

# **SR 167 Corridor Plan Technical Memorandum 7**

*Appendix A:*

**Direct Access Ramp Analysis**

# **Direct Access Ramp Analysis**

## **Why Consider Direct Access Ramps?**

Direct Access ramps can be an effective improvement to help provide fast and reliable transit service, encourage commute trip reduction, and improve the efficiency of freeway operations. Direct Access ramps are generally defined to be exclusive ramps for transit and other high occupancy vehicles (HOV's), usually from the managed lane of the freeway to provide easier access to transit facilities and major employment areas. They can also be used to provide direct connections between the managed lanes of multiple limited access facilities. In the case of the SR 167 corridor, because the managed lanes would include High Occupancy Toll (HOT) lanes, the direct access ramps would also be used by single occupant toll paying vehicles.

Because the SR 167 corridor is part of a regional system that provides access to regional growth centers (as designated in the Puget Sound Regional Comprehensive Plan, Vision 2020) and other major employment areas, it is important to identify the opportunities for maximizing the efficiency of movement of people and goods between the regional growth centers and transportation facilities. Direct Access Ramps are one method to help improve that efficiency. Other than the Smith Street direct access ramp in Kent that is included in the long term options, there are no other direct access ramps currently planned along the SR 167 corridor. The purpose of this analysis was to identify those locations that are potential candidates for further consideration as direct access ramps.

## **Where are Direct Access Ramps most Effective?**

Direct Access lanes are most feasible where they serve major transit hubs (such as transit centers and park & ride lots with multiple transit routes), combined with major nearby employment sites. They are most effective when they are used to provide an optional route to areas where existing ramps are currently congested. The lanes help to improve speed and reliability for transit, and provide easy access for other users (HOV and toll users) to and from the managed lanes. Improved transit speed and reliability results in attracting new potential transit riders, thereby increasing the overall efficiency of the

regional transportation system. Direct access ramps that also serve major employment areas provide additional benefit to commuters who rideshare. Finally, they can be used to provide more seamless connections between multiple limited access highways, and thereby improve the traffic flow along the mainline operation. For the SR 167 corridor, this was considered to be an important consideration, given the number of state routes that link to SR 167, including SR 18, SR 410 and SR 512. Based on these assumptions, the analysis of potential direct access ramps along the SR 167 corridor examined:

- Potential benefit to mainline operations
- Major existing or planned transit facilities and service
- Major employment areas, including Regional Growth Centers

As these criteria were analyzed, other considerations were examined, including

- Existing or planned transportation improvements
- Existing and future congestion at current ramps
- Planned major trip generators or activity centers
- Potential for direct access ramp to accommodate freight

### **What is the potential benefit of Direct Access Ramps to SR 167 mainline operations?**

A typical Direct Access ramp, in the case of HOV operations, provides a benefit to transit and high occupancy vehicles. These ramps are intended to provide a reduced travel time for buses to reach transit facilities, and for ridesharers to reach park & ride lots or major employment areas.

The SR 167 corridor is unique in that the managed lanes will include HOT lanes, which would allow single occupant vehicles to use the direct access ramps. Therefore, the real benefit is that by allowing these users, as well as HOV's to use the ramps, the mainline operates more efficiently because motorists don't need to merge between the managed lanes and general purpose lanes to access ramps.

Scenarios that include two managed lanes in each direction (Options 2A, 4, 4A) can provide even greater benefit, as more vehicles are able to use the managed lanes thereby providing more capacity on the mainline. Dual managed lanes also provide greater opportunities for freight because of the

increased capacity. With that in mind, there are more opportunities for locations of direct access ramps along SR 167 than would typically be considered for a facility with only HOV lanes. Direct access ramps could potentially be located in areas that may not have a transit facility, but allow easier access to major warehousing districts, such as the Kent MIC, especially where existing access points are congested.

In addition, direct access ramps can also be used to provide direct connections between SR 167 managed lanes and other limited access roadways, such as SR 18 and SR 410. Providing direct access ramps between the general purpose lanes of these highways and the managed lanes of SR 167 will result in less merging on the mainline, thereby improving mainline operations, while also providing time savings for those users.

### **What are the major employment areas that would benefit from Direct Access Ramps?**

There are four regional growth centers designated by PSRC near the SR 167 corridor, including Renton, Tukwila, Kent and Auburn. These are areas that are targeted for population, housing and employment growth as well as transportation funds. Only Kent and Auburn's regional growth centers are directly adjacent to the SR 167 corridor, and thus are considered as part of this analysis. In addition, the Kent Manufacturing / Industrial Center is a designated Manufacturing/Industrial Center (MIC).

Outside of these regional growth centers and MIC's are other major employment areas along the SR 167 corridor, including:

- Renton Industrial Area (West of SR 167 between I-405 and SW 43<sup>rd</sup> St.)
- Valley Medical Center (East of SR 167 at SW 43<sup>rd</sup> Street, southbound only)
- The Supermall of the Great Northwest (East of SR 167 & south of SR 18)
- Sumner
- Downtown Puyallup

### **What current Transit Facilities are located along the SR 167 Corridor?**

While there are six park & ride facilities along the corridor, those that would benefit the most from a direct access ramp include the Kent Transit Station and the Auburn Transit

Station, Puyallup Transit Station and Sumner Transit Station. These facilities provide multiple modal opportunities including local and regional bus service and commuter rail, and include parking and are near major employers or transit oriented developments, such as the Kent Station commercial development. Most of the transit stations along the SR 167 corridor have a higher demand for parking than is available, including the Auburn, Sumner and Puyallup transit stations.

**What transit routes use SR 167?**

There is currently limited bus service along the SR 167 corridor, including two Sound Transit routes (Route 564 and 565) and one King County Metro route that operate along SR 167. The Sound Transit routes operate weekdays with 30 to 60 minute headways. These routes serve the Kent Transit Station (via SR 516), the Auburn Transit Station (via SR 18). The route 565 also serves the Sumner Transit Station via SR 410. These two routes include approximately 40 northbound and 40 southbound trips per weekday. A King County Metro route (Route 154) provides limited weekday peak period service between Seattle and the Auburn Transit Station (2 am peak trips and 2 pm peak trips).

**What transit service or capital improvements are planned along the SR 167 corridor?**

King County Metro has a number of transit service and capital improvements that are either underway or planned near the SR 167 corridor. Most of these improvements do not affect routes that operate on SR 167, but rather service on arterials between stations and cities along the SR 167 corridor and elsewhere in South King County.

Sound Transit’s Six Year Transit Development Plan includes expanding the service for the Sounder commuter rail between Seattle and Tacoma. Sound Transit is currently underway with its Phase 2 planning effort. If approved by voters, some capital facility improvements that may be constructed along the SR 167 corridor, including<sup>1</sup>:

- New parking garage at Sumner Station to accommodate 400 spaces
- New Parking garage at Auburn Station for net increase of 500 spaces
- New parking garage/surface parking at Puyallup Station for net increase of 500 spaces

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<sup>1</sup> Sound Transit -Transit Development Plan 2006-2011

- Transit Signal Priority at SR 167 ramps at SR 516; Transit bypass queue lane on northbound offramp; TSP at nine intersections within downtown Kent.

### **Where would Direct Access Ramps be most effective along the SR 167 Corridor?**

The direct access ramp analysis identified potential locations along the SR 167 corridor, especially those within regional growth centers and major employment areas, where direct access ramps could improve mainline operations, benefit transit, and provide service to major employers. In addition, if the managed lanes were to be allowed for freight in the future, there are some locations that may be of benefit to freight.

The analysis considered existing and planned transit services and facilities, planned transportation improvements, and existing areas of congestion. The following section describes the locations that should be considered for further analysis of direct access ramp locations.

#### **Locations that benefit Mainline Operations**

*SR 18 Interchange* – A direct access ramp at this location would provide a connection between the managed lanes on SR 167 to SR 18. Providing this access would allow motorists on SR 18 to easily access the managed lanes on SR 167, and the motorists using the managed lanes on SR 167 to reach SR 18 without having to merge into several lanes to reach the ramp. This in turn, helps to improve the overall efficiency of operations on the mainline for SR 167. It would also improve the travel time for motorists using the managed lanes to access the C Street SW interchange in Auburn.

*SR 410 Interchange* – Similar to SR 18, direct access ramps from the managed lanes on SR 167 to SR 410 would allow motorists on SR 410 to easily access the managed lanes on SR 167, and the motorists using the managed lanes on SR 167 to reach SR 410 without having to merge into several lanes to reach the ramp. This in turn, helps to improve the overall efficiency of operations on the mainline for SR 167. It would also improve the travel time for motorists using the managed lanes to access the Main Avenue interchange in Sumner. The planned widening of Main Avenue near the interchange of SR 410 should also help to improve travel time into downtown and the transit station, from SR 410.

*SR 512 Interchange* –Direct access ramps from the managed lanes on SR 167 to SR 512 would allow motorists on SR 512 to easily access the managed lanes on SR 167, and the motorists using the managed lanes on SR 167 to reach SR 512 without having to merge into several lanes to reach the ramp. This in turn, helps to improve the overall efficiency of operations on the mainline for SR 167. It would also improve the travel time for motorists using the managed lanes to access the Pioneer Way interchange to downtown Puyallup.

## Potential Locations that Serve Major Transit and Employment Hubs

### Kent Regional Growth Center

The Kent Regional Growth Center is essentially comprised of downtown Kent. The land uses are generally mixed, and include commercial, residential, government/institutional, and recreation. In 2000, the Kent Regional Growth Center had just over 3,000 employees. As a regional growth center, it is projected to accommodate a minimum of 15,000 employees by the year 2030. In addition, the growth center had a population of 922 in 2000. The City’s population target for the center is 10,309. Major employers within the Kent Regional Growth Center include the Kent Regional Justice Center, Kent Station Commercial Center and Kent City Hall.

The primary benefit of a direct access ramp to downtown Kent is that it could reduce travel time to the Kent Transit Station and major trip generators such as the Regional Justice Center and Kent Station retail development. While congestion is not expected in the PM peak in the year 2020 at the existing ramp to downtown Kent (at SR 516), the following locations may want to be considered further for potential direct access ramps:

*James Street* – There are currently no ramps to SR 167 at James Street. James Street is a 4 to 5 lane arterial that begins at Russell Road to the west and traverses east into downtown Kent and beyond to Maple Valley. A direct access ramp at this location would provide easy access to downtown Kent, the James Street Park & Ride lot, the Kent Regional Justice Center, Kent Station and Kent Transit Station. The Kent Transit Station is approximately one half mile from SR 167. To the west, users could access light industrial uses along West Valley Highway. There is an at-grade railroad crossing to the east of SR 167, which could impact travel times when trains are present.

Because Willis Street (where the existing ramps to SR 167 are located) is planned to be grade separated at the railroad, there would be time savings along Willis that could negate the need for a direct access ramp at James Street.

*West Smith Street* – There are currently no ramps to SR 167 at West Smith Street. West Smith Street does not currently connect across SR 167. On the west side of SR 167, West Smith Street is a 2 lane road that begins at 64<sup>th</sup> Avenue South to the west and traverses east to Thompson Avenue. On the west side of SR 167, West Smith Street is part of an arterial that begins as Meeker Street to the west of SR 167. The arterial turns north-south along Lincoln Avenue for a short distance, before turning east-west again along West Smith Street. West Smith Street is a 4 lane arterial that eventually becomes SR 516 which traverses east to Covington and Maple Valley. A direct access ramp at this location would provide easy access to downtown Kent, the Kent Regional Justice Center, Kent Station and Kent Transit Station. The Kent Transit Station is approximately one half mile to SR 167. To the west, users could access light industrial uses along West Valley Highway. A direct access ramp at this location would require the construction of the Smith Road linkage beneath SR 167, as well as intersection and signal improvements at Lincoln Avenue. In addition, there is an at-grade railroad crossing to the east of SR 167, which could impact travel times when trains are present. Because Willis Street (where the existing ramps to SR 167 are located) is planned to be grade separated at the railroad, there would be time savings along Willis that could negate the need for a direct access ramp at West Smith Street. Also, in the year 2020, the intersection of West Smith Street and 4<sup>th</sup> Avenue North is expected to operate at a level of service E, which may result in little if any travel time savings for a direct access ramp at this location.

#### **Auburn Regional Growth Center**

Auburn is a major employment center for South King County, partially because its location at the intersection of SR 167 and SR 18. Because it is fairly equidistant between the Port of Tacoma and the Port of Seattle, it has many freight warehouse distribution centers. The Downtown portion of Auburn is a newly designated urban growth center.

Major employers within the Auburn Regional Growth Center include Auburn Regional Medical Center, Auburn City Hall, Auburn Justice Center and Auburn High School.

The primary benefit of a direct access ramp from SR 167 to downtown Auburn is that it could reduce travel between SR 167 and the Auburn Transit Station, especially for vehicles traveling to and from the north on SR 167. Traffic currently destined for downtown Auburn must use SR 18 and exit at C Street SW. While there is not expected to be congestion in the year 2020 during the PM peak at the interchange of SR 18 and C Street SW, the following location could be considered further for potential direct access ramps:

*West Main Street* – There are currently no ramps to SR 167 at West Main Street. West Main Street is a two to four lane arterial that begins at West Valley Highway to the west and traverses east into downtown Auburn. A direct access ramp at this location could provide easy access to downtown Auburn and the Auburn Transit Station, which is approximately .75 miles east of SR 167. There are currently no major activity areas or trip generators along West Main Street to the west of SR 167. A constraint related to this option is an at-grade railroad crossing to the east of SR 167, which could impact travel times when trains are present. Unless this crossing were grade-separated, it would probably not be competitive with SR 18 in terms of travel time.

#### **Kent Manufacturing / Industrial Center**

The Kent Manufacturing / Industrial Center, a designated MIC by the Puget Sound Regional Council, is bordered by SR 167 to the east and south, SW 43<sup>rd</sup> Street to the north, and West Valley Highway to the west. It is largely comprised of lower density, warehouse distribution centers. Other large employers are located outside, but adjacent the Kent MIC, including Boeing (which employs approximately 4,000 people) and the REI Corporate Headquarters, both of which are to the west of West Valley Highway.

There are currently no transit services that access the Kent MIC directly from SR 167, and there are no transit facilities such as park & ride lots or transit centers within the area.

A direct access ramp to the Kent MIC would mostly benefit freight and other vehicles going to and from the various manufacturing related facilities in the area, including the Renton industrial area to the north, or other major nearby employers such as Boeing and the Valley Medical Center.

Freight would only benefit if in the future, freight were to be allowed to use the managed lanes.

Because of expected congestion during the PM peak period in the year 2020 at the interchanges of SR 167 at East Valley Highway (level of service F), and at South 212<sup>th</sup> Street (level of service F), the following locations should be considered further for potential direct access ramps:

*South 196/192<sup>nd</sup> Street* – The Kent CIP includes a project to construct a new corridor along South 196<sup>th</sup> /192<sup>nd</sup> Street between 84<sup>th</sup> Avenue South and 108<sup>th</sup> Avenue SE. A direct access ramp at this location would provide access to the north Kent MIC / Renton industrial area, as well as to the Kent East Hill area and Valley Medical Center (via Talbot Road).

*South 208<sup>th</sup> Street* – The Kent CIP includes a project to make street improvements to South 208<sup>th</sup> Street between 84<sup>th</sup> Avenue South and 96<sup>th</sup> Way South. A direct access ramp at this location would provide access to the central Kent MIC, as well as to the Kent East Hill area.

*South 228<sup>th</sup> Street* – The Kent CIP includes a project to construct a new corridor between 84<sup>th</sup> Avenue South (Central Avenue N) and 104<sup>th</sup> Avenue SE. There are a number of alignment options, including one that traverses across SR 167, linking to where 83<sup>rd</sup> Avenue S intersects with Central Avenue N, north of the southbound SR 167 onramp. A direct access ramp at this location would provide access to the south Kent MIC, as well as to the Kent East Hill area. It would also provide easy access to the Central Avenue North commercial area north of downtown Kent.

## Locations Examined and Found Not Feasible

### Auburn - Supermall Area

The Supermall of the Great Northwest, located at SR 167 and 15<sup>th</sup> Street SW, and surrounding area was considered as part of this analysis, even though it is not a regional growth center. This is because of the large number of employees that work at the mall itself. Besides the Supermall, other nearby major employers include the Boeing – Auburn facility, which is located 1.1 miles further east, at the southwest corner of 15<sup>th</sup> Street SE and C Street SW. Further to the south, along C Street

SW at Ellingson Road is the recently constructed Safeway Distribution center, which employs nearly 1,000 people.

Because of the lack of major transit hubs or facilities, and there is not expected to be significant congestion in the future at the interchange of SR 167 with 15<sup>th</sup> Street SW, a direct access ramp to this area is probably not needed.

### Sumner

Sumner, located to the east of SR 167 near SR 410 in Pierce County, is not designated as a regional growth center, but is expecting significant employment growth. In 2000, the employment within the city of Sumner was 6,481, according to the PSRC. This number is expected to grow to 12,331 by 2030, a 90 percent increase. This rate of increase is the highest among all jurisdictions along the SR 167 corridor. The only major employers identified within downtown are the City of Sumner government offices, and Sumner High School.

Near downtown Sumner, there are geographic constraints adjacent to SR 167 that have significant impacts toward developing a direct access ramp into downtown and the transit station, including the Union Pacific Railroad, and the White River. Any ramp that provides access to existing arterials, such as West Valley Highway, would require vehicles to make circuitous movements and cross the railroad, which does little to improve travel time to the transit station. Therefore, there is not much merit in providing a direct access ramp from SR 167 directly to downtown Sumner.

### Downtown Puyallup

Downtown Puyallup is located to the south of SR 167, and west of SR 512. SR 167 currently ends near downtown Puyallup at SR 161 (North Meridian Street), but is being planned to extend further west toward I-5 and the Port of Tacoma. In 2000, the employment within the Puyallup CBD was 7,128, according to the PSRC. This number is expected to grow to 9,458 by 2030, a 33 percent increase. The only major employers identified within downtown are the City of Puyallup government offices, and Puyallup High School. Good Samaritan Medical Center is located just to the south of downtown on 14<sup>th</sup> Avenue SE, east of South Meridian Street, near the SR 167 ramp to South Meridian.

The proposed HOT lanes on SR 167 will terminate just to the east of the interchange of SR 167 at SR 512. A single HOV lane will continue on SR 167 to the west as part of the SR 167 extension project. In addition, the tight distance between the interchange of SR 167/SR 512 and SR 167/North Meridian Street makes a direct access ramp to downtown Puyallup difficult to implement.