Going/Greeley Interchange Enhancements for Truck Operations

City of Portland
Office of Transportation
Transportation Planning
November 26, 2007

Table of Contents

Notes:

What is the problem?

Traffic counts conducted by the City of Portland, Office of Transportation in February of 2005 on N. Interstate Ave. just north of the intersection with N. Greeley showed a combined north and south bound 24 hour volume of 8,194 vehicles. Associated truck volumes (trucks with five or more axles) are: northbound 485 and southbound 376 for a combined total of 861. Approximately 10.5 % of the volume in each direction is large trucks. These high truck volumes are due to the interchange geometry at the Going/Greeley interchange, which makes it very difficult for large trucks to negotiate this interchange so the route of choice continues to be Interstate Ave.

PDOT traffic engineering staff considers this to be a very high volume for trucks of this size on a street with Interstate Avenue's design profile. Residents of the Overlook neighborhood have long history of concern for truck volumes on Interstate Ave. that pre-dates the construction of light rail by many years. With the construction of light rail and the community desire for redevelopment of the street frontage with transit supportive uses, community concern has become more intense and vocal. Many feel that the current situation is a major pedestrian safety issue for people using the stations on Interstate, in addition, to being an impediment to redevelopment.

What is the purpose of the study?

This study was commissioned by the Interstate Corridor Urban Renewal Area Transportation Committee and the Portland Freight Committee. The purpose of the study is two fold: The first is to determine if there are ways to facilitate freight movement to and from the Union Pacific Albina Yards at N. Interstate and N. Russell by redesigning the Going/Greeley interchange. Secondly, would the cost of any improvements be something that the City and community could finance. Would cost prove to be a fatal flaw for the project?

Review of Alternatives:

Three options were considered in this study:

1. "Low Speed" (east & west bound) at Going/Greeley Interchange
2. "High Speed" (east & west bound) at Going/Greeley Interchange
3. "Cement Road" improvements

Two matched pairs of ramp options on Going are considered:- A "high speed" alternative and a "low speed" alternative. To this was added a third option—the so-called "Cement Rd.", which connects Swan Island with Interstate Ave. via the Tillamook Over crossing. These options are summarized in the table shown on the next page.

Going/Greeley Options showing estimated cost and total cost

Option	Alternative	Est. Cost:	Total Cost
High Speed	NB Greeley to EB Going Truck Ramp-HS Option	**$11,621,000**	**$16,753,000**
	WB Going to Greeley High Speed Off Ramp	**$5,132,000**	
Low Speed	NB Greeley to EB Going Truck Ramp-LS Option	**$2,384,000**	**$3,313,000**
	WB Going to Greeley Low Speed Off Ramp	**$929,000**	
Cement Rd.	Cement Road"	**$13,133,000**	**$13,133,000**

Vicinity Map Showing Major Routes and Landmarks:

Swan Island

Going Greeley Interchange

Study Area- see Individual option maps for detail

Overlook Park

Kaiser Clinic

Cement Road

UP Albina Yards

Lower Albina Industrial Area

Description of area impacted by improvements:

Geographically, the area is west of I-5, north of the Broadway Bridge, south of N. Going St. and east of the Willamette River. It is home to the Lower Albina Industrial Area, the Union Pacific Albina yards and intermodal center, the Overlook neighborhood, Overlook Park, Kaiser Clinic, and an emerging retail commercial center along N. Interstate Ave. adjacent to the new Yellow Line light rail corridor. The Overlook neighborhood is a vibrant inner city neighborhood experiencing substantial new growth and redevelopment. Adidas USA has relocated their US headquarters on N. Greeley just north of Going bringing a new image and status to the neighborhood, in addition, to local employment opportunities. Family wage job opportunities are also found on Swan Island, UP's Albina Yards and Lower Albina Industrial District. A new loft neighborhood is emerging along N. Russell St. in the Lower Albina Industrial Area.

Alternatives Considered:

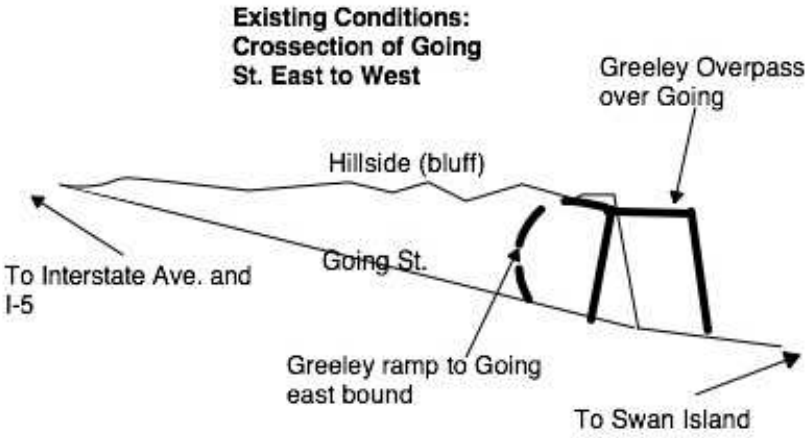
Existing Conditions-No Build

N. Greeley St. proceeds north from its intersection with N. Interstate underneath the Fremont Bridge, ultimately reaching the top of the bluff just south of N. Killingsworth. Approximately two thirds of the way up the hill it passes over N. Going. At N. Going there are ramps, which connect N. Greeley with N. Going. South bound or northbound traffic on Greeley can access either east or westbound destinations on N. Going. However, because of a prohibition on left hand turns westbound traffic on Going cannot go south on Greeley. Currently that is the only prohibition on turning movements.

Traffic on Greeley bound for Going, east or west bound reach Going via the Greeley ramps. These ramps present several problems for large multi axle trucks. First the ramps are very steep and at least for east bound traffic require a complete stop before the truck can make a right turn and try to merge with east bound traffic bound for N. Interstate Ave. or I-5. Because of the large turning radius required by these large trucks they must have a gap in both the middle and right hand lane long enough to accommodate the entering truck safely. Once the truck has made a safe merge into traffic it must accelerate up a very steep grade to Interstate Ave. and I-5. Frequent congestion at Interstate Ave. is also a problem.

All vehicles west bound on Going bound for Greeley are restricted to a northbound right turn only at the top of the ramp. This effectively prohibits any westbound truck from reaching the Albina yard intermodal terminal via Going/Greeley.

The diagram to the right illustrates the problem east bound trucks encounter trying to access Going from Greeley east bound.



Option 1: "Low Speed" improvements at Going/Greeley Interchange

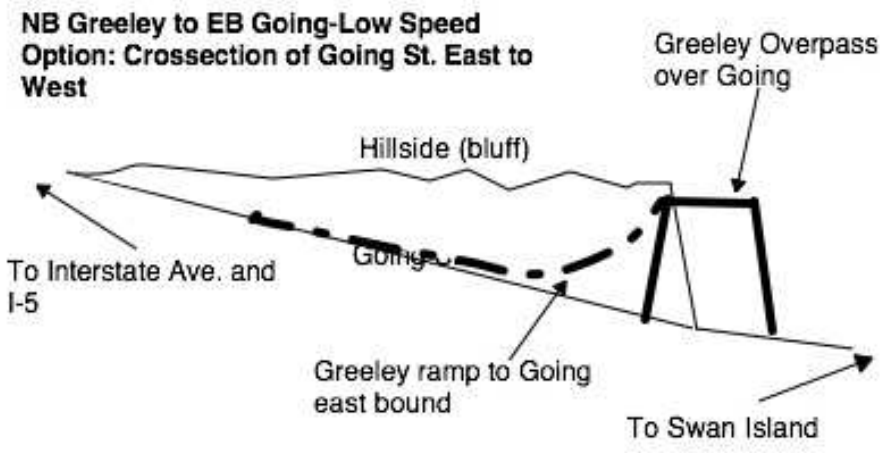
The east bound option operates more efficiently because no stop is required at the bottom of the ramp and a climbing lane is provided for trucks to gain speed before merging with thru traffic. The west bound option on Going to north or south bound Greeley are more straight forward than the east bound options. To achieve a more efficient interchange the ramp exit from Going must permit a higher speed exit and a left hand turn must be permitted at the ramp terminus to allow for southbound travel. A southbound turn would permit access to the Union Pacific Albina Yards.

<u>Option 1</u>: Alternative One- NB Greeley to EB Going Truck Ramp-Slow Speed Option

This alternative is similar to Option 2: Alternative Three in that it introduces very large radius curves to the interchange that do not require trucks to slow for tight curves. But rather than stay at the top of the Going St. cut it descends to grade of Going St. and a climbing lane is introduced to allow the truck to reach the speed limit before merging with thru traffic on Going. This alternative is both slower and less expensive (by an order of 5 or 6 times) than Option 2: Alternative One. It is estimated this alternative would be from 30 seconds to more than a minute slower than the high-speed option.

This alternative is essentially the same as existing conditions but the slow right angle corners have been replaced with gentle, sweeping

curves, which permit higher speeds. These changes coupled with the climbing lane make this a viable alternative with a much lower price tag.



Pros and Cons for this option are as follows:

Pros:

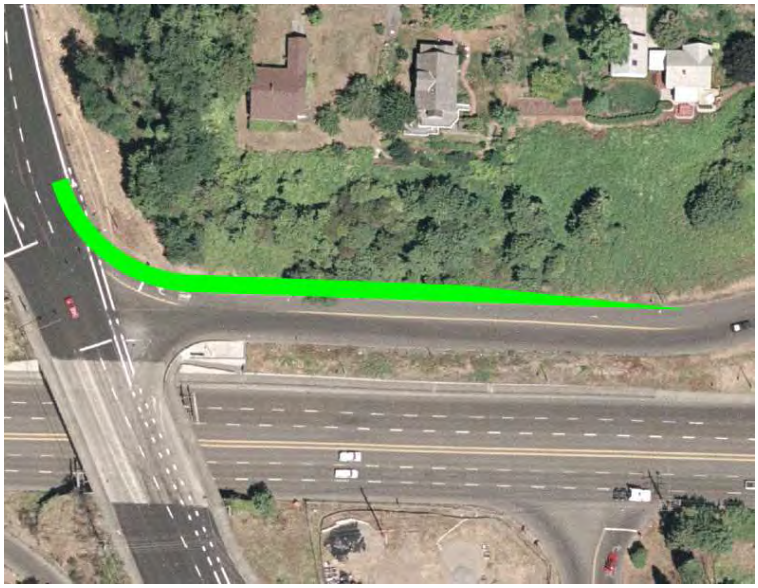
- **Much lower cost**
- **Fewer environmental impacts**

Cons:

- **Slower speed**

<u>Option 1</u>: Alternative Two- WB Going to NB Greeley-Low Speed Off Ramp:

This alternative is the ultimate in simplicity consisting of a simple free right turn at the top of the ramp to allow the ramp to clear faster. There is no southbound left turn permitted with this alternative. This alternative offers little improvement or increase in efficiency over the no build. This alternative could be combined with signal modifications (as in Option 2: Alternative 4) to allow a left turn at the top of the ramp to permit south bound travel to the Albina Yards.



The chief advantage of this alternative is a slightly faster travel time over the no-build.

Pros:

- **Lower cost**
- **Less environmental damage**
- **Slightly faster**

Cons:

- **No southbound access**

Option 2: "High Speed" Improvements at Going/Greeley Interchange

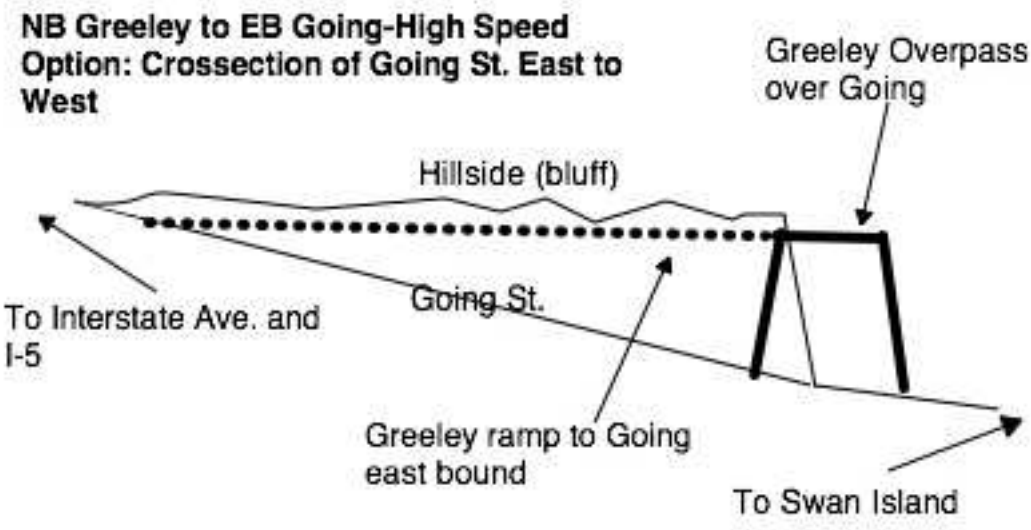
This interchange pair provides high speed access to and from Going to Greeley. This would be the most desirable option but its cost probably exceeds its benefits. Much of the same utility can be achieved at a much lower cost with the Option 1-the "low speed" improvements

Option 2: Alternative Three- NB Greeley to EB Going Truck Ramp-High Speed Option

This option corrects three problems that make the Going/Greeley route undesirable for large trucks. First, trucks do not need to slow to make the turn from northbound Greeley to the ramp to access eastbound Going. Second, they do not need to slow or stop to merge with eastbound traffic. And third they do not need to climb the long hill up Going to reach Interstate Ave

This alternative accomplishes these seemingly impossible objectives by staying at the top of the Going St. cut rather than descending to current street grade. To do this the roadway would be supported by massive retaining walls and fill. The need to construct these large retaining walls is the reason for the high cost of this alternative.

The turning radius from Greeley to Going is also greatly enlarged to permit large trucks to accelerate in the turn and on the ramp as they approach the merge with Going. Thus large trucks are able to negotiate this alternative without slowing below the speed limit.



Travel time for this route is approximately 36 seconds longer than the current route up Interstate Ave. from

the Albina Yards. Despite being approximately 50% longer, the travel time is made up by allowing higher speeds and having fewer stops for traffic signals.

A summary of the pros and cons of this alternative are shown below.

Pros:

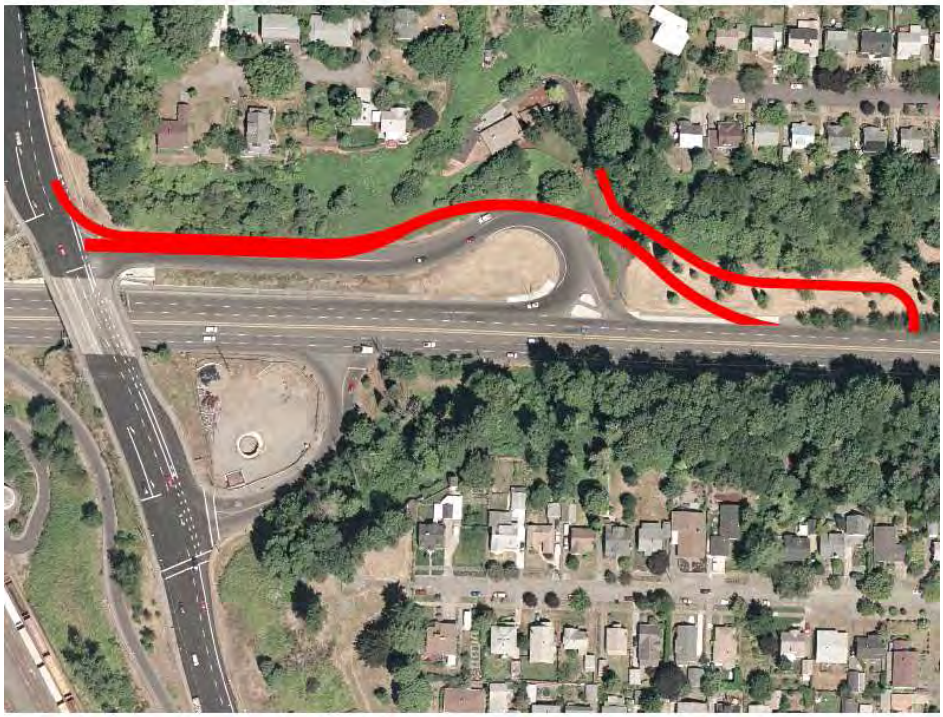
- **High speed**
- **Shortest travel time**

Cons:

- **High cost**
- **Most environmental impacts-high retaining walls**
- **Most neighborhood impact-trucks and related noise and pollution are closer to residential areas due to high retaining walls**

<u>Option 2</u>: Alternative Four- WB Going to NB/SB Greeley-High Speed Off Ramp

This is a much more complex alternative than the slow speed option. This alternative permits rapid exit from Going and most of all a left hand turn at the ramp terminus to permit southbound traffic to access the Union Pacific Albina Yards. This alternative also rebuilds the ramps to permit traffic exiting from Going to exit without slowing for the abrupt right turn onto the ramp, which would permit higher speed operation on the ramp.



Because, the ramp must be rebuilt an access to a private residence north of Going is cut off necessitating the construction of a new drive way. This new element is shown on the aerial photo of this option.

WB Going to NB/SB Greeley-High Speed Off Ramp

Pros:

- **Higher speed**
- **Lower travel time**

Cons:

- **Higher Cost**

- **Greater environmental damage due to longer ramp and the relocation of a private driveway.**

The challenge with this alternative is whether the high cost is worth the trade off in higher speed. This is somewhat mitigated by potential for travel in both the north and south direction. That would have to be considered a large benefit.

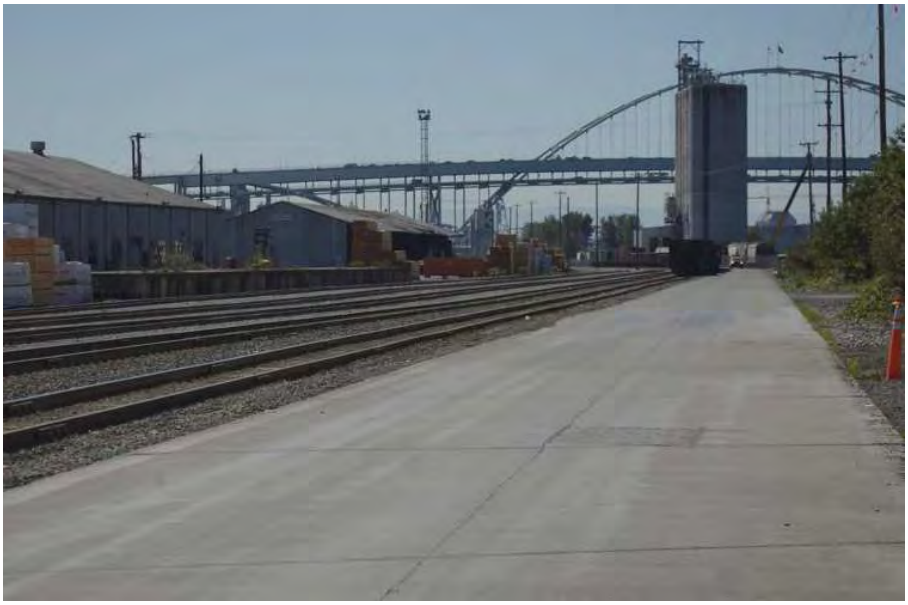
Option 3: The "Cement Road"

The so-called "Cement Road" option was reviewed because it could potentially accomplish the same purpose as an improved Going/Greeley interchange i.e. take truck traffic off of Interstate Ave. between the Albina Yards and N. Going Street. Trucks leaving the Union Pacific Albina Yards can travel south bound on Interstate Ave. to access south bound I-5 at the Vancouver St. on ramp or turn right on N. Tillamook St. to access the "Cement Rd.", which will intersect with N. Going St. on Swan Island. This route will provide access to northbound I-5.

The Union Pacific Railroad owns the road. From its intersection with N. Port Center Way to a point a few hundred yards north of N. River St. it is paved with a twenty-foot wide ribbon of concrete. From the point where the concrete ends to the end of unimproved River St. it is non-existent, as even a nominally improved street.

The purpose of including this option is to compare it with the cost of rebuilding the Going/Greeley interchange. And, in fact, it does cost several million dollars less then improving the Going/Greeley interchange in both the east and west bound directions.

The photograph above shows the proximity of the "Cement Rd." to the rail sidings in the UP Albina Yard. It clearly shows that any widening of the road would require acquiring more ROW from the Union Pacific Railroad. The paved section of the



View south from near the northern end of the "Cement Rd." Ashgrove Cement storage silos shown in mid ground.

"Cement Rd." is approximately 20 ft. wide. There is narrow dirt/gravel buffer between the edge of pavement and the edge of track, perhaps four to five feet in width. Therefore, the total distance from western most edge of pavement to the western most edge of track is approximately 25 feet.

The narrowest crossection possible would be around 45 ft. Two 12 ft. travel lanes, two 10 ft. sidewalks would be 44 ft. If bike lanes were added the width would increase to 54 ft. To achieve this width would require the acquisition and removal of Union Pacific's two western most sidings.

There is more room for expansion near the northern end of the roadway. However, near the southern end an Ashgrove Cement loading hopper shed comes to the western edge of the pavement, which effectively limits the maximum width of the ROW to approximately 25 feet.

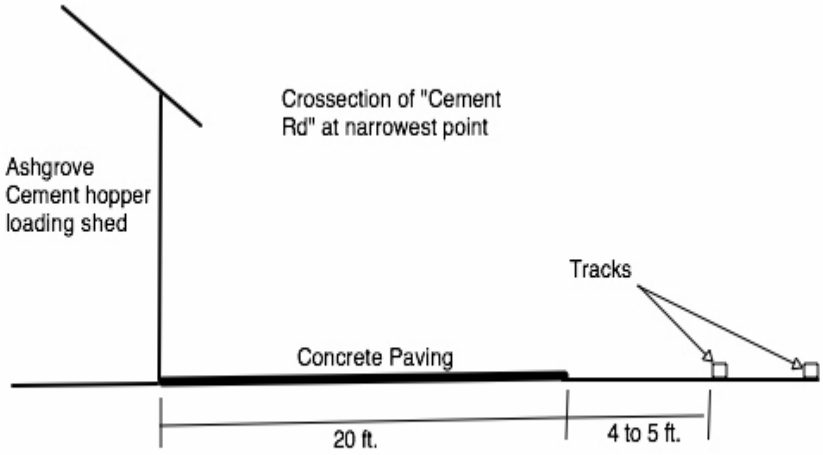
Close up showing how constrained the "Cement Rd" is to the west. Rail sidings come almost to the edge of pavement.

Cement Rd and vicinity

<u>However, at this time future development of a "Cement Rd." option would have to be termed "extremely problematic." To build the new road to city standards would require additional ROW from the Union Pacific Railroad. Recent meetings with Union Pacific officials have indicated that there are no circumstances under which the railroad would be willing to transfer the ROW.</u>

Even though this alternative appears to be unworkable at this time, it should not be discarded completely. It would provide an internal circulation system connecting Swan Island, the Albina Yards and the Lower Albina Industrial Area. It allows the separation
of neighborhood livability concerns from industrial and commercial uses of the businesses located on Swan Island, the Albina Yards and the Lower Albina

Industrial Area. It also provides a direct link to both I-5 southbound and northbound on roadways that do not impact residential neighborhoods. It represents an opportunity to create a self-contained industrial area in the center of the City on riverfront property devoted to industrial uses with no change in use anytime in the near future. For these reasons negotiations with Union Pacific and other industrial users should continue.



The "Cement Rd." is known by several other names including, "Albina Access Rd.", "Concrete Rd.", and "River St" know. It is actually an extension of N. Port Center Way to N. River St. Businesses along the road have addresses on N. Port Center Way, which give it the unofficial title (shown on street signs in the area) N. Port Center Way. It goes from a cul de sac at the end of the official N. Port Center Way south to join N. River St., which then intersects with N. Tillamook Ave. and N. Interstate Ave.

The "Pros" and "Cons" of the alternative are shown below but in reality the future of this option is in the hands of the Union Pacific Railroad rendering the discussion mute at the time.

Pros:

- **New route on and off Swan Island**
- **Alternate route to reach N. Going from the Albina Yard and then on to I-5 at Going**
- **Direct route to I-5 at Vancouver/Williams interchange via Tillamook Overpass, N. Interstate Ave. and N. Broadway Ave.**
- **Links Swan Island, the Albina Yards and the Lower Albina Industrial Area without impacting a residential neighborhood.**

Cons:

- **Cost**
- **Minimal Right-of-way only 20 ft. Would require acquisition of additional ROW from UP**
- **Environmental concerns surrounding a new road adjacent to the riverbank**
- **Greenway concerns**
- **Many unknowns-still may be fatally flawed-need more discussion with Union Pacific**

- **Could not be used for large volumes of traffic due to capacity constraints at N. Tillamook St. and N. Interstate Ave.**

Summary and Conclusions:

With funding from the PDC and with our own resources, PDOT conducted a study of alternative truck routes connecting Albina Yard and the Going Street/Interstate 5 interchange. The purpose of the study was to determine if improvements to alternative routes, namely Going Street and Greeley Avenue, would result in a decrease in through truck trips on Interstate Avenue.
Three alternatives were evaluated:

1) 'Low speed' improvements at Going/Greeley interchange $ 3.31 million
2) 'High speed' improvements at Going/Greeley interchange $16.75 million
3) 'Cement Road' improvements $13.13 million

The first two alternatives were designed to divert trucks from Interstate Avenue to the Going Street/Greeley Avenue route. In order to accomplish this diversion, improvements are needed to allow left turns from westbound Going Street to southbound Greeley Avenue. This movement is currently prohibited. Improvements are also needed at the same intersection to enhance movements from northbound Greeley Avenue to eastbound Going Street. The difference between the two alternatives is that Alternative 2 allows higher speed movements but at a much higher cost.
When the cost of improvements is weighed against the benefit, the anticipated cost per diverted trip for alternative 2 appears excessive.
A third alternative using the so-called Cement Road was also analyzed. This 20-ft wide concrete road is owned by the Union Pacific Railroad and lies within the Albina Yard between rail-related structures and an active rail siding. Improvements to the road were evaluated and cost estimates were calculated. However those improvements would require displacing the abutting rail siding and rail structures. Improvements would also be needed to connect the Cement Road to Going Street and the existing intermodal facilities at the south end of Albina Yard, necessitating one or two new at-grade crossings of the railroad main line. The Union Pacific Railroad has no interest in making or even allowing these improvements on their road and property.
We recommend further evaluation of Alternative 1, the low-speed Going/Greeley interchange improvements. This work involves the following:

- evaluate new access from Greeley Avenue directly into the Albina Yard, which at a minimum would serve inbound truck trips
- reevaluate the need for eastbound climbing lane on Going Street
- reevaluate traffic signal operations at intersection of westbound Going Street off ramp and Greeley Avenue
- recompute travel times by direction for Alternative 1 and compare to existing

Other PDOT publications of relevance to this report and project

Project Estimate Report: Development Phase
Design and Cost Estimates for Going/Greeley Interchange Enhancements for Truck Operations

Going-Greeley Interchange: Freight Movement Deficiencies