Canyonville

Interchange

I-5 Exit 99: Interchange Area Management Plan

Oregon Department of Transportation

March 2006

Acknowledgements

Technical Advisory Committee

Clarice Dennison
Canyonville Planning Commission

Mike Lutrell
Douglas County Public Works Department

Kelly Niemeyer
Douglas County Planning Department

Wayne Shammel
Cow Creek Band of Umpqua Tribe of Indians, General Counsel

Lisa Cortes
Oregon Department of Transportation

Ingrid Weisenbach
Oregon Department of Transportation

Haregu Nemariam
Oregon Department of Transportation

Bob Grubbs
Oregon Department of Transportation

Ron Hughes
Oregon Department of Transportation

Steve Madison
Oregon Department of Transportation

THIS PAGE WAS INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

THIS PAGE WAS INTENTIONALLY LEFT BLANK

ACRONYMS

AADT	Average Annual Daily Traffic
ADT	Average Daily Traffic
AMP	Access Management Plan
AMS	Access Management Strategy
BIA	Bureau of Indian Affairs
CITY	City of Canyonville
CHAMPS	Central Highway Approach/Maintenance Permit System
County	Douglas County
Division 51	OARS 734-051
GIS	Geographic Information System
EA	Environmental Assessment
HDM	Highway Design Manual
IGA	Intergovernmental Agreement
IMA	Interchange Management Area
MP	Milepost
NB	Northbound
NEPA	National Environmental Policy Act
OAR	Oregon Administrative Rule
ODOT	Oregon Department of Transportation
OHP	Oregon Highway Plan
ORS	Oregon Revised Statute
OTIA	Oregon Transportation Investment Act
PD-03	Transportation Operations, Project Delivery Leadership Team Operational Notice for Project Development Access Management Sub-teams
Project	I-5: Exit 99 Interchange Improvement Project
RAME	Region Access Management Engineer
SB	Southbound
SIP	Safety Improvement Program
SPIS	Safety Priority Index System
TPR	Transportation Planning Rule

Tribe	Cow Creek Band of Umpqua Tribe of Indians
UGB	Urban Growth Boundary
V/C	Volume to capacity ratio

DEFINITIONS

Access Control: No right of access exists between a property abutting the highway and the highway. The right of access may have been acquired by the Department or eliminated by law.

Alternate Access: The physical existence of other means to access a property than the proposed approach, such as an existing public right of way, another location on the subject state highway, an easement across adjoining property, a different highway, a service road, or an alley, including singularly or as a joint approach, but without a conclusive determination that the alternate access is "reasonable" as defined in section (51) of this rule.

Approach: Legal term for roads or driveways providing access to the State highway.

Average Annual Daily Traffic (AADT): The average flow on an average day, i.e. Sunday to Saturday inclusive, throughout the year and is expressed as a 24-hour flow.

Average Daily Traffic (ADT): The total volume passing a point or segment of a road facility, in both directions, during a 24-hour period.

Access Management Plan (AMP): A plan for a designated section of highway that identifies the location and type of approaches and necessary improvements to the state highway or local roads and that is intended to improve current conditions of the section of highway by moving in the direction of the access management spacing standards.

Access Management Strategy (AMS): A project delivery strategy that identifies the location and type of approaches and other necessary improvements to the highway and that is intended to improve current conditions of the section of highway by moving in the direction of the access management spacing standards within the project area. Strategies are short-term project specific actions only to be considered by the project development team. An AMS does not require formal adoption.

Central Highway Approach/Maintenance Permit System (CHAMPS): A computerized system used by ODOT to manage the application/permit processes and records for Approach, Utility, and Miscellaneous permits.

Change of Use: A change in the land use, volume, or type of traffic utilizing an approach. For a more specific definition, see OAR 734-051(110).

Deviation: A departure from the access management spacing standards.

Division 51: Oregon Administrative Rules (OAR) 734-051-0010 through 734-051-0560 and Tables 1, 2, 3, 4, 5, 6, 7 and 8 adopted and made a part of division 51 rules and Figures 1, 2, 3 and 4 adopted and made a part of division 51 rules. Governs the

issuance of Construction Permits and Permits to Operate, Maintain and Use an Approach for approaches onto state highways. (OAR 734-051)

Geographic Information Systems (GIS): A computerized system designed to manipulate, analyze, and present information tied to a spatial location.

Grandfathered Approaches: A legally constructed approach that was constructed before permission from ODOT was required by law, prior to 1949 (OAR 734-051-0040 (21))

Grant of Access: Constitutes the transfer of a property right and is required to create a new approach where access control exists.

Indenture of Access: Modification in the deed record of the location, width or use restrictions of an existing reservation of access. It is required when an applicant wishes to move the access point more than 10 feet from the location listed in the deed. It is also required to increase the deeded width of an existing approach or to remove use restrictions other than a farm use.

Influence area of an interchange: The area 1320 feet from an interchange ramp terminal measured on the crossroad away from the mainline.

Interchange Area Management Plan (IAMP): A plan similar to an Access Management Plan or an Access Management Plan for an Interchange developed to plan for and manage grade-separated interchange areas to ensure safe and efficient operation between connecting roadways and to protect the functional integrity, operations, and safety of the influence area of an interchange. Interchange Area Management Plans typically include analysis of the relationships between existing local land uses, zoning and long range plans and the state and local roadway network within a designated study area around an existing or planned interchange, and identify necessary improvements to approach roads and the local street network to support the long-term safety and efficiency of the interchange.

Intergovernmental Agreement (IGA): A legal contract between two or more governmental agencies.

Milepost (MP): A point on a highway indicating the distance, in miles, measured along the course of the highway, usually from west to east or north to south.

Move in the direction of: means that changes in the approach (es) to a property abutting the highway would bring a site closer to conformance with existing highway standards including where existing approaches to the highway or expressway are combined or eliminated resulting in a net reduction in the number of approaches to the highway or expressway, improvements in spacing of private approaches or public approaches, or improvements to intersection sight distance.

Oregon Highway Plan (OHP): Defines policies and investment strategies of Oregon's state highway system for the next 20-years. It further refines the goals and policies of the Oregon Transportation Plan and is part of Oregon's Transportation System Plan.

Oregon Transportation Investment Act (OTIA): Bonding measure that is used to finance preservation and modernization projects chosen by the Oregon Transportation Commission.

Permitted approach: A legally constructed approach existing under a valid Permit to Operate.

Private approach: An approach serving one or more properties and is not a public approach as defined in section (50) of this rule.

Public approach: An approach serving multiple properties, owned and operated by a public entity, and providing connectivity to the local road system.

Reservation of Access: The limitation of an abutting property owner's common law right of access to a specific location where ODOT has acquired access control along the highway frontage. A reservation of access is designated to a specific location and may be subject to use restrictions and a specific width. The reservation of access must be designated and specifically identified in the deed or final judgment where the state acquired the access control rights. A reservation of access provides the abutting property owner with the right to apply for an approach pursuant to OAR 734-051-0080 through 734-051-0210.

Reasonable Access: The ability to access a property in a manner that meets the criteria under ORS 374.310(3).

Redevelopment: The act or process of changing existing development including replacement, remodeling, or reuse of existing structures to accommodate new development that is consistent with current zoning.

Region Access Management Engineer: A professional engineer employed by the Department who by training and experience has comprehensive knowledge of the Department's access management rules, policies, and procedures, or as specified in an Intergovernmental Agreement delegating permitting authority as set forth in OAR 734-051-0035(3).

Restricted Use Approach: An approach that is intended to provide vehicular access for a specific use and for a limited volume of traffic. Such uses are determined by the Department and may include emergency services, government, and utility uses. Mitigation required as a part of approach permit approval or a condition on a construction permit does not by itself create a "restricted use approach."

Safety Improvement Program (SIP): One component of the Project Safety Management System aimed at reducing fatalities and serious injury accidents in Oregon. Road segments are in 5-mile segments and are ranked by number of fatalities or serious injuries:

Category 1: 0 (no) fatal or injury A (serious) crashes

Category 2: 1-2 fatal or injury A crashes
Category 3: 3-5 fatal or injury A crashes
Category 4: 6-9 fatal or injury A crashes
Category 5: 10 or more fatal or injury A crashes

Safety Priority Index System (SPIS): A method developed by the Oregon Department of Transportation (ODOT) for identifying hazardous locations on state highways. The SPIS score is based on three years of crash data and considers crash frequency, crash rate, and crash severity. Types of injuries are divided into three categories:

Type A: Serious injuries
Type B: Moderate injuries
Type C: Minor injuries

ODOT bases its SPIS on 0.10 mile segments to account for variances in how crash locations are reported. To become a SPIS site, a location must meet one of the following criteria:

- Three or more crashes have occurred at the same location over the previous three years
- One or more fatal crashes have occurred at the same location over the previous three years

Each year, a list of the top 10% SPIS sites are generated for review by the five Region Traffic Engineers. These sites are evaluated and investigated for safety problems.

Transportation Planning Rule (TPR): Implements Statewide Planning Goal 12 (Transportation) and promotes the development of safe, convenient and economic transportation systems that are designed to reduce reliance on the automobile.

Transportation System Plan (TSP): Establishes a system of facilities and services to meet local transportation needs over a 20-year period.

Tribe: Cow Creek Band of Umpqua Tribe of Indians,

Urban Growth Area (UGA): The area within the Urban Growth Boundary and outside the city limits.

Urban Growth Boundary (UGB): A legal boundary line used to separate urban and urbanizable land from rural land.

Volume to capacity ratio (V/C): The peak hour traffic volume (vehicles/hour) on a highway section divided by the maximum volume that the highway section can handle.

1: INTRODUCTION

It is the policy of the State of Oregon to plan for and manage grade-separated interchange areas to ensure safe and efficient operation between connecting roadways. The Oregon Department of Transportation (ODOT) Region 3 is required to prepare an Interchange Area Management Plan (IAMP) for the proposed I-5: Exit 99 Interchange Improvement project (Key 12707). It is the goal at the time of redesign of the interchange to meet the appropriate spacing standards, but at the very least, to improve the current conditions by moving in the direction of the spacing standards (OAR 734-051-0190(2) (B)). The interchange project is located at mile point 99.53 within the Canyonville Urban Growth Boundary (UGB). The IAMP must be developed in accordance with the Oregon Highway Plan (OHP) Policy 3C, Oregon Administrative Rule(OAR) 734-051-0155, Interchange Access Management Spacing Standards for Approaches, and the Oregon Transportation Investment Act (OTIA) conditions for interchanges adopted by the Oregon Transportation Commission (OTC) on January 6, 2002.

The IAMP will focus on existing and future land use and access management in the interchange's area of influence. The goal of the IAMP will be to improve and protect operations of the North Canyonville interchange area and protect the upcoming project that will improve the interchange. The IAMP will include an Access Management Strategy (AMS) that will identify short-term project specific actions only. The IAMP will also include recommended long-term strategies for the area outside of the project limits, but within a ¼ mile of the interchange ramp terminals. This information will help continue coordination efforts between Douglas County (County), Cow Creek Band of Umpqua Tribe of Indians (Tribe), Canyonville (City), and ODOT.

OBJECTIVES

The Canyonville IAMP is intended to outline access management strategies that will be considered for implementation in conjunction with the I-5: Exit 99 Interchange Improvement project and recommended long-term access improvements for the County to consider for future improvements to roadways under their jurisdiction in the influence area. The IAMP will provide an analysis of potential land use changes around the interchange. These will allow the City and County to refine local land use designations and Comprehensive Plan policies in order to ensure that growth which impacts the interchange will not overwhelm future interchange improvements.

I-5: EXIT 99 INTERCHANGE IMPROVEMENT PROJECT BACKGROUND

The project is being coordinated with the City, County, and Tribe to improve the existing interchange. The I-5: Exit 99 Interchange Improvement Project (KN 12707) is intended to mitigate traffic impacts from existing and planned developments, improve access management at the off-ramp and on-ramps, replace the two I-5 overpass bridges, and improve operations.

The project is located on Interstate 5 (I-5) approximately 0.4 mile north of the center of the city of Canyonville, Douglas County, Oregon. The Canyonville Exit 99 interchange is

within the Canyonville urban growth boundary (UGB), approximately 25 miles south of Roseburg and 40 miles north of Grants Pass. Most of the project area is within existing ODOT right-of-way. The existing northbound (NB) and southbound (SB) bridges carry I-5 traffic over Irwin Access Road. The project is located in Sections 21 and 28, Township 30 South, Range 5 West, Willamette Meridian, on Douglas County Assessors Tax Lot Map T30S-R5W-S21. Adjacent land uses include Seven Feathers Truck Stop to the northwest, the Seven Feathers Casino, residential, and commercial development to the southeast, and residential and commercial developments to the northeast. A steep, undeveloped, forested hillside is southwest of the project area.

The project area is located within the South Umpqua River basin in the Klamath Mountains Ecoregion. The South Umpqua River is located east of the project area. The surrounding landscape is mostly forested, with mountainous topography. The project area is situated at an elevation of approximately 750 feet, at the base of a 1,200-foot summit.

The I-5: Exit 99 interchange project area consists of an I-5 off-ramp for SB traffic and I-5 on-ramps for NB and SB traffic. Figure 1 shows the project area and surroundings. There are two lanes of traffic in each direction of I-5. Two three-span bridges at the interchange allow I-5 traffic to pass over Irwin Access Road, which is on a northeast-southwest alignment. The existing bridges were built around 1956 and are on the list of cracked bridges identified throughout the state. ODOT proposes to replace the two bridges (overpasses). In conjunction with the necessary bridge replacements, ODOT would realign the existing Exit 99 on-ramps for both NB and SB I-5, realign the existing Exit 99 off-ramp for SB I-5, and realign and improve adjacent roads. Improvements to Jeffries Drive and a road providing access to tribal property to the west of I-5 would require minor improvements to a culvert carrying Jordan Creek beneath I-5 (DEA 2005).

Figure 1: Interchange Management Area

Interchange Management Area (IMA)

Not to Scale

Information displayed on this map was derived from multiple sources. Maps are only for graphic display and general planning purposes. The Oregon Department of Transporatation and the State of Oregon make no representations, expressed or implied, as to the accuracy of the information or data contained herien. The information or data is provided with the understanding that it is not guaranteed to be correct or complete.

N

THIS PAGE WAS INTENTIONALLY LEFT BLANK

Purpose and Need for the Project

The purpose of the I-5: Exit 99 Bridge Replacements and Interchange Improvements Project is to replace the two I-5 overpass bridges, to provide capacity for additional traffic expected from planned development, and to improve access management at the off-ramp and on-ramps for I-5.

The bridge structures at Exit 99 are listed on the state cracked bridge list. Also, because the bridges do not provide adequate clearance over Irwin Access Road, the new bridge structures would be built with adjustments made to the underpass in order to meet clearance requirements. As part of the Oregon Transportation Investment Act (OTIA) III – a 10-year, $3 billion program – ODOT will repair or replace hundreds of bridges, pave and maintain city and county roads, improve and expand interchanges, add new capacity to Oregon's highway system, and remove freight bottlenecks statewide (ODOT no date). The two I-5 overpass bridges would be replaced under the OTIA III program.

The Exit 99 interchange is being put under pressure by additional traffic generated by continuing growth and development in the Canyonville area. Much of the land in the project area is owned by the Cow Creek Band of the Umpqua Tribe of Indians (Tribe), including the Seven Feathers Hotel and Casino Resort located in the southeast quadrant of the project area. New development planned for both sides of the interchange is expected to draw additional traffic to the area. The planned development includes a 200-space RV park west of the interchange (under construction), an interpretive garden northwest of the interchange, an 18-hole golf course with driving range northwest of the interchange, and a 12-store outlet shopping mall area on the east side of the interchange. The rest areas closest to Exit 99 to the north and to the south have either been closed or are scheduled to be closed in the near future. A potential new rest stop being considered for the north end of the SB off-ramp frontage road, called Jeffries Drive, would put additional pressure on this interchange.

The configuration of the local roads connecting with the SB and NB ramps is inefficient and challenging to drivers. There are private accesses in close proximity to the SB off-ramp along Jeffries Drive, which connects to the SB off-ramp in the existing configuration. The configuration of Jeffries Drive with the SB off-ramp requires vehicles to make a tight turn, which is difficult for a high percentage of the trucks using the SB off-ramp. The junction of the NB on-ramp with Stanton Park Road, a local road also known as Yokum Road, is aligned at a severe acute angle rather than being perpendicular. This configuration is confusing to drivers and can present an unsafe situation.

The project is needed because of the above conditions. ODOT's proposed upgrade of Exit 99 on I-5 to accommodate traffic demands for the interchange would require ODOT to obtain a permanent easement on tribal trust land for highway right-of-way purposes (DEA 2005).

An Environmental Assessment (EA) was prepared to address the potential environmental effects of the Project and the potential effects granting an easement on tribal trust land to ODOT. The EA was prepared in accordance with the Bureau of Indian Affairs (BIA) National Environmental Policy Act (NEPA) standards. In addition,

and Interchange Modification Request was prepared to request Federal Highway Administration (FHWA) approval for the modified interchange. The policy addresses the requirements contained in the policy statement "Additional Interchanges to the Interstate System", published in the Federal Register on February 11, 1998.

INTERCHANGE MANAGEMENT AREA

The IAMP interchange area of influence extends 1/4 mile (1320 feet) beyond the end of the interchange ramp terminal intersections of Exit 99 North Canyonville along the approach roads. Figure 1 shows the approximate boundary of the North Canyonville Interchange Management Area (IMA).

The I-5 Interchange Improvement Project will occur around the NB on-ramp and SB on/off-ramp, however, for the purpose of a 20-year IAMP, the study area has been expanded to include the Exit 99 NB off-ramp. The NB off-ramp's interchange area of influence is outside of the I-5: Exit 99 Interchange Improvements Project (Project) Limits. The minimum interchange area of influence extends ¼ in each direction from ramp terminals. The ¼ mile south of the NB off-ramp extends onto Main Street, under County jurisdiction; therefore, long-term strategies have been developed as recommendation to the County. This is also the case with Stanton Park Road north of the NB on-ramp. Currently Stanton Park Road is connected to the ramp terminal and intersects with Main Street, but after the Project it will be disconnected from the ramp and realigned to intersect with Gazely Bridge Road east of its current intersection with Main Street. The IMA boundary shown on the figure is approximate. Some land was included in the analysis west of the boundary to include proposed land uses. The parcels facing the frontage roads will be the focus of the access management analysis.

The area is urban in nature and is characterized by 45 approach points fronting the approach roads to the interstate. The effort will focus on identifying opportunities for interchange area access management measures.

2: OREGON REVISED STATUTES, OREGON ADMINISTRATIVE RULES, PLANS, POLICIES AND STANDARDS

It is important that the development of this plan be completed in conformity with state and local plans, policies and standards. Following are the relevant documents that were consulted prior to the development of the IAMP and a brief description of how they relate to the IAMP.

THE NORTHWEST ORDINANCE (SIGNED JULY 13, 1787)

In 1787, the U.S. Congress passed the Northwest Ordinance, which contained a section titled the Utmost Good Faith Law, which asserted: "*The utmost good faith shall always be observed toward the Indians; their lands and property shall never be taken from them without their consent; and in their property, rights, and liberty, they shall never be invaded or disturbed by Congress; but laws founded in justice and humanity shall from time to time be made from preventing wrongs done to them, and preserving peace and friendship with them*." The Organic Act (1848) created the Oregon Territory, extended the Utmost Good Faith Law to Oregon Territory, and confirmed all Indian land titles in the territory.

THE UNITED STATES CONSTITUTION (SIGNED SEPTEMBER 17, 1787)

Article 1, Section 8, clause 3, commonly referred to as the Indian commerce clause. This clause states that "*The Congress shall have power to regulate commerce with foreign nations, and among the several states and with Indian Tribes."*

Article VI, Section 2, states: "*this constitution and the laws of the United States which shall be made in pursuance thereof and all treaties made, or shall be made under the authority of the United States shall be the Supreme law of the land, and the Judges in every state shall be bound thereby, anything n the Constitution or laws of the state to the contrary notwithstanding."*

ORS 374 CONTROL OF ACCESS TO PUBLIC HIGHWAYS

The ORS contains guidance on permitting accesses to the highway. More detailed direction regarding these policies is contained in other documents, such as Division 51.

OAR 734–051 (DIVISION 51) HIGHWAY APPROACHES, ACCESS CONTROL, SPACING STANDARDS AND MEDIANS

Division 51 governs the permitting, management, and standards of approaches to state highways to ensure safe and efficient operation of the state highways. The following OARs shall specifically guide the development of the IAMP:

- OARs 734-051-0125 Access Management Spacing Standards for Approaches in an Interchange Area;
- -0135 Deviations from Access Management Spacing Standards;

- -0155 Access Management Plans, Access Management Plans for Interchanges, and Interchange Area Management Plans;
- -0275 Removal of Approaches; and
- -0285 Project Delivery.

Policies were identified which address the following:

- How to bring existing and future approaches into compliance with access spacing standards, and ensure the safe and efficient operation of the highway;
- The purpose and components of an IAMP; and
- Requirements regarding mitigation, modification and closure of existing approaches as part of project development.

OAR 660-012 (TPR) TRANSPORTATION PLANNING RULE

The purpose of the rule is to promote safe, convenient and economic transportation systems and coordination between affected levels of government in all steps of a transportation system plan (TSP). 660-012-0020 requires that TSPs include a road plan, which should address Access Management issues. The AMP is not intended to fulfill access management requirements in a TSP as outlined in the TPR but rather provide supplemental information on a specific highway segment. Statewide Goal 12 Transportation Planning is implemented through the TPR. The TPR contains numerous requirements governing transportation planning and project development, several of which warrant comment in this report.

The TPR requires local governments to adopt land use regulations consistent with state and federal requirements "to protect transportation facilities, corridors and sites for their identified functions OAR 660-012-0045(2)." This policy is achieved through a variety of measures, including:

- Access control measures which are consistent with the functional classification of roads and consistent with limiting development on rural lands to rural uses and densities;
- Standards to protect future operations of roads;
- A process for coordinated review of future land use decisions affecting transportation facilities, corridors or sites;
- A process to apply conditions to development proposals in order to minimize impacts and protect transportation facilities, corridors or sites;
- Regulations to provide notice to ODOT of land use applications that require public hearings, involve land divisions, or affect private access to roads; and
- Regulations assuring that amendments to land use designations, densities and design standards are consistent with the functions, capacities and performance standards of facilities identified in the TSP. See also OAR 660-012-0060.

Land Conservation Development Commission's rules implementing Goal 12 do not regulate access management. ODOT adopted OAR 734, Chapter 51 to address access

management and it is expected that ODOT, as part of this project, will engage in access management consistent with its Access Management Rule.

STATEWIDE PLANNING GOAL 2 AND OAR 660, DIVISION 4

Goal 2, Land Use Planning, requires that a land use planning process and policy framework be established as a basis for all decisions and actions relating to the use of land. This Goal is one of four statewide planning goals that play a key role in management planning for the Interchange 99 area. The other goals are Goals 11 (Public Facilities Planning), 12 (Transportation) and 14 (Urbanization). Goal 2 is important for two reasons. First, Goal 2 requires planning coordination between those local governments and state agencies "which have programs, land ownerships, or responsibilities within the area included in the plan." Here, Goal 2 will require that ODOT coordinate with Douglas County, Tribe, and the City of Canyonville, all of which have planning authority over the area impacted by the proposed interchange improvements. Coordination is particularly important because development within both the City and the County will impact use of the proposed interchange, and land use decisions in that area could affect future use and operation of the interchange.

Second, Goal 2 requires that city, county, state and federal agency and special district plans and actions related to land use are "consistent with the comprehensive plans of cities and counties and regional plans adopted under ORS Chapter 268." This provision is important because elements of an IAMP will need to be consistent with the county Transportation System Plan (TSP) and the City Comprehensive Plan. The Tribe does not have a plan, but the elements developed in the IAMP are sensitive to possible future development provided by the tribe. The tribe has been given the opportunity to comment on this plan.

STATEWIDE PLANNING GOAL 11 AND OAR 660, DIVISION 11

Statewide Planning Goal 11, Public Facilities Planning requires cities and counties to plan and develop a timely, orderly and efficient arrangement of public facilities and services to serve as a framework for urban and rural development. The goal requires that urban and rural development be "guided and supported by types and levels of urban and rural public facilities and services appropriate for, but limited to, the needs and requirements of the urban, urbanizable and rural areas to be served."

STATEWIDE PLANNING GOAL 12 AND OAR 660, DIVISION 12

Goal 12, Transportation, requires cities, counties, metropolitan planning organizations and ODOT to provide and encourage a safe, convenient and economic transportation system.

STATEWIDE PLANNING GOAL 14

Goal 14, Urbanization, requires an orderly and efficient transition from rural to urban land use. This is accomplished through the establishment of urban growth boundaries

and unincorporated communities. Urban growth boundaries (UGBs) and unincorporated community boundaries separate urbanizable land from rural land. Land uses permitted within the urban areas are more urban in nature and higher intensity than in rural areas, which primarily include farm and forest uses.

Goal 14 is important because it focuses development within relatively compact boundaries of the UGB and to a lesser degree in unincorporated communities. This compact development helps contain the costs of public facilities, such as transportation, by reducing the need for facilities farther out and helping jurisdictions better anticipate where growth will occur. The location, type, and intensity of development within the study area will impact use of the interchange and could affect future use and operation of the interchange.

OREGON TRANSPORTATION PLAN (OTP) – 1992

The OTP is ODOT's policy plan. The goal of the OTP is to guide the development of a safe, convenient, and efficient transportation system that promotes economic prosperity and livability for all Oregonians. The plan promotes a balanced multimodal system and encourages cooperation among state, regional and local governments.

Policies were identified which address the following:

- Cooperation between state and local jurisdictions to ensure a safe and efficient transportation system;
- Efficient movement of goods on the highway; and
- Public involvement programs.
- Cooperation with representatives of Indian tribal governments in transportation planning and project development when such plans and projects are on or adjacent to Indian reservations.

The OTP is intended to be broad in scope and general. More detailed direction regarding these policies is contained in other modal system plans, facility plans, and documents as discussed below.

OREGON HIGHWAY PLAN (OHP) – 1999

The OHP represents one modal element of the OTP. It supports the OTP through policies and actions that address system classification/definition, system management, access management, travel alternatives and environmental and scenic resources. The OHP promotes coordination and collaboration with local governments. The OHP reinforces the need to plan for the long term and specifically requires the development of Interchange Area Management Plans to protect the function of interchanges to provide safe and efficient operation between connecting roadways and to minimize the need for major improvements of existing interchanges. (OHP Action 3C.1) These plans are required when an interchange is improved or constructed.

Policies were identified which address the following:

- Cooperation with local jurisdictions;

- Improvements to the highway;
- Mobility and access spacing standards;
- Interchange access management areas;
- Traffic signal placement; and
- Public involvement programs.

OREGON BICYCLE AND PEDESTRIAN PLAN – 1995

The plan provides guidelines to encourage walking and biking as a viable alternative to the single occupancy vehicle as well as information on how different issues affect these modes. Placement and type of accesses are important for pedestrians and bicyclists since accesses can lead to more direct routes but at the same time, each access can become a point of conflict for the pedestrian and bicyclist with merging or crossing vehicles. Each access needs to be examined and evaluated with these modes in mind in addition to vehicles.

PD-03 PROJECT DEVELOPMENT ACCESS MANAGEMENT SUB-TEAMS (2003)

The purpose as stated in the Operational Notice is to provide detailed guidance and structure for those required to make and carry out appropriate access management decisions in the development of highway projects. This document will guide the Sub-team during the development of the AMS & IAMP. PD-03 outlines the formation, membership and function of access management sub-teams. It further outlines specifics for the sub-teams for guidance on operation, modernization, preservation, bridge and safety projects.

DOUGLAS COUNTY TRANSPORTATION SYSTEM PLAN

In compliance with the Transportation Planning Rule (TPR), Douglas County has developed a Transportation System Plan (TSP). The TSP guides the management of existing transportation facilities and the design and implementation of future facilities for the next 20 years. TSP addresses access management and recommends standards for county roads in its transportation policies. Access management standards on State highways reference OHP standards. The development of an IAMP must fit within the context of the county's TSP.

DOUGLAS COUNTY LAND USE DEVELOPMENT ORDINANCE (LUDO)

The Douglas County LUDO contains ordinances and zoning codes implementing the plans and policies outlined in the Comprehensive Plan. Ordinances relating to access management for both County and State Highways can be found in this document and are incorporated into the strategies in the IAMP.

CITY OF CANYONVILLE / DOUGLAS COUNTY URBAN GROWTH MANAGEMENT AGREEMENT

This is an agreement between the City of Canyonville and Douglas County for the management of the Canyonville Urban Growth Boundary. Standards for streets within

Urban Growth Boundary are explained. Specifically, section 10.1.3 states that, "all new streets within the UGB that are not part of a land division or planned development shall be constructed to coordinated urban street construction standards. The coordinated standards would apply County construction standards which would be coordinated to allow for the amenities or improvements the City may require in the future." In addition, section 10.2 Existing Streets within the UGB applies by determining which jurisdiction is responsible for maintenance. Section 1.3 of the UGMA states that, "the City shall have jurisdiction, within the UGA, to implement the City Plan using city implementing ordinances." Furthermore, "the County adopts, and incorporates by reference, the current (as of the date of this agreement) City Comprehensive Plan, as it applies to the Urban Growth Area (UGA), and the current City implementing ordinances (or codes) and authorizes the City to administer those ordinances or codes within the UGA as provided for this agreement."

CITY OF CANYONVILLE BICYCLE/PEDESTRIAN CORRIDOR DESIGN (1998-1999)

The plan provides preliminary design for the primary bicycle/pedestrian corridor of Main Street from C.V. Stanton Park (north end) to Holiday Gardens (south end). The plan:

- Identifies existing conditions of the primary bicycle/pedestrian corridor, the citywide bicycle/pedestrian system, and destinations;
- Summarizes the Main Street bicycle/pedestrian corridor and future bicycle /pedestrian system planning in Canyonville; and
- Reviews relevant bicycle/pedestrian goals and policies identified in the City's Comprehensive Plan, Subdivision Ordinance, Draft Local Street Network Plan and the Oregon Bicycle and Pedestrian Plan.

Specific to the IAMP, the plan includes a policy that, "at the time of development or redevelopment, property fronting Main Street will provide only one direct access to Main Street. In no case will more than two driveways be closer than 300 feet on a single tax lot. Shared driveways between more than one tax lots are encouraged. Access to local streets, perpendicular to Main Street is encouraged."

This plan recommends strategies that will help the City move towards this goal through recommendations to the County that has permitting rights to Main Street.

CITY OF CANYONVILLE COMPREHENSIVE PLAN

The City of Canyonville has developed a Comprehensive Plan containing major policies concerning desirable future growth over the next two decades. The Comprehensive Plan indicates broad categories of land use throughout the urban area and provides a framework for the involvement of both the legislative body and the public in the planning process. The IAMP must be consistent with the City's Comprehensive Plan.

Goals and Policies were found which state the following:

- Goal 1: To improve traffic flow and increase safety of the present system.
- Policy 6: The City shall work with the Oregon State Department of Transportation and Douglas County to improve the transportation system in the City consistent with

the Goals and Policies of the plan in regard to projects planned within the city limits or the urban growth boundary.

- Policy 7: Coordinate with the Oregon Department of Transportation (ODOT) to mitigate transportation impacts that may result from commercial and industrial development at the north I-5 interchange. No plan amendment shall be approved in Canyonville that may adversely affect the level-of-service (LOS) at the Exit 99 interchange, unless a transportation impact study (TIS) has been approved in coordination with ODOT, consistent with OAR 660-12-060.

Policy 7 will ensure coordination between ODOT and the City in planning appropriate land uses and facilities protect the interchange. It is recommended that the City continue to coordinate with ODOT and the County in the event that there is not a plan amendment, but a significant change of use or increase in traffic volumes.

CITY OF CANYONVILLE LAND USE ORDINANCE

The Canyonville LUDO contains ordinances and zoning codes implementing the plans and policies outlined in the City's Comprehensive Plan. Ordinances relating to access management, transportation, and land use can be found in this document and will be incorporated into the strategies in the IAMP as appropriate.

THIS PAGE WAS INTENTIONALLY LEFT BLANK

3: EXISTING CONDITIONS

LAND USE / ZONING

Pursuant to the requirements stated in the Oregon Administrative Rule 734-051-0125 for the preparation of an IAMP, a summary of land uses are described below for the IMA. This section provides a description of the existing comprehensive plan designations.

Canyonville

Canyonville has land use planning jurisdiction for areas within UGB and City limits. The City zoning designations in the IMA include tribal lands; single-family residential, commercial retail, commercial highway related, and Community Service (see **Figure 2**). Specifically, the land within City limits in the IMA consists of the two zones R-1 Single Family Residential allowing 2-5 units/acre and C-2 commercial retail. The majority of the land located within the UGB is Tribal lands. The other zones found in the UGB within the IMA are C-2 Commercial Retail (Best Western Motel), CS Community Service (Masonic Cemetery), C-3 Commercial Highway related (Burger King), and R-1 Single Family Residential. The management land within the UGB is coordinated by the UGMA between the City and County.

On the east side of the Interstate north of Gazley Rd is the only Commercial Highway zoned parcel (Burger King). The rest of the parcels in this area are zoned R-1 Residential and Tribal. Current land uses are residential and two small motels.

The dominant feature on the east side of the Interstate south of Gazley Rd in the UGB is the Seven Feathers Hotel and Casino. The other existing land use in this area is the Masonic Cemetery (CS; Community Service). The zoning is commercial; however, the majority of uses are non-conforming single family residential. Uses south of the project area in City limits include residential and a few commercial businesses. The commercial businesses consist of two automobile services, fencing business, and a small second hand store located on the bottom level of a residence.

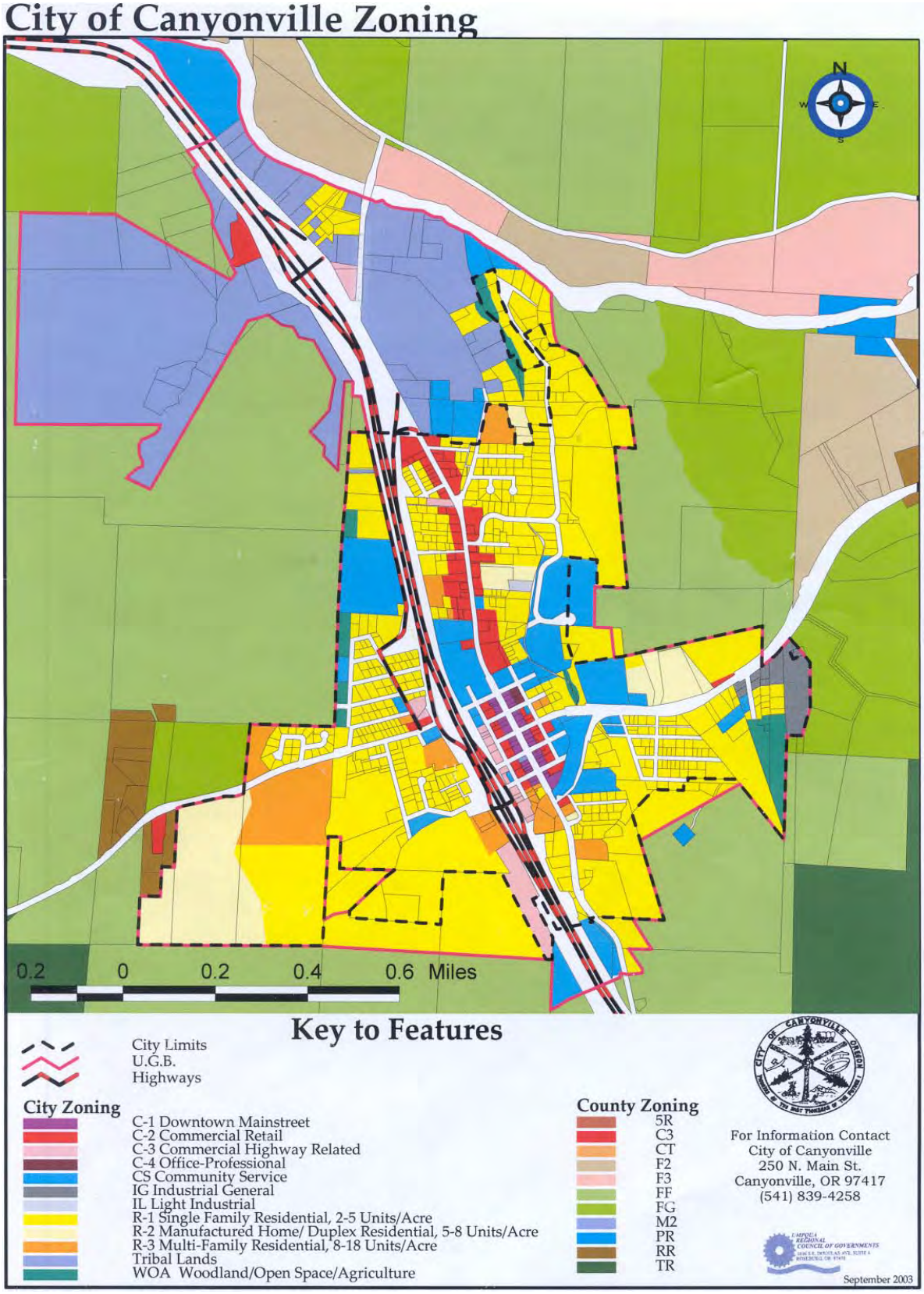
The dominant feature on the west side of the interstate is the Seven Feathers Truck and Travel center. The only non-tribal parcel in this part of the study area is Best Western Motel zoned C-2 commercial retail.

County

The County zoning within and surrounding the IMA is primarily Farm Forest (FF) (see **Figure 2**). The stated purpose of the classification is to promote management utilization, and conservation of current, or potential, forested grazing lands. Uses in this zone are limited to farm and forest use, associated buildings, and limited home occupations. The minimum lot size is 80 acres. Across the river to the northeast, lies Exclusive Farm Use – Cropland (F2, F3). The purpose of the zones is to provide areas for the continued agricultural use and permit the establishment of only those new uses which are compatible with agricultural activities. The minimum property size established by this zone (Article 4) is intended to promote commercial agricultural pursuits, such as

grain lands, croplands and horticultural areas. Permitted uses are farm use, their associated buildings and accessory uses, and propagation or harvesting of a forest product. The difference between the two is the acreage minimums.

Figure 2: City of Canyonville Zoning map



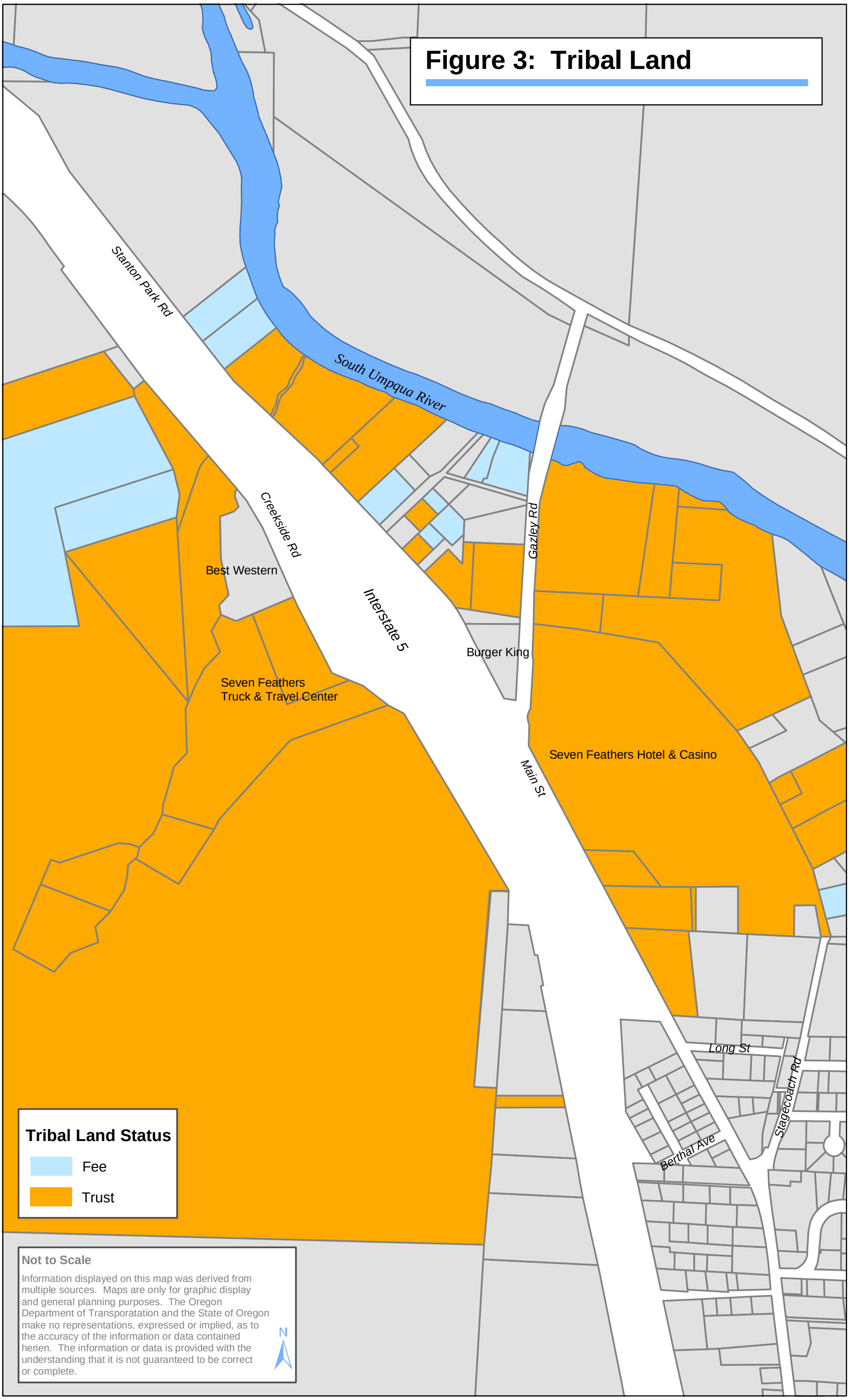
THIS PAGE WAS INTENTIONALLY LEFT BLANK

Tribal

Land in Trust is for the benefit of current and future generations of the tribal members. The title is held legally by the federal government, acting as trustee, in a trust status. This status means that the land is not subject to state or local laws and falls under tribal government authority. Land held in “trust” by the federal government cannot be sold, transferred, leased or used without tribal approval. However, Tribal “fee” land (private corporate ownership) is generally subject to the same zoning and subdivision regulations of the local jurisdiction where the land is located. All trust land under tribal law is zoned multi-use. The Tribe shall be required to apply for a permit to roadways under state and county jurisdiction (See **Figure 3**).

THIS PAGE WAS INTENTIONALLY LEFT BLANK

Figure 3: Tribal Land



THIS PAGE WAS INTENTIONALLY LEFT BLANK

ROAD CHARACTERISTICS

These data were gathered in order to gain understanding about the Interstate. Information will be helpful in identifying access issues and developing recommendations for access management for the project area.

Table 1: Current Network[1]

County Road No.	Name	Classification	Speed	Jurisdiction
001B	Stanton Park Road(Realigned to Gazley Bridge Road)	Major Collector	45 MPH	County
001C	Main Street(S from I-5 Exit 99 NB off-ramp to 3rd Street)	Major Collector	25 MPH/20 through School District	County
N/A	Main Street (Gazely Bridge Road to I-5 Exit 99 NB off-ramp)	Local Interest Road	25 MPH/20 through School District	State
NA	Creekside Blvd. (I-5 Exit 99 to End)	Local Interest Road	30 MPH	State
035	Gazley Bridge Road	Major Collector	45 MPH	County
N/A	Long St	Local	25 MPH	City
N/A	Klenke Ln	Local	Private	Tribe
N/A	I-5 Mainline	Interstate/ Principal Highway	65 MPH	State

Based on Functional Classification, different standards apply for speed, access, and mobility standards. Functional classification is the process by which streets and highways are grouped into classes, or systems, according to the character of service they are intended to provide. The county uses a four part classification system to describe function of the roads under their jurisdiction. This system includes principal highways, arterials, collectors, and local roads. Collector roads are further broken down into major and minor collectors. The following characteristics apply to classifications within the IMA:

[1] As of Cooperative Improvement Agreement I-5: Exit 99 Interchange Improvements & Bridge Replacement Douglas County No. 21133.

County

Principal Highway – These fall under state jurisdiction.

Major collector – They provide the connection of major residential and activity centers. Such roads primarily accommodate through traffic and channel traffic from local and minor collectors onto streets of higher classification. Access to adjacent properties may be limited to balance between movement and access. In rural areas, major collectors connect minor rural communities, provide secondary access between major communities and provide access to major employment, recreational and rural residential areas.

Minor collector – They are intended to distribute local traffic onto other minor collector, major collector or arterials. Property access onto minor collectors is often allowed. In rural areas, minor collectors also connect rural residential areas.

Local – They are intended to provide direct access to abutting property and move traffic from its origin to the major road network. The through movement of traffic on local roads is to be discouraged.

City

Canyonville uses arterial, collector, and local street classifications. The classification characteristics for classifications existing in the study area are as follows:

Local – They provide access to abutting property and their secondary function is to move local traffic to a collector. Through traffic, especially buses and heavy trucks should be strongly discouraged.

Current Deficiencies

Table 2: Geometric deficiencies include:

Deficiency	Standard
SB ramp terminal intersection has limited sight distance (22 miles/h) due to horizontal curvature.	At least 31 miles/h
Numerous driveways and intersections along northbound ramps.	No access point along ramps
Private Business access along Creekside Rd. is only 164 ft from SB ramp terminal	First full access intersection should be at least 1320 ft from ramp terminal
Existing ramp terminal spread is only 459 ft	Desirable ramp terminal spread is 558 ft
75 ft curve on frontage/crossroad sight distance limited to 164 ft	Recommended sight distance is 394 ft (local arterial)
NB entrance ramp accel lane is 951 ft	1083 ft
Existing vertical clearance is 15.5 ft.	Desirable vertical clearance is 17 ft (local arterial)

Deficiency	Standard
NB exit ramp is only 2854 ft from NB entrance ramp at Canyonville interchange	Desirable ramp spacing is 0.6 miles
Interchange located within 1.86 miles of adjacent interchanges	At least 6 miles in rural areas
SB ramp terminal intersection has limited sight distance (< 22 miles/h) due to horizontal curvature	Sight distance should be provided for at least 31miles/h (local arterial)

The configuration of the local roads connecting with the south-bound and north-bound ramps is inefficient and challenging to drivers. The configuration makes movement difficult for trucks and freight. There are several private accesses in close proximity to the south-bound off-ramp along the frontage road that connects to the southbound off-ramp. The junction of the northbound on-ramp with a local road meets at a severe acute angle rather than a perpendicular alignment. This configuration is confusing to drivers and can present an unsafe situation (Toews 2004).

The Irwin bridge structures at Exit 99 are deficient and listed on the cracked bridge list. The Irwin under crossing road that passes beneath the bridges does not have the necessary height required. The existing height is 15 ½ ft and the standard is 17 ft.

TRAFFIC CHARACTERISTICS

Greater mobility is expected on roads with higher classifications. Mobility standards are used to determine the traffic a road can handle. Once mobility standards are set, depending on functional classification, it is possible to see deficiencies in road capacity. In this plan, mobility is measured by a volume to capacity ratio (v/c). For example, the county urban v/c for a major collector equals 0.90, which means peak hour traffic uses 90 percent of the roads capacity; ten percent of the roads capacity is not used. If v/c mobility exceeds the standard traffic may begin to form queues. V/C is used to help plan for future developments and the transportation system. The goal is to keep developments and land use so that they do not exceed v/c mobility standards.

Volumes

The V/C ratios of the unsignalized intersections evaluated are all within the 1999 OHP and County V/C mobility standards. No-Build 1999 OHP mobility standards for the freeway ramps are 0.85. Freeway operation with merge and diverge movements at the ramps was within 1999 OHP mobility standards (See Figure 2 in Appendix A) The following Table 3 from the County TSP summarizes the maximum allowable volume to capacity (V/C) ratios for county routes based on functional classification. County roads in the UGB fall under urban standards.

Table 3: County Mobility Standards

Classification	V/C Urban	V/C Rural
Arterial	0.85	0.80
Major Collector	0.90	0.85
Minor Collector	0.95	0.90
Necessary Local	0.95	0.90

Where two different county route classifications intersect, the V/C ratio of the higher county classification shall be used for the intersection. The County Public Works Engineering Department shall have the final determination of roadway capacity issues.

The City does not have mobility standards listed for their system.

Table 4: 2003 Unsignalized Intersection Analyses

Intersection	Controlling Approach[1]	Volume to Capacity (V/C) Ratios	Mobility Standard
		2003	
SB on/off ramp	Southbound Off- Ramp Left / Right Turns	0.70	0.85
NB On-ramp at Stanton Park Road	On Stanton Park Rd Southbound Through / Right Turn	0.20	0.85
Main Street at Underpass	Under crossing Eastbound Left /Right Turns	0.37	0.85
Main Street at Gazley Bridge Road	On Gazley Westbound Left /Right Turns	0.30	0.85
Creekside Rd at Truck Parking and Employee Parking	Truck Parking Eastbound Left / Right Turns	0.07	0.90
Main Street at Casino Access	Casino Access Westbound Left Turn	0.33	0.85

1 On Unsignalized Intersections, the operation of the intersection is determined by the approach with the highest volume to capacity (v/c) ratio. This v/c ratio reflects the operation of the controlling approach and not for the entire intersection.

All of the analyzed intersections are shown to operate at an acceptable level within the v/c parameters established by the agency with jurisdiction of the facility (Toews 2004).

Crash records

Five crashes were reported between 1998 and 2002 in the interchange area. The crashes (1998-2002) on I-5 through the interchange area are mainly fixed object and rear-end collisions due to driver error with no pattern between them. The crash rate is

0.24, which is average with the five-year average of 0.22[2] crashes per million vehicle-miles for a rural freeway segment. Freeway ramp crash rates cannot be directly compared to crash rates on other types of roadway sections because of the numerous variables such as shorter length, narrower cross-sections, sharper turns, steeper grades, and intersections (Toews 2004).

The majority of the crashes on the frontage roads and ramps have been rear-end collisions. The rest of the collisions occur because of improper turning or backing maneuvers.

Table 5: Non-Interstate 2000-2002 Crash Summary[3]

Location	Number	Type	Cause
Stanton Park Rd	1	*PDO	Left turn in front of traffic (1)
Creekside Rd to SB Stanton Park Rd	1 1	PDO *INJ	Failed to avoid stopped car (2)
Stanton Park Rd to NB Stanton Park Rd	1 1	PDO INJ	Ran stop sign (1) Failed to Avoid stopped car (1)

*Property Damage Only
*Injury

[2] Transportation Planning Analysis Unit Technical Memorandum: Canyonville Exit 99 Interchange Pacific Highway (I-5), Mile Post 99.0 dated March 26, 2004.

[3] Department of Transportation, Transportation Development Division, Transportation Data Section Crash Analysis & Reporting Unit.

4: FUTURE CONDITIONS/NO BUILD SCENARIO

LAND USE/ZONING

Canyonville

The plan map for the City is consistent with existing zoning. Although, the City plan map zoning is consistent with existing zoning, it is difficult to predict what exactly will happen within the UGB because the majority of the land in the IMA is Tribal trust land. The planned land uses within city limits in the study area is commercial retail and single family residential and the plan map remains consistent with these zoning designations.

More traffic could generate if the current non-conforming uses of parcels south of the NB off-ramp redeveloped to existing and planned commercial zoning. Parcels are small and would most likely need to develop together to generate significant traffic impacts. A preliminary analysis was done to determine possible future 2002 Highway Design Manual (HDM) v/c ratios if the non-conforming parcels were developed to full build out and if the approximate 4 acres of residential parcels were rezoned to commercial and developed to full build out[4]. The results are as follows: The SB off-ramp intersection with Creekside Drive v/c ratios are 0.55 and 0.91 for 2006 and 2026 respectively. The HDM mobility standard is 0.65 and the state mobility standard is 0.85, so it would possibly be exceeded in 2012. The NB off-ramp intersection with Main Street v/c ratios are 0.52 and 0.97 for 2006 and 2026 respectively. It estimated to exceed the HDM mobility standard of 0.65 and the state mobility standard of 0.85 in 2012. There would need to be more detailed analysis in the future to determine mitigation if the full build out commercial scenario occurs. Policy 7 of the City's Comprehensive Plan will ensure coordination between the City and ODOT to mitigate transportation impacts that may result from commercial and industrial development at the north I-5 interchange.

The City has discussed expanding its' UGB north and zone it light industrial in the future. At this time, no specifics are known. ODOT, City, and County must work together in planning and decision making relating to transportation.

Policy 7 of the City Comprehensive Plan reads as follows: Coordinate with the Oregon Department of Transportation (ODOT) to mitigate transportation impacts that may result from commercial and industrial development at the north I-5 interchange. No plan amendment shall be approved in Canyonville that may adversely affect the level-of-service (LOS) at the Exit 99 interchange, unless a transportation impact study (TIS) has been approved in coordination with ODOT, consistent with OAR 660-12-060. This policy will ensure that the agencies work together to make the best land use and transportation decisions.

County

The County is not aware of any planned developments around the IMA at this time. The County plan map shows that land is planned for Agriculture north and east of the UGB

[4] This analysis included the preferred alternative described in chapter 5. The SB off-ramp has right and left lanes and NB off-ramp has single shared left/right lane stop control on the off-ramps.

near the IMA. Land is planned Farm/Forest Transitional west of the UGB near the IMA. However, the land to the west is in trust and some of the land to the east so it is tribal multi-use.

Tribal

The Tribe has plans for several new developments in the project area. Tribal planning representatives were consulted about the type, size, location and completion dates of the proposed developments. The proposed developments within the next 20 years include:

- 200 space RV Park
- Rest area
- Interpretive Garden
- 18 hole golf course with driving range
- outlet shopping mall

Construction of the proposed project will require acquisition of part of a mini storage facility and of the residential structure located east of I-5 within projects limits to allow through connection of Stanton Park Road to Gazely Bridge Road (DEA 2005). Both are owned by the Tribe. The Tribe will be required to apply for a permit to roadways under state and county jurisdiction.

TRAFFIC CHARACTERISTICS

Volumes

ODOT Transportation Planning Analysis Unit (TPAU) performed a cumulative analysis to obtain the 2006 and 2026 no-build volumes. A cumulative analysis looks at the existing and proposed development and the resulting generated trips. Historic growth was used to predict the amount of future through trips.

Future through (external – external) trips were estimated using the 20 year historical growth rates for I-5 on the north and south sides of the study area. Over the last 20 years, the average growth rate for I-5 through this area is 2% per year (Toews 2004).

The volumes shown for 2006 No-Build analysis assumes that the following additional traffic volume generators are in place–

- proposed 200 space RV Park, operating at 1/2 capacity
- proposed interpretive garden,
- new rest area.

The volumes shown for the 2026 No-Build analysis assumes that the following additional traffic volume generators are in place–

- RV Park is now operating at capacity,
- rest area is in operation,

- interpretive garden has been expanded,
- 18 hole golf course with driving range is added,
- and an outlet shopping mall.

The following results of the no-build traffic analysis are shown in Table 5.

2006 – When additional traffic volumes are added due to historic growth and proposed development, the SB on/off ramp exceeds capacity, which indicates that the intersection can expect to experience congestion and delay. Reported queue length becomes “unstable” because the intersection is over capacity and the reported queue may be much longer and could extend onto I-5. Freeway operation with merge and diverge movements at the ramps was within 1999 OHP V/C mobility standards. The other intersections evaluated are within the 1999 OHP V/C mobility standards with minimal queuing (See Figure 3 in Appendix A).

2026 – When significant amounts of traffic volumes are added due to growth and development, both the SB on/off ramp and the Main Street at the Freeway operation with merge and diverge movements at the ramps was within 1999 OHP V/C mobility standards. As Creekside Drive carries larger traffic volumes, fewer gaps will be available for vehicles to use to get onto Creekside Drive. The Creekside Drive access to the truck parking, just south of the restaurant, has the potential to back-up into the truck parking lot as more and more traffic occurs on Creekside Drive. Main Street at the under pass intersection operates over capacity. Again, the queue length reported may be much longer causing blocking. The other intersections evaluated are within the 1999 OHP V/C mobility standards with minimal queuing.

Table 6: No-Build Unsignalized Intersection Analysis

Intersection	Controlling Approach[1]	Volume to Capacity (V/C) Ratios		Mobility Standard
		2006	2026	
SB on/off ramp & Creekside Drive/Road	Southbound Off- Ramp Left / Right Turns	**1.20[2]**	**1.70[2]**	0.85
NB On-ramp & Stanton Park Road/Main St.	On Stanton Park Rd Southbound Through / Right Turn	0.32	0.70	0.85
Main Street & Irwin Access Road	Under crossing Eastbound Left /Right Turns	0.77	**1.50[2]**	0.85
Main Street & Gazley Bridge Road	On Gazley Westbound Left /Right Turns	0.40	0.78	0.85
Creekside Dr. at Truck Parking and Employee Parking	Truck Parking Eastbound Left / Right Turns	0.18	0.28	0.90
Main Street at Casino Access	Casino Access Westbound Left Turn	0.42	0.75	0.85

[1] On Unsignalized Intersections, the operation of the intersection is determined by the approach with the highest volume to capacity (v/c) ratio. This v/c ratio reflects the operation of the controlling approach and not for the entire intersection.

[2] The dark shaded areas show the areas where mobility standards are not met (Toews 2004).

5: PREFERRED ALTERNATIVE

The project team identified design elements to consider in the development of the alternative. The I-5 Improvement Project analyzed several design elements in various combinations to determine which would provide the best build alternative for the interchange area. The design elements include –

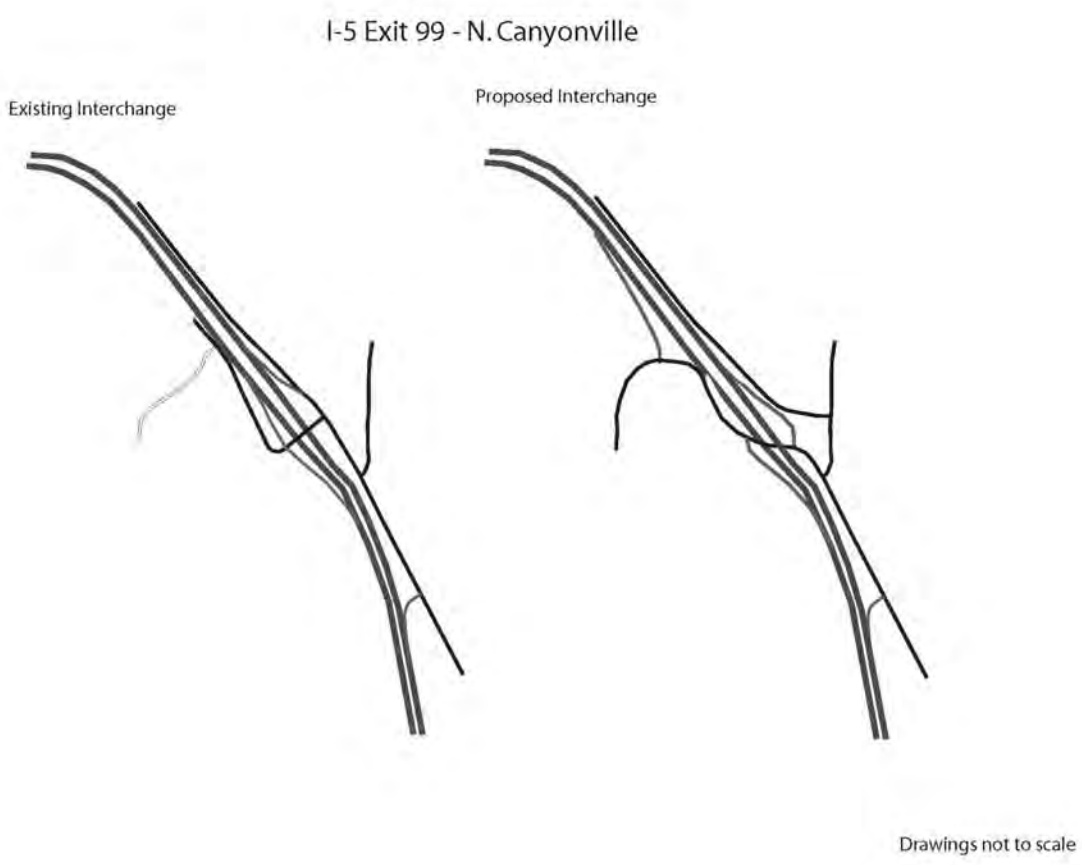
- Realigning Stanton Park Road with Gazley Bridge Road to eliminate the atypical lane configuration of the intersection. The two roads meet at a severe acute angle rather than a perpendicular alignment. This configuration is confusing to drivers and can present an unsafe situation.
- Widening the under crossing to four lanes by adding eastbound and westbound back-to-back left-turn lanes. No additional through lanes would be added.
- Signalizing the SB on/off ramp.
- Signalizing the SB on/off ramp and the Main Street at the under crossing intersection.
- Realigning the Main Street at the under crossing intersection so that the through movement is between Main Street and the under crossing.
- Moving the SB off ramp north of the interchange and "T" it into the local tribal road that leads to the RV Park and rest area.
- Building a roundabout at the SB on/off ramp.
- Sidewalks and bike lanes.

The preferred alternative as described in the Technical Memorandum for the traffic analysis (Toews 2004) includes the following design elements (see **Figure 4**).

- Move the SB off ramp north of the interchange and "T" it into the local tribal road (Creekside Drive) to the RV Park and proposed rest area,
- Realign Main Street with the under crossing to allow for free flow traffic between them,
- Realign Stanton Park Road to align with Gazley Bridge Road and separate the NB on-ramp,
- Widen and realign the under crossing to include two through lanes with eastbound and westbound back-to-back left-turn lanes,
- Widen Creekside Drive to two lanes with a continuous left-turn lane.

The preferred alternative addresses the traffic flow conditions and allows design flexibility to accommodate planned and future development and growth in the interchange area during the project life through 2026 (DEA 2005).

Figure 4: Proposed Interchange



ROAD CHARACTERISTICS

Stanton Park road will be realigned with Gazley to eliminate the confusion caused by an acute angle between the NB on-ramp and the current Stanton Park road. Realigning Stanton Park road helps by eliminating most of the access points between the NB ramps.

The preferred alternative adds bike lanes on both sides of the road from Creekside to Main and on the rebuild section of Stanton Park. Sidewalks are being built on the business side of Creekside to Main and on the north side of the rebuild section of Stanton Park. Relocating the SB off-ramp improves the turning movement for freight.

TRAFFIC CHARACTERISTICS

Both the SB off and the SB on ramps will operate within 2002 HDM V/C guidelines through the project's design life based on existing and known planned development. The V/C at the intersection of the SB off ramp and the frontage road is 0.70 at the end of the project life. Main Street at the under crossing results in a V/C of 0.26 at this intersection. This intersection has ample capacity to allow for unexpected growth and development and still operate within the 2002 HDM V/C guidelines.

Table 7: Preferred Alternative Future Volume to Capacity

Intersection	Controlling Approach[1]	Volume to Capacity (V/C) Ratios	Mobility Standards/ HDM Acceptable V/C
		2026	
SB-Off ramp & Creekside Drive	Southbound Off- Ramp Left turn	**0.84**	0.85/0.65
SB On-ramp & Creekside Drive	SB On-ramp Left turn	0.42	0.85/0.65
Main Street & Irwin Access Road	Under crossing Eastbound Left turn	0.26	0.85/0.75
Main Street & Gazley Bridge Road	On Gazley Westbound Left /Right Turns	**0.97**	0.85/0.75
Main Street at Casino Access	Casino Access Westbound Left Turn	0.65	0.85/0.75

The build alternative will allow the interchange intersections to operate at acceptable HDM acceptable v/c ratios in the design year 2026 with the exception of two intersections. One of these is Main St. & Gazley Bridge Road. This design feature was present in all the build alternatives. With the realignment of Stanton Park Road with Gazley Bridge Road, more vehicles will use this intersection, and it is anticipated to exceed vehicle-to-capacity standards in the year 2020. At that time, if the SB Gazely leg of the intersection were modified from the single left-turn/right-turn lane to two lanes, providing a right-turn lane and a left-turn lane, then the intersection will meet standards

and a v/c ratio of 0.71 in the design year 2026 (DEA 2005). Currently, the design of an added lane is not part of the project due to cost and right-of-way issues, however, it may be phased into the project at a time in the future so that the intersections does not exceed capacity standards in the futures. The other is the SB off-ramp and Creekside Drive intersections. With all the development projected, it is expected to operate with 19% less than the standard capacity, however it will have 16% of capacity available for an unsignalized intersection. If the SB off-ramp were signalized, the v/c ratio would drop to 0.64 providing 20% more capacity than the unsignalized intersection and would meet HDM v/c standards. Listed below is how the preferred alternative addresses the geometric deficiencies.

Table 8: Proposed Geometry Improvements

Deficiency	Standard	Improvement
SB ramp terminal intersection has limited sight distance (22 Miles/h) due to horizontal curvature.	At least 31 miles/h	Move SB ramp to North, improves Sight Distance
Numerous driveways and intersections between northbound ramps.	No access point along ramps	Improved with Access Management Plan
Access along Creekside Rd. is only 164 ft from SB ramp terminal	First full access intersection should be at least 1312 ft from ramp terminal	Move SB ramp to North.
Existing ramp terminal spread is only 500 ft	Desirable ramp terminal spread is 558 ft	Move SB off-ramp
75 ft curve on frontage/crossroad sight distance limited to 164 ft	Recommended sight distance is 394 ft (local arterial)	Realign road
NB entrance ramp accel lane is 951 ft	1,083 ft	Construct to Standard
Existing vertical clearance is 15 ft.	Desirable vertical clearance is 17 ft (local arterial)	Construct to Standard
NB exit ramp is only 0.54 mile from NB entrance ramp at Canyonville interchange	Desirable ramp spacing is 0.56 mile	Beyond scope, not addressed
Interchange located within 1.86 mile of adjacent interchanges	At least 6.2 mile in rural areas	Beyond scope, not addressed

6: ACCESS MANAGEMENT

Access Management is the careful planning of the location, design, and operation of driveways, median openings, interchanges, and street connections. Roads serve two primary purposes. One is mobility and the other is access. Mobility is the efficient movement of people and goods. Access is getting those people and goods to specific properties. A roadway designed to maximize mobility typically does so in part by managing access to adjacent properties. A good example of this is an Interstate Highway. A motorist can typically expect efficient travel over a long distance using an Interstate Highway. The number of access points is restricted to only freeway interchanges every few miles because this type of roadway primarily serves a mobility function. At the other extreme are local residential streets that provide easy and plentiful access to adjacent properties. This type of roadway primarily serves an access function.

Most state roads serve a function somewhere between the Interstate Highway and the local road. One of the responsibilities of the ODOT is to ensure that the design of each state road properly balances access and mobility based on the road's classification. Access Management is the means to provide this balance.

Access Management typically includes:

- Frequency, spacing and design of private driveways
- Left/Right turn lanes
- Frequency and location of cross streets
- Frequency and location of traffic signals
- Use of median barriers
- Sight distances and corner clearances

The IAMP differs from previous access management efforts in that it looks at access on approach roads to interchanges and land use from a planned, long range, system-wide approach rather that on a case-by-case basis. It recognizes that parcel by parcel access decisions made in the early stages of corridor development make it difficult, if not impossible; to preserve roadway capacity and mobility as development occurs.

ACCESS MANAGEMENT AND MODE OF TRANSPORTATION

Pedestrian and Bicycle

Most conflicts between bikes/pedestrians and vehicles occur at intersections, driveways and alleys. By limiting and consolidating driveways, by providing raised or landscaped medians, or by creating frontage roads, bicyclists and pedestrians benefit in several ways:

- The number of conflict points is reduced; this is best achieved by replacing a center-turn lane with a raised median (as left turns account for a high number of crashes with bicyclists and pedestrians);
- Motor vehicles are redirected to intersections with appropriate control devices;

- Pedestrian crossing opportunities are enhanced with an accessible raised median and fewer conflicts with turning cars;
- Accommodating the disabled is easier, as the need for special treatments at driveways is reduced;
- Traffic volumes on the arterial may decrease if local traffic can use other available streets or frontage roads for local destinations; and
- Improved traffic flow may reduce the need for road-widening, allowing part of the right-of-way to be recaptured for bicyclists, pedestrians and other uses.

However, limiting the number of street connections may also have negative impacts as well. For example

- Creating a thoroughfare may increase traffic speeds and volumes;
- Eliminating local street crossings eliminates pedestrian crossing opportunities, reduces pedestrian and bicycle travel choices and may increase out-of-direction travel;
- Reduced access to businesses may require out-of-direction travel, discouraging walking and bicycling trips;
- Placing concrete barriers down the middle of the road (rather than raised or landscaped medians) effectively prohibits pedestrian crossings; and
- Improperly designed raised medians act as barriers: pedestrians should be able to see to the other side of the street (vegetation should not decrease visibility) and curbs should be no more than standard height.

Freight

While pedestrian and bicycle access is very important for local access, adequate freight access is necessary for economic vitality. While a typical car is approximately 19 feet long, freight and delivery trucks are usually 30 ft. (single unit) – 50 feet. Freight and delivery trucks typically require a turning radius twice as wide as a passenger car. A more narrow approach requires a much slower turn by the vehicle, which increases delay. Because of this, the approach either needs to be the appropriate width, or the traffic should be rerouted to an intersection with appropriate facilities. The latter is the preferred approach, because it causes only minimal delay to the delivery vehicle, but a substantial time saving to the general traveling public.

ACCESS MANAGEMENT AND ECONOMIC DEVELOPMENT

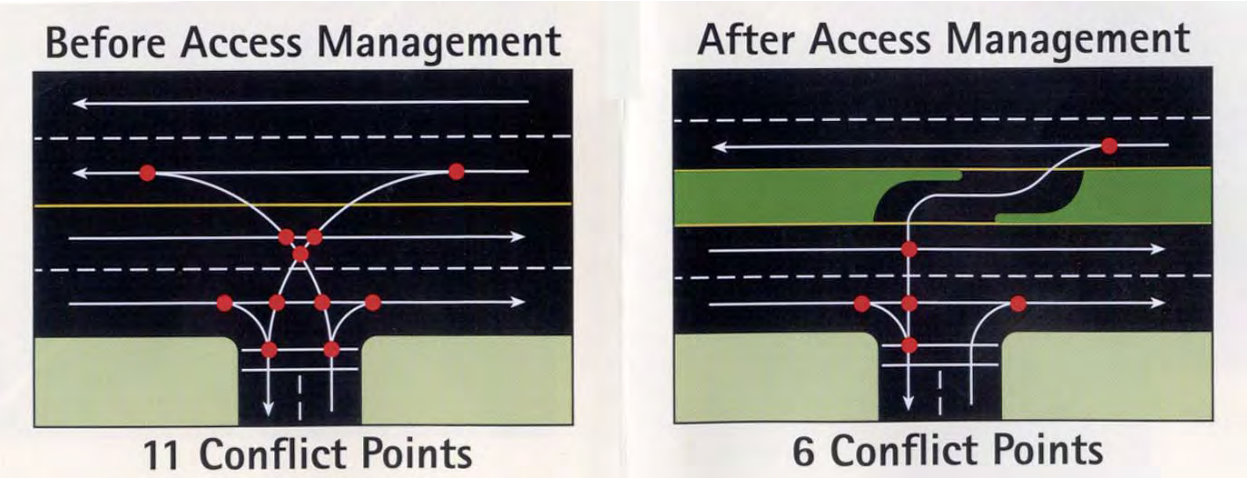
There is intense pressure to allow roadside businesses unlimited access to the roadway, often resulting in strip development. This may provide an immediate opportunity for the developer, but over time, the traffic that supported the business can become traffic congestion that may keep prospective customers away. The congestion on the roadway system results in excessive time delays, delayed shipments, interrupted deliveries, loss of potential customers, and transfer of business activity to other more easily accessed businesses. Additionally, the congestion leads to increased fuel consumption, poor air quality and less desirable communities.

The challenge is to determine how to best apply techniques that protect the efficiency and investment, and also contributes to the City of Canyonville's' local economy and community values. Access Management is one technique the State employs to provide more efficient highways and roadways. As traffic flow becomes more efficient, the roadway is able to handle additional traffic allowing congestion levels to decrease. This results in more motorists being exposed to roadside businesses.

ACCESS MANAGEMENT AND SAFETY

Access management is a safety issue. A basic principal of access management is to limit the number of conflict points along a roadway by limiting the number of driveways and in some locations restricting turning movements. Drivers become overwhelmed by the numerous conflict points when approaches are in close proximity to one another, increasing the potential for crashes. Studies indicate that 50-60% of accidents are access related. These include all left turn and right angle accidents, and most rear end accidents. A 1992 study by the Insurance Institute for Highway Safety found that 58% of urban area accidents occurred at or near intersections.

Figure 5: Conflict Points Before and After Access Management[5]



While automobile-automobile accidents are most common, proper access management also increases the ease of travel for cyclists and pedestrians. Excessive access points results in a disjointed network for non-automobile traffic. Also, Disabled persons are placed at risk when excessive access points exist.

The principles of access management should be used as a guide to planning and design of access points along corridors to ensure adequate access to property and to ensure the capacity of the roadway is maintained, at a relatively low cost. If, however, construction of access points occurs at random, with little thought given to proper spacing, design, or long-term impacts, it is very costly, and often difficult to correct the situation once development along the corridor is complete.

[5] Taken from ODOT's What is Access Management? Brochure (2003).

The Oregon Perspective – Facts & Figures[6]

- Approximately 50% of all non-freeway crashes are at or near driveways and intersections, and 50% of these crashes result in an injury.
- Every time a vehicle stops in a mile, fuel consumption increases by 20%, as well as an increase in emissions and fumes.
- There are more than 48,000 Oregon-based trucks. If each of those trucks was delayed in traffic only 5 minutes once a month, the extra cost of those trips would amount to $1.2 million/year.
- On an average weekday, 780,000 tons of freight worth $500 million moves by truck over Oregon roads.
- Every year, 45 million tourists travel on Oregon's highways. It is important that tourists enjoy a safe and efficient trip to their destinations. Access management makes these trips possible.

The Research Perspective – Facts & Figures[7]

- Each additional access point increases the accident rate by 4%
- Increasing the access points from 10 to 20 per mile would increase the accident rate by 40%.
- A road with 60 access points per mile would have tripled the accident rate of a road with 10 access points per mile.

Spacing Standards

The following sections will include a discussion of the spacing standards and the current spacing of the access points surrounding Interchange 99. The Oregon Highway Plan (OHP) and Chapter 734, Division 51 of the Oregon Administrative Rules (OAR) govern the permitting management, and standards for approaches to ensure safe and efficient operation of the state highways.

OAR Chapter 734, Division 51

The proposed revisions to Division 51 dated July 1, 2003 were formally adopted and became effective on March 1, 2004. The rules in Division 51 establish procedures and criteria used by the Oregon Department of Transportation to govern highway approaches, access control, spacing standards, medians, and restriction of turning movements in compliance with statewide planning goals. The following discussion details the spacing standards required by the OHP and Division 51 and the existing approach spacing within the IMA.

The guidelines are separated into two subcategories, the first provides "Access Management Spacing Standards for Approaches", which applies to any approaches to state highways. The second category is called "Access Management Spacing Standards for Approaches in an Interchange Area", which applies to all approaches

[6] Taken from ODOT's *What is Access Management?* Brochure (2003).
[7] Papayannoulis, Vassilios et al. Access Spacing and Traffic Safety. TRB Circular E-C019: Urban Street Symposium

within an interchange area. This second category is applicable to the management of Interchange 99. Table 1 summarizes these standards.

Table 9: Minimum Spacing Standards Applicable to Freeway Interchanges (OAR 734-051-0125)

Category of Mainline	Category of Crossroad	Type of Area	Spacing Dimension			
			A	X	Y	Z
Freeway	Two-Lane Crossroad	Fully Developed Urban	1 mile	750 feet	1,320 feet	750 feet
		Urban	1 mile	1,320 feet	1,320 feet	990 feet
		Rural	2 miles	1,320 feet	1,320 feet	1,320 feet
	Multi-Lane Crossroad	Fully Developed Urban	1 mile	750 feet	1,320 feet	990 feet
		Urban	1,320 feet	1,320 feet	1,320 feet	1,320 feet
		Rural	2 miles	1,320 feet	1,320 feet	1,320 feet

Notes:
1. If the crossroad is a state highway, these distances may be superseded by the Access Management Spacing Standards, providing the distances are greater than the distances listed in the above table.
2. No four-legged intersections may be placed between ramp terminals and the first major intersection.
3. No application shall be accepted where an approach would be aligned opposite a freeway or expressway ramp terminal (OAR 734-051-0070(4) (a)).
4. Use four-lane crossroad standards for urban and suburban locations that are documented to be widened in a Transportation System Plan or corridor plan.

A = Distance between the start and end of tapers of adjacent interchanges.

X = Distance to the first approach on the right; right in / right out only

Y = Distance to first intersections where left turns are allowed.

Z = Distance between the last right in / right out approach road and the start of the taper for the on-ramp.

Fully Developed Urban = Occurs when 85% or more of the parcels along the developable frontage area are developed at urban densities and many have driveways connecting to the crossroad. See the definition in the 1999 Oregon Highway Plan on page 181.

Urban = Means the area within the urban growth boundary, within a Special Transportation Area of an unincorporated community defined in OAR 660-022-0010(9). For purposes of these rules, the Region Access Management Engineer may apply the “urban” standards in OAR 734-051-0080 to infill or redevelopment projects in an otherwise rural area on commercial or industrial zoned land where the land has been developed into an urban block pattern including a local street network, and the posted highway speed is at or below 45 MPH.

Rural = Means the area outside the urban growth boundary, the area outside a Special Transportation Area in an unincorporated community, or the area outside an Urban unincorporated Community defined in OAR 660-022-0010(9).

Oregon Highway Plan

Policy 3C of the OHP outlines many actions necessary to comply with the policy. Included within these actions were preliminary recommendations for access spacing, which were summarized in Appendix C of the OHP. The standards have since been revised, and have been adopted as shown in **Table 8** through the Oregon Administrative Rules.

SHORT-TERM APPROACH RELATED STRATEGIES FOR PREFERRED ALTERNATIVE

The goal of the AMS (short-term actions) is to move towards access spacing standards identified in Division 51 at the time of the I-5: Exit 99 Interchange Improvement project. AMS outlines how to improve access in the Projects limits and how to implement Division 51, OHP access management policies, and local policies, while recognizing that access spacing standards may not be achieved on all existing driveways and road approaches and that deviations may be needed, as appropriate. Generally, short-term strategies include closing, modifying, relocating, consolidating driveways and purchasing access rights. ODOT Project Teams must consider AMS recommendations within the IAMP during project development within the project limits.

LONG-TERM APPROACH RELATED STRATEGIES

The goal of the Plan (long-term strategies) is to move towards the County access spacing standards as land use changes and development application occur, or in concurrence with future roadway improvement projects. Plan strategies for approaches outside of project limits on County roadways or public spaces, are recommendations to the County as long-term strategies. Long-term strategies include encouraging consolidation of access points, encouraging shared access points between adjacent properties, offsetting driveways at proper distances to minimize the number of conflict points, providing driveway access via local roads where possible, and minimizing driveway widths. ODOT, City, and County must consider the Plan strategies listed for each approach below when there is a roadway construction project that occurs within the limits of this plan or property is developed, redeveloped or undergoes a change-of-use.

Figure 6 shows approaches from 2004 field visits. There are currently 45 approaches within the IMA. There are 17 approaches within project limits and 28 approaches outside project limits. The following short-term access management strategies (see Table 10) and long-term recommended Plan strategies (see Table 11) were developed with the preferred alternative. ODOT does not have jurisdiction over all the roads in the IMA (see Table 1) so close coordination with County and Tribe is needed in order for strategies or policies to be implemented.

Figure 6: Existing Approaches

THIS PAGE WAS INTENTIONALLY LEFT BLANK

APPROACHES

A list of approaches was developed from survey maps and from 2004 field visits. (See Appendix A for more detailed information.) Using ODOT's Central Highway Approach/Maintenance Permit System (CHAMPS) database and Douglas County, approaches were checked to see if they had legal approach permits. There was not an ability to correlate with certainty any of the permits on file to any current road approach. There are six permits on file that may be relevant to the county roads (former state jurisdiction). The permits are all dated early 1960's and do not hold enough information to decisively determine the location, such as Tax Lot, Township, Section and Range. To further complicate matters, several years ago the highway mile points were changed and the permit mile points are no longer relevant, road names have changed and the right of way mapping for the former state roads has been purged. All approaches on County roadways before 1985, when the County acquired jurisdiction from ODOT, are considered grandfathered, if safety related issues do not exist. County would treat "grandfathered" accesses as if they were permitted for the current use. Any change of use, as with a permitted approach, would trigger reauthorization of the access.

County public works will review each of these approaches on the roads under their jurisdiction case by case at the time of future improvements, redevelopment, or change of use of property to ensure they meet minimum safety standards. The Counties' general permitting process requires identifying the roads functional classification, reviewing the site, and stopping distance. County checks to see if sufficient specifications are met on constructing approach, and if there is sufficient distance and safe distance to another approach. If right-of-way needs maintenance, then the applicant is responsible. Typically, new approaches are not granted access on arterials and major collectors unless there is not any other reasonable access. Most of the Counties' requests for new access are for proposed property division. The County Public Work's unwritten policy is to encourage property development, however, access to the parent parcel and all subsequent parcels shall come from a common location. Accesses are not permitted that do not meet minimum safety standards[8].

County usually only allows one access per lot. If it is near a large intersection, County checks if an alternative location to a lesser traveled or lower functional class road is possible or, if it is possible, to share an easement. The County will coordinate with the City and consider recommendations in this document; however, county will have final authority over location, design, or whether an access will be allowed to their jurisdiction.

The following factors were considered for each approach before a recommendation was developed: safety, existing and potential land use, the existing site plan, the number of approaches, future plans for development of a parcel and access to local streets.

Figure 7 shows proposed approach strategies. The AMS approaches are labeled with letters and long-term Plan strategies are labeled with numbers. There is a brief description of each approach recommended for modification during construction of

[8] Douglas County references American Association of State Highway and Transportation Officials (AASHTO) standards.

interchange improvements and approaches that have recommended long-range strategies.

Figure 7: Proposed Approach Strategies

Includes short-term & long-term strategies

Strategy

- no change
- modify
- narrow
- consolidate
- relocate
- closure

Letters denote short-term
Numbers denote long-term

Not to Scale

Information displayed on this map was derived from multiple sources. Maps are only for graphic display and general planning purposes. The Oregon Department of Transporatation and the State of Oregon make no representations, expressed or implied, as to the accuracy of the information or data contained herien. The information or data is provided with the understanding that it is not guaranteed to be correct or complete.

N

NOTE: In some cases, redevelopment may include combining several parcels. When this occurs, the recommended approaches may no longer be appropriate. The ODOT Regional Access Management Engineer (RAME) will be responsible for making the determination on state facilities. The County Public Works Department will be responsible for making the determination on County facilities.

THIS PAGE WAS INTENTIONALLY LEFT BLANK

Table 10: Short-term Strategies

ID	Description	Zoning	Use	Short-term Actions
A	Single dwelling access to Creekside Frontage Rd	Tribal	Residential	Close or relocate to Stanton Park Road
B	Private Drive	Tribal	Under Development	Close.
C	Tribal Development Road	Tribal	Under Development	Close.
D	Tribal development Rd. split access to Creekside Rd	Tribal	Under Development	Close.
E	Best Western North Access to Creekside Rd	C-2	Motel	No action.
F	Best Western South Access to Creekside	C-2	Motel	No action.
G	7 Feathers Truck and Travel Gas Pump	Tribal	Truck Stop	Modify into two approaches (Ga & Gb) 50' & 40' wide.
H	Mini market and deli/gas pump	Tribal	Truck Stop	Modify into right-in/right-out. Install median.
I	Creekside Restaurant/gas pump	Tribal	Truck Stop	Modify to on-site circulation with no access to Creekside Blvd.
J	Creekside parking lot	Tribal	Truck Stop	Modify to on-site circulation with not access to Creekside Blvd.
K	Truck parking/crosswalk	Tribal	Truck Stop	Modify. Channelize to encourage right-out movements. Install median.
L	2nd car parking next to SB on ramp, Jordan Cr, Floodway	Tribal	Parking	Modify. Channelize to encourage right-out movements. Install median.
M	Gazely Rd		Public Street	No action.
N	Single dwelling	Tribal	Residential	Close.
O	Riepe Court serves 4 dwellings	R-1	Private Drive	Relocate approximately 50' south to improve sight distance.
P	Single dwelling, Access to Stanton Park	R-1	Residential	No action.
Q	Klenke Ln serves 10 dwellings/no thru traffic	Tribal	Private Drive	No action.

INTERCHANGE IMPROVEMENT SHORT-TERM ACCESS MANAGEMENT STRATEGIES

Approach A- The property in the extreme northwest portion of the project area would either be purchased or have a new access road constructed to replace the loss of its

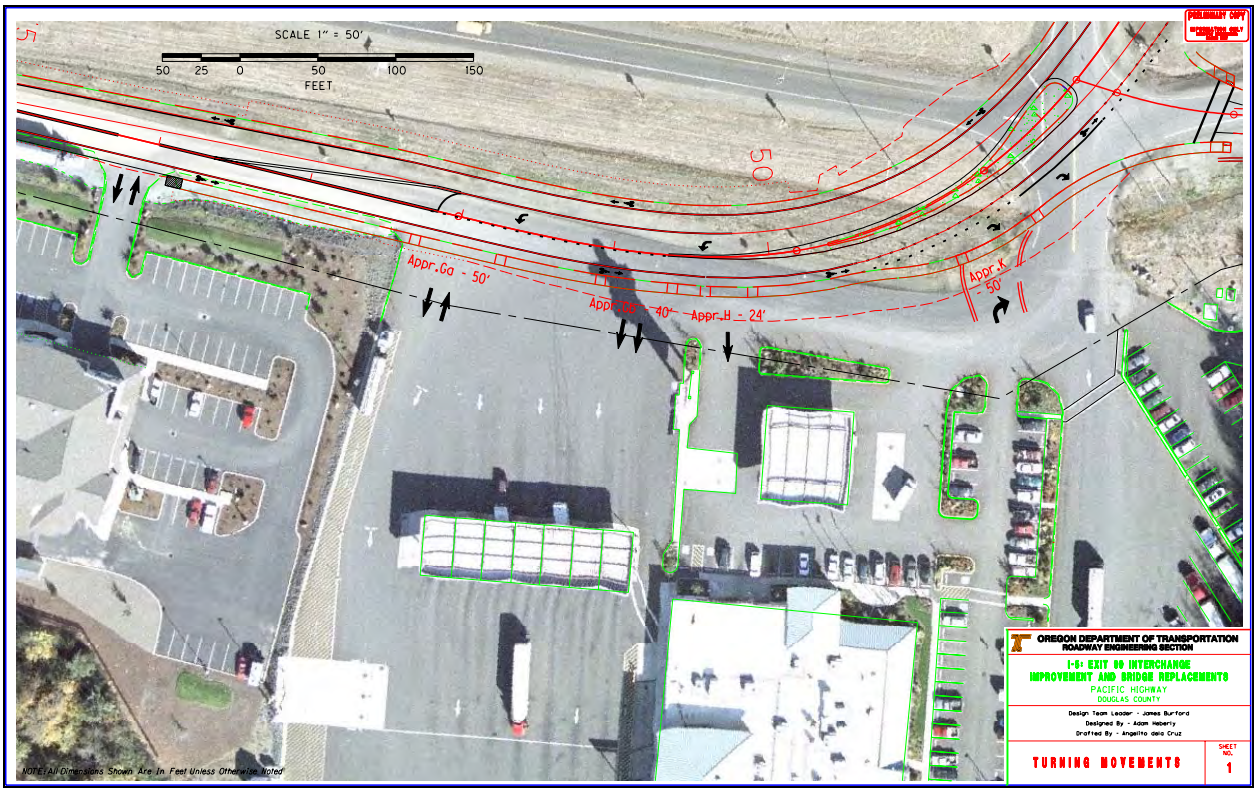
existing access road. The driveway for the property currently connects with Jeffries Drive. The project would realign Jeffries Drive and the SB off-ramp, cutting off access to the property. Therefore, ODOT would either purchase the tracts or construct an access road underneath the new SB off-ramp and I-5. The new access road would be connected to Stanton Park Road (also known as Yokum Road) on the east side of I-5 (DEA 2005). ODOT Right-of-Way will be negotiating with the property owners directly to identify the final strategy.

Approaches B, C, D- These approaches will be closed during construction of the interchange improvement project. A new road will be constructed to the proposed rest area. The first access on the new road will be the rest area (900 FT). Access control shall be purchased up to the first access point.

Approach E- This approach is currently restricted by a chained entrance. The approach does not circulate around the motel. The motel said they will continue to keep the approach chained and it is used rarely for certain vehicles to access the creek behind the motel.

Approaches G, H, I, J, K, & L - These approaches all provide access to the Seven Feathers Truck & Travel Center. Approach G will be redesigned to have two approaches (Ga & Gb on figure 8) 50 & 40 feet wide. Currently the approach is 188 feet wide. The northern approach (Ga) will be designed for two-way travel and large enough to accommodate the truck traffic. The south approach will be designed for entrance only traffic to avoid conflicts with trucks entering the weigh station directly to the west of the approach on the property. Approaches H will be right-in/right-out. Approach K will be channelized to encourage right-out only movements. A median will be installed to ensure the right-in/right-out movements. The raised median will remain in place to provide access control, but will allow vehicles to store in the left turn lane just west of the southbound entrance ramp terminal. Approaches I, J, & L will be on-sight circulation and will not have curb cuts to Creekside Blvd. (See Figure 8 below).

Figure: 8 Existing and Proposed access at Seven Feathers Truck and Travel Center



Approach N- This approach will be closed because the realigned Stanton Park Road will cut through the property. The approach will no longer be needed.

Approach O- This approach serves four dwellings and should be moved approximately 50 feet south for better sight distance with the realignment of Stanton Park Road.

Table 11: Long-term Strategies

ID	Description	Zoning	Land Use	Access Strategies
1	Abandoned, appears to be former auto repair shop	C-2	Vacant Commercial	Consolidate into #2 if tax lots 2700 & 2800 redevelop together and relocate to the property line. If not, no action or relocate to the north to maximize spacing with tax lot 2700.
2	Single dwelling with dual access	C-2	Vacant Lot	Consolidate with #3 upon redevelopment. If tax lots 2700 & 2800 redevelop together consolidate with #1 #3 and relocate to the property line.
3	Single dwelling with dual access	C-2	Vacant Lot	Consolidate into #2.
4	1st level: Hills Trading Post/ 2nd story: dwelling	C-2	Mixed Use	Narrowed to appropriate width for use. Commercial: 20-40' Residential: 16-20'.
5	Single dwelling	C-2	Residential	No Action.
6	Single dwelling	C-2	Residential	No Action.
7	Single dwelling	C-2	Residential	No Action.
8	Single dwelling	C-2	Residential	No Action.
9	Berthal St.		Public Street	No action. Will continue to be public street.
10	Canyonville Collision/vacant auto repair	C-2	Shop	Close upon development, alternate access via Berthal Avenue.
11	Fencing Business/closed off, Access to Johnson	C-2	Fencing Business	Close upon development, alternate access via Johnson Street.
12	Stage Coach Rd		Public Street	No action. Will continue to be public street.
13	Serves 4 dwellings, Access to TL 1400,1500,160	C-2	Residential	Consolidate #14 into #13. Relocate #13 to property line.
14	Single dwelling	C-2	Residential	Consolidate with #13. Relocate #13 to property line.
15	Single dwelling	C-2	Residential	No Action.
16	Single dwelling	C-2	Residential	No Action.
17	Long St		Public Street	No action. Will continue to be public street.
18	Car yard, Access to Main St.	C-2	Auto Repair Shop	No Action.
19	Masonic cemetery access, TL 100, Access to Main St.	Tribal	Cemetery Access	No Action.
20	7 Feathers Casino out exit	Tribal	Casino	No Action.
21	7 Feathers Casino in entrance	Tribal	Casino	No Action.
22	Valley View Motel entrance, one shared with TL 2300	Tribal	Motel	Consolidate upon redevelopment with #23 if tax lots 2100 & 2200 develop together. Mid-term action:

ID	Description	Zoning	Land Use	Access Strategies
1	Abandoned, appears to be former auto repair shop	C-2	Vacant Commercial	Consolidate into #2 if tax lots 2700 & 2800 redevelop together and relocate to the property line. If not, no action or relocate to the north to maximize spacing with tax lot 2700.
2	Single dwelling with dual access	C-2	Vacant Lot	Consolidate with #3 upon redevelopment. If tax lots 2700 & 2800 redevelop together consolidate with #1 #3 and relocate to the property line.
3	Single dwelling with dual access	C-2	Vacant Lot	Consolidate into #2.
				sign for directional movement to increase driver expectation.
23	Valley View Motel, shared access w/TL 2100 single dwelling	Tribal	Motel	Consolidate upon redevelopment into #22 if tax lots 2200 & 2100 develop together. Mid-term action: sign for directional movement to increase driver expectation.
24	2 dwellings with joint access to Stanton Park	Tribal	Residential	Relocate to the north to maximize spacing between approaches.
25	Riverside Motel entrance	Tribal	Motel	Consolidate upon redevelopment with #26 and relocate to center of the parcel to maximize spacing. Mid-term action: sign for directional movement to increase driver expectation.
26	Riverside Motel/no trucks/no turn around	Tribal	Motel	Consolidate upon redevelopment into #25 and relocate to center of parcel to maximize spacing. Mid-term action: sign for directional movement to increase driver expectation.
27	Single dwelling	Tribal	Residential	No Action.
28	South Umpqua Fire District/dead end	Tribal	Vacant	No Action.

Note: In some cases, redevelopment may include combining several parcels. When this occurs, the recommended approaches may be no longer appropriate. The ODOT Regional Access Management Engineer (RAME) will be responsible for making this determination on roadways under state jurisdiction. Douglas County public works will be responsible for making this determination on roadways under County jurisdiction.

LONG-RANGE PLAN STRATEGIES

It is recommended that when redevelopment occurs or Stanton Park or Main Street is improved that approaches be put in at a standard width depending on property use. The majority of approaches 1-19 are currently non-conforming uses because they are single-family residences located on property zoned commercial (C-2). An approach

width of 20-40 FT is recommended for properties developed as commercial and an approach width of 16-20 FT is recommended for properties that continue to be used as single-family residences.

Approaches 1, 2, & 3- These approaches should be consolidated if property is developed together. If properties do not develop together, approaches 2 & 3 should consolidate to allow one approach on the single parcel.

Approach 4- This approach should be narrowed to meet property use. Currently this approach is 42 FT wide.

Approach 10- It is recommended that this approach be closed and alternate access be taken off of Berthal Avenue. Currently, the approach is cabled off during non-business hours to stop people from cutting through the property to the side street.

Approach 11- It is recommended that this approach be closed and alternate access be taken off of Johnson Street.

Approaches 13 & 14- These approaches are currently separated by a log barrier. Approach 14 should be closed, log barrier removed, and have access through 13 with one approach to access multiple residences.

Approaches 25 & 26- These approaches should be consolidated to reduce conflict points if redeveloped unless traffic studies show otherwise. Medium-term strategies should include restricting access to Riverside motel by adding signs for directional movement. One should be designated “entrance” and one should be designated “exit” to increase driver expectation.

Approach 24- This approach should be relocated north to maximize spacing between approach points.

Approaches 22 & 23- These approaches should be consolidated to reduce conflict points if redeveloped. Medium-term strategies should include restricting access to Valley View motel by adding signs for directional movement. One should be designated “entrance” and one should be designated “exit” to increase driver expectation. These should be restricted by signs for directional movements. One should be designated “entrance” and one should be designated “exit”.

ADDITIONAL TOOLS FOR IMPLEMENTATION

The following excerpts are from City of Canyonville plans that will guide future access management decisions and approving plan amendments:

The City of Canyonville Bicycle/Pedestrian Corridor Design (1998-1999) plan proposes that, “at the time of development or redevelopment, property fronting Main Street will provide only one direct access to Main Street. In no case will more than two driveways be closer than 300 feet on a single tax lot. Shared driveways between more than one

tax lots are encouraged. Access to local streets, perpendicular to Main Street is encouraged."

The City of Canyonville Comprehensive Plan includes goals and policies that state:

Policy 6: The City shall work with the Oregon State Department of Transportation and Douglas County to improve the transportation system in the City consistent with the Goals and Policies of the plan in regard to projects planned within the city limits or the urban growth boundary.

Policy 7: Coordinate with Oregon Department of Transportation (ODOT) to mitigate transportation impacts that may result from commercial and industrial development at the north I-5 interchange. No plan amendment shall be approved in Canyonville that may adversely affect the level-of-service (LOS) at the Exit 99 interchange, unless a transportation impact study (TIS) has been approved in coordination with ODOT, consistent with OAR 660-12-060.

THIS PAGE WAS INTENTIONALLY LEFT BLANK

APPENDIX A

Approach Inventory

THIS PAGE WAS INTENTIONALLY LEFT BLANK

Appendix A: Approach Inventory

ID	Plat Map No.	Tax Lot	Acre	Engineering Station	Width (FT)	Material	Single	Owner	Zoning	USE
1	30 5 27BC	2800	1.2		38	Gravel	Yes	Brown	C-2 Commercial Retail	Vacant Business
10	30 5 27BC	2000	0.11		47	Asphalt	Yes	Malkon	C-2 Commercial Retail	Commercial
11	30 5 27BC	1800	0.16		35	Asphalt	Yes	Malkon	C-2 Commercial Retail	Commercial
12	30 5 27BC	Stagecoach Rd			32	Asphalt	No			Public Street
13	30 5 27BC	1700	0.44		40	Gravel	No	Kelly	C-2 Commercial Retail	Residential
14	30 5 27BC	1400	0.19		35	Gravel	Yes	Noonkester	C-2 Commercial Retail	Residential
15	30 5 27BC	1300	0.56		18	Gravel	Yes	Denton	C-2 Commercial Retail	Residential
16	30 5 27BC	1200	0.2		18	Gravel	Yes	Cherokee Crumb	C-2 Commercial Retail	Residential
17	30 5 27BC	Long St			28	Gravel	Yes			Public Street
18	30 5 27BC	200	0.48		26	Gravel	Yes	Brown	C-2 Commercial Retail	Auto Repair Shop
19	30 5 27BC	101	2.06		35	Asphalt	Yes	Umpqua Tribe of Indians	Tribal	Cemetery Access
2	30 5 27BC	2700	0.27		21	Gravel	Yes	Brown	C-2 Commercial Retail	Vacant Lot
20	30 5 27B	2700	27.75		45	Asphalt	Yes	Seven Feathers Hotel & Resort	Tribal	Casino
21	30 5 27B	2700	27.75		45	Asphalt	Yes	Seven Feathers Hotel & Resort	Tribal	Casino
22	30 5 21DD	2100	3.36		30	Gravel	Yes	Umpqua Tribe of Indians	Tribal	Motel
23	30 5 21DD	2200	0.24		24	Gravel	No	Umpqua Tribe of Indians	Tribal	Motel
24	30 5 21D	600	4.11		18	Gravel	No	Umpqua Tribe of Indians	Tribal	Residential
25	30 5 21D	400	2.16		33	Asphalt	Yes	Umpqua Tribe of Indians	Tribal	Riverside Motel
26	30 5 21D	400	2.16		29	Asphalt	Yes	Umpqua Tribe of Indians	Tribal	Riverside Motel
27	30 5 21D	300	1.53		30	Asphalt	Yes	Umpqua Tribe of Indians	Tribal	Residential
28	30 5 21D	200	1.7		15	Gravel	Yes	Umpqua Tribe of Indians	Tribal	Vacant
3	30 5 27BC	2700	0.27		18	Gravel	Yes	Brown	C-2 Commercial Retail	Vacant Lot
4	30 5 27BC	2500	0.11		42	Gravel	Yes	Willard	C-2 Commercial Retail	Mixed Use
5	30 5 27BC	2400	0.11		21	Gravel	Yes	Ives	C-2 Commercial Retail	Residential
6	30 5 27BC	2300	0.11		15	Gravel	Yes	Redfearn	C-2 Commercial Retail	Residential
7	30 5 27BC	2200	0.11		18	Gravel	Yes	Hemphill	C-2 Commercial Retail	Residential
8	30 5 27BC	2100	0.11		18	Concrete	Yes	Mack	C-2 Commercial Retail	Residential
9	30 5 27BC	Berthal Ave			20	Asphalt	No			Public Street
A	30 5 21D	1102 & 1104	10.84/.33		27	Asphalt	No	Denison	County FF	Residential
B	30 5 21D	1110	1.68	"M" 385+03	27	Gravel	Yes	Umpqua Tribe of Indians	Tribal	Under Development
C	30 5 21D	1101	3.05		24	Gravel	Yes	Umpqua Tribe of Indians	Tribal	Under Development
D	30 5 21 D	1110	1.68		32	Asphalt	Yes			
E	30 5 21D	1108	2.9	"M" 43+35	33	Gravel	Yes	CKS Investments	C-2 Commercial Retail	Motel
F	30 5 21D	1108	2.9	"M" 45+85	28	Asphalt	Yes	CKS Investments	C-2 Commercial Retail	Motel
G	30 5 21D	800	2.61	"M" 48+68	188	Asphalt	Yes	Umpqua Tribe of Indians	Tribal	Truck Gas Station
H	30 5 21D	800	2.61	"M" 49+76	38	Asphalt	Yes	Umpqua Tribe of Indians	Tribal	Gas Station
I	30 5 21D	800	2.61	"M" 50+66	39	Asphalt	Yes	Umpqua Tribe of Indians	Tribal	Gas Station
J	30 5 21D	800	2.61	"M" 51+00	20	Asphalt	Yes	Umpqua Tribe of Indians	Tribal	Truck Stop

*Engineering stations were derived from Preliminary Construction Plans dated 7/20/2004

Appendix A: Approach Inventory

ID	Plat Map No.	Tax Lot	Acre	Engineering Station	Width (FT)	Material	Single	Owner	Zoning	USE
K	30 5 21D	800	2.61	"M" 51+33	31	Asphalt	Yes	Umpqua Tribe of Indians	Tribal	Truck Stop
L	30 5 28	500	10.25	"M" 51+67	30	Asphalt	Yes	Umpqua Tribe of Indians	Tribal	Truck Stop
M	30 5 27B	Gazely Rd		"M" 60+18	160	Asphalt	No			Public Street
N	30 5 21DD	900	1.07	"C"261+72/"SP"12+7	20	Gravel	No	Umpqua Tribe of Indians	Tribal	Mini Storage
O	30 5 21DD	1100	0.33	"C"259+86/"SP"14+6	18	Gravel	No	Indian Spring Water District	R-1 Single Family Residential	Private Drive
P	30 5 21DD	1700	0.3	"C"258+05/"SP"16+4	15	Asphalt	Yes	Carpenter	R-1 Single Family Residentail	Residential
Q	30 5 21DD	400	0.78	"C"257+00/"SP"17+4	30	Gravel	No	Indian Spring Water District	Tribal	Private Drive

*Engineering stations were derived from Preliminary Construction Plans dated 7/20/2004

Approach #	Access Type/Use	Description	Distance to nearest ramp terminal (FT)	Distance between each approaches (FT)	Width (FT)	Material	Single/Shared
L (**from SB-on ramp**)	Car Parking		115		30	Asphalt	Single
K	Truck Parking		160	45 **(From South Approach L)**	31	Asphalt	Single
J	Car Parking		210	50	20	Asphalt	Single
I	Gas Station	South Entrance	260	50	39	Asphalt	Single
H	Gas Station	North Entrance	388	128	38	Asphalt	Single
G	Truck Gas Station		484	96	188	Asphalt	Single
F	Motel entrance		788	304	28	Asphalt	Single
E	Motel Access	Chained entrance	1,044	256	33	Gravel	Single
D	Construction Access	South entrance	1,326	282	32	Gravel	Single
C	Construction Access	North entrance	1,391	65	24	Gravel	Single
B	Construction office access		1,441	50	27	Gravel	Single
A	Residential/550 Creekside		1,905	464	27	Asphalt	Shared
M **(from NB-on)**	Gazely Road		1,116 feet		160	Asphalt	Shared
N	Residential/mini storage		500	1,116 **(From South approach M)**	20	Gravel	Shared
O	Residential/Riepe Ct.		297	203	18	Gravel	Shared
P	Residential 1996		108	189	15	Asphalt	Single
Q	Private Drive/Klenke Lane		0	108	30	Gravel	Shared
22	S. Motel Entrance 1926		227	227	30	Gravel	Single
23	N. Motel entrance/Residential 1926,1918,1922		305	78	24	Gravel/Concrete	Shared
24	Residential 1878,1882		441	136	18	Gravel	Shared
25	Riverside Motel	South entrance	860	419	33	Asphalt	Single
26	Riverside Motel		1025	165	29	Asphalt	Single
27	Residential 1754		1085	60	30	Asphalt	Single
28	Access to field 1696		1372	287	15	Gravel	Single
1**(from NB off-ramp)**	Business		524		38	Gravel	Single
2	Vacant Lot	North entrance	614	90 **(From north approach 1)**	21	Gravel	Single

3	Vacant Lot	South entrance	667	53	18	Gravel	Single
4	Residential/640 N Main		791	124	42	Gravel	Single
5	Residential/600 N. Main		840	49	21	Gravel	Single
6	Residential		906	66	15	Gravel	Single
7	Residential/580 N. Main		952	37	18	Gravel	Single
8	Residential		989	37	18	Concrete	Single
9	Berthal St.		1055	66	20	Asphalt	Shared
10	Commercial/570 N. Main		1125	70	47	Asphalt	Single
11	Commercial		1279	154	35	Asphalt	Single
21	Casino	North exit	773		45	Asphalt	Single
20	Casino	South entrance	733	50 **(From north approach 21)**	45	Asphalt	Single
19	Cemetery access		431	302	35	Asphalt	Single
18	Commercial auto		490	59	26	Gravel	Single
17	Long St.		626	136	28	Gravel	Single
16	Residential/613 N. Main		762	136	18	Gravel	Single
15	Residential		880	118	18	Gravel	Single
14	Residential/583 N. Main		944	856	35	Gravel	Single
13	Residential		1019	75	40	Gravel	Shared
12	Stage Coach Road		1279	260	32	Asphalt	Shared


Stanton Park Rd.
Creekside Blvd.
Main Street
State Jurisdiction
County Jurisdiction
State Jurisdiction

THIS PAGE WAS INTENTIONALLY LEFT BLANK

APPENDIX B

ODOT Traffic Analysis Technical Memorandum

THIS PAGE WAS INTENTIONALLY LEFT BLANK

APPENDIX A
ODOT TRAFFIC ANALYSIS TECHNICAL MEMORANDUM

(Toews 2004)

This page left
blank intentionally.

STATE OF OREGON **INTEROFFICE MEMO**

Department of Transportation
Transportation Development Branch
Mill Creek Office Park
555 13th Street NE, Suite 2
Salem, Oregon 97301-4178
(503) 986-4107 FAX (503) 986-4174

Date: March 26, 2004

TO: Ingrid Weisenbach, Solution Team Leader
Region 3

FROM: V. Irene Toews P.E., Transportation Analyst
Transportation Planning Analysis Unit

SUBJECT: Technical Memorandum,
Canyonville Exit 99 Interchange
Pacific Highway (I-5), Mile Post 99.0

The Transportation Planning Analysis Unit (TPAU) was asked by Region 3 to analyze the Canyonville Exit 99 interchange area. The purpose of the Canyonville Exit 99 Interchange Project is to accommodate additional traffic that is projected for the project area due to the addition of a rest area and other planned developments. There are also safety and operational issues at the northbound (NB) on-ramp and the south-bound (SB) on/off ramp that makes maneuvering difficult and confusing for drivers. After considering several alternatives to alleviate the pressure of additional traffic and operational difficulties, the recommended improvement is Alternative 6. This alternative signalizes the SB on/off ramp, reconfigures Yocum Road to align with Gazley Bridge Road, includes a four lane underpass, and reconfigures Main Street with the underpass to allow for free flow traffic (See Figure 12). All figures may be found in Appendix A.

The project is located at the junction of Pacific Highway No. 1 (I-5) and Exit 99-Canyonville (See Figure 1). Interstate 5 is the primary north-south truck route in western Oregon. The Canyonville Exit 99 interchange is within the City of Canyonville urban growth boundary, in Douglas County, approximately 25 miles south of Roseburg and 40 miles north of Grants Pass.

Background

The Exit 99 interchange area is being put under pressure by continuing growth and development in the Canyonville area. The rest areas closest to Exit 99 to the north and to the south have either been closed or are scheduled to be closed in the near future. A new rest area is planned for the north end of the south-bound ramp frontage road which will put additional pressure on this interchange. In addition, new development is planned for both sides of the interchange that will draw additional traffic to the area.

The configuration of the local roads connecting with the south-bound and north-bound ramps is inefficient and challenging to drivers. There are several private accesses in close proximity to the south-bound off-ramp along the frontage road that connects to the southbound off-ramp. The configuration of this frontage road with the southbound off-ramp requires vehicles to make a tight turn, which is difficult for the high percentage of trucks using the south-bound off-ramp. The junction of the northbound on-ramp with a local road meet at a severe acute angle rather than a perpendicular alignment. This configuration is confusing to drivers and can present an unsafe situation.

Much of the land in the project area is owned by the Cow Creek Indian Tribe, including the Seven Feathers Hotel and Casino Resort located in the southeast quadrant of the project area. The Tribe has plans for several new developments in the project area.

The bridge structures at Exit 99 are deficient and listed on the cracked bridge list. The local road that passes beneath the bridges does not have the necessary height required. New bridge structures will be built with adjustment made to the underpass in order to meet height requirements.

TRAFFIC DEVELOPMENT

Base and future year traffic data used for the transportation analysis was developed using manual traffic counts, ODOT's Permanent Recorder Stations and Transportation Volume Tables. The counts were seasonally adjusted to the 30th Highest Hour Volumes using the recorder #10-05, Roseburg, and #17-001 Grave Creek Automatic Traffic Recorders (ATR).

Future year traffic volumes were developed using cumulative analysis which uses historic trends for the area and combines them with traffic generated by approved and pending developments that have not yet been built. Please see Appendix B for information on ODOT's Permanent Recorder Stations, Transportation Volume Tables, and future year traffic development.

Evaluation Criteria

For no-build conditions, according to the 1999 Oregon Highway Plan (OHP), a Volume-to-Capacity (V/C) ratio of less than **0.85** is an acceptable operating condition. **For build alternatives,** according to ODOT's Highway Design Manual (HDM), a V/C ratio of **0.70** is an acceptable operating condition.

NO-BUILD ANALYSIS

Existing Condition Analysis

The interchange area was evaluated using **2003 30th highest hour volumes**. No future development or new rest area volumes were included in the existing condition traffic volumes. Table 2 below shows the intersections that were evaluated and the analysis results.

Future Year No-Build Analysis

A cumulative analysis was performed to obtain the 2006 and 2026 no-build volumes. A cumulative analysis looks at the existing and proposed development and the resulting generated trips. Historic growth was used to predict the amount of future through trips. Future through (external – external) trips were estimated using the 20 year historical growth rates for I-5 on the north and south sides of the study area. Over the last 20 years, the average growth rate for I-5 through this area is 2% per year. See Appendix B for a detailed explanation of the cumulative analysis used to develop the future no-build traffic volumes.

The volumes shown for **2006 No-Build** analysis assumes that the following additional traffic volume generators are in place–

- a proposed 200 space RV Park, operating at 1/2 capacity northwest of the interchange,
- a proposed interpretive garden northwest of the interchange,
- the new rest area located at the north end of Jefferies Dr.

The volumes shown for the **2026 No-Build** analysis assumes that the following additional traffic volume generators are in place–

the RV Park is now operating at capacity,

the rest area is in operation,

the interpretive garden has been expanded,

an 18 hold golf course with driving range is added northwest of the interchange,

and a 12-store outlet shopping mall area is built on the east side.

The results of the no-build traffic analysis are shown in Table 2.

Table 2: No-Build Unsignalized Intersection Analysis

Intersection	Controlling Approach[1]	Volume to Capacity (V/C) Ratios			Queuing Concerns? (in feet)		
		2003	2006	2026	2003	2006	2026
SB on/off ramp	Southbound Off- Ramp Left / Right Turns	0.70	**1.20**[2]	**1.70**[2]	275	**550**[3]	**1150**[3]
NB On-ramp at Yocum Road	On Yocum Southbound Through / Right Turn	0.20	0.32	0.70	--	--	--
Main Street at Underpass	Undercrossing Eastbound Left /Right Turns	0.37	0.77	**1.50**[2]	125	225	**350**[3]
Main Street at Gazley Bridge Road	On Gazley Westbound Left /Right Turns	0.30	0.40	0.78	100	100	275
Jeffries Dr. at Truck Parking and Employee Parking	Truck Parking Eastbound Left / Right Turns	0.07	0.18	0.28	--	--	400
Main Street at Casino Access	Casino Access Westbound Left Turn	0.33	0.42	0.75	--	--	--

1 On Unsignalized Intersections, the operation of the intersection is determined by the approach with the highest volume to capacity (v/c) ratio. This v/c ratio reflects the operation of the controlling approach and not for the entire intersection.

2 The dark shaded areas show the areas where mobility standards are not met.

3 The approach is above capacity - the queue length could be much longer - blocking problems may occur.

-- No Queuing Concerns are Present

No-Build 1999 OHP mobility standards for the freeway ramps are 0.85.

The no-build analysis results are summarized below.

- **2003 Existing conditions** - The V/C ratios of the unsignalized intersections evaluated are all within the 1999 OHP V/C mobility standards and experience minimal queuing. Freeway operation with merge and diverge movements at the ramps was within 1999 OHP V/C mobility standards (See Figure 2).

- **2006 No-Build –** When additional traffic volumes are added due to historic growth and proposed development, the SB on/off ramp exceeds capacity, which indicates that the intersection can expect to experience congestion and delay. Reported queue length becomes "unstable" because the intersection is over capacity and the reported queue may be much longer and could extend onto I-5. Freeway operation with merge and diverge movements at the ramps was within 1999 OHP V/C mobility standards. The other intersections evaluated are within the 1999 OHP V/C mobility standards with minimal queuing (See Figure 3).

- **2026 No-Build** – When significant amounts of traffic volumes are added due to growth and development, both the SB on/off ramp and the Main Street at the Freeway operation with merge and diverge movements at the ramps was within 1999 OHP V/C mobility standards. As Jeffries Drive carries larger traffic volumes, fewer gaps will be available for vehicles to use to get onto Jeffries Drive. The Jeffries Drive access to the truck parking, just south of the restaurant, has the potential to back-up into the truck parking lot as more and more traffic occurs on Jeffries Drive. Main Street at the under pass intersection operates over capacity. Again, the queue length reported may be much longer causing blocking. The other intersections evaluated are within the 1999 OHP V/C mobility standards with minimal queuing (See Figure 4).

Crash Information

There have been five crashes between 1998 and 2002 in the interchange area. See Appendix B for the crash listing.

The crashes on I-5 though the interchange area are mainly fixed object and rear-end collisions due to driver error with no pattern between them. The crash rate is 0.24, which is average with the five-year average of 0.22 crashes per million vehicle-miles for a rural freeway segment.

The majority of the crashes on the frontage roads and ramps have been rear-end collisions. The rest of the collisions occur because of improper turning or backing maneuvers.

Freeway ramp crash rates cannot be directly compared to crash rates on other types of roadway sections because of the numerous variables such as shorter length, narrower cross-sections, sharper turns, steeper grades, and intersections.

Preliminary Signal Warrants for the No-Build Alternative

The No Build Alternative was reviewed to determine if any additional intersections will meet Preliminary Signal Warrants in the years 2006 2026. Table 3 shows the results of the no-build preliminary signal warrant analysis. Meeting preliminary signal warrants does not guarantee that a signal will be installed. The State Traffic Engineer must approve all new signals on state facilities. Before any signals are installed on the state system, Region 3 will need to perform a field warrant analysis. Even if the actual traffic signal warrants are met, then the ODOT Traffic Management Section and the State Traffic Engineer must approve of the signals before a signal may be installed.

If the proposed signal were on the local system, a complete warrant analysis would need to be completed and approvals done by the appropriate officials. Additional information on Preliminary Signal Warrants can be seen in Appendix B.

Table 3: Signal Warrant Analysis, No-Build Alternative

Intersection	Does Intersection Meet Preliminary Signal Warrant #1?	
	Y/N	What Year is Warrant Met?
SB on/off ramp	**Y**	**2020**
Main Street at Underpass	**Y**	**2015**
Main Street at Gazley Bridge Road	**N**	**--**
NB On-ramp at Yocum Road	**N**	**--**
Main Street at Casino Access	**Y**	**2014**

The intersections that meet preliminary signal warrants in the no-build alternative are the SB on/off ramp, the Main Street at the Underpass, and the Main Street at the Casino entrance. If there is additional unanticipated development in the project area, these intersections may meet signal warrants earlier and other intersections may meet warrants.

BUILD ANALYSIS

The Design Elements

There were several design elements that were analyzed in various combinations to determine which would provide the best alternative for the interchange area. The design elements include –

- Realigning Yocum Road with Gazley Bridge Road to eliminate the atypical lane configuration of the intersection. The two roads meet at a severe acute angle rather than a perpendicular alignment. This configuration is confusing to drivers and can present an unsafe situation (See Figure 5).
- Widening the undercrossing to four lanes by adding eastbound and westbound back-to-back left-turn lanes. No additional through lanes would be added. (See Figure 6).
- Signalizing the SB on/off ramp (See Figure 7).
- Signalizing the SB on/off ramp and the Main Street at the undercrossing intersection. (See Figure 8).
- Realigning the Main Street at the undercrossing intersection so that the through movement is between Main Street and the undercrossing. (See Figure 9).
- Moving the SB off ramp north of the interchange and "T" it into the local tribal road that leads to the RV Park and rest area (See Figure 10).
- Building a roundabout at the SB on/off ramp (See Figure 13).

Analysis of Build Alternatives

The build alternatives were developed using the listed design elements in combination to meet the needs of the interchange area. All of the build alternatives included realigning Yocum Road with Gazley Bridge Road and widening the undercrossing to two through lanes with eastbound and westbound back-to-back left-turn lanes. All build alternatives also include widening Creekside/Jeffries Drive to two lanes with a continuous left-turn lane.

Table 4 shows the build analysis for the Yocum Road at Gazley Bridge Road and the Gazley Bridge Road at Main Street intersections. The volumes and analysis results for these two intersections are the same for all of the build alternatives.

Table 4: Build Analysis for All Build Alternatives for the Main Street at the Gazley Bridge Road and Main Street at the Casino Entrance Intersections

Intersection	Controlling Approach[1]	V/C Ratio	Queuing Concerns? (in feet)
Main Street at Gazley Bridge Road	On Gazley, Westbound Left /Right Turns	**0.96**[2]	**425**[2]
Main Street at Casino Access	Casino Access Westbound Left Turn	0.65	125

[1] On *Un*signalized Intersections, the operation of the intersection is determined by the approach with the highest volume to capacity (v/c) ratio. This v/c ratio reflects the operation of the controlling approach and not for the entire intersection.

[2] The shaded areas show that the intersection is nearing capacity. This can result in delay and congestion.

When Yocum Road is realigned to Gazley Bridge Road, more traffic will use the Gazley Bridge Road at Main Street intersection. Also, some traffic would be expected to divert through the Casino parking lot and access the Yocum Road at Gazley Bridge Road intersection through the RV parking access. Main Street at Gazley Bridge Road will operate at near capacity with significant queuing at the SB approach and have the potential to block the Yocum Road at Gazley Bridge Road intersection. Gazley Bridge Road at Main Street may meet signal warrants if more than anticipated growth occurs in the area. Because this design feature is present in all of the build alternatives, all of the alternatives would face this challenge.

As Jeffries Drive carries larger traffic volumes, fewer gaps will be available for vehicles to use to get onto Jeffries Drive. The Jeffries Drive access to the truck parking, just south of the restaurant, has the potential to back-up into the truck parking lot as more and more traffic occurs on Jeffries Drive. The other non-ramp intersections in the project area are within the 2002 HDM V/C guidelines with minimal queuing.

Analysis Results of Interchange Ramps in the Build Alternatives

In order to meet the needs of the interchange area, the following build alternatives were developed using a combination of the listed design elements. Freeway operation including merge and diverge movements at the ramps was within 2002 HDM V/C guidelines.

Alternative 1 – Signalize SB On/Off Ramp (See Figure 7). This alternative improves the operation of the SB on/off ramp, but leaves the Main Street at the undercrossing intersection operating over capacity with substantial queuing at the eastbound approach.

Alternative 2 – Signalize SB On/Off Ramp and the Main Street at the undercrossing intersection (See Figure 8). This alternative allows both intersections to operate within 2002 HDM V/C guidelines, but the NB approach to the Main Street at the undercrossing intersection can queue back significantly along Main Street. These two intersections would not be expected to meet preliminary signal warrant #1 for nearly 15 years. Region 3 and Traffic Management Section personnel would need to investigate the possibility of signalizing this intersection using other signal warrants.

Alternative 3 – Realign Main Street with the undercrossing so that through traffic flows between the undercrossing and Main Street (See Figure 9). The northbound on-ramp "T's" into this realigned road. This realignment improves the flow of traffic between Main Street and the undercrossing so that it operates within 2002 HDM V/C guidelines as an unsignalized intersection. However, SB on/off ramp operates over capacity with significant queuing at the SB approach.

Alternative 4 – Move the SB off ramp north of the interchange and "T" it into the local Tribal road to the RV Park and the rest area (See Figure 10). The V/C of the "T" intersection of the SB off ramp and the Tribal road is within 2002 HDM V/C guidelines with acceptable queuing through the project's design life. This alternative allows the SB off ramp to operate within 2002 HDM V/C guidelines as an unsignalized intersection. However, the operation of the Main Street at the undercrossing intersection is over capacity and the eastbound approach experiences significant queuing.

Alternative 5 - Move the SB off ramp north of the interchange and "T" it into the local Tribal road to the RV Park and the rest area. Also realign Main Street with the undercrossing so that through traffic flows between the undercrossing and Main Street (See Figure 11). The operation of the "T" intersection of the SB off ramp and the Tribal road is within 2002 HDM V/C guidelines with acceptable queuing through the project's design life. This alternative also allows the SB on ramp to operate within 2002 HDM V/C guidelines as an unsignalized intersection. The realignment of Main Street at the undercrossing improves the operation of this intersection to within 2002 DHV V/C guidelines with no queuing problems.

Alternative 6 – Signalize SB on/off ramp and realign Main Street at the undercrossing so that through traffic flows between the undercrossing and Main Street (See Figure 12). This alternative allows both the SB ramp and the Main Street at the undercrossing

intersection to operate within 2002 HDM V/C guidelines through the life of the design with acceptable queuing.

Alternative 7 – Build a roundabout at the SB on/off ramp and realign Main Street at the undercrossing so that through traffic flows between the undercrossing and Main Street (See Figure 13). The reported V/C at the roundabout is within the 2002 HDM V/C guidelines; however, the geometry needed to accommodate all five legs would potentially reduce the capacity. Also, there are over 250 vehicles, many of which are trucks, making a tight right turn from the SB off ramp onto Jeffries Drive. The close spacing of these two legs would likely result in reduced capacity of the roundabout. It is unlikely that the roundabout would operate as well as the analysis methodology reports since the methodology can not take the severe geometry, tight truck turn movements and close leg spacing into consideration when calculating the V/C.

Table 5 shows how the SB ramp and the Main Street at the underpass intersection compare with the 2002 HDM V/C guidelines.

Table 5: Build Analysis for the SB Ramp and the Main Street at the Underpass

Intersection	**V/C Ratios for Alternatives**						
	1	**2**	**3**	**4**	**5**	**6**	**7**
SB Ramp (Controlling Movement: SB Left/Right)	*Signalized* 0.62[2]	*Signalized* 0.62	**1.30** [1, 2]	Off ramp 0.70 On Ramp 0.42	Off ramp 0.70 On Ramp 0.42	*Signalized* 0.62	Round-about 0.58 to 0.62
Main Street at Underpass (Controlling Movement: EB Left)	**1.08**	*Signalized* 0.69	0.26	**1.05**	0.26	0.26	0.26

[1] The dark shaded areas show the areas where mobility standards are not met.

[2] Intersections are unsignalized unless marked "Signalized".
On *Un*signalized Intersections, the operation of the intersection is determined by the approach with the highest volume to capacity (v/c) ratio. This v/c ratio reflects the operation of the controlling approach and not for the entire intersection.

Preliminary Signal Warrants for the Build Alternatives

The Build Alternative was reviewed to determine if any additional intersections will meet Preliminary Signal Warrants in 2006 and 2026. Table 6 shows the results of the build preliminary signal warrant analysis. Meeting preliminary signal warrants does not guarantee that a signal will be installed. The State Traffic Engineer must approve all new signals on state facilities. Before any signals are installed on the state system, Region 3 will need to perform a field warrant analysis. Even if the actual traffic signal warrants are met, then the ODOT Traffic Management Section and the State Traffic Engineer must approve of the signals before a signal may be installed.

If the proposed signal were on the local system, a complete warrant analysis would need to be completed and approvals done by the appropriate officials. Additional information on Preliminary Signal Warrants can be seen in Appendix B.

Table 6: Signal Warrant Analysis, Build Alternatives

Intersection	Does Intersection Meet Preliminary Signal Warrant #1?	
	Y/N	What Year is Warrant Met?
SB on/off ramp *	**Y**	**2020**
Main Street at Underpass **	**Y**	**2024**
Main St. at Gazley Br. Road	**N But Close**	**--**
Main St. At Casino Access	**Y**	**2015**

* In Alternatives where the SB off ramp is moved north, the SB on ramp intersection would not meet preliminary signal warrants during the project life.
** In Alternatives where the Main Street at the underpass intersection is realigned, this intersection would not meet preliminary signal warrant during the project life.

The intersections that meet preliminary signal warrants in the build alternative are the SB on/off ramp, the Main Street at the Underpass, and the Main Street at the Casino entrance. The Main Street at Gazley Bridge Road is very close to meeting preliminary signal warrants. If there is additional unanticipated development in the project area, these intersections may meet signal warrants earlier and other intersections may meet warrants.

Discussion of Analysis Results

Several of the alternatives allow the SB Ramp and the Main Street at the undercrossing to operate within the 2002 HDM V/C guidelines with acceptable queuing through the project life.

Alternative 2 signalizes both the SB on/off ramp and the Main Street at the Undercrossing intersection. This alternative allows the both intersections to operate within the 2002 HDM V/C guidelines with acceptable queuing. The expected V/C for Main St. at the underpass intersection is 0.69 at the end of the project life. This is close to the maximum acceptable V/C outlined in the 2002 HDM V/C guidelines. This intersection has the potential to exceed 2002 HDM V/C guidelines if there is unexpected growth or development in the project area. If this intersection was signalized and the SB ramp was signalized, their timing plans would have to be coordinated to progress traffic between them.

Alternative 5 moves the SB off ramp north and realigns Main Street at the undercrossing so that through traffic flows between the two streets. . Both the SB off and the SB on ramps to operate with within 2002 HDM V/C guidelines through the project's design life. The V/C at the intersection of the SB off ramp and the Tribal Road is 0.70 at the end of the project life. This is the maximum acceptable V/C outlined in the 2002 HDM V/C guidelines. If there were unexpected growth or development in the project area, this intersection has the potential to exceed 2002 HDM V/C guidelines before the end of the project life. Realigning Main St. at the undercrossing results in a V/C of 0.26 at this intersection. This intersection has ample capacity to allow for unexpected growth and development and still operate within the 2002 HDM V/C guidelines.

Alternative 6 signalizes the SB on/off ramp and realigns the Main St. at the undercrossing intersection. Realigning Main St. at the undercrossing results in a V/C of 0.26 at this intersection. This intersection has ample capacity to allow for unexpected growth and development and still operate within the 2002 HDM V/C guidelines. Given the current historic growth rate, the signalized SB ramp would continue to operate within the 2002 HDM V/C guidelines with acceptable queuing for seven to eight years after the end of the project life

Alternative 7 builds a roundabout at the SB on/off ramp and realigns Main St. at the undercrossing. This alternative results in a V/C of 0.26 at the Main St. and the undercrossing intersection. This intersection has ample capacity to allow for unexpected growth and development and still operate within the 2002 HDM V/C guidelines. The reported V/C for a roundabout at the SB ramp is between 0.58 and 0.62 at the end of the project life. However, the methodology can not take the severe geometry, tight truck turn movements and close leg spacing into consideration when calculating the V/C. It is unlikely that the roundabout would operate as well as the analysis methodology reports.

SUMMARY

The Canyonville Exit 99 Interchange project area is expected to be put under pressure from additional traffic due to the building of a new rest area and several other planned developments. There are also safety and operational issues that makes maneuvering difficult and confusing for drivers at the northbound (NB) on-ramp and the south-bound (SB) on/off ramp. Several alternatives were considered to alleviate the pressure of additional traffic and operational difficulties; the recommended improvement is Alternative 6 (See Figure 14).

Alternative 6 includes the following –

- reconfigures Yocum Road to align with Gazley Bridge Road,
- widens the underpass to include two through lanes with eastbound and westbound back-to-back left turn lanes,
- signalizes the SB on/off ramp,
- and reconfigures Main Street with the underpass to allow for free flow traffic between them.

This alternative addresses the concerns of the project area and allows maximum design flexibility to accommodate unforeseen development and growth in the interchange area.

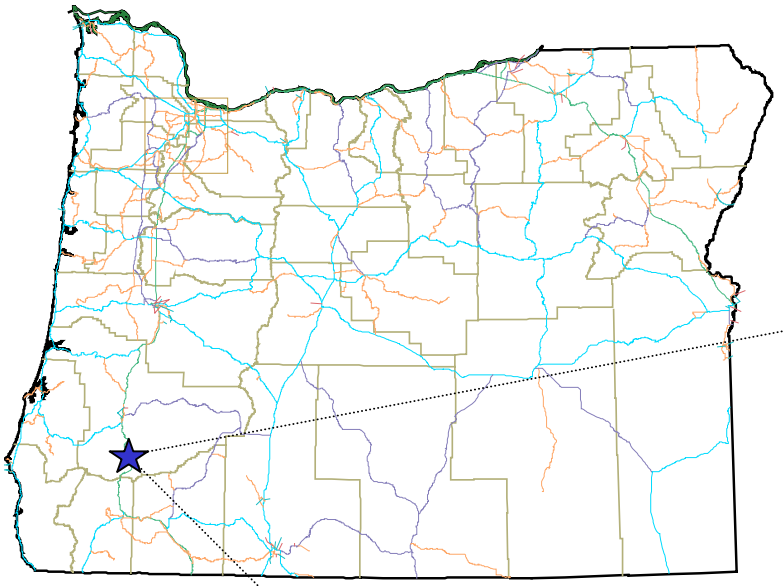
Cc: Haregu Nemanian, Region 3
Peter Schuytema, TPAU
Dorothy Upton, TPAU
Robert Grubbs, Region 3
Kent Belleque, Roadway Engineering Unit
Karen Scott, Pavement Design Unit
Gary Obery, Traffic Management Section
Ron Hughes, Region 3 Access Management

This page left
blank intentionally.

Appendix A

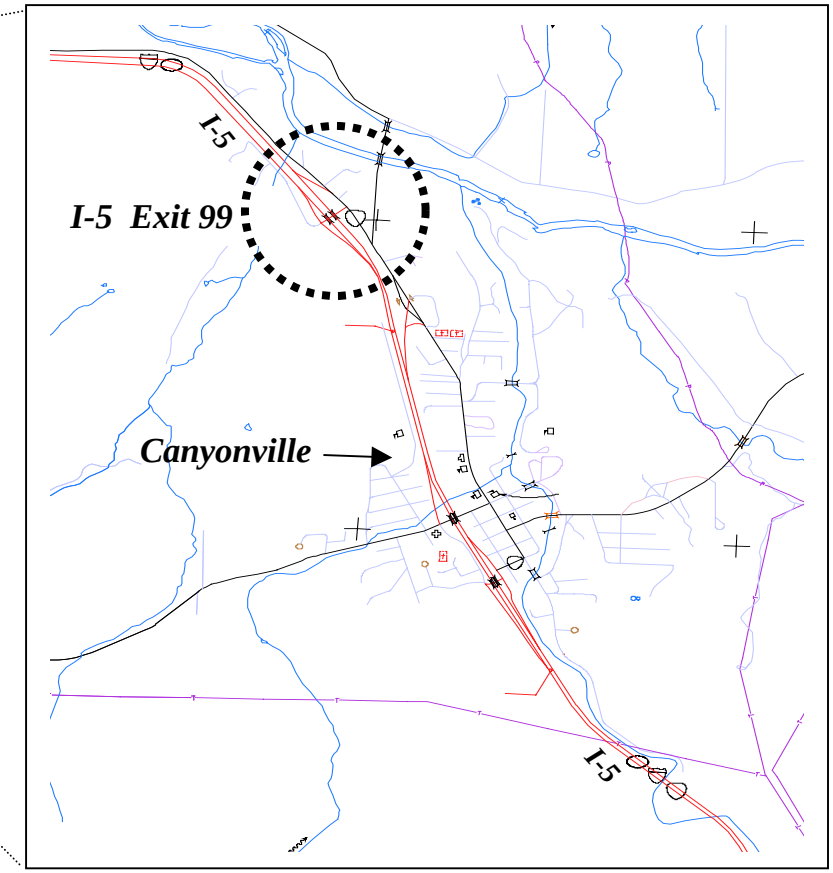
Figures

This page left
blank intentionally.



NORTH

NO SCALE

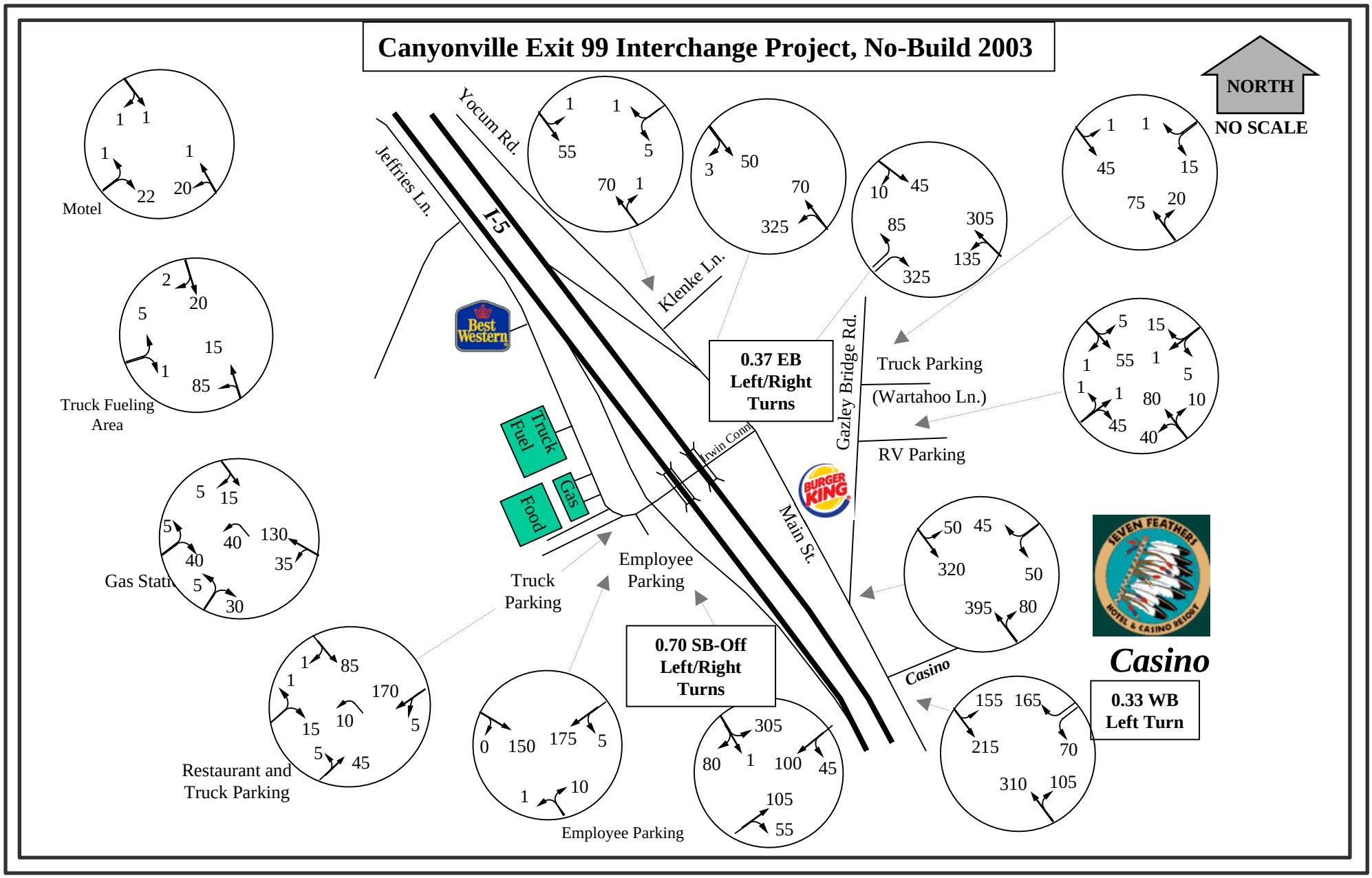


Canyonville I-5 Exit 99 Project Area

OREGON DEPARTMENT OF TRANSPORTATION **TPAU TRANSPORTATION PLANNING ANALYSIS UNIT**

Canyonville Exit 99 Project Area	**File : Exit 99**	**Prep. By: I. Toews, P.E.**	FIGURE 1
	Date : 3/26/04	**Revd. By: P. Schuytema, P.E.**	

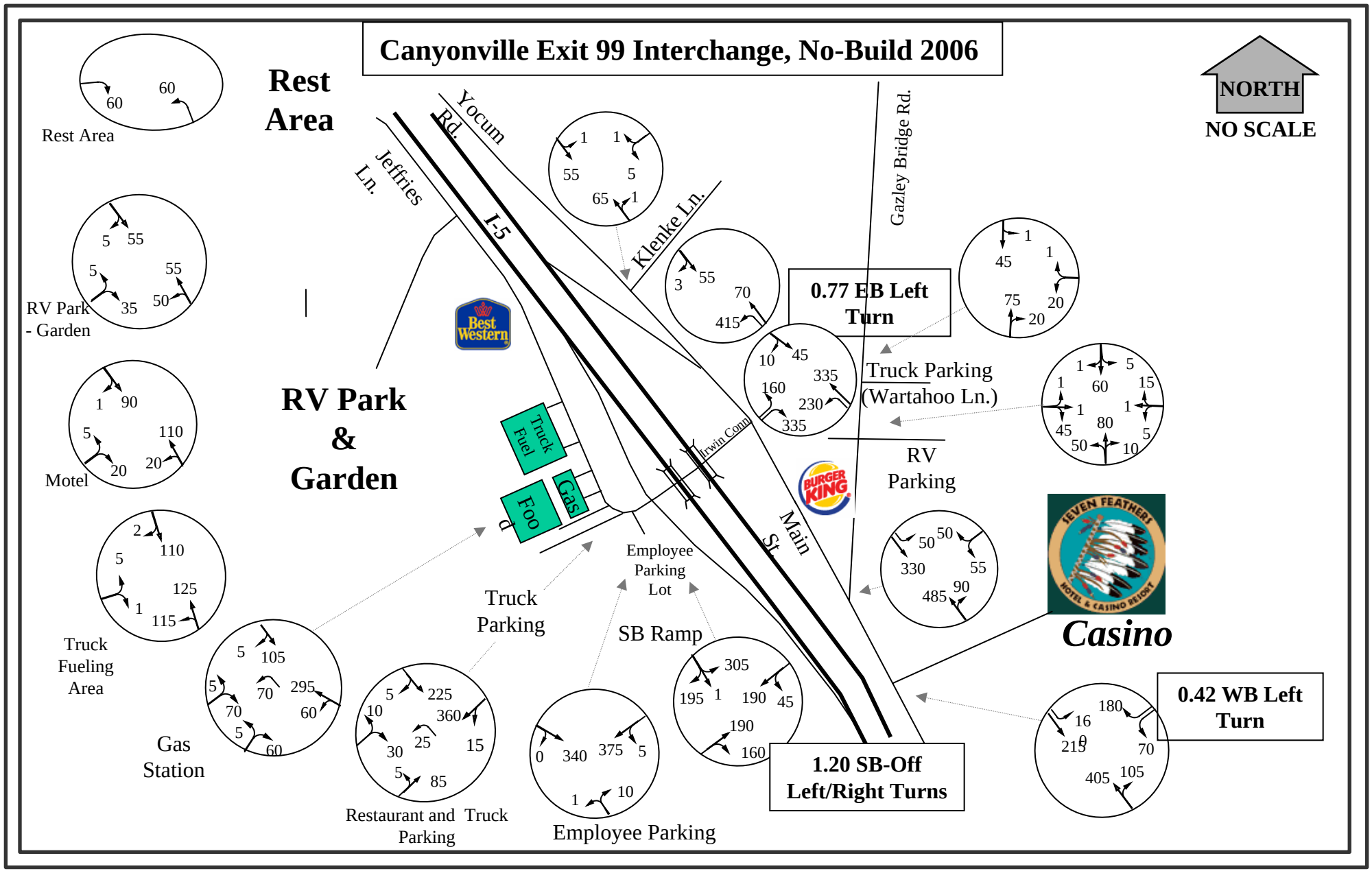
This page left
blank intentionally.



OREGON DEPARTMENT OF TRANSPORTATION **TPAU** **TRANSPORTATION PLANNING ANALYSIS UNIT**

Canyonville Exit 99 Interchange Project, No-Build 2003, 30th Highest Hour Volumes	**File : no-build.PPT**	**Prep. By: I. Toews, P.E.**	FIGURE 2
	Date : 3/24/04	**Revd. By: P. Schuytema, P.E.**	

This page left
blank intentionally.

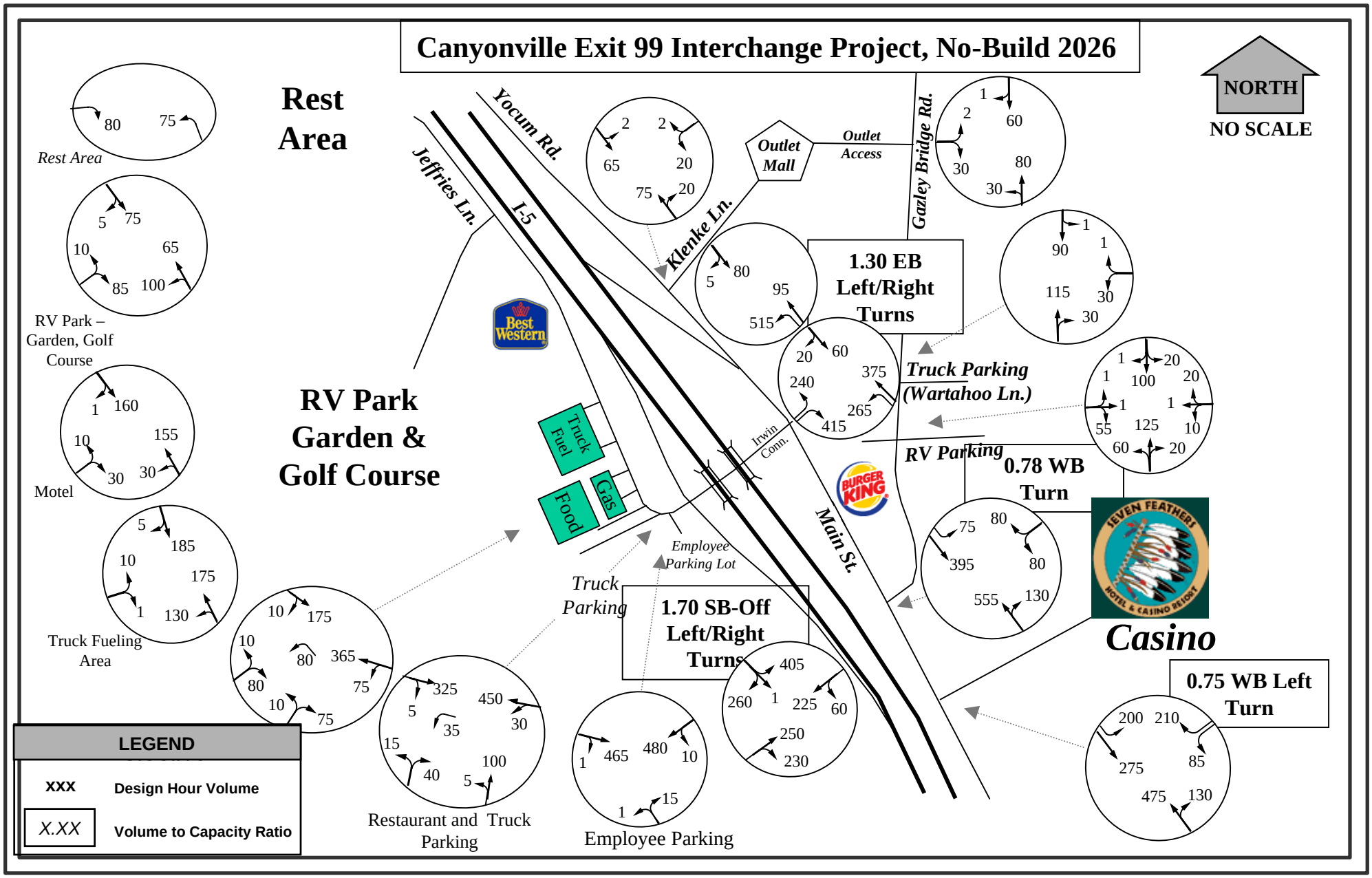


OREGON DEPARTMENT OF TRANSPORTATION **TPAU** TRANSPORTATION PLANNING ANALYSIS UNIT

Canyonville Exit 99 Interchange Project, No-Build 2006, 30th Highest Hour Volumes	**File : No-Build.PPT**	**Prep. By: I. Toews, P.E.**	FIGURE 3
	Date 3/24/04	**Revd. By: P. Schuytema, P.E.**	

This page left
blank intentionally.

Canyonville Exit 99 Interchange Project, No-Build 2026

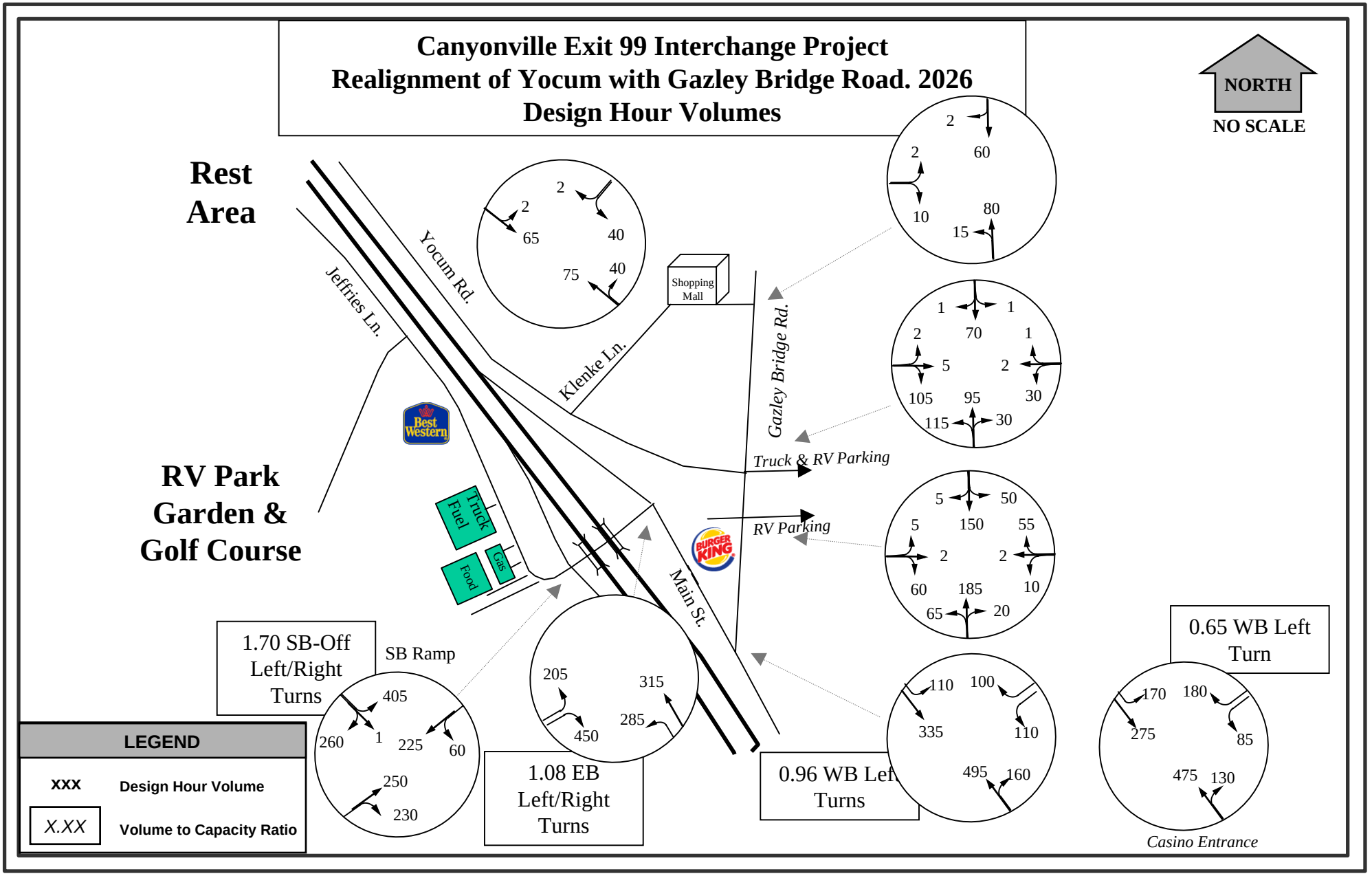


OREGON DEPARTMENT OF TRANSPORTATION | TPAU | TRANSPORTATION PLANNING ANALYSIS UNIT

Canyonville Exit 99 Interchange Project, No-Build 2026, 30th Highest Hour Volumes	**File : no-build.PPT**	**Prep. By: I. Toews, P.E.**	FIGURE 4
	Date : 3/24/04	**Revd. By: P. Schuytema, P.E.**	

This page left
blank intentionally.

Canyonville Exit 99 Interchange Project
Realignment of Yocum with Gazley Bridge Road. 2026 Design Hour Volumes

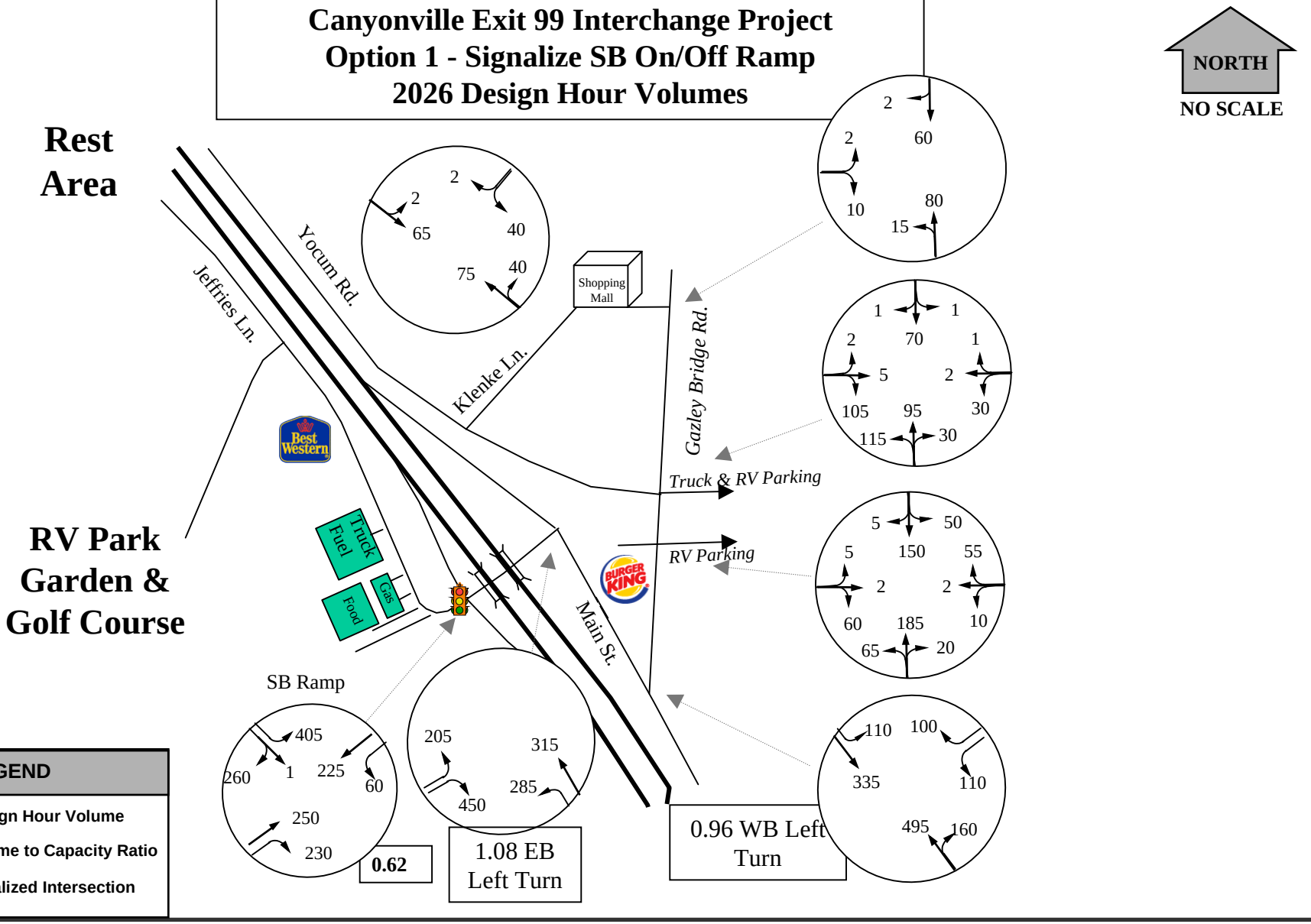


OREGON DEPARTMENT OF TRANSPORTATION **TPAU** **TRANSPORTATION PLANNING ANALYSIS UNIT**

Canyonville Exit 99 Interchange Project **Realign Yocum, 2026 Design Hour Volumes (DHV)**	**File : Exit 99a.PPT**	**Prep. By: I. Toews, P.E.**	FIGURE 5
	Date : 3/23/04	**Revd. By: P. Schuytema, P.E.**	

This page left
blank intentionally.

Canyonville Exit 99 Interchange Project
Option 1 - Signalize SB On/Off Ramp
2026 Design Hour Volumes



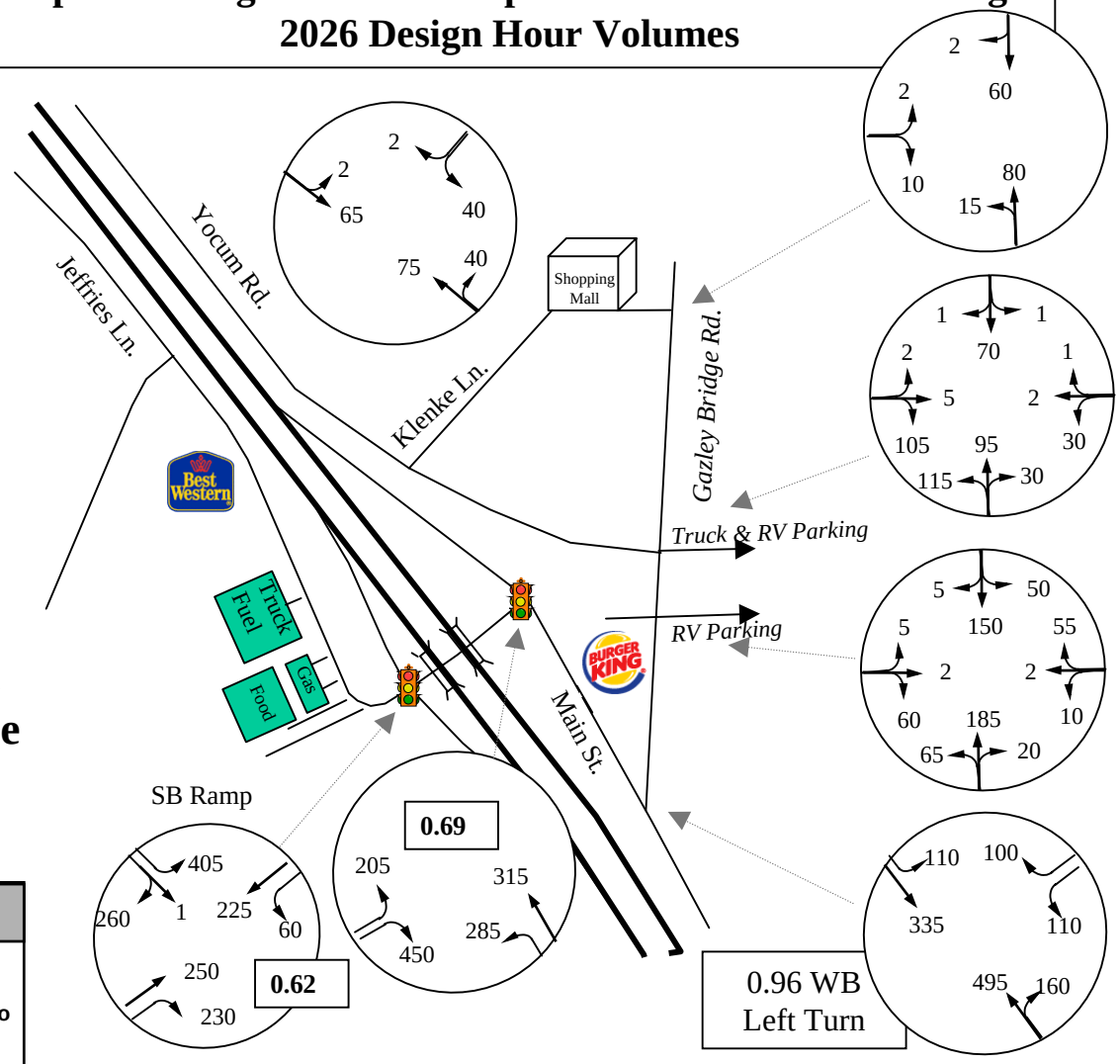
OREGON DEPARTMENT OF TRANSPORTATION

TPAU TRANSPORTATION PLANNING ANALYSIS UNIT

Canyonville Exit 99 Interchange Project, Option 1. 2026 DHV	File : Option1.PPT	Prep. By: I. Toews, P.E.	FIGURE 7
	Date : 3/23/04	Revd. By: P. Schuytema, P.E.	

This page left
blank intentionally.

Canyonville Exit 99 Interchange Project
Option 2 - Signalize SB Ramp and Main At Undercrossing
2026 Design Hour Volumes



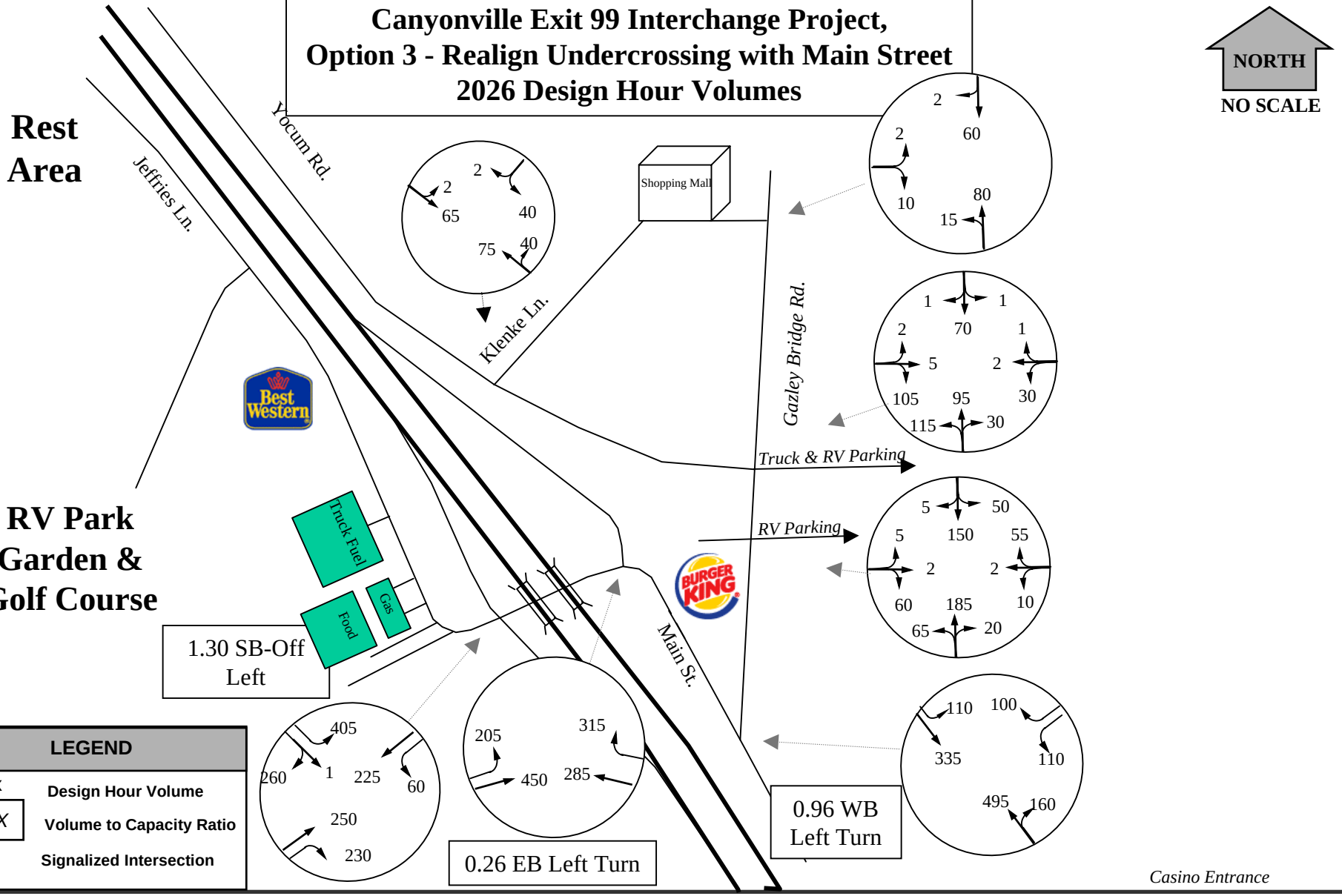
OREGON DEPARTMENT OF TRANSPORTATION

TPAU TRANSPORTATION PLANNING ANALYSIS UNIT

Canyonville Exit 99 Interchange Project, Option 2, 2026 DHV	File : Option2.PPT	Prep. By: I. Toews, P.E.	FIGURE 8
	Date : 3/23/04	Revd. By: P. Schuytema, P.E.	

This page left
blank intentionally.

Canyonville Exit 99 Interchange Project, Option 3 - Realign Undercrossing with Main Street 2026 Design Hour Volumes

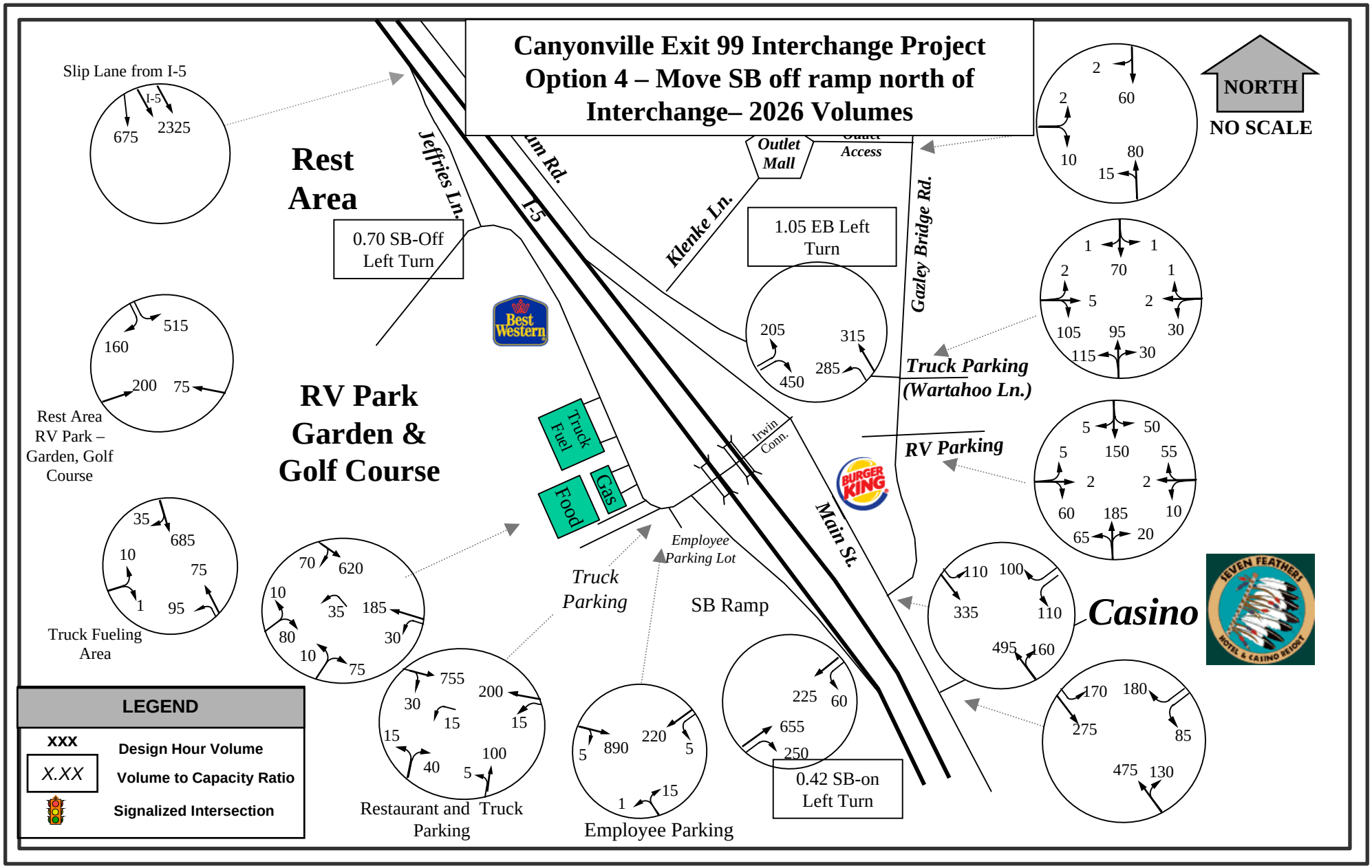


OREGON DEPARTMENT OF TRANSPORTATION

TPAU TRANSPORTATION PLANNING ANALYSIS UNIT

Canyonville Exit 99 Interchange Project, Option 3, 2026 DHV	File : Option3.PPT	Prep. By: I. Toews, P.E.	FIGURE 9
	Date : 3/23/04	Revd. By: P. Schuytema, P.E.	

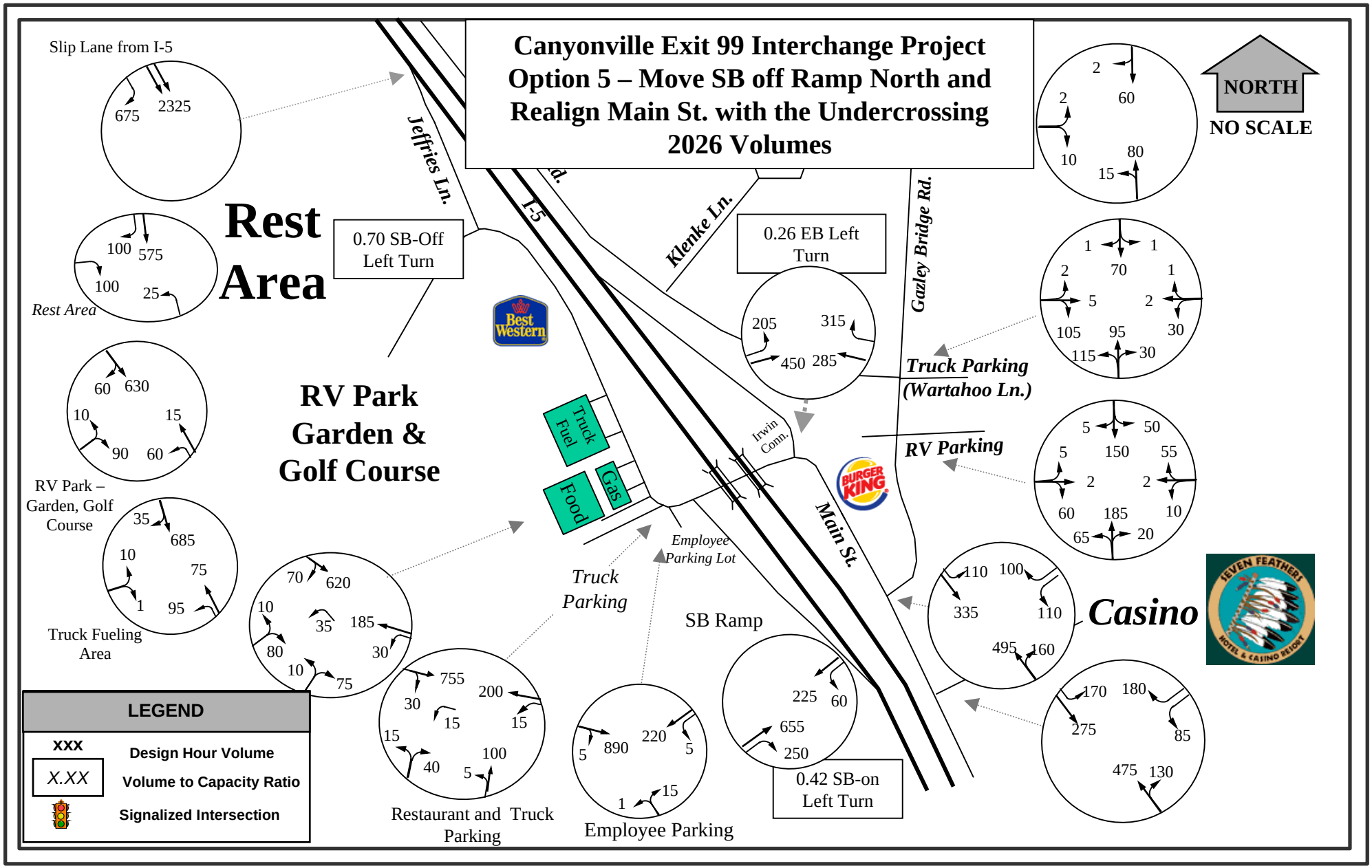
This page left
blank intentionally.



OREGON DEPARTMENT OF TRANSPORTATION **TPAU** **TRANSPORTATION PLANNING ANALYSIS UNIT**

Canyonville Exit 99 Interchange Project, Option 4, 2026 DHV	**File : Option4.ppt**	**Prep. By: I. Toews, P.E.**	FIGURE 10
	Date : 3/23/04	**Revd. By: P. Schuytema, P.E.**	

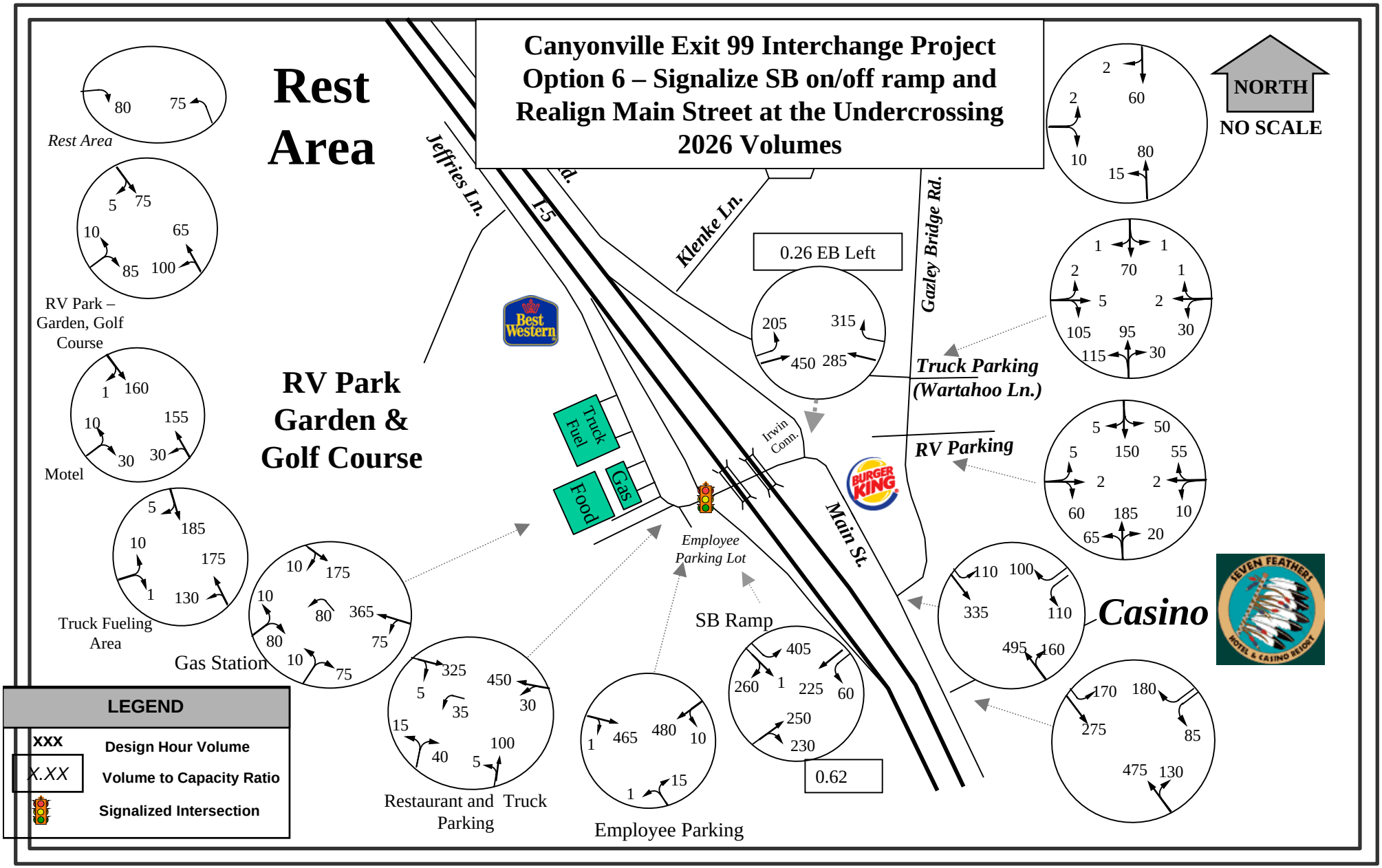
This page left
blank intentionally.



OREGON DEPARTMENT OF TRANSPORTATION **TPAU** **TRANSPORTATION PLANNING ANALYSIS UNIT**

Canyonville Exit 99 Interchange Project, Option 5, 2026 DHV	**File : Option 5.ppt**	**Prep. By: I. Toews, P.E.**	FIGURE 11
	Date : 3/24/04	**Revd. By: P. Schuytema, P.E.**	

This page left
blank intentionally.

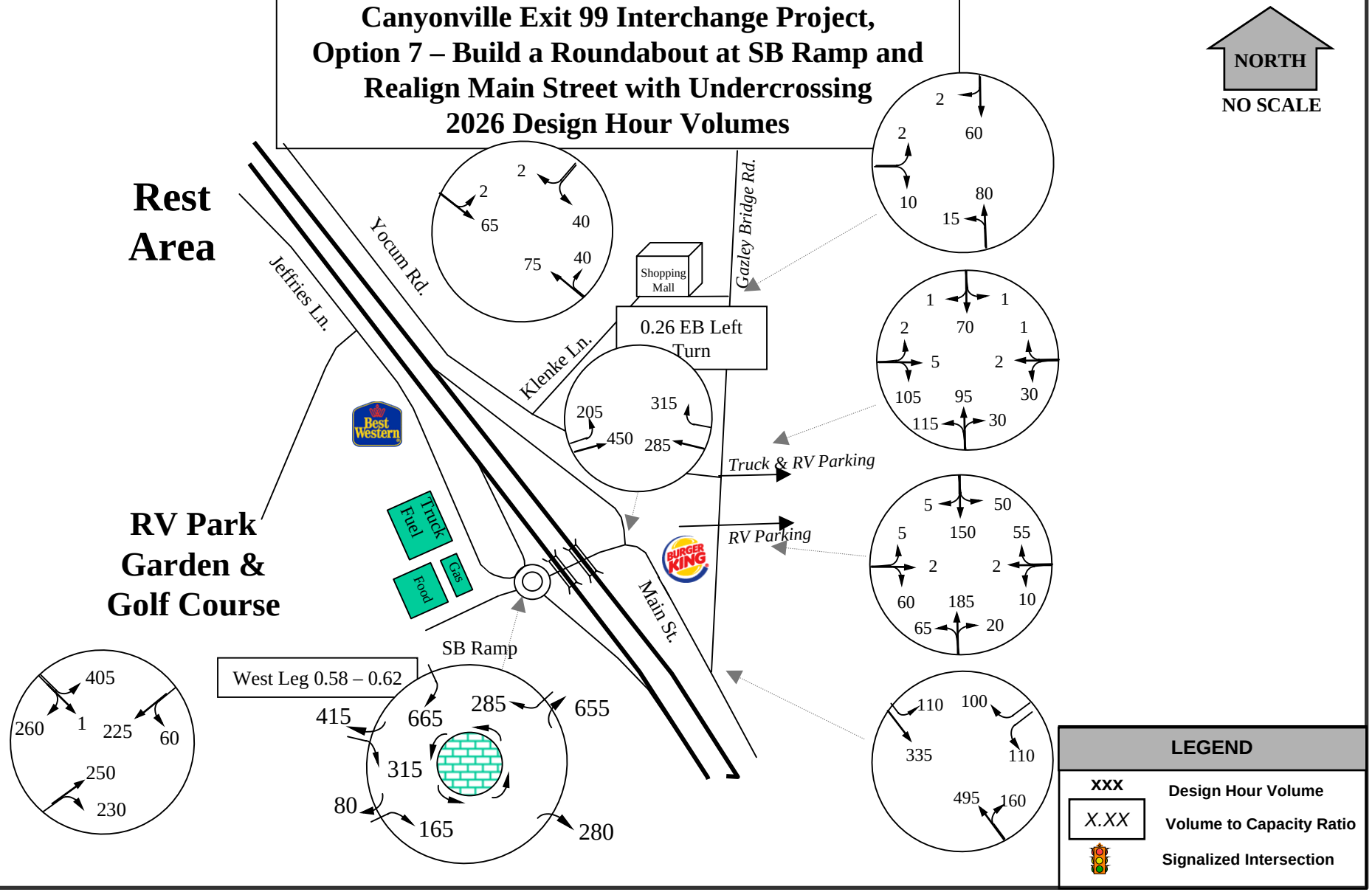


OREGON DEPARTMENT OF TRANSPORTATION **TPAU** **TRANSPORTATION PLANNING ANALYSIS UNIT**

Canyonville Exit 99 Interchange Project, Option 6, 2026 DHV Recommended Option	**File : Option 6.ppt**	**Prep. By: I. Toews, P.E.**	FIGURE 12
	Date : 3/23/04	**Revd. By: P. Schuytema, P.E.**	

This page left
blank intentionally.

Canyonville Exit 99 Interchange Project, Option 7 – Build a Roundabout at SB Ramp and Realign Main Street with Undercrossing 2026 Design Hour Volumes



OREGON DEPARTMENT OF TRANSPORTATION

TPAU TRANSPORTATION PLANNING ANALYSIS UNIT

Canyonville Exit 99 Interchange Project, Option 7, 2026 DHV	File : Option 7.PPT	Prep. By: I. Toews, P.E.	FIGURE 13
	Date : 3/23/04	Revd. By: P. Schuytema, P.E.	

This page left
blank intentionally.

Appendix B

Traffic Counts

ODOT's Permanent Recorder Stations

Future Year Traffic Projections

Cumulative Analysis

Transportation Volume Tables

Analysis Methodology

Preliminary Signal Warrants

This page left
blank intentionally.

Traffic Counts

Manual turn movement counts, which include 15-minute interval turn movement data and full federal truck classification breakdowns, were taken by ODOT staff, at the locations in Table B1. The traffic counts indicated that the peak period was from 4 to 5 PM. All volumes reflect a peak hour from 4 to 5 PM. The traffic counts were seasonally adjusted to 30th Highest Hour Volumes using the # 10-05, Roseburg, and #17-001 Grave Creek.

Table B1: Manual Count Locations

Location	Date	Duration
Canyonville Exit 99, NB on-ramp at the interchange connector road	Nov. 21 to 22 2003	16 hour
Canyonville Exit 99, SB On-Off ramps at the interchange connector road	Nov. 21 to 22 2003	16 hour
Main Street and Gazley Bridge Road	Dec. 5 to 6, 2003	16 hour
Main Street and Seven Feather Casino Entrance	Nov. 21 to 22 2003	16 hour
Gazley Bridge Road and the RV Casino Entrance (Burger King)	Dec. 4, 2003	5 hour
Gazley Bridge Road and the Truck and RV Casino Entrance	Dec. 4, 2003	5 hour
Driveway to the truck fueling area on Jeffries Drive. Taken with video camera.	Dec. 3, 2003	5 hour
North Driveway to the gas station on Jeffries Drive. Taken with video camera.	Dec. 3, 2003	5 hour
South Driveway to the gas station on Jeffries Drive. Taken with video camera.	Dec. 3, 2003	5 hour
Driveway to the restaurant area on Jeffries Drive. Taken with video camera.	Dec. 3, 2003	5 hour
Driveway to the truck parking area on Jeffries Drive. Taken with video camera.	Dec. 3, 2003	5 hour
Driveway to the employee parking area on Jeffries Drive. Taken with video camera.	Dec. 3, 2003	5 hour

ODOT's Permanent Recorder Stations

ODOT maintains 120 permanent recorder stations throughout the state highway system that record information about highway use throughout the year. The data gathered from these recorders include Average Daily Traffic (ADT), Maximum Day, Maximum Hour, 10th, 20th, 30th Highest Hours shown as percent of ADT, traffic classification breakdowns, Historic Annual Average Daily Traffic (AADT) by Year, directional traffic splits, and seasonal variations in traffic.

Future Year Traffic Projections

Future year traffic projections are typically performed through the use of cumulative analysis, historic growth rends or transportation models. The method used in an area depends on the type and availability of information. Historic trends use past year's volumes to project the future volumes, assuming that the future growth trend will be similar to the past. Traffic from developments and vacant land buildout comes from the ITE (Institute of Transportation Engineers) Trip Generation Manual.

Cumulative Analysis

A cumulative analysis was performed to obtain the 2006 and 2026 no-build volumes. A cumulative analysis looks at the existing and proposed development and the resulting generated trips. Historic growth was used to predict the amount of future through trips.

Future through (external – external) trips were estimated using the 20 year historical growth rates for I-5 on the north and south sides of the study area. Over the last 20 years, the average growth rate for I-5 through this area is 2% per year.

Table B2 summarizes the trip generated uses and sizes for proposed development for the project area. Most of the expansion is being developed by the Cow Creek Tribe; therefore, tribal planning representatives were consulted about the type, size, location and completion dates of the proposed developments. Average trip generation rates were developed from the Sixth Edition of Trip Generation from the Institute of Transportation Engineers (ITE).

Reductions for pass-by trips of 10% and 60%, depending on the uses, were applied to the generated trip volumes. The pass-by percentages were developed by following average or similar sized developments in ITE's Trip Generation. Pass-by trips do not add to the traffic volumes on the main lines, but do add to the turning movements at the facilities.

Internal-internal trips were also taken into account when distributing trip generation volumes. Internal-internal trips are those that begin and end within the project area. Because a fair amount of traffic would be expected to be recreational in this area due to the casino, RV Park, golf course, interpretive garden, shopping area and restaurants, internal-internal trips can have an impact on the area traffic dynamics.

Table B2: Primary Trip Generation (PM Peak Hour)

Development	ITE Code	Variable	Size	Total Trips	In	Out
RV Park	416	Sites	200	74	52	22
Interpretive Garden	411, 412, 413, 417	Acres	10	40	20	20
Golf Course	430	Holes	18	49	22	27
Driving Range	432	Tees	10	17	8	9
Shopping Center	823	Square Ft. X 1000	40	85	40	45

Trips generated by the new rest area were developed by exploring the average trips at other rest areas along I-5 in the vicinity and assuming that the new rest area would generate similar traffic volumes. It was assumed that fewer drivers from the NB direction would use the new rest area since NB vehicles would have to go a considerable distance out of direction to get to the new rest area. After these factors were considered, it was concluded that the new rest area would generated 180 trips during the peak hour; 105 trips from the SB direction and 75 trips from the NB direction.

A new RV park is being proposed for the area northwest of the Exit 99 interchange. The new facility is planned to be built before the interchange build project is completed in 2006. It was assumed that the new RV Park would not be filled to capacity in the build year, so the traffic generated for the RV Park was estimated to be 50% of its maximum generated trips in 2006 and near capacity in 2026.

Many factors were taken into account when estimating the trips generated by an interpretive garden. Several similar facilities were contacted and asked about their average number of visitors throughout the year. The trip generation characteristics of several types of park facilities were investigated to determine a reasonable trip generation rate.

One important that needed to be investigated for the factory outlet center was the square footage of the individual stores. Several factory outlet shopping facilities were contacted and asked about the average store size and the average number of visitors throughout the year. The trip generated volumes that were used for the factory outlet center were an average of the volume information collected from this investigation.

Transportation Volume Tables

ODOT's Transportation Volume Tables contain tabulation listing of ADT values for state highways. Data from these tables provide information on current ADT values and historic growth trends.

Analysis Methodology

The Volume to Capacity (V/C) ratios for signalized intersections were analyzed using Synchro and SimTraffic. Synchro is a signal coordinating and timing program by Trafficware and is based on the Highway Capacity Manual, Chapter 9. The timing plans are similar to TRANSYT. Synchro provides level of service designations based on delay, and volume to capacity ratios based on green time. The signalized intersection V/C is a quantitative measure of the ratio between the existing or projected volumes, to the ideal capacity of the roadway at a given location. This ratio is known as the Volume to Capacity ratio (V/C). If the intersection is coordinated, Synchro explicitly calculates the effects of coordination automatically. V/C mobility standards are listed in the 1999 Oregon Highway Plan based on highway classification and surrounding land use.

SimTraffic is a simulation program that models the behavior of vehicles. Turning moves use gap acceptance methodology. SimTraffic provides average speeds for the link conditions, and maximum queue length over the designated time period.
SimTraffic is traffic simulation and animation software. SimTraffic includes the vehicle and driver performance characteristics developed by the Federal Highway Administration for use in traffic modeling.

Unsignalized two-way stop-controlled intersections were analyzed using UNSIG10, ODOT's unsignalized intersection analysis program. UNSIG uses gap acceptance methodology. Four-way stops were analyzed using Highway Capacity Software (HCS) which uses 1994/1997 Highway Capacity Manual (HCM) methods. The interchange area was analyzed using HCS, which uses 1994/1997 HCM methods. Freeway operation with merge and diverge movements were analyzed using HCM2000.

Preliminary Signal Warrant

Of the 8 traffic signal warrants in the Manual on Uniform Traffic Control Devices (MUTCD), Page 4C-1, only Warrant 1 can be used to project a future need for a traffic signal, according to Oregon Administrative Rule 734-020 Rule G (1). Warrant 1 Case A (Minimum vehicular volume) is mainly for high volumes on the minor street. Warrant 1 Case B (Interruption of continuous volume) deals with high volumes on the major street and the potential delays and safety hazards with minor street traffic crossing or turning onto the major street. Warrant 1 uses average daily traffic rather than the MUTCD eighth-highest hour volumes.

Meeting preliminary signal warrants does not guarantee that a signal will be installed. The State Traffic Engineer must approve all new signals on state facilities. Before any signals are installed on the state system, Region 3 will need to perform a field warrant analysis. Even if the actual traffic signal warrants are met, then the ODOT Traffic Management Section and the State Traffic Engineer must approve of the signals before a signal may be installed.

If the proposed signal were on the local system, a complete warrant analysis would need to be completed and approvals done by the appropriate officials.

THIS PAGE WAS INTENTIONALLY LEFT BLANK

APPENDIX C

Agency Coordination

THIS PAGE WAS INTENTIONALLY LEFT BLANK

PUBLIC WORKS DEPARTMENT

Administration
1036 SE Douglas, Room 219
Roseburg, Oregon 97470
(541) 440-4208

DIVISIONS

Administrative Services
1036 SE Douglas, Room 220
Roseburg, Oregon 97470
(541) 440-4526

Engineering and Construction
1036 SE Douglas, Room 304
Roseburg, Oregon 97470
(541) 440-4481

Operations and Maintenance
433 Rifle Range Road
Roseburg, Oregon 97470
(541) 440-4268

Natural Resources
1036 SE Douglas, Room 306
Roseburg, Oregon 97470
(541) 440-4255

PAUL	TERRY H.	DARYL	SUE D.
JANELLE S.	KEN N.	CONNIE	RAY L.
INGRID			MIKE
ANDREW			ROSE
TOM	NOV 16 2005		DAVE
MIKE B.			BOB S.
SHIRLEY			CRAIG
ELIZABETH	BILL S.	JARED	RON H.
SHELLY R.	LORI	CHRIS W.	HAREGU

November 14, 2005

Oregon Department of Transportation
3500 N. W. Stewart Parkway
Roseburg, Oregon 97470

Attention: Lisa Cortes

Reference: I-5 Exit 99 Interchange Area Management Plan Access Strategies

Dear Ms. Cortes:

We have reviewed the Final Draft of the I-5 Exit 99 Interchange Area Management Plan Access Strategies. The access strategies outlined in this document are designed to address the most efficient and effective means of safely accessing property along connecting roadways in the study area in a manner which move toward the spacing standards adopted by the State.

Currently Douglas County has jurisdiction in the study area over Main Street (Old Highway 99), Stanton Park Road (Old Highway 99), Gazley Road and Creekside Road. However, we are in the process of transferring jurisdiction of Main Street, between the northbound off ramp terminal of Exit 98 and the northbound on ramp of Exit 99 and all of Creekside Road, to ODOT jurisdiction. The County will acquire a short extension of Stanton Park Road connecting it to Gazley Road. The study recommends the access strategies along the county maintained roads in the study area. Based on the current development of the adjacent properties and their land use designation and potential future land use, the access strategies are developed to improve and protect the interchange operation. Identifying long term strategies for access management on connecting roads inside the interchange management area is intended to help guide other jurisdictions in managing accesses within their jurisdiction and to promote the long term health of the interchange, while providing efficient and effective strategies for property development.

Although development of the properties adjacent to county facilities may dictate a different access strategy in the future, this document should serve as a useful guide for the development of the properties and their access. We believe that the access strategies outlined in the management plan are reasonable and address the needs for future development and the need for access management guidelines to promote a safe and efficient transportation system.

Sincerely,

Robert G. Paul, P.E., P.L.S.
Director of Public Works

RGP/kl

cc: Mike Luttrell
Phil Stenbeck

g:\data\wp61\tranport.com\exit99\access strategies/kl