I-5: Delta Park to Lombard Project

Transportation Performance: The Context

The I-5 Corridor between Portland and Vancouver is one of the region's most heavily used freeway corridors. It is an important transportation route for commuters getting to jobs and for the movement of freight. This corridor provides access to over half the Portland/Vancouver region's industrial land.

In the absence of both freeway and transit investment in the corridor, congestion and delay will grow steadily due to population and employment growth, resulting in weekday morning and evening periods of congestion spreading into the midday. Growth will also result in weekend and midday congestion in the corridor.

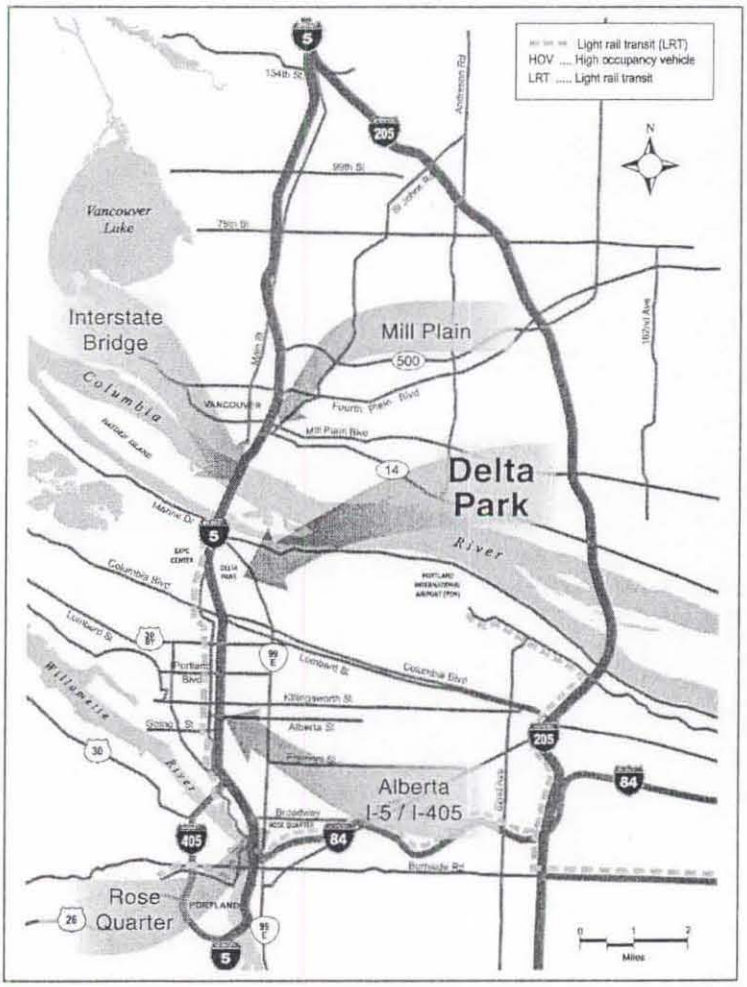
The I-5 Partnership Strategic Plan calls for a series of road, transit, and transportation demand management projects in the corridor. The objective of these proposed projects is to manage the transportation system by providing reliability and improved traffic operations in the corridor for most of the day. The proposed projects will not eliminate rush hour congestion, which is a fact of life in an urban area and is to be expected and tolerated to some degree.

Congestion experienced along high volume corridors such as I-5 is often a function of specific bottlenecks resulting from capacity and/or operational constraints. The bottlenecks create extended traffic back-ups over longer corridor segments.

The I-5: Delta Park to Lombard project is the most prominent/immediate of five bottlenecks along the corridor and is the first of the proposed projects that the region is developing.

ODOT is assessing a project to add a third lane in the southbound direction between Delta Park and Columbia Blvd., so that the freeway is continuously three-lanes in each direction. We are also exploring ways to provide more direct access to and from I-5 via Columbia Blvd.

The I-5: Delta Park to Lombard project will address one of the many capacity and operational problems in the I-5 Corridor. The project is not a silver bullet for the Corridor's problems and even after it is completed, substantial problems will continue to exist on I-5 both up-stream and down-stream of the project area primarily during the morning hours. However, it is the logical first step in a series of projects to address I-5's problems.



What Happens If We Do Nothing?

Comparing conditions today on I-5 southbound between SR 500 in Washington and I-84 in Oregon, with 2025 No Build conditions the following can be expected to occur:

- Population and employment growth in the region will result in a substantial increase in congestion and delay for all vehicles and all time periods in the I-5 corridor. Current forecasts show a 14-19% increase in southbound weekday traffic levels and 26% increase in weekend traffic levels compared to today.

- Congestion in the I-5 corridor will be a common occurrence. The heaviest congestion will continue to be during weekdays in the morning, but substantial increases in delay will occur at the corridor's bottlenecks during the mid-day and evening, and on the weekends. Vehicle hours of delay, vehicle hours of travel will increase.

- Mid-day and evening congestion resulting from the I-5 Delta Park to Lombard bottleneck will create back-ups that extend across the Interstate Bridge and affect a critical area for the movement of freight (SR 500 to Columbia Blvd.).

What Happens If We Fix The Bottleneck?

Compared to 2025 No Build, adding a third lane southbound in the I-5 Delta Park to Lombard project area is the first step to alleviating traffic problems in the I-5 corridor and can be expected to:

- Eliminate the most prominent/immediate of five bottlenecks along the I-5 study corridor.

- Provide capacity to accommodate some of the expected growth in southbound travel demand, especially the growing demands during the weekday, mid-day and evening periods and during the weekend.

- Notably reduce weekday mid-day and evening congestion, as well as weekend congestion.

- Importantly, the additional lane would improve travel southbound predictability in the I-5 Bridge Influence Area for trucks during key truck usage periods.

- Maintain/modestly improve delay and travel times in the corridor.

- Produce notable positive changes in weekday morning, mid-day and evening, as well as weekend traffic congestion on I-5 southbound in the northern 1/3 of the corridor.

- Produce minimal changes in morning traffic congestion on I-5 southbound in the southern 2/3 of the corridor, but positive changes in weekday, mid-day and evening conditions, as well as weekend conditions.

- Produce minimal changes in traffic on arterial streets near the corridor.

- Produce modest decrease in access to I-5 for close in Portland neighborhoods.

Downstream bottlenecks at the Alberta/I-5/I-405 and at the Rose Quarter will continue to exist during peak periods. Evening congestion and traffic back-ups in these areas are expected to increase with the release of the Delta Park bottleneck.

What Happens if The New Lane is Operated as an HOV Lane in the Morning?

- Providing a third lane through the Delta Park to Lombard area of I-5 opens up the possibility of establishing a high occupancy vehicle (HOV) lane southbound in the morning during the peak period. A HOV lane is one tool that can be used to manage corridor mobility and performance.

- The goal of an HOV lane is to increase corridor person trips by providing HOV users with travel times savings and improved reliability.

- HOV lane performance is affected by its length and termini. The location of the HOV lane also has a bearing on overall freeway performance during morning peak hours of operation.

- Four southbound scenarios were evaluated for the I-5: Delta Park to Lombard project. Three scenarios include one or more segments of HOV lanes and one scenario includes no HOV lane. All scenarios consider the weekday a.m. peak period only. Relative to these four scenarios the following can be expected:

    - Providing a southbound HOV lane in Oregon, whether contiguous with the Washington HOV lane or not, would substantially: improve travel times for HOV users, increase the number of persons through the corridor each hour, and decrease single-occupant vehicle (SOV) trips during the a.m. peak period.

    - While the HOV lane would provide significant benefits for users of the lane, the trade-off is substantially increased travel times and traffic back-ups for SOV users and, importantly, trucks.

    - A southbound HOV lane in Oregon would provide moderately better access to the freeway at on-ramps for vehicles traveling from close-in Portland neighborhoods.

    - A continuous HOV lane across the Interstate Bridge would provide the greatest benefits in terms of HOV user travel times and person through put in the corridor.

    - With a southbound HOV lane in Oregon, HOV users would experience congestion at the end of the HOV lane by 7:30 a.m. due to back-ups at the Rose Quarter area; this would decrease the travel time savings for HOV users in the later hours of the lane's operation.

    - Providing a southbound HOV lane also has a number of policy benefits including:

        - Providing transportation options other than the single occupant vehicle

        - Providing a good interim step toward high capacity transit in the corridor

        - Building transit ridership in the corridor

Delta Park Project Meeting

Clark County Public Service Center, 1300 Franklin, Sixth Floor
March 11, 2004, 9:30 to 11:00

AGENDA

	ITEMS	NOTES
I.	**Review of VISSIM Traffic Analysis for the Delta Park Project** (9:30-9:50)	• Project description, forecast year, network assumptions, model calibration, range of alternatives • Summary of results, morning peak period, with/without HOV lane, midday • Overall findings/message
II.	**Key Issues, Results, Key Messages** (9:50-10:30)	• Three-lanes? HOV lane? Interchange alternative? • HOV lane: WA only, WA/OR, WA/OR and across I-5 Bridge • Current northbound and southbound HOV lanes • Benefits of project, phasing in context of other I-5 corridor bottlenecks
III.	**Bi-State Committee Delta Park Presentation** (10:30-10:50)	• Confirmation of need for 3-lanes • Issues/context for determining the HOV decision • Federal and State funding strategies
IV.	**Next Steps, Critical Decisions** (10:50-11:00)	• Delta Park Citizen Committee • Update to JPACT/Metro and RTC

Key Questions:

1. Add the lane and fix the bottleneck now?
2. HOV?
3. Interchange configuration?

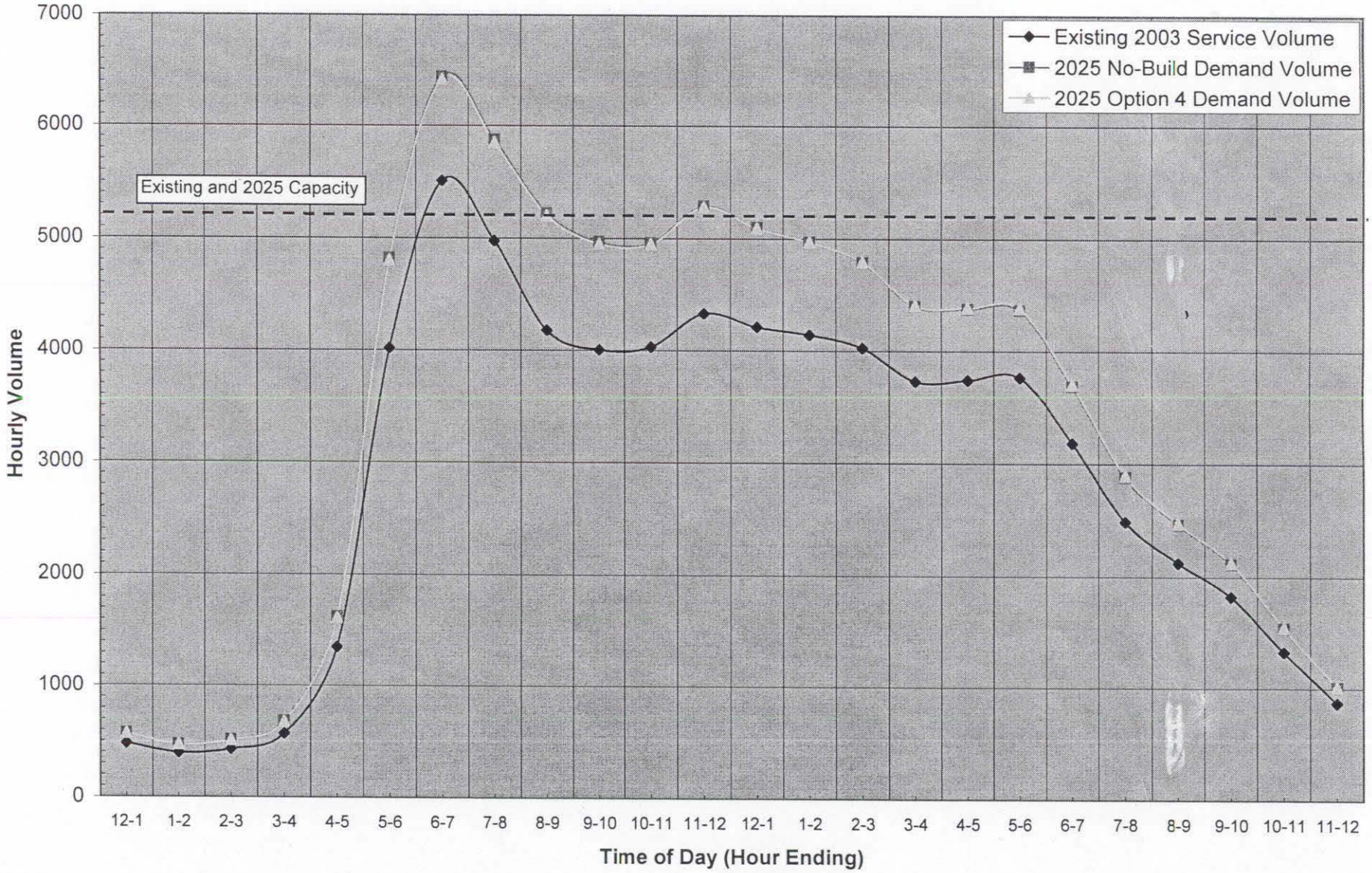
Key Messages:

1. Growth over the next 20 years will have a significant impact on the I-5 corridor.
2. The I-5 Delta Park area is the most prominent of 5 key bottlenecks – it is an important first step, but will not solve all of the corridor's problems – upstream and downstream problems will continue to exist.
3. Build or No Build there will be significant A.M. congestion
4. The big benefits from the I-5 Delta Park project are in the mid-day, evenings and weekends. The Bridge Influence Area and trucks are the winners.

Upcoming Meetings:

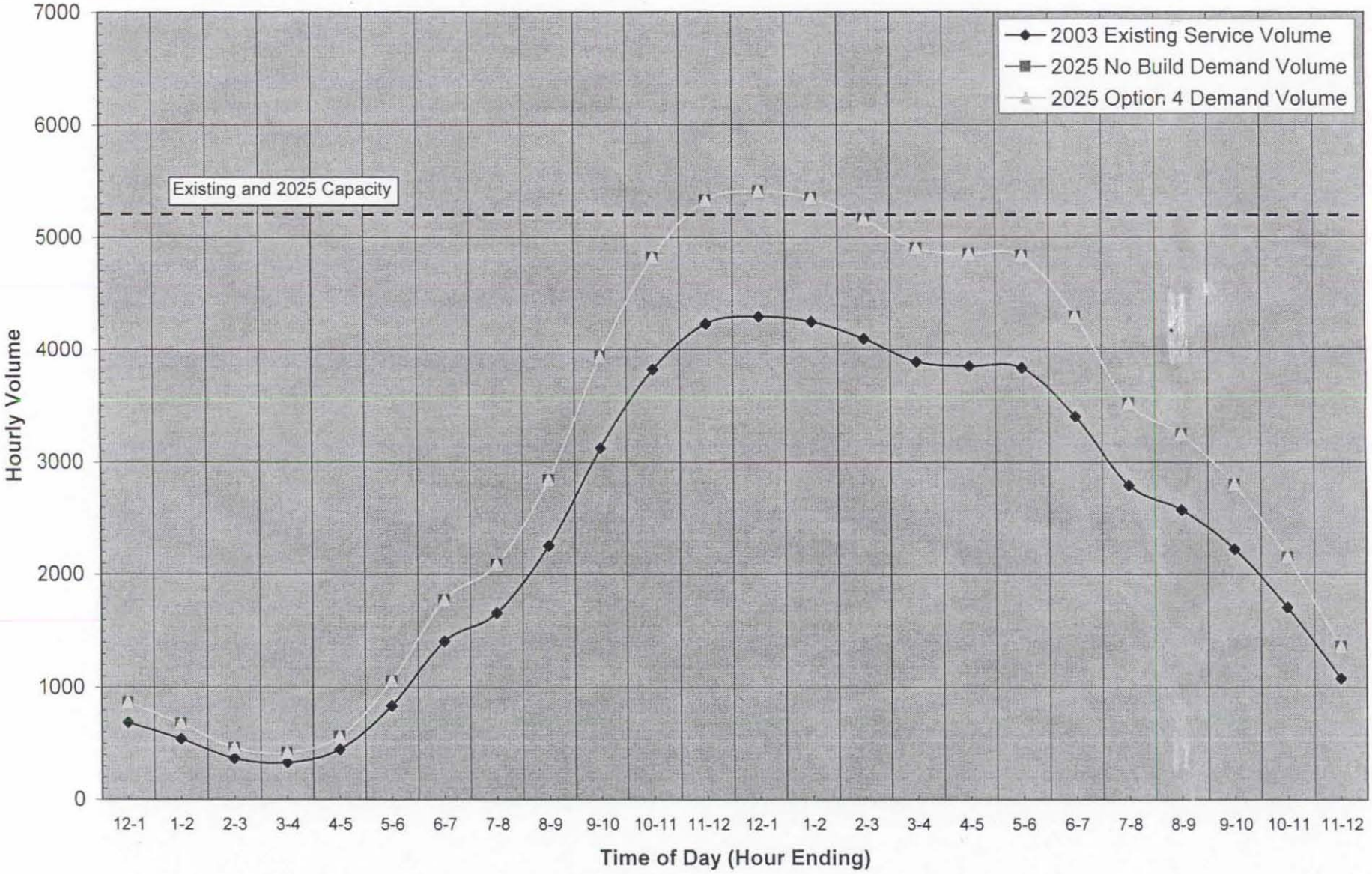
- Bi-State Coordinating Committee – March 25th
- CAC/EJWG Meeting – April 5th

Service and Demand Volumes at I-5 Columbia River Bridge ATR - SB Weekday Hourly Profile

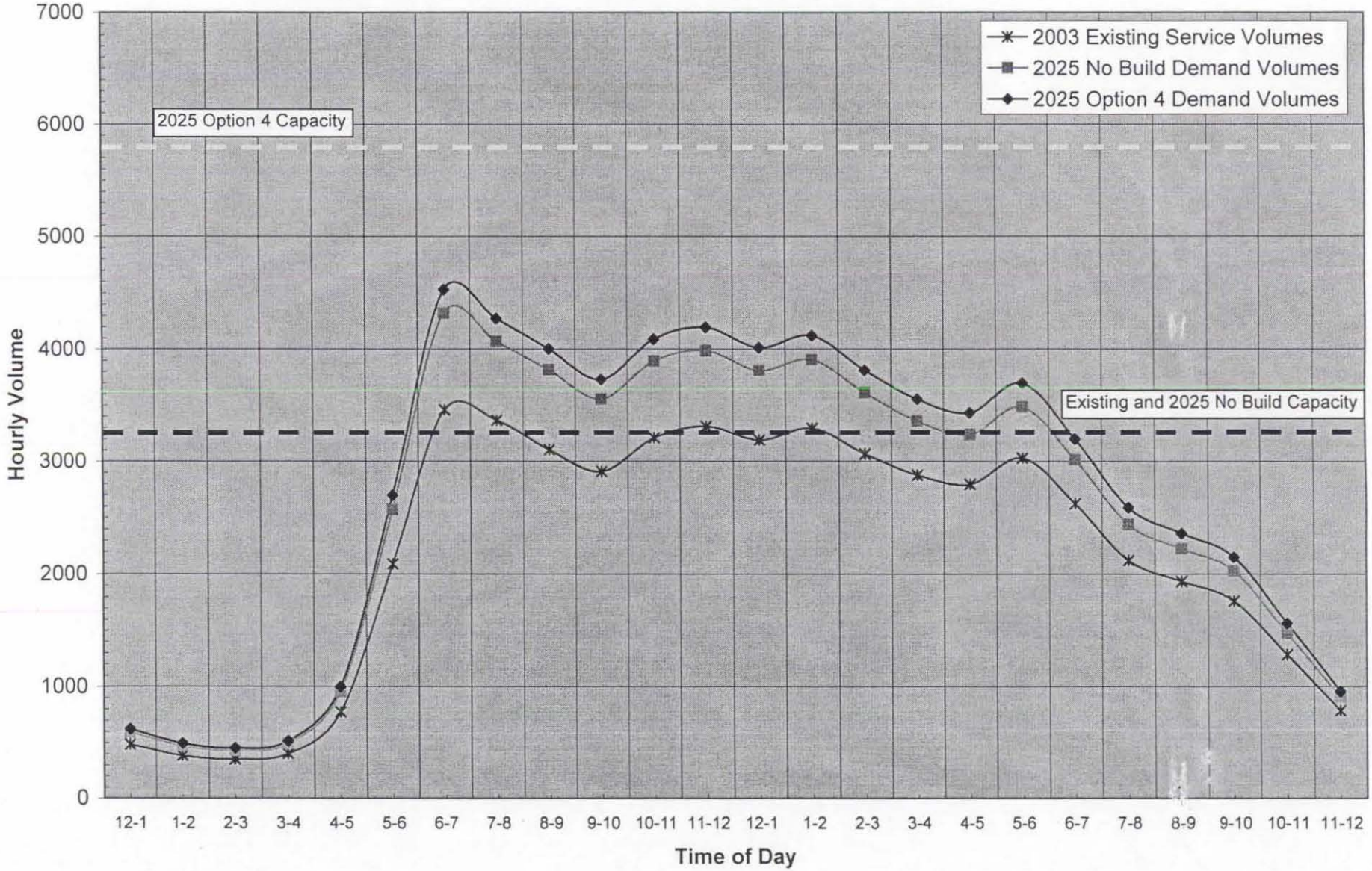


Draft as of 2-26-04

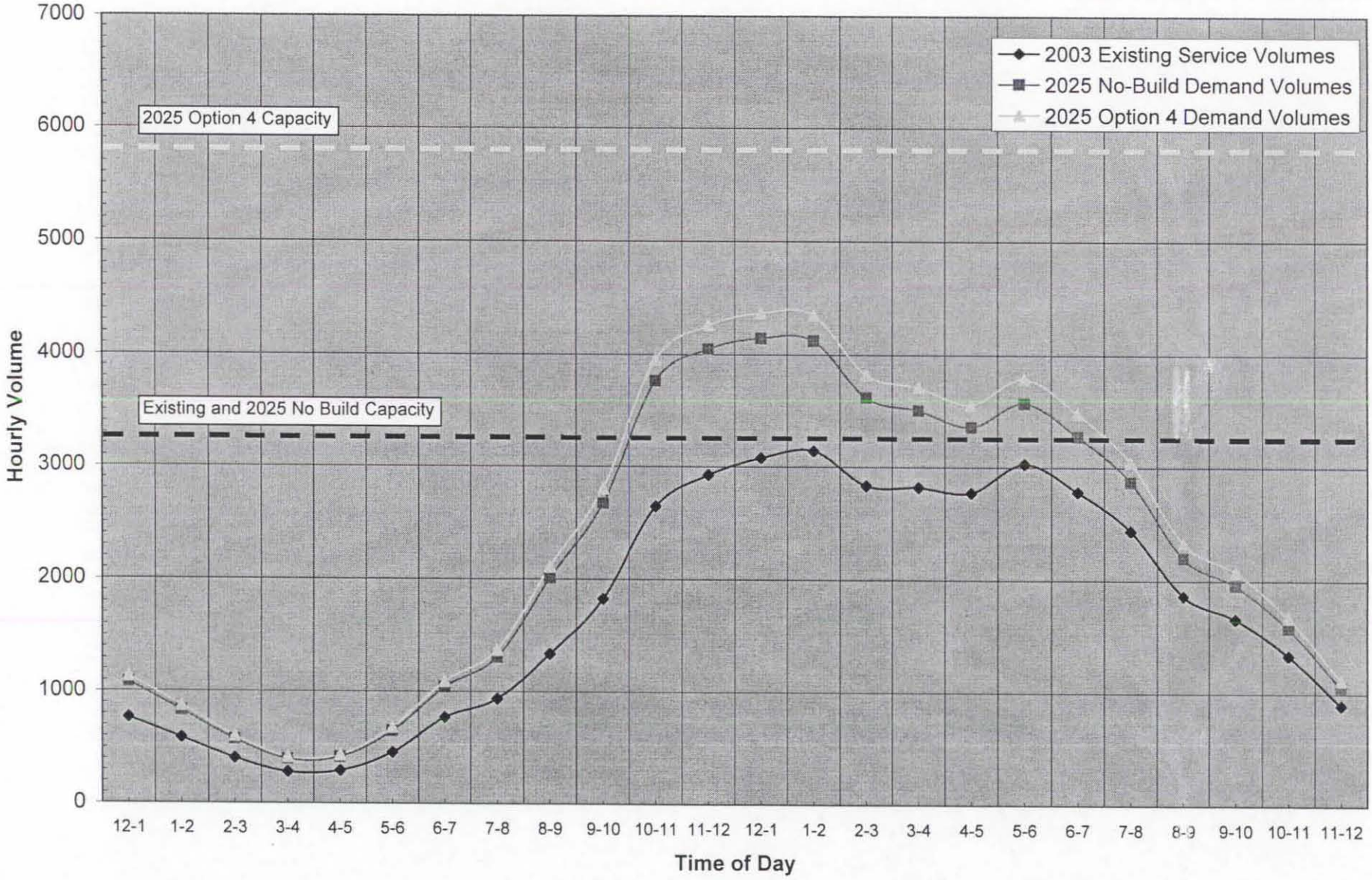
Service and Demand Volumes at I-5 Columbia River Bridge ATR - SB Weekend Hourly Profile



Service and Demand Volumes through Delta Park - SB Weekday Hourly Profile

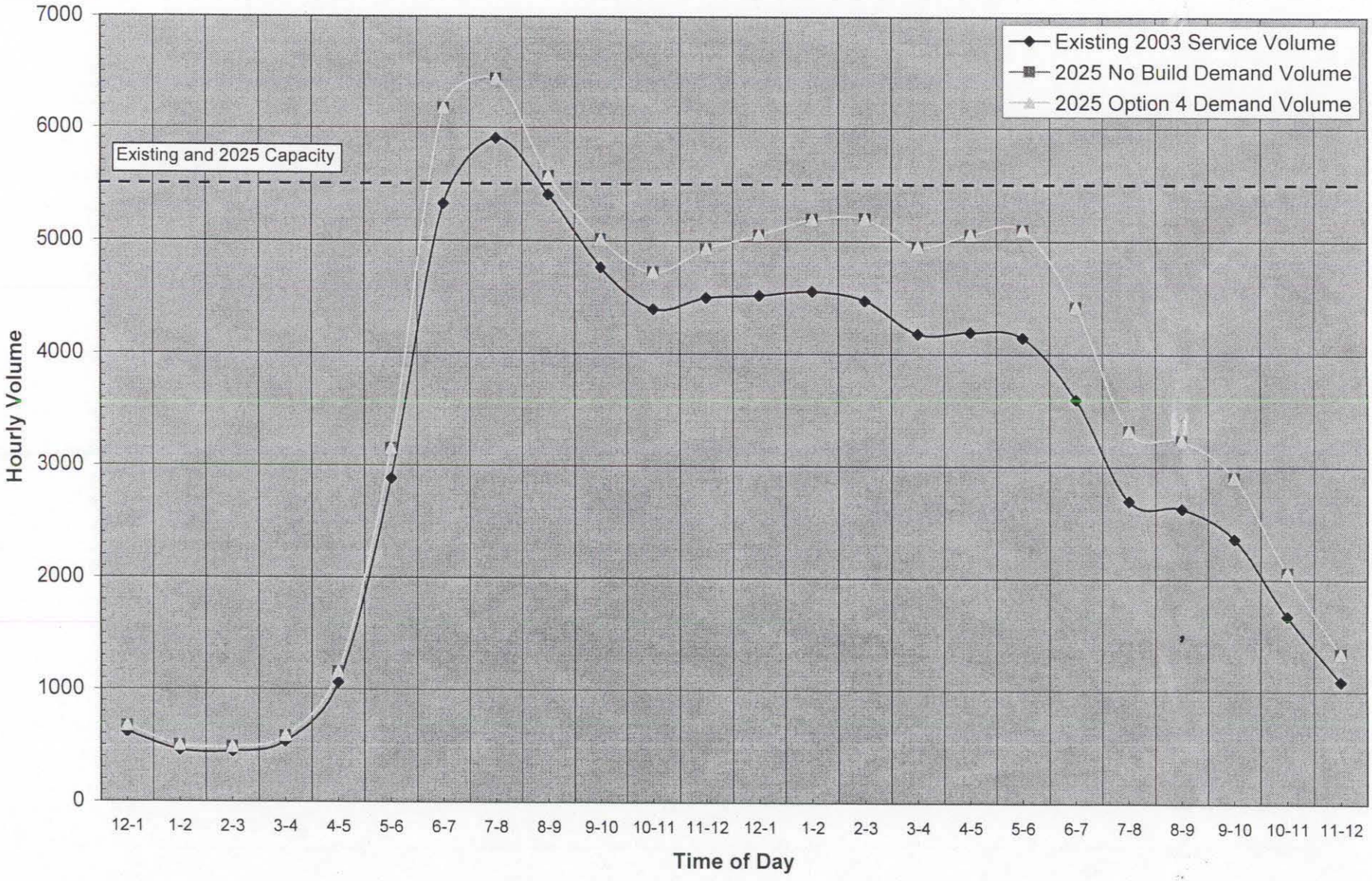


Service and Demand Volumes through Delta Park - SB Weekend Hourly Profile



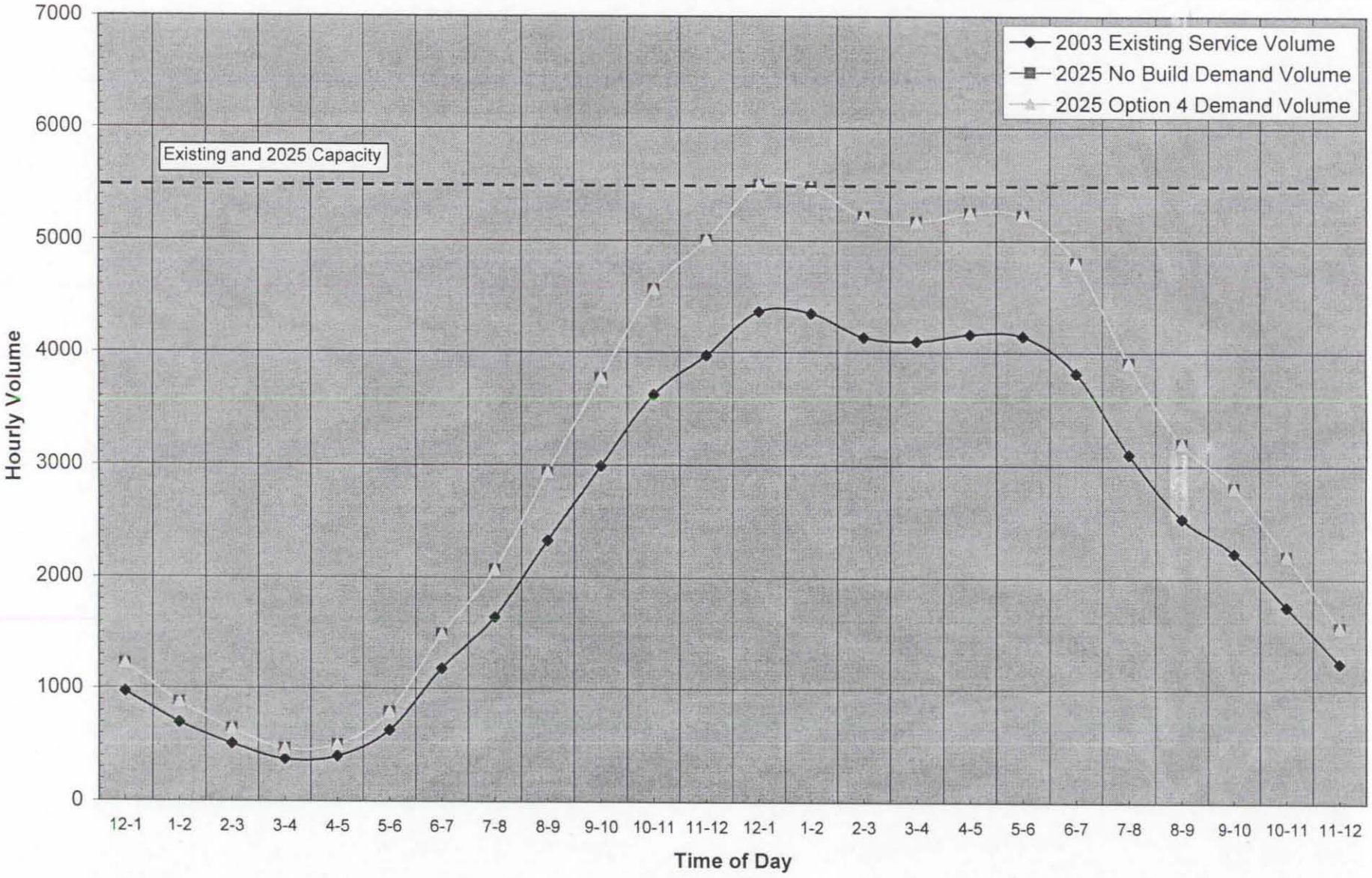
Service and Demand Volumes at Ainsworth ATR - SB Weekday Hourly Profile

(Ainsworth ATR located between SB Portland Blvd. on-ramp and SB Alberta/Going St. off-ramp)



Service and Demand Volumes at Ainsworth ATR - SB Weekend Hourly Profile

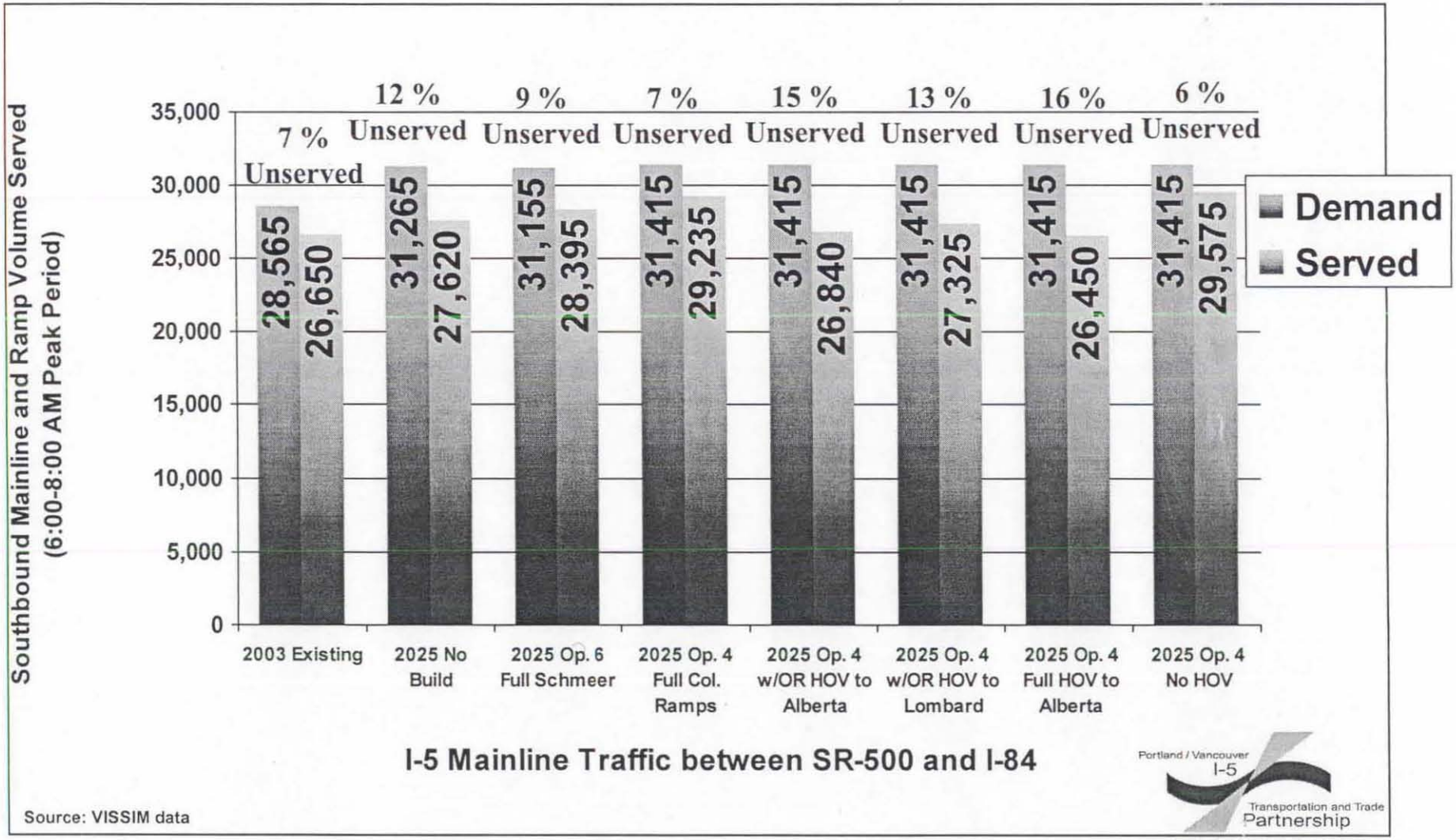
(Ainsworth ATR located between SB Portland Blvd. 0n-ramp and SB Alberta/Going St. off-ramp)



Draft as of 2-26-04

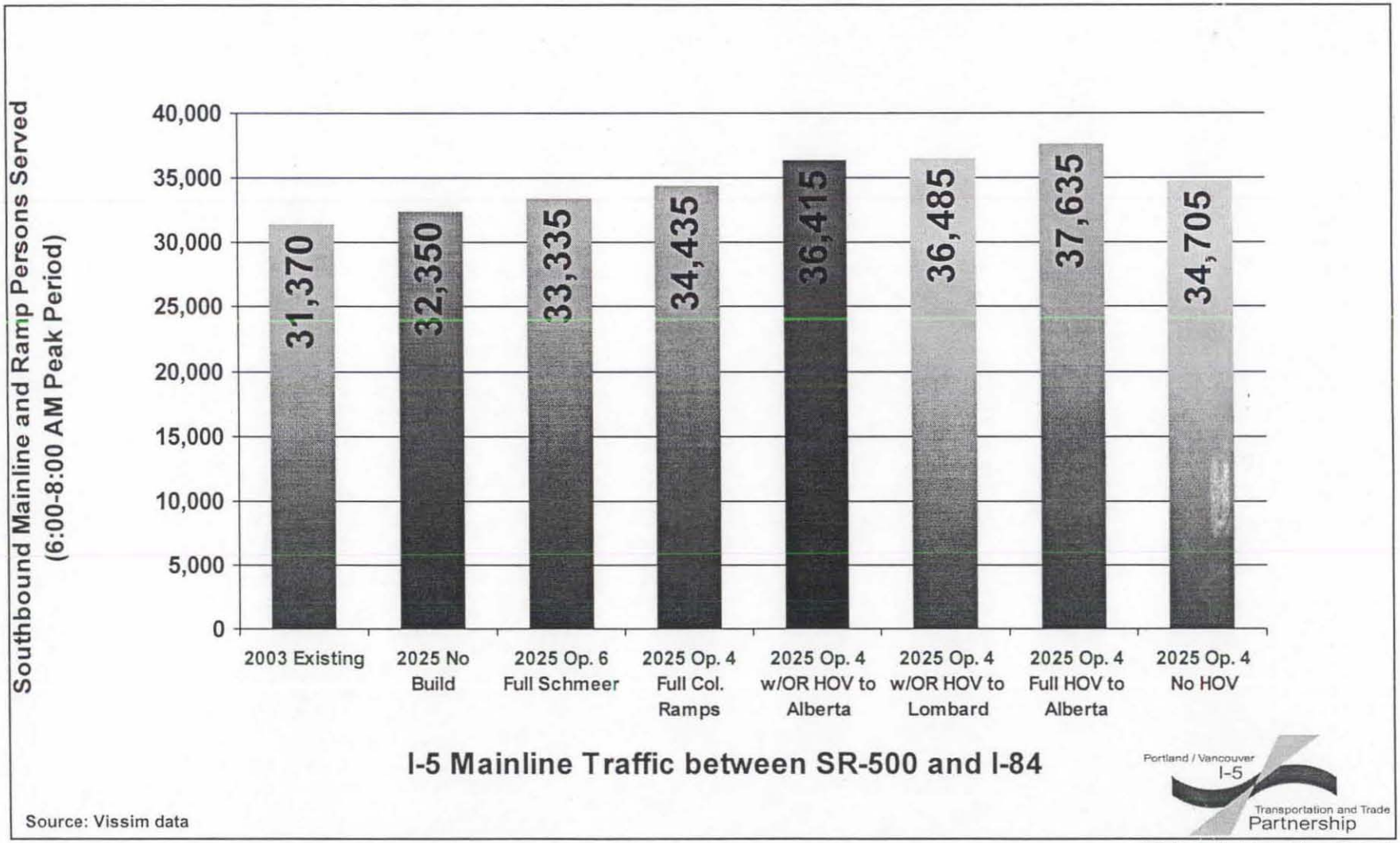
Southbound Total I-5 Vehicles Served

(AM Peak Period)



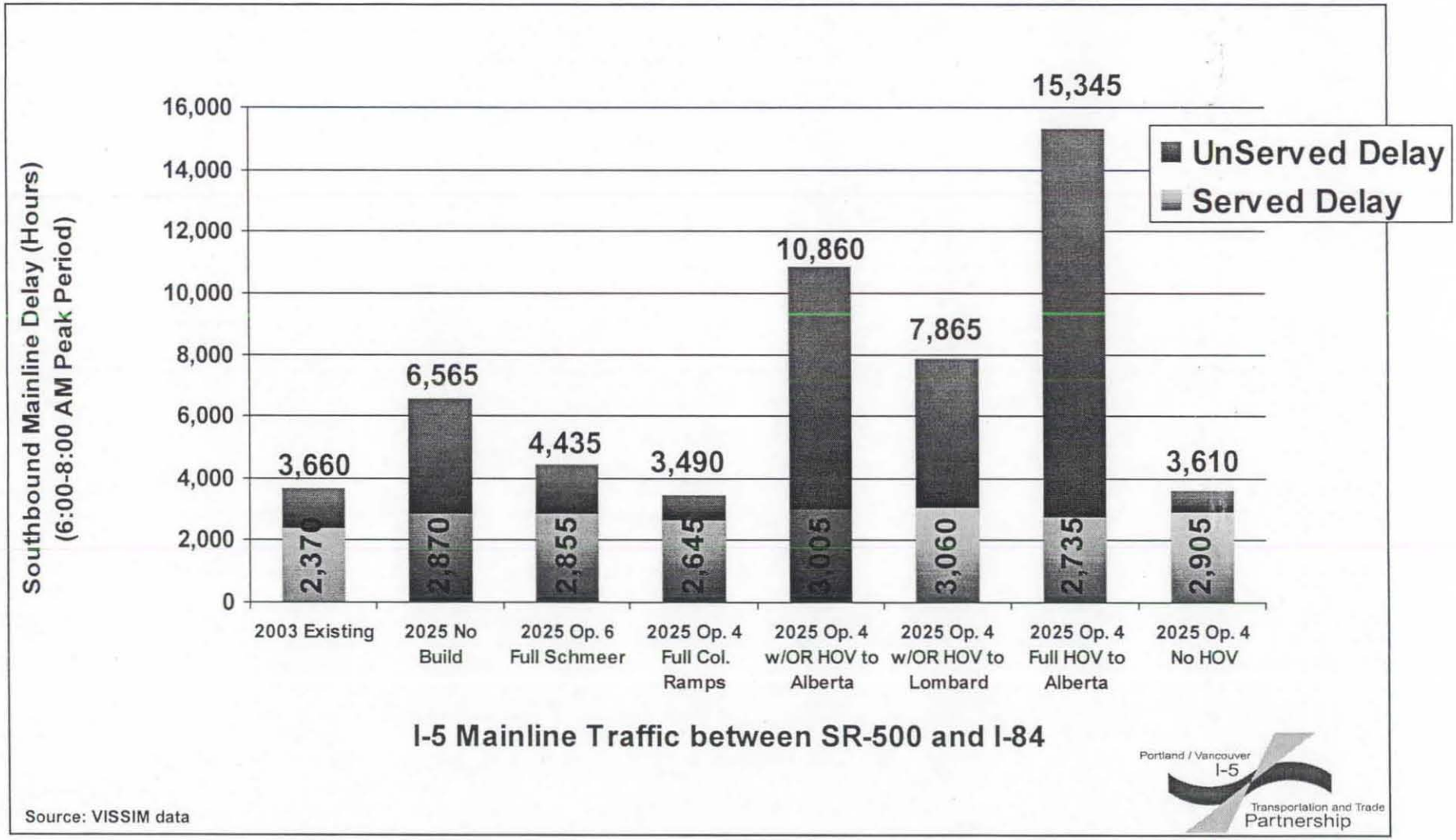
Southbound Total I-5 Person Served

(AM Peak Period)



Southbound Vehicle Hours of Delay

Along I-5 from SR-500 to I-84 (AM Peak Period)
Served and Unserved

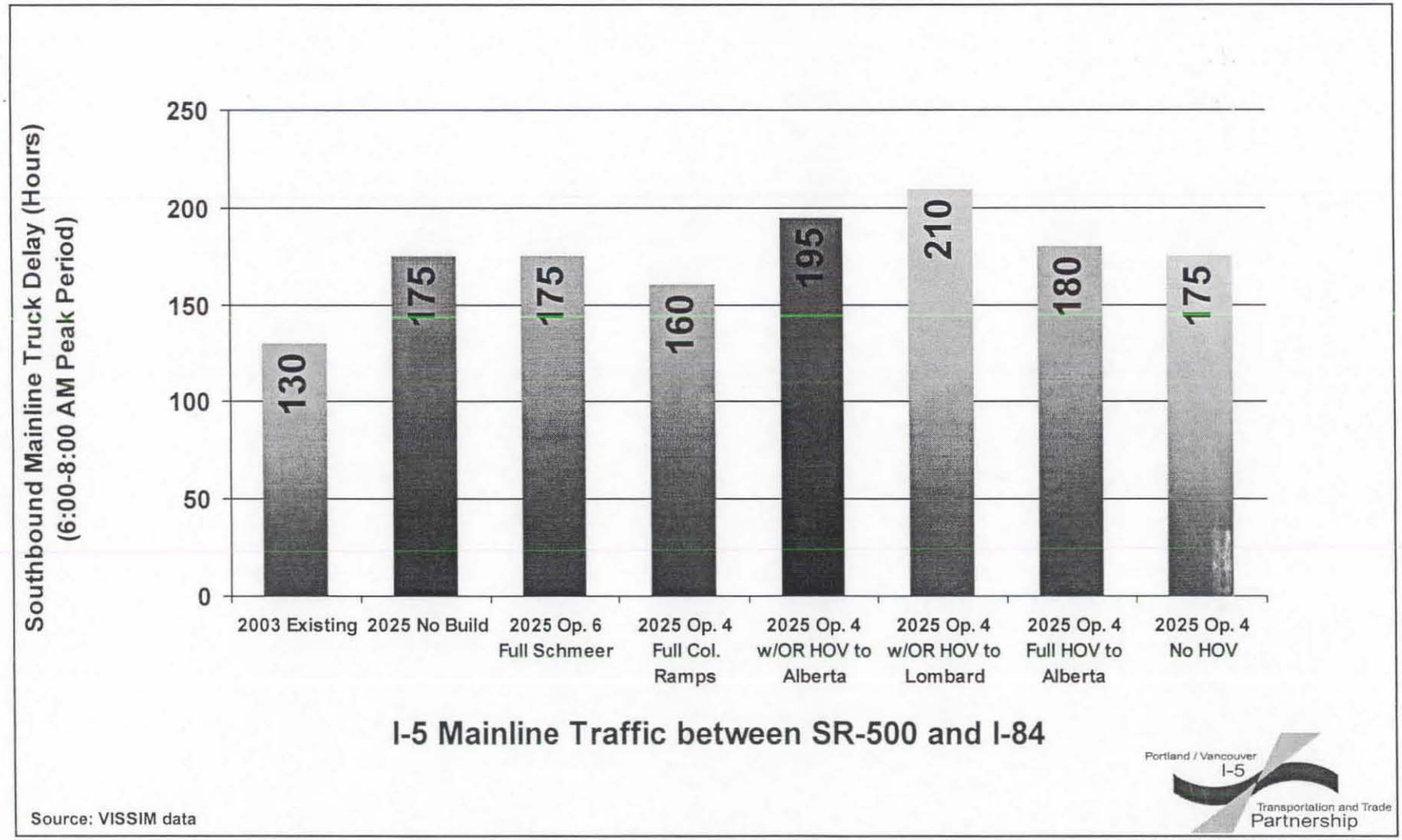


Source: VISSIM data

Portland / Vancouver I-5 Transportation and Trade Partnership

Southbound Truck Hours of Delay

Along I-5 from SR-500 to I-84 (AM Peak Period)
Served Only

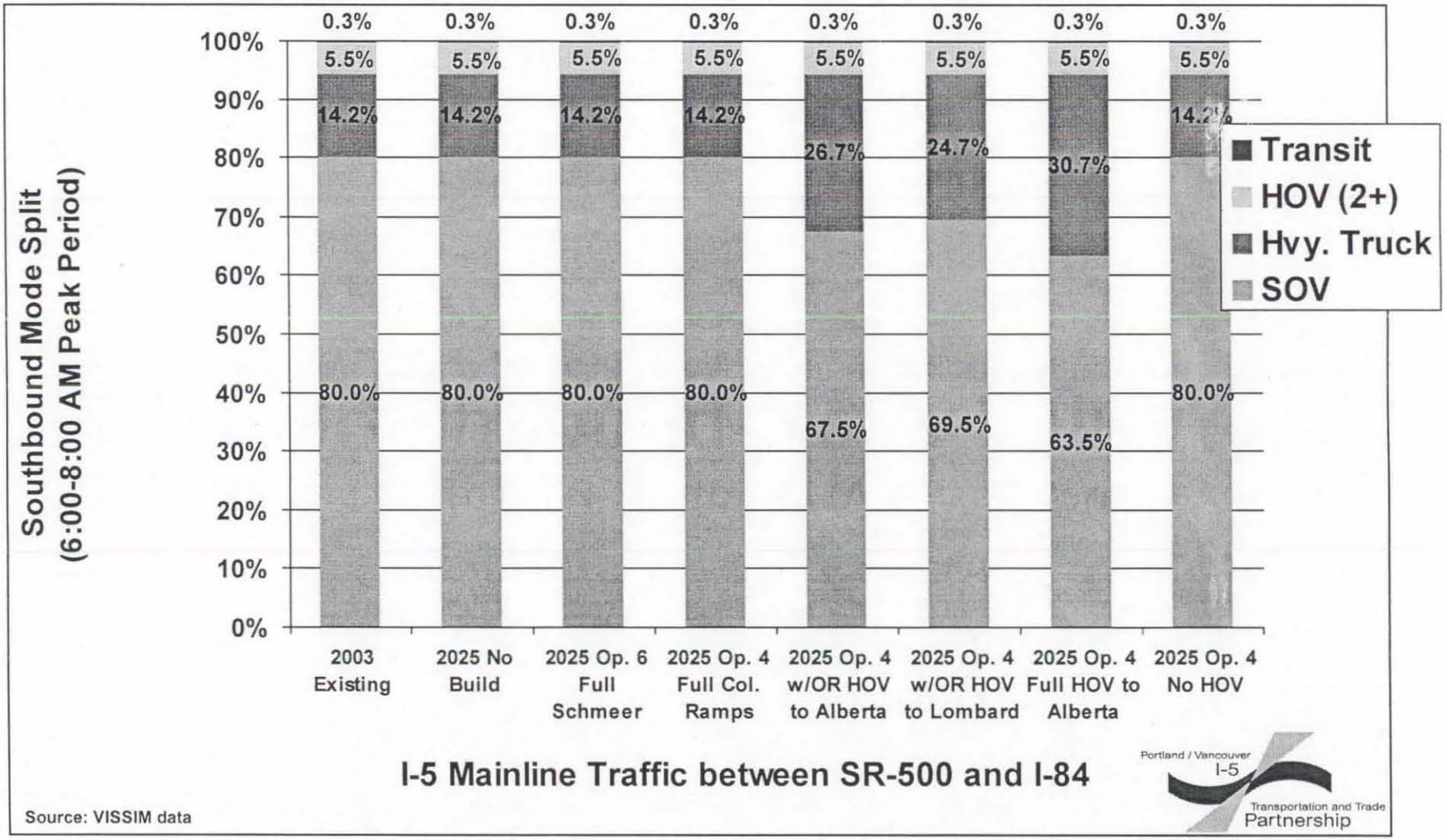


Source: VISSIM data

Portland / Vancouver I-5 Transportation and Trade Partnership

Southbound Mode Split

Along I-5 from SR-500 to I-84 (AM Peak Period)



I-5: Delta Park to Lombard Project

Transportation Performance: The Context

The I-5 Corridor between Portland and Vancouver is one of the region's most heavily used freeway corridors. It is an important transportation route for commuters getting to jobs and for the movement of freight. This corridor provides access to over half the Portland/Vancouver region's industrial land.

In the absence of both freeway and transit investment in the corridor, congestion and delay will grow steadily due to population and employment growth, resulting in weekday morning and evening periods of congestion spreading into the midday. Growth will also result in weekend midday congestion.

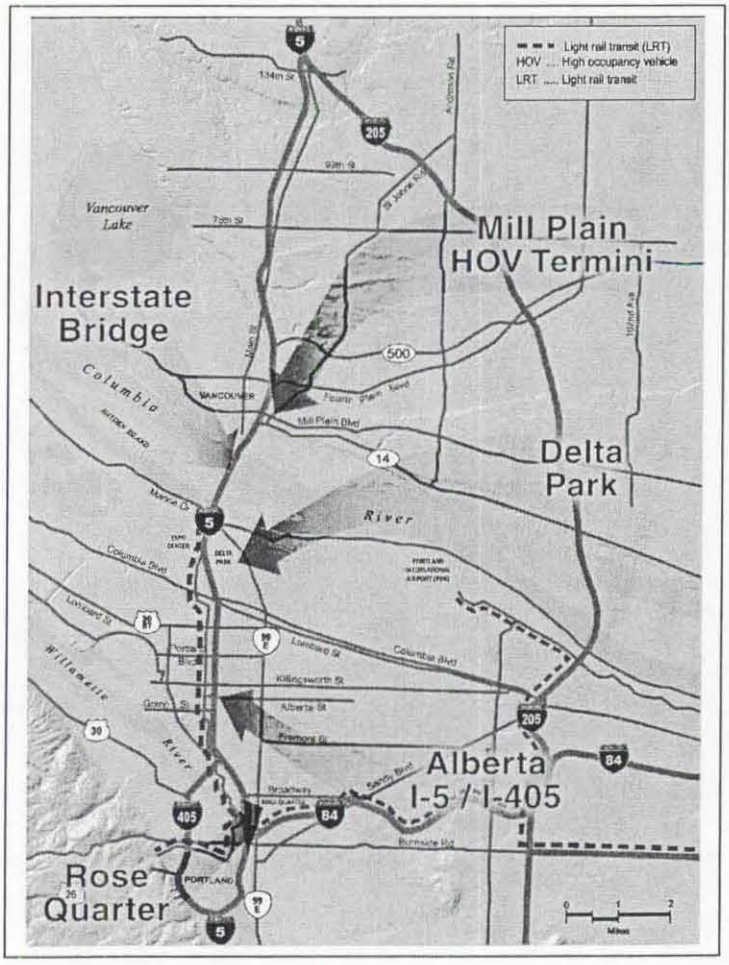
The I-5 Partnership Strategic Plan calls for a series of road, transit, and transportation demand management projects in the corridor. The objective of these proposed projects is to manage the transportation system by providing reliability and lack of congestion in the corridor for most of the day. The proposed projects will not eliminate rush hour congestion, which is a fact of life in an urban area and is to be expected and tolerated to some degree.

Congestion experienced along high volume corridors such as I-5 is often a function of specific bottlenecks resulting from capacity and/or operational constraints. The bottlenecks create extended traffic back-ups over longer corridor segments.

The I-5: Delta Park to Lombard project is the most prominent/immediate of five bottlenecks along the corridor and is the first of the proposed projects that the region is developing.

ODOT is assessing a project is to add a third lane in the southbound direction between Delta Park and Columbia Blvd., so that the freeway is continuously three-lanes in each direction. We are also exploring ways to provide more direct access to and from I-5 via Columbia Blvd.

The I-5: Delta Park to Lombard project will address **one** of the many capacity and operational problems in the I-5 Corridor. The project is not a silver bullet for the Corridor's problems and even after it is completed, substantial problems will continue to exist on I-5 both up-stream and down-stream of the project area primarily during the morning hours. However, it is the logical first step in a series of projects to address I-5's problems.



What Happens If We Do Nothing?

Comparing conditions today on I-5 southbound between SR 500 in Washington and I-84 in Oregon, with 2025 No Build conditions the following can be expected to occur:

- Population and employment growth in the region will result in a substantial increase in congestion and delay for all vehicles in the I-5 corridor. Current forecasts show a 14-19% increase in southbound weekday traffic levels and 26% increase in weekend traffic levels.
- Congestion in the I-5 corridor will be a common occurrence. The heaviest congestion will continue to be during weekdays in the morning, but substantial increases in delay will occur at the corridor's bottlenecks during in the mid-day and evening, and on the weekends. Vehicle hours of delay, vehicle hours of travel will increase.
- Mid-day and evening congestion resulting from the I-5 Delta Park to Lombard bottleneck will create back-ups that extend across the Interstate Bridge and affect a critical area for the movement of freight (SR 500 to Columbia Blvd.).

What Happens If We Fix The Bottleneck?

Compared to 2025 No Build, adding a third lane southbound in the I-5 Delta Park to Lombard project area is the first step to alleviating traffic problems in the I-5 corridor and can be expected to:

- Eliminate the most prominent/immediate of five bottlenecks along the I-5 study corridor.
- Provide capacity to accommodate some of the expected growth in southbound travel demand, especially the growing demands during the weekday, mid-day and evening periods and during the weekend. Travel demands during these time periods are expected to exceed today's available capacity in just a X years.
- Notably reduce weekday mid-day and evening congestion, as well as weekend congestion.
- Importantly, the additional lane would improve travel southbound predictability in the I-5 Bridge Influence Area for trucks during key truck usage periods.
- Maintain/modestly improve delay and travel times in the corridor.
- Produce notable positive changes in weekday morning, mid-day and evening, as well as weekend traffic congestion on I-5 southbound in the northern 1/3 of the corridor.
- Produce minimal changes in morning traffic congestion on I-5 southbound in the southern 2/3 of the corridor, but positive changes in weekday, mid-day and evening conditions, as well as weekend conditions.
- Produce minimal changes in traffic on arterial streets near the corridor.
- Produce modest changes in access to I-5 for close in Portland neighborhoods.

Downstream bottlenecks at the Alberta/I-5/I-405 and at the Rose Quarter will continue to exist during peak periods. Evening congestion and traffic back-ups in these areas are expected to increase with the release of the Delta Park bottleneck.

What Happens if The New Lane is Operated as an HOV Lane in the Morning?

- Providing a third lane through the Delta Park to Lombard area of I-5 opens up the possibility of establishing a high occupancy vehicle (HOV) lane southbound in the morning during the peak period. A HOV lane is one tool that can be used to manage overall peak period freeway performance, including upstream and downstream traffic effects.

- The goal of an HOV lane is to increase corridor person trips by providing HOV users with travel times savings and improved reliability.

- HOV lane performance is affected by its length and termini. The location of the HOV lane also has a bearing on overall freeway performance during morning peak hours of operation.

- Four southbound scenarios were evaluated for the I-5: Delta Park to Lombard project. Three scenarios include one or more segments of HOV lanes and one scenario includes no HOV lane. All scenarios consider the weekday a.m. peak period only. Relative to these four scenarios the following can be expected:

    - Providing a southbound HOV lane in Oregon, whether contiguous with the Washington HOV lane or not, would substantially: improve travel times for HOV users, increase the number of persons through the corridor each hour, and decrease single-occupant vehicle (SOV) trips during the a.m. peak period.

    - While the HOV lane would provide significant benefits for users of the lane, the trade-off is substantially increased travel times and traffic back-ups for SOV users and trucks.

    - A southbound HOV lane in Oregon would provide moderately better access to the freeway at on-ramps for vehicles traveling from close-in Portland neighborhoods.

    - A continuous HOV lane across the Interstate Bridge would provide the greatest benefits in terms of HOV user travel times and person through put in the corridor.

    - With a southbound HOV lane in Oregon, HOV users would experience congestion at the end of the HOV lane by 7:30 a.m. due to back-ups at the Rose Quarter area; this would decrease the travel time savings for HOV users in the later hours of the lane's operation.

6. Avoid or Minimize Adverse Impacts to Neighborhoods/Community:

6.1 Impacts to property

- Acres of additional property required for right-of-way or easement purposes
- Number of homes and businesses ODOT will need to purchase for right-of-way or easement purposes
- Number of involuntary home and/or business displacements anticipated
- Change in property access

6.2 Impacts to recreation

6.3 Impacts to bicyclists and pedestrians

6.4 Impacts to employment and business opportunities

6.5 Impacts to visual resources, aesthetics

6.6 Incremental noise impacts

6.7 Impacts to event traffic

7. Avoid or Minimize Adverse Construction Impacts:

7.1 Impacts on businesses and local residents from construction

7.2 Traffic disruptions on I-5 during construction

7.3 Noise impacts during construction

8. Provide Environmental Justice:

8.1 Avoid, minimize or mitigate disproportionate adverse impacts on low income and minority communities in the project area.

- Analysis of how all adverse impacts from the project impact low income and minority communities in the project area including impacts to transportation

facilities, the natural environment, the cultural and built environment, and construction impacts.

8.2 Project elements and enhancement measures that benefit impacted low-income and minority communities.

- Analysis of elements and enhancement measures that benefit impacted low-income and minority communities including benefits to transportation facilities, the natural environment, the cultural and built environment and construction benefits.

9. Cost:

9.1 Minimize project construction costs

- Estimates of the project capital costs
- Estimates of project operating and maintenance costs

Himes, Dale

From: Anderson, Karyn
Sent: Friday, October 03, 2003 10:09 AM
To: Himes, Dale
Subject: FW: I-5 Delta Park: Oct 6th CAC and EJWG Meeting Agenda

Draft Mtg Agenda 10-6-03.doc

Hi Dale,
Note below that the Delta Park to Lombard meeting has changed locations on October 6th. Also, below is the meeting agenda for that evening. fyi
:)Karyn

-----Original Message-----
From: Kate.H.DEANE@odot.state.or.us
[mailto:Kate.H.DEANE@odot.state.or.us]
Sent: Tuesday, September 30, 2003 5:58 PM
To: CarlFlipper@comcast.net; chrisbailey@oregoncc.org; dan.green@roadway.com; dspahr@ups.com; darambula@ca-city.com; ellenbeaton@msn.com; berlioz@teleport.com; omot53@aol.com; jwish@independentdispatch.com; tracy.whalen@escocorp.com; brillobrain@ureach.com; csherrard@vhausa.com; dfrei@teleport.com; ejco@teleport.com; lakesr49@msn.com; krisl@eocwa.org; msolano@worksystems.org; entienne01@yahoo.com
Cc: vbrown@jlainvolve.com; nanci@lunajimenezseminars.com; kkibler@jlainvolve.com; ssharpe@parametrix.com; edp@c-tran.org; Kurt.S.JUN@odot.state.or.us; andersonk@wsdot.wa.gov; Gabe.Onyeador@pdxtrans.org; tarnold@ch2m.com; Steven.M.HARRY@odot.state.or.us; Aaron.J.ISENHART@odot.state.or.us; jeffrey.graham@fhwa.dot.gov; john.gillam@pdxtrans.org; John.E.OSBORN@odot.state.or.us; Wilton.A.ROBERTS@odot.state.or.us; April.S.SIEBENALER@odot.state.or.us; steve.gerber@pdxtrans.org; Susan.A.WHITNEY@odot.state.or.us
Subject: I-5 Delta Park: Oct 6th CAC and EJWG Meeting Agenda

Note Change in Meeting Location -- See Below!!!

Hello all -

Attached is the meeting agenda for our next meeting on October 6th. I look forward to seeing you all.

Please note the change in meeting location. We are meeting at:

Oregon Association of Minority Entrepreneurs
4134 N Vancouver Ave in Portland

Driving directions:
From I-5 Northbound, Exit at Killingsworth/Alberta #303 - toward Swan Island, turn right onto N Alberta St and then right onto N Vancouver street.

From I-5 Southbound: Exit Albert st #303 - toward Swan Island, turn left onto N Alberta St, turn right onto N Vancouver Avenue.

I-5: Delta Park to Lombard Project
CAC & EJWG Meeting #7

October 6, 2003
5:30 – 7:30 PM

Oregon Association of Minority Entrepreneurs (OAME), 4134 N. Vancouver Ave in Portland

Draft Agenda

Meeting Purpose

- Review Alternative Analysis data
- Build relationship between committee members
- Discuss Design Workshop goals and outcomes

5:30 Welcome, Introductions and Agenda Review

- Introduce new Project Director, April Siebenaler
- Review previous meeting summaries (6/16)
- Review EJWG meetings summaries and outcomes (i.e. changes in venue, meeting structure, etc.)
- Announcements
- Agenda

5:35 Small Group Introductions

- Full names
- Highlight from the summer

5:40 Reportback on Alternatives Analysis

- Presentation of general findings of alternative analysis (Kate)

5:55 Small Group Discussions

- Discuss & clarify understanding of alternative analysis data
- Log unanswered questions for review at next meeting

6:10 Activity & Debrief

- Goal clarification
- Team building

6:35 Break

6:45 Presentation of Design Workshop

- Outline of Design Workshop goals and structure (Kate)
- Overview of Design Workshop timeline and logistics
- Introduce Design Workshop Project Manager, Sumner Sharpe

7:00 Committee Break-out Sessions on Design Workshop

- Role of committee members
- Scheduling of committee members
- Suggestions for specific materials requests (i.e. maps, view, charts, information, etc.)
- Ideas for setting up & staffing the EJ station (EJWG only)

7:30 Next Meeting Reminder, Thanks and Adjourn

I-5: Delta Park to Lombard Project
CAC & EJWG Meeting #7

October 6, 2003
5:30 – 7:30 PM

Oregon Association of Minority Entrepreneurs (OAME), 4134 N. Vancouver Ave in Portland

REVISED Draft Agenda

Meeting Purpose

- Review Alternative Analysis data
- Build relationship between committee members
- Discuss Design Workshop goals and outcomes

5:30 Welcome, Introductions and Agenda Review

- Introduce new Project Director, April Siebenaler
- Review previous meeting summaries (6/16)
- Review EJWG meetings summaries and outcomes (i.e. changes in venue, meeting structure, etc.)
- Announcements
- Agenda

5:35 Small Group Introductions

- Full names
- Highlight from the summer

5:40 Reportback on Alternatives

- Overview of alternatives and status of analysis (Kate)

5:55 Small Group Discussions

- Discuss & clarify understanding of alternative analysis data
- Log unanswered questions for review at next meeting

6:10 Activity & Debrief

- Goal clarification
- Team building

6:35 Break (review of draft Design Workshop materials)

6:45 Presentation of Design Workshop

- Outline of Design Workshop goals and structure (Kate)
- Overview of Design Workshop timeline and logistics
- Introduce Design Workshop Project Manager, Sumner Sharpe

7:00 Committee Break-out Sessions on Design Workshop

- Role of committee members
- Scheduling of committee members
- Suggestions for specific materials requests (i.e. maps, view, charts, information, etc.)
- Ideas for setting up & staffing the EJ station (EJWG only)

7:30 Next Meeting Reminder, Thanks and Adjourn

Purpose and Need: I-5: Delta Park to Lombard Project

Project Background and Context

Interstate 5 is the only continuous freeway on the West Coast, connecting Canada and Mexico through the states of Washington, Oregon and California. It provides for high capacity, high-speed traffic movement in urban and rural areas. I-5 is a part of the National Highway system, it is a state designated freight route, and is Oregon's most heavily used roadway. In the Portland/Vancouver region, this freeway connects downtown Portland, through north and northeast Portland to Vancouver, Washington. The Portland/Vancouver region is the fourth largest urban area that I-5 travels through.

The project area for this Environmental Assessment is on I-5 in Portland, between Delta Park (at Victory Boulevard) and the Lombard interchange. I-5 in the project area is a major freight and commuter roadway. Just north of the project area, at the Columbia River, I-5 provides a critical connection to two major ports, deep-water shipping, up-river barging, two transcontinental rail lines, and much of the region's industrial land. For residents in the Portland and Vancouver area, the I-5 Bridge provides one of two crossings of the Columbia River for transit and automobiles. It connects the communities of Portland and Vancouver for work, recreation, shopping and entertainment purposes. An average of 125,000 trips are made across the I-5 Bridge every day. In the project area I-5 carries approximately 109,100 vehicles daily, with trucks accounting for 14% of the traffic. The posted speed on the highway within the project area is 55 m.p.h..

In general, I-5 is three through lanes in each direction in the Portland/Vancouver metropolitan area. In the project area, I-5 is only a 2-lane section in the southbound direction between Victory Blvd. and the Columbia Blvd. on-ramp. The Columbia Blvd. on-ramp becomes the third southbound lane on the freeway. The two-lane section creates a bottleneck that results in congestion, poor lane balance and the freeway not being used to its full capacity. In 1998, the northbound section of the project area was modified to provide a third lane. This third lane was added by strengthening shoulder areas and re-striping the freeway. On the Columbia Boulevard and Columbia Slough structures in the project area, the re-striping of the freeway has resulted in inadequate shoulder and median width. The left travel lane currently operates as a high-occupancy vehicle lane in the evening between 3:00 p.m. and 6:00 p.m. on weekdays. In the project area, both northbound and southbound, the freeway has substandard shoulders, medians, and acceleration and deceleration lanes for ramps.

The I-5: Delta Park to Lombard project is in the Metro Regional Transportation Plan; it was also recommended in the Portland/Vancouver I-5 Transportation and Trade Partnership Strategic Plan.

Project Purpose

The **purpose** of the I-5: Delta Park to Lombard project is to relieve southbound congestion problems, and to improve the safety, operation and efficiency of the existing highway in the project area.

Project Need

The **need** for this project is generated by:

- Congestion created when the southbound freeway capacity decreases from three through lanes to two through lanes.
- Safety and operational concerns created by merging vehicles where the southbound freeway capacity decreases from three through lanes to two through lanes.
- Safety and operational concerns created by the lack of shoulders and medians on the Columbia Slough Bridge and the Columbia Boulevard structures in the northbound direction.
- Safety and operational concerns at entrance and exit ramps in the project area.
- Industrial business and job growth in the vicinity of the project area.

Discussion:
The efficiency and operation of I-5 is compromised by the current configuration of I-5 in the project area. On average, 109,100 vehicles use the freeway in the project area every day.

The primary problem in the southbound direction is poor lane balance. Interstate 5 in the Portland/Vancouver area is generally three lanes in each direction. In the project area however, there is a .81 mile-long section of the freeway that is only two lanes. One of the three southbound travel lanes ends just before the Victory Boulevard interchange and does not pick up again until the Columbia Boulevard on-ramp. Regular traffic back-ups occur during the morning commute period as a result of the disruption of traffic flow from merging vehicles and the lane reduction.

The primary problem in the northbound direction is the lack of shoulders on the freeway bridges over Columbia Boulevard and the Columbia Slough. In 1998 a third travel lane was added to I-5 northbound between Columbia Boulevard and Victory Boulevard. The third travel lane was added by re-striping the freeway, and widening and strengthening the shoulders where possible. On the Columbia Boulevard and Columbia Slough bridges there was no room for a shoulder when the freeway was re-striped. The lack of shoulders has significant operational implications. There is no place for disabled vehicles to park so that flow of the travel lanes can be maintained. There is also no room for driver error and recovery.

The I-5: Delta Park to Lombard project area is the gateway to over half the region's industrial land, two transcontinental railways and the Ports of Portland and Vancouver. Attracting and

retaining businesses in the I-5 corridor requires a well functioning transportation system that provides good access to industrial areas. Every day, approximately 15,000 trucks travel in the project area. Planned growth in the region's industrial areas is expected to contribute to a growth in truck traffic of 50% or higher. The I-5: Delta Park to Lombard project is one of a series of highway, transit, transportation demand management and heavy rail investments planned for the Portland/Vancouver I-5 corridor to address the long-range mobility needs of the corridor and to strengthen the access to the industrial areas served by the corridor.

Project Goals and Objectives

Goals

- Meet the project purpose and need by developing a design solution for the project that balances community concerns, transportation needs, environmental impacts, and regulatory requirements.
- Collaboratively develop project elements and mitigation and enhancement measures that will help to improve the livability of the community, including the natural environment.

Objectives

Natural Environment:

- Avoid or minimize adverse impacts to: air quality, wildlife habitat, and water resources.

Cultural and Built Environment:

- Avoid or minimize involuntary displacement of homes and businesses.
- Minimize the need to purchase property for right-of-way or easement purposes.
- Avoid or minimize incremental noise impacts of the built project.
- Avoid or minimize impacts to archaeological and historic resources.

Transportation:

- Avoid or minimize negative impacts on other highways and streets.
- Do not preclude future options to construct a full access interchange at Columbia Boulevard (or consider other viable options).
- Meet sound engineering practices and safety requirements.

Construction:

- Avoid or minimize construction impacts on businesses and local residents
- Minimize traffic disruptions during construction.
- Minimize noise impacts during construction.
- Minimize project construction costs.

Environmental Justice:

- Avoid or minimize disproportionate adverse impacts on low income and minority communities in the project area.
- Collaboratively develop project elements and enhancement measures to ensure that the impacted low-income and minority communities do receive benefits from the project.

Evaluation Factors
Adopted June 16, 2003

Portland / Vancouver I-5 Transportation and Trade Partnership

I-5: *Delta Park to Lombard Project*

1. Improve Transportation Performance:

1.1 Reduce congestion and delay

- Travel time for autos, trucks and transit during morning rush hour to and from key locations in the I-5 corridor
- "Level of service" in the project area
- Daily hours of truck delay
- Travel time for trucks to and from I-5 industrial locations

1.2 Improve safety and efficiency

- Number of traffic conflict points – difficult merges, for example
- Impacts on emergency vehicle access
- Impacts on incident management access
- "Level of service" in the project area

1.3 Meet safety requirements

2. Conform to state, regional and local plans

2.1 Comprehensive plans

2.2 I-5 Transportation and Trade Partnership Final Strategic Plan

3. Avoid or Minimize Adverse Impacts on Other Transportation Facilities:

3.1 Impacts on other highways and streets

- Change in traffic volumes (autos and trucks) on selected arterial roads
- Change in traffic volumes on I-5 south of the project area (up to I-84 interchange).
- Change in traffic I-5 operations north of the project area (up to Columbia River)

3.2 Ability to construct a full access interchange at Columbia Boulevard in the future

3.3 Ability to construct I-5 "Bridge Influence Area" improvements in the future

4. **Avoid or Minimize Adverse Impacts to the Natural Environment:**
(Direct, indirect and cumulative impacts)

4.1 Impacts to air quality

- Production of standard pollutants in the study area
- Production of toxic pollutants in the study area

4.2 Impacts to wildlife habitat

- Impacts to fish, wildlife, and sensitive, threatened and endangered species and their habitats

4.3 Impacts to water resources

- Impacts to water quality and quantity

4.4 Impacts to wetlands

- Acres, types and quality of wetlands and riparian areas impacted

4.5 Hydraulic impacts

- Floodways
- Flood plains

4.6 Hazardous materials impacts

4.7 Noise impacts

- Increase due to project

5. **Avoid or Minimize Adverse Impacts to the Cultural and Built Environment:**

5.4 Impacts to archaeological resources

5.5 Impacts to historic resources

environmental justice

"No person in the United States shall, on the ground of race, color, or national origin be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance."

- Title VI of the Civil Rights Act of 1964

"Each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations."

- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, 1994

Safety and mobility are two of the U.S. Department of Transportation's (DOT's) top priorities. Achieving environmental justice is another undeniable mission of the agency.

A 1994 Presidential Executive Order directed every Federal agency to make environmental justice part of its mission by identifying and addressing the effects of all programs, policies, and activities on "minority populations and low-income populations." The DOT's environmental justice initiatives accomplish this goal by involving the potentially affected public in developing transportation projects that fit harmoniously within their communities without sacrificing safety or mobility.

Environmental justice and Title VI are not new concerns. Today, because of the evolution of the transportation planning process, they are receiving greater emphasis. Effective transportation decision making depends upon understanding and properly addressing the unique needs of different socioeconomic groups. This is more than a desktop exercise; it requires involving the public. The U.S. DOT is committed to this more comprehensive, inclusive approach. These changes make sure that every transportation project nationwide considers the human environment. Use the information in this brochure to learn how to promote environmental justice and ensure nondiscrimination in your community.

WHAT IS ENVIRONMENTAL JUSTICE?

There are three fundamental environmental justice principles:

· To avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations.

· To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.

· To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.

Context-Sensitive Design: Harlem Gateway Corridor, New York.

Transportation Enhancement Program funds help the Harlem community participate in a design process that improves the public streetscape through new lighting, tree planting, pedestrian-friendly design, and murals celebrating the community's cultural heritage.

IS ENVIRONMENTAL JUSTICE A NEW REQUIREMENT?

No. The recipients of Federal-aid have been required to certify and the U.S. DOT must ensure nondiscrimination under Title VI of the Civil Rights Act of 1964 and many other laws, regulations, and policies.

In 1997, the Department issued its *DOT Order to Address Environmental Justice in Minority Populations and Low-Income Populations* to summarize and expand upon the requirements of Executive Order 12898 on Environmental Justice.

The need to consider environmental justice is already embodied in many laws, regulations, and policies such as:

📖 Title VI of the Civil Rights Act of 1964

📖 National Environmental Policy Act of 1969 (NEPA)

📖 Section 109(h) of Title 23

📖 The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (URA), as amended

📖 The Transportation Equity Act for the 21st Century (TEA-21)

📖Other U.S. DOT statutes and regulations.

HOW DOES ENVIRONMENTAL JUSTICE IMPROVE TRANSPORTATION DECISION MAKING?

Environmental justice is more than a set of legal and regulatory obligations. Properly implemented, environmental justice principles and procedures improve all levels of transportation decision making. This approach will:

- Make better transportation decisions that meet the needs of all people.

- Design transportation facilities that fit more harmoniously into communities.

- Enhance the public-involvement process, strengthen community-based partnerships, and provide minority and low-income populations with opportunities to learn about and improve the quality and usefulness of transportation in their lives.

- Improve data collection, monitoring, and analysis tools that assess the needs of, and analyze the potential impacts on minority and low-income populations.

- Partner with other public and private programs to leverage transportation agency resources to achieve a common vision for communities.

- Avoid disproportionately high and adverse impacts on minority and low-income populations.

TITLE VI AND ENVIRONMENTAL JUSTICE ADDRESS WHICH GROUPS?

Title VI of the Civil Rights Act prohibits discrimination on the basis of race, color, and national origin. The *DOT Order on Environmental Justice* and Executive Order 12898 address persons belonging to any of the following groups:

Black – a person having origins in any of the black racial groups of Africa.

Hispanic – a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race.

Asian American – a person having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands.

American Indian and Alaskan Native – a person having origins in any of the original people of North America and who maintains cultural identification through tribal affiliation or community recognition.

Low-Income – a person whose household income
(or in the case of a community or group, whose median household income) is at or below the U.S. Department of Health and Human Services poverty guidelines.

HOW CAN TRANSPORTATION PARTNERS AND THE PUBLIC SUPPORT TITLE VI AND ENVIRONMENTAL JUSTICE?

Federal agencies, State DOTs, Metropolitan Planning Organizations (MPOs), and transit providers advance Title VI and environmental justice by involving the public in transportation decisions. Effective public involvement programs enable transportation professionals to develop systems, services, and solutions that meet the needs of the public, including minority and low-income communities. There are many excellent examples of transportation initiatives that successfully integrate environmental justice principles. Partners and stakeholders can use these successes to champion the opportunities and responsibilities that Title VI and environmental justice present.

Federal Agencies – FHWA and FTA staff will continue to work with State DOTs, MPOs, transit providers, and other local agencies to ensure Title VI and environmental justice considerations are integral to all surface transportation activities. In addition to making sure that Federal transportation regulations and policies affirm and reinforce nondiscrimination, Federal staff will take other important actions to: Ensure that Title VI compliance and environmental justice principles are understood and implemented in metropolitan and statewide planning activities and in NEPA processes and documents.

Identify effective practices, potential models, and other technical assistance resources to promote the integration of environmental justice into all planning, development, and implementation activities.

State DOTs – are at the heart of planning, design, construction, and operations and maintenance projects across all travel modes. They allocate resources from various Federal-aid programs. State DOTs successfully integrate Title VI and environmental justice into their activities when they:

•Develop the technical capability to assess the benefits and adverse effects of transportation and use that capability to develop appropriate activities among different population groups procedures, goals, and performance measures in all aspects of their mission.

• Ensure that State Transportation Improvement Program (STIP) findings of statewide planning compliance and NEPA activities satisfy the letter and intent of Title VI requirements and environmental justice principles.

• Enhance their public-involvement activities to ensure the meaningful participation of minority and low-income populations.

• Work with Federal, State, local, and transit planning partners to create and enhance intermodal systems, and support projects that can improve the natural and human environments for low-income and minority communities.

MPOs – serve as the primary forum where State DOTs, transit providers, local agencies, and the public develop local transportation plans and programs that address a metropolitan area's needs. MPOs can help local public officials understand how Title VI and environmental justice requirements improve planning and decision making. To certify compliance with Title VI and address environmental justice, MPOs need to:

• Enhance their analytical capabilities to ensure that the long-range transportation plan and the transportation improvement program (TIP) comply with Title VI.

• Identify residential, employment, and transportation patterns of low-income and minority populations so that their needs can be identified and addressed, and the benefits and burdens of transportation investments can be fairly distributed.

• Evaluate and – where necessary – improve their public involvement processes to eliminate participation barriers and engage minority and low-income populations in transportation decision making.

Transit Providers – offer mobility for all citizens whether they own a vehicle or not. They provide an essential service for many low-income and minority populations who have no other way to get to work, shopping, child care, medical appointments, recreation, or other destinations. Transit agencies support Title VI and environmental justice principles when they:

- Ensure that new investments and changes in transit facilities, services, maintenance and vehicle replacement deliver equitable levels of service and benefits to minority and low-income populations.
- Avoid, minimize or mitigate disproportionately high and adverse effects on minority and low-income populations.
- Enhance public involvement activities to identify and address the needs of minority and low- income populations in making transportation decisions.

The Public – Transportation agencies cannot fully meet community needs without the active participation of well-informed, empowered individuals, community groups, and other non-governmental organizations such as businesses and academic institutions. These individuals and groups advance the letter, spirit, and intent of Title VI and environmental justice in transportation when they:

- Participate in public involvement activities (meetings, hearings, advisory groups, and task forces) to help responsible State and local agencies understand community needs, perceptions, and goals.
- Get involved with State and local agencies to link TEA-21 programs with other Federal, State, and local resources to fund projects that support community goals.

WHERE DO I FIND MORE INFORMATION ABOUT ENVIRONMENTAL JUSTICE AND TRANSPORTATION?

For information on resources, technical assistance, publications, and DOT contacts, visit FHWA's web site: www.fhwa.dot.gov/environment/ej2.htm.

Additional contact information:
Federal Highway Administration
Office of Human Environment
400 Seventh Street, SW, HEPH-40
Washington, DC 20590
Phone: (202) 366-0106
Web Site: www.fhwa.dot.gov/environment/subject.htm
Federal Transit Administration
Office of Planning
400 Seventh Street, SW, TPL-10
Washington, DC 20590
Phone: (202) 366-6385
Web Site: www.fta.dot.gov/office/planning/index.html

Oregon Dept. of Transportation contacts:
Joyce Felton 503-731-8565
joyce.a.felton@odot.state.or.us

Kate Deane 503-731-8245
kate.h.deane@odot.state.or.us

Portland / Vancouver I-5 Transportation and Trade Partnership

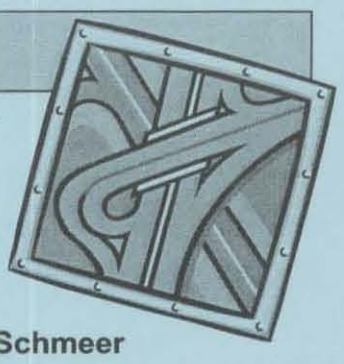
I-5: Delta Park to Lombard Project

I-5: Delta Park to Lombard Project

Environmental Assessment

Fall 2003

What are we studying?



The Oregon Department of Transportation is looking at ways to improve efficiency and safety on I-5 between Delta Park and Lombard. In this area, I-5 narrows from three lanes to two lanes in the southbound direction.

The list of possible projects has been narrowed down to a no-build alternative and the following build alternatives.

Go West (Partnership)

- Widen I-5 southbound to 3 lanes with possibility of one lane as a high occupancy vehicle (HOV) lane
- Re-construct southbound Columbia Blvd. on-ramp in existing configuration/alignment
- This alternative widens the west side of the freeway

Go East

- Widen I-5 southbound to 3 lanes with possibility of one lane as a HOV lane
- Re-construct southbound Columbia Blvd. on-ramp in existing configuration/alignment
- This alternative widens the east side of the freeway

North to Schmeer

- Widen I-5 southbound to 3 lanes with possibility of one lane as a HOV lane
- Eliminate Columbia Boulevard interchange, and relocate access to and from I-5 via two new bridges across the Columbia Slough to a new interchange at Schmeer Road

A public workshop is being held this month to further refine the designs.

For more background on this project, visit the project website: www.i-5partnership.com – click "Go to the Delta Park-Lombard website." To see the design concept maps for the alternatives go to "products + reports."

Design Workshop

You are welcome to attend and participate in any session that interests you. If this is your first time attending a meeting on this project and you would like background, please come 15 minutes early.

Listening Sessions

Community Listening Session
Monday, October 20th
5:30 p.m. — 8:00 p.m.

Share your ideas and concerns about neighborhood, community & environmental justice issues. This meeting is recommended for neighbors and community members who have time to attend only one session.

Additional listening sessions will be targeted to similar interests. All are open to the public.

Monday October 20th	
12:30 p.m. — 2:30 p.m.	Local Government
2:30 p.m. — 4:30 p.m.	Utilities
Tuesday, October 21st	
7:00 a.m. — 9:00 a.m.	Freight Movement & Business Access
9:15 a.m. — 11:15 a.m.	Natural Resources
11:30 a.m. — 1:30 p.m.	Major Events & Attractions
2:00 p.m. — 4:00 p.m.	Hayden Meadows Property Owners

Work Sessions

Wednesday, October 22nd
8:00 a.m — 5:00 p.m.

Thursday, October 23rd
8:00 a.m. — 4:00 p.m.

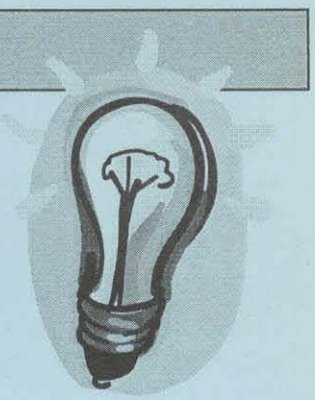
Final Workshop Presentation

Thursday, October 23rd
5:30 p.m. — 8:00 p.m.

Staff will present designs and other recommendations from the listening and work sessions. Public comments are welcome.

All meetings held at OAME
4134 N Vancouver Ave in Portland
(see inside for directions)

Why are we holding the design workshop?

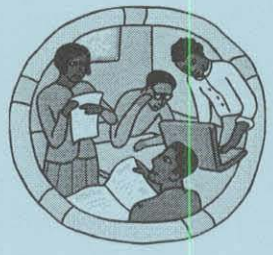


The purpose of the week-long workshop is to get additional input from you and other stakeholders to help guide the design process by:

- Identifying citizen's issues and concerns regarding impacts to the community
- Identifying potential mitigation and enhancement ideas to be considered for each alternative
- Developing the alternatives in sufficient detail to begin assessing the environmental impacts

Who is involved?

- **Oregon Department of Transportation (ODOT)**
- **City of Portland**
- **Federal Highway Administration (FHWA)**
- **Two Project Advisory Committees:**
  - **Citizen Advisory Committee (CAC)** representing neighborhood, business and other community concerns
  - **Environmental Justice Work Group (EJWG)** representing low-income and minority communities in the I-5 corridor in Washington and Oregon.
- **and YOU!!**



What is Environmental Justice (EJ)?

Environmental Justice (EJ) is about fairness for people in relationship to our environment—where we live, work and play. Historically, many public projects have negatively affected low income and minority communities. The purpose of EJ is to ensure that low-income and minority populations are not disproportionately adversely impacted. EJ concerns include health, economic and social effects, and emphasizes community participation. EJ allows for the creation of a community voice to be part of important decisions that affect our health, our neighborhoods and our future.

We invite you to participate in this public process.

What happens after the Design Workshop?

Fall /Winter 2003-2004	• Design concepts finalized • Environmental impacts, traffic performance, right-of-way impacts, and costs analyzed
Spring 2004	• Open House with results of analysis (to be scheduled) • Environmental Assessment preparation
Fall 2004	• Open House and Public Hearing on Environmental Assessment (to be scheduled)
Spring 2005	• Final Recommendations and FHWA approval
2005-2006	• Final design and right-of-way
2006-2008	• Construction (subject to funding availability)

Por favor asista a una junta pública para el proyecto de ampliación de I-5: Delta Park a Lombard

Sesión para Escuchar a la Comunidad
Comparta sus ideas y preocupaciones acerca de los temas del vecindario, la comunidad y la justicia medioambiental.
Lunes, 20 de octubre del 2003
5:30 p.m. — 8:00 p.m.

Presentación del Taller Final
Vea los bosquejos de las ideas para la carretera y escuche cómo se resolverán los temas restantes.
Jueves, 23 de octubre del 2003
5:30 p.m. — 8:00 p.m.

Las juntas se celebrarán en OAME,
4134 N Vancouver Ave en Portland

Para hablar con alguien en español acerca de este proyecto, llame al 1-866-788-3945 y marque 5.

Xin vui lòng đến dự buổi họp công khai về xa lộ I-5: Chương Trình Nới Rộng từ Delta Park đến Lombard

Phiên Họp Nghe ý Kiến Của Cộng Đồng
Đóng góp ý kiến của quý vị và những điều quan tâm về khu phố, cộng đồng, và vấn đề pháp lý về môi trường.
Thứ Hai, ngày 20 tháng Mười, 2003
Từ 5 giờ 30 Chiều đến 8:00 giờ Tối.

Trình Bày Chung Quyết về Hội Thảo
Xem sơ đồ ý kiến về đường xá và biết còn lại bao nhiêu vấn đề cần giải quyết.
Thứ Năm, ngày 23 tháng Mười, 2003
5 giờ 30 Chiều đến 8:00 giờ Tối.

Phiên Họp được tổ chức tại OAME,
4134 N Vancouver Ave tại Portland

Để nói tiếng Việt với những người phụ trách về chương trình này, gọi số điện thoại 1-866-788-3945 và nhấn số 6.

Where are the meetings?

All meetings will be held at the Oregon Association of Minority Entrepreneurs (OAME) 4134 N Vancouver Ave in Portland.

OAME Cascade Plaza is located at the corner of N. Vancouver Ave and N. Skidmore St. It is a one story building with a large pink stripe on the exterior. Parking is available on the street and in the adjacent parking lot. This location is accessible by **Tri-Met #40-Mocks Crest.**

Driving directions:

From I-5 Northbound (coming from downtown Portland):
- Exit Killingsworth St/Alberta #303-toward Swan Island (stay in the right lane)
- Turn right onto N. Alberta St.
- Turn right onto N. Vancouver Ave.
-

From I-5 Southbound (coming from Vancouver):
- Exit Alberta St #303-toward Swan Island
- Turn left onto N. Alberta St.
- Turn right onto N. Vancouver Ave.

Children are welcome to attend!

Project Resources

www.i-5partnership.com — Click "Go to the Delta Park—Lombard website"
1-866-STUDY I-5 (1-866-788-3945)

Project Contacts:

April Siebenaler, Oregon Department of Transportation
ODOT Project Leader
(503) 731-8469
TDD 1-800-735-2900
April.S.SIEBENALER@odot.state.or.us

Kristen Kibler, Jeanne Lawson Associates
Community Outreach Coordinator
(503) 235-5881
TDD 1-800-735-2900
kkibler@jlainvolve.com

I-5: Delta Park to Lombard Project
Design Workshop in October
Give us your input on the
draft concepts for this area!

Oregon Dept of Transportation
123 NW Flanders
Portland, OR 97209

I-5: Delta Park to Lombard Project

Portland / Vancouver I-5 Transportation and Trade Partnership

I-5: Delta Park to Lombard Project Design Workshop

I-5: Delta Park to Lombard Project Area

Four Alternatives Being Studied

Join us at the Design Workshop.

Help guide the design process by giving us your input!

From October 20-23, a team of engineers and designers will listen to your ideas and further develop the alternatives.

The design workshop consists of:

⇒ **Listening Sessions**—listening to the public.

⇒ **Work Sessions**—working on the design concepts.

⇒ **Final Presentation**—presenting designs and other recommendations from listening and work sessions.

(See front side for list of all workshop sessions.)

Community Listening Session
Monday, October 20th
5:30 p.m. — 8:00 p.m.

Share your ideas and concerns about neighborhood, community & environmental justice issues. This meeting is recommended for neighbors and community members who have time to attend only one session.

Final Workshop Presentation
Thursday, October 23rd
5:30 p.m. — 8:00 p.m.

See sketches of the road ideas and hear about how remaining issues will be solved.

All meetings at OAME
4134 N. Vancouver Ave in Portland

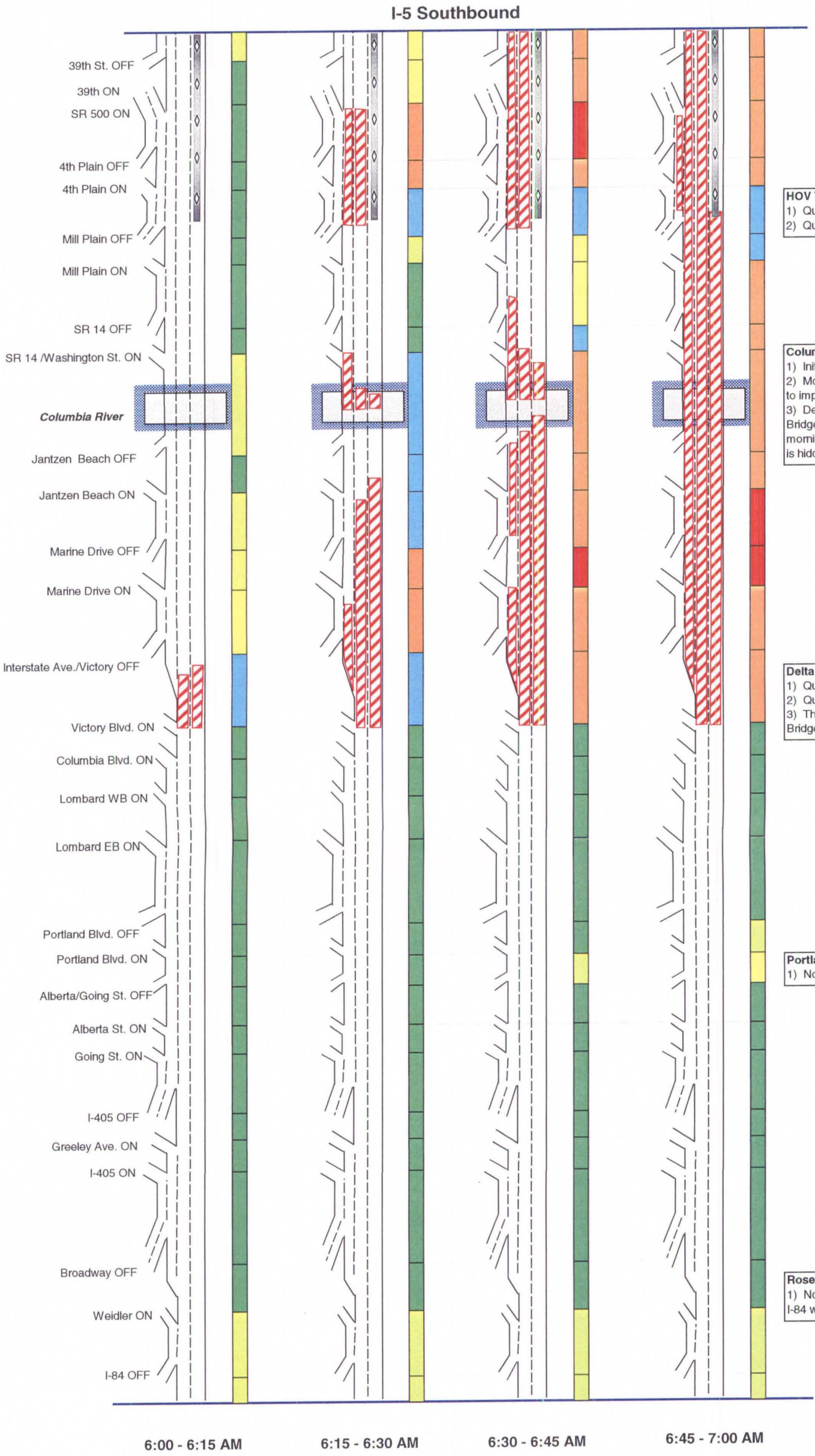
See inside for more details on the workshop and the alternatives being studied.

I-5: Delta Park to Lombard
Key Traffic Findings

Table 1: Two Hour A.M. (6-8 a.m.) SR 500 to I-84

	Measure	Existing Conditions	2025 No Build	2025 Build - Option 4 (HOV only in WA: 99th to Mill Plain)	2025 Build Option 4 (Separate HOV Marine Dr to Alberta)	2025 Build Option 4 (Continuous HOV 99th to Alberta)	2025 Build Option 4 (No HOV in WA or OR)
			( )=Compared to Existing Cond.	( )=Compared to 2025 No Build			
A	Served Vehicle Demand from I-5 mainline and on-ramps	26,650 vehicles	27,620 vehicles (+970) (+3.6%)	29,240 vehicles (+1,620) (+5.9%)	26,840 vehicles (-780) (-2.8%)	26,450 vehicles (-1,170) (-4.2%)	29,570 vehicles (+1,950) (+7.1%)
B	Unserved Vehicle Demand from I-5 mainline and on-ramps	1,920 vehicles	3,640 vehicles (+1,720) (+89.6%)	2,170 vehicles (-1,470) (-40.4%)	4,570 vehicles (+930) (+25.5%)	4,960 vehicles (+1,320) (+36.3%)	1,840 vehicles (-1,800) (-49.5%)
C	Travel Times – All Traffic	26.5 min	29.4 min (+2.9)	28.9 min (-.5)	34.0 min (+4.6)	30.4 min (+1.0)	31.5 min (+2.1)
D	Vehicle Hours of Delay (VHD) – All Traffic	2,370 hrs	2,870 hrs (+500) (+21.1%)	2,645 hrs (-225) (-7.8%)	3,005 hrs (+135) (+4.7%)	2,735 hrs (-135) (-4.7%)	2,905 hrs (+35) (+1.2%)
E	Vehicle Hours of Delay (VHD) – Trucks	130 hrs	175 hrs (+45) (+34.6%)	160 hrs (-15) (-8.6%)	195 hrs (+20) (+11.4%)	180 hrs (+5) (+2.9%)	175 hrs (0) (0%)
F	Vehicle Hours of Travel (VHT) – All Traffic	3,845 hrs	4,275 hrs (+430) (+11.2%)	4,140 hrs (-135) (-3.2%)	4,335 hrs (+60) (+1.4%)	4,050 hrs (-225) (-5.3%)	4,400 hrs (+125) (+2.9%)
G	Vehicle Hours of Travel (VHT) – Trucks	200 hrs	245 hrs (+45) (+22.5%)	225 hrs (-20) (-8.2%)	250 hrs (+5) (+2%)	240 hrs (-5) (-2%)	235 hrs (-10) (-4.1%)
H	Auto Occupancy	1.27 persons per vehicle	1.29 persons per vehicle	1.29 persons per vehicle	1.45 persons per vehicle	1.51 persons per vehicle	1.3 persons per vehicle
I	Persons Served	31,370 persons	32,350 persons (+980) (+3.1%)	34,435 persons (+2,085) (+6.4%)	36,415 persons (+4,065) (+12.6%)	37,635 persons (+5,285) (+16.3%)	34,705 persons (+2,355) (+7.3%)
J	Travel Times – Single Occupant Vehicles (SOV)	26.4 min	29.3 min (+2.9)	28.5 min (-.8)	37.0 min (+7.7)	35.2 min (+5.9)	31.5 min (+2.2)
K	Travel Times – High Occupant Vehicles (HOV)	24.9 min	27.5 min (+2.6)	27.2 min (-.3)	25.1 min (-2.4)	20.6 min (-6.9)	31.5 min (+4)
L	Single Occupant Vehicle (SOV) Users	80.0%	80.0% (0)	80.0% (0)	67.5% (-12.5)	63.5% (-16.5)	80% (0)
M	High Occupant Vehicle (HOV) Users	14.2%	14.2% (0)	14.2% (0)	26.7% (+12.5)	30.7% (+16.5)	14.2% (0)
N	Trucks	5.50%	5.50% (0)	5.50% (0)	5.50% (0)	5.50% (0)	5.50% (0)
O	Average Speed in Vancouver near 4th Plain	29 mph	22 mph (-7)	31 mph (+9)	24 mph +2	23 mph +1	40 mph +18
P	Length of Backup North of SR 500 in Vancouver	1.5 miles	1.8 miles (+.3)	0.1 miles (-1.7)	2.4 miles (+.6)	3.1 miles (+1.3)	0 miles (-1.8)
Q	Average Speed in Portland near Col. Blvd.	50 mph	47 mph (-3)	32 mph (-15)	25 mph (-22)	29 mph (-18)	32 mph (-15)
R	Served Vehicle Demand at On-Ramps A.M. 2 - hr- (Lombard to Greeley)	6,310 vehicles	6,610 vehicles (+300) (+4.8%)	6,560 vehicles (-50) (-.8%)	6,720 vehicles (+110) (+1.7%)	6,730 vehicles (+120) (+1.8%)	6,560 vehicles (-50) (-.8%)
S	Unserved Vehicle Demand at On-Ramps A.M. 2 - hr- (Lombard to Greeley)	80 vehicles	320 vehicles (+240) (+300%)	450 vehicles (+130) (+40.6%)	290 vehicles (-30) (-9.4%)	280 vehicles (-40) (-12.5%)	450 vehicles (+130) (+40.6%)

I-5 Corridor - Existing Observed 2003 Conditions (6:00 - 7:00 AM)



HOV Termination/Mill Plain Weave Area Issues:
1) Queue forms around 6:25 AM in two GP lanes.
2) Queue quickly extends north of project area.

Columbia River Bridge Issues:
1) Initial queue forms near middle of Col. River Bridge.
2) More significant queuing forms on outside lane due to impacts associated with SR 14 short merge.
3) Delta Park queue combines with Columbia River Bridge queue before 7:00 a.m. For the remaining morning commute the Columbia River Bridge bottleneck is hidden within the Delta Park queue.

Delta Park Issues:
1) Queue forms at lane drop prior to 6:15 AM.
2) Queue backs up rapidly towards Col. River Bridge.
3) The Delta Park queue overcomes the Col. River Bridge queue prior to 7:00 a.m.

Portland/Alberta Area Issues:
1) No issues prior to 7:00 a.m.

Rose Quarter Area Issues:
1) No issues but minor weaving issues at Weidler/ I-84 weave.

Notes:
Bottlenecks (6:00 - 7:00 AM)
- Delta Park lane drop forms before 6:15 a.m.
- Columbia River Bridge forms before 6:30 a.m.
- HOV termini near Mill Plain forms before 6:30 a.m.

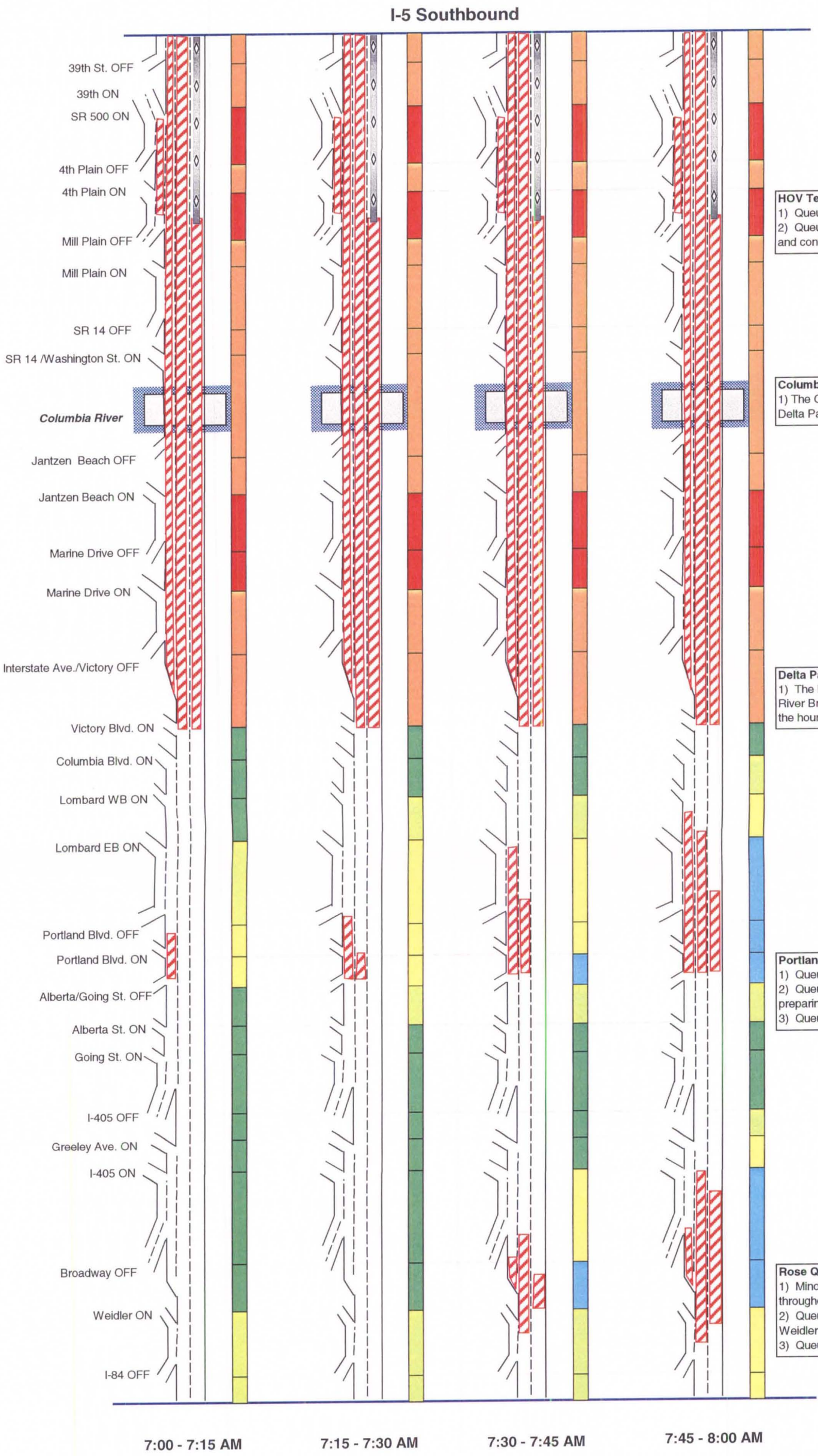
Lane Utilization Impacts:
- Delta Park queue initially forms in two southbound left lanes leaving access to Marine Drive and Interstate Avenue Off-ramps. Near the end of the hour the queue encompasses all three lanes limiting accesses to these two major off-ramps.
- Initial queuing on Columbia River Bridge forms in slow lane due to the short merge at SR 14. Queuing eventually crosses all three lanes.
- Mill Plain queuing forms in two GP lanes and extends beyond project area prior to 6:45 a.m. HOV lane remains free flowing length of study area.

LEGEND
- 0 - 10 MPH
- 11 - 20 MPH
- 21 - 30 MPH
- 31 - 40 MPH
- 41 - 50 MPH
- > 51 MPH

Not To Scale

Extent of Queue

I-5 Corridor - Existing Observed 2003 Conditions (7:00 - 8:00 AM)



HOV Termination/Mill Plain Weave Area Issues:
1) Queue extends north of project area past 8:00 a.m.
2) Queuing forms in auxiliary lane around 6:45 a.m. and continues through 8:00 a.m.

Columbia River Bridge Issues:
1) The Columbia River Bridge queue is hidden within the Delta Park queue through 8:00 a.m.

Delta Park Issues:
1) The Delta Park queue extends beyond the Columbia River Bridge prior to 7:00 a.m. and lasts throughout the hour.

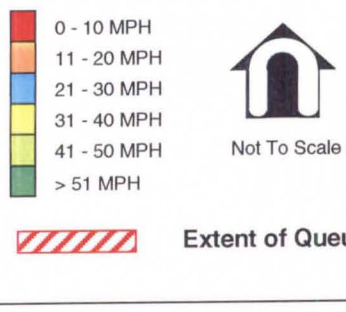
Portland/Alberta Area Issues:
1) Queue forms in outside lane around 7:00 a.m.
2) Queuing in outside lane is caused by traffic preparing for the I-5/ I-405 4-2-2 split.
3) Queue backs up to Lombard Street by 8:00 a.m.

Rose Quarter Area Issues:
1) Minor weaving issues at Weidler/ I-84 weave throughout morning commute.
2) Queuing starts to form near lane drop just south of Weidler Off-ramp by 7:30 a.m.
3) Queue extends to I-405 on-ramp by 8:00 a.m.

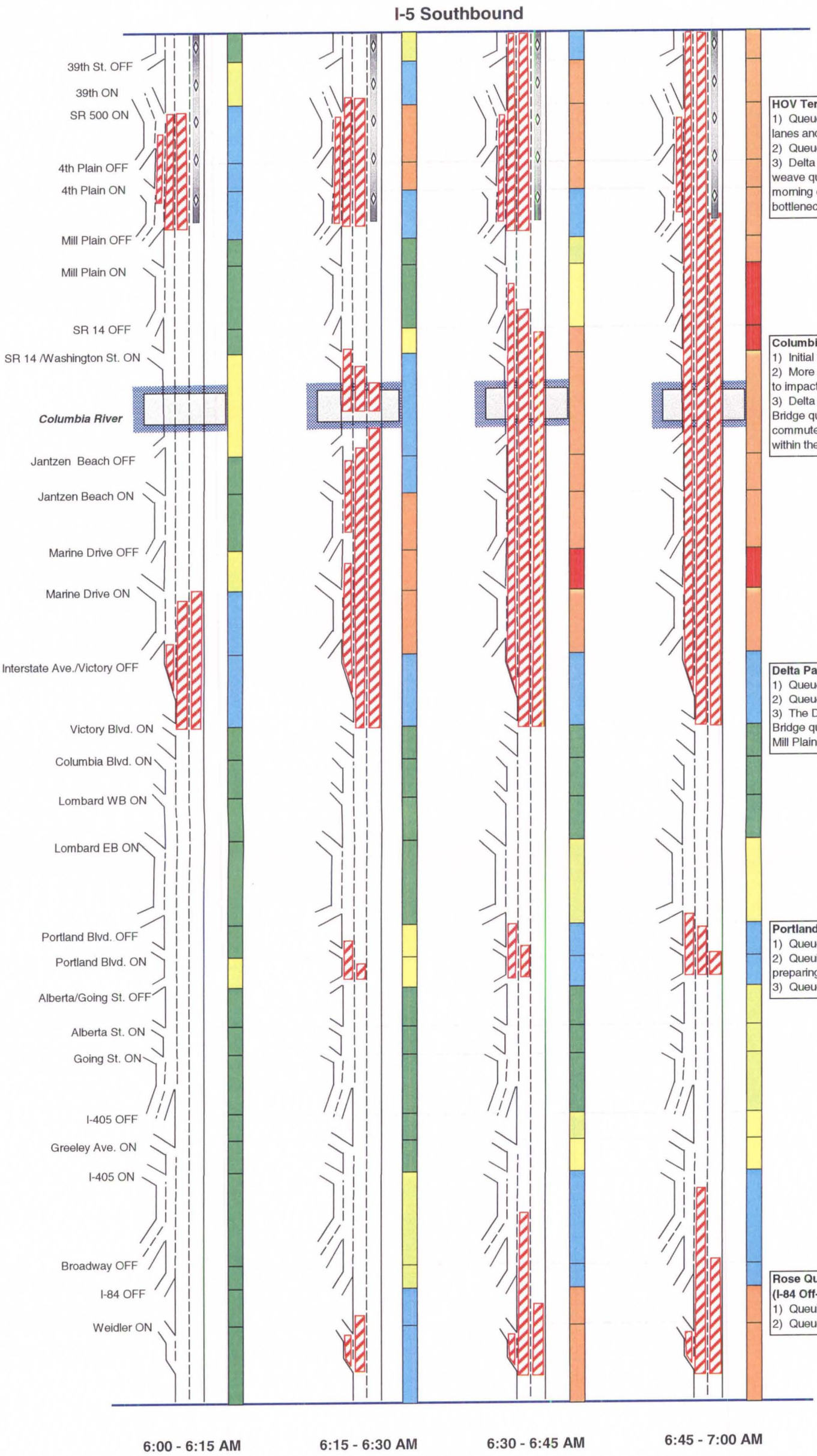
Notes:
Bottlenecks (7:00 - 8:00 AM)
- Delta Park, Columbia River Bridge, and HOV termini bottlenecks remain throughout entire hour.
- Portland/Alberta area bottleneck forms prior to 7:15 a.m.
- Rose Quarter area bottleneck forms prior to 7:30 a.m.

Lane Utilization Impacts:
- Queuing north of Delta Park is three lanes wide throughout the hour.
- Initial queuing near the Portland/Alberta area forms in the outside lane. The queue is caused by traffic preparing for the I-5/ I-405 split as well as consecutive short merge on-ramps.
- Queuing near the Rose Quarter starts near the lane drop and within the hour influences all three travel lanes south of I-405 Off-ramp.

LEGEND



I-5 Corridor - 2025 No Build Conditions (Option 2) (6:00 - 7:00 AM)



HOV Termination/ Mill Plain Weave Area Issues:
1) Queue forms between 6:00 and 6:15 a.m. in two GP lanes and auxiliary lane.
2) Queue extends north of project area prior to 6:45 a.m.
3) Delta Park queue combines with HOV termini/ Mill Plain weave queue before 7:00 a.m. For the remaining morning commute the HOV termini/Mill Plain weave bottleneck is hidden within the Delta Park queue.

Columbia River Bridge Issues:
1) Initial queue forms near middle of Col. River Bridge.
2) More significant queuing forms on outside lane due to impacts associated with SR 14 short merge.
3) Delta Park queue combines with Columbia River Bridge queue before 6:45 a.m. For the remaining morning commute the Columbia River Bridge bottleneck is hidden within the Delta Park queue.

Delta Park Issues:
1) Queue forms at lane drop prior to 6:15 AM.
2) Queue backs up rapidly towards Col. River Bridge.
3) The Delta Park queue overcomes the Columbia River Bridge queue prior to 6:45 a.m. and the HOV termini/ Mill Plain weave queue prior to 7:00 a.m.

Portland/Alberta Area Issues:
1) Queue forms in outside lane prior to 6:30 a.m.
2) Queuing in outside lane is caused by traffic preparing for the I-5/ I-405 4-2-2 split.
3) Queue spreads across all three lanes by 7:00 a.m.

Rose Quarter Area Issues:
(I-84 Off-ramp is braided with Weidler On-ramp)
1) Queuing forms at Weidler On-ramp by 6:15 a.m.
2) Queue extends to I-84 off-ramp by 7:00 a.m.

Notes:
Bottlenecks (6:00 - 7:00 AM)
- Delta Park lane drop forms before 6:15 a.m.
- HOV termini / Mill Plain weave forms before 6:15 a.m.
- Columbia River Bridge forms before 6:30 a.m.
- Portland / Alberta forms before 6:30 a.m.
- Rose Quarter forms before 6:30 a.m.

Lane Utilization Impacts:
- Delta Park queue initially forms in two southbound left lanes leaving access to Marine Drive and Interstate Avenue Off-ramps. By 6:45 a.m. the queue encompasses all three lanes limiting accesses to these two major off-ramps.
- Initial queuing on Columbia River Bridge forms in slow lane due to the short merge at SR 14. Queuing eventually crosses all three lanes.
- HOV termini / Mill Plain weave queuing forms in two GP lanes and extends beyond project area prior to 6:45 a.m. HOV lane remains free flowing length of study area.
- Portland / Alberta area queuing forms in outside lane prior to 6:30 a.m. The queue is caused by traffic preparing for the I-5 / I-405 split as well as consecutive short merge on-ramps.
- Queuing near the Rose Quarter starts near new Weidler On-ramp braid with I-84 Off-ramp.

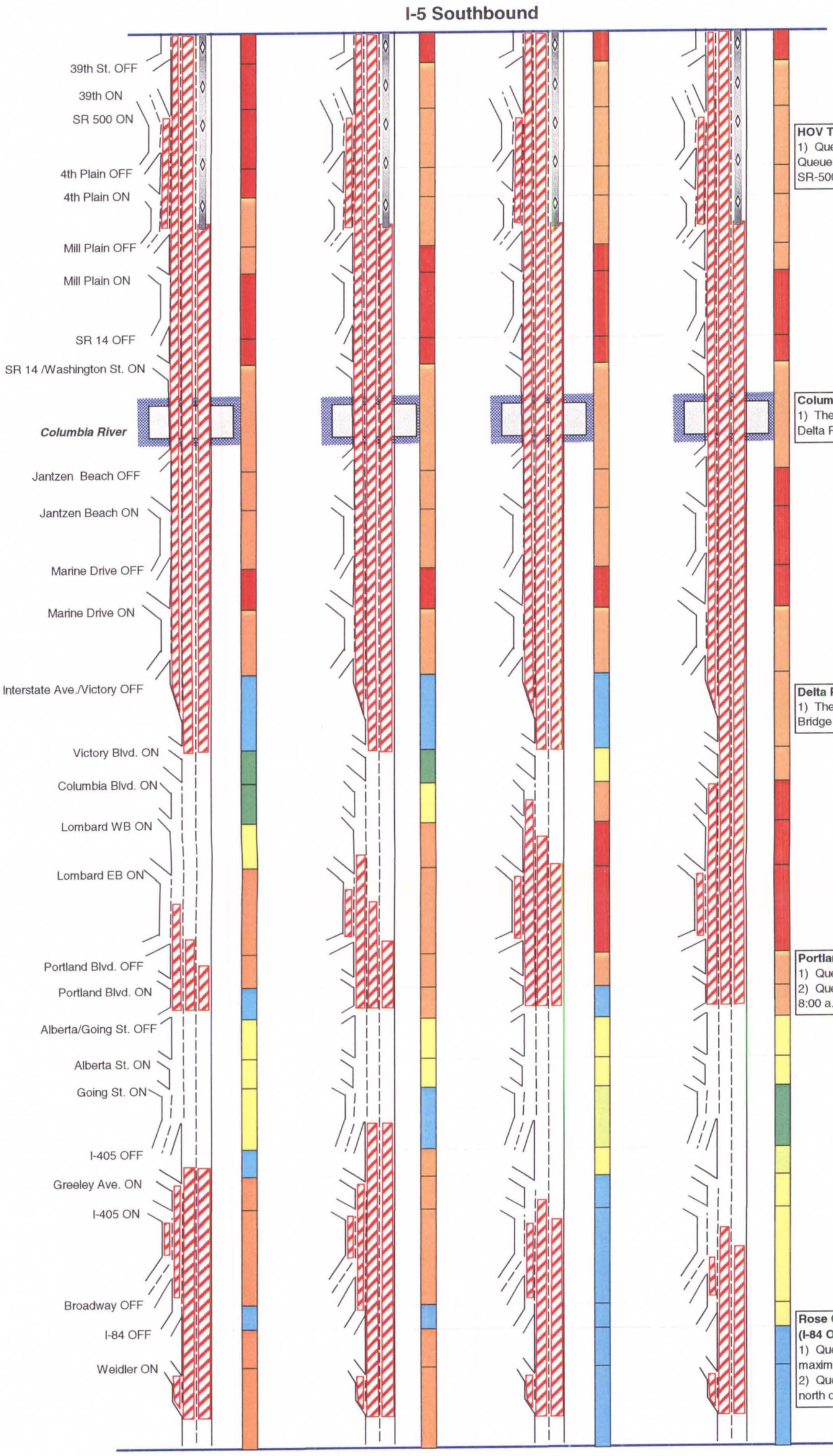
LEGEND

0 - 10 MPH
11 - 20 MPH
21 - 30 MPH
31 - 40 MPH
41 - 50 MPH
> 51 MPH

Not To Scale

Extent of Queue

I-5 Corridor - 2025 No Build Conditions (Option 2) (7:00 - 8:00 AM)



HOV Termination/ Mill Plain Weave Area Issues:
1) Queue extends north of project area past 8:00 a.m. Queue is in two GP lanes and auxiliary lane between SR-500 On-ramp and Mill Plain Off-ramp.

Columbia River Bridge Issues:
1) The Columbia River Bridge queue is hidden within the Delta Park queue through 8:00 a.m.

Delta Park Issues:
1) The Delta Park queue extends beyond the Col. River Bridge prior to 7:00 a.m. and lasts throughout the hour.

Portland/Alberta Area Issues:
1) Queue forms in all three lanes prior to 7:00 a.m.
2) Queue combines with Delta Park queue prior to 8:00 a.m.

Rose Quarter Area Issues:
(I-84 Off-ramp is braided with Weidler On-ramp)
1) Queuing from the Weidler On-ramp reaches its maximum around I-405 Off-ramp by 7:30 a.m.
2) Queuing in the Rose Quarter areas recovers to just north of Broadway Off-ramp prior to 8:00 a.m.

Notes:
Bottlenecks (7:00 - 8:00 AM)
- HOV termini, Delta Park, Columbia River Bridge, Portland / Alberta, and Rose Quarter bottlenecks remain throughout entire hour.

Lane Utilization Impacts:
- Queuing north of Delta Park is three lanes wide throughout the hour.
- Portland / Alberta area queuing continues to increase until combining with the Delta Park queuing prior to 8:00 a.m.
- Queuing near the Rose Quarter continues to increase until reaching its maximum near I-405 Off-ramp. By the end of the hour the queue recovers to just north of the Broadway Off-ramp.

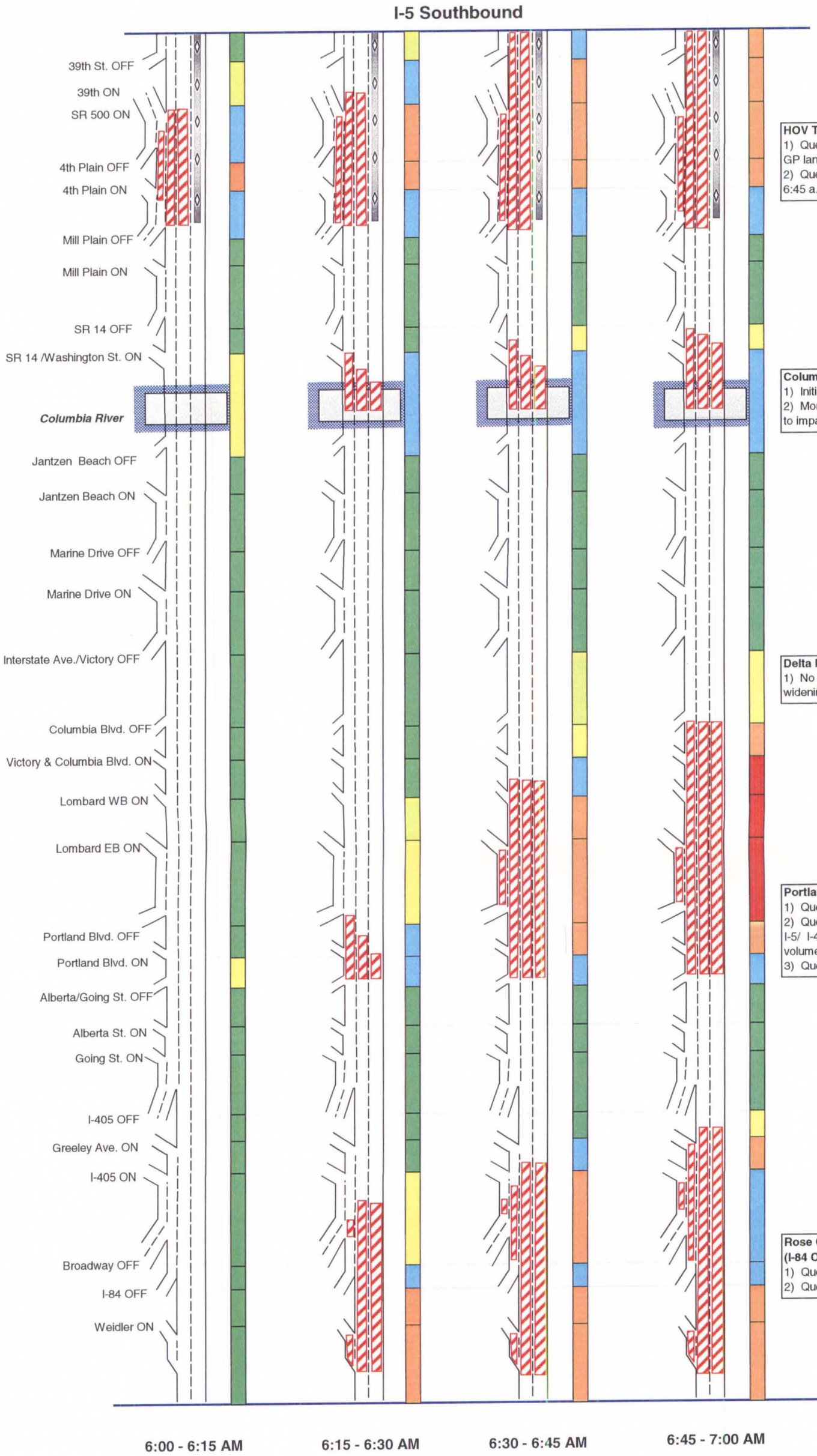
LEGEND

0 - 10 MPH
11 - 20 MPH
21 - 30 MPH
31 - 40 MPH
41 - 50 MPH
> 51 MPH

Not To Scale

Extent of Queue

I-5 Corridor - 2025 Build Conditions (Option 4) (6:00 - 7:00 AM)



HOV Termination/ Mill Plain Weave Area Issues:
1) Queue forms between 6:00 and 6:15 a.m. in two GP lanes and auxiliary lane.
2) Queue extends north of project area prior to 6:45 a.m.

Columbia River Bridge Issues:
1) Initial queue forms near middle of Col. River Bridge.
2) More significant queuing forms on outside lane due to impacts associated with SR 14 short merge.

Delta Park Issues:
1) No queuing in Delta Park area after completing widening from 2 GP lanes to 3 GP lanes.

Portland/Alberta Area Issues:
1) Queue forms in all three lanes prior to 6:30 a.m.
2) Queuing is caused by traffic preparing for the I-5/ I-405 4-2-2 split and successive short heavy volume merges.
3) Queue backs up to Columbia Blvd. OFF by 7:00 a.m.

Rose Quarter Area Issues:
(I-84 Off-ramp is braided with Weidler On-ramp)
1) Queuing forms at Weidler ON prior to 6:30 a.m.
2) Queue extends passed Greeley ON by 7:00 a.m.

Notes:
Bottlenecks (6:00 - 7:00 AM)
- HOV termini / Mill Plain weave forms before 6:15 a.m.
- Columbia River Bridge forms before 6:30 a.m.
- Portland / Alberta forms before 6:30 a.m.
- Rose Quarter forms before 6:30 a.m.

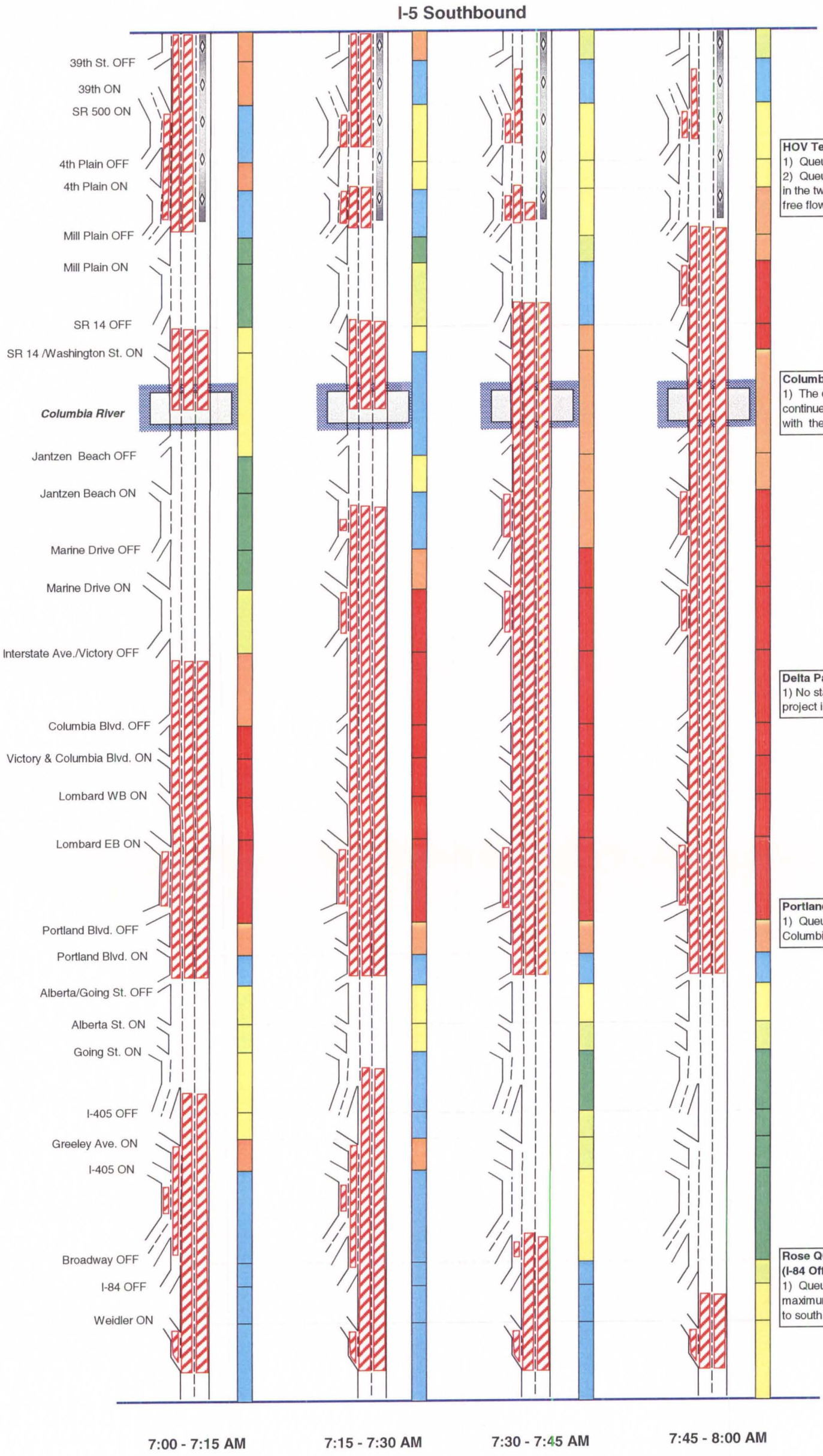
Lane Utilization Impacts:
- Initial queuing on Columbia River Bridge forms in slow lane due to the short merge at SR 14. Queuing eventually crosses all three lanes.
- HOV termini / Mill Plain weave queuing forms in two GP lanes and extends beyond project area prior to 6:45 a.m. HOV lane remains free flowing length of study area.
- Portland / Alberta area queuing forms in outside lane prior to 6:30 a.m. The queue is caused by traffic preparing for the I-5 / I-405 split as well as consecutive short merge on-ramps. Queue crosses all three lanes and by the end of the hour has backed up to Columbia Blvd.
- Queuing near the Rose Quarter starts near new Weidler On-ramp braid with I-84 Off-ramp.

LEGEND
- 0 - 10 MPH
- 11 - 20 MPH
- 21 - 30 MPH
- 31 - 40 MPH
- 41 - 50 MPH
- > 51 MPH

Not To Scale

Extent of Queue

I-5 Corridor - 2025 Build Conditions (Option 4) (7:00 - 8:00 AM)



HOV Termination/ Mill Plain Weave Area Issues:
1) Queue extends north of project through 7:15 a.m.
2) Queuing splits into two separate sections located in the two weaving sections. The HOV lane remains free flowing throughout the morning commute.

Columbia River Bridge Issues:
1) The queue from the middle of the Col. River Bridge continues to remain around SR-14 OFF until combining with the Portland / Alberta queue prior to 7:45 a.m.

Delta Park Issues:
1) No stand alone issues with Delta Park area once project is complete.

Portland/Alberta Area Issues:
1) Queue backs up quickly and combines with Columbia River Bridge queue prior to 7:45 a.m.

Rose Quarter Area Issues:
(I-84 Off-ramp is braided with Weidler On-ramp)
1) Queuing in the Rose Quarter area reaches its maximum of just north of I-405 OFF and then recovers to south of I-84 OFF by the end of the hour.

Notes:
Bottlenecks (7:00 - 8:00 AM)
- Columbia River Bridge, Portland / Alberta area, and Rose Quarter area bottlenecks remain throughout entire hour.
- The HOV termini / Mill Plain weave area queuing almost dissipates by the end of the hour.

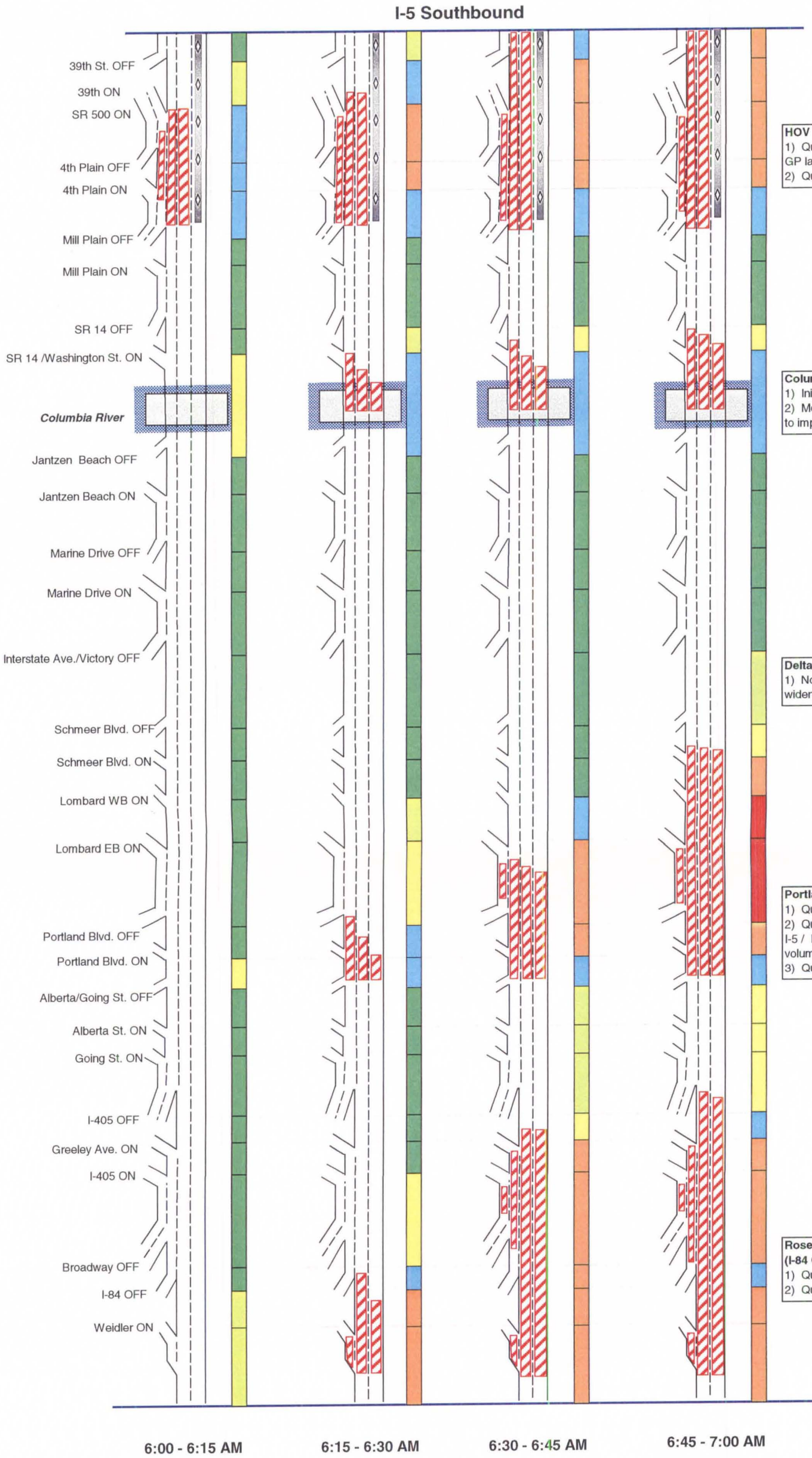
Lane Utilization Impacts:
- Queuing near the HOV termini / Mill Plain weave splits into two separate sections by 7:15 a.m. The two sections are the two weaving sections. The queuing continues to recover leaving only minimal queuing by the end of the hour.
- Columbia River Bridge queuing remains until combining with the Portland / Alberta queue prior to 7:45 a.m.
- Queuing from the Portland / Alberta area is three lanes wide and backs up to the Mill Plain Off-ramp by the end of the hour.
- Queuing near the Rose Quarter increases until reaching its maximum near I-405 Off-ramp. By the end of the hour the queue recovers to near the Weidler On-ramp.

LEGEND
- 0 - 10 MPH
- 11 - 20 MPH
- 21 - 30 MPH
- 31 - 40 MPH
- 41 - 50 MPH
- > 51 MPH

Not To Scale

Extent of Queue

I-5 Corridor - 2025 Build Conditions (Option 6) (6:00 - 7:00 AM)



HOV Termination/ Mill Plain Weave Area Issues:
1) Queue forms between 6:00 and 6:15 a.m. in two GP lanes and auxiliary lane.
2) Queue extends north of project area by 6:45 a.m.

Columbia River Bridge Issues:
1) Initial queue forms near middle of Col. River Bridge.
2) More significant queuing forms on outside lane due to impacts associated with SR 14 short merge.

Delta Park Issues:
1) No queuing in Delta Park area after completing widening from 2 GP lanes to 3 GP lanes.

Portland/Alberta Area Issues:
1) Queue forms in all three lanes prior to 6:30 a.m.
2) Queuing is caused by traffic preparing for the I-5 / I-405 4-2-2 split and successive short heavy volume merges.
3) Queue backs up to Schmeer Blvd. ON by 7:00 a.m.

Rose Quarter Area Issues:
(I-84 Off-ramp is braided with Weidler On-ramp)
1) Queuing forms at Weidler ON prior to 6:30 a.m.
2) Queue extends passed Greeley ON by 7:00 a.m.

Notes:
Bottlenecks (6:00 - 7:00 AM)
- HOV termini / Mill Plain weave forms before 6:15 a.m.
- Columbia River Bridge forms before 6:30 a.m.
- Portland / Alberta forms before 6:30 a.m.
- Rose Quarter forms before 6:30 a.m.

Lane Utilization Impacts:
- Initial queuing on Columbia River Bridge forms in slow lane due to the short merge at SR 14. Queuing eventually crosses all three lanes.
- HOV termini / Mill Plain weave queuing forms in two GP lanes and extends beyond project area prior to 6:45 a.m. HOV lane remains free flowing length of study area.
- Portland / Alberta area queuing forms in outside lane prior to 6:30 a.m. The queue is caused by traffic preparing for the I-5 / I-405 split as well as consecutive short merge on-ramps. Queue crosses all three lanes and by the end of the hour has backed up to Schmeer Blvd.
- Queuing near the Rose Quarter starts near new Weidler On-ramp braid with I-84 Off-ramp.

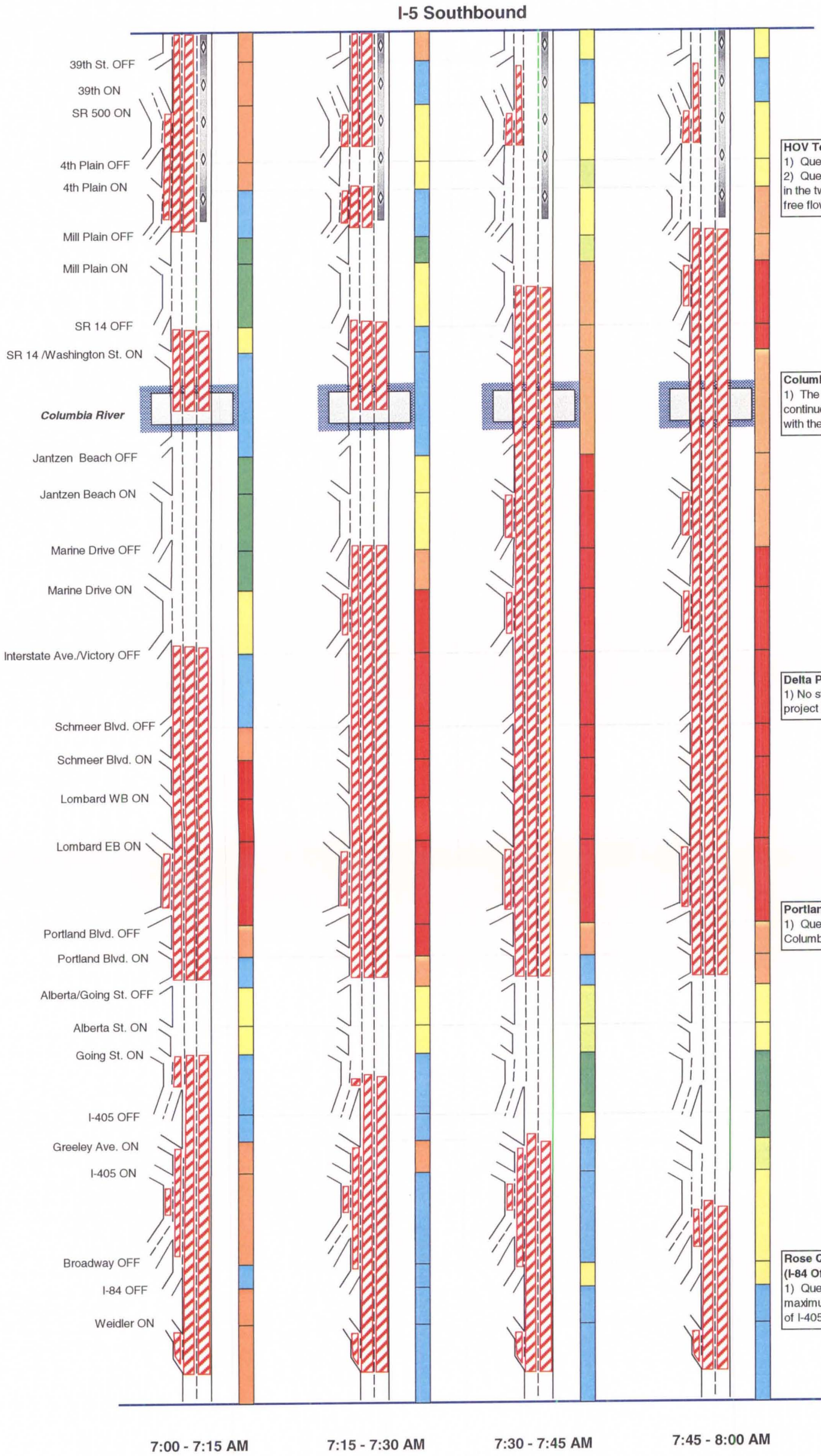
LEGEND

0 - 10 MPH
11 - 20 MPH
21 - 30 MPH
31 - 40 MPH
41 - 50 MPH
> 51 MPH

Not To Scale

Extent of Queue

I-5 Corridor - 2025 Build Conditions (Option 6) (7:00 - 8:00 AM)



HOV Termination/ Mill Plain Weave Area Issues:
1) Queue extends north of project through 7:15 a.m.
2) Queuing splits into two separate sections located in the two weaving sections. The HOV lane remains free flowing throughout the morning commute.

Columbia River Bridge Issues:
1) The queue from the middle of the Col. River Bridge continues to remain around SR-14 OFF until combining with the Portland / Alberta queue prior to 7:45 a.m.

Delta Park Issues:
1) No stand alone issues with Delta Park area once project is complete.

Portland/Alberta Area Issues:
1) Queue backs up quickly and combines with Columbia River Bridge queue prior to 7:45 a.m.

Rose Quarter Area Issues:
(I-84 Off-ramp is braided with Weidler On-ramp)
1) Queuing in the Rose Quarter area reaches its maximum of Going Street On and then recovers to south of I-405 ON by the end of the hour.

Notes:
Bottlenecks (7:00 - 8:00 AM)
- Columbia River Bridge, Portland / Alberta area, and Rose Quarter area bottlenecks remain throughout entire hour.
- The HOV termini / Mill Plain weave area queuing almost dissipates by the end of the hour.

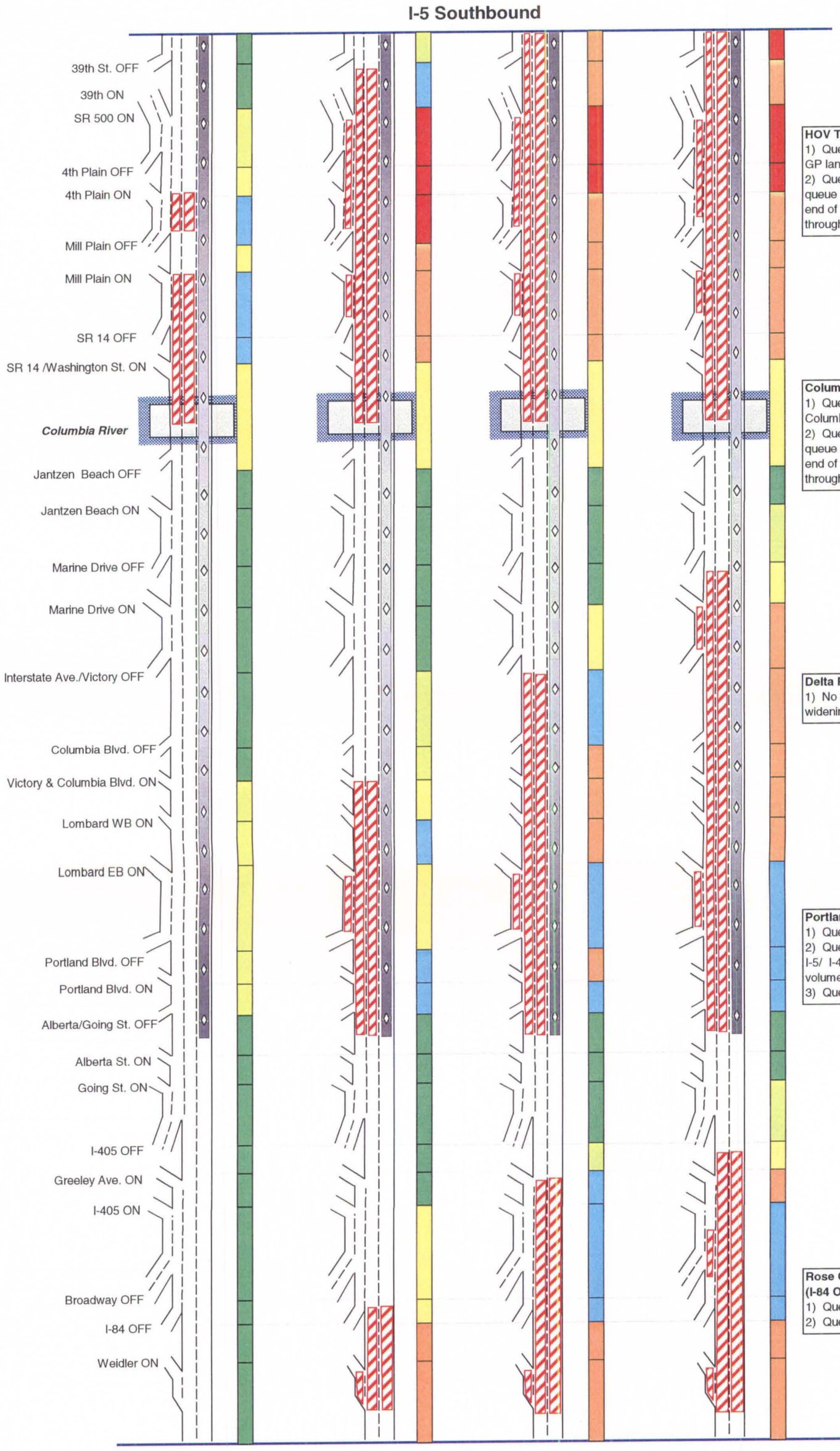
Lane Utilization Impacts:
- Queuing near the HOV termini / Mill Plain weave splits into two separate sections by 7:15 a.m. The two sections are the two weaving sections. The queuing continues to recover leaving only minimal queuing by the end of the hour.
- Columbia River Bridge queuing remains until combining with the Portland / Alberta queue prior to 7:45 a.m.
- Queuing from the Portland / Alberta area is three lanes wide and backs up to the Mill Plain Off-ramp by the end of the hour.
- Queuing near the Rose Quarter increases until reaching its maximum near Going St. On-ramp. By the end of the hour the queue recovers to near the Broadway Off-ramp.

LEGEND
- 0 - 10 MPH
- 11 - 20 MPH
- 21 - 30 MPH
- 31 - 40 MPH
- 41 - 50 MPH
- > 51 MPH

Not To Scale

Extent of Queue

I-5 Corridor - 2025 Build Conditions (Option 4- W/ Cont. HOV) (6:00 - 7:00 AM)



HOV Termination/ Mill Plain Weave Area Issues:
1) Queue forms between 6:00 and 6:15 a.m. in two GP lanes.
2) Queue quickly combines with Columbia River Bridge queue and extends beyond corridor study limits by the end of the hour. HOV lane remains free flowing throughout the hour.

Columbia River Bridge Issues:
1) Queue forms in 2 GP lanes near the middle of the Columbia River Bridge prior to 6:15 a.m.
2) Queue quickly combines with Mill Plain Weave area queue and extends beyond corridor study limits by the end of the hour. HOV lane remains free flowing throughout the hour.

Delta Park Issues:
1) No queuing in Delta Park area after completing widening from 2 GP lanes to 3 GP lanes.

Portland/Alberta Area Issues:
1) Queue forms in 2 GP lanes prior to 6:30 a.m.
2) Queuing is caused by traffic preparing for the I-5/ I-405 4-2-2 split and successive short heavy volume merges and HOV lane.
3) Queue extends to Marine Drive area by 7:00 a.m.

Rose Quarter Area Issues:
(I-84 Off-ramp is braided with Weidler On-ramp)
1) Queuing forms at Weidler ON prior to 6:30 a.m.
2) Queue backs up to Greeley ON by 7:00 a.m.

Notes:
Bottlenecks (6:00 - 7:00 AM)
- HOV termini / Mill Plain weave forms before 6:15 a.m.
- Columbia River Bridge forms before 6:15 a.m.
- Portland / Alberta forms before 6:30 a.m.
- Rose Quarter forms before 6:30 a.m.

Lane Utilization Impacts:
- Initial queuing on Columbia River Bridge forms in two GP lanes due to drop in overall capacity caused by carrying HOV lane over Columbia River Bridge. Queuing backs up quickly and combines with Mill Plain weave are queue and extends beyond corridor by 7:00 a.m.
- HOV termini / Mill Plain weave queuing forms in two GP lanes and remains combines with Columbia River Bridge queue prior to 6:30 a.m. HOV lane remains free flowing length of study area.
- Portland / Alberta area queuing forms in two GP lanes prior to 6:30 a.m. The queue is caused by the HOV lane, traffic preparing for the I-5 / I-405 split, and the consecutive short merge on-ramps. Queuing extends to Marine Drive by the end of the hour.
- Queuing near the Rose Quarter starts near new Weidler On-ramp braid with I-84 Off-ramp.

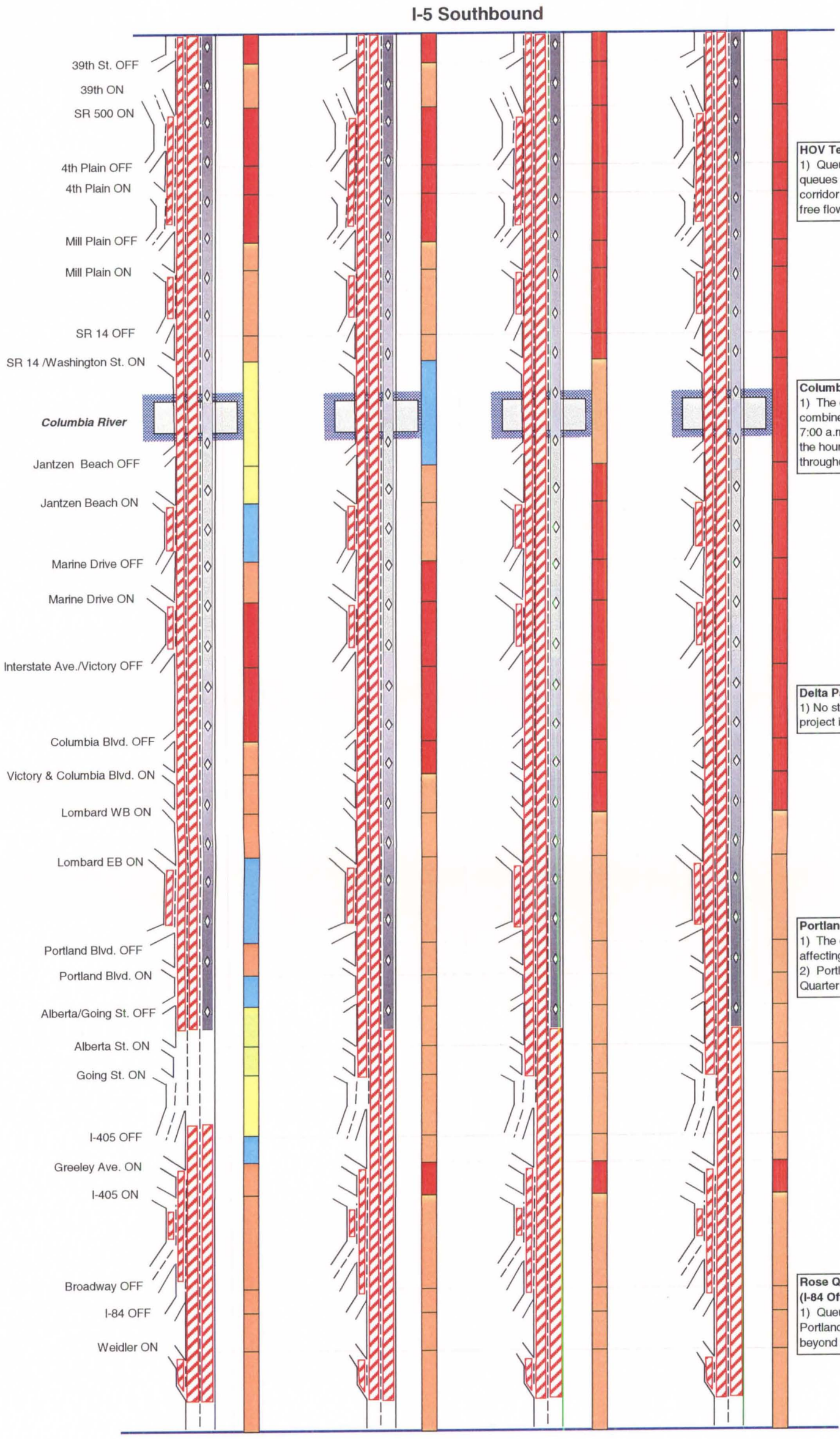
LEGEND
- 0 - 10 MPH
- 11 - 20 MPH
- 21 - 30 MPH
- 31 - 40 MPH
- 41 - 50 MPH
- > 51 MPH

Not To Scale

Extent of Queue

DRAFT as of 2-26-04

I-5 Corridor - 2025 Build Conditions (Option 4- W/ Cont. HOV) (7:00 - 8:00 AM)



HOV Termination/ Mill Plain Weave Area Issues:
1) Queuing in this area continues to combine with other queues prior to 7:00 a.m. and extends beyond the corridor for the rest of the hour. The HOV lane remains free flowing throughout the morning commute.

Columbia River Bridge Issues:
1) The queue from the middle of the Col. River Bridge combines with the Portland / Alberta queue prior to 7:00 a.m. and extends beyond the corridor throughout the hour. The HOV lane remains free flowing throughout the morning commute.

Delta Park Issues:
1) No stand alone issues with Delta Park area once project is complete.

Portland/Alberta Area Issues:
1) The queuing continues to back up in the 2 GP lanes, affecting other corridor queues prior to 7:15 a.m.
2) Portland / Alberta queue combines with Rose Quarter queuing prior to 7:30 a.m.

Rose Quarter Area Issues:
(I-84 Off-ramp is braided with Weidler On-ramp)
1) Queuing in the Rose Quarter area combines with the Portland / Alberta queue prior to 7:30 a.m. and extends beyond the project area past 8:00 a.m.

Notes:
Bottlenecks (7:00 - 8:00 AM)
- HOV termini / Mill Plain weave, Columbia River Bridge, Portland / Alberta area, and Rose Quarter area bottlenecks remain throughout entire hour.

Lane Utilization Impacts:
- Queuing near the HOV termini / Mill Plain weave and Columbia River Bridge remains within other queues throughout the hour.
- Queuing from the Portland / Alberta area continue within the 2 GP lanes until it combines with the Rose Quarter queue prior to 7:30 a.m.
- Queuing near the Rose Quarter increases quickly and combines with the Portland / Alberta queue causing continuous queuing throughout the study area.

LEGEND

- 0 - 10 MPH
- 11 - 20 MPH
- 21 - 30 MPH
- 31 - 40 MPH
- 41 - 50 MPH
- > 51 MPH

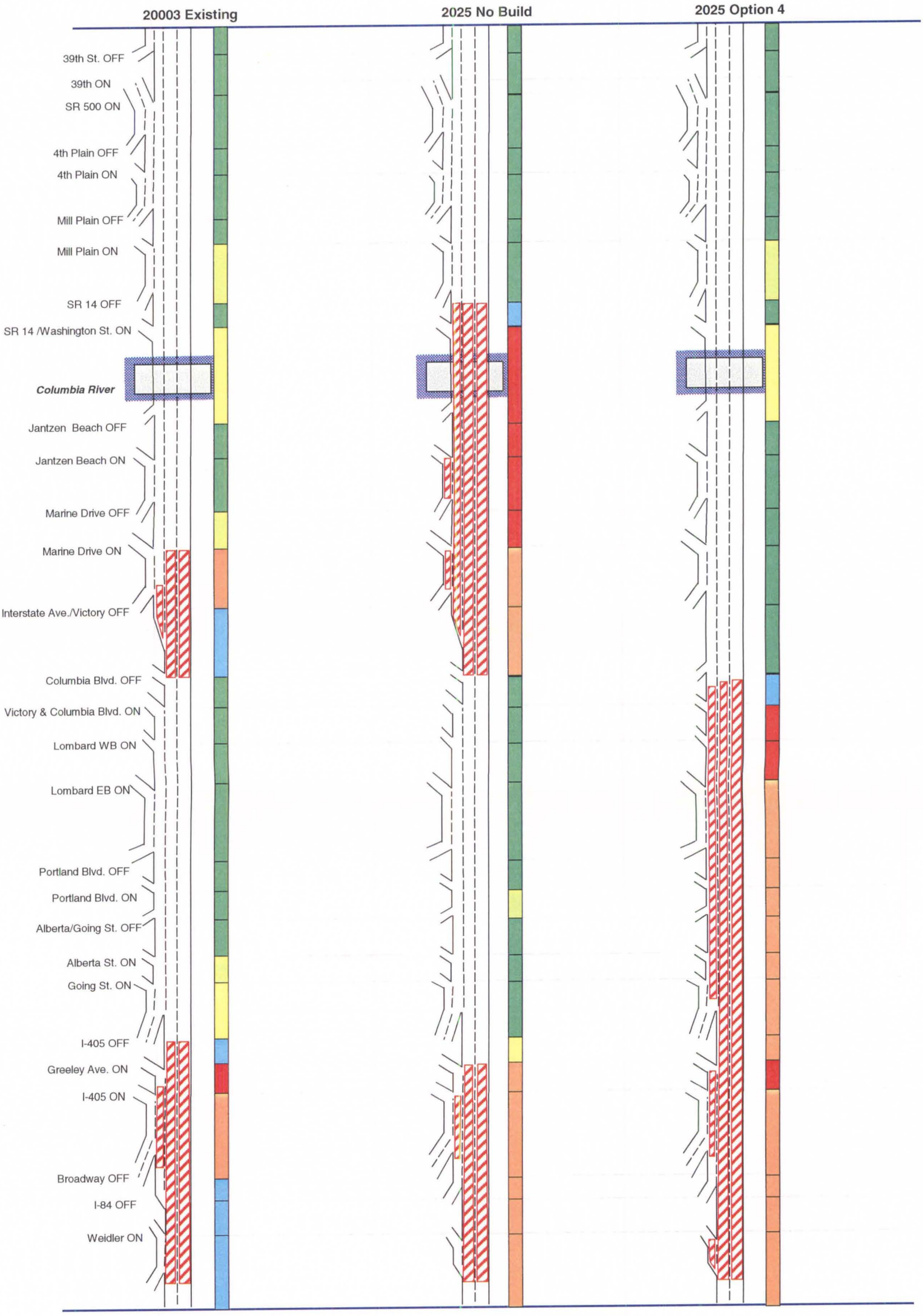
Not To Scale

Extent of Queue

DRAFT as of 2-26-04

I-5 Corridor - 2003 vs. 2025 PM Conditions Comparison (5:45 - 6:00 PM)

I-5 Southbound



Notes:

LEGEND

- 0 - 10 MPH
- 11 - 20 MPH
- 21 - 30 MPH
- 31 - 40 MPH
- 41 - 50 MPH
- > 51 MPH

Not To Scale

Extent of Queue (5:45-6:00 PM)

4500 **Hourly Volume Served**

DRAFT as of 2-26-04

I-5: Delta Park to Lombard
Key Traffic Findings

Degrades — Maintains — Improves

1 2 3 4 5

Table 1: Two Hour A.M. (6-8 a.m.) SR 500 to I-84 Southbound

	Measure	2025 No Build	2025 Build (Existing HOV in WA – 99th to Mill Plain. No new HOV in OR)	2025 Build Option 4 (Separate HOV Marine Dr to Alberta)	2025 Build Option 4 (Continuous HOV 99th to Alberta)	2025 Build Option 4 (No HOV in WA or OR)
		Compared to Existing Cond.	Compared to 2025 No Build			
A	Unserved Vehicle Demand from I-5 mainline and on-ramps	1	5	3	1	5
B	Served Vehicle Demand from I-5 mainline and on-ramps	4	5	3	1	5
C	Vehicle Hours of Delay (VHD) – All Traffic	1	4	3	4	3
D	Vehicle Hours of Delay (VHD) – Trucks	1	4	3	3	3
E	Persons Served	4	4	5	5	4
F	Average Speed in Vancouver near 4th Plain	3	4	3	3	5
G	Auto Occupancy – Average number of persons in each vehicle	3	3	5	5	3
H	High Occupant Vehicle (HOV) Users	3	3	5	5	3
I	Travel Times – All Traffic	1	3	1	4	4
J	Travel Times for Single Occupant Vehicles (SOV)	3	3	1	1	4
K	Travel Times for High Occupant Vehicles (HOV)	3	3	4	5	1
L	Served Vehicle Demand at On-Ramps A.M. 2 - hr- (Lombard to Greeley)	4	3	4	4	3
M	Unserved Vehicle Demand at On-Ramps A.M. 2 - hr- (Lombard to Greeley)	1	2	4	4	2
N	Average Speed in Portland near Col. Blvd.	3	2	1	1	2

Table 2: Two Hour P.M. (4-6 p.m.) SR 500 – I-84 Southbound

	Measure	2025 No Build Compared to Existing Cond.	2025 Build Compared to 2025 No Build
A	Duration of queuing due to Delta Park bottleneck	1	5
B	Average Speed in Portland near Victory Blvd.	3	5
C	Vehicle Hours of Delay (VHD) – Trucks	1	4
D	Served Vehicle Demand at On-Ramps P.M. 2 – hr- (Lombard to Greeley)	3	4
E	Travel Times	1	3
F	Served Vehicle Demand from I-5 mainline and on-ramps	4	3
G	Vehicle Hours of Delay (VHD) – All Traffic	1	3
H	Vehicle Hours of Delay (VHD) - Trucks	1	3
I	Average Speed in Vancouver near 4th Plain	3	3
J	Unserved Vehicle Demand at On-Ramps P.M. 2 - hr- (Lombard to Greeley)	3	3
K	Average Speed in Portland near Col. Blvd.	3	2
L	Unserved Vehicle Demand from I-5 mainline and on-ramps	2	1

Notes:

- 2025 Build = 3rd lane with Full Columbia Ramps.
- 2025 No Build and 2025 Build assume light rail to downtown Vancouver, and braided ramp connections between I-5 and I-84.
- 2025 No Build and 2025 Build do not assume that I-5 will be three lanes through the Rose Quarter area.
- Unless otherwise indicated all measures are for the full corridor length from SR 500 to I-84.
- Data source: EMME/2 and VISSM traffic models.

I-5: Delta Park to Lombard
Key Traffic Findings

Table 1: Two Hour A.M. (6-8 a.m.) SR 500 to I-84

	Measure	Existing Conditions	2025 No Build	2025 Build (HOV only in WA: 99th to Mill Plain)	2025 Build (Separate HOV Marine Dr to Alberta)	2025 Build (Continuous HOV 99th to Alberta)	2025 Build (No HOV in WA or OR)
			( )=Compared to Existing Cond.	( )=Compared to 2025 No Build			
A	Unserved Vehicle Demand from I-5 mainline and on-ramps	1,920 vehicles	3,640 vehicles (+1,720) (+89.6%)	2,170 vehicles (-1,470) (-40.4%)	4,570 vehicles (+930) (+25.5%)	4,960 vehicles (+1,320) (+36.3%)	1,840 vehicles (-1,800) (-49.5%)
B	Served Vehicle Demand from I-5 mainline and on-ramps	26,650 vehicles	27,620 vehicles (+970) (+3.6%)	29,240 vehicles (+1,620) (+5.9%)	26,840 vehicles (-780) (-2.8%)	26,450 vehicles (-1,170) (-4.2%)	29,570 vehicles (+1,950) (+7.1%)
C	Vehicle Hours of Delay (VHD) – All Traffic	2,370 hrs	2,870 hrs (+500) (+21.1%)	2,645 hrs (-225) (-7.8%)	3,005 hrs (+135) (+4.7%)	2,735 hrs (-135) (-4.7%)	2,905 hrs (+35) (+1.2%)
D	Vehicle Hours of Delay (VHD) – Trucks	130 hrs	175 hrs (+45) (+34.6%)	160 hrs (-15) (-8.6%)	195 hrs (+20) (+11.4%)	180 hrs (+5) (+2.9%)	175 hrs (0) (0%)
E	Persons Served	31,370 persons	32,350 persons (+980) (+3.1%)	34,435 persons (+2,085) (+6.4%)	36,415 persons (+4,065) (+12.6%)	37,635 persons (+5,285) (+16.3%)	34,705 persons (+2,355) (+7.3%)
F	Average Speed in Vancouver near 4th Plain	29 mph	22 mph (-7)	31 mph (+9)	24 mph +2	23 mph +1	40 mph +18
G	Auto Occupancy	1.27 persons per vehicle	1.29 persons per vehicle	1.29 persons per vehicle	1.45 persons per vehicle	1.51 persons per vehicle	1.3 persons per vehicle
H	High Occupant Vehicle (HOV) Users	14.2%	14.2% (0)	14.2% (0)	26.7% (+12.5)	30.7% (+16.5)	14.2% (0)
I	Travel Times – All Traffic	26.5 min	29.4 min (+2.9)	28.9 min (-.5)	34.0 min (+4.6)	30.4 min (+1.0)	31.5 min (+2.1)
J	Travel Times – Single Occupant Vehicles (SOV)	26.4 min	29.3 min (+2.9)	28.5 min (-.8)	37.0 min (+7.7)	35.2 min (+5.9)	31.5 min (+2.2)
K	Travel Times – High Occupant Vehicles (HOV)	24.9 min	27.5 min (+2.6)	27.2 min (-.3)	25.1 min (-2.4)	20.6 min (-6.9)	31.5 min (+4)
L	Served Vehicle Demand at On-Ramps A.M. 2 - hr- (Lombard to Greeley)	6,310 vehicles	6,610 vehicles (+300) (+4.8%)	6,560 vehicles (-50) (-.8%)	6,720 vehicles (+110) (+1.7%)	6,730 vehicles (+120) (+1.8%)	6,560 vehicles (-50) (-.8%)
M	Unserved Vehicle Demand at On-Ramps A.M. 2 - hr- (Lombard to Greeley)	80 vehicles	320 vehicles (+240) (+300%)	450 vehicles (+130) (+40.6%)	290 vehicles (-30) (-9.4%)	280 vehicles (-40) (-12.5%)	450 vehicles (+130) (+40.6%)
N	Average Speed in Portland near Col. Blvd.	50 mph	47 mph (-3)	32 mph (-15)	25 mph (-22)	29 mph (-18)	32 mph (-15)

Notes:

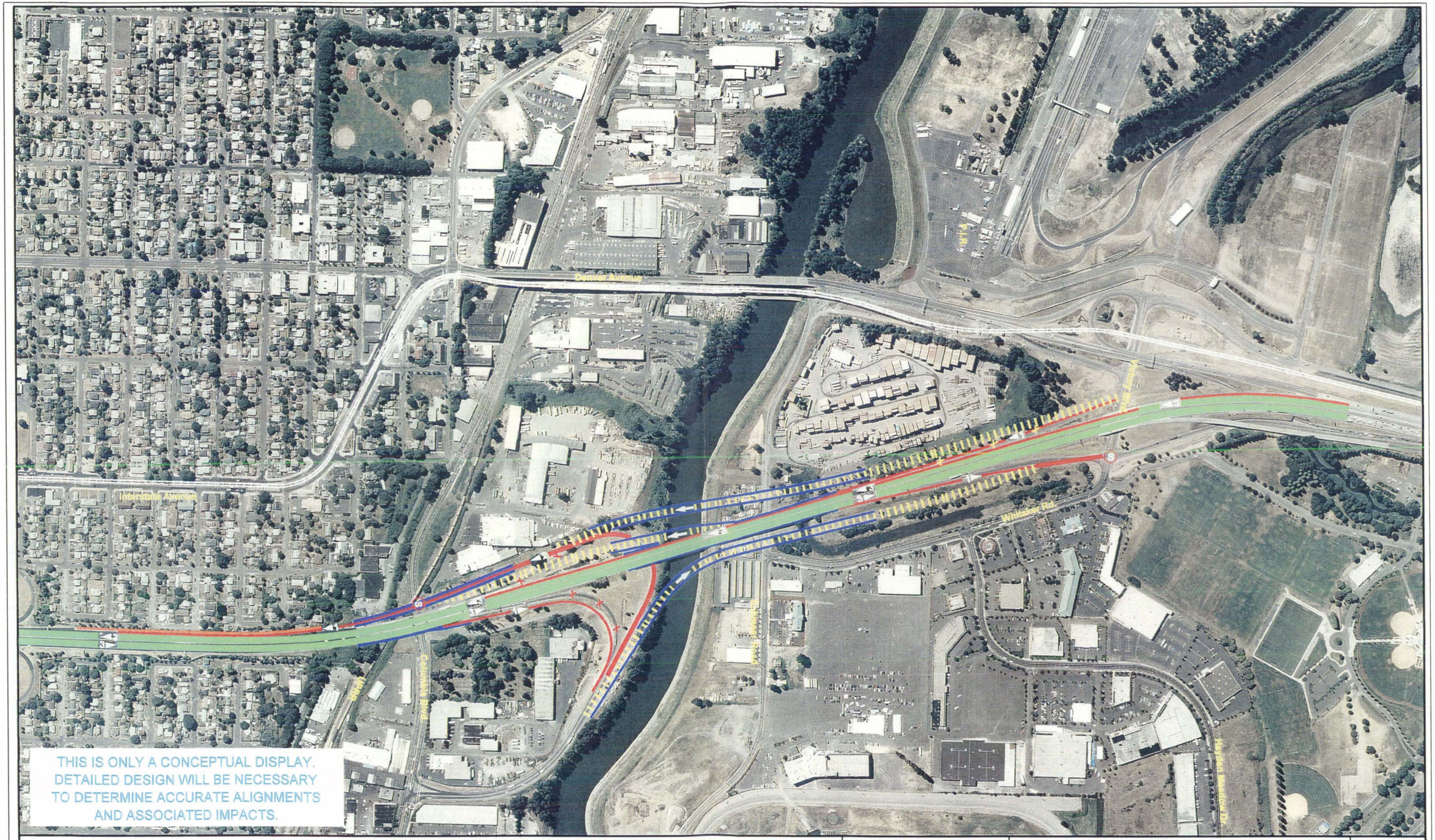
- 2025 Build = 3rd lane with Full Columbia Ramps.
- 2025 No Build and 2025 Build assume light rail to downtown Vancouver, and braided ramp connections between I-5 and I-84.
- 2025 No Build and 2025 Build do not assume that I-5 will be three lanes through the Rose Quarter area.
- Unless otherwise indicated all measures are for the full corridor length from SR 500 to I-84.
- Data source: EMME/2 and VISSM traffic models.

Go East: Phase 1: Freeway widening is oriented to the east. The existing Columbia Blvd. ramps would be re-constructed in their existing configuration. *Phase 2: In future years, another project would be constructed to add the northern "legs" of the Columbia Blvd. interchange.*

What concerns do you have about this alternative?	How could we change the alternative to respond to or address your concerns?
Mitigation and Enhancement Ideas?	**Other Comments**

North to Schmeer: Phase 1: Relocates Columbia Blvd. interchange north of the Columbia Slough. Freeway widening occurs. The Columbia Blvd interchange is eliminated and access to I-5 is re-located to a new interchange at Schmeer Rd. Access to the new interchange from Columbia Blvd. would be via two new bridges across the Columbia Slough. *Phase 2: In future years, add the northern "legs" of the Schmeer Road interchange and close Victory Blvd interchange. The southbound off to Interstate/Denver would remain open.*

What concerns do you have about this alternative?	How could we change the alternative to respond to or address your concerns?
Mitigation and Enhancement Ideas?	**Other Comments**



THIS IS ONLY A CONCEPTUAL DISPLAY.
DETAILED DESIGN WILL BE NECESSARY
TO DETERMINE ACCURATE ALIGNMENTS
AND ASSOCIATED IMPACTS.

EXISTING LANE(S)

NEW OR REBUILT LANE(S)

NEW OR WIDENED BRIDGE

NOISE WALL

POTENTIAL PHASE 2 CONFIGURATION

LANES IN DIRECTION OF ARROW

X X PAVEMENT REMOVAL

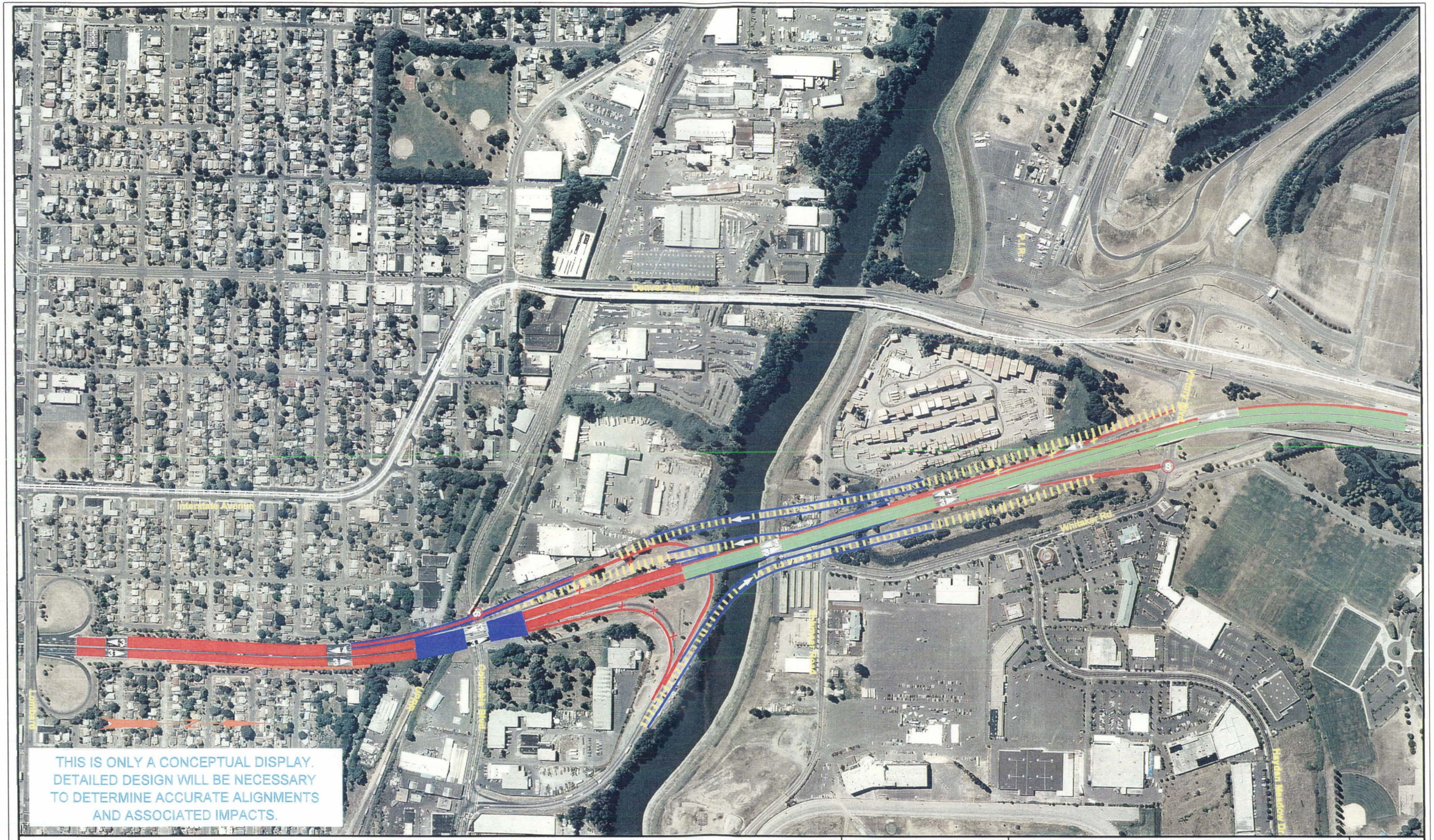
SCALE 1" =500'

Portland / Vancouver I-5 Transportation and Trade Partnership

I-5: *Delta Park to Lombard Project*

Go West

OCTOBER 2003



THIS IS ONLY A CONCEPTUAL DISPLAY.
DETAILED DESIGN WILL BE NECESSARY
TO DETERMINE ACCURATE ALIGNMENTS
AND ASSOCIATED IMPACTS.

EXISTING LANE(S)

NEW OR REBUILT LANE(S)

NEW OR WIDENED BRIDGE

NOISE WALL

POTENTIAL PHASE 2 CONFIGURATION

LANES IN DIRECTION OF ARROW

X X PAVEMENT REMOVAL

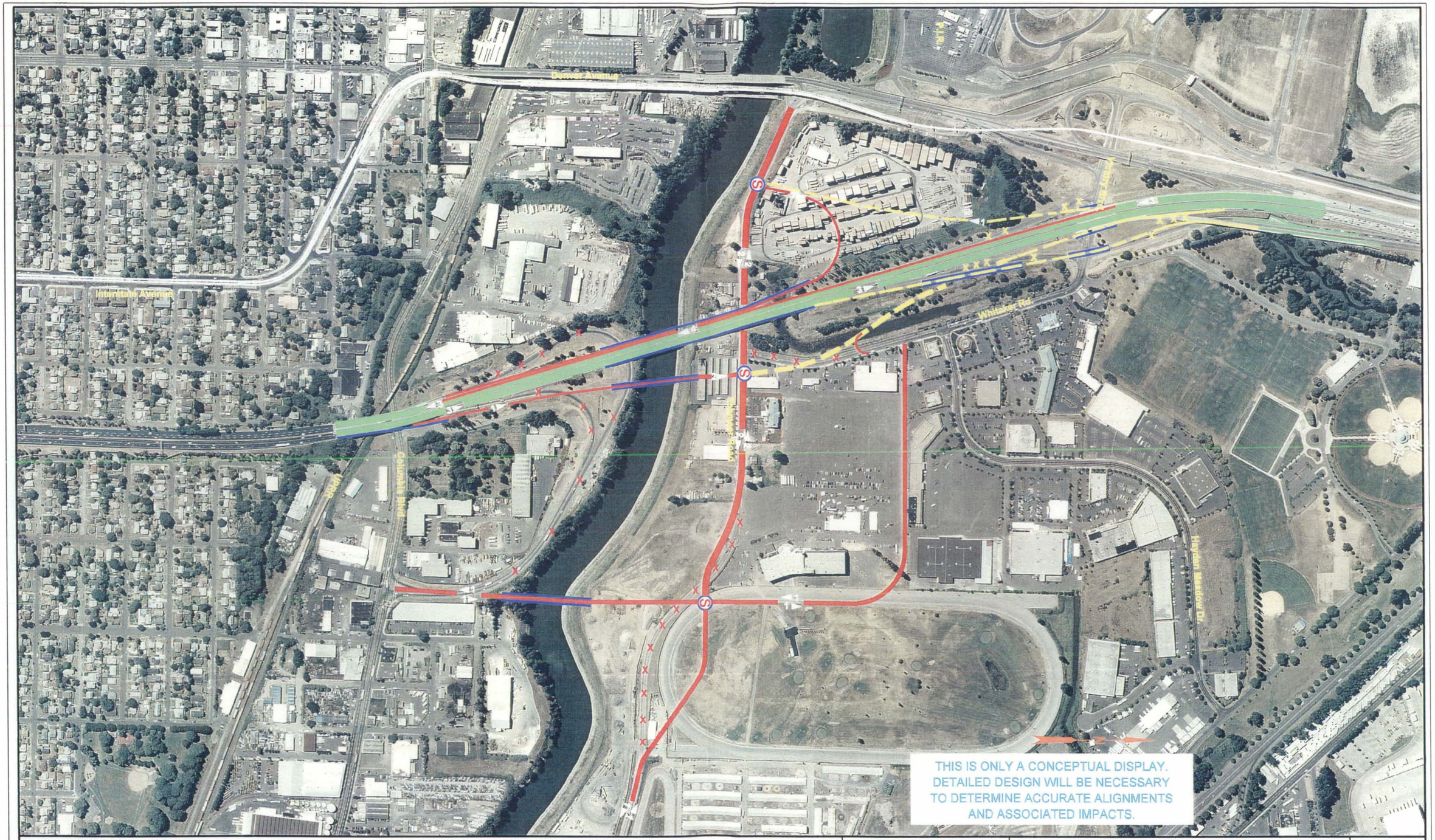
SCALE 1" =500'

Portland / Vancouver I-5 Transportation and Trade Partnership

I-5: *Delta Park to Lombard Project*

Go East

OCTOBER 2003



EXISTING LANE(S)

NEW OR REBUILT LANES(S)

NEW OR WIDENED BRIDGE

NOISE WALL

NEW LANES PHASE 2

LANES IN DIRECTION OF ARROW

X X PAVEMENT REMOVAL

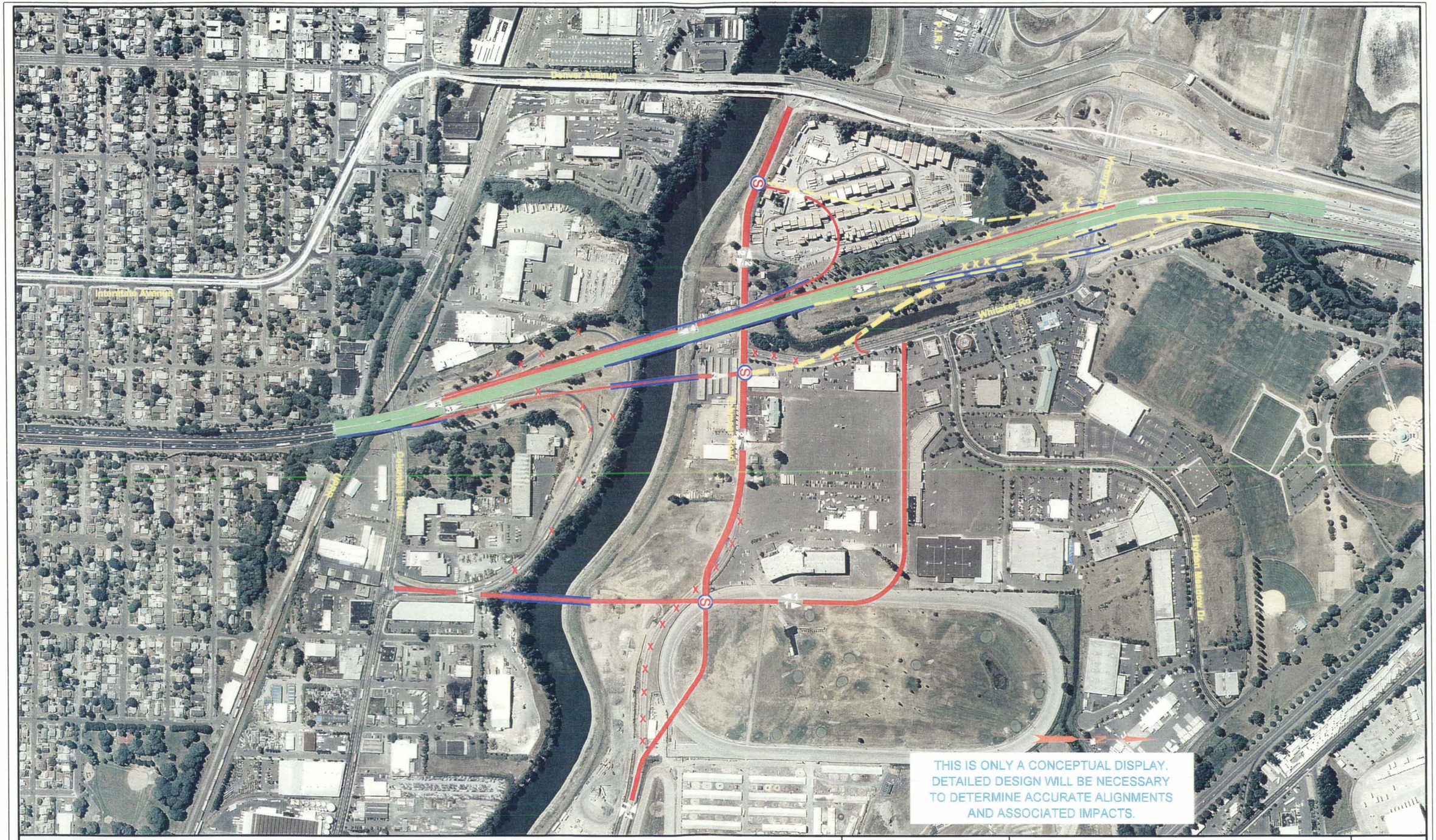
SCALE 1" = 500'

Portland / Vancouver I-5 Transportation and Trade Partnership

I-5: *Delta Park to Lombard Project*

North to Schmeer
New Interchange at Schmeer Road

OCTOBER 2003



EXISTING LANE(S)

NEW OR REBUILT LANES(S)

NEW OR WIDENED BRIDGE

NOISE WALL

NEW LANES PHASE 2

LANES IN DIRECTION OF ARROW

X X PAVEMENT REMOVAL

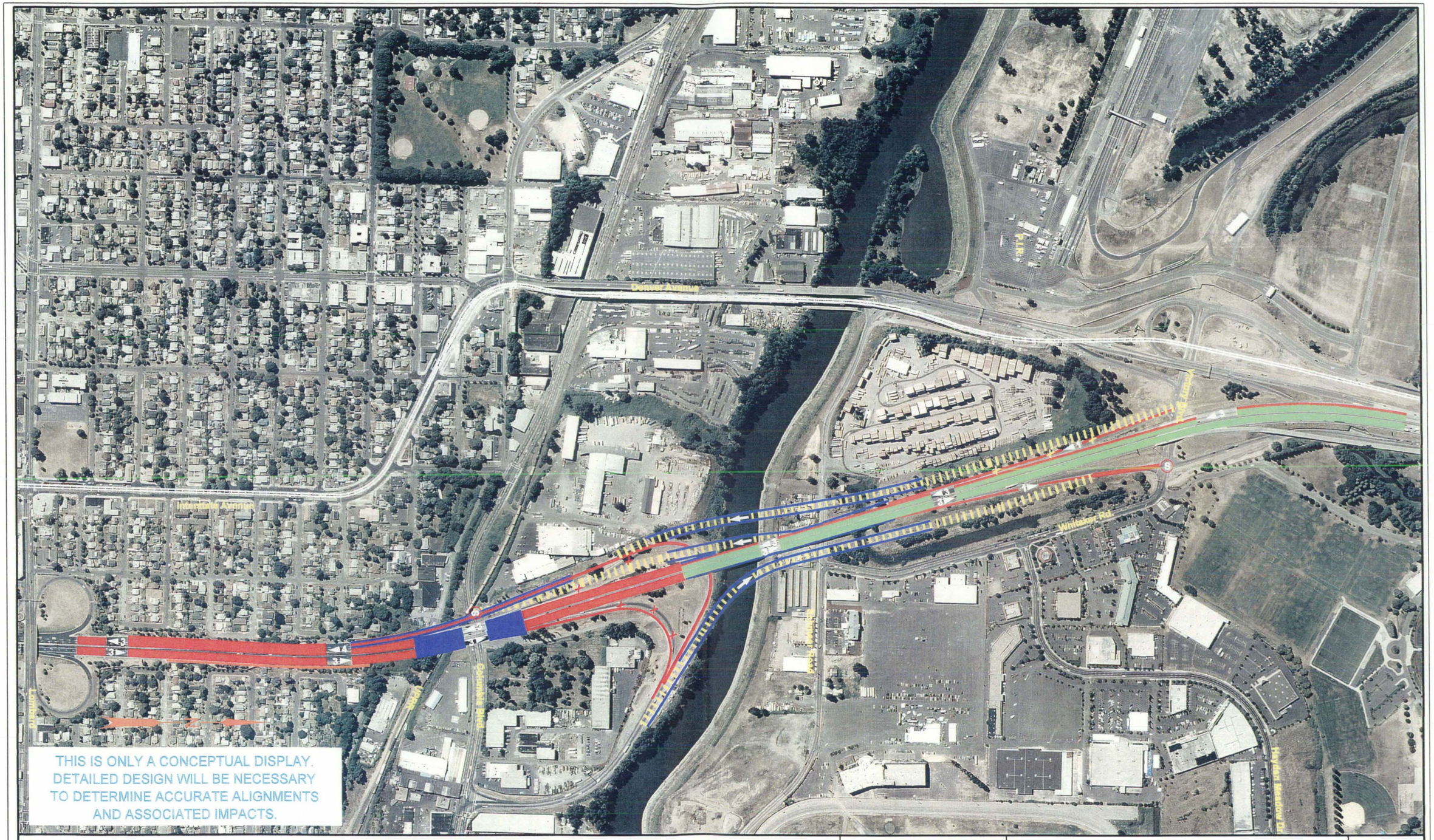
SCALE 1" = 500'

Portland / Vancouver I-5 Transportation and Trade Partnership

I-5: *Delta Park to Lombard Project*

North to Schmeer
New Interchange at Schmeer Road

OCTOBER 2003



SCALE 1" =500'

OCTOBER 2003

EXISTING LANE(S)

NEW OR REBUILT LANE(S)

NEW OR WIDENED BRIDGE

NOISE WALL

POTENTIAL PHASE 2 CONFIGURATION

LANES IN DIRECTION OF ARROW

X X PAVEMENT REMOVAL

Portland / Vancouver I-5 Transportation and Trade Partnership

I-5: *Delta Park to Lombard Project*

Go East

THIS IS ONLY A CONCEPTUAL DISPLAY.
DETAILED DESIGN WILL BE NECESSARY
TO DETERMINE ACCURATE ALIGNMENTS
AND ASSOCIATED IMPACTS.

EXISTING LANE(S)

NEW OR REBUILT LANE(S)

NEW OR WIDENED BRIDGE

NOISE WALL

POTENTIAL PHASE 2 CONFIGURATION

LANES IN DIRECTION OF ARROW

X X PAVEMENT REMOVAL

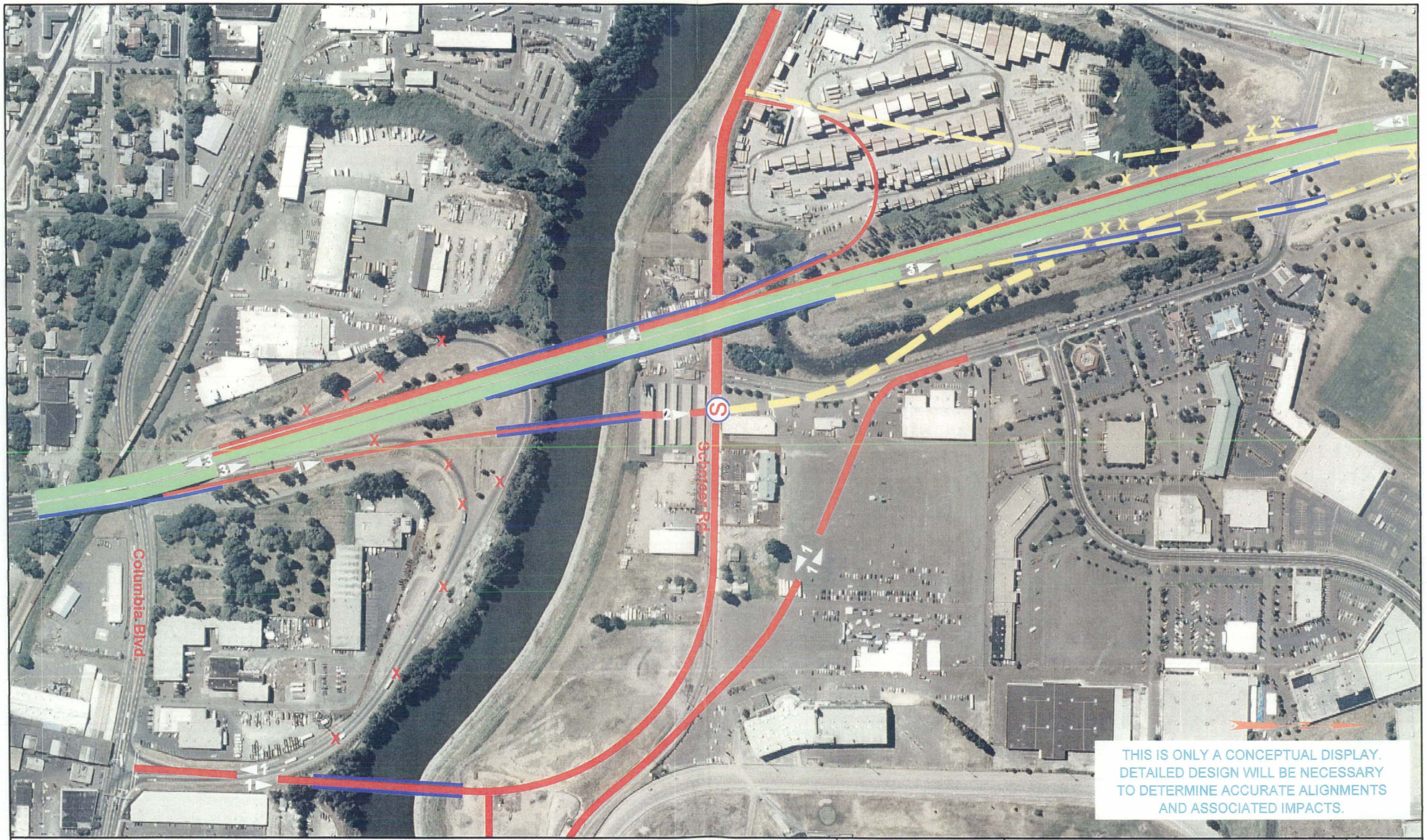
SCALE 1" =500'

Portland / Vancouver I-5 Transportation and Trade Partnership

I-5: *Delta Park to Lombard Project*

Go West

OCTOBER 2003



EXISTING LANE(S)

NEW OR REBUILT LANES(S)

NEW OR WIDENED BRIDGE

NOISE WALL

NEW LANES PHASE 2

LANES IN DIRECTION OF ARROW

X X PAVEMENT REMOVAL

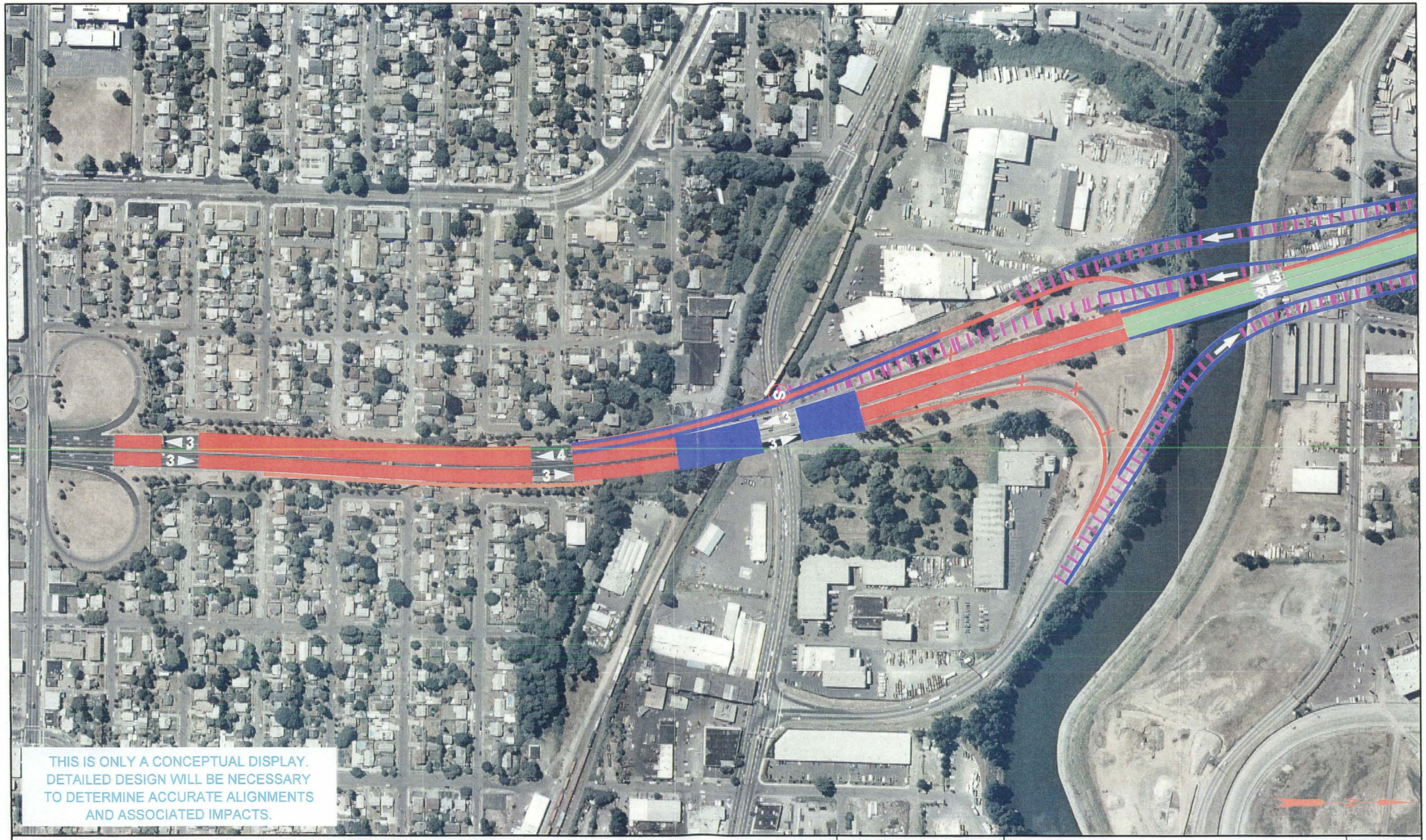
SCALE 1" = 300'

Portland / Vancouver I-5 Transportation and Trade Partnership

I-5: *Delta Park to Lombard Project*

North to Schmeer
New Interchange at Schmeer Road

JULY 2003



THIS IS ONLY A CONCEPTUAL DISPLAY.
DETAILED DESIGN WILL BE NECESSARY
TO DETERMINE ACCURATE ALIGNMENTS
AND ASSOCIATED IMPACTS.

EXISTING LANE(S)

NEW OR REBUILT LANE(S)

NEW OR WIDENED BRIDGE

NOISE WALL

POTENTIAL PHASE 2 CONFIGURATION

LANES IN DIRECTION OF ARROW

X X PAVEMENT REMOVAL

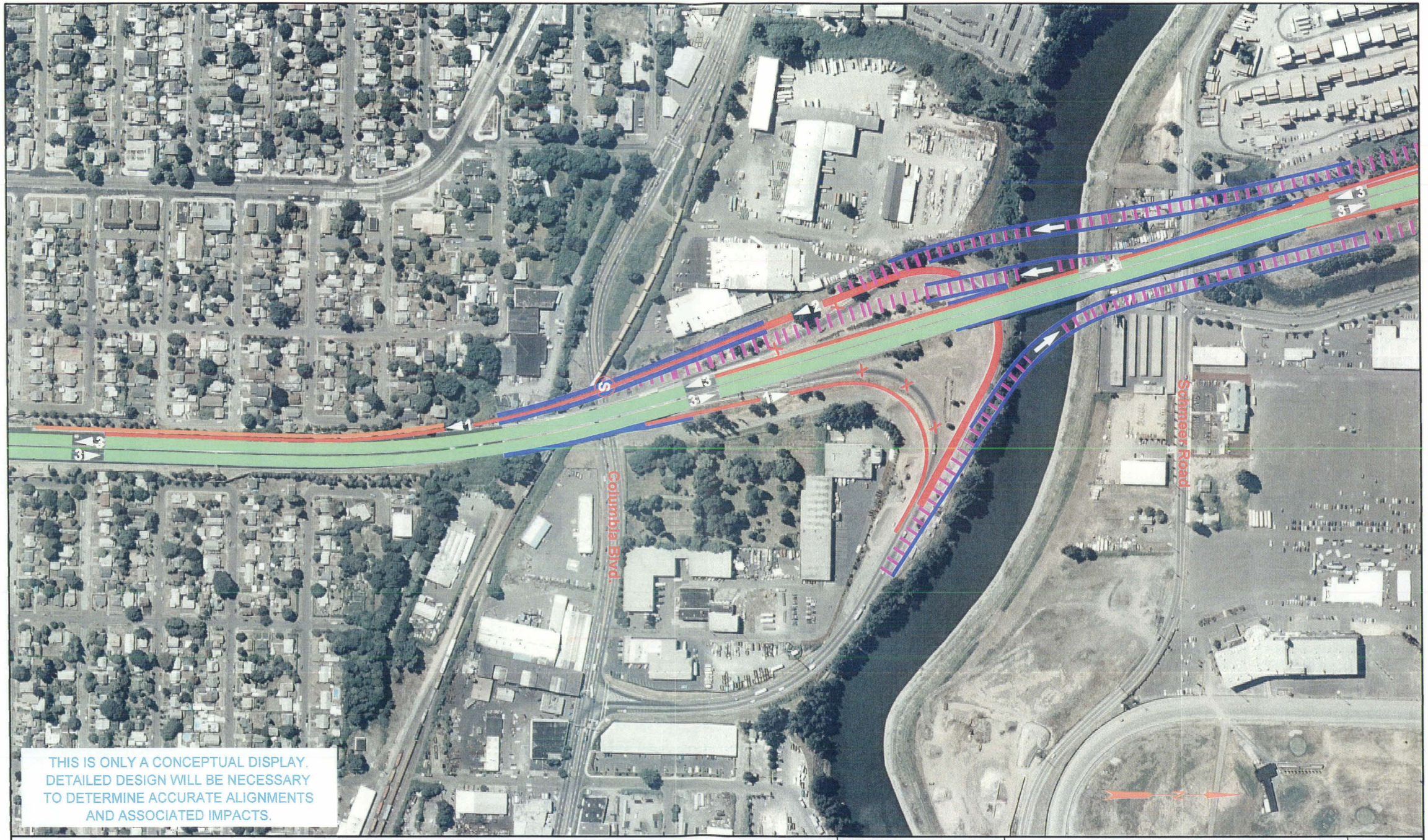
SCALE 1" = 300'

Portland / Vancouver I-5 Transportation and Trade Partnership

I-5: *Delta Park to Lombard Project*

Go East

JULY 2003



EXISTING LANE(S)

NEW OR REBUILT LANE(S)

NEW OR WIDENED BRIDGE

NOISE WALL

POTENTIAL PHASE 2 CONFIGURATION

LANES IN DIRECTION OF ARROW

X X PAVEMENT REMOVAL

SCALE 1" = 300'

Portland / Vancouver I-5 Transportation and Trade Partnership

I-5: Delta Park to Lombard Project

Partnership Alternative Re-Construct Southbound Entrance Ramp

JULY 2003