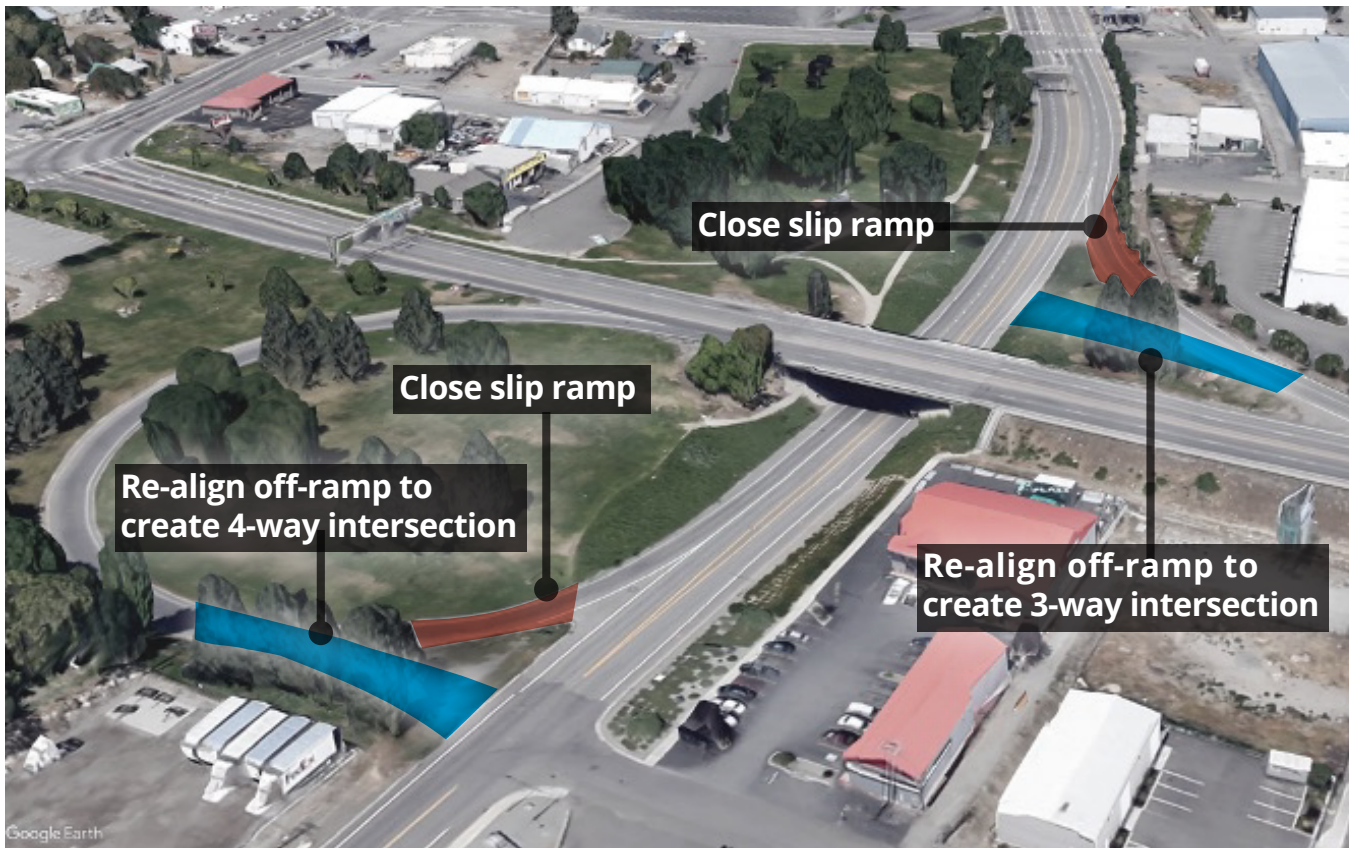


Appendix E: SR 285 Loop Ramp Reconfiguration



SR 285 Loop Ramp Reconfiguration Concept

SR 285 Loop Ramp Reconfiguration

The project team considered a conceptual alternative to the Locomotive Park shared use path between Snohomish Street and Ferry Street for cyclists on South Wenatchee Avenue. The alternative would require approaching WSDOT with a proposal to modify the existing ramps to and from SR 285, removing the loops and direct access, to provide intersection crossings for bike facilities, as shown above.

Intersection Concept

The concept was to change the on-ramp and off-ramp connections to SR 285 along South Wenatchee Avenue to lower volume roadway controlled intersections. The control could be either traffic signals or roundabouts, depending on the results of an intersection control evaluation (ICE). The current ramp configurations make a challenging environment for on-street bike facilities. Either intersection configuration could allow for the easier integration of linear bike facilities on South Wenatchee Avenue, as an alternative to the shared use path through Locomotive park.

Rider Comfort Analysis

The evaluation of bike facilities for a wide range of rider comfort levels on South Wenatchee Avenue concluded that the use of the Locomotive Park shared use path had the widest appeal to a variety of riders. The public outreach process confirmed that the public preferred physically separated, off-road facilities compared to on-road bike lanes.

The configuration of the loop ramps to intersections would allow for greater continuity between bike facilities on South Wenatchee Avenue south of Marr Street with facilities north of Ferry Street, removing the need to cross South Wenatchee Avenue to get to and from Locomotive park. But, the tradeoff for the continuity is greater exposure to traffic, both in linear bike facilities between the proposed SR 285 ramp intersections and through the intersections. Both the linear facilities and the intersections, either signalized or roundabouts, may be uncomfortable for some riders, and may represent a barrier to a facility that appeals to the widest range of users.

Agency Coordination

The loop ramp reconfiguration would require extensive coordination with WSDOT in order to be implemented. No agency coordination was conducted as part of the South Wenatchee Bicycle Connectivity Study to determine if WSDOT would be open to discussing the loop ramp reconfiguration concept.

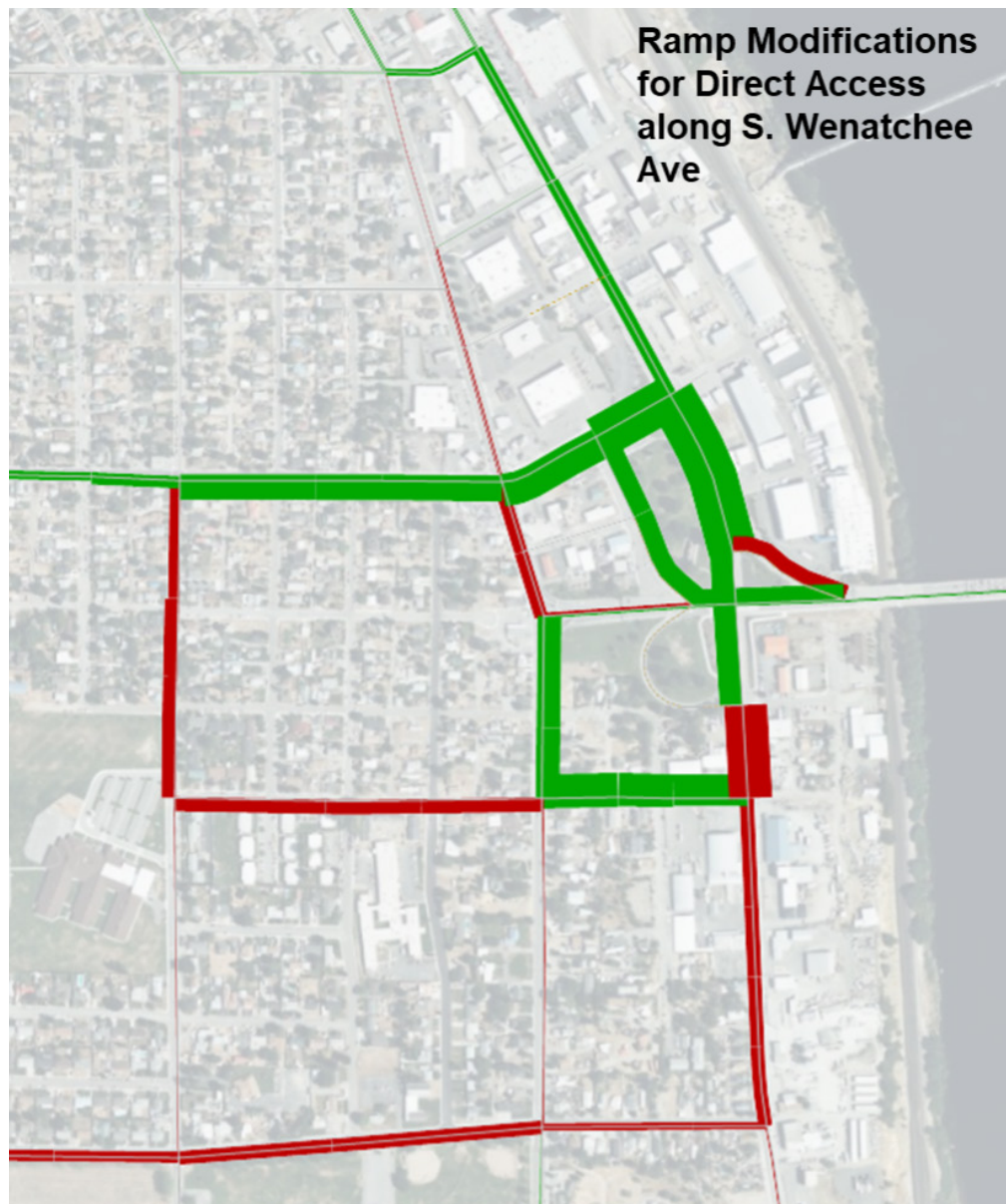
Other Impacts

The intersection concept would likely require additional right of way acquisition, especially if roundabouts are preferred to signals for operational, safety or maintenance considerations. The right of way acquisition could impact Locomotive park, in addition to surrounding commercial and industrial development.

The intersection concept would require significant financial resources to implement. The intersections may also require modification of the ramps to SR 285 to achieve sufficient queuing space for westbound traffic exiting SR 285 to South Wenatchee Avenue.

Travel Demand Model Analysis

The CDTC travel demand model was used to understand high level traffic shifts related to the intersection concept for the SR 285 ramps. The graphic above shows the travel demand model results. In the figure, green bars indicate roadways where traffic decreases compared to baseline conditions, and red bars show traffic increases.



285 ramp intersections concept

The graphic above shows the intersection controls at the ramps provide better accessibility for traffic from the south, and thus traffic shifts to southern east-west connections, such as Marr Street and Crawford Avenue to access the new intersections on South Wenatchee Avenue. The new preferred access pattern reduces traffic at several locations on Mission Street and Ferry Street where current traffic must “loop-around-the-block” to access the SR 285 bridge loop ramps from South Wenatchee Avenue.

Table E1 LOS Operations

Inter-section	Streets	2045 Baseline Scenario			Revised Ramps Scenario		
		LOS	Delay	WM	LOS	Delay	WM
1	Mission/Ferry	B	18.8	-	C	20.8	-
2	Mission/SR 285	D	43.7	-	D	52.2	-
3	Mission/Marr	E	42.9	WBL	D	32.5	WBL
4	Crescent/Ferry	D	36.2	-	D	40	-
5	Wenatchee/Ferry	C	31.6	-	C	31.9	-
6	Wenatchee/Marr	D	27	EB	D	28.1	EB
7	Wenatchee/Snohomish	-	-	-	B	16.1	-
8	Wenatchee/Ramp	-	-	-	B	17.9	-
9	Mission/Crawford	C	23	-	C	22.9	-

Traffic Operations

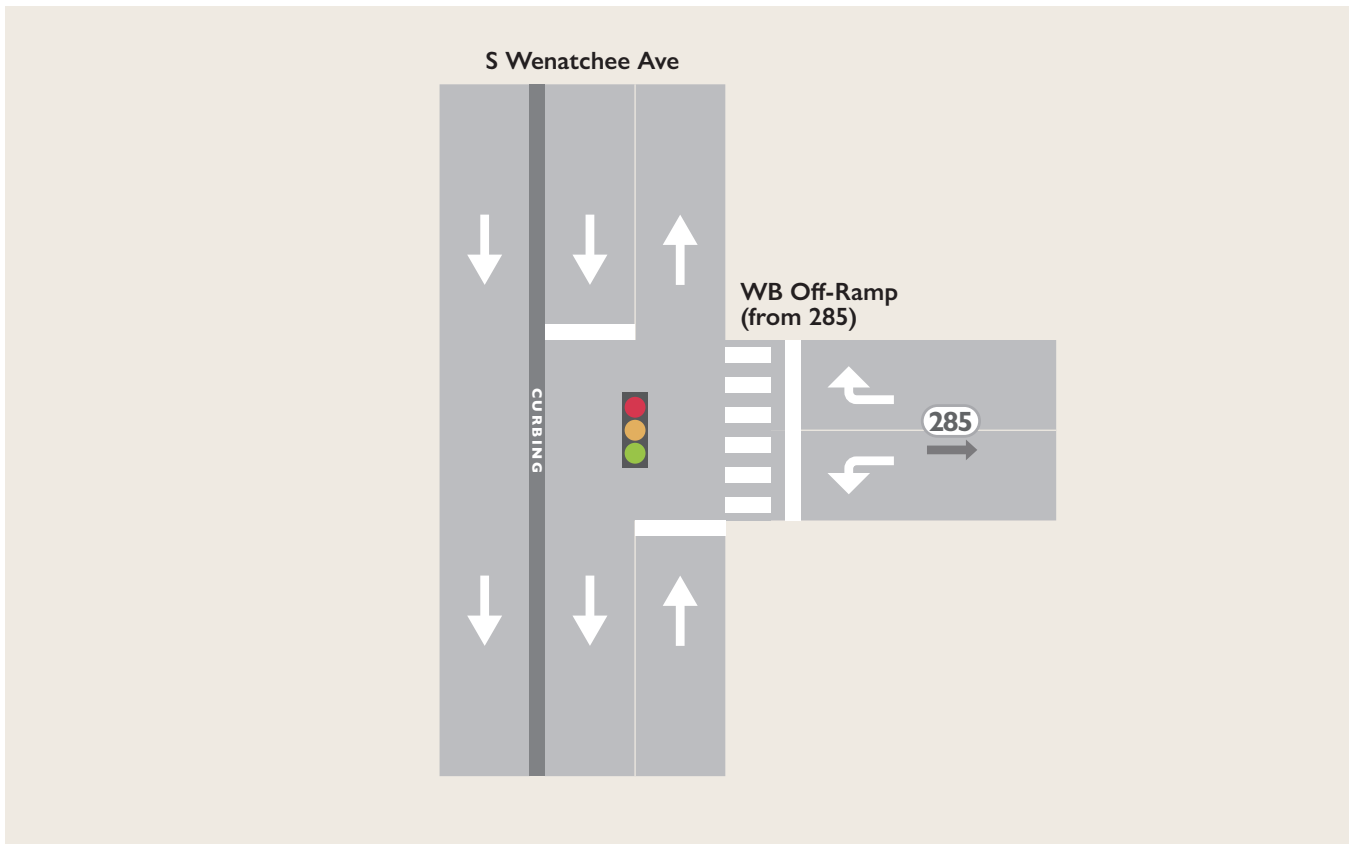
Expanding on the travel demand model analysis, exploratory intersection traffic operations analysis was performed at the study intersections. The westbound off-ramp at Wenatchee Avenue was assumed to be a traffic signal, with westbound left-turn movements allowed. The eastbound on-ramp from Wenatchee Avenue was also assumed to be a signal, with southbound right-turn movements stopped at the signal and northbound left-turn movements allowed. Both intersections were assumed to be more urban in context with improved walk and bike facilities and no “free right-turn” movements for vehicle traffic.

Table E1 provides the LOS results of the revised ramps scenario compared to baseline conditions. The new ramp intersections would operate at an acceptable LOS B, however queue lengths for certain movements may be an issue. The westbound off-ramp is expected to have a 95th-percentile queue that would extend a car-length into the mainline through-lane operations. The northbound left-turn movement to the eastbound on-ramp would have a 95th-percentile queue that would extend down to the Marr Street intersection.

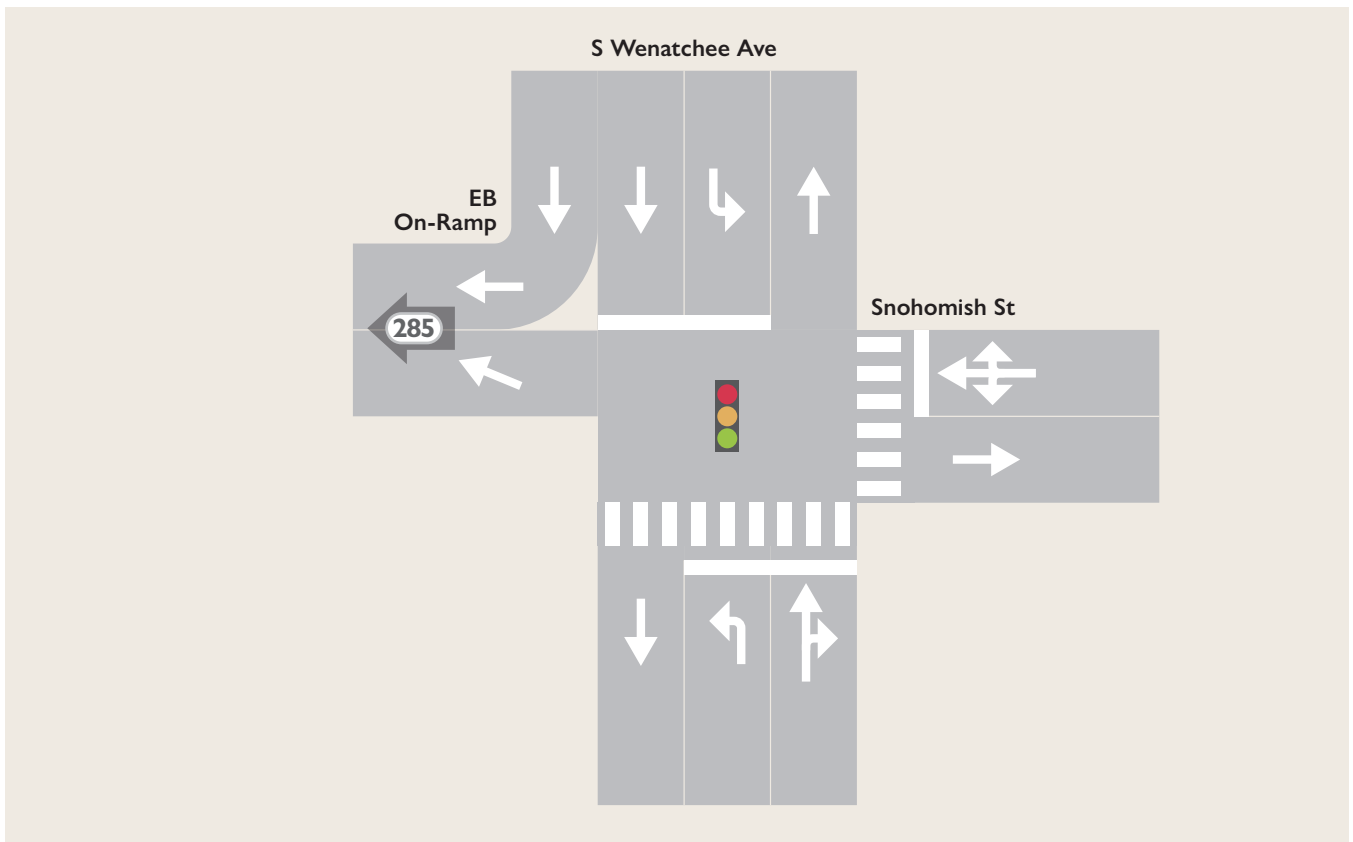
One possible way to reduce both these queue lengths is to remove the southbound-to-eastbound-on-ramp movement from both intersection operations. At the westbound off-ramp intersection, this would include a c-curb or similar separation

between the two southbound lanes. This separated southbound lane would continue to the eastbound on-ramp intersection, where southbound-to-eastbound-ramp traffic would either yield to or merge with northbound left-turning traffic (when present) when entering the ramp. A similar concept would likely be needed for roundabout operations to work at each intersection, meaning a type of southbound “slip-lane” through both intersections to access the eastbound ramp. These more complex intersections may or may not complicate walk and bike facilities in the area depending on facility types. Schematic figures of the intersection configurations are shown on the next page.

Table E1 also shows the operational impacts at the other study intersections in the area. In general, the new ramp configurations remove a significant number of right-turning movements at several study intersections. Since right-turn movements have lower delays in general, the overall average delays naturally increase with removed lower delay right-turns. In other words, some intersection metrics show higher delays with the revised ramp scenario, but actual operations are not significantly different. One example of this is at the Mission Street/SR 285 where LOS is D for both scenarios, but overall delay increased by 8 seconds. The intersection had increased “higher-delay” southbound left-turn volumes and decreased “lower-delay” northbound right-turn volumes, which compounded to create higher overall delay metrics. However, we would not expect operations to be much different than baseline conditions.



Westbound Ramp Intersection with Curbing



Eastbound On-Ramp Slip Lane