

# SOUTH LANDER STREET GRADE SEPARATION PROJECT

## ALIGNMENT MEMORANDUM

*For  
South Hanford Street Alternative Comparison*

Prepared for:



City of Seattle  
Department of Transportation

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KPFF Project No. 106531.1

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## 1. Executive Summary

This Alignment Memorandum has been prepared to compare the benefits and impacts of a grade separation of the Burlington Northern Santa Fe (BNSF) railroad track in the South Lander Street and South Hanford Street corridors between 1st Avenue South and 4th Avenue South. The purpose of this comparison is to determine which location will provide the greatest benefit with the least impact to the community.

The need for a grade separation in this area was identified in the Access Duwamish Initiative, which identified access and mobility problems in the North Duwamish Industrial Area. In 2002 a Type Size and Location Study (TS&L) was prepared for a grade separation of the track at South Lander Street. As part of the TS&L process a screening analysis was conducted on eight alternative corridors between South Holgate Street and South Hinds Street to confirm a preferred location. That analysis concluded South Lander Street was the preferred location, although it recommended further study of the South Hanford Street corridor.

Additional analysis has been conducted for the South Hanford Street Corridor and the comparative PROS and CONS for each corridor are summarized in the following table.

South Lander Street	South Hanford Street
<p><b>PRO:</b> Results in the closing of an existing grade crossing which:</p> <ul style="list-style-type: none"> <li>• Eliminates existing and future vehicular delays</li> <li>• Improves BNSF, Sound Transit, and Amtrak operations</li> <li>• Improves safety conditions for all users</li> </ul> <p><b>PRO:</b> Ideally located to provide pedestrian and transit connections to Sound Transit’s South Lander Street Light Rail Station, and to serve the higher intensity development in the area, as well as the newly rezoned area to the north.</p>	<p><b>CON:</b> Will not result in the closure of an existing grade crossing. Will not provide any benefit to railroad operations, and will not improve safety in the South Lander Street Corridor.</p> <p><b>PRO:</b> Improves east-west connections between 1st Avenue South and Airport Way South.</p> <p><b>CON:</b> South Hanford Street is located at the far south end of the North Duwamish Industrial Area, and is relatively close to Spokane Street which already meets some of the areas grade separation needs. The proposed 1st Avenue South and 4th Avenue South ramps to the Spokane Street viaduct will further increase the utility of that structure and lessen the benefit of a grade separation at South Hanford Street.</p> <p><b>PRO:</b> Creates some network continuity by providing a direct link between the Port of Seattle terminals on East Marginal Way South, BNSF’s Seattle International Gateway (SIG) and Stacey Yards and 4th Avenue South.</p> <p><b>PRO:</b> Improves level of service through out the 1st Avenue South and 4th Avenue South corridors because it creates additional capacity in the system with a new east west street.</p>

South Lander Street	South Hanford Street
<b>CON:</b> 40 on-street parking stalls will be lost.	<b>CON:</b> Up to 100 parking stalls within the public right-of-way will be eliminated. These stalls tend to be used by five specific property owners.
<b>PRO:</b> Almost all the improvements on South Lander Street can be constructed within the existing right-of-way.	<b>CON:</b> One active rail that served industrial parcel will have to be acquired and property from two other owners will be needed to assemble the necessary right-of-way. Approximately 50,000 square feet of additional right-of-way will be needed.
<b>PRO:</b> The intersection at 3rd Avenue South will remain open with limited turning movements. (Note: the intersection at Occidental Avenue South will be eliminated in both corridors.)	<b>CON:</b> The intersection at 3rd Avenue South will be eliminated.
<b>PRO:</b> None of the impacted businesses are rail served, and mitigation to address their impacts is with the realm of this project.	<b>CON:</b> Three rail served industrial properties will be impacted. One parcel will be acquired for right-of-way, and the two others may have their rail spurs eliminated due to limited clearance under the bridge structure. At a minimum, the restricted clearance could limit future rail operations or it might require relocation of these rail served businesses.
<p><b>CON:</b> The loss of direct access will impact the South Lander Business Park, the South Lander Station Business Park, and Pacific Galleries Antique Mall. These businesses will also suffer from a loss of visibility.</p> <p><b>CON:</b> The loss of direct access on South Lander Street will require the Seattle School District to reroute their exiting truck traffic, which will result in a loss of parking, and increased pedestrian/truck conflicts in their south parking lot.</p>	<p><b>CON:</b> Operational and access impacts to Allied Waste may limit their ability to maintain current functions and could require relocating a portion of their operations.</p> <p><b>CON:</b> Reduced parking and access will impact Renewal Windows and Doors, the Herban Building, Andy's Diner, and AC Automotive. If access to the repair bays at AC Automotive is blocked, it could require relocation of this business.</p>

Impacts to adjacent businesses will occur in each corridor as noted in the table above; however, there are significant differences in the types of businesses and the extent of the impacts depending on the corridor. In the case of South Lander Street, the impacts are primarily due to a change in access and decreased visibility from the street, and will primarily affect office and retail businesses as well as a restaurant, and the Seattle School District's headquarters building. In the South Hanford Street corridor, three industrial rail dependent businesses, the Allied Waste recycling facility and one retail business will have major operational impacts while three other retail businesses and one restaurant will have relatively minor access impacts. While improvements in the South Lander Street corridor are likely to make retail and restaurants less viable, it is easier to relocate these businesses

when compared to the rail served industrial properties impacted in the South Hanford Street corridor.

In summary, South Lander Street provides substantially more benefit, will have less impact on the community, and is likely to be less expensive based on right-of-way acquisition and length of elevated structure. It is the recommended alternative for a grade separation when compared to South Hanford Street.

## 2. Introduction

In 2002 the City of Seattle began a Type Size and Location (TS&L) Study for the South Lander Street Grade Separation project of the Burlington Northern Santa Fe (BNSF) railroad tracks. In response to citizen concerns, the City interrupted the process to conduct an Alignment Screening Analysis to determine if the objective of increasing truck and rail freight mobility could be achieved at another location with less impact on the community.

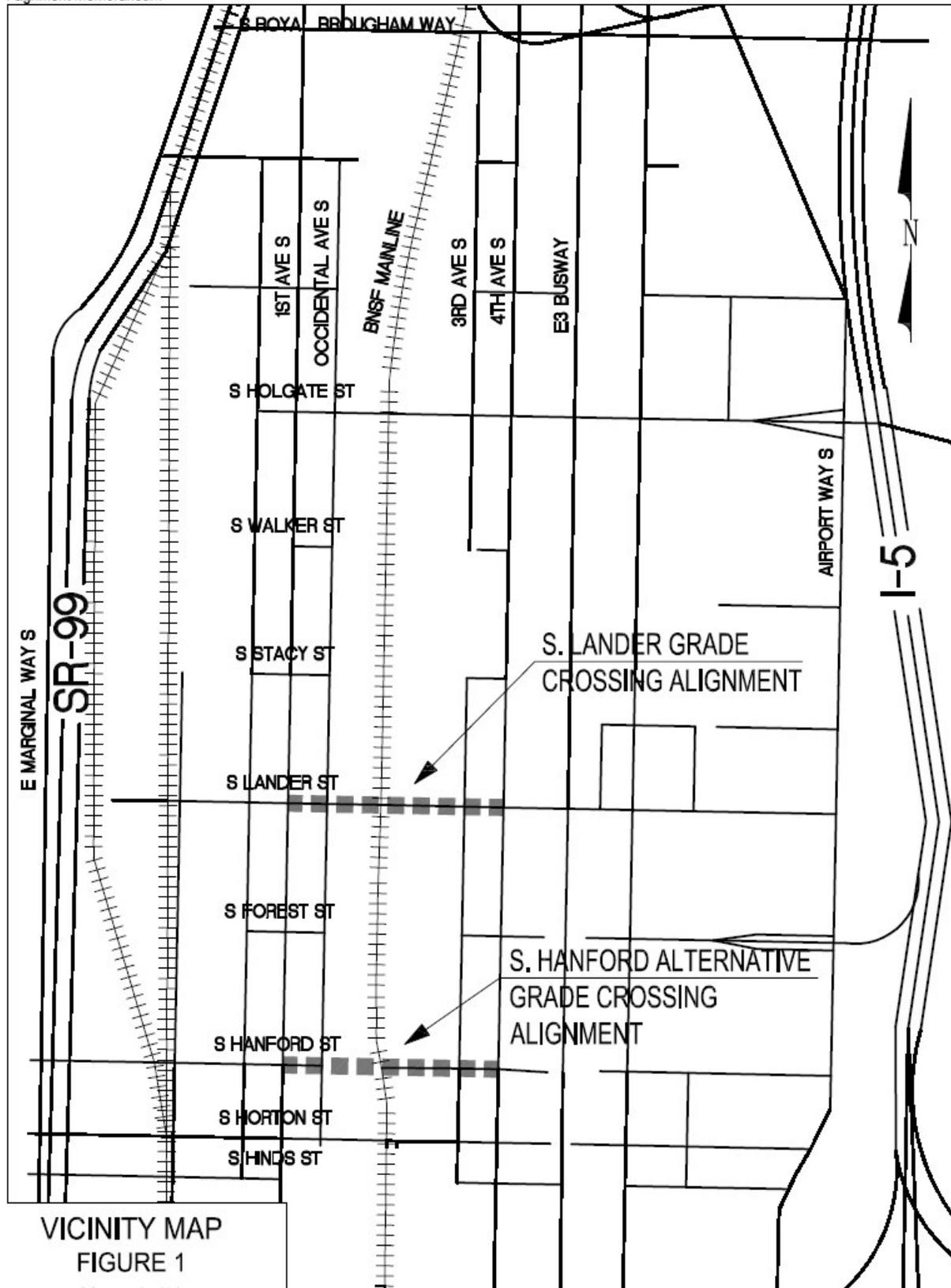
This screening analysis concluded that the South Lander Street alternative clearly best meets the objectives of this project. However, since the South Hanford Street alternative also provides benefit and the impacts were not fully determined due to budgetary constraints, the analysis noted that further consideration of South Hanford Street may be warranted.

This comparative analysis of the impacts and benefits for a grade separation documents the additional analysis to determine which location best meets the purpose and need for the project.

Located in the North Duwamish Industrial Area, South Lander Street between 1st Avenue South and 4th Avenue South is an existing arterial with two travel lanes in each direction, a center turn lane, two lanes of curb-side parking, one on each side, and sidewalks on both sides. The width of the right-of-way in this area is 100 feet and can accommodate those improvements directly related to South Lander Street. See Vicinity Map, Figure 1.

Along the South Hanford Street alignment there is no public right-of-way between Occidental Avenue South and 200 feet west of 3rd Avenue South (the east side of the Allied Waste site). Currently, the right-of-way for South Hanford Street exists between 1st Avenue South and Occidental Avenue South, and from 250 feet west of 3rd Avenue South to 4th Avenue South. The right-of-way between 1st Avenue South and Occidental Avenue South is 150-feet wide, and the 250 feet west of 3rd Avenue South is 75-feet wide, while between 3rd Avenue South and 4th Avenue South it is 75-feet wide. Photographs for each of the corridors are shown in Appendices A and B.

Included in this report is a brief discussion of the project background followed by descriptions of each corridor. These sections are followed by required access revisions and a thorough corridor comparison.



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### 3. Background

The need for additional grade-separations in the Duwamish area was initially evaluated by the *Access Duwamish Study*, which was a comprehensive study of transportation and freight needs performed between 1997 and 2000. The goals of the Access Duwamish project were to:

- Provide for the efficient movement of goods and people to ensure the economic vitality of the North Duwamish Industrial Area.
- Reduce modal conflicts and enhance traffic connections.
- Contribute to regional air quality objectives by planning improvements that reduce congestion and transportation related pollution.
- Reduce safety hazards and ensure a safe operating environment for all modes of transportation.

The study identified over 80 potential infrastructure improvements, which included grade separation or closure of the remaining mainline grade crossings between South Horton Street and Royal Brougham Way. All of the potential grade-crossing locations were evaluated to determine which ones would provide the greatest benefit, and to determine the order in which such projects should be constructed. The results and recommendations from the *Access Duwamish Study* are as follows:

1. Build SR 519 first. The crossing at Atlantic Street (Phase I) was opened in 2004 and an additional crossing (Phase II) is under consideration.
2. Build South Lander Street next.
3. Build another grade separation after South Lander Street, at either Holgate Street or South Hanford Street.

As each grade separation project is constructed, the *Access Duwamish* plan calls for the closure of additional at-grade crossings in the corridor.

The Alignment Screening Analysis that was conducted as part of the TS&L considered the following eight alternative corridors between South Holgate Street and South Hinds Street for a four-lane overcrossing of the BNSF tracks within the limits of 1st Avenue South and 4th Avenue South:

- South Holgate Street
- South Walker Street
- South Stacey Street
- South Lander Street
- South Forest Street
- South Hanford Street
- South Horton Street
- South Hinds Street

A Technical Memorandum with results of the Alignment Screening Analysis was completed on January 21, 2003, with a recommendation that the South Lander Street and South Hanford Street corridors be given further consideration. The TS&L Study for South Lander Street was completed on June 5, 2003.

This Memorandum defines and compares benefits and impacts of a grade separation at South Lander Street and South Hanford Street to complete the TS&L study.

## 4. Project Descriptions for Each Corridor

### General Improvements

A grade separated crossing on either South Lander Street or South Hanford Street would stretch from 1st Avenue South to 4th Avenue South, with minor changes to 1st Avenue South and 4th Avenue South intersections. The traveled way cross section will be similar to the existing condition on South Lander Street with two travel lanes in each direction and left-turn lanes at the intersections with 1st Avenue South and 4th Avenue South. It is necessary to have two lanes in each direction due to the steep 7 percent maximum grades and the high volume of truck traffic. See Figures 2 and 3 at the end of this section for plan and profile drawings of the improvements.

For each corridor there are associated site-specific improvements and requirements to address side street circulation, business access, parking, right-of-way acquisition, and utilities. These improvements and requirements are listed below, first for South Lander Street Alignment, and then for South Hanford Street Alignment.

### South Lander Street Alignment

#### Right-of-Way

Improvements for South Lander Street can generally be constructed within the existing 100-foot wide right-of-way.

Depending on the design solution for Occidental Avenue South, additional right-of-way may be required.

#### Side Street Circulation

Occidental Avenue South and 3rd Avenue South intersections will be affected. The existing intersection at Occidental Avenue South will be eliminated. Design solutions under consideration to address this impact include construction of cul-de-sacs on each side of South Lander Street and a shift in the alignment of Occidental Avenue South to create an underpass, which would allow the street to remain open for through traffic. This shift in the alignment will maintain the existing access to the public rail freight loading facility, however, it will result in a loss of parking for the South Lander Station Business Park, and the South Lander Business Park.

Impacts to the intersection at 3rd Avenue South include raising the intersection grade approximately 3 feet, and prohibiting through and left-turn movements due to the queue length for the 4th Avenue South left turn signal.

#### Parking

South Lander Street currently has approximately 40 on-street public parking spaces that will be lost.

Parking on private property is also likely to be lost. The Seattle School District's need to relocate their on-site truck route could result in a loss of up to 30 parking stalls in the south lot of that facility. To create street access for the Pacific Galleries Antique Mall, the City would need to negotiate with Allied Waste to provide an ingress/egress across their parking lot. The specifics of this will not be known until the agreement between Seattle Department of Transportation, Allied Waste, and the

property owner for Pacific Galleries Antique Mall is reached. In total, up to 40 public parking stalls and 30 private parking stalls could be lost.

### **Utility Relocation and Protection**

Major underground utility mains lie within South Lander Street, including a 96-inch diameter sanitary sewer, a 90-inch storm drain, and a 16-inch diameter water main. The sanitary sewer will be protected in place and the water main most likely will be relocated along with other minor utilities. The storm drain line was built around 1910 and most likely will be replaced. The existing overhead power lines serve local businesses and will either be relocated or undergrounded. A final decision on the utilities has not been made. For a complete overview of the utilities, see the TS&L Study.

## **South Hanford Street Alignment**

### **Right-of Way**

Approximately 50,000 square feet or 1.1 acres of private property will be required from four owners to complete the right-of-way for a South Hanford Street grade separation.

In addition, agreements will have to be reached with the BNSF Railway, PTS, and Allied Waste for an over crossing of their tracks. The City would also need to negotiate an agreement with Allied Waste for use of the area under the structure.

### **Side Street Circulation**

The South Hanford Street grade separation would eliminate the intersections with Occidental Avenue South and 3rd Avenue South. Design solutions under consideration to address this impact include constructing cul-de-sacs on each side of South Hanford Street. At the existing 3rd Avenue South intersection, it may be possible to create an underpass by shifting the street alignment to the west. To do this would eliminate all of the parking for the Hullin Transfer Building. Depending on the design solutions for Occidental Avenue South and 3rd Avenue South, additional right-of-way may be required.

### **Parking**

Currently, there are approximately 30 on-street public parking stalls that will be lost. In addition, there are currently four businesses along the South Hanford Street corridor using the public right-of-way for their parking needs, approximately 70 stalls. These businesses include the Renewal Windows and Doors, the Herban Company, Andy's Diner, and AC Automotive. A grade separation on South Hanford Street would require reconfiguring these lots, and will result in a loss of stalls.

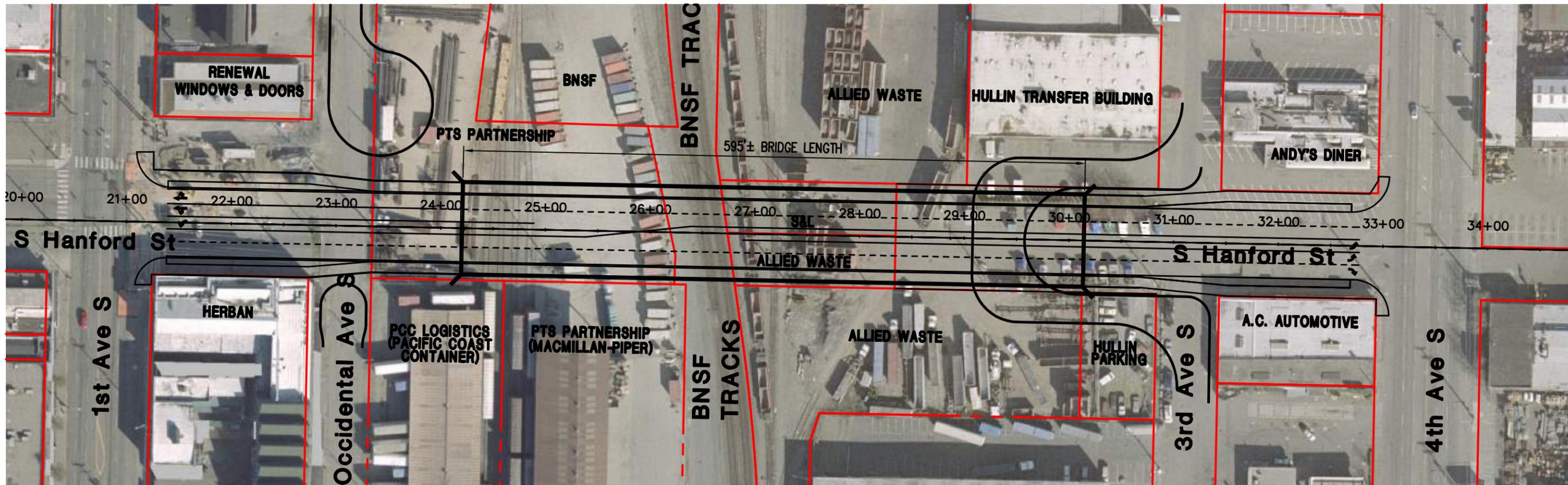
### **Utility Relocation and Protection**

Major underground and overhead utilities are located within the South Hanford Street alignment. A 16-inch diameter water main exists between 1st Avenue South and Occidental Avenue South, and an old 150- by 100-inch rectangular brick-lined sewer tunnel owned by King County Department of Natural Resources extends the entire length of the project. Seattle City Light has a 26 KV overhead transmission line that runs from 1st Avenue South to the east side of the railroad tracks. Below this transmission line on the same poles are local overhead power distribution lines. Depending on the location of the structure, these power facilities may need to be relocated. Discussion with King County will determine if the sanitary sewer needs to be replaced or if it can be protected in place.

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GRAPHIC SCALE

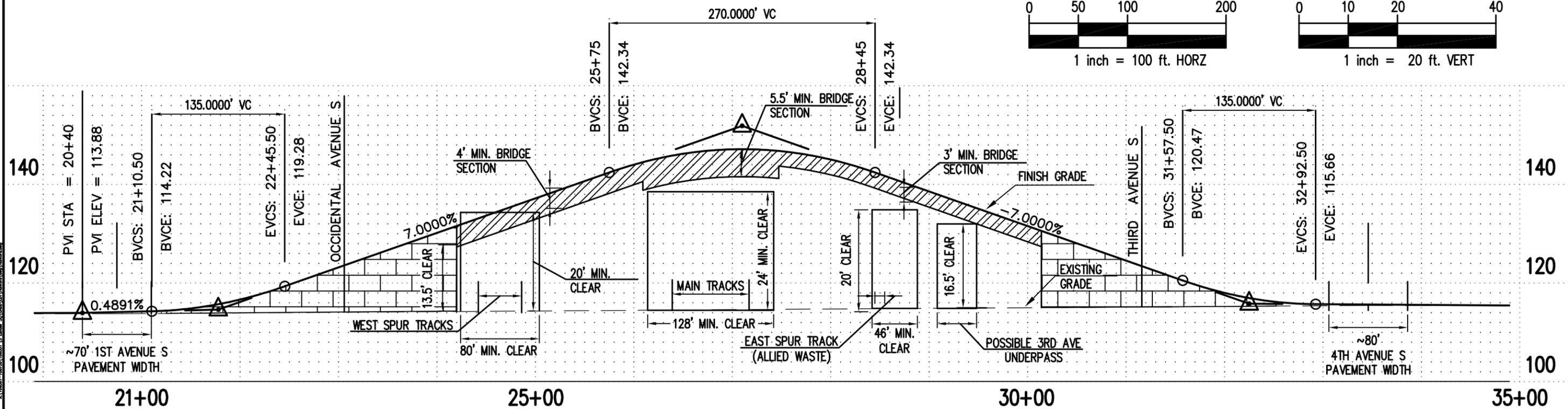


1 inch = 100 ft. HORZ

GRAPHIC SCALE



1 inch = 20 ft. VERT



**S HANFORD STREET GRADE SEPARATION**

**FIGURE 3**

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## 5. Business Access Revisions and Operational Impacts

### South Lander Street Business Access Revisions and Operational Impacts

There are nine businesses with frontages along South Lander Street whose access will be directly impacted. Direct access off of South Lander Street will be eliminated to seven of these businesses.

For the Earthwise and Dordre properties between 1st Avenue South and Occidental Avenue South, the impact will be minor. The Earthwise building currently houses a furniture store that has a pick-up area in the back along Occidental Avenue South. There will no longer be access to the backs of these buildings from South Lander Street. Customers and deliveries would need to drive around the block. For the Dorde property, the impact will be the same.

Impacts to the Allied Waste and the Big "O" Tires will also be minor. Allied Waste will have their access relocated to 3rd Avenue South. The Big "O" Tires store between 3rd Avenue South and 4th Avenue South currently has driveways on South Lander Street that are usually blocked with cars parked on their site. Their existing accesses on 3rd Avenue South and 4th Avenue South will be unaffected by the project. Their access from South Lander Street will be resolved during the design process. Access will be provided to 3rd Avenue South for through access to 4th Avenue South and their business.

For the Texaco station on the north side of the street between 3rd Avenue South and 4th Avenue South, the impact will be greater because it is likely that some of their existing accesses will be closed due to their proximity to the intersections. Further design is needed to determine which driveways can be closed, while maintaining necessary traffic flow.

The South Lander Business Park and the Lander Station Business Park are located on the north and south side of the street between Occidental Avenue South and the railroad tracks. Both these businesses will have their access shifted from South Lander Street to Occidental Avenue South. Since the intersection at South Lander Street will be eliminated, access to these properties will have to come from the 1st Avenue South intersections at either South Stacey Street or South Forest Street. Business may be affected due to the indirect access and lower visibility.

The Seattle School District's Headquarters is located between the railroad tracks and 3rd Avenue South. The main parking lot on the south side of the building has direct access from South Lander Street that will have to be relocated to 3rd Avenue South. The facility also has a primary truck exit just east of the BNSF tracks on the north side of South Lander Street. Elimination of this access may result in the need to redirect all exiting truck traffic which may result in a loss of parking, and could create pedestrian conflicts with the buildings main entrance.

Pacific Galleries Antique Mall located on the south side of the street between the railroad track and 3rd Avenue South will have their entire access eliminated, unless an agreement can be reached with Allied Waste to provide an easement across their property thereby creating a new access for Pacific Galleries Antique Mall from 3rd Avenue South. Allied Waste has mentioned in meetings a willingness to consider such an agreement. Pacific Galleries Antique Mall most likely will lose access to their loading dock located on South Lander Street just east of the railroad tracks due to physical limitations associated with the new grade separated structure.

## **South Hanford Street Business Access Revisions and Operational Impacts**

The South Hanford Street grade separation alignment will seriously impact a number of businesses including rail served businesses, key community service businesses, and other private businesses. Impacts to a rail served facility are considered serious because of the limited railroad accessible property in the North Duwanish Industrial area. If a rail served business were rendered inoperable, it would be very difficult or impossible to relocate it. In addition, these rails served facilities affect a broader economy including the Port of Seattle, and a number of local freight distributors and suppliers.

The PTS Partnership property located currently between Occidental Avenue South and the railroad tracks is occupied by the Nortrak business and will have to be acquired since it lies directly within the future right-of-way. This property has rail access and is currently being used for movement of freight.

Allied Waste's access and operations will be significantly impacted by a South Hanford Street grade separation. Operationally, it will be a significant constraint. Currently, the South Hanford Street alignment within the Allied Waste site is used to stack containers and load/unload container trains. This activity will no longer be possible, and given the layout of the site, cannot be shifted to another area. Construction of the grade separation will limit the number of containers the facility can handle. In addition, the movement and parking of trucks will be limited by the bridge columns.

From an access and circulation standpoint, Allied Waste will be significantly impacted. The existing gate on South Hanford Street would have to be closed or an easement acquired from an adjacent property owner to obtain access to 3rd Avenue South. Currently, many of the truck hauling containers enter the site through the gate at 3rd Avenue South and South Forrest Street, and leave the site via South Hanford Street. According to Allied Waste's Staff, it would be impossible to operate the facility with one gate at 3rd Avenue South and South Forrest Street. In addition, a grade separation will limit Allied Waste's future plans for a new track scale on their site south of South Hanford Street.

To match the grade at 1st Avenue South and clear the BNSF mainline tracks, the structure would only provide 13 to 19 feet of clearance over the four spur tracks that serve the Pacific Coast Container (PCC) and MacMillian Piper facilities. The current standard is to provide 20 feet of clearance over spur tracks. Further analysis is needed to determine if this condition will eliminate rail access to these properties. However, it will limit these businesses ability to accommodate taller rail freight in the future.

Pacific Coast Container NW and the MacMillan-Piper facilities handle products such as refrigerated foods and other temperature sensitive products, bentonite clay, pressboard, flatracks, over-dimensional cargo, etc. Products are transferred to and from rail cars to freight trucks.

Other businesses that will be impacted include the Renewal Window and Door Company, the Herban Building, the Hullin Transfer Building, AC Automotive, and Andy's Diner.

The Renewal Window and Herban businesses located between 1st Avenue South and Occidental Avenue South currently use the South Hanford Street right-of-way for their parking. Some of this parking will be lost, and the access relocated to either 1st Avenue South and/or Occidental Avenue South.

The parking for the Hullin Transfer Building may not be able to be replaced; thus, making the building noncompliant with City Codes. The parking lost includes worker and visitor parking as well freight vehicle storage.

Andy's Diner and AC Automotive located between 3rd Avenue South and 4th Avenue South about South Hanford Street, use the public right-of-way for their exclusive parking and access. It is likely that some parking will be lost and their access relocated to either 3rd Avenue South or 4th Avenue South. Andy's Diner would lose close to 35 parking spaces. AC Automotive would also lose a number of parking spaces, but would also lose any access to the five service area garage doors located on the South Hanford Street right-of-way.

## 6. Corridor Comparison

The pros and cons of constructing a grade separation and the associated improvements in each corridor are discussed in the following table.

### Traffic Operations

South Lander Street	South Hanford Street
<p><b>PRO:</b> The traffic analysis prepared for the initial corridor screening indicated a grade separation at South Lander Street would eliminate existing and future vehicular delays, which are anticipated to increase to 240 hours per day.</p>	<p><b>CON:</b> Since a South Hanford Street grade separation does not eliminate an existing at-grade railroad crossing, vehicular delays would not be eliminated. Delays may be slightly reduced due to drivers choosing South Hanford Street rather than one of the east/west routes with an at-grade railroad crossing.</p>
<p><b>PRO:</b> There will be a modest improvement in the level of service in the 1st Avenue South and 4th Avenue South corridors.</p>	<p><b>PRO:</b> Improves the levels of service through out the 1st Avenue South and 4th Avenue South corridors because this option creates additional capacity in the system with a new east west street.</p>
<p><b>PRO:</b> Located in the heart of the North Duwamish Industrial Area, this is a better location to serve the higher intensity development in the area, as well as the newly rezoned area to the north.</p>	<p><b>CON:</b> South Hanford Street is located at the far south end of the North Duwamish Industrial Area, and is relatively close to Spokane Street which already meets some of the areas grade separation needs. The proposed 1st Avenue South and 4th Avenue South ramps to the Spokane Street viaduct will further increase the utility of the structure and lessen the benefit of a grade separation at South Hanford Street.</p> <p><b>CON:</b> The 1st Avenue South and South Hanford Street intersection is very close to the influence area for the new 1st Avenue South and Spokane Street Viaduct ramps. This could result in potential channelization conflicts.</p>
<p><b>PRO:</b> Improves east-west connections between 1st Avenue South and Airport Way South.</p>	<p><b>PRO:</b> Create some network continuity by providing a direct link between the Port of Seattle terminals on East Marginal Way South, BNSF's Seattle International Gateway (SIG) and Stacey Yards and 4th Avenue South.</p>

## Traffic Operations

South Lander Street	South Hanford Street
<p><b>PRO:</b> Ideally suited to provide pedestrian and transit connections to Sound Transits Lander Street Light Rail Station.</p>	<p><b>CON:</b> Is not located in an area that is expected to receive significant amounts of pedestrian traffic.</p>

## Rail Operations and Safety

South Lander Street	South Hanford Street
<p><b>PRO:</b> Would result in closure of the existing grade crossing and provide operational benefits to BNSF, Sound Transit, and Amtrak.</p>	<p><b>CON:</b> A grade separation at this location would not close any existing grade crossings.</p> <p><b>CON:</b> There would be no benefit to rail operations for BNSF, Sound Transit, or Amtrak.</p>
<p><b>PRO:</b> Eliminates all safety concerns associated with the existing grade crossing for all users.</p>	<p><b>CON:</b> Existing safety concerns from a rail operations and traffic standpoint at South Lander Street will still exist.</p>
<p><b>PRO:</b> A grade separation at this location has no impact on any spur tracks.</p>	<p><b>CON:</b> A grade separation at this location will impact four spur tracks that currently serve the PCC and MacMillian Piper facilities on the west side of the BNSF mainline tracks. Depending on the minimum required clearance it may eliminate the rail service to these properties.</p>

## Right-of-Way

South Lander Street	South Hanford Street
<p><b>PRO:</b> The actual grade separation improvements on South Lander Street can be constructed within the existing right-of-way.</p>	<p><b>CON:</b> 50,000 square feet of right-of-way is required for the structure.</p>
<p><b>PRO:</b> It is likely not to result in the complete take of any parcels assuming successful negotiation between, Allied Waste and the owners of the Pacific Galleries Antique Mall to provide access for the Mall property from 3rd Avenue South.</p>	<p><b>CON:</b> One active rail served industrial parcel will have to be acquired and portions of two other properties will be needed to assemble the necessary right-of-way.</p>
<p><b>CON:</b> Additional right-of-way may be required for improvements on Occidental Avenue South.</p>	<p><b>CON:</b> Additional right-of-way may be required for improvements on Occidental Avenue South and 3rd Avenue South.</p>

## Side Street Circulation

South Lander Street	South Hanford Street
<p><b>PRO:</b> The intersection at 3rd Avenue South will remain open to traffic; however, due to the new channelization on South Lander Street turning movements may be limited to right-in and right-out.</p> <p><b>CON:</b> The intersection at Occidental Avenue South will be eliminated. It may be possible to keep Occidental Avenue South open to through traffic by shifting the alignment to the east and creating an underpass, but this will have a significant impact on the parking for the South Lander Business Park and the Lander Station Business Park.</p>	<p><b>CON:</b> The existing intersections at Occidental Avenue South and 3rd Avenue South will be eliminated. It may be possible to keep 3rd Avenue South open to through traffic by shifting the alignment to the west to create an undercrossing, but this will eliminate the parking area for the Hullin Transfer building.</p>

## Business Impacts

South Lander Street	South Hanford Street
<p><b>PRO:</b> None of the businesses impacted are rail served, and although there may be inconveniences and additional project costs for business relocation, it would be possible for any of the businesses to relocate.</p>	<p><b>CON:</b> One rail served industrial property will have to be acquired and the existing tenant relocated to create the necessary right-of-way.</p> <p><b>CON:</b> Limited clearances under the bridge structure could render the 4 spur tracks that serve PCC and MacMillan Piper useless. At a minimum it could limit future operations or it might require relocation of these rail served businesses.</p>
<p><b>PRO:</b> Access to all of the properties, although they are impaired, will be maintained or replaced. None of the impacts would involve rendering a property useless.</p> <p><b>CON:</b> The loss of direct access on South Lander Street will impact the South Lander Business Park, the Lander Station Business Park, and Pacific Galleries Antique Mall.</p>	<p><b>CON:</b> Reduced parking and access will impact Renewal Windows and Doors, the Herban Building, Andy's Diner, and AC Automotive. If access to the repair bays at AC Automotive is blocked it could require relocation of this business.</p>
<p><b>CON:</b> The loss of direct access on South Lander Street will require the school district to reroute their exiting truck traffic, which may result in a loss of parking, and increased pedestrian/truck conflicts.</p>	<p><b>CON:</b> Operational and access impacts to Allied Waste may limit their ability to maintain current functions and could require relocating a portion of their operations.</p>

## Parking

South Lander Street	South Hanford Street
<p><b>CON:</b> 40 on street public parking stalls will be lost.</p>	<p><b>CON:</b> When compared to South Lander Street, there is more use of the public right-of-way for parking in the South Hanford Street corridor. This parking tends to be used by specific property owners, and although it will not be completely eliminated it will impact five businesses. Based on the concept alignment up to 100 stalls could be eliminated.</p>

## Utility Relocation

South Lander Street	South Hanford Street
<p><b>CON:</b> Major utilities located in the corridor will be protected in place or relocated.</p>	<p><b>CON:</b> Major utilities located in the corridor will be protected in place or relocated.</p>
<p><b>PRO:</b> All non-City owned utilities will have to relocate or pay for protection at the owner's expense. This includes the 96-inch diameter King County Department of Natural Resources sanitary sewer.</p>	<p><b>CON:</b> Since the City does not own all the right-of-way; the project may have to pay for the relocation of all non-City owned utilities in these areas. This most likely will include the old 150- by 100-inch rectangular brick-lined sewer tunnel owned by King County Department of Natural Resources which extends the entire length of the project.</p>

## Construction

South Lander Street	South Hanford Street
<p><b>CON:</b> Will disrupt existing arterial traffic.</p>	<p><b>PRO :</b> Less disruptive to existing arterial traffic.</p>
<p><b>CON:</b> Will impact access to existing retail businesses.</p>	<p><b>CON:</b> Significant operational impact to Allied Waste, that could result in the need for them to relocate a portion of their operations.</p>
<p><b>PRO:</b> Limited impact to traffic on 3rd Avenue South.</p> <p><b>CON:</b> Major disruption to traffic on Occidental Avenue South.</p>	<p><b>CON:</b> Major disruption to traffic on Occidental Avenue South and 3rd Avenue South.</p>

## Cost

A grade separation at South Lander Street and at South Hanford Street would have the same length, channelization, and other associated street improvements. The major differences that affect cost include the amount of right-of-way acquisition, the length of elevated structure, utility relocations, and impacts to 3rd Avenue South. These differences are noted below.

South Lander Street	South Hanford Street
<b>PRO:</b> Minimum required length of elevated structure, 100 feet.	<b>CON:</b> Minimum required length of elevated structure is 480 feet without impacting the mainline and spur tracks. If the spur tracks serving PCC and MacMillan-Piper are eliminated, the minimum length of elevation structure would be 300 feet.
<b>CON:</b> May require reconstruction of the existing 90 year old 90-inch diameter storm drain.	<b>CON:</b> May require reconstruction of King County's 150-inch by 100-inch brick-lined sanitary sewer.  <b>CON:</b> Will require relocation of the existing 126 KVA transmission line.
<b>PRO:</b> The actual grade separation improvements on South Lander Street can be constructed within the existing right-of-way.	<b>CON:</b> 50,000 square feet of additional right-of-way required to create Hanford Street right-of-way.
<b>CON:</b> Requires demolition of existing road facilities.	<b>PRO:</b> Lower demolition costs.
	<b>CON:</b> Additional cost to eliminate the intersection with 3rd Avenue South.

## 7. Summary

A grade separation of the BNSF railroad tracks at South Lander Street when compared with a separation at South Hanford Street provides the greatest benefit with the least impact to the community. It will eliminate the existing and future vehicular delays, provides operational benefits for the BNSF, Amtrak, and Sound Transit, and dispenses with all the safety concerns associated with a grade crossing. Comparatively, it is likely to cost less than a grade separation at South Hanford Street.

A grade crossing at South Lander Street will require substantially less right-of-way acquisition. Since a large portion of the right-of-way in the South Hanford Street corridor does not exist, up to 50,000 square feet of property will be required. Assembling the necessary area will result in the taking of one industrial rail served property, and portions from at least two other properties.

A grade separation at South Lander Street will have no impact on spur tracks, whereas at South Hanford Street, four spur tracks will be impacted, and could result in the need to relocate two rail served businesses.

Impacts to adjacent businesses will occur in each corridor, although there are significant differences in the types of businesses and the extent of the impacts. In the South Lander Street corridor, the impacts are primarily due to a change in access and decreased visibility from the street, and will primarily affect a mixed-use of office, and retail businesses in addition to a restaurant, and the Seattle School District's headquarters building. In the South Hanford Street Corridor, three industrial rail dependent businesses including the Allied Waste recycling facility and one retail business will have major operational impacts while three other retail businesses and one restaurant will have minor access impacts. While the changes in the South Lander Street corridor are likely to make retail and restaurants less viable, it is easier to relocate these businesses when compared to the rail served industrial properties that will be impacted in the South Hanford Street corridor.

The South Lander Street option also has less impact on the side streets. A grade separation at South Lander Street will eliminate the intersection at Occidental Avenue South, but will keep the intersection at 3rd Avenue South open, whereas a grade separation at South Hanford Street will eliminate both these intersections.

A grade separation at South Lander Street will also better serve transit and provide convenient connections to the South Lander Street LINK light rail station. South Lander Street is also a designated bike route and given the higher intensity of development in the corridor will provide a greater benefit for bicyclists and pedestrians.

Although a grade separation at South Hanford Street will result in better traffic operations since it creates a new street, its actual benefit will not be as great since it does not result in closure of a grade crossing, and is not ideally located to serve the needs of the North Duwamish Industrial Area. South Hanford Street is at the south end of the area, and is further away from the higher intensity developments, and the recently rezoned area to the north. In addition, it is relatively closer to the Spokane Street Viaduct that will provide even more grade separation benefits when the new ramps are connected at 4th Avenue South and 1st Avenue South.

In summary, a grade separation at South Hanford Street would have substantially more impact to the community, and that South Lander Street should be confirmed as the preferred alternative.

**Appendix A – South Lander Street Photos**



Photo 1 – South Lander Street at 1st Avenue South Looking East



Photo 2 – South Lander Street Near Occidental Avenue South Looking East



Photo 3 – South Lander Street Near 3rd Avenue south Looking West



Photo 4 – South Lander Street Near 4th Avenue South Looking West



Photo 5 – Occidental Avenue South Looking North Across South Lander Street



Photo 6 – Occidental Avenue South Looking South Across South Lander Street



Photo 7 – Rail Road Tracks at South Lander Street Looking North



Photo 8 – Rail Road Tracks at South Lander Street Looking South



Photo 9 – 3rd Avenue South Looking North to South Lander Street



Photo 10 – 3rd Avenue South Looking South to Lander Street

**Appendix B – South Hanford Street Photos**



Photo 1 – South Hanford Street at 1st Avenue South Looking West



Photo 2 – 1st Avenue South Looking North from South Hanford Street



Photo 3 – 1st Avenue South Looking South from South Hanford Street



Photo 4 – South Hanford Street at Occidental Looking West to 1st Avenue South



Photo 5 – At South Hanford Street and Occidental Avenue Looking South



Photo 6 – Allied Waste in South Hanford Alignment Looking West

Note: Overhead power lines are approximate with south side of future roadway.



Photo 7 – South Hanford Street and 3rd Avenue South Looking West at Allied Waste Operations



Photo 8 – South Hanford Street Right-of-Way (West of 3rd Avenue South) Looking East



Photo 9 – South Hanford Street Near 3rd Avenue South Looking Southeast Toward 4th Avenue South



Photo 10 – South Hanford Street Near 3rd Avenue South Looking Northeast toward 4th Avenue South



Photo 11 – Allied Waste Site, "Top Pick" in action



Photo 12 – View of Tracks for Pacific Container Company (left) and MacMillan-Piper (right) Looking North from South Horton Street