THE PROBLEM
BACKGROUND
The Federal Highway Administration (FHWA) has found that approximately 40 percent of all congestion nationwide can be attributed to recurring congestion—or “bottlenecks.”

In 2009, ODOT began a new approach to identify major congestion bottlenecks on local freeways and develop cost-effective operational improvements to address safety and assess traffic movement at certain locations.

This program was not intended to address capacity-related congestion problems, but rather to provide immediate and long-term safety improvements at bottleneck locations.

CAUSES OF CONGESTION AND DELAYS
Forty percent of all congestion is predictable, caused by bottlenecks or physical constraints of the roadway. Many bottleneck locations are also high crash sites. Crash incidents increase congestion levels, causing more delay and longer recovery time for the freeway.

WHERE IT HAPPENS
- Recurring bottleneck location
- Planned project (funded)
- Planned project (unfunded)
- Completed project

THE BOTTLENECK STUDY
The Corridor Bottleneck Operations Study (CBOS) identified areas of recurring congestion along five key Portland metro area corridors (I-5, I-205, I-84, I-405, and US 26). The report provided detailed information about regional bottlenecks and project concepts to address the problem areas. The project concepts are cost-effective, small-scale improvements intended to be studied further or combined as funds become available. The study prioritizes recommendations based on bottleneck severity, contributing problems, cost and various other factors. The full report is available online at: www.tinyurl.com/bottleneckstudy.

FIND MORE INFORMATION ON THE STUDY WEBSITE:
www.tinyurl.com/bottleneckstudy

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THE BOTTLENECK STUDY

IMPROVING HIGHWAY BOTTLENECKS: ADDRESSING CONGESTION AROUND THE PORTLAND METRO AREA

WHY IT HAPPENS
Every bottleneck identified occurs at freeway interchanges as vehicles enter or leave the mainline. The examples below illustrate three reasons why bottlenecks occur.

PROBLEM: Short distances between entrances and exits provide little room to merge and weave, slowing freeway traffic. An example of this type of bottleneck is I-5 southbound at Lower Boones Ferry Road.

SOLUTION: An auxiliary lane allows vehicles to merge outside of the main through-lane, improving safety and traffic flow. Auxiliary lanes are planned for several bottlenecks on I-5 southbound near OR 217/I-205.

PROBLEM: Freeway traffic changing lanes to avoid or enter exit-only lanes. An example of this type of bottleneck is I-205 northbound at the I-84 interchanges.

SOLUTION: An auxiliary lane removes the exit-only lane. This type of auxiliary lane is planned between several entrance ramps on I-205 northbound, which will address a number of bottlenecks.

PROBLEM: Decision points cause traffic to weave. An example of this type of bottleneck was the I-84 westbound / I-5 northbound interchange.

SOLUTION: Decision points are separated, reducing weaving. The I-84 westbound / I-5 northbound interchange was restriped in this way during a paving project.

SOLUTIONS
The study found that cost-effective, localized improvements, such as restriping or auxiliary lanes, can improve safety and reduce congestion. An auxiliary lane typically provides a direct connection from one interchange ramp to the next. The lane separates slower traffic movements from the mainline, helping smooth the flow of traffic and reduce the potential for crashes.

FOCUS ON SAFETY AND OPERATIONS
The improvements identified in the study do not add capacity, but improve safety and operations of the freeway.