I-5 SOUTHBOUND ACCESS ALTERNATIVES STUDY

Executive Summary and Recommendations

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
A. TSM/Minor Improvements • 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.	A. TSM/Minor Improvements • 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.
B. Major Improvements (Eastside) • 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.	B. Major Improvements (Eastside) • 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.
C. Major Improvements (Westside) • CEID to Sunset Hwy. access avoids congestion on Marquam Bridge and downtown street system; • Improvements useful with Eastbank Freeway relocation.	C. Major Improvements (Westside) • 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.

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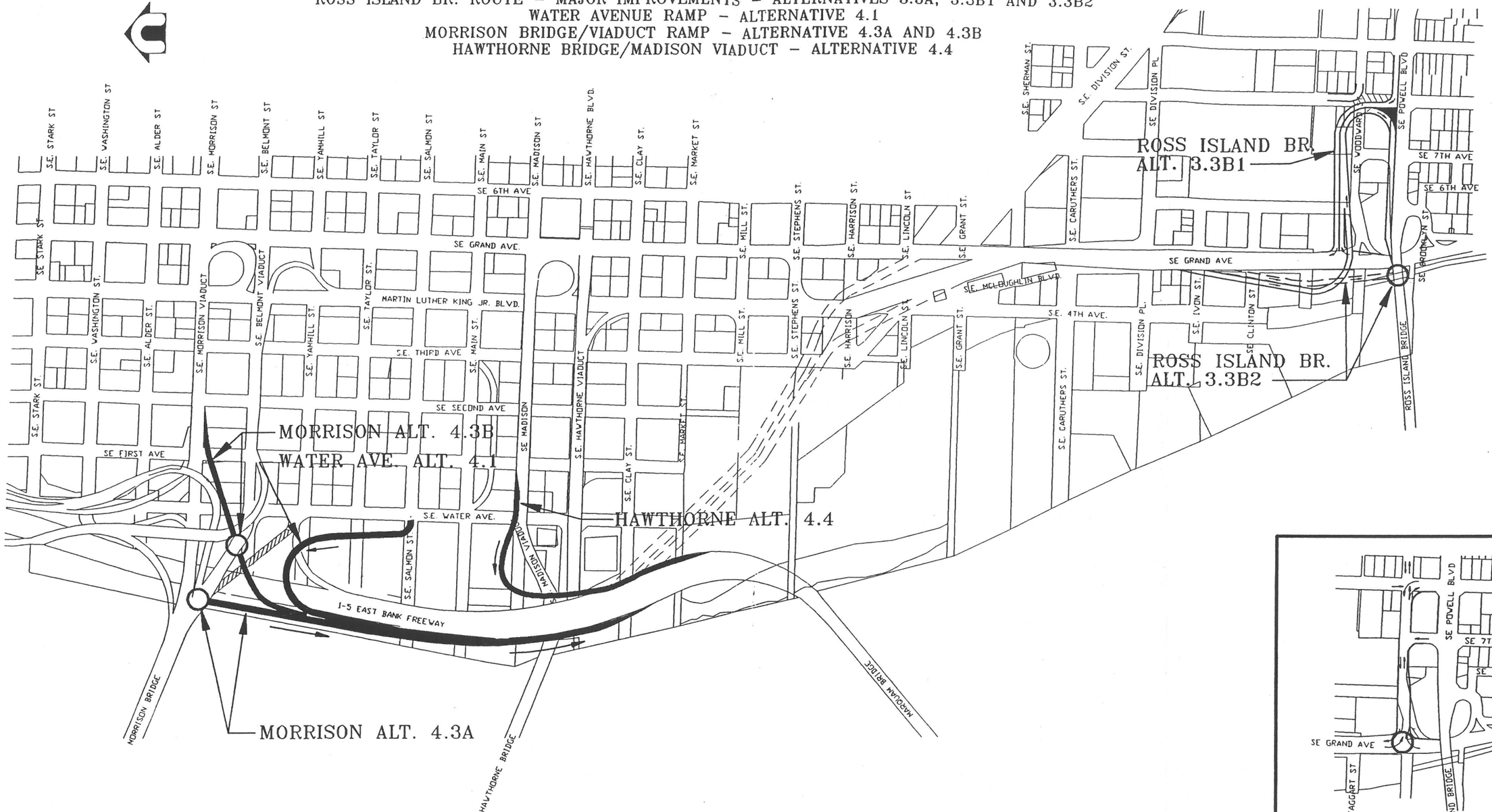
FIGURE 1
I-5 SOUTHBOUND ACCESS ALTERNATIVES STUDY
"PROMISING ALTERNATIVES"

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

DAVID EVANS AND ASSOCIATES, INC.



ROSS ISLAND BR.
ALT. 3.3A

LEGEND

○ SIGNAL ADDED AT INTERSECTION

▨ REMOVE EXISTING RAMP (ALTERNATIVE 4.3B)

FIGURE 2

I-5 SOUTHBOUND ACCESS ALTERNATIVES STUDY
SUMMARY OF EVALUATION PROCESS

EVALUATION CRITERIA

	PERFORMANCE CHARACTERISTICS					TECHNICAL CHARACTERISTICS: PHYSICAL FEATURES		TECHNICAL CHARACTERISTICS: OPERATIONAL FEATURES				TECHNICAL CHARACTERISTICS: MODAL CONFLICTS			IMPLEMENTATION CHARACTERISTICS					
ALTERNATIVE	**Service Area** What CEID area has improved access: South, Central or North?	**Travel Time** Is the travel time from the Central Eastside Industrial District to I-5 southbound improved over TSM (Alternative 3.2)?	**Waterfront Impacts** Will the alternative preserve the waterfront's functional and visual characteristics?	**External Impacts** Will freeway access traffic avoid travel through other districts?	**Development/Land Use** Will the activities supported and changes induced be compatible with the CEID?	**Structure Conflicts** Does the alternative avoid major structure conflicts and obstructions?	**Geometric Design** Does the alternative avoid geometric design problems?	**Congested Locations** Does the route avoid severely congested locations?	**Truck Speeds** Do truck speeds match normal main line traffic speeds in the off-peak period?	**Standards** Does the facility meet current highway design standards?	**Safety Issues** Are new safety problems and existing high accident locations avoided?	**Rail Crossing** Does the route avoid significant rail crossing conflicts?	**Bus/Bicycle/Pedestrian** Will the route avoid major modal conflicts?	**Freeway Removal/Relocation** Is the alternative compatible with freeway relocation?	**Comparative Costs** What are the comparative costs between projects?	**Time Frame** **Is the time Frame required for alternative completion Short, Medium, or Long?	**Operational/ Economic Life** Relative to traffic problems in the CEID, is the alternative's operational/economic life Short, Medium, or Long?	**Constructability** Is this alternative physically feasible and what are the issues?	**Feasibility**	**RECOMMENDED TO CARRY FORWARD**
	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 / 8'30" 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 though 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 though 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 though 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, esplanade, 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 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 though 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 subareas 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 though 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 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 turn ramp (Option B) requires revision 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