Freeway-to-Freeway Connections: Tying the HOV Lanes Together

One of the considerations of this project was that people often use more than one freeway to get from one place to another. Travelers on HOV lanes should be able to get on an HOV lane in one part of the region, and stay in an HOV lane all the way to their destination. To create this "integrated" system, HOV lanes on intersecting freeways need direct ramps to connect them.

This kind of ramp can be very expensive. Freeway interchanges are often the hardest places to find room for new ramps; so major modifications are often needed. To allow every possible traffic movement, up to eight ramps are needed in an interchange or four pairs of ramps, one in each "quadrant" of the interchange. On average, to provide HOV connector ramps in each direction for one quadrant of an interchange, it costs about $60 million. To provide for all movements can cost up to $250 million!

The HOV Pre-Design Studies approach to freeway-to-freeway connections was to look at each quadrant of each interchange separately, and then prioritize the connections. Ramps that would have very low volumes and high costs scored low in the analysis; ramps with higher volumes, bigger travel time savings and lower cost scored high. The results are shown below and are described more fully on the maps that follow later in this booklet.

This project provides a basis to prioritize HOV freeway-to-freeway connections, but how much to spend overall on connections is a policy choice, not a technical decision. Therefore, recommendations are grouped into "definite" and "possible," depending on funding. Out of almost $1 billion in possible freeway-to-freeway projects, about $235 million are "definitely" recommended, and another $190 million are "possibly" recommended.

PUGET SOUND HOV PHASE 2 - FREEWAY TO FREEWAY EVALUATION

EFFECTIVENESS RATING
1 ○ Least Effective — 2 ◔ — 3 ◑ — 4 ◕ — 5 ● Most Effective

Location	Quadrant / Improvement Type	Travel Time Savings: Transit	Travel Time Savings: 3+ HOV	Cost: Cost ($ Mil)	Cost: Cost Effectiveness ($/Per-min Saved)	Facilitates Regional Transit	Safety	Environmental	General System Enhancement	Definite Recommendation	Possible Recommendation	Cost ($ in Mil)
I-5 / SR16 Interchange	NW Quadrant	●	●	◕	●	◑	◕	◑	●	✔		$ 40.00
I-5 / SR16 Interchange	SW Quadrant	○	◔	◕	◑	○	◑	◑	◕			$ 37.00
I-5/ I-405 / SR 518 Interchange	NW Quadrant	◕	◔	◑	◔	◔	◕	◕	●	✔		$ 45.14
I-5/ I-405 / SR 518 Interchange	SE Quadrant	○	◑	◑	◕	○	◑	◔	◕		✔	$ 45.93
I-405 / SR 167 Interchange	SE Quadrant	◑	◑	◔	◑	○	◕	○	◕		✔	$ 68.51
I-405 / SR 167 Interchange	SW Quadrant	○	○	◔	○	◔	◑	◕	◑			$ 74.13
I-405 / I-90 Interchange	SE Quadrant	○	◑	◑	◑	○	◑	◕	◑			$ 60.70
I-405 / I-90 Interchange	SW Quadrant	●	◔	◑	◑	◔	◕	◑	◑	✔		$ 56.57
I-405 / I-90 Interchange	NE Quadrant	◑	◑	◕	◕	◑	◑	◕	●	✔		$ 38.25
I-405 / I-90 Interchange	NW Quadrant	●	◕	◕	●	◕	◑	◑	●	✔		$ 43.07
I-405 / SR 520 Interchange	NW Quadrant	●	◑	◑	●	◑	◑	◔	●	★		$ 66.26
I-405 / SR 520 Interchange	SE Quadrant	●	●	○	◕	◑	◑	◔	●	★		$ 90.79
I-5/ SR 520 Interchange	Reversible Ramp	●	●	●	●	●	●	◕	●	✔		$ 11.12
I-5 / I-405 / SR 525 Interchange	SW Quadrant	◑	○	◑	○	◑	◑	◕	◑			$ 58.12
I-5 / I-405 / SR 525 Interchange	NE Quadrant	◑	◔	◔	◔	◑	◑	◕	◕		✔	$ 71.75
I-5 / I-405 / SR 525 Interchange	SE Quadrant	◔	◔	◑	○	◔	◑	◕	○			$ 59.10
I-5 / SR 2 Interchange	SE Quadrant	◔	◑	○	◔	○	◕	◑	◑			$ 108.14
I-5 / SR 526 Interchange	SW Quadrant	◑	○	●	◑	◔	◑	◕	◑		✔	$ 6.66

TOTAL Definite Recommendations $ 234.16
TOTAL Possible Recommendations $ 192.85

Note:
★ SR 520/I-405 connections rate high. The SE Quadrant is not recommended until the SR 520 HOV lane can be moved to the inside lane.
Investigation of the NW Quadrant is continuing to determine the feasibility of designing it initially for a right side connection convertible to a left side connection.

HOV Lanes - How Far Should the System Extend?

Since 1991, WSDOT has maintained the concept of a "Core" program of freeway HOV lanes for the Puget Sound region. This represents the system of HOV lanes the state would build if new revenue was available. The definition of the Freeway HOV Core Program has evolved, and includes 276 lane-miles, stretching from Lakewood north to Everett, and from Seattle east to Issaquah, including parts of I-5, I-90, I-405, SR 525, SR 520, SR 167 and SR 16.

Phase 2 of the HOV Pre-Design Studies evaluated HOV Lanes in the same manner as the other HOV projects in this report. The evaluation covered the Core HOV projects that remain unfunded, as well as other limited access highways in the region. The results are shown in the map on page 3.

The recommendations (at right) reaffirm the value of the projects in the Core program. In a few cases, HOV lane segments were only conditionally recommended. These are shown as dashed lines on the map and in general, their recommendation depends on something else that needs to happen first. Note that HOV lanes were not considered across the Evergreen Point Bridge (SR 520) or the Narrows Bridge (SR 16). These bridges are the subject of proposed public-private partnership projects, which require voter approval to proceed.

Four additional segments are recommended as possible HOV lane extensions: an extension on I-5 north to US 2, an extension on I-5 south to DuPont, an extension of SR 167 south to Puyallup, and an HOV lane on SR 526. An innovative proposal to use part of the express lanes to provide for a permanent southbound HOV lane between NE 65th Street and downtown Seattle is also conditionally recommended. This is one of the most congested routes in the region, as well as one of the highest transit ridership corridors for which there is no planned HOV solution. (This project is described in the North Seattle section on page 16.)

Finally, all the recommended HOV lane projects were screened to see if any might present an opportunity to convert an existing general purpose lane to HOV use, rather than construct a new HOV lane. At the planning stage, only longer segments have been examined to see if whole projects could be accomplished through conversion, and of these none were identified. It could be that at the detailed design stage, shorter segments may be identified where enough capacity exists to save money by converting an existing lane to HOV use. This was found to be the case for parts of I-5 in Pierce County.

As part of the process to periodically update the State Highway System Plan, it will be up to the Washington State Transportation Commission to decide whether to redefine what should be included in the Core HOV program. HOV projects that are not added to the "Core" program may still compete for funding against other proposed highway projects.

PUGET SOUND HOV PHASE 2 - HOV LANE EVALUATION

EFFECTIVENESS RANKING
1 2 3 4 5
Least Effective → Most Effective

Segment	Primary Criteria: Transit Travel Time Savings	Primary Criteria: HOV 3+ Travel Time Savings	Primary Criteria: Traffic Congestion	Primary Criteria: HOV Lane Continuity	Primary Criteria: Cost Magnitude	Secondary Criteria: Potential for Public Controversy	Secondary Criteria: Consistency with Plans	Secondary Criteria: Consistency with RTA Proposal	Recommended?	Preliminary Conceptual Cost* (Millions)
I-5 (Between DuPont and SR 512) - SB	2	5	4	2	3	4	3	3	Yes	$152.5
I-5 (Between DuPont and SR 512) - NB	1	5	4	2	3	4	3	3	Yes	
I-5 (Between SR 512 and Puyallup River Br.) - NB	5	5	4	3	1	4	5	5	Yes	$416.6
I-5 (Between SR 512 and Puyallup River Br.) - SB	3	5	4	3	1	4	5	5	Yes	
I-5 (Between Puyallup River Br. and S. 320th) - NB	1	1	1	4	5	4	5	5	Yes	$123.1
I-5 (Between Puyallup River Br. and S. 320th) - SB	1	1	1	4	5	4	5	5	Yes	
SR 16 (Between Purdy and Narrows Bridge) - EB	5	5	4	2	2	4	3	3	Yes	$38.5
SR 16 (Between Narrows Bridge and I-5) - WB	5	5	4	2	2	4	3	3	Yes	$91.7
SR 410 (Between SR 167 and Sumner) - EB	1	1	1	2	4	3	3	1	No	$12.6
SR 410 (Between SR 167 and Sumner) - WB	1	1	1	2	4	3	3	1	No	
I-5 (From SR 516 to S. 320th) - SB	1	1	1	4	4	4	3	5	Yes	$40.1
SR 167 (Between SR 512 and SR 18) - SB	1	5	5	4	5	3	3	3	Yes	$67.8
SR 167 (Between SR 512 and SR 18) - NB	1	1	4	4	5	3	3	3	Yes	
SR 509 (Between SR 518 and SR 99) - NB	1	1	1	2	4	4	3	1	No	$90.6
SR 509 (Between SR 518 and SR 99) - SB	1	1	1	2	4	4	3	1	No	
SR 512 (Between I-5 and SR 167) - EB	1	1	2	3	4	4	3	3	No	$132.6
SR 512 (Between I-5 and SR 167) - WB	1	1	2	3	4	4	3	3	No	
SR 518 (Between I-5 and SR 509) - EB	1	1	1	4	3	4	3	3	No	$63.3
SR 518 (Between I-5 and SR 509) - WB	1	1	1	4	3	4	3	3	No	
I-405 (Between SR 522 and I-5) - NB	2	3	4	5	5	5	5	5	Yes	$46.7
I-405 (Between SR 522 and I-5) - SB	1	1	1	5	5	5	5	5	Yes	
SR 520 (Between Evergreen Br. and 108th) - EB	1	1	1	4	1	3	5	5	No	$89.7
I-5 (Between Lake City Way and Mercer St.) - SB**	5	5	4	5	1	3	3	1	Yes	$53.5
US 2 (Between I-5 and SR 204) - EB	3	5	3	2	2	4	3	3	No	$80.0
US 2 (Between I-5 and SR 204) - WB	4	3	2	2	2	4	3	3	No	
I-5 (Between 164th and SR 526) - NB	3	2	3	4	5	4	5	5	Yes	$23.4
I-5 (Between 164th and SR 526) - SB	3	3	3	4	5	4	5	5	Yes	
I-5 (Between SR 526 and US 2) - NB	1	1	3	3	4	5	3	5	Yes	$83.0
I-5 (Between SR 526 and US 2) - SB	1	2	3	3	4	5	3	5	Yes	
I-5 (Between US 2 and Marysville) - NB	1	2	2	2	2	4	3	3	No	$56.0
I-5 (Between US 2 and Marysville) - SB	1	1	2	2	2	4	3	3	No	
SR 525 (Between I-5 and SR 99) - NB (1 HOV, 1 GP Ln)***	2	4	5	3	4	3	3	3	Yes	$36.6
SR 525 (Between I-5 and SR 99) - SB (1 HOV, 1 GP Ln)***	2	4	5	3	4	3	3	3	Yes	
SR 525 (Between I-5 and SR 99) - NB (1 HOV, 2 GP Ln)***	1	1	1	3	4	4	3	3	No	NA
SR 525 (Between I-5 and SR 99) - SB (1 HOV, 2 GP Ln)***	1	1	1	3	4	4	3	3	No	
SR 526 (Between Airport Rd and I-5) - WB	5	5	4	2	3	3	3	3	Yes	NA
SR 526 (Between Airport Rd and I-5) - EB	5	5	4	2	3	3	3	3	Yes	

* Cost includes both directions, unless otherwise noted.

** Permanent SB HOV lane on Express Lanes with Ravenna Blvd and Mercer Street Crossovers.

*** Includes new interchange at SR 99.

PIERCE COUNTY

SUMMARY RECOMMENDATIONS

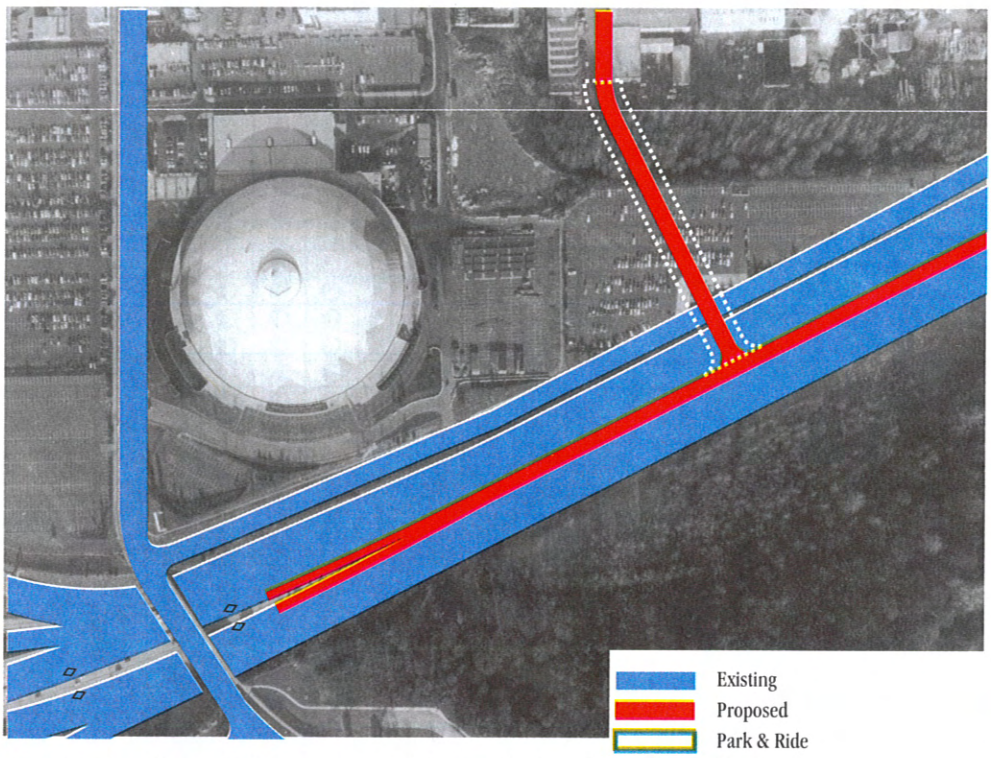
INCORPORATES RESULTS FROM: "MOUNTS ROAD INTERCHANGE TO PORT OF TACOMA INTERCHANGE HOV PROJECT"

HOV PROJECT ON I-5 IN PIERCE COUNTY REACHES FINAL STAGE

WSDOT has been working to better define what will need to be done to extend HOV lanes from King County through Tacoma and south, and to assess the environmental impacts HOV lane development would cause. The WSDOT Freeway Core Program includes HOV lanes on I-5 south to the SR 512 interchange, but HOV lanes are contemplated that would continue south to DuPont in the future. Overall, the planned HOV lanes in Pierce County comprise over half of the remaining cost to complete the Puget Sound HOV lane system, if HOV direct access ramps and freeway-to-freeway connections are excluded.

HOV lanes are also planned for SR 16 to Purdy, but WSDOT is waiting to see whether a proposed public-private project to expand capacity across the Tacoma Narrows bridge will gain voter approval before doing detailed planning for HOV lanes in this corridor.

To complete the I-5 Pierce County HOV project, many of the interchanges will need to be rebuilt to accommodate the widening of the freeway to add two more lanes. In the process, there will be opportunities to improve how some of these interchanges operate, as well as to remedy safety problems where they exist. Hence, an important part of planning this future HOV lane project was to examine alternatives for each interchange before developing cost estimates and the environmental assessment. Descriptions of the interchange improvements needed to construct HOV lanes in Pierce County are included on pages 10 and 11 in this booklet.



1 Tacoma Dome Direct Access (pictured above)

Direct Access, Northbound and Southbound

Cost: $35.00 M

The preferred alternative for this interchange would connect an inside HOV lane with the Tacoma Dome area and the Pierce Transit intermodal center via a tunnel from I-5. Ramps from the median of I-5 would drop down to connect to a new 800 foot tunnel roadway which would connect to "G" Street under the Southbound lanes of I-5, Wiley Avenue and the North parking lot for the Tacoma Dome. A second, less expensive concept should remain under consideration in case funding can not be attained for the first option. This concept would provide direct access to the Tacoma Dome by using a restricted direct access ramps from the I-5 median to the "D" Street overpass. A pair of pedestrian bridges connecting the parking lots west of the Dome to the main entrance of the Tacoma Dome to mitigate concerns regarding pedestrian and vehicular traffic conflicts during Tacoma Dome events are required with this option, which may be feasible only if the Tacoma Dome South parking lots are expanded by building a parking garage. The cost of this would be comparable to the tunnel option but it would also result in additional parking.

HOV DIRECT ACCESS RECOMMENDATIONS

2 S. 48th Street

Direct access, NB and SB

Cost: $13.33 M

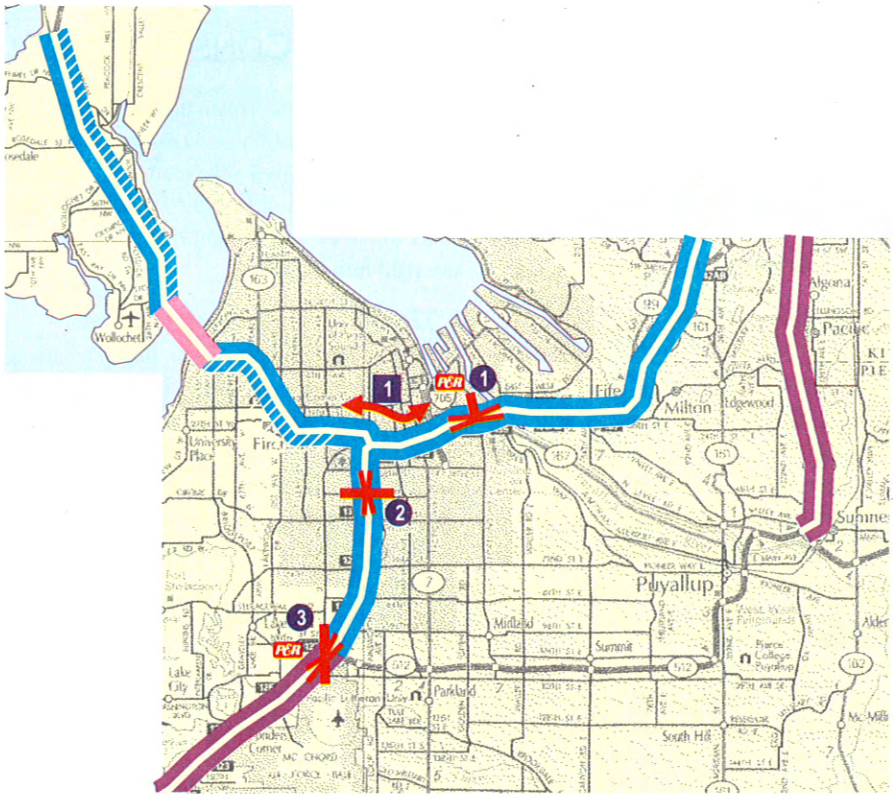
S. 48th St. crosses I-5, but there is no interchange there today. By providing drop-ramps from the 48th St. overpass, carpools would gain better access to the Tacoma Mall, and buses would be able to more efficiently reach the Tacoma Mall transit center located nearby.

3 SR 512

Direct access, NB and SB

Cost: $25.65 M

Just south of SR 512, Union St. crosses I-5. To provide direct access ramps connecting the Lakewood Park and Ride with HOV lanes to the north and south, ramps are proposed to drop from the Union St. overpass into the center HOV lanes on I-5. The Lakewood Park and Ride lot is a major transit transfer location, and access to the lot using the busy SR 512 interchange is difficult.



Legend

- Completed or Funded HOV Core
- Unfunded HOV Core - Recommended
- Unfunded HOV Core - Conditionally Recommended
- Potential HOV Core Extentions
- Subject to Voter Approval
- Proposed Direct Access Facility
- Proposed Freeway-to-Freeway Connection
- P&R Planned or Existing Park & Ride

HOV Lanes — Pierce County

WSDOT's Freeway Core HOV program includes HOV lanes on I-5 south to Lakewood, and on SR 16 to Purdy. All of these lanes rated high in the HOV lane segment evaluation, but on SR 16, the lanes headed away from the Narrows Bridge, on either side of the bridge, are only conditionally recommended. Because only as many cars can use these lane segments as can get across the bridge, traffic flow is constrained, and until HOV lanes can be constructed across the bridge span, it may not make sense to build HOV lanes heading away from the bridge. Heading towards the bridge, and eastbound approaching I-5, lines of traffic back up waiting to cross the bridge or to enter I-5, and HOV lanes would allow carpools and buses to get to the front of those lines.

Looking 10 years out, forecasts suggest that traffic volumes are likely to grow in Pierce County faster than in other parts of the region. Based on this expected growth, the evaluation process recommends considering an extension of the I-5 HOV lanes to DuPont, and of the SR 167 HOV lanes south from Auburn to Puyallup.

Freeway-to-Freeway HOV Connections

1 I-5 / SR 16 Interchange, NW Quadrant

Cost: $40.0 M

The preferred alternative for the SR 16 interchange provides direct ramp connections to eliminate the existing weaving movements across the Nalley Valley viaduct, and to provide direct HOV lane connections between I-5 and SR 16. Cross over ramps will carry HOV traffic from the inside of I-5 up and over mainline traffic. These ramps will continue to and from SR 16, using a structure paralleling the Nalley Valley viaduct which will tie back into existing SR 16 at a point west of the Nalley Valley. Northbound I-5 to westbound SR 16 general purpose traffic will also use a portion of this new structure over the Nalley Valley. Although only the northwest quadrant ramps are recommended by the HOV Pre-Design Studies project, connecting SR 16 HOV lanes to and from the north on I-5, current plans for the Pierce County I-5 HOV lanes also include ramps in the southwest quadrant, connecting to and from the south on I-5.

Interchange Improvements to Result from I-5 HOV Lane Construction

DuPont Interchange

At the existing DuPont interchange, ramps will be lengthened and widened to accommodate HOV bypass lanes and signals for ramp metering. Since DuPont has been the focus of attention recently because of plans by Intel to develop a manufacturing plant there, further access improvements in the interchange vicinity are being developed by WSDOT as part of a separate project. This includes a new interchange and potentially, a plan for direct access at the existing interchange into the inside lanes for transit and carpools.

Fort Lewis Interchange

No improvements are recommended to this interchange at this time, but if a new cross-base highway becomes a reality, the configuration of this interchange will need to be revisited. Fort Lewis may also be a desirable location for direct access using drop ramps to the Division Drive underpass, but it is not recommended without becoming part of a plan to increase transit and carpool usage, including, perhaps, a proposed major park-and-ride and shuttle bus/transit center adjacent to the southwest area of the interchange which is being investigated by the Fort.

West Tillicum Interchange

The two-lane bridge over I-5 would be replaced with a five-lane structure (two through-lanes in each direction and a center left-turn lane). A signal would be installed at the intersection of Berkeley Street and Union Avenue when warranted, and the northbound on-ramp would be widened from one lane to three to accommodate ramp meters, two general purpose lanes and an HOV bypass lane.

East Tillicum Interchange

The two-lane bridge over I-5 would be replaced with a five-lane structure (two through-lanes in each direction and a center left-turn lane). Signals would be installed at the ramp intersections on N. Thorne Lane SW, and ramp meters and HOV bypass lanes would be installed.

Gravelly Lake Interchange

The existing four-lane structure over I-5 would be replaced with a wider four-lane structure (two northbound through-lanes, one changing to two lanes southbound, and a center left-turn lane for the southbound on-ramp) to accommodate mainline widening. The bridge structure would be extended to the south. A northbound to westbound loop off-ramp would be added. The signal at the intersection of Gravelly Lake Drive with the northbound ramps would be removed, the northbound off- and on-ramps would be reconstructed, and ramp meters and bypass lanes would be added.

Bridgeport Way Interchange

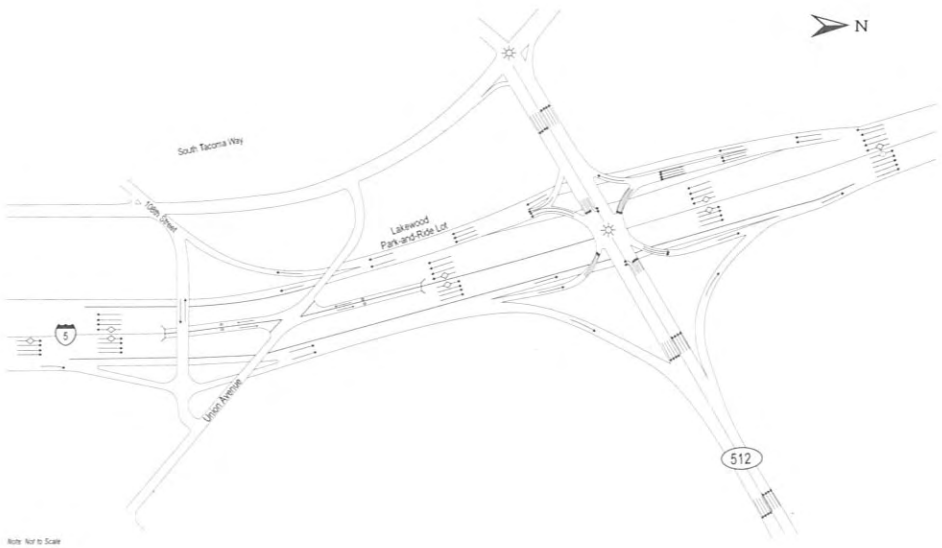
The existing four-lane bridge over I-5 would be replaced with a five-lane structure (two through-lanes in each direction and a center left-turn lane). The intersection of 123rd Street SW and Bridgeport Way would be moved south, and a five-lane roadway configuration would be extended to the south of that intersection. Ramp meters and bypass lanes would be added.

S 84th Street Interchange

The existing five-lane bridge over I-5 would be replaced with a new structure to accommodate mainline widening and ramp metering. The existing configuration will remain the same, but the intersection of the northbound off-ramp to Hosmer St. would be signalized. The eastbound approach to the intersection of Hosmer Street and S 84th Street would be widened to provide for an exclusive right-turn lane.

S 72nd/74th Street Interchange

There are two alternatives for this interchange which should remain under consideration. The preferred alternative would replace the eight-lane bridge over I-5 with a new structure to accommodate mainline widening, replacement of the existing retaining wall between the southbound lanes and the on-ramp, and ramp meters. An additional southbound off-ramp would connect with the intersection of S 74th Street and Sprague Avenue. A more expensive alternative would replace the existing structure with a full single point urban interchange (as described under the SR 512 inter-



SR 512 Interchange

Much of the traffic using the SR 512 interchange today would be diverted to a new ramp at 108th St., which would allow all movements except for a southbound on-ramp. The existing interchange would be completely rebuilt, using an innovative interchange design called a single-point urban interchange. In this type of interchange, all the ramps converge at the center of the overpass, allowing them all to be controlled by a single traffic signal. The existing six lane bridge over I-5 would be replaced with an eight lane structure, including three through-lanes in each direction and two turn lanes in each direction. These improvements have the side benefit of creating space which could be used to expand the existing park and ride lot. (Direct access ramps are also proposed at this interchange — described on page 8.)

change), as well as the southbound off-ramp which connects to Sprague Avenue and ramp meters. The new structure over I-5 would have seven lanes: two westbound, three eastbound, and two left-turn lanes for each direction. The latter approach is preferred if funding is available, but the first approach would provide adequate service for the next 10 to 20 years at a lower cost.

S 56th Street

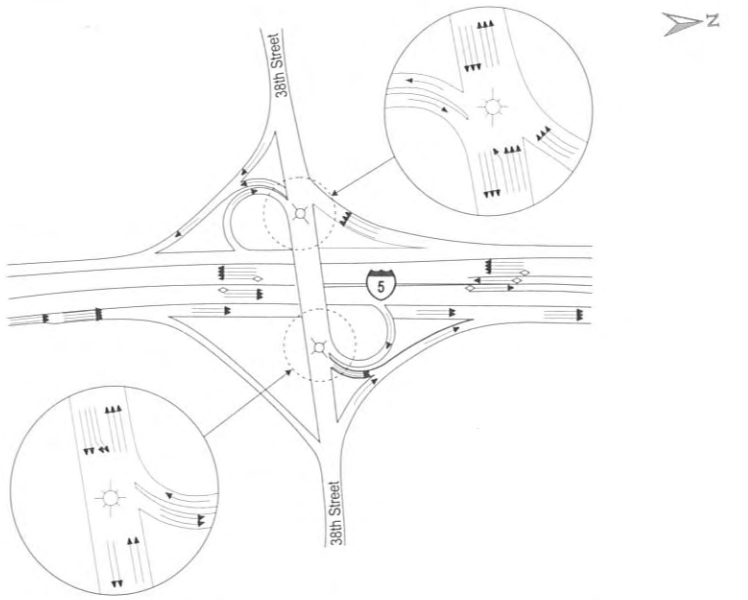
This existing full cloverleaf configuration over I-5 and collector-distributor (C-D) lanes would be reconstructed as a modified half-urban interchange. Ramp meters would be added. The southbound to eastbound and northbound to westbound loop off-ramps would be replaced with off-ramps which meet at the single point intersection. The on-ramps would retain their existing cloverleaf/diamond configuration, with an added southbound ramp from Tacoma Mall Boulevard merging with the southbound loop. The diamond on-ramps would be realigned much closer to the freeway. In addition, the diamond off-ramp configuration would be retained, including the existing southbound off-ramp intersection with the parallel Tacoma Mall Boulevard arterial. The existing six-lane S. 56th structure would be replaced with a new structure to accommodate mainline widening, providing three through-lanes in each direction instead of the existing two. The existing park-and-ride lots could be expanded into the areas cleared by removal of the two loop ramps. It is recommended that the interchange improvements be staged, first constructing the southbound slip on-ramp from Tacoma Mall Boulevard.

SR 7/705/Pacific Avenue Interchange

Due to the fairly recent construction of SR 705, no significant changes are planned for the I-705/SR 7/ Pacific Avenue interchange although those areas affected by the widening of the I-5 mainline would be modified. Changes, indirectly related to this interchange, would include removal of the Delin Street, Tacoma Avenue, and Thompson Avenue structures. The Thompson Avenue Bridge would be replaced with a new structure and the Delin Street and Tacoma Avenue bridges would be removed and replaced with a single new structure.

Portland Avenue/SR 167 Interchange

A signal would be installed at the intersection of 28th Street and Bay Street, and ramp meters and bypass lanes would be installed on the northbound on ramp. It is also recommended that the southbound off-ramp from I-5 to Bay Street be widened from one lane to two. Widening this ramp would facilitate movement of Tacoma Dome event traffic and is considered as a necessary improvement by the City of Tacoma.



S 38th Street Interchange

The loop on-ramps would be removed from the existing full cloverleaf interchange. They would be replaced with "slip-ramps" allowing traffic to merge into the diamond on-ramps. The existing six lane structure would be replaced by a seven-lane structure, with three through-lanes and a left-turn lane in the westbound direction, and two through-lanes and two left-turn lanes in the eastbound direction. The southbound to westbound diamond off-ramp would be relocated approximately 100 feet to the east and signalized, alleviating some weaving complications on the arterial street and associated traffic conflicts from this ramp headed west to go south on Steele Street. Ramp meters and bypass lanes would be installed. This interchange would continue to connect to the SR 16 interchange via collector-distributor lanes.

Port of Tacoma Interchange

There are two alternatives for this interchange which should remain under consideration: The preferred alternative consists of a single point urban interchange (described previously) with a four-lane structure (two northbound through-lanes, one southbound through-lane, and a center left-turn lane). The southbound ramps would be moved to the south to allow for more weaving room in between the ramps and Pacific Highway S. Also, a signal would be installed at the intersection of Port of Tacoma Road and 20th Street E, double left-turn lanes would be provided for the northbound off-ramp, and ramp meters and bypass lanes would be installed. The second alternative retains the basic existing configuration, replacing the existing structure over I-5 with a five-lane structure (two lanes of traffic in each direction and a center left-turn lane). The southbound ramps would be moved to the south to allow for more weaving room in between the ramps and Pacific Highway S, a signal would be reinstalled at the intersection of the southbound ramps with Port of Tacoma Road, a signal would be installed at the intersection of Port of Tacoma Road and 20th Street E, ramp meters would be added. Additionally, the southbound off-ramp would have a combined left-turn and right-turn lane as well as a second exclusive right-turn lane. The first approach is the more desirable if adequate funds are available, however the second approach would provide adequate service for the next 10 to 20 years if funding limitations dictate.

Fife Interchange

This interchange would be reconstructed as a single point urban interchange with a six-lane structure (two through-lanes in each direction and two left-turn lanes in each direction), the southbound ramps moved to the south to allow for more weaving room in-between the ramps and Pacific Highway S. Double left-turn lanes would be provided for each off-ramp, ramp meters and bypass lanes would be installed.