten signature in black ink, appearing to read "Bruce A. Warner", with a stylized flourish at the end.

Bruce A. Warner, P. E.
Region 1 Manager

BW:DM:hrm
knowles.doc

cc: Mayor Katz
Commissioner Blumenauer
Commission Hales
Task Force Members
Dave Williams
Dennis Mitchell



CITY OF
PORTLAND, OREGON
BUREAU OF PLANNING

Charlie Hales, Commissioner
David C. Knowles, Director
1120 S.W. 5th, Room 1002
Portland, Oregon 97204-1966
Telephone: (503) 823-7700
FAX (503) 823-7800

June 5, 1995

Mr. Bruce Warner, Region 1 Manager
ODOT
123 NW Flanders
Portland OR 97209-4037

Dear Bruce:

As we discussed, the Access Advisory Task Force (AATF) is currently evaluating alternatives for providing access to I-5 Southbound from the Central Eastside. The AATF has expressed interest in a response from ODOT regarding the alternatives. On behalf of the Task Force, I am writing to request that ODOT review each of the alternatives.

The Task Force has been charged by City Council with reviewing each alternative based upon cost of construction, operational feasibility and construction feasibility. This is a concept level analysis. The Task Force has not been asked to develop detailed designs. The City has retained David Evans and Associates to assist in the technical analysis. John Gillam and I staff this Task Force.

The Task Force has already adopted evaluation criteria for each alternative and has narrowed a list of alternatives and options to six, which are receiving greater scrutiny. (See attached map.) Our consultant has indicated that certain design elements of some of the alternatives may vary from typical highway standards. However, based on professional judgment and available precedent and procedures for variances from standards, our consultant has indicated that all remaining alternatives could be considered "feasible".

The Task Force would like ODOT to review each of these six alternatives and provide the Task Force with ODOT's technical assessment on each alternative. In accordance with the Council's directive, we are asking ODOT to provide the Task Force with its opinion on each of the following matters: cost, operational feasibility and construction feasibility. If ODOT defines any of these alternatives as not feasible, please specifically indicate the reasons.

Warner/Knowles Letter

June 5, 1995

Page 2

The Committee meets again on June 15, 1995. In order to provide the Committee with time to review your agency's information, we would appreciate a formal response no later than June 9, 1995. If it is not possible to respond within this time frame, please call me as soon as possible so we can discuss the best way for the project staff to work with your staff to produce this information. We will be happy to meet with you on short notice.

Thank you for your assistance. Please contact John at 823-7707 or me at 823-7717.

Sincerely,



David C. Knowles

cc: Mayor Katz
Commissioner Blumenauer
Commissioner Hales
Task Force Members

I-5 Southbound Access Alternatives Study

Appendix B

**REVIEW OF STUDY AND RESPONSES TO QUESTIONS
BY METRO**



METRO

September 26, 1995

Ms. Margaret Kirkpatrick, Chair
I-5 Access Alternatives Task Force
c/o Mr. David Knowles, Planning Director
City of Portland Bureau of Planning
1120 SW Fifth Avenue, Room 1002
Portland, OR 97204-1957

Subject: *I-5 Southbound Access Alternatives Study*

Madam Chair and Task Force Members:

At the request of John Gillam, City of Portland Project Manager for the *I-5 Southbound Access Alternatives Study*, Metro staff has been asked to offer comments on the implications of the study relating to regional transportation policy, funding, and process. The following are our comments as they pertain to those issues.

At this time, neither the Metro Council, the Executive Officer, nor staff have taken a position on any of the alternatives. We may choose to do so as the recommendations are forwarded on to the Portland City Council and, ultimately, to Metro for inclusion in the Regional Transportation Plan (RTP). We do, however, appreciate the efforts of the study Task Force, the consultant team, and staff to address this important regional issue. We are hopeful that these efforts will result in a consensus solution for southbound I-5 access from the Central Eastside Industrial District (CEID).

Current RTP Policy

Metro was asked to provide clarification as to the current status of the I-5 southbound access from the CEID. The May, 1995 Interim Federal RTP continues to identify the I-5/Water Avenue ramp in the RTP Preferred (unfunded) project list. The project indicates the continuing need for southbound access from the CEID, given its continuing key role as an industrial area in the adopted Region 2040 Growth Concept. Metro will revise the RTP when and if an adequate alternative transportation or land use solution is forwarded and adopted through JPACT and the Metro Council. The *I-5 Southbound Access Alternatives Study* is addressing transportation alternatives. As a Portland City Council recommendation is reached as part of that study, it should be forwarded to Metro for consideration for inclusion in the RTP.

From a land use perspective, the Region 2040 Study recommendations continue to identify the CEID as a regionally significant industrial area. Consequently, the overall need for quality access to and from I-5 remains intact.

Project Funding

The City asked what the chances of funding would be for an alternative project. Metro and ODOT have conducted a 20-year revenue forecast for the region consistent with

ISTEA directives. This project was included in the ODOT system. The RTP estimates 20-year revenues of \$436 million available for all state system expansion projects (e.g., southbound access to I-5). The need is over \$1.9 billion. The resulting shortfall is roughly \$1.5 billion and includes the Water Avenue ramp project as an unfunded but "preferred" project.

Despite currently being an unfunded project, future funding decisions will weigh technical performance measures (generally related to project effectiveness and cost/benefit) with regional growth management directives and local priorities. Given these current funding parameters, we would estimate that any of the alternatives identified as part of this study will likely score high in terms of effectiveness and relationship to Region 2040 objectives due to CEID's Central City location and industrial area status.

Whether a project is ultimately funded will therefore be determined more on local priority and cost-effectiveness. A highly supported and relatively modest priced alternative might be able to be included in the constrained (funded) RTP although some other City of Portland priority of similar value may have to be postponed. Conversely, a high priced, less efficient alternative would be more difficult to fund under any revenue scenario. Currently, the Water Avenue ramp or its alternatives have no higher standing in the RTP for funding purposes than any other City of Portland project.

In addition, in response to the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991, Metro must now specifically consider significant freight and intermodal needs in planning and programming (funding) activities. While this has elevated the status of freight access needs within the RTP, it has also generated a host of other regional freight and intermodal needs. Any of the alternatives recommended will likely compete with a number of other freight needs from throughout the region.

In summary, regional equity has and will play a role in future funding decisions. The extent to which the City makes the project a priority relative to scarce resources and other regional needs on the state system within the City will help determine whether the project is eventually constructed.

Future Study Processes

1. Major Investment Studies

The City asked whether the next steps in the process would require a major investment study (MIS) as required by ISTEA. In general, an MIS is required for high-cost, high-type facilities which have clearly defined system and modal alternatives. In discussion with FHWA, they have indicated that freeway interchanges or ramp improvements are not subject to an MIS.

Of all the proposals, the Ross Island 3.3 B1 alternative may require an MIS given its overall system implications and impacts on alternative modes. If selected, however, the alternative could potentially be included in Metro's South Willamette River Crossing (SWX) Study. The SWX Study is an MIS currently underway which is examining river crossing needs south of the Ross Island Bridge to Oregon City and includes Sellwood Bridge replacement options. Before such a decision is made to include I-5 southbound access issues into the SWX Study, impacts on the study scope, budget, and timeline would need to be evaluated. The 3.3 B1 alternative would then be evaluated in context with the needs further to the south.

Whether an MIS is required or not for any alternative, we would suggest that any additional analysis on the recommended alternative generally mirror the MIS process. While the MIS is intended to ensure alternative modes are considered where the study purpose and need statement indicates, the process itself is useful. The MIS process merely ensures adequate inter-agency cooperation, ongoing public and elected official involvement, and general agreement at key decision points (alternatives selection and narrowing, evaluation methods, and final recommendations).

2. Environmental Impact Statements

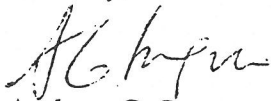
We essentially defer to ODOT, FHWA, and other environmental regulatory agencies to determine necessary environmental review for these alternatives. However, in discussions with ODOT, it was felt that only the Water Avenue Ramp project would be subject to additional environmental review. Essentially, the Water Avenue Environmental Assessment (E/A) would have to be updated to reflect current conditions and any modifications to the project. ODOT suggested that new or revised Environmental Impact Statements (EIS) would not likely be necessary. The other alternatives do not appear to have significant environmental impacts although an E/A would likely be needed to make such a conclusion. Again, the final call on environmental review should be made by responsible federal agencies.

Technical Issues

At this time, we have given a cursory review of the remaining alternatives. In general, they are all promising and seem to provide the southbound access the CEID requires. Most of our initial concerns are mostly design related and should be fully discussed and agreed upon by ODOT. For example, ODOT has long opposed signalization on the approaches to the east end of the Ross Island Bridge and on Grand/MLK. Further, Alternative 4.4 Hawthorne seems to have a difficult grade up to the Marquam Bridge and an inadequate merge/weave to southbound I-5. Consequently, it appears the Morrison and Water ramps continue to be most viable. However, we understand they would likely be expensive and have the least desirable urban design features.

We hope the above discussion has addressed those questions asked of Metro by project staff. Again, we appreciate the opportunity to comment on the study alternatives as they relate to this complex issue. We look forward to reviewing the recommendation of the Task Force and providing additional comments as it is forwarded on to the City Council.

Sincerely,



Andrew C. Cotugno
Transportation Director

cc Mike Burton, Metro Executive Officer
Mike Hoglund, Metro
David Knowles, Portland Bureau of Planning
John Gillam, Portland Office of Transportation

I-5 Southbound Access Alternatives Study

Appendix C

**USE / DEVELOPMENT IMPACTS
BY CITY OF PORTLAND - BUREAU OF PLANNING**



CITY OF
PORTLAND, OREGON
BUREAU OF PLANNING

Charlie Hales, Commissioner
David C. Knowles, Director
1120 S.W. 5th, Room 1002
Portland, Oregon 97204-1966
Telephone: (503) 823-7700
FAX (503) 823-7800

July 1, 1995

MEMORANDUM

TO: John Gillam, Office of Transportation
FROM: Jim Claypool, Senior Planner
SUBJECT: **I-5 SOUTHBOUND ACCESS ALTERNATIVES STUDY -
LAND USE/DEVELOPMENT IMPACTS**

Last April, the Access Advisory Task Force called for criteria to consider the five "promising alternatives" which included development/land use impacts. This criterion was described as: *activities supported and changes that may be induced in the Central Eastside.*

Attached is a matrix that highlights probable land use impacts of each alternative and a map of the Central Eastside subdistricts. Some of the questions which the matrix format proposes to answer are:

- What are the probable impacts to existing land uses and present development patterns?
- How will the various subdistricts of the Central Eastside be affected?
- How does the alternative support the Central City Plan, or are there possible conflicts?
- Could redevelopment opportunities be enhanced by the alternative, and if so, where?
- Are there secondary or other land use/development related impacts?

The intent of the matrix is to promote discussion among committee members in order to determine which impacts are more important to the alternatives evaluation. Following this discussion, it may be appropriate to do a more quantitative and qualitative assessment of the most critical land use/development impacts.

JHC:jc
attachments

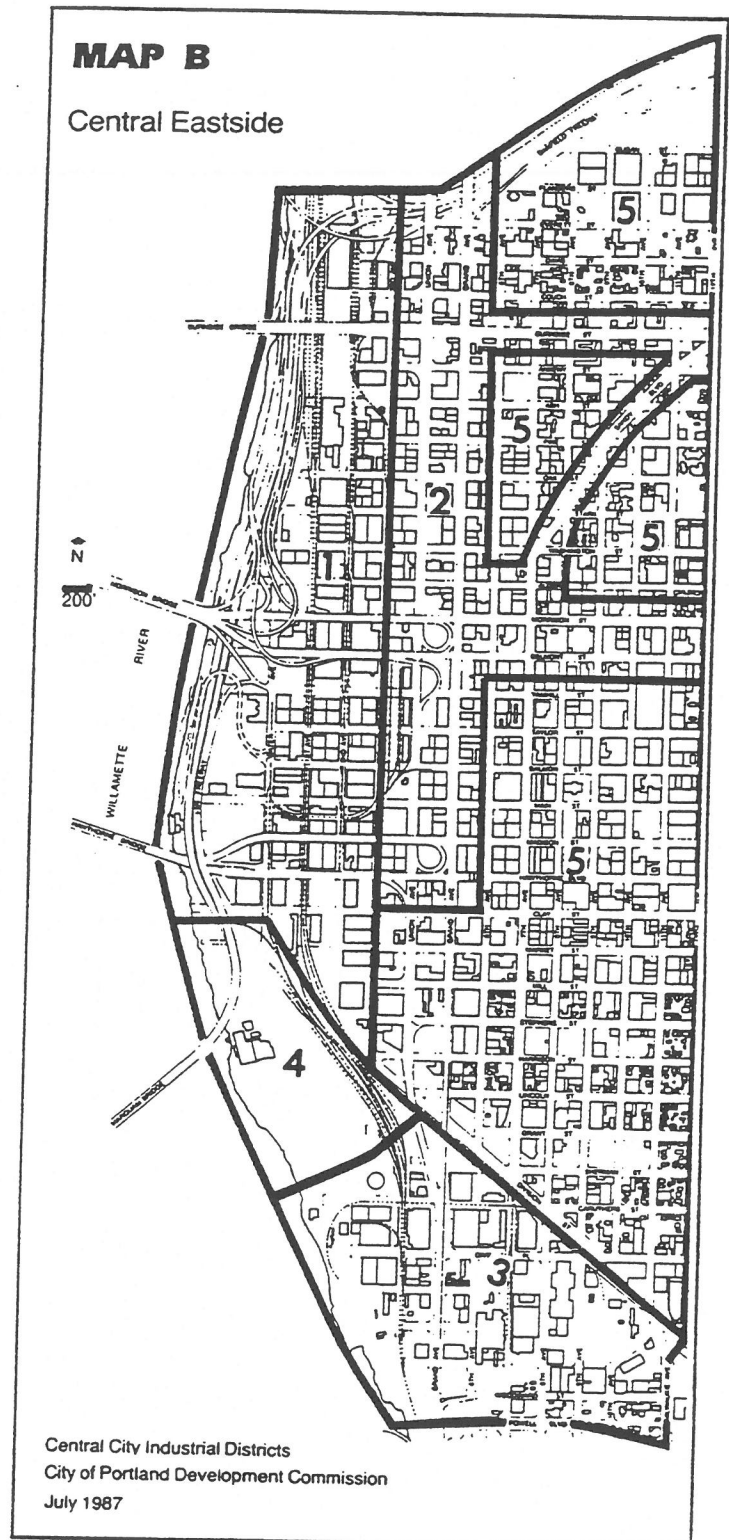
cc: David Knowles

The Central Eastside Industrial District Development Plan is designed in accordance with the Comprehensive Plan of the City of Portland. The Plan identifies development opportunities to provide strategic information to individuals and companies interested in locating in the District (see Map B).

The five subdistricts in the Central Eastside are:

1. **Eastbank:** This area is the District's waterfront distribution center where rail, highway and local streets intersect to provide firms with a variety of transportation modes and access.
2. **Commercial Corridors:** These commercial arterials provide location for local service firms and large regional service and retail firms. Unique anchor locations exist for small class "A" signature office buildings. Residential activities are also an important component in these areas.
3. **Southern Triangle:** This area is the District's heavy industrial area with rail, highway and water access available. Several large manufacturing campuses existing in this area.
4. **Station L:** The Oregon Museum of Science and Industry anchors the northern part of this waterfront subdistrict with the southern part available for employment-generating facilities which can benefit from a waterfront location.
5. **Industrial Heartland:** This area encompasses the majority of land in the Central Eastside. It provides unique locations for specialized manufacturing and distribution companies. Firms benefit from a well-developed system of transportation and services.

Industrial



I-5 SOUTHBOUND ACCESS ALTERNATIVES STUDY MATRIX OF LAND USE/DEVELOPMENT IMPACTS

DRAFT 7/1/95

ALTERNATIVE	ACTIVITIES SUPPORTED	CHANGES INDUCED	SUMMARY
Ross Island Br. Route - Existing Facilities (TSM) Alternative 3.3A	- Existing development south of Hawthorne Blvd. - Expansion of the Eastbank Esplanade envisioned in the Central City Plan	- Improves accessibility somewhat to the Ross Island Bridge and I-5 S - Possibly enhances redevelopment opportunities in the Southern Triangle subarea	This alternative would likely have little impact on the northern and central parts of the district, and marginal impacts in the south. There are secondary impacts concerning the west end of the Ross Island Bridge.
Ross Island Br. Route - Major Improvements Alternatives 3.3B1/2	- Existing development south of Hawthorne Blvd. - Expansion of the Eastbank Esplanade envisioned in the Central City Plan - Enhances opportunities for uses in the Southern Triangle Subarea (industrial sanctuary designation)	- Improves accessibility to the Ross Island Bridge and I-5 S - Possibly enhances redevelopment opportunities in the Southern Triangle subarea	This alternative would likely have little impact on the northern and central parts of the district. There are secondary impacts concerning the west end of the Ross Island Bridge.
Water Avenue Ramp Alternative 4.1	- Existing development in the central part of the district - Activities envisioned for the Central Eastside as an industrial sanctuary - Enhances opportunities for uses in the Eastbank Subarea (industrial sanctuary designation)	- Improves accessibility to I-5 South - May constrain riverfront redevelopment plans west of MLK - Possibly enhances redevelopment opportunities in the Eastbank and Station L subareas	Public access and visibility issues remain as a major land use impact along the riverfront. Because this alternative is relatively hidden in the center of the district, there would be less impact to land uses on the edge and outside the district.
Morrison Bridge/ Viaduct Ramp Alternatives 4.3A/B	- Existing development in the north and central part of the district - Activities envisioned for the Central Eastside as an industrial sanctuary - Enhances opportunities for uses in the Commercial Corridors Subarea (central employment designation)	- Improves accessibility to I-5 South - May constrain riverfront redevelopment plans west of MLK - Possibly enhances redevelopment opportunities in the Commercial Corridors and northern pockets of the Industrial Heartland subareas	Public access and visibility issues remain as a major land use impact along the riverfront. The northern industrial heartland pockets would receive improved access. There are secondary impacts concerning the removal of the Morrison Bridge's eastbound access to Water Avenue.
Hawthorne Bridge/Madison Viaduct Alternative 4.4	- Existing development in the south and central part of the district - Activities envisioned for the Central Eastside as an industrial sanctuary - Enhances opportunities for uses in the Commercial Corridors and Industrial Heartland Subareas (central employment & industrial sanctuary designation)	- Improves accessibility to I-5 South - Increases transportation modal conflicts on Madison viaduct - Possibly enhances redevelopment opportunities in the Commercial Corridors and Industrial Heartland subareas	This alternative is located just outside the Willamette River Greenway Boundary. There are secondary impacts of negating the McLoughlin/I-5 N ramps project which will cause high traffic volumes on the MLK/Grand corridor.

I-5 Southbound Access Alternatives Study

Appendix D

**IMPACT ANALYSIS MATRIX ON EASTBANK
BY CITY OF PORTLAND - BUREAU OF PARKS AND RECREATION**

PORTLAND PARKS AND RECREATION



1120 SW FIFTH AVE, SUITE 1302, PORTLAND, OREGON 97204-1933

TELEPHONE (503) 823-2223

FACSIMILE (503) 823-5297



CHARLIE HALES, COMMISSIONER

CHARLES JORDAN, DIRECTOR

6/26/95

Mr. John Gillam
Transportation Director
Bldg. 106/702

Re: I-5 Southbound Access - Revised Impact analysis matrix on Eastbank

Dear Mr. Gillam,

Parks & Recreation and PDC staff have reviewed the 5/11/95 draft alternatives for the ramp locations for the I-5 southbound study. Please find attached a revised matrix identifying the impacts on the Eastbank Esplanade project for each alternative for your review.

Based on the matrix, there are impacts with each alternative the will need to be addressed. If you would like to discuss this further, please feel free to contact me at 823-6183.

Sincerely,

A handwritten signature in cursive script that reads "George M. Hudson".

George M. Hudson
Project Manager

CC: Zari Santer, Parks
Larry Brown, PDC
Judith Rees, PDC

I-5 SOUTHBOUND/EASTBANK IMPACT MATRIX (Revised 6/26/95)

LOCATION	FUNCTIONAL	VISUAL	ENVIRONMENTAL
Ross Island Bridge Route Alternatives 3. 3A, 3.3B1,3.3B2	No impact	New ramps will be within view of the trail	None
Hawthorne Bridge/ Madison Viaduct Alternative 4.4	Impacts Market shed area of Eastbank Waterfront Park plan. Presents a conflict in the use of the area.	Distracts from the visual effect of the market sheds which intended to serve as a landmark. The ramp will be an obstacle to the sheds achieving a landmark status. The visual impact from the river is minimal.	Will increase dust, noise and litter in the Market shed area.
Water Avenue Alternative 4.1	The plan for the Eastbank park has assumed the presence of the Water Ave. ramp. However, it recognizes the fact that without the ramp, the area between the Hawthorne and Morrison Bridges can be implemented with considerably less fill in the river.	Major impact, places freeway on and over the edge of the <u>current</u> river edge.	Requires additional fill and or piling in the river. Significant increase in noise, dust, litter. Reduces ability to connect to river.
Morrison Viaduct Ramp, Alternative 4.3	The impact is similar to the Water Avenue alternative. Implementation will require more fill in the river.	Major impact, places freeway on and over the edge of the <u>current</u> river edge.	Requires major fill and/or pilings in river. Significant increase in noise, dust, litter. Reduces ability to connect to river.

I-5 Southbound Access Alternatives Study

Appendix E

SUMMARY OF TESTIMONY AT PUBLIC MEETING

**SUMMARY OF TESTIMONY AT PUBLIC MEETING
I-5 SOUTHBOUND ACCESS ALTERNATIVES STUDY
MEETING DATE: AUGUST 30, 1995**

John Lanouette

1400 NE 2nd, 97232

Lloyd District Assoc. representative--supports for CEIC access and Water Avenue Ramp alternative is best.

Ken McFarling

7447 SE 20th Ave., 97202

Use current Roadways--See written comments.

Jim Howell

3325 NE 45th Ave., 97213

Supports option 3.3A--MLK/Grand viaducts needed anyway; 3.3A also provides access to/from east (via Powell Blvd.); Substantial projected increase in railroad traffic affects Water Ave. option.

Randy Miller

#1 Produce Row, 97214

Support of Water Ave Ramp--Access/transportation critical to business development; This option is more known/definitive, the others are uncertain/ambiguous.

David Zagel

3104 NE Schuyler, 97212

Support for 3.3A--most flexible to changes, no RR conflicts, low impact; Overall transportation solution and coordination with S-N LRT needed.

Alex Pierce

650 NW St. Helens Ave., 97229

Best alternative is 3.3A--Supports removal of the freeway and not adding ramps to freeway constructed in wrong place; Reclaim land on waterfront.

Jack Burns

Burns Bros., Inc.

Supports Water Ave. Ramp; Not enough talk about commercial vehicles; Ross Island Br. will not handle trucks.

Connie Hunt

727 SE Grand, 97214

Eastbank Saloon owner and CEIC representative--Support for Water Ave. Ramp.

Mike Menkelbach

HAND

Too much traffic on 11/12th--Neighborhood wants more information about how large truck traffic is routed thru area; Water Ave. Ramp does not address Brooklyn Yard activity.

Bill Welch

1100 SE Grand, 97214

Rejuvenation Hardware at Taylor & Grand --Support for 3.3A -- most new businesses in area don't need freeway access; Consider train blockage of Water Ave.

Ron Buel

2817 NE 19th

Riverfront for People; Industrial Sanctuary is gentrifying; Incorrect assumption that CEID "needs accessibility"; Why spend \$20M on ramp that yields \$2m in time savings?

Ernie Bonner

2836 SE Main, 97214

Water Ave. Ramp is not flexible enough to adapt to change; Don't approve alternative that cannot be paid for; Create alternative with broader support; Not adequate time savings to pay for ramp; See attached written comments.

Dan McFarling

20585 SW Cheshire, Aloha 97007

From AORTA; Water Ave has too many rail service conflicts; See attached written comments.

Worth Caldwell

20 NE 14th, 97232

Chair of CEIC; Strongly supports Water Ave. Ramp; City 2000 Committee says that jobs will increase in CEID from 19,000 to 38,000; Workers/businesses need access.

Ray Polani

6136 SE Ankeny, 97215

Citizens for Better Transit--Support for Alternative 3.3A.

Peter Fry

722 SW 2nd #330, 97204

Supports Water Ave. Ramp; Alternative 3.3A puts more traffic on highest used bridge in City, disturbs Lair Hill/Corbett neighborhoods; Freeway project provides funds for waterfront improvements; Refers AATF to written comments submitted earlier (Aug. 2); See attached written comments.

Gary Coe

120 SE Clay, 97214

CEIC member, Speed's Towing business; Water Ave. Ramp works - tested by starting truck from dead stop up Marquam Br.; Traveling through Downtown is 6 min. faster to I-405 than using Ross Island Br. and 4 min. faster to I-5 South; Ross Island Br. is too narrow; Existing routes impacted by bridge lifting - bigger interruption than railroad traffic; Observes rail activity daily - has not increased.

Moshe Lenske

4314 SE Crystal Springs Blvd, 97206

Water Ave. Ramp will plug into freeway with level-of-service "E" - Marquam Br. at capacity in Year 2010; Ramp metering impacts not evaluated; CEIC opposes residential uses which would lessen traffic problems; Study reports have sketchy analyses.

Cathy Galbraith

Bosce-Milligan Foundation - Non-profit agency located at SE Grand and Alder; Supports Water Ave. Ramp and McLoughlin Ramps - relieves traffic congestion on historic Grand Ave.; Ross Island Br. option doesn't work.

Alan McArthur

527 SE 62nd

Business is on Water Ave. near Hawthorne; Business would benefit from ramp, but opposes Water Ave. Ramp - impacts neighborhood qualities; Traffic needs to go many different places, not just freeway; Use Water Avenue Extension for freeway access - why is it not on map?

George Ward

510 SW 3rd #433, 97204

Consulting Engineer; Suggests placing I-5 access route beneath the freeway along either SE Main, SE Madison or SE Salmon; Could be combined with needed sewage outfall interceptor -- See attached written comments.

I-5 Southbound Access Alternatives Study

Appendix F

WRITTEN TESTIMONY AND COMMENTS

American Institute of Architects Portland Chapter

Garry Papers

George Crandall, Marcy McNelly, Gary Papers

AIA Urban Design Committee

Association For Portland Prograss

J Clayton Hering

Port of Portland

Mike Thorne

Citizens

Ernie Bonner

George Ward, William Ruff

Ken McFarling

Dan McFarling

Peter Fry

Donald Sterling JR

Oregonian Articles

submitted by:

R. Miller

Steve Duin, *The Glorion Refuge of
Ambiguity*

Ron Buel

Editorial, *City Needs Bold Leaders to Open East Riverbank*,
March 12, 1989

RECEIVED

SEP 08 1995

TRANSPORTATION PLANNING
& FINANCE

September 7, 1995



Ms. Margaret Kirkpatrick, Chair
I-5 Access Advisory Task Force
c/o John M. Gillam, Project Manager
Portland Office of Transportation
1120 SW Fifth Ave, Room 702
Portland, OR 97204 - 1957

Dear Chair Kirkpatrick & Task Force Members:

The Urban Design Committee of the AIA/Portland Chapter advocates a high quality public realm and careful, wise integration of land-use and transportation planning. We have been actively monitoring changes in the Central Eastside for many years and vigorously support the full revitalization of the district and reclaiming the Willamette Eastbank.

As you continue your evaluation of the alternatives, we strongly urge you to support the appropriate measures found in improvements to the Ross Island Bridge Routes (ALT 3.2 & 3.3). All the alternatives involving new access ramps (ALT 4.1 - 4.4) are extremely problematic and expensive:

- Truck ramp speeds are substandard and other safety issues are unresolved.
- The Water Avenue ramp (ALT 4.1) with the railroad conflicts and claims of no external impacts or congested locations is debatable at best.
- Spending \$15 - 25 Million to save 2 - 4 minutes travel time and to serve only 16% of total CEID trips is irresponsible.

Above all, new ramps to I-5 will blight the waterfront, complicate reclamation of the river edge and further legitimize the existing freeway. We remind the task force that in 1993 the Eastbank Review Advisory Committee recommended removal of the I-5 Freeway from the Eastbank, and before that the Options Steering Committee, the Portland Planning Commission, and Multnomah County Legislators supported proposals to relocate the freeway.

The assumption that "there will be no major physical or operational relocation of the I-5 Eastbank Freeway" appears very short-sighted. Considering the emerging policy direction to relocate I-5, the opposite assumption seems more valid. We consistently recommend no more valuable transportation money be spent on I-5 (or connecting ramps) in its current location. The Central Eastside has been and is rebounding quite well with current access patterns.

Thank you for your consideration and efforts.

A handwritten signature in black ink, appearing to read "Garry Papers", with a stylized flourish extending to the right.

Garry Papers, AIA
Chair, Urban Design Committee

cc. John Baker, AIA, President
Saundra Stevens, Hon. AIA, Exec. Vice Pres.

THE AMERICAN INSTITUTE OF ARCHITECTS / PORTLAND CHAPTER, INC.
215 SOUTHWEST FIRST AVENUE/PORTLAND, OREGON 97204/TELEPHONE (503) 223-8757

April 7, 1993

City Council Members
City Hall
Portland, OR 97204

Dear Council Members:



The Urban Design Committee of the Portland Chapter of the American Institute of Architects, strongly urges you to reevaluate the decisions regarding further East Marquam Improvements. We would like to inform the Mayor and new Council Members Kafoury and Hales that our committee testified before Council in 1989, when Council was considering two proposals by ODOT along with a relocation proposal. The AIA Urban Design Committee, along with the Options Steering Committee, the Portland Planning Commission and Multnomah County Legislators, supported freeway relocation then, as it does now, in 1993.

As every Portlander can see, much has changed on the east side over the last four years, and immediate study and fresh analysis of previously identified options is well-warranted. No less is at stake than the continued viability of the central eastside and the livability of the city and region.

The full revitalization of the central eastside, and a true reclaiming of the river's edge for the public, is fundamentally incompatible with the current freeway. Furthermore, Phase 3 and 4 additional work on I-5 will make any reclamation effort token and institutionalize the freeway from further reconfiguration. Like all citizens, we want to use the available funds in the most effective and wise way possible. Now that safety, seismic and congestion issues are resolved by Phase 1 and 2 work, we suggest you halt further expenditure until a comprehensive reevaluation has taken place, in the context of the Central City Plan vision.

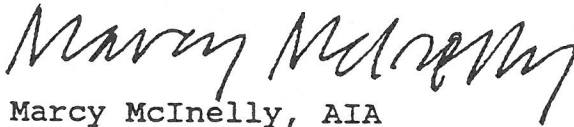
City Council Members
April 7, 1993
Page 2

We believe the critical issues should be identified and studied immediately, not in 25 years. We are eager to help the Council and city agencies in this effort, but we first urge you to not continue the East Marquam Improvement project.

Sincerely,



George M. Crandall, FAIA
Chair, AIA Urban Design Committee



Marcy McInelly, AIA



Garry Papers, AIA



TO: Willamette River Eastbank Advisory Committee
FROM: AIA Urban Design Committee
SUBJECT: Recommendations on Eastbank
DATE: 2 November 1993

THE FOLLOWING POLICIES ARE RECOMMENDED TO THE EASTBANK
CAC AND CITY COUNCIL

FUNDING

- Spend no more money on I-5 in its current location.
- Use ODOT's \$220,000,000 planned east-side expenditures on a realignment option responsive to City policies.

I-5 LOCATION

- Establish a realignment corridor on the east side of the Southern Pacific Railroad.

PHASING

- Make improvements, consistent with the realignment corridor, on the north end of I-5 to serve the Convention Center and new arena first.

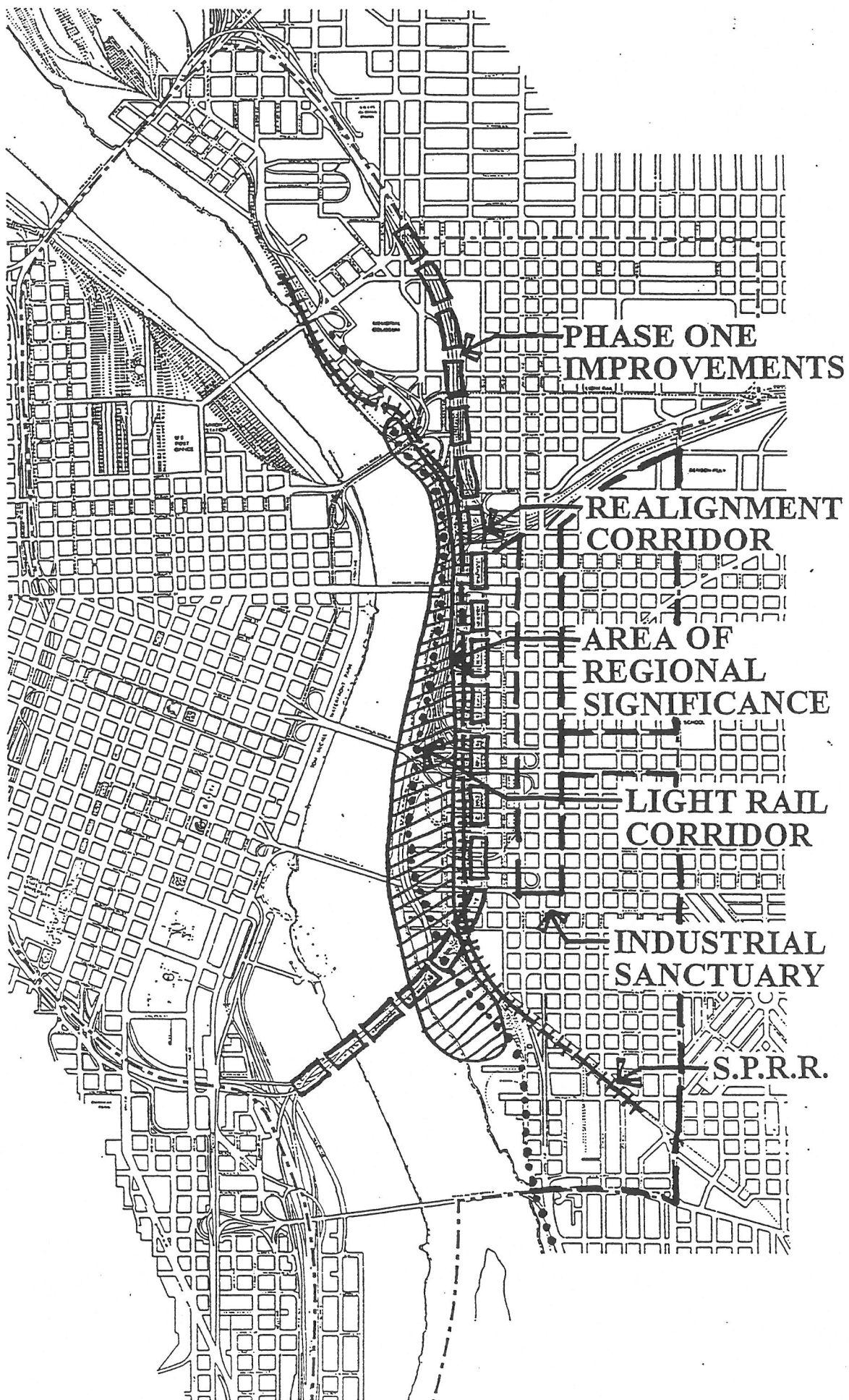
LAND USE

- Declare the area between the railroad and river (30/40 acres) an area of regional significance, reserved for future regional attractors, public open space and supportive mixed use development.
- Maintain the industrial sanctuary east of the railroad.

LIGHT RAIL

- Establish a north-south light rail corridor through the reclaimed land to serve existing and future regional attractors.

EASTBANK\MEM\GP01



POLICY FRAME WORK



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September 7, 1995

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TRANSFORMATION PLANNING
& FINANCE

Ms. Margaret Kirkpatrick
Access Advisory Task Force
Portland Planning Bureau
1120 SW Fifth Ave., 10th Floor
Portland, OR 97204

Re: Southbound Freeway access from the CEID

Dear Ms. Kirkpatrick:

I am writing in response to the consultant's report on alternatives for improving southbound freeway access to the CEID. In 1993, the same issue was raised in connection with the public discussion over the possibility of moving the east bank freeway.

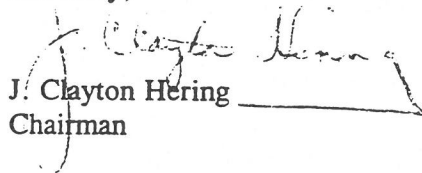
From our perspective the considerations that were important then are still relevant today:

- the CEID provides 17,000 high quality jobs in the inner city;
- southbound access is important to the district's health and the full realization of its development potential;
- the City needs to make a final and definitive decision about this issue in order to protect those jobs and realize the district's full potential.

With those criteria in mind, the consultant's report is clear that a Water Avenue ramp is the best option for securing meaningful access to southbound I-5, Highway 26 and north bound I-405.

The APP continues to support the Water Avenue ramp.

Sincerely,


J. Clayton Hering
Chairman

cc: Mayor Vera Katz
Commissioner Earl Blumenauer
Commissioner Charlie Hales
Commissioner Gretchen Kafoury
Commissioner Mike Lindberg
Peter Fry, Consultant, CEIC
John Gillam, Bureau of Transportation

Officers

J. Clayton Hering
Chairman

W. Charles Armstrong
Chairman-Elect

Tammy Hickel
Treasurer

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Solomon D. Menashe



Port of Portland

Box 3529, Portland, Oregon 97208
503/231-5000

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PLANNING BUREAU
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September 7, 1995

Margaret D. Kirkpatrick, Chair
Access Advisory Task Force
c/o David C. Knowles, Planning Director
City of Portland Bureau of Planning
1120 S. W. Fifth, Room 1002
Portland, OR 97204-1966

Dear Ms. Kirkpatrick:

This letter is to share with you the Port's conclusions after reviewing the findings of the I-5 Southbound Access Alternatives Study report.

Of the three I-5 access alternatives that were analyzed, Port staff believes the Water Avenue ramp (alternative 4.1) most directly serves the needs of the Central Eastside Industrial District (CEID) businesses and provides access to the regional freeway system at a point in the system that is least congested. In fact, the Water Avenue ramp alternative does not add any new traffic onto the freeway, but rather provides centralized, efficient access for traffic currently using other ramps. This improvement, unlike the other recommended alternatives, will not reduce the capacity of the freeway system.

Warehousing and distribution are an important and sizable element of the economy for the Portland metro area. Those industries rely on efficient access to the regional transportation system to compete. The Central Eastside Industrial area is a significant warehousing and distribution area for this region. Providing access to the regional freeway system will enhance the ability of the Central Eastside businesses, as well as the businesses elsewhere in the area that depend on them, to continue to contribute to the Portland area economy.

Margaret D. Kirkpatrick, Chair

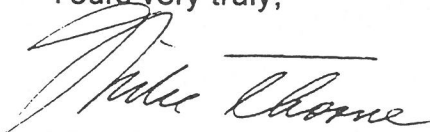
Page 2

September 7, 1995

Strategy A3) of the Mayor's Business Roundtable report "Internationalizing Greater Portland," asserts that a regional priority is to facilitate movement of goods. If that is true, as I believe it should be, then the region should provide complete access to one of the region's most important warehousing and distribution areas through construction of a Water Avenue on-ramp. This is the recommendation of the Study and, as one of the entities charged in "Internationalizing Greater Portland" with the responsibility for seeing that the region's arterials and freeways are improved for truck freight movement, the Port concurs with that recommendation and urges implementation.

Thank you for the opportunity to comment.

Yours very truly,

A handwritten signature in cursive script, appearing to read "Mike Thorne", written over a horizontal line.

Mike Thorne
Executive Director

cc: Mayor Vera Katz
Commissioner Earl Blumenauer
Commissioner Charlie Hales

8/29/95

Testimony to Alternatives Analysis Task Force

Good Will Industries, August 30, 1995

Ernie Bonner, 2836 SE Main, Portland, OR 97214

1. Base your recommendation on counts and observations, not on estimates from those with direct and substantial interests in the outcome.

As with most public decisions, there is a blizzard of information and a drought of information provided to the decision-makers. What little we do find should not be in conflict. I have two examples:

First example: The Oregon Draymen's and Warehousemen's Association survey of a portion of those who use trucks into and out of the Central East Side estimates that the ramp—if now available—would carry a little over 1,200 trucks a day. The City's count of the Water Avenue off-ramp, based on a count of the Water Avenue off-ramp traffic adjusted for increases of 22% by the year 2010, concludes that about 400 trucks would use the proposed Water Avenue on-ramp. Why is the Association's estimate three times the City's count?

A second example: The case study documents you were offered as part of the research for your work included an interview with Burns Brothers. In answer to questions about the volume of trips to and from Burns Bros. properties in the Central Eastside, the interviewee indicated a volume of 600 medium trucks and 130 heavy trucks daily into and out of Burns Bros. facilities in the Central East Side. That seemed extremely high to me, so I checked it. In fact, on Friday, August 25, 1995, I recorded the following volumes at the Burns Bros. Service Station between MLK and Grand:

	Heavy Trucks*	Medium Trucks**
From the hours of 7:00 to 11:00 am	15	24
From the hours of 3:00 to 5:00 pm	5	7
I estimate the volumes for the remainder of the day at:		
Estimated rest of the day	30	130
Total	50	161
Compare these counts with the Case Study estimates:		
Case Study Estimate	130	600

Why do the Case Study estimates vary so much from the counts taken?

I would recommend that we take a few more counts, make a few more actual observations, and reduce the number of estimates we use by those who have interests in the matter at hand. If your suggestions to the Council don't have solid, unbiased justification, they don't help the Council and they don't help the community.

This is part of a larger problem of having to deal with this thorny issue without good information. For example, no one has yet to produce a careful inventory of the uses of

land and buildings in the Central Eastside (and their change over time) that confirms or denies the success (or failure) of the industrial sanctuary policy of the city for that area. Traffic and use questions constantly need answers, but rarely get attention, or money.

2. The Water Avenue Ramp is not the kind of investment you would make with your own money.

If you were going to make a personal business investment, you would ask whether the returns generated by the investment paid off the investment and left you with a rate of return. And the more generous the rate of return, the more excited you might be about making the investment.

Suppose we use that perspective in this matter, and inquire whether companies seeking access out of the Central East Side would find the Water Avenue ramp a good investment. The investment that has to be made is \$21,000,000. The returns from that investment would be the financial benefits realized by the companies in the form of time savings to the truck drivers who now have a quicker route out of the area.

According to the City estimates, trucks using the proposed Water Avenue ramp can save 3 minutes and 35 seconds during off-peak hours and 4 minutes and 10 seconds during peak hours. If we assume that 4 minutes is saved each trip, that trucker time is valued at \$25 an hour, and that 470 trucks will make the trip each day, companies will save about \$250,000 annually.

This \$250,000 annual saving would amortize (at 10%, over 30 years) an investment of just over \$2,000,000. In other words, direct benefits to truckers and their companies would purchase about 200 feet of the 2,000 foot ramp. Where are the benefits (and to whom do they belong) that will pay for the other 2,000 feet?

This is a lousy investment, even for the direct beneficiaries. Why is it any better for the rest of us?

(See attached spreadsheet)

3. If the Committee is searching for consensus on south-bound access to I-5 you will not find it with the ramp.

There can be no agreement on the ramp. It thumbs its nose at the River. It doesn't respect the real interests of those who seek to reclaim the Eastbank.

If the Committee wants consensus, it should offer the City Council an alternative to the ramp. Otherwise, we are just going to continue spending our time opposing each other on the ramp, while other areas of the city develop apace.

This is a wonderful opportunity for the interests of the City to get together on the Central East Side.

*Heavy Trucks are as defined in the Case Study Interviews Draft Report.

**Medium Trucks are as defined in the Case Study Interviews Draft Report.

Investment Analysis of Water Avenue Ramp							
Prepared for Hearing at Good Will Industries							
30-Aug-95							
Number vehicles peak hour (1995)				770			
Increase 1995-2010				22.0%			
Number vehicles peak hour (2010)				940			
Number daily Traffic Trips (all vehicles 2010)				9,400			
Truck Traffic Trips as % of all Traffic Trips (2010)				5%			
Number daily Truck Traffic Trips (2010)				470			
Time Savings each Truck Traffic Trip (Hrs)				0.067			
Value of Time Savings (\$/Hr)				\$25			
Daily Savings, all Truck Traffic Trips (\$)				\$783			
Number Trips annually				2,932,800			
Annual Savings, all Truck Traffic Trips (\$)				\$244,400			
Simple Pay-back (Years)				86			
\$2,195,871.44							
Net Present Value Calculation							
Discount Rate Used		10%					
244,400	244,400	244,400	244,400	244,400	244,400	244,400	244,400
\$2,227,664	Level annual payment on 30-Year loan of \$21 Million						
Miles of Water Avenue Ramp				0.378787879			
Cost of Ramp				\$21,000,000			
Ramp Cost/ Mile				\$55,440,000			



GEORGE D. WARD & ASSOCIATES

4941 S.W. 26th Dr., Portland, Oregon 97201
(503) 293-6075 FAX (503) 243-6815

ENVIRONMENTAL CONSULTING ENGINEERS

September 14, 1994

Mayor Vera Katz
City of Portland
1220 S.W. 5th Ave.
Portland, Oregon 97204

Subject: I-5 Southbound Access Alternative Study

Dear Mayor Katz:

Please accept my appreciation for your and Commissioner Hales request for comments concerning the City of Portland's plan to investigate alternatives concerning southbound access to the eastbank freeway. Your letter was absolutely correct when it acknowledged the firm's interest in the central eastside area.

I trust you will find it of interest to know that early in my professional career I worked for the City as an assistant traffic engineer under Fred Fowler at the time he was the city of Portland's Chief Traffic Engineer. He was also "godfather" to Portland's unique vehicle traffic system much of which is still in use today. Mr. Fowler played an important part in my professional development which probably accounts for my deep interest in how the City Council approaches its growth problems today.

I was pleased to learn that you plan to pursue alternative 1-5 access options. This is in keeping with the Council's commitment last December when the Water Ave. ramp plan was rejected. Your interest in revisiting this issue is to be commended. The outcome of the proposed study is important to the vitality of the Central Eastside Industrial District and adjacent neighborhoods.

My first reaction to the proposed time schedule is that it may be somewhat aggressive if adequate time is to be allowed for conducting realistic, origin and destination traffic analysis. In discussing this subject with ODOT, it is my understanding that they too felt more time might be required for meaningful truck traffic counts that are extremely important to any final design. Depending on the location and configuration of possible access options, it is likely that early traffic studies conducted for the Water Avenue ramp may not be entirely applicable. Nevertheless, the results of all earlier traffic studies should be made available to the selected consultant.

Last fall his firm submitted a response to the City Council's Resolution No. 35141 concerning the Willamette River Eastbank Review Project. During the preparation of its proposal, close attention was paid to the "Guidelines for Proposal Submittal" issued by Charlie Hales office September 24, 1993. Included in the guidelines was the requirement that serious consideration be given to numerous traffic modes including commuter rail transit, high speed rail, land use and transportation impacts and transportation network configurations.

For assistance in better understanding the land use and transportation requirements, we added to our team the firm of LRS Architects. Bill Ruff and members of his staff worked closely with us in the preparation of sketches and computer enhanced color photographs that included recommendations concerning these matters. Enhanced photos and sketches describing options to the Water Avenue ramp and commuter rail transit were first presented during a meeting that included engineering representatives from the Oregon Department of Transportation and the City of Portland Office of Transportation.

The attached color photo is just one of several freeway access options that resulted from this team effort. As noted, easy access beneath the freeway is available from the foot of S.E. Main Street. Other options include similar configurations utilizing either Madison or Salmon. Adequate overhead clearance for trucks is available with no change in street elevations required for any of these three streets. No overhead structure, as proposed for the original Water Ave. ramp, is necessary as the elevation of the proposed ramp would extend no higher than the present freeway system.

The attached photo suggests that the entire ramp could be constructed on a combination of existing streets and structural fill material. It could just as easily be supported on pile supported concrete columns in the river thereby eliminating the need for placing fill in the river. However, the proper placement of fill along the riverbank in this area could play an important role in the elimination of flooding in approximately fifty square blocks of valuable industrial land in the heart of the central eastside industrial sanctuary. Another advantage of the proposed fill is to offer an extremely cost effective solution to Portland's \$700 million combined sewer outfall obligation.

From the above it becomes obvious that a multidisciplinary approach to the above issues may be a suggestion worth the City Council's consideration. If approached correctly it may be possible to find a common solution to the City's needs for a riverbank parkway, its combined sewer outfalls, property flooding and a relatively easy southbound access route to the I-5 freeway.

Enclosed please find a portion of our original proposal. The color reproductions include:

1. PROPOSED EASTBANK ENVIRONMENTAL PARKWAY
2. CITIZENS PROPOSED OPTION FOR COMBINED SEWER INTERCEPTOR BURIED BENEATH EASTBANK ENVIRONMENTAL PARKWAY
3. ALTERNATIVE I-5 SOUTH BOUND ACCESS
4. MAIN STREET SOUTH BOUND ACCESS TO I-5 ALTERNATIVE
5. OBLIQUE PHOTO OF PROPOSED EASTBANK ENVIRONMENTAL PARKWAY

The firms of George D. Ward & Associates and LRS Architects working together hereby request that we be placed on the list of consultants you are proposing for the forthcoming freeway access study. The list of options suggested above is just a small part of a long list of existing eastbank possibilities that were being prepared for your consideration in the near future.

Both Bill Ruff and I wish to thank you and Charlie Hales personally for requesting our views concerning the eastbank. Since our last meeting on this subject we have assembled a slide presentation that includes all of the above subjects. We would be glad to present it to each of you anytime.

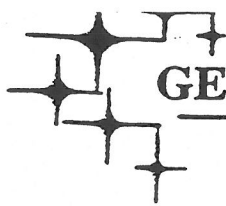
Thanks,

GEORGE WARD & ASSOCIATES

LEE•RUFF•STARK ARCHITECTS

George D. Ward

William E. Ruff



GEORGE D. WARD & ASSOCIATES

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ENVIRONMENTAL CONSULTING ENGINEERS

September 20, 1994

Mr. Jeff Keizer
Oregon Department of Transportation
9002 SE McLoughlin Blvd.
Milwaukie, Oregon 97222

RE: I-5 Southbound Access Alternative Study by City of Portland

Dear Mr. Keizer:

Attached, as per your request, are copies of the City of Portland's request for comments concerning the above referenced subject and this firm's response to it. The RFP was both signed by Mayor Katz and Commissioner Charlie Hales. Bill Ruff with the architectural firm Lee • Ruff • Stark assisted this firm in the presentation of the Sept. 15, 1994 response.

Also attached are a series of color photos of Portland's waterfront that this firm, with the assistance of Bill Ruff, has assembled since the City first requested proposals last fall. In the event you may not have seen it I have included a copy of this firm's Oct. 13, 1993 proposal prepared in response to the City's Resolution No. 35141.

The intent of the photos, some of which have been computer enhanced, is to demonstrate that it appears technically feasible to add a sufficient amount of fill along the east bank to permit the construction of a combined sewage outfall interceptor as noted in one of the modified photos. Another photo confirms that a similar approach was used by the City in 1927 in order to complete a much needed sewage interceptor along the west bank which is now buried behind the seawall.

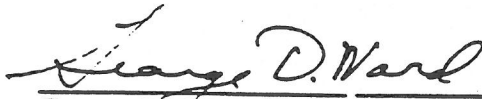
The option of placing the I-5 access route "beneath" the I-5 freeway on either S.E. Main, Madison or Salmon Streets resulted from last years request for proposals by the City. The City's "killing of the ramp" in late 1993 ended discussion on the subject at that time. The City's apparent attempt to re-visit this issue provided us an opportunity to re-submit the earlier ramp concept.

At your convenience Bill Ruff and I would look forward to meeting with you and others at ODOT for a more detailed discussion on this subject. As noted in our letter to the City we would look forward to discussing some form of an engineering retainer with ODOT for the purpose of investigating the permit acceptance of the numerous city, state and federal agencies involved in approving the above optional solution of the I-5 southbound access issue.

Sincerely,

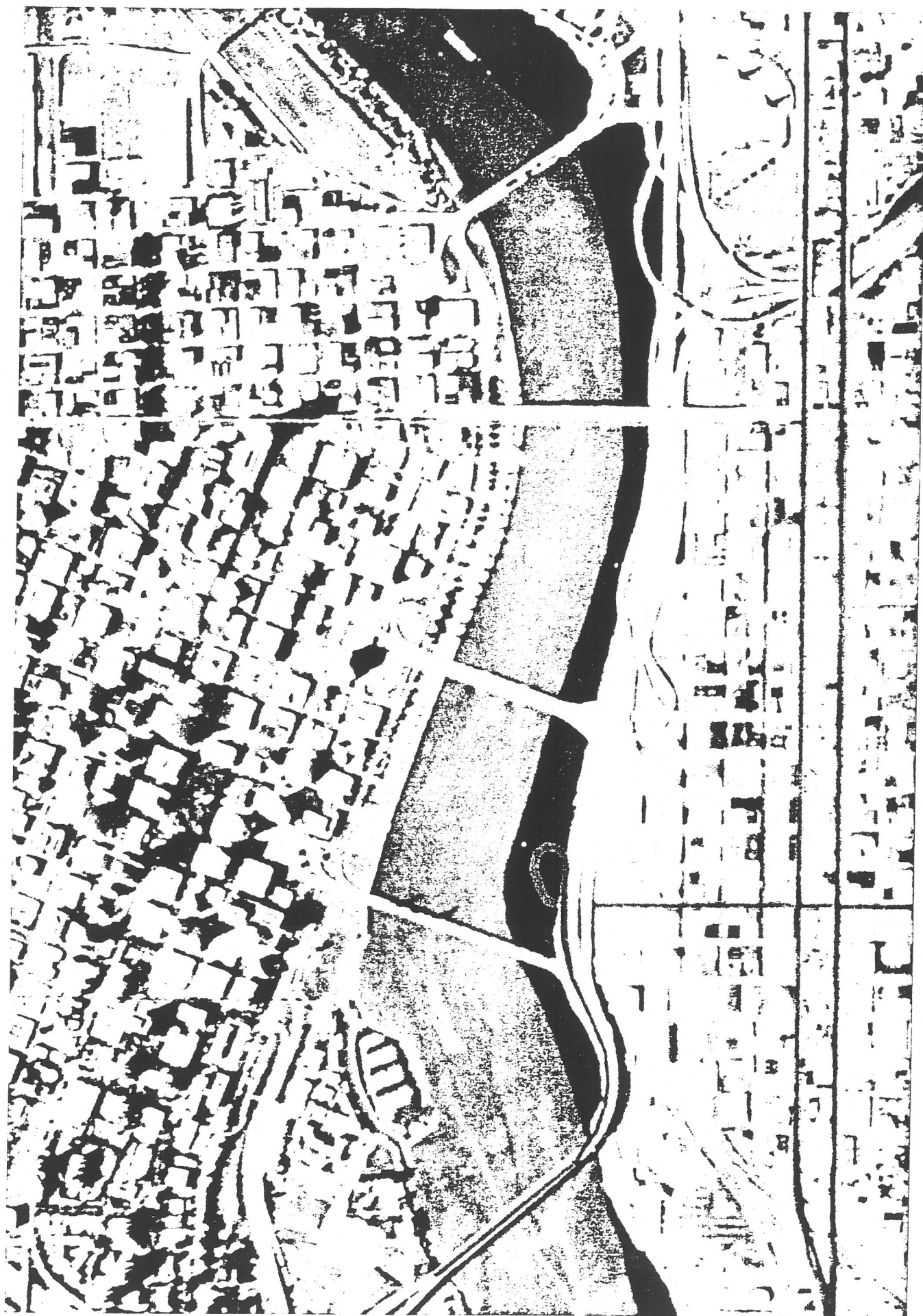
GEORGE WARD & ASSOCIATES

LEE•RUFF•STARK ARCHITECTS


George D. Ward


William E. Ruff

Enclosures



Testimony Regarding Provision for Truck Access to I-5 Southbound
Ken McFarling Wednesday, August 29, 1995

The economically justifiable way of linking I-5 southbound with the Sanctified East Side Industrial Zone is to make use of roadways already existing. Those roadways are S E M L King Bv to where it joins Grand Av to become McLoughlin Bv; Woodward St immediately south of that juncture; thence the route already provided for vehicles northbound on McLoughlin to reach Ross Island Bridge and the ramp to I-5 from its western end.

That connection would require removing the median barrier at the west end of Woodward; signalizing the intersection thereby created, to permit alternation between left-turn movements east from McLoughlin and through movement on McLoughlin northbound.

The connection would also permit vehicles turning left to proceed east on Woodward to Milwaukie Av; jog right to Powell Bv; & proceed eastward through the existing underpass of Southern Pacific railway, thereby avoiding delay at a grade intersection with the railway. Facilitating that supplemental advantage would require a pair of signals authorizing vehicular movement alternately eastbound on Woodward and southbound on Milwaukie, to enable lane changes at that intersection. *

Highway partisans profess solicitude for avoiding occasional delay to vehicles northbound along McLoughlin by vehicles turning left onto Woodward. Forthrightness of that solicitude can be gauged by the highwaymen's ready provision of left turn access across McLoughlin at the paving material plant of a highway lobby constituent doing business a few blocks south of Woodward.

If concern be expressed that space is unavailable on M L King to hold vehicles waiting to turn left, be reminded that the viaduct from contemporary Union Av to McLoughlin was built as a four-lane highway. Union was restriped as a two-lane roadway for southward-bound vehicles at the time Grand Av viaduct was built. That left buffer capacity which can accommodate left-turning vehicles.

Any expense related to rebuilding the viaducts will occur whether or not the herein-proposed Industrial Zone be built. <exit>
That expense is therefore not chargeable to provision of the connection.

RR

* An equal number of signals wd be required
for Taylor St approx to Water Av ramp
(Grand & King)

In opposition to Water Avenue ramp...

At the present ~~there are~~ approximately 14 freight trains which travel along Southern Pacific's mainline in SE Portland every day. Each freight train results in approximately 6 minutes delay. This means ~~at~~ the crossing is not available ~~for trucks~~ 1.5 hours per day based upon current levels of freight service alone.

Rail Freight The volume of intermodal rail freight traffic is increasing, and it is increasing significantly.

Recently announced mergers, such as Burlington Northern and Santa Fe, and Southern Pacific and Union Pacific, promise to have an even greater impact on rail's market share of intercity freight ~~traffic~~. These mergers allow rail to overcome shipping delays which frequently resulted when freight shipments had to pass from one carrier to another.

The merger of SP and UP has particularly strong implications for proposed Water Avenue ramp. This merger opens up the possibility of non-stop intermodal freight trains between the San Francisco area and Seattle; between Los Angeles and Seattle.

Throughout the nation a multitude of shortlines are being established, including Willamette and Pacific Railroad, and Portland and Western Railroad, in the immediate area. These shortlines are more responsive to the needs of smaller shippers, ~~and are~~ bringing freight traffic long ignored by the mainline railroads back to rails.

While the number of freight trains today is 14, you will see an increase in both number and length of ~~trains~~ within the next decade.

Rail Passenger Service The Seattle-Portland-Eugene corridor is one of five high speed rail corridors designated in the United States. During the past two years the State of Washington added two new trains to the corridor using existing equipment. The State of Oregon extended the route of an existing train, the *Mt Rainier*, to Eugene.

Both states have invested in track, rail, signal and crossing improvements to facilitate increased passenger and freight rail traffic, and increased speeds. The State of Washington will be purchasing two sets of passenger equipment during the next two years in order to increase frequency of passenger service. *The WA Legislature approved an additional \$34.4M to continue improvements in the corridor.*

The Portland area is home base for Gundersons, one of the nation's largest builders of intermodal rail equipment. Gundersons recently expanded, significantly increasing their capacity to construct intermodal rail equipment.

A single freight train is ~~now~~ capable of taking 200 or more trucks off our interstate highways, reducing road maintenance costs, air pollution, congestion and safety problems, and saving taxpayer dollars.

Increased capacity of rail freight; development of shortlines to meet the needs of small shippers; merger of major rail companies for faster, more direct shipment; evolution of high speed passenger rail; all translate into substantial increases in rail service. All translate into increased inference with truck traffic at the Water Avenue ramp. A Water Avenue ~~Ramp~~ would create serious problems with both safety and congestion.

Couple this with the State of Oregon's clear charge to the Public Utility Commission to eliminate crossings at-grade wherever possible (ORS 763.013), the Water Avenue ramp is clearly a step in the wrong direction.

Support lower cost,
Ross Is Bridge
alternative.

Dan L. McFarling
Assn of OR Rail & Transit Advocates
20585, SW Cheshire Ct.
Aloha, Oregon 97007-3737

Peter Finley Fry, AICP

Willamette Block, 722 SW 2nd Avenue, #330, Portland, Oregon 97204, (503) 274-2744, Fax (503) 274-1415

August 2, 1995

MEMORANDUM

TO: Access Advisory Task Force
FROM: Peter Finley Fry AICP
RE: Issues raised at meeting

At recent meetings a variety of opinions have been expressed that are inconsistent with economic theory, market forces and basic realities.

Central City Plan

The Central City Plan creates a framework for various geographic districts to complement each other, as opposed to competing. Speculative pressures continue to impact the vitality of each district and test the plan, because everyone is seeking a competitive advantage (buy cheap and sell high). A land use plan is responsible for protecting the investment of all players and ensure that public investment is equitably distributed e.g., not used to provide an unfair advantage to one player over others.

Infrastructure is designed to maximize the competitive advantage of each area. Central Eastside is satisfied with being a progressive industrial area. The south bound on-ramp was and is designed to maximize the Central Eastside competitively as an industrial center.

Uninformed speculation about market forces exacerbates underlying weaknesses and ultimately destroys the economic vitality of Portland by pitting "family members" against each other in unnecessary conflict and eliminates Portland's economic base.

Market Forces

Some have a perception that the Oregon Convention Center/Blazer Arena and the Oregon Museum of Science and Industry will create market forces that will drive industry out of the Central Eastside. This will not occur as there is sufficient commercial land to sustain market demand for forty years or more.

Both the Oregon Convention Center/Blazer Arena and the Oregon Museum of Science and Industry create commercial (retail) and industrial market demand. Commercial market is illustrated by a family who comes to a convention and then to lunch at Digger O'Dells. Industrial market is illustrated by the demand these facilities have for services and products (distribution and production of goods and displays).

These facilities also create an educational force that keeps Portland's research and development on the leading edge.

The Central City Plan focuses the connection between these attractors on both the west and east side of the river.

The commercial market is served by Old Town, downtown, Lloyd Center and the Grand/King Corridor. The industrial market is served by Central Eastside, Lower Albina, and the Northwest Triangle.

The Central City area has too much commercial land which is why the North River District and North Macadam have failed to develop after thirty years of effort. The Central Eastside will not convert to commercial and/or residential uses for approximately 90 to 100 years. That is, until our regional population base increases to 4,000,000 to 5,000,000 people.

This is why the eastbank freeway will never move. The benefits of land gained (value) are much less than the cost of creating the land.

Leased to Owned Space

The defining issue of the Central Eastside is the conflict between those who want to own land and lease the space to renters versus those who own their land.

The Central Eastside has the most amount of owned space of any Central City District. Cheap incubator space is an important attribute of the area. However, the Central Eastside Industrial Council was formed to stop the transition of property from owners to landlords.

A strong, stable area is dependent on high owner occupancy. The urban renewal game has influenced public policy in American Cities. The purpose is to utilize public funds to transfer the ownership of land from a multitude of small owners to a few large landlords who then lease space. Clearly, the creation of property equity is what wealth production is all about. The relationship between Clackamas Town Center to Oregon City or Washington Square to Tigard clearly illustrates the consequences of this public/private collusion.

This game is one of the leading factors of urban decay and subsequent urban renewal.

Truck Movement

Time is not the issue. Getting there is the issue. Trucks cannot maneuver in the same manner as cars and cannot make U-turns. Trucks require a large area to turn. Access from the firm to the freeway must be truck-friendly. This is why Central Eastside has large streets, on-street parking is pushed back from intersections, and wide radius curbs are used. This is in contrast to residential or neighborhood commercial areas with narrow streets, maximized on-street parking, and sidewalk extensions.

DONALD J. STERLING, JR.
1718 S.W. MYRTLE STREET
PORTLAND, OREGON 97201

CC: AATF Committee

March 5, 1995

Karen Whitman
ACI
720 S.W. Washington Street, #100
Portland, Oregon 97205

Dear Karen:

Service in 1993 on the city's Eastbank study committee, of which you also were a member, convinced me that:

- The Central East Side Industrial District is an invaluable source of jobs and services to all of Portland. It deserves to be nurtured.
- The so-called southbound access to the freeway system would be of great value to the industrial district.
- City authorities and planners have promised repeatedly that the access will be built. Members of the City Council renewed that promise after receiving our 1993 report, even as the council majority voted not to build the Water Avenue ramp.

I believe the city government has a number of compelling reasons, therefore, to follow through with a southbound access. I was part of a minority of members of the 1993 committee who opposed eliminating the Water Avenue ramp from consideration. All of us were aware of its awkward design and I think would have welcomed a more elegant alternative, but the city planners offered us none.

Since then, however, a new possibility has arisen that I think your new committee should explore. After our 1993 committee finished its work the planners of a north-south light rail route for Tri-Met announced that one alternative they were considering was a new so-called Caruthers Street bridge to carry the rails across the Willamette south of the West Side business district. Although I have no idea of the engineering or financing problems involved, I wonder whether such a bridge might not be designed to serve as the long-sought southbound freeway access as well.

I understand that your current committee is not eager to become involved with the controversy over the light-rail route. I respectfully think, however, that you have a responsibility not to overlook the possibility of a joint rail and motor vehicle bridge. The combination might open opportunities for financing that neither purpose alone could command, thus making it easier for the City Council to keep its promise.

If you think it is worth sharing this note with the rest of your committee, I would be glad.

Regards,





The glorious refuge of ambiguity

If the Portland City Council were thinking clearly, it would understand that it voted with the wrong half of the brain when it blew off the Water Avenue on-ramp to the Marquam Bridge.

The right halves of their overwrought brains. The artistic, wide-eyed, fuzzy side of the think tank. The side that leaves the logical, analytical thoughts to its next-door neighbor.

Thursday's brainstorming session on the freeway ramp was a mockery of open government: Dozens of citizens who didn't have a vote were forced to grovel before five commissioners who had already made up their muddled minds.

No one rose as eloquently above this charade as Randolph L. Miller.

Miller is the president of The Moore Co., a wholesale distributor of consumer electronics and appliances.

He is also one of the businessmen who were foolish enough to take the council at its word over the last 15 years. Trusting in the city's commitment to provide southbound freeway access, Miller developed nine acres in the central east side.

A committee chairman on the Mayor's Business Roundtable, Miller was the 29th witness to come before the council Thursday morning. Given only three minutes to speak, he got quickly to his point:

All the definitive results are on one side of the ramp debate, Miller said. All the ambiguity is on the other.

Build the ramp and the city provides essential freeway access to the central eastside industrial sanctuary, spends \$19 million in available federal highway dollars and proves that city government can be taken at its word.

Abandon the project, Miller added, and businesses' certainty regarding future traffic patterns, the highway dollars and trust in government are forfeit or suspended.

"The council is approaching this whole issue with the right side of their brain," Miller said. "They're rejecting the known for the unknown. The issue is so complex we can get lost in the ambiguity."

The four council members who detonated the ramp — Mayor Vera Katz, Charlie Hales, Gretchen Kafoury and Mike Lindberg — don't have a Plan B. They don't know, after a mere 20 land-use studies, if there is a better site for the ramp or if the highway dollars will be available, down the road, to build it.

What they don't know won't hurt them. Ambiguity is a delicious refuge for politicians who consider their inability to make a decision the evidence that they need more time on the job; i.e., a second, third or fourth, term.

It's a lousy resort for businessmen and investors who aren't spending the public's money and can ill afford to waste its time.

This decision to turn the freeway debate into another Hundred Years' War is Hales' baby. He arranged the circus. He overruled the recommendation of a citizens advisory committee to move the eastbank freeway someday but, while those arrangements are in the works, to build the ramp.

Hales' explanation for doing so was so insipid and half-baked that it actually made me nostalgic for Dick Bogle.

But the real curiosity here is Katz. She's the one who claimed, six weeks ago, that "our No. 1 goal is to double the number of family-wage jobs in the city of Portland." She's the one who enlisted 26 people for the Business Roundtable.

That roundtable, however, was never consulted on the ramp decision. Said John Russell, chairman of the group, "I think we have more important things to do."

We all know the feeling, John.

What's keeping the roundtable busy? It's preparing the "Prosperous Portland" plan for the council. Leaf through a rough draft of the plan and you'll find this statement under "Operating Principles:"

"All aspects of the City's operations will be designed and conducted in a way that promotes business development."

Dream on.

Sam Adams, the mayor's top aide, insists that Katz and the majority of the council believe "this decision is in the best interests of business and business on the east side."

That's the right side of the brain talking. That's the "creative" rationalizing Vera needs when the vast majority of her business advisers would argue otherwise.

If you reject the ramp, Russell said, you are obligated to produce another vision for the eastbank freeway: "You must mobilize the best minds in the world to deal with this very thorny issue."

And quickly. The City Council needs reinforcements. It's operating with, at best, half a brain.

FRED A. STICKEL, President and Publisher
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PETER THOMPSON, Managing Editor
PATRICK L. MARLTON, Circulation Dir.

MARCH 12, 1989

City needs bold leaders to open east riverbank

Imagine looking across the Willamette River from downtown and seeing, not a huge concrete freeway flush against the east bank, but another RiverPlace.

Imagine a conservatory with a small botanical garden, a Pacific Rim trade and conference center beyond the greenbelt, a small-boat marina, an outdoor concert and stage area, children swimming, people fishing off piers and dining in restaurants. Imagine, as well, walking or riding a historic light-rail trolley to all that across a bridge of shops, a picture-postcard bridge tying the region's largest retail-commercial center — downtown — to a riverbank park linking the Oregon Convention Center and the Oregon Museum of Science and Industry.

Imagine.

Portland doesn't have a Puget Sound or a San Francisco Bay or the Pacific Ocean. What it has is the Willamette River. And right now it has perhaps a once-in-a-lifetime opportunity to make the Willamette as special as the unique features of any major city.

Or it can continue to prize only half a river, ensuring continued blight and minimal development between the new convention center and the new OMSI.

That decision faces the City Council this week as it prepares to hear the pros and cons of moving the Eastbank Freeway inland about 700 feet.

Costly as the move would be, difficult as the financing would be, the council would be remiss — tragically so —

in not reaching out to the future and to a better Portland.

One plan would move the freeway inland a few acres, adding approximately \$20 million to the cost of the project. The estimated costs for a bolder vision range from \$120 million to \$131 million. But \$54 million is in hand now, to finance an unimaginative plan to build southbound ramps onto the existing concrete barrier.

The other \$65 million to \$80 million won't come easily. But it won't come at all unless the City Council explores — seriously explores — this 21st century opportunity.

Yes, the city has unacceptable crime rates. It has the homeless and the jobless and insufficient tax dollars to provide all the public services that residents say they want at the level that they want them. It has made a firm commitment to a regional balance of transportation priorities, with the westside light-rail project No. 1 among them.

Moving the freeway is costly. It is a land-use goal, not a transportation necessity. It is not a regional, state or federal priority. It would temporarily drain scarce dollars from other needs. It would delay the long-sought southbound access from the Central Eastside Industrial District to the freeway.

But Portland is the city that boldly built the Memorial Coliseum in the 1950s, when no major-league tenant had been signed up; the city that risked building a Transit Mall in its commercial core, when other central cities were being devastated by the 1970s' suburban flight; the city that

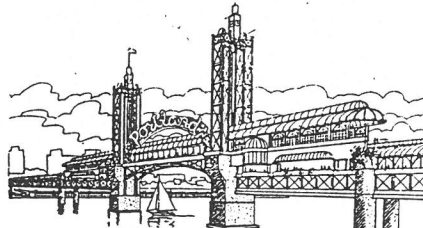
built the nationally acclaimed Center for the Performing Arts during the 1980s' economic recession.

Oregon's congressional delegation isn't going to do the City Council's job. Nor is Gov. Neil Goldschmidt, or elected officials of the surrounding metropolitan-area counties. They might follow, but only if the council leads.

Mayor Bud Clark accepted a hand-off four years ago from a group of downtown business people and led the city, region and state toward building the Oregon Convention Center, a sure economic win for everyone. Now, a group of citizens — some architects, some engineers, some planners, but mostly just people with a vision of what Portland can and should be — offers him and the rest of the City Council another win-win opportunity.

Proponents of moving the freeway point to Portland's great vision of a city joined by a river, not separated by it. They say the river that has nourished Oregon has more to give.

They acknowledge the projected displacement of 19 businesses and 400 to 550 jobs. But they counter with the Portland Development Commission's prospect of \$60 million to \$80 million in private investment attracted and up to 2,500 jobs created if the freeway is pushed inland, the river-



bank is opened up, and a 32-acre site is created.

The citizens group says the cost of the the visionary plan, can be brought down, that federal highway safety and railroad-crossing funds can be tapped, that there might even be help from the state lottery because of the economic benefits that would accompany the boldest plan.

They may be a bit wishful in their thinking, but the council should pin down design efficiencies and find out what the city can realistically expect from state, federal and regional funds.

Public-private partnerships might generate some revenue, and an increase in Multnomah County's gasoline tax is worth considering. If there is nowhere else to turn, the council likely would have to ask voters to approve a bond issue.

The voters' decision wouldn't be any easier than the council's. They, too, have various priorities. But if there is any doubt about rebuilding the freeway as it exists, or doing it right, the voters deserve a say in such a pivotal choice for their future.

Even if the odds are long against finding the right financing formula, the effort should be made. It is time for the mayor and City Commissioners Dick Bogle, Bob Koch, Mike Lindberg and Earl Blumenauer to come out from behind their excuses and reasons for not moving the freeway and lead Portland residents toward a city united, not divided by its river.

Portland stands at the shore of the 21st century. It should not miss this boat across the Willamette.

I-5 Southbound Access Alternatives Study

Technical Appendix A

TRANSPORTATION SYSTEM MANAGEMENT ALTERNATIVES

TRANSPORTATION SYSTEM MANAGEMENT ROUTES

Ross Island Bridge Route

- Signing to I-5 south bound from Martin Luther King (MLK) Boulevard is adequate to 3rd Avenue via Mill Street.
- From 3rd to Division there is I-5 south bound signing via 8th Avenue.
 - It was noted that trucks were taking an "alternate" route under the Grand Avenue Bridge to 5th, making a left turn onto Division Place, then making a right turn onto 6th, then making a left turn down Woodward Street to 8th, then making a right turn to Powell Boulevard across the Ross Island Bridge.
- On the west side of the Ross Island Bridge, three lane changes are made to enter I-5 south bound (a problem with weaving may be encountered).
- Truck turning radius seems appropriate on this route.
- Appropriate signing to I-5 may be required on this "alternate" truck route.
- Narrow lanes on the bridge (approximately 10 feet)

Hawthorne Bridge Route

- Trucks would take MLK Boulevard and make three lane changes to enter a loop ramp onto the Hawthorne Bridge.
- A small turning radius (narrow lane) for trucks may be encountered on the west end of the Hawthorne Bridge when making a left turn onto Front Street.
- The Front Street to I-5 south bound left turn may need to be adjusted for turning trucks (they may cut across lanes to make turns).

Clay to Highway 26 Route

- Place "Highway 26" sign on mast pole for south bound to west bound traffic on Front and Clay streets.
- On the Morrison Bridge, place direction signs to Highway 26.
- On Front Avenue, place direction signs to Highway 26.
- On the Hawthorne bridge, place direction signs to Highway 26.
- On the Hawthorne overpass (south bound), place "Sunset Highway" or "Beaverton" directional signing.

Morrison Bridge Route

- Trucks would take MLK Boulevard to Morrison Street, taking the loop ramp.
- Trucks would be required to make four lane changes within a maximum of three blocks.
- Trucks were noted to take this route to north bound I-5.
- West side of Morrison Bridge may be tight for turning trucks.
- Again, the Front Street to I-5 south bound left turn may need to be adjusted for turning trucks (they may cut across lanes to make turns).

Burnside Bridge Route

- Trucks would take Grand Avenue to Burnside with a signaled left turn.
- Signing exists to I-5 south bound (Salem) from Burnside to 2nd. However, no signing exists to get trucks to Front Street.
- Again, the Front Street to I-5 south bound left turn may need to be adjusted for turning trucks (they may cut across lanes to make turns).

General TSM Improvements

- Sign and stripe a truck bypass lane for the southbound Front Avenue connection to I-5 at the proposed ODOT ramp meter.
- Use traffic monitoring information from the proposed transportation operations center to provide real time traffic routing information for central eastside commercial vehicle operators.
- The transportation system management routes and improvements could be considered the same as the no build alternative.

I-5 Southbound Access Alternatives Study

Technical Appendix B

RAMP ALTERNATIVES

RAMP ALTERNATIVE FOR I-5 SOUTHBOUND ACCESS

No Build Alternative

- Do not construct any ramp to I-5, use the existing facilities.
- Do not construct any ramp but make better use of existing facilities through signing and signal adjustments.

Water Avenue On-Ramp

Alternative 1, Design Option "A"

- Construct an I-5 southbound on-ramp that would start at the intersection of Water Avenue and Taylor Street.
- Support the ramp on fill until it reaches I-5, then carry over I-5 on a structure.
- The ramp would carry two lanes tapering to one as it enters I-5. The structure will have a 40° curve, and a 5% to 6% grade, allowing a speed of 20 miles per hour. A flat section prior to I-5 entrance will, however, allow appropriate entrance speeds.
- The structure will require columns along the existing esplanade.

Alternative 1, Design Option "B"

- The on-ramp would be similar in configuration to Option "A" but would originate at Salmon Street.
- Minor differences in sidewalk configuration on the Morrison Avenue-Water Avenue ramp between Options "A" and "B."

Alternative 2

- Same Design as Alternative 1 "A" and "B," however, the Water Avenue on-ramp from Water Avenue to Morrison Bridge Ramp is closed and removed. I-5 bound traffic will use the new Water Avenue on-ramp. Inter-city westbound traffic is routed to Union Avenue and Morrison Bridge.

The Hawthorne Connector

*South Bound I-5 Access from the Central East Side
(as suggested by Walter M. Valenta)*

- Construct a ramp from the westbound (east end) stub of the Hawthorne Bridge to the lower deck of the Marquam Bridge. This would connect near the old Mt. Hood Freeway stub location on the Marquam Bridge and create a left-hand weaving section.
- Since this ramp construction will be between Water Avenue and I-5, there would be no impact to the esplanade.

Flanders Street On Ramp

Citizens for Better Transit (as suggested by Jim Howell)

- Construct an on-ramp from Flanders Street (by Lloyd Center) to I-5 southbound.
- This would satisfy the following criteria:
 1. It will not impact the railroad.
 2. It does not create a traffic safety hazard on the Marquam Bridge.
 3. It may not be demolished if the freeway is moved to another alignment.

Ross Island Bridge Diversion

- Modify the west end of the Ross Island Bridge with a southbound I-5 on-ramp.
- Include a ramp meter bypass lane for trucks on the southbound I-5 on ramp.
- Complete Water Avenue from the central business district to the east end of the Ross Island Bridge, include a westbound on-ramp to the Ross Island Bridge.

Marquam Bridge Connections

- Direct ramp connection to the Marquam Bridge, creating a left-hand entrance and weaving section.

Morrison/I-5 Ramp

- Build a right-hand loop ramp from I-5 to the east end of the Morrison bridge. This would provide travelers with westbound access to I-5.
- Place a signal and a ramp at the east end of the Morrison Bridge to provide a left turn onto an I-5 southbound on-ramp.

I-5 Southbound Access Alternatives Study

Technical Appendix C

I - 5 CORRIDOR ALTERNATIVES

I-5 CORRIDOR ALTERNATIVES

Alternative excerpts were taken from the noted references.

1. Beeson, Mark, Project Coordinator. *Eastbank Freeway Options Study*. Portland, OR: Oregon Department of Transportation, 1989.

Original ODOT Design

This Alternative is a freeway widening project proposed to be built under traffic in the current freeway alignment in three units:

- Widen the East Marquam Bridge approach to a standard four lanes, modify the northbound off-ramp to Water Avenue, and construct a new companion I-5 southbound on-ramp from Water Avenue. (Completed)
- Construct a new two-lane freeway-to-freeway, I-5 northbound to I-84 eastbound connector ramp. (Completed)
- Construct a new northbound and southbound ramp between McLoughlin Boulevard and I-5 north.

In addition, the existing esplanade along the Willamette's east bank would be improved with pedestrian and bicycle access from the east side via Clay and Main streets, and from the west side via the Morrison and Hawthorne bridges.

ODOT Modified Design

This alternative is a freeway relocation project between the Marquam and Morrison bridges that maintain an alignment west of Water Avenue and retains the existing free-flow directional access ramps at the east end of the Morrison Bridge. Essential elements of the original design are retained; however, the Water Avenue access to and from the Central East Side are replaced by an I-5 northbound off ramp to Belmont, and a southbound on-ramp from Morrison to I-5 south. Also, the southbound I-5 off-ramp to McLoughlin Boulevard is carried in a tunnel. The northbound I-5 on-ramp from McLoughlin is the same as the original ODOT design.

Access to the newly-created waterfront property would be provided from the east at Clay and Madison streets and from the west across the Hawthorne Bridge. Foot and bicycle traffic would be provided from the Central Business District (CBD) via the Hawthorne and Morrison bridges.

Committee's Alternative

This alternative is a freeway relocation project between the Marquam and Burnside bridges that maintain an alignment west of 1st Avenue. A new split-diamond interchange would be constructed to Morrison and Belmont that, aside from I-5 northbound to the CBD, provide full directional operation. The design of the new two-lane I-5 northbound to I-84 eastbound ramp remains consistent with the other designs. The McLoughlin Ramp design, however, unlike the other designs, are carried for the most part on grade with a half-diamond interchange at Harrison Street providing additional access to I-5 north.

Access to the newly-created waterfront property would be provided from the east at Stark Street via a tunnel, and Harrison Street via an over crossing of the McLoughlin ramps. Access from the CBD would be provided at the Morrison and Hawthorne bridges. Foot and bicycle traffic would be provided from the CBD via the Hawthorne and Morrison bridges.

2. City of Portland. "Eastbank Freeway Review: A Transportation Planning Summary." 1993.

- Relocate I-5 to a SE 8th/9th corridor, with the freeway mainline depressed below grade with all surface streets remaining at-grade. Access connections to I-5 would occur at King and Grand. Another alternative was to relocate the Marquam-Banfield section of I-5 to a SE 1st/2nd corridor and depress I-5 in its current alignment between the Banfield and Broadway. Access connections would include a split-diamond interchange at the Morrison Bridge.
- The "Removal" option would eliminate the Marquam-Banfield section of I-5, with connections from the Marquam Bridge to the central eastside located at King-Grand, and I-405 would be redesigned to become I-5. Thus, rather than removing the freeway, the "removal" option essentially combines the functions of I-5 and I-405 in the central city. This option requires the redistribution of traffic from I-5 to I-405 and several surface streets. Substantial traffic impacts would occur on Front Avenue, Broadway and the Broadway, Steel and Fremont Bridges. Some undetermined level of improvements would be required for I-405, and possibly for the impacted streets and bridges, in order to accommodate increased traffic volumes.

3. Derby, Dennis, chair. *Willamette River Eastbank Review Report and Recommendations Appendices*. Portland, OR: Willamette River Eastbank Review Advisory Committee, November 29, 1993.

- **Willamette River Eastbank Review (George D. Ward & Associates)**
The objective of the proposal is to provide the review committee with a number of long range opportunities for the development of the eastbank of the Willamette River beginning at the Steel Bridge and extending upriver initially as far as OMSI and eventually to Oaks Bottom and, in time, even as far as the City of Milwaukie. Included in this proposal is a discussion of the economic probability that in order to develop sufficient land for recreational use by the public along the river's eastbank, it may be substantially less costly to simply "MOVE THE RIVER" instead of attempting to move the Eastbank Freeway a few hundred feet in order to accomplish the same purpose. This development would occur in three phases.
- **Vision for the Eastbank, 1993 (Philip Thompson, Architect)**
Proposed the use of pilings or floating piers to build a park area.
- **Low Bridge Option (Jim Lee)**
This option resolves the fundamental problems that delimit the effectiveness of previously proposed options.
 - Interstate 5 is rerouted via present I-405 to the Fremont Bridge.
 - The high span through-truss structure of the Marquam Bridge is rebuilt on its existing piers to a low span cable-stayed bridge.
 - The upper level of the new bridge is a four lane boulevard connecting Harbor Way on the west to the King-Grand couplet on the east.
 - The lower level of the new bridge is a two lane truck route connecting the intersection of Southeast Clay and Water to and from Interstate 5 south.
 - A two lane truck route below grade along the present alignment of I-5 north connects the intersection of Southeast Clay and Water to and from I-5 north and I-84 east.
- **A Tunnel Proposal**
A proposal to tunnel I-5 under the Willamette River and continue this tunnel to north of the Burnside Bridge. All interconnecting ramps would also access this tunnel.

- **Phased Removal of the I-5 Freeway (James M. Howell, Architect and Planner)**

Through traffic on I-5 between the Marquam and Fremont Bridges can be diverted to I-405 after some modifications, allowing for the eventual removal of the main stem of the freeway from the Eastbank. I-84 can connect to the "new" I-5 south, via a road built adjacent to the west side of the Southern Pacific RR and then across the lower deck of the Marquam Bridge and to I-5 north, via the present I-5 alignment.

After the freeway is removed from the Eastbank, other forms of transportation will take its place which can serve new mixed use transit oriented development in the corridor as well as the travel needs of the region. The Marquam Bridge is converted into a linear park, accommodating light rail, bicycles and pedestrians as well as other activities. With no I-5 through traffic, the lower deck should be adequate for the remaining traffic traveling to and from I-84. Additionally, OMSI would annex the bridge and build a high capacity elevator to reach the MAX station above and to a revolving restaurant called "The Top Of The Marq."

4. Willamette River Eastbank Review. "A Generic List of Options," October 13, 1993.

- In the short and long term, retain I-5 in its present location.
- In the short term, retain I-5 in its present location throughout its design and economic life, but realign in the long term, either west of Third Ave. or east of Third Ave., keeping its interstate designation.
- Downgrade the I-5 designation, realign I-5 in the central eastside and route through traffic to I-405 or 205; but build the south bound Water Avenue on ramp.
- Retain I-5 in its present location and deck over the lower elevation sections for parks, plazas, and open spaces.

I-5 Southbound Access Alternatives Study

Technical Appendix D

EVALUATION OF MARQUAM BRIDGE RAMP ALTERNATIVES

I-5 Southbound Access Alternatives Study

April 14, 1995

TO: Access Alternatives Task Force

FROM: John Gillam, City of Portland, Office of Transportation
Dwayne Hofstetter, David Evans And Associates
Rob Bernstein, Consulting Transportation Engineer/Planner

SUBJECT: Initial Evaluation of Marquam Bridge Ramp Alternative

The Marquam Bridge Ramp Access Alternative (4.2) was one of six alternatives selected at the last AATF meeting for further evaluation. Our first level fatal flaw evaluation showed that there are serious problems with this alternative. Based on the severity of this problem, we recommend that we not analyze the Marquam Bridge Ramp Alternative further. The following is a list of the attributes on which we based our recommendation:

Marquam Bridge Ramp from MLK Boulevard (Figure A)

- **There is no space on the lower south bound deck of the Marquam Bridge to construct an acceleration lane. In order to install the necessary acceleration lane, either the existing main span structure would need to be heavily modified to accommodate another lane, or one of the existing freeway lanes would have to be eliminated.**
- Physical conflicts with buildings from 3rd to MLK Boulevard, between Clay and Mill Street.
- Coordination of vertical alignment with McLoughlin Ramps.
- Left hand merge and weave on The Marquam Bridge.
- Inadequate weaving distance on The Marquam Bridge.
- Physical conflicts with existing bridge columns.
- Physical conflicts with The Hawthorne Ramp to MLK Boulevard.
- A steep grade of 7% would be required for the ramp.
- For the year 2010, the Marquam Bridge is predicted to operate at LOS 'F'.
- Weaving on the Marquam Bridge, from MLK Boulevard Ramp, would operate at LOS 'F'.
- A bus stop at Market Street and MLK Boulevard would need to be removed.
- Traffic would be added to these high accident intersections:
 1. MLK Boulevard and Clay Street.
 2. MLK Boulevard and Taylor Street.

Marquam Bridge Ramp from Mill Street (Figure B)

- There is no space on the lower south bound deck of the Marquam Bridge to construct an acceleration lane. In order to install the necessary acceleration lane the existing main span structure would need to be heavily modified to accommodate another lane, or one of the existing freeway lanes would have to be eliminated.
- Physical conflicts with buildings from north of Mill Street between 2nd & 3rd Avenue.
- Coordination of vertical alignment with The McLoughlin Ramps.
- Conflicts with existing Marquam Bridge columns.
- Left hand merge and weave on The Marquam Bridge.
- Inadequate weaving distance on The Marquam Bridge.
- An excessive grade of 9%, with a 30 MPH freeway entry speed, would be required.
- For the year 2010, The Marquam Bridge is predicted to operate at LOS 'F'.
- Weaving on The Marquam Bridge, from MLK Boulevard Ramp, would operate at LOS 'F'.
- Traffic would be added to these high accident intersections:
 1. MLK Boulevard and Clay Street.
 2. MLK Boulevard and Taylor Street.

We also considered a third alternative that would connect to 7th Avenue. This alternative would solve the grade problem, but it may impact OMSI and requires long costly structures to cross the railroad lines. Like the other alternatives, this also has the fatal flaw of no space to construct an acceleration lane on the main span of The Marquam Bridge.

With these problems and fatal flaws, we recommend the removal of The Marquam Bridge Alternative from the six alternatives to be considered and that we proceed with additional evaluation of the other five alternatives.



Figure A Marquam Bridge Ramp from MLK Boulevard

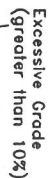
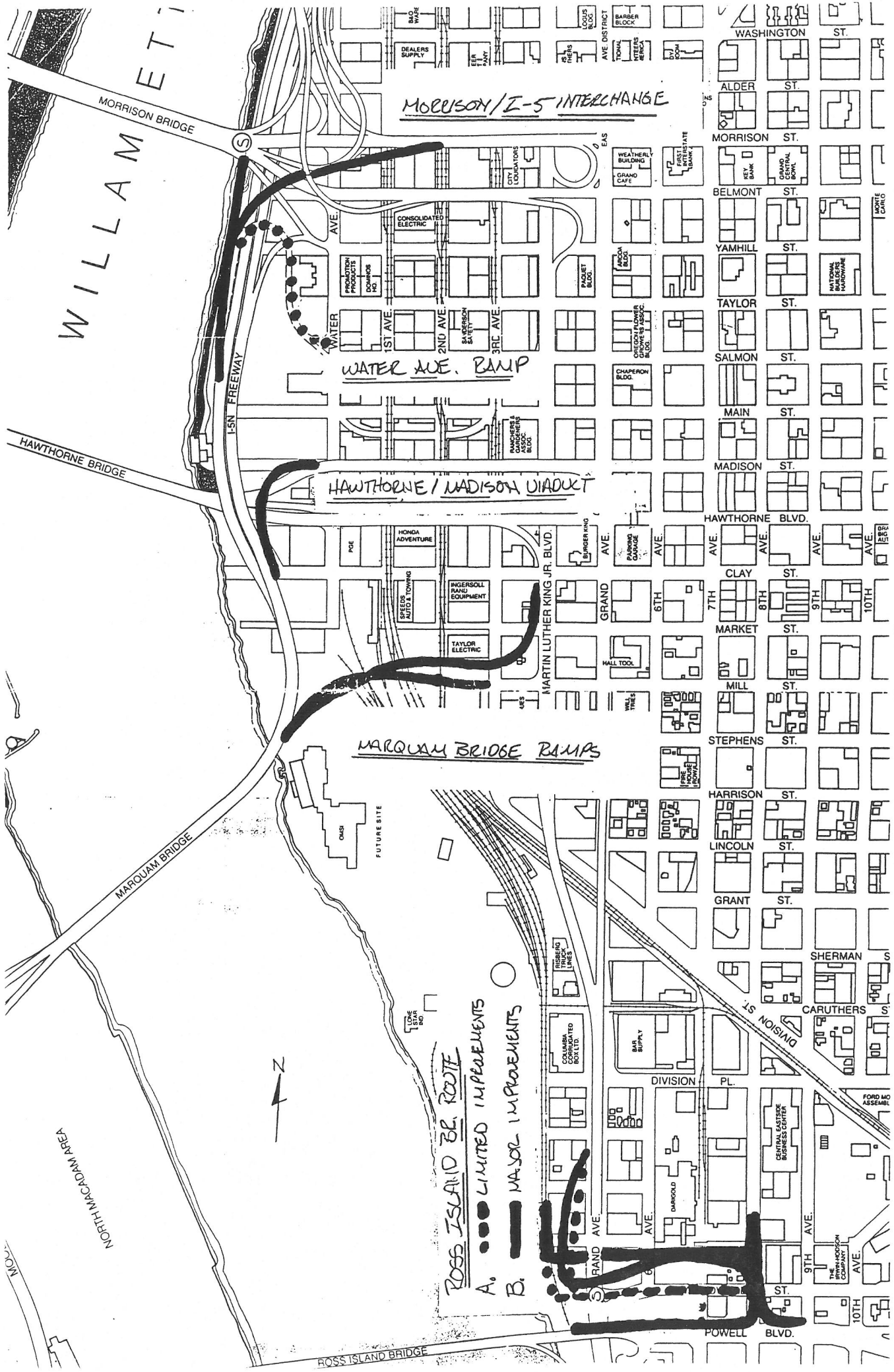


Figure B Marquam Bridge Ramp from Mill Street



MORRISON / I-5 INTERCHANGE

WATER AVE. RAMP

HAWTHORNE / MADISON VIADUCT

MARQUAM BRIDGE RAMP

ROSS ISLAND BR. ROUTE
A. ●●● LIMITED IMPROVEMENTS
B. — MAJOR IMPROVEMENTS



I-5 Southbound Access Alternatives Study

Technical Appendix E

CASE STUDY QUESTIONNAIRE

I-5 Southbound Access Case Study Questions

Business Classification

Which use best classifies your type of business?

- ☐ construction (special trade contractors in both building & non building projects)
☐ industrial services (providing services of industrial nature for individuals, businesses & government establishment and other organizations)
☐ manufacturing (transformation of materials or substances into raw materials)
☐ transportation / distribution (furnishing local or long distance trucking or transfer services)
☐ warehousing (storage of products or commercial goods of any nature)
☐ wholesale or retail services (engaged in selling merchandise to retailers for personal or household consumption)
☐ mixed use - specify which types _____
☐ Use other than listed. Please list type _____.

Size

How many employees are on-site. _____

What is the total square footage of your building(s) on-site _____

What is the site size. (Sq. ft. or acres please circle which measurement used) If site size is not known then list property boundaries (north, south, east, & west)

Market Area

What is the approximate geographic location of your primary market area or customer base. Please define and describe your market area. Also circle location that best represents your primary market area on the attached map. (Exhibit A)

If primary or secondary market is outside the Portland Metropolitan area then check below which best represents this market area:

- | | | | |
|--------------------------|--------------------------|--------------------------|---------------|
| ☐ | Statewide in Oregon | ☐ | West coast |
| ☐ | Statewide in Washington | ☐ | Western U.S. |
| ☐ | Northwest (OR, WA, & ID) | ☐ | National |
| | | ☐ | International |

I-5 Southbound Access Case Study Questions

Supplier Location

What is the approximate geographic location of your primary suppliers. Please define and describe the geographic area. Also circle location that best represents your suppliers in the Portland metropolitan area on the attached map. (Exhibit B)

If your suppliers are located outside the Portland Metropolitan area then check below which best represents their location:

☐	Statewide in Oregon	☐	West coast
☐	Statewide in Washington	☐	Western U.S.
☐	Northwest (OR, WA, & ID)	☐	National
		☐	International

Traffic Characteristics

What is your primary mode of product distribution: Indicate # of trips per DAY or WEEK for each type. (Please circle either day or week)

☐	Ship
☐	Plane
☐	Train
☐	Bicycle
☐	Auto
☐	Light van
☐	Truck: (see attached photos for description - Exhibit C)
☐	2-axle or 3-axle medium truck
☐	3-axle or 5-axle, single trailer heavy truck
☐	5-axle, double trailer or 7 axle heavy truck

What are the shipping/receiving peak periods of high vehicle activity.

☐	-	<u>AM</u>	☐	-	<u>PM</u>	<u>Day of the week</u> (circle)
						Mo. Tue. Wed. Thur. Fri.. Sat. Sun.

What is the primary mode of pickup for customers: Indicate # of trips per DAY or WEEK for each type. (Please circle either day or week)

☐	Transit
☐	Walking
☐	Bicycle
☐	Auto
☐	Light van
☐	Truck: (see attached photos for description - Exhibit C)
☐	2-axle or 3-axle medium truck
☐	3-axle or 5-axle, single trailer heavy truck
☐	5-axle, double trailer or 7 axle heavy truck

I-5 Southbound Access Case Study Questions

What are your customer peak periods of high vehicle activity.

_____ - AM _____ - PM

Day of the week (circle)

Mo. Tue. Wed. Thur. Fri.. Sat. Sun.

How many delivery trips does your business have on an average work day. A trip constitutes 1 departure or 1 arrival. (not both) _____ trips

Is there a seasonal peak period of high vehicle activity.

Yes _____ No _____ If yes, when?

What is the percentage of employees who commute by.....

Drive alone _____%

Transit _____%

Carpool _____%

Walk _____%

Bicycle _____%

Total 100%

I-5 Southbound Access Case Study Questions

Transportation Characteristics

Check which are your primary Central East Side Industrial District routes to your site:

Streets:

East-West

Burnside
Stark
Morrison
Belmont
Hawthorne
Division
Powell

Other (please list)

South-North

Water Av.
MLK
Grand
SE 7th Av.
SE 11th Av.
SE 12th Av.
Milwaukie
McLoughlin
Sandy Blvd.
Other (please list)

Bridges:

Fremont Bridge I-405
Broadway Bridge
Steel Bridge
Burnside Bridge
Morrison Bridge
Hawthorne Bridge
Marquam Bridge I-5
Ross Island Bridge

Freeways:

I-5 Southbound/ Broadway; Broadway/ I-5 Northbound
Wheeler Av./ I-5 Southbound
I-84 Westbound/ Lloyd Blvd.
NE 16th/I-84 Eastbound
Grand/I-84 Eastbound
I-5 Southbound/ Belmont
Morrison/I-5 Northbound
I-5 Northbound/ Water Av.
Marquam I-5 Southbound
Marquam I-405 to US 26 & US 30
Ross Island Bridge.-Hood Av./I-5 Southbound

I-5 Southbound Access Case Study Questions

Check which are your primary Central East Side Industrial District routes from your site to your destinations:

Streets:

East-West

☐ Burnside
☐ Stark
☐ Morrison
☐ Belmont
☐ Hawthorne
☐ Division
☐ Powell

☐ Other (please list)

South-North

☐ Water Av.
☐ MLK
☐ Grand
☐ SE 7th Av.
☐ SE 11th Av.
☐ SE 12th Av.
☐ Milwaukie
☐ McLoughlin
☐ Sandy Blvd.
☐ Other (please list)

Bridges:

☐ Fremont Bridge I-405
☐ Broadway Bridge
☐ Steel Bridge
☐ Burnside Bridge
☐ Morrison Bridge
☐ Hawthorne Bridge
☐ Marquam Bridge I-5
☐ Ross Island Bridge

Freeways:

☐ I-5 Southbound/ Broadway; Broadway/ I-5 Northbound
☐ Wheeler Av./ I-5 Southbound
☐ I-84 Westbound/ Lloyd Blvd.
☐ NE 16th/I-84 Eastbound
☐ Grand/I-84 Eastbound
☐ I-5 Southbound/ Belmont
☐ Morrison/I-5 Northbound
☐ I-5 Northbound/ Water Av.
☐ Marquam I-5 Southbound
☐ Marquam I-405 to US 26 & US 30
☐ Ross Island Bridge.-Hood Av./I-5 Southbound

Are there attributes or problems for your company and the Central Eastside Industrial District transportation system as a whole? Yes ☐ No ☐ If yes, describe below:

I-5 Southbound Access Case Study Questions

Opinions

What are your opinions regarding transportation planning for the area and the freeway access alternatives in particular:

Southbound I-5S Water Avenue Ramps?

I-5 Eastbank freeway relocation?

Light Rail Transit service to the Central Eastside Industrial District?

The City is currently evaluating four alternative concept locations for improved access to the I-5 Freeway - Southbound. Do you have any comments regarding how these alternatives compare or how each or any would meet your needs? What issues do you feel should be considered in evaluating these alternative? (**Exhibit D**)

The four alternative concept locations are:

1. Morrison Bridge Interchange

2. Water Avenue On-Ramp

I-5 Southbound Access Case Study Questions

3. Hawthorne Bridge/Madison Ramp

4. Ross Island Bridge Connection from Grand Ave.

What are your company's goals for the 10 to 15 year time frame and what Central Eastside transportation improvements would enhance your business?

What transportation improvements would be best for the Central Eastside Industrial District as a whole?

Do you have special parking or loading requirements?

Yes _____ No _____ If yes, what are they and are they being met in the Central East Side Industrial District?

I-5 Southbound Access Case Study Questions

History/Location

How long have you been at your present location? _____ Years

Does your business have other locations? Yes _____ No _____ If yes,
where are they?

Why did your company locate in the Central Eastside Industrial District?

If company has relocated outside the Central Eastside Industrial District or is thinking of
relocating, please list reasons why?

About You, the Interviewee

Business Name: _____

Business Address: _____

SIC classification: _____

Your Name _____

Your Title: _____

Phone #: _____

FAX #: _____

Exhibit A
Market Area

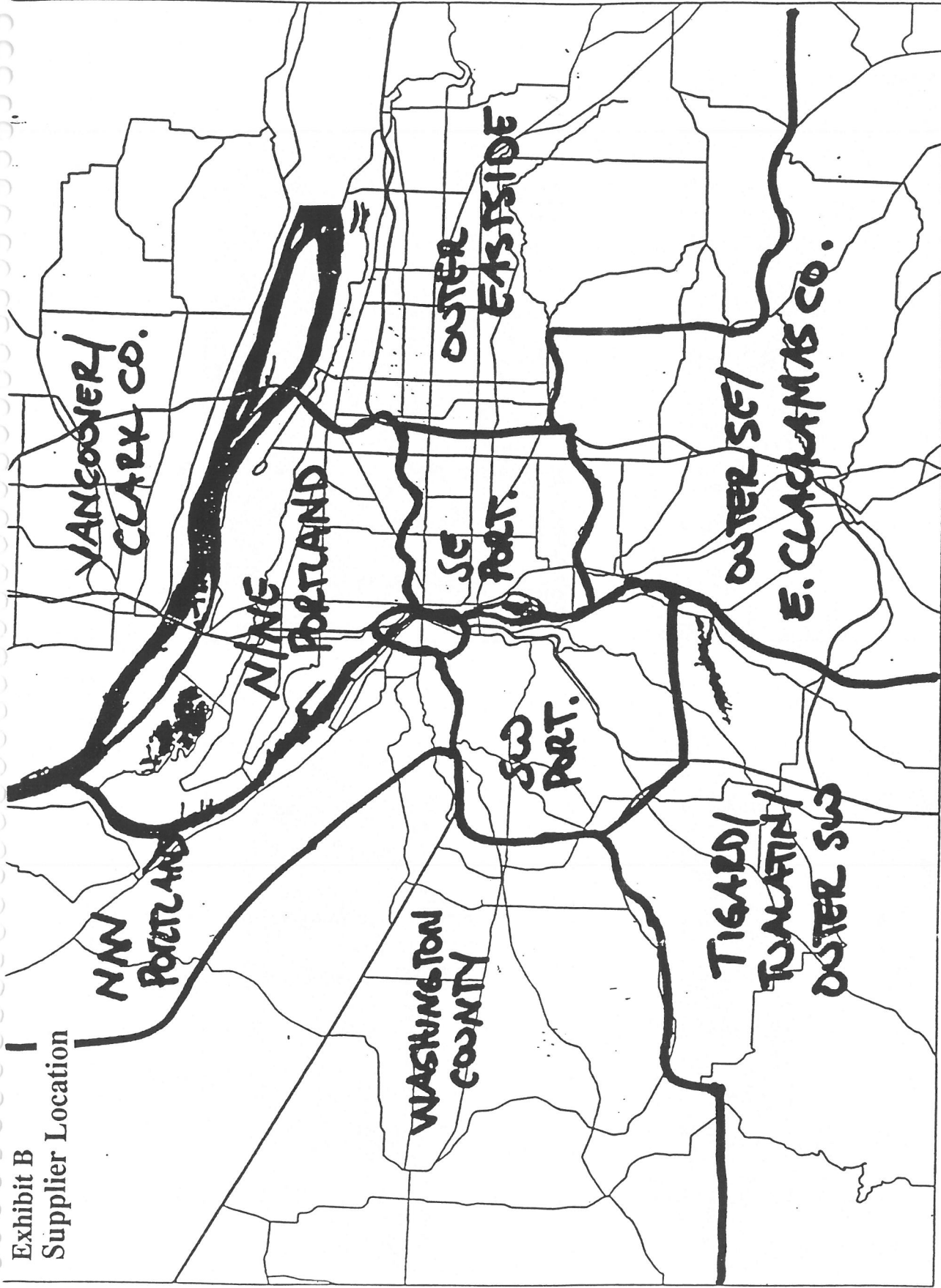
A hand-drawn map of the Market Area, showing various regions and locations. The map is oriented with North at the top. The regions are labeled as follows:

- NAN PORTLAND** (Northwest)
- VANCOUVER/CLARK CO.** (Northwest)
- NINE PORTLAND** (Northwest)
- SE PORT.** (Central)
- SUD PORT.** (Central)
- WASHING TON COUNTY** (Southwest)
- TIGARD/TUALATIN/OSTER SUD** (Southwest)
- OSTER EASTSIDE** (Northeast)
- OSTER SE/ E. CLACKAMAS CO.** (Northeast)

The map shows a network of roads and boundaries between these regions. The labels are written in a stylized, hand-drawn font.

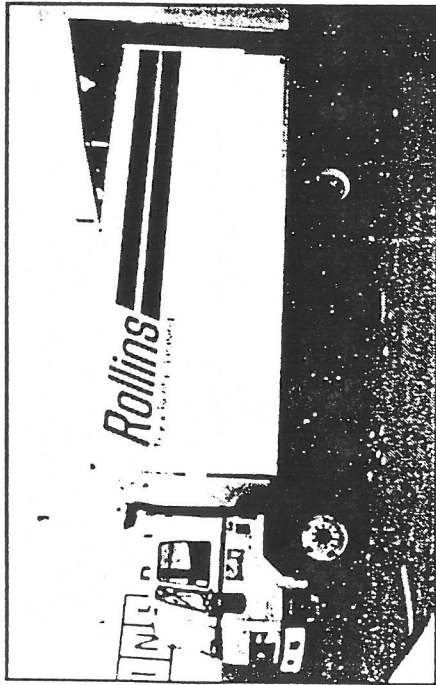
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Exhibit B
Supplier Location

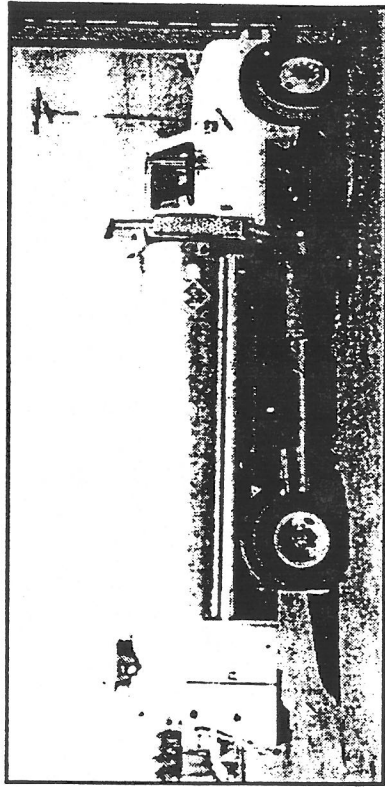


Downtown

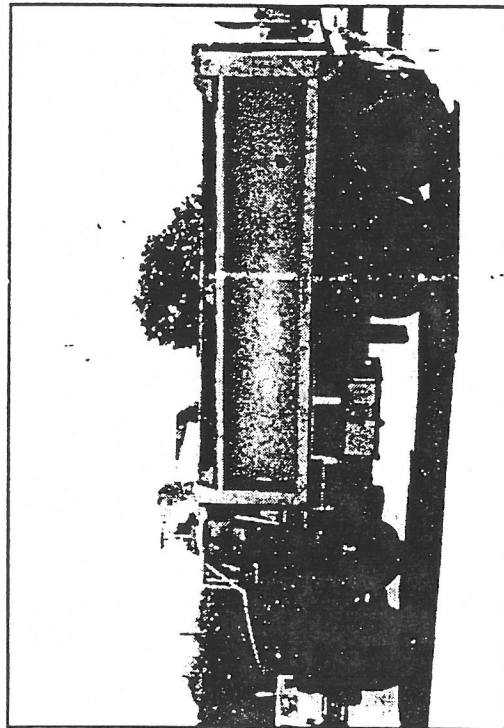
Exhibit C



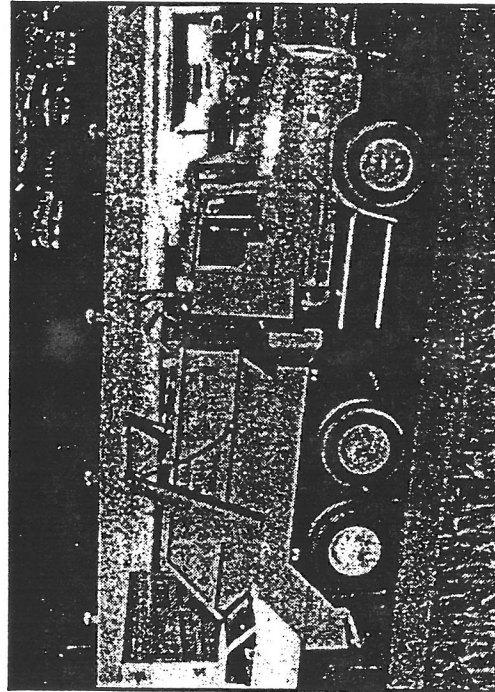
2-axle medium truck (6 tires)



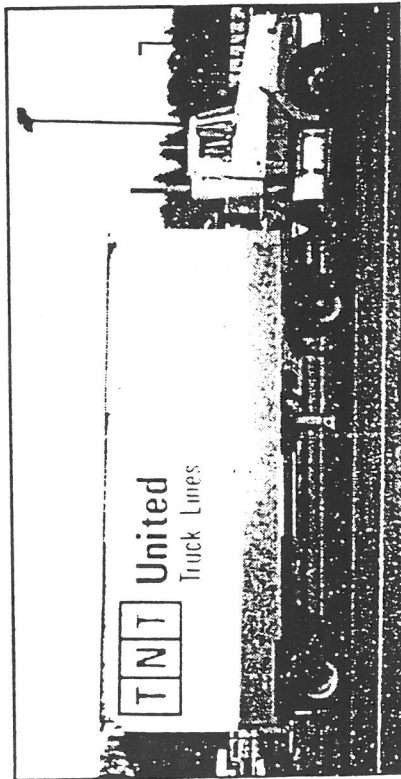
2-axle medium truck (6 tires)



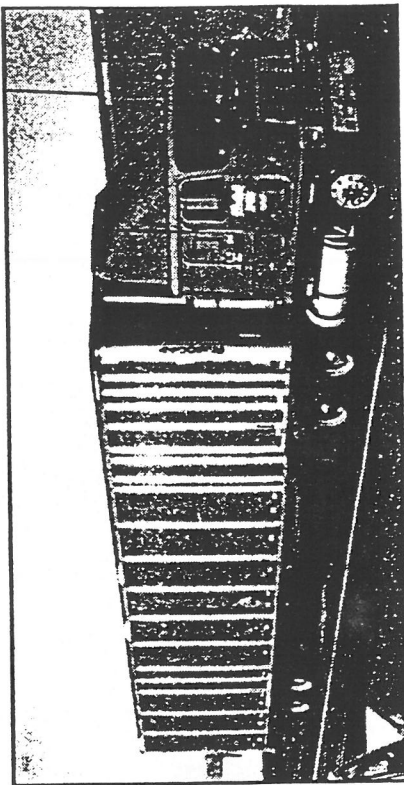
3-axle medium truck



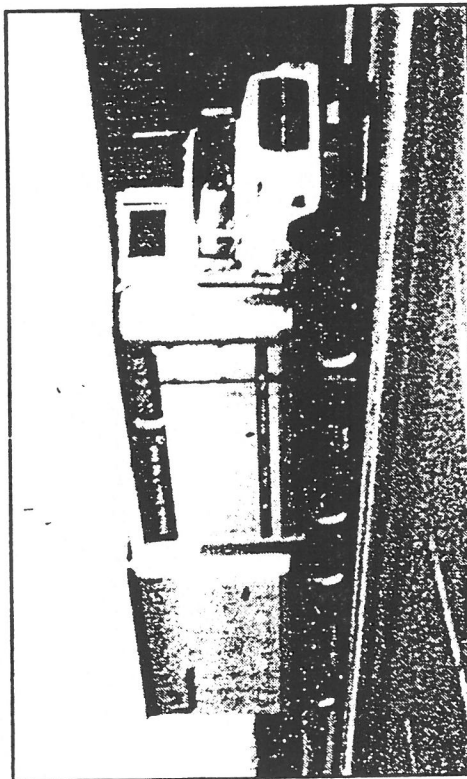
3-axle medium truck



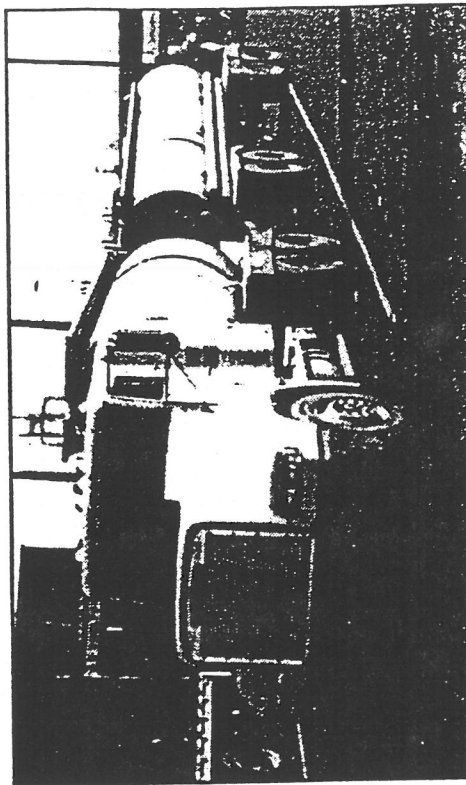
3-axle, single trailer heavy truck



5-axle, single trailer heavy truck



5-axle, double trailer heavy truck



7-axle, heavy truck

I-5 SOUTHBOUND ACCESS - CONCEPT ALTERNATIVES -

- Morrison Bridge Interchange
- Water Ave. Ramp
- Hawthorne Br. / Madison Ramp
- Ross Island Br. Connection

