CHAPTER 2:
INTRODUCTION (PROJECT SYNOPSIS)

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The Project Atlas identifies bottleneck locations along the five metro area corridors (I-5, I-205, I-84, I-405 and US 26) and correlate locations of congestion with recommended projects. This study is in response to Federal Highway Administration (FHWA) Localized Bottleneck Reduction (LBR) program. The LBR program focused on relieving recurring bottlenecks (as opposed to non-recurring bottleneck causes) and the operational influences that cause them. The primary purpose is to improve safety and operations at these bottlenecks. This new approach is to seek cost-effective and small-scale improvements to the existing system. The projects recommended are not capacity improvements.

The development of this Project Atlas consists of three steps:

- Corridor-level reconnaissance:

  This step consisted of corridor-level reconnaissance to provide the foundation for specific investigation to identify and validate bottleneck activity and causes.

- Bottleneck analysis, evaluation, screening, and selection of solutions:

  This step focused primarily on design and operations. Bottlenecks were analyzed and potential solutions were developed, evaluated, and screened by an expert multidisciplinary design panel.

- Refinement of solutions:

  The final step involved a more thorough operations and design evaluation of potential solutions deemed feasible by the screening panel. The detailed evaluation and refinement included traffic modeling to assess various performance measures, then assessment of project feasibility.

Projects were selected as providing the best value of benefits and cost (primarily $1 million to $20 million range). It should be noted, however, that traffic volumes on these highways are very high, particularly during the peak commute hours, and because these operational improvements do *not* add capacity, the benefits achieved will likely be moderate and incremental. Insofar as bottlenecks along these corridors often meter traffic flow, reducing the queuing and delay at a specific bottleneck may allow more traffic to pass through and move the bottleneck further downstream. Notwithstanding these occurrences, the proposed projects will alleviate congestion at identified bottlenecks, particularly on the peak commute shoulders, and enhance safety by improving the weaves and merges that occur at interchanges.

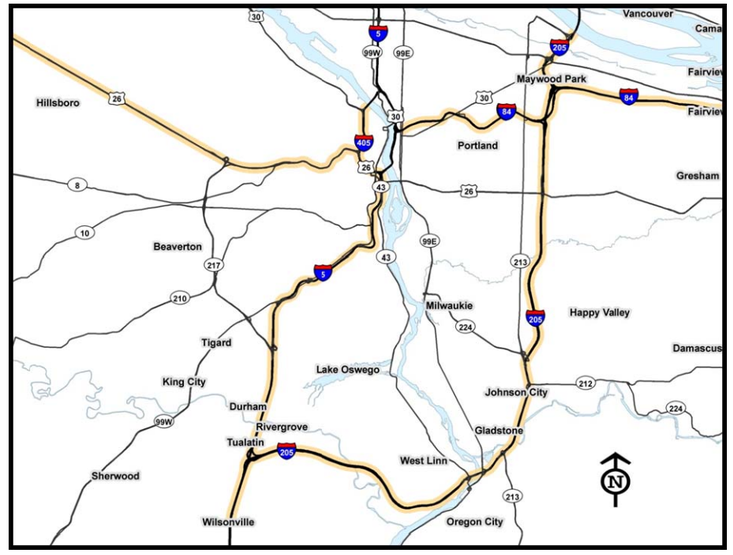
2.1 Study Area

The study area consists of five corridors in the Portland metropolitan area (see **Figure 2-1**): I-5, I-205, I-84, I-405, and US 26. The I-5 corridor is bounded on the north by the Marquam Bridge (approximately milepost 300) and on the south by the Boones Bridge (approximately milepost 283) in Wilsonville. The I-205 corridor is bounded on the north by Airport Way (approximately milepost 25) and on the south by the I-5 interchange in Tualatin (approximately milepost 0). The I-84 corridor is bounded on the west by I-5 and on the east by 257th Avenue. The I-405 corridor is bounded on the north and south by I-5. The US 26 corridor is bounded on the west by OR 47 and on the east by I-405. The study areas for each corridor includes the roadway mainline as well as the ramp merge/diverge locations. This project does not include evaluation of ramp terminals or other parallel roadway facilities.

2.2 Bottleneck Identification Methodology

The bottleneck identification analysis included in Phase 1 of this project is intended to provide spatial and temporal evaluation of freeway operations along each of the freeway corridors and to help correlate locations of congestion with potential mitigation measures. For this study, the term bottleneck was used to identify corridor operations that result in a speed of 35 miles per hour or less across all lanes. There were two tiers of analysis used to identify bottlenecks.

Figure 2-1: Study Area Corridors



The first tier of analysis included a corridor-level reconnaissance utilizing loop detector data from the Portland Oregon Regional Transportation Archive Listing (PORTAL), historical crash data (5 years) from ODOT's Online Crash Database, and a review of Oregon Highway Plan (OHP) mobility standards as they relate to the current operations of each facility. The PORTAL data is used to identify bottleneck locations for a typical weekday commute during the AM and PM peak periods.

The second tier of bottleneck analysis included validation of the PORTAL observations by means of existing documentation, or further investigation in the form of ODOT video camera footage, field travel time data, and traffic volume collection (to determine saturation flow rates). After validation, the bottleneck locations, activation and deactivation times, duration, and average queue lengths were verified and translated to graphics to combine and visually assess correlations between crash frequency and lane geometry on the facilities. More detailed methodology is identified in **Technical Memoranda 1 and 2**, a copy of which is included in **Appendix A**.

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