Purpose of this Study

To develop an alternative concept for SR 519 Phase 2, which can be supported by the project partners, thereby maintaining funding for the project and allowing the project to move forward.

Findings

Alternative A + B best provides a direct east-west grade-separated connection (South Atlantic Street – South Massachusetts Street) from I-90 to Alaskan Way, SR 99 and the waterfront (T-46), and improves traffic flow. Either Alternative A or B could be accomplished within the current funding, depending on the year of expenditure. Alternative A + B is likely to cost roughly twice that amount.

INTRODUCTION AND BACKGROUND

The primary purpose and need of the SR 519 Intermodal Access Project (SR 519 Project or Project) is to provide increased mobility and safety by improving connections between Interstate 5 (I-5)/Interstate 90 (I-90), the Port of Seattle (POS), waterfront commercial (including State ferries), and recreational/sports facilities in the south downtown area. In addition, the Project is intended to increase vehicular capacity and provide for improved safety for pedestrians as they access transit, neighborhoods, and major event facilities.

The Project, which is to be implemented in phases, was originally envisioned as shown in Figure E-1. It shows the completed Phase 1 and the previously agreed to Phase 2. Since the completion of Phase 1 in 2004, changes in the project area context, combined with the desire of certain stakeholders to revisit Phase 2, have resulted in the Washington State Department of Transportation (WSDOT) undertaking a study of the preliminary feasibility of new Phase 2 alternatives. These new alternatives would meet not only the Project's original purpose and need, but would also be sensitive to the more recent changes in context and stakeholder goals.

Changes in context that support revising Phase 2 are:

1. The planned relocation of the mainline railroad track(s) into King Street Station (to accommodate projected significant increases in passenger rail trains) utilizes right of way that was also needed for the local access component of the original SR 519 Phase 2 design.
2. Amtrak's planned expansion of its maintenance facilities (north and south of South Holgate Street between 1st Avenue South and 4th Avenue South) substantially reduces the capacity of South Holgate Street to accommodate east-west traffic movements.
3. Related to the livable south downtown vision and planning, the City of Seattle no longer supports the proposed elevated structure (and its I-90 ramp connection) over South Royal Brougham Way adjacent to Safeco Field.
4. The 2001 Nisqually earthquake, led to the ongoing development of the adjacent Alaskan Way Viaduct (AWV) and seawall replacement project. A key consideration of this study is determining improvements that facilitate east-west traffic movement within the project area, including opportunities to implement improvements prior to major AWV replacement construction.

WSDOT launched this feasibility study effort on October 17, 2005 with the following objectives:

1. Revisit the project's purpose and need statement in light of recent changes in context and stakeholder goals.
2. Develop a range of alternatives that more or less meet the original Project's purpose and need.
3. Develop evaluation criteria that represent the range of stakeholder goals for the Project.
4. Evaluate and screen alternatives based on the evaluation criteria.
5. Present the initial findings in the form of a draft feasibility report to the stakeholders for discussion and comment.
6. Gain consensus among stakeholders for a new preferred alternative sufficient to communicate a unified direction to the legislature by June of 2006.
7. Secure funding for the Project sufficient to carry the Project forward to completion.

ALTERNATIVES

Alternatives that survived screening were segregated into, and are presented in, two groups by location –SR 519 alternatives east of 1st Avenue South and AWV alternatives west of 1st Avenue South.

Overall, twenty-one alternatives were developed, evaluated, and screened using the following criteria:

1. Purpose – Does it accomplish the project's purpose and need?
2. Sensitivity – Does it address stakeholder objectives?
3. Cost – Can it be reasonably implemented?
4. Flexibility – Does it provide flexibility for future land use changes, projects, developments, etc.?
5. Phasing – Can it be accomplished in discrete phases that fit the available funding?

EAST OF 1ST AVENUE SOUTH

Original Phase 2 Design (Figure E-1).

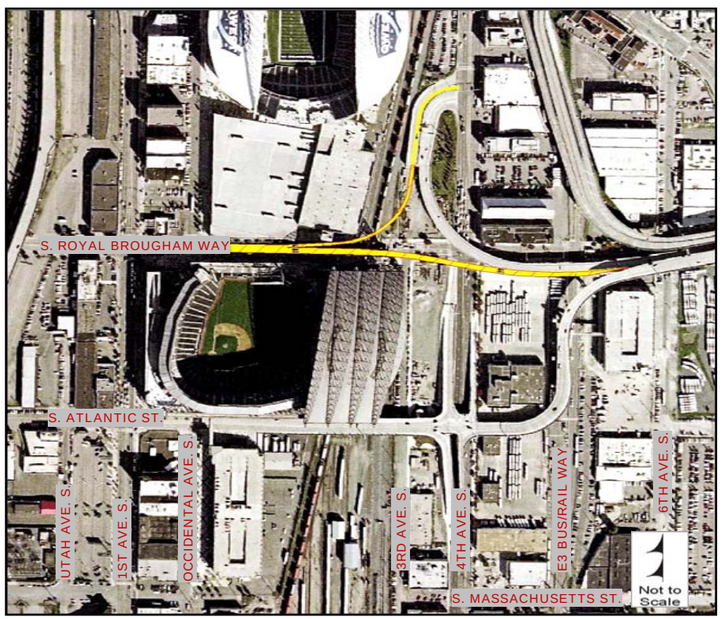

Figure E-1: Original Phase 2

Alternative A

Construct a two-lane ramp from the existing westbound I-90 ramp to South Atlantic Street. Connect this ramp just west of the elevated 4th Avenue/South Atlantic Street intersection. Improve the 1st Avenue South/South Atlantic Street intersection (Figure E-2).

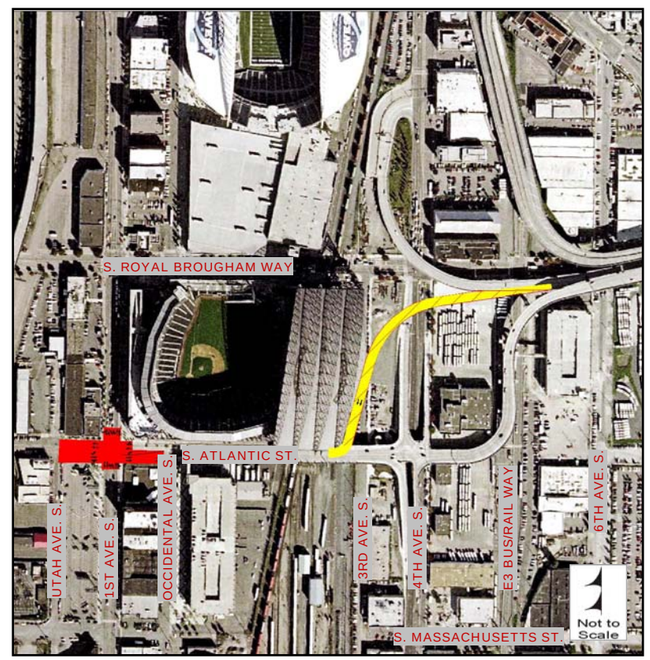

Figure E-2: Alternative A

Alternative B

Construct an eastbound two-lane ramp from South Massachusetts Street, (starting east of Occidental Avenue South and connecting to South Atlantic Street west of the elevated 4th Avenue South intersection). Improve 1st Avenue South/South Atlantic Street intersection, and improve the 1st Avenue South/South Massachusetts Street intersection (Figure E-3).

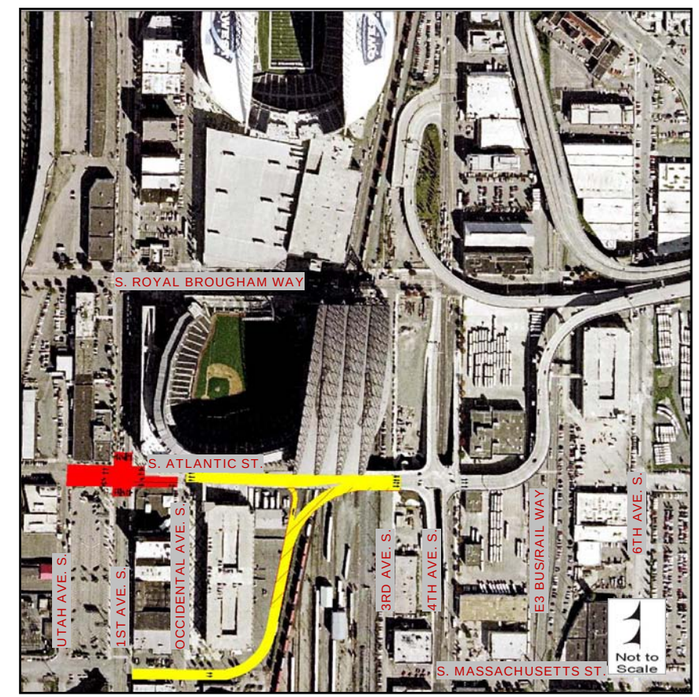

Figure E-3: Alternative B

Alternative A + B

Combine Alternatives A and B (Figure E-4).

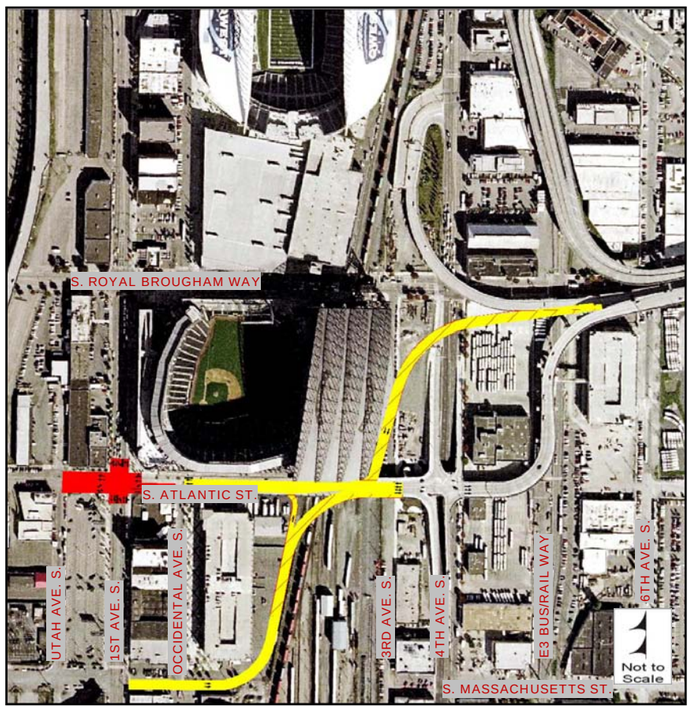

Figure E-4: Alternative A + B

West of 1st Avenue South

The logical western terminus for the SR 519 project is First Avenue South, which is a logical dividing line between the AWV project and the SR 519 project. The SR 519 and AWV projects are independent projects with independent utility.

At the start of this study, the preferred alternative for the south end of the AWV project was as presented in AWV Draft Environment Impact Statement (DEIS) as shown in Appendix B of this report. Later, however, the AWV project team proposed new alternatives for the south end of the AWV. The traffic analysis in this report is based on the more recent south end design of the AWV, which is included in Appendix B as Alternative 10-C.

Traffic Analysis Summary

The traffic analysis performed as part of this feasibility assessment was limited and focused on modeling traffic operations on 1st Avenue South and 4th Avenue South between South Royal Brougham Way and South Massachusetts Street, during the evening peak period only in 2030 under non-event conditions.

All 2030 alternatives, including Alternative A, B, and A + B, and the No-Build Option, were analyzed under different assumptions for South Royal Brougham Way and South Holgate Street. These assumptions included both streets open with reduced capacity due to increased rail traffic, both streets closed, and one street closed and the other open at reduced capacity.

Preliminary traffic analysis of the alternatives (2030) suggests the following:

1. All proposed alternatives for 2030 (Alternatives A, B and A + B) meet the purpose and need of the SR 519 project. They improve overall intersection delay over the No-Build Option and they reduce total travel times for east-west crossings between I-90 and the Waterfront.
2. Alternative A would improve operations at three intersections (out of six) along 1st Avenue South and 4th Avenue South. Both the intersection of 1st Avenue South and South Atlantic Street and the intersection of 4th Avenue South and South Atlantic Street would operate at LOS E or F, and further refinements would be required at these intersections. Alternative A improves total east-west crossing travel times when compared to the No-Build Option. The westbound movement primarily benefits from Alternative A. Alternative A slightly increases the total north-south travel times compared to the No-Build Option.
3. Alternative B would improve operations at four intersections (out of six) along 1st Avenue South and 4th Avenue South. When either South Holgate Street or South Royal Brougham Way is open, all studied intersections except the intersection of 4th Avenue South and South Atlantic Street would operate at an acceptable level of service. The intersection of 4th Avenue South and South Atlantic Street would operate at LOS E or F and further refinements would be required at this intersection. Alternative B improves total east-west crossing travel times when compared to the No-Build Option. The eastbound movement primarily benefits from Alternative B. Alternative B improves the total travel times in the north-south direction over the No-Build Option.
4. Alternative A + B would improve operations at four intersections (out of six) along 1st Avenue South and 4th Avenue South. Even when both South Holgate Street and South Royal Brougham Way are closed, all intersections except 4th Avenue

South and South Atlantic Street would operate at an acceptable level of service. The intersection of 4th Avenue South and South Atlantic Street would operate at LOS E or F and further refinements would be required at this intersection. Alternative A + B improves total east-west crossing travel times when compared to the No-Build Option. Both the eastbound and westbound movements benefit from Alternative A + B

5. The intersection of 1st Avenue South and South Atlantic Street requires improvements to provide for north-south dual left and east-west single left turn lanes for Alternative A. Alternatives B and A + B require improvements at this intersection to allow single left turn pockets for all approaches.
6. South Royal Brougham Way and South Holgate Street provide much needed east-west capacity. The best intersection performances are obtained when both South Holgate Street and South Royal Brougham Way are open. The worst conditions occur when both streets are closed. With one east-west street closed and the other open with reduced capacity, the results indicate that the intersection performances are better with South Holgate Street closed and South Royal Brougham Way open.
7. Amtrak is proposing to expand its Northwest Maintenance Facility, which services and maintains Sound Transit's commuter, Amtrak's long-distance, and WSDOT sponsored Amtrak Cascades passenger trains. Construction will start in early 2006 and be completed in 2009. BNSF is also relocating and expanding their main tracks along 3rd Avenue South in anticipation of expanded commuter and intercity passenger operations. Once the track improvements and maintenance facility are constructed, it will be very difficult to provide adequate crossing safety warning systems for this section given the large number of tracks to protect. At the same time, South Holgate Street provides the only east-west middle crossing of the almost mile-long rail maintenance yard. In the long-term, a grade-separation of South Holgate Street or an adjacent street should be considered.
8. The traffic analysis performed as part of the feasibility study will have to be expanded and refined for the design phase of the project. The study area will be expanded further south to include South Holgate Street, South Lander Street, and South Spokane Street. Different time periods will have to be studied including the morning peak, total daily traffic, and event conditions. Additional traffic analysis is needed to support the development and evaluation of intersection design and channelization refinements.

Other Considerations

South Royal Brougham Way Grade Separation

Because traffic operations benefit from South Royal Brougham Way being kept open even under reduced capacity, short-term improvements to the railroad-grade crossing, such as quad gates or similar features, should be installed to improve near-term at-grade safety.

During the review of the initial draft of this report, some of the project partners requested that a "South Royal Brougham Way Connector," a grade-separated ramp connecting 4th Avenue South to South Royal Brougham Way, over and west of the railroad tracks, be evaluated as part of this report.

Several alternatives were developed and studied. A two-lane loop ramp connecting 4th Avenue South to South Royal Brougham Way west of the railroad tracks, and also to the second floor of the Public Stadium Authority (PSA) garage, is shown below in Figure E-5. Preliminary cost estimates are included below.

Pedestrian Grade Separation

The project partners also requested that alternatives for a pedestrian grade-separation crossing over 4th Avenue South and the railroad tracks be studied. Several alternatives were studied and a pedestrian grade-separation from 4th Avenue South over the railroad tracks, which can be built separately or integrally with the "South Royal Brougham Connector," is shown below in Figure E-5. Cost estimates are included below.

Preliminary Cost Estimates (2006)

Pedestrian Ramp	$13 to $15 million	2006 $
Loop Ramp	$18 to $20 million	2006 $
Pedestrian + Loop Ramp	$31 to $33 million	2006 $

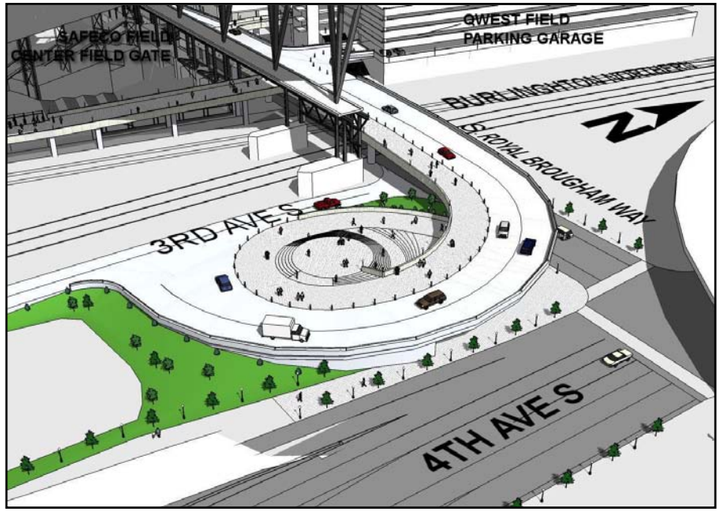

Figure E-5: South Royal Brougham Way Loop and Pedestrian Ramps

Findings

Alternative A + B best meets the project's purpose and need. Alternative A or B meets the project's purpose and need to a lesser extent, but Alternative B has merit as a first phase that can possibly be implemented within the next six to seven years.

Estimated Costs (Planning Level Estimates in Year of Expenditure Dollars)

The year of expenditure (YOE) for individual project elements is derived from the proposed project timeline shown in Appendix C. These elements, their associated preliminary cost ranges, and projected YOE are as follows:

		YOE
1st and Atlantic Intersection	$1.6 to $1.7 million	2008
Alternative A	$65 to $71 million	2017-2018
Alternative B	$43 to $47 million	2009-2010
Alternative A + B	$105 to $114 million	2009-2018
Original Phase 2	$59 to $66 million	2009-2010
Current Phase 2 Budget	$46.3 million	

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