

**I-5 Interchange 14 (Green Springs)
City of Ashland, Jackson County**

Interchange Area Management Plan

Technical Memorandum #1: Definition and Background

Prepared for

**Oregon Department of Transportation, Region 3
3500 NW Stewart Parkway
Roseburg, Oregon 97470**

Prepared by

**David Evans and Associates, Inc.
2100 SW River Parkway
Portland, Oregon**

June 12, 2007

Purpose and Introduction

As outlined in OAR 734-051-0155(7), an Interchange Area Management Plan (IAMP) is “required for new interchanges and should be developed for significant modifications to existing interchanges.” Public investments for new interchanges and major improvements to existing interchanges are very costly and it is in the interest of the State, local governments, citizens of Oregon, and the traveling public to ensure that the interchange functions as it was designed for as long a time period as possible.

Development of this IAMP is the planning process intended to assess existing and potential land use and transportation conditions, opportunities and limitations, identify long-range needs, and identify recommended improvements to the Green Springs Interchange (I-5 Interchange 14). This process includes identifying necessary improvements to the local street network in the vicinity of the interchanges to ensure consistency with operational standards.

This IAMP follows detailed analyses conducted for preparation of the *Traffic Analysis Report for I-5 Interchanges 14 and 19 (TAR)*, dated August 22, 2006 and prepared by David Evans and Associates, Inc. The analyses summarized in the report were used to gain a better understanding of both the current and the future deficiencies of the two interchanges, and to examine the performance of a number of alternative interchange configurations under projected future traffic volumes. The TAR provides the basis for the Green Springs Interchange IAMP.

Planning and Management Area

The Green Springs interchange, shown in Figure 1, is located within the Ashland city limits in the southeastern section of the city, although much of the land in the interchange vicinity lies outside the city limits but inside the Ashland UGB. The interchange is a standard diamond type. Ashland Street (Green Springs Highway, OR 66) is the cross street, which connects with Siskiyou Boulevard (OR 99, Rogue Valley Highway) approximately one mile to the west. All four quadrants of the interchange area are developed.

The defined boundaries of the Interchange Area Planning and Management Area (Planning Area), displayed in Figure 1, includes land where existing and future development has the potential to significantly affect the interchange function, capacity and performance standards. The Planning Area roughly coincides with existing transportation analysis zone (TAZ) boundaries. It also encompasses key roadways in the vicinity that relate to traffic operations at the interchange.

The Planning Area is roughly bounded by Siskiyou Boulevard and the UGB to the south, Walker Avenue to the west, and the UGB to the north and east. The Planning Area consists of commercially zoned land on either side of the interchange. The remainder of the study area is composed of residential land; single and multi-family residential in the areas within Ashland city limits, and rural residential in the areas outside city limits. Based on the existing density of development, it appears that a significant intensification could occur in the vicinity of the Planning Area.

Problem Statement

Operational and Safety Deficiencies

The TAR provided traffic operations analyses at key intersections and freeway facilities in the planning area under both existing conditions (2006) and future no-build conditions (2010 and 2030). The TAR concluded that the existing bridge and ramps are functionally obsolete to adequately serve the long-range transportation needs.

Technical Memorandum #1: Definition and Background

An analysis of existing traffic operations showed that critical v/c ratios at both ramp terminal intersections exceed ODOT mobility standards. Queuing on both unsignalized exit ramps, and especially the southbound ramp, is significant because of limited gaps on Ashland Street for left turning vehicles, combined with substantial right turning volumes from the southbound ramp. The 95th percentile queue on the southbound exit ramp is calculated to extend into the deceleration area of the ramp. Left turning vehicles from eastbound Ashland Street to the northbound I-5 entrance ramp are delayed because of conflicts with high westbound through volumes. These delays result in queuing over the bridge that spills over into the southbound ramp terminal intersection.

An analysis of year 2030 no-build traffic operations showed that projected demand at both ramp terminal intersections would exceed the capacity of the intersections. Future operations are expected to be characterized by more delay and queuing on intersection and ramp approaches. Without mitigation, queuing on the southbound exit ramp will frequently extend into the deceleration area of the ramp, creating a safety problem. The increased demand for the eastbound left turn from Ashland Street to the I-5 northbound entrance ramp will generate queues that extend through and well beyond the adjacent southbound ramp terminal intersection.

Compounding the operational problems at the ramp terminal intersections are the presence of many accesses to Ashland Street very close to the interchange ramp terminal intersections. These public streets (Clover Lane and Washington Street) and private driveways create potential vehicular conflicts and delay that may impact operations at the interchange. ODOT interchange area access spacing standards, as stated in OAR 734-051 (Division 51), specify that the first right-in/right-out approach shall be no closer than 750 feet from ramp terminal intersections, and the first full-access approach shall be located no closer than 1320 feet (1/4 mile) of ramp terminal intersections along the cross street. While Division 51 standards may not be fully attainable in a developed area such as this, it is desirable to move in the direction of the standards through access management techniques such as consolidation or elimination of accesses and implementation of turn prohibitions. The purpose of these implementation measures is to ensure long-term public safety and operations of the interchange and associated immediate local street network.

Structural and Geometric Deficiencies

The bridge structure (ODOT Bridge No. 08745) is a reinforced concrete deck-girder span constructed in 1961 and has only had guardrail upgrades since. An Engineering Baseline Report (EBR) was prepared in 2003 that listed the deficiencies associated with the bridge. The EBR recommended that the bridge be replaced and listed the following structural and geometric deficiencies:

- Cracks in cross beams ranging from hairline to 0.060"
- Poor condition of deck
- Low sufficiency rating of 23.1
- Substandard bridge railing
- Narrow bridge roadway width (Two 12-foot lanes with 4-foot shoulders); urban area with no sidewalks or bike facilities.
- Presence of roadside hazards including substandard guardrail to bridge rail connections and guardrail terminals.
- Repair / replace cost estimate ratio exceeds 50%

Technical Memorandum #1: Definition and Background

- Existing vertical clearance is less than 17.5 feet

The EBR assumed that a feasible replacement structure would be a five-lane structure, and estimated the replacement cost at approximately \$7 million.

Bicycle and Pedestrian Deficiencies

There are currently no provisions for bicycle and pedestrian traffic. As noted previously, the interchange has urban development in all four quadrants.

ORS 366.514 specifies, in part, that "...reasonable amounts shall be expended as necessary to provide footpaths and bicycle trails, including curb cuts or ramps as part of the project. Footpaths and bicycle trails, including curb cuts or ramps as part of the project, shall be provided wherever a highway, road or street is being constructed, reconstructed or relocated." Three exceptions are provided: "(a) Where the establishment of such paths and trails would be contrary to public safety; (b) If the cost of establishing such paths and trails would be excessively disproportionate to the need or probable use; or (c) where sparsity of population, other available ways or other factors indicate an absence of any need for such paths and trails."

Goals and Objectives

The goals of this IAMP are to develop a plan for improvements that can be implemented over time to:

- Improve safety and operations of Interchange 14 for all modes of travel;
- Improve safety and operations of the I-5 mainline;
- Identify adequate local street network improvements for all modes of travel; and
- Protect the investment in I-5 and its interchanges and maintain the function of the interchange.

The objectives of the IAMP are to:

- Evaluate the need for capacity improvements based on the adopted, comprehensive land use plans of Ashland, the Regional Transportation Plan, and the mobility standards prescribed in the 1999 Oregon Highway Plan (OHP), 2003 Highway Design Manual (HDM) and the Ashland Transportation System Plan (TSP).
- Evaluate concepts to improve safety and increase capacity of the interchange and roadways to address existing and future needs. The concepts that will be evaluated consist of the following:
 - No Build
 - Five-lane bridge
 - Single-point urban interchange (SPUI)
 - Four-lane bridge with loop ramp in southeast quadrant
 - Diverging diamond interchange
- Develop an access management plan that provides for safe and acceptable operations on the transportation network and that meet, or move in the direction of meeting the access spacing standards prescribed in the OHP.
- Develop and evaluate potential management actions that have the potential to protect the future function, capacity, and mobility of the interchange.

- Protect the capability of the interchange to provide for bicycle and pedestrian traffic.

Interchange Function

The Green Springs Interchange provides the main link between the I-5 corridor and the southern end of Ashland via Ashland Street, also known as the Green Springs Highway and OR 66. This crossroad also provides one of the few interstate crossings in the vicinity and carries significant local vehicle, bicycle, and pedestrian traffic volumes that do not enter or exit the interstate. The interchange also provides interstate highway access for local residents and businesses in the interchange vicinity.

Interstate 5 is classified as an interstate highway, a designated freight route and is on the National Highway System. The primary function of interstate freeways is to serve inter-regional and interstate passenger and freight traffic. OR 66 is classified by the OHP as a District Highway. According to the OHP, the function of District-level highways is to “provide connections and links between small urbanized areas, rural centers and urban hubs, and also serve local access and traffic.”

The intended function of the Green Springs Interchange 14 is to safely and efficiently accommodate future vehicle, bicycle, and pedestrian traffic demands generated by population and employment growth in the region and within the City of Ashland.