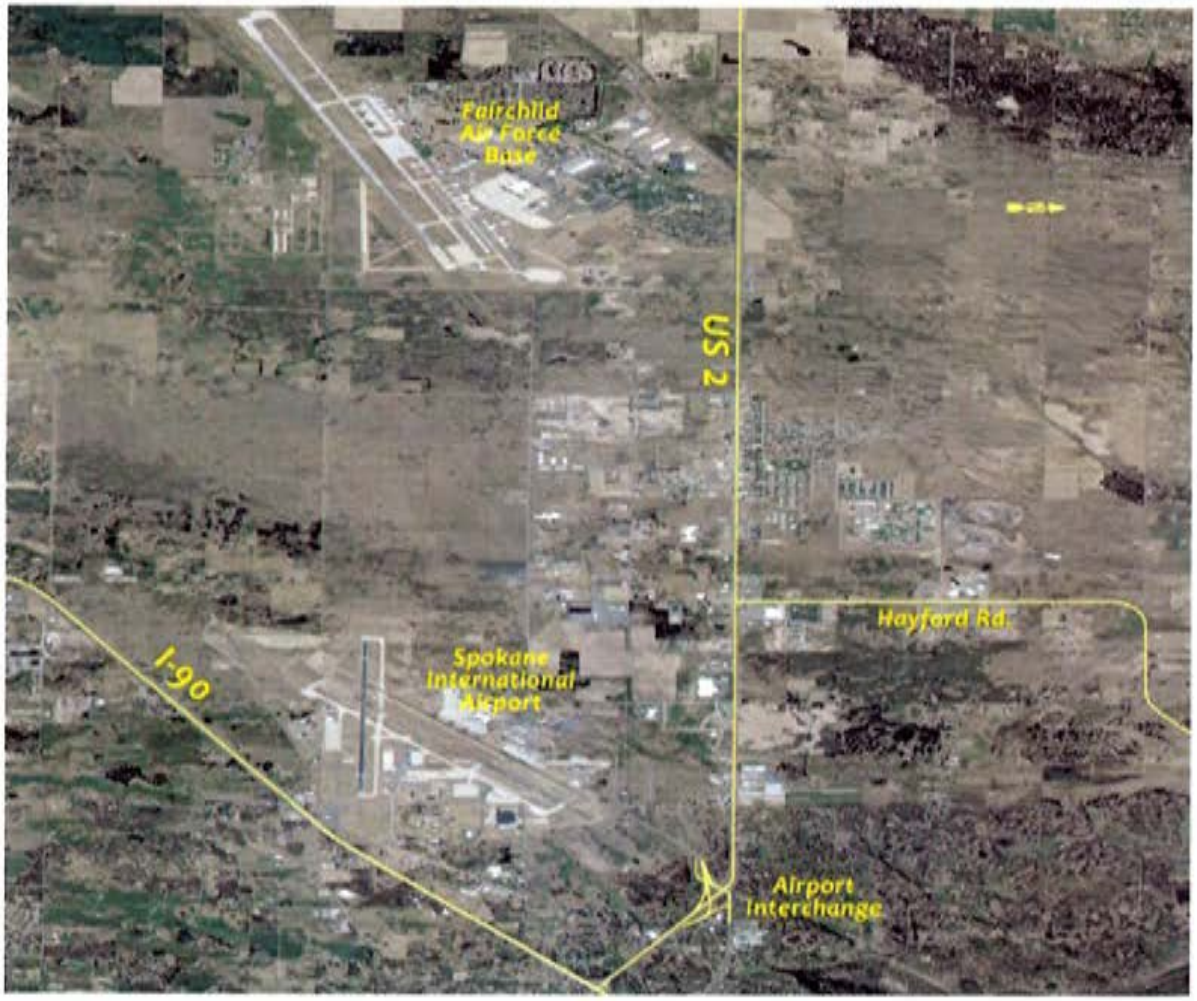
US 2 Route Development Plan
Lincoln County Line to I-90

MP 266.86 to MP 283.01



Washington State Department of Transportation

Eastern Region Planning Office
Route Development Team

Final
November 2010

Route Development Plans (RDPs) are planning studies on state highway facilities. These studies identify deficiencies and recommend improvement solutions to accommodate future development and traffic growth. The studies include analysis of operating conditions, environmental issues, population and land use changes, customer needs, as well as right-of-way and other issues affecting the future of a state highway and its neighbors.

This Route Development Plan is a recognition of current deficiencies, and is expected to be utilized by the Washington State Department of Transportation as a tool to facilitate integration of the needs of the Department of Transportation with the needs of cities, counties, traveling public, and other stakeholders in the development of transportation solutions. Route Development Plans are periodically updated to address and reflect changing issues along a corridor.

Formally Adopted November 2010

Approved:

Keith Metcalf, P.E. Regional Administrator

Washington State Department of Transportation

Eastern Region
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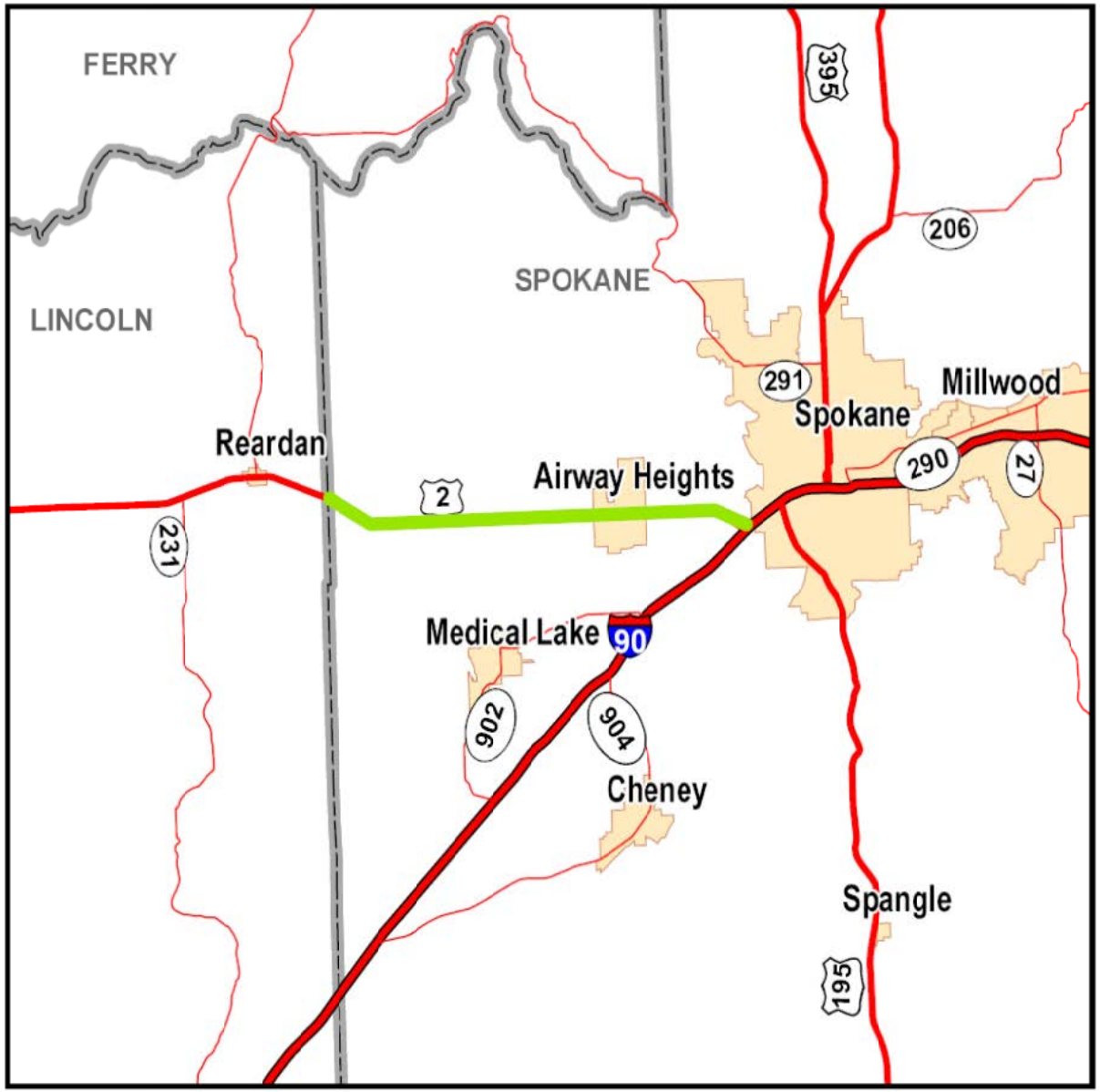
Route Development Team

US-2 LINCOLN COUNTY LINE TO I-90

ROUTE DEVELOPMENT PLAN

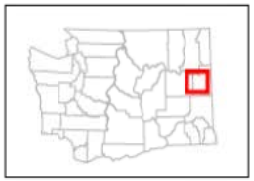


VICINITY MAP

RDP Section

County Boundaries

Incorporated Cities



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Washington State Department of Transportation

Executive Summary

Eastern Region

US 2 Route Development Plan

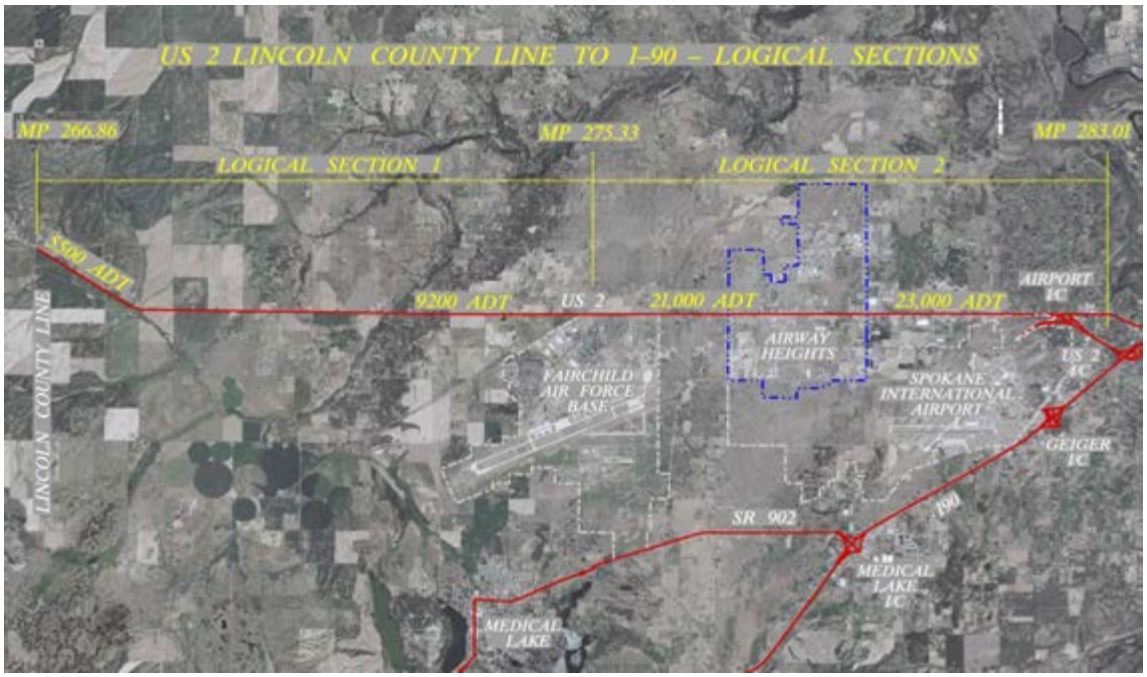
Lincoln County Line to I-90

Route Development Plans

A Route Development Plan (RDP) is a comprehensive roadway improvement strategy designed to address future, as well as existing safety and capacity problems on a section of state highway. RDP's include an assessment of how a roadway currently functions, as well as a projection of how it may operate 20 years into the future. Public input, safety, mobility, land use, and environmental concerns are the primary elements evaluated in a RDP. The Washington State Department of Transportation (WSDOT) Eastern Region (ER) Planning Office utilizes a four-phased process to develop an RDP for a state highway within its jurisdiction. This process is further detailed in the *"Introduction"* section of this RDP.

Route Development Plan Location

The Route Development Plan addresses the section of US 2, a National Highway System (NHS) route, extending from the Lincoln County Line (MP 266.86) to I-90 (MP 283.01) in the west plains area of Spokane County. The study divides the corridor into two distinct sections called "logical sections". The sections are based on access control, roadway characteristics, and scope of residential and commercial development. Logical Section 1, from Lincoln County Line to Fairchild Air Force Base (FAFB), is a two-lane high speed rural facility. Logical Section 2, from Fairchild AFB to I-90, is a five-lane facility with both urban arterial and High speed characteristics.



Plan Purpose and Need

US 2 is a major commuter route serving Spokane International Airport (SIA), the City of Airway Heights, Fairchild Air Force Base, and communities to the west such as Reardan and Davenport. The route development plan addresses growing traffic and collision frequency/severity within the study limits by identifying existing and future deficiencies. The study proposes feasible solutions the public supports and that will guide transportation investment decisions.

This section of the US 2 corridor is experiencing significant growth and increased traffic. New residential and commercial development such as the construction of a Wal-mart Super Store, expansion of the Northern Quest Casino, and other retail stores are attracting trips. Future development plans for the Kalispel and Spokane Tribes' properties also validate the need to study the corridor to plan for future transportation needs.

US 2 Corridor Vision Statement

"Reduce collision frequency/severity and maintain mobility throughout the US 2 corridor by enhancing pedestrian facilities, by implementing mobility strategies as traffic demand increases, and by meeting the transportation needs of the Spokane International Airport, Fairchild Air Force Base, the City of Airway Heights, and surrounding communities."

Summary of Findings & Recommendations

To reduce collision frequency/severity, and provide capacity relief, this route development plan recommends the following:

Short-Range Improvements:

Section 1: Lincoln County Line to Fairchild AFB (MP 266.86 to MP 275.22)

- Construct left turn channelization on US 2 at Wood-Espanola Rd., Ritchey Rd., and Central Rd.
- Construct right turn decel lanes on US 2 at Christianson-Graham Rd.

Section 2: Fairchild AFB to I-90 (MP 275.22 to MP 283.01)

- Extend the Existing Eastbound Fairchild AFB acceleration lane
- Continue developer mitigations as growth continues in the US 2 corridor and modified access control should be established in conjunction with developments or other roadway projects
- Support expansion and improvements of 21st Avenue.
- Ensure with development plans that sufficient right of way exists for a six lane section on US 2
- Pedestrian/Bicycle facilities need to be provided in conjunctions with development along this corridor. A separated, multi-use pathway is the preferred treatment.
- Construct Intersection Improvements***** as warranted:
    - Rambo Rd. – Intersection Control
    - Spokane Tribal Entrance – Intersection Control
    - Craig Rd. – Intersection Control
    - Lawson St. – Add Capacity
    - Garfield Rd. – Add Capacity
    - Lyons Rd. – Intersection Control
    - Hayford Rd. – Add Capacity
    - Deer Heights – Intersection Control
    - Flint Rd. – Intersection Control
    - Spotted Rd. – Intersection Control - Channelization

***Implementation of intersection control measures, including type of improvements, are subject to operational analysis based on conditions in the year of construction.**

- City of Airway Heights Strategies:
    - Support City of Airway Height's Re-vitalization Plan
    - Support expansion of public transit
    - Support other pedestrian safety options
- Access Control
    - Support construction of raised median channelization in Airway Heights and city street consolidation along US 2 for access control

Mid-Range Improvements:

Section 1: Lincoln County Line to Fairchild AFB (MP 266.86 to MP 275.22)

- Construct left turn channelization on US 2 at Dover Rd
- Construct/stripe two way left turn channelization from Brooks Rd. to Galena Underpass

Section 2: Fairchild AFB to I-90 (MP 275.22 to MP 283.01)

- Support installation of High Intensity crosswalk (HAWK) signals or equivalent when warranted.
- Add lanes each direction on US 2 from Lyons Rd. to Russell Rd.
- Support expansion and improvements of 21st Avenue.
- Support acquisition of access rights within the 21st Avenue corridor.
- Support expansion of existing City arterials such as 6th and 12th Avenues from Craig Rd. to Spotted Rd.
- Support Improvement of Craig Rd. from SR 902 to the Hayford Rd./Deno Rd. intersection.

Long-Range Improvements:

Section 1: Lincoln County Line to Fairchild AFB (MP 266.86 to MP 275.22)

- Purchase right of way and access rights as funds become available for future expansion of the US 2 corridor.

Section 2: Fairchild AFB to I-90 (MP 275.22 to MP 283.01)

- Support construction of an alternate route in the 21st Avenue corridor from Rambo Rd. to Spokane International Airport Interchange.
- Pursue public and private funding to construct a new 2-lane arterial between the Hayford Rd./Sprague Avenue intersection and Spokane International Airport Interchange.

Implementation Plan

This RDP identifies a wide variety of proposed improvements that address both congestion relief and collision reduction measures over the next 20 years and beyond. This plan recommends that the following implementation steps be utilized:

Short-range Proposals (0 - 6 Years)

Develop a prioritization list with notes on each improvement for the high benefit, short-range proposed projects.

Mid-range Proposals (6 - 10 Years)

Outline key and/or high benefit proposed recommendations made for the next 6-10 years. Work with partner agencies on getting the recommended solutions that are under local jurisdiction into their 6 year plans.

Long-range Proposals (10 – 20 Years)

Outline the ultimate solutions and take steps to get them integrated into the Highway Systems Plan. Begin scoping, securing funding, and ensure that short and mid-term projects are building toward ultimate plans.

Current funding of WSDOT highway projects (based on existing revenues) is limited to maintenance, preservation, and traffic operations projects. US 2 is identified in the 2007 - 2026 Highway System Plan Eastern Region 20-year Mobility Strategies. The current programmed budget does not include funding for improvements on this segment of US 2.

WSDOT is committed to operate an efficient, safe, and coordinated corridor. Thus, WSDOT Eastern Region will continue to pursue funding for improvements. Periodically,

during future WSDOT Highway System Plan updates, proposed improvement projects on US 2 will be re-assessed in coordination with prioritization efforts in the preservation, safety, mobility, economic initiative, and environmental retrofit programs.

Contacts

We encourage your comments and input on this and future Route Development Plans. Please contact us at:

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Route Development Team
2714 N Mayfair Street
Spokane, WA 99207
(509) 324-6197

http://www.wsdot.wa.gov/Projects/US2/LincolntoI90RDP/

Introduction

Eastern Region

US 2 Route Development Plan

Lincoln County Line to I-90

WSDOT Planning

Planning at the WSDOT is a continuous, evolving, and flexible process that seeks to facilitate the development and implementation of sound and innovative strategies, addressing the dynamic issues and needs that face our transportation system. The goal of WSDOT planning is to create an integrated transportation system capable of supporting a vital economy while maintaining sensitivity to the surrounding environment and promoting a positive quality of life. We endeavor to accomplish this goal by integrating the needs of WSDOT with those of stakeholders including cities, counties, the public, Metropolitan Planning Organizations (MPOs), and Regional Transportation Planning Organizations (RTPOs). During implementation of the recommendations, WSDOT will strive to design highways that are sensitive to the surrounding environment.

Eastern Region RDP Process

Route Development Plans identify proposed improvements on a designated section of a state highway that will incrementally provide measures that reduce collision frequency/severity and meet capacity needs based on statewide prioritization processes for the next 20 years. The RDP process integrates input from various constituents to produce highway corridor improvements endorsed by stakeholders and the community. Some of these elements are noted below in a brief description of the four-phased process utilized by the WSDOT Eastern Region to develop a RDP for a state highway within its jurisdiction:

Phase 1 *Initiate stakeholder and public involvement.*
Data Collection: inventory existing conditions, identify route deficiencies & future needs, identify existing and projected Level of Service (LOS), and examine route continuity.

Phase 2 *Form a Stakeholder Advisory Committee and an internal WSDOT Eastern Region Steering Committee to focus efforts for creation of a route development plan. The internal WSDOT committee includes representation from Planning, Program Management,*

Environmental, Construction, Maintenance, Traffic, Local Programs, and Project Development.

Phase 3 *Identify and develop conceptual design alternatives. Evaluate advantages and disadvantages of each alternative. Present findings to steering committee, stakeholders, and public.*

Phase 4 *Revise conceptual design alternatives, if needed. Complete the RDP. Present final conceptual design alternatives to stakeholders. Obtain inclusion of general conceptual design alternatives in the Washington State Highway System Plan, and in the comprehensive plans of local jurisdictions, as appropriate.*

This Route Development Plan is part of the Washington State Department of Transportation Eastern Region long-range planning program and is also intended to support local jurisdictions in implementation of the Growth Management Act (GMA) *RCW 36.70A*. The RDP also supports the mission of the Washington State Department of Transportation:

Mission Statement:
The Washington State Department of Transportation keeps people and business moving by operating and improving the state transportation systems vital to our taxpayers and communities.

This long-range plan will provide:

- Guidance for regional decision makers regarding future projects on this state route;
- Direction for determining possible mitigation measures for proposed developments;
- Inclusion of improvement solutions in the WSDOT Highway System Plan;
- Guidance for interim projects to ensure the progression towards the long-range objectives;
- Coordination with stakeholders on the future development of this state route; and
- Adoption into regional comprehensive plans.

Stakeholder and Public Involvement

Public involvement is an integral part of the RDP process. As part of WSDOT's plan to emphasize early, continuous, and meaningful involvement, this RDP initiated an aggressive public involvement campaign to promote early and ongoing stakeholder and public input. This resulted in an open exchange of information, and promoted a greater understanding of the competing needs and concerns of WSDOT, stakeholders and the public. An Advisory Group committee was established for the US 2 RDP. This Advisory Group was comprised of representatives from Spokane and Lincoln Counties, City of Airway Heights, as well as local businesses and developers, resulting in over 20 representatives. In addition, WSDOT hosted three listening posts along the route, and held an open house to present conceptual alternatives and receive feedback. A web page is also available at http://www.wsdot.wa.gov/Projects/**US**2/**Lincoln**to**I90**RDP/ providing further detail about the US RDP with an e-mail address for comments. Ultimately, this public involvement effort leads to RDP alternative solutions strongly supported by WSDOT, stakeholders and the public.

Chronology of Events

The following is a chronology of stakeholder and public involvement. This list is an overview. It does not include contacts with individual landowners and developers.

12/13/06 – Letters to interested parties for RDP Advisory Group participation.

01/31/07 – Eastern Region RDP Steering Committee Kickoff Meeting.

03/13/07 – Kickoff RDP Advisory Group Meeting.

05/02/07 – Listening Posts at Dean's Drive Inn (Reardan) and Yokes Fresh Market (Airway Heights).
05/03/07 – Listening Posts at Fairchild Air Force Base

05/21/07 – Eastern Region RDP Steering Committee Meeting #2.

06/12/07 – RDP Advisory Group Meeting #2.

02/21/08 – Eastern Region RDP Steering Committee Meeting #3.

06/25/08 – Eastern Region RDP Steering Committee Meeting #4.

11/13/08 – RDP Advisory Group Meeting #3.

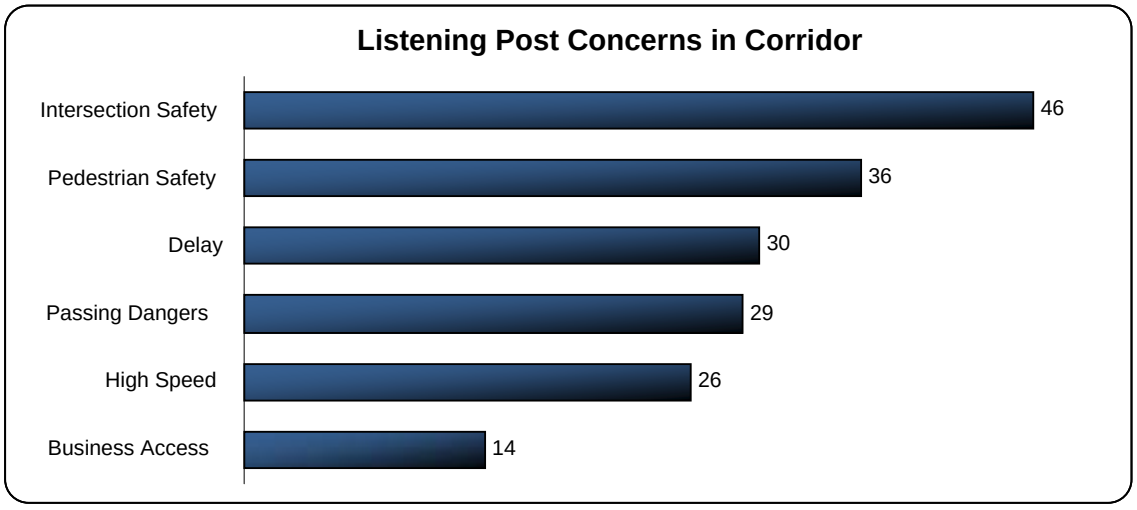
06/04/09 – Open House at Sunset Elementary School in Airway Heights

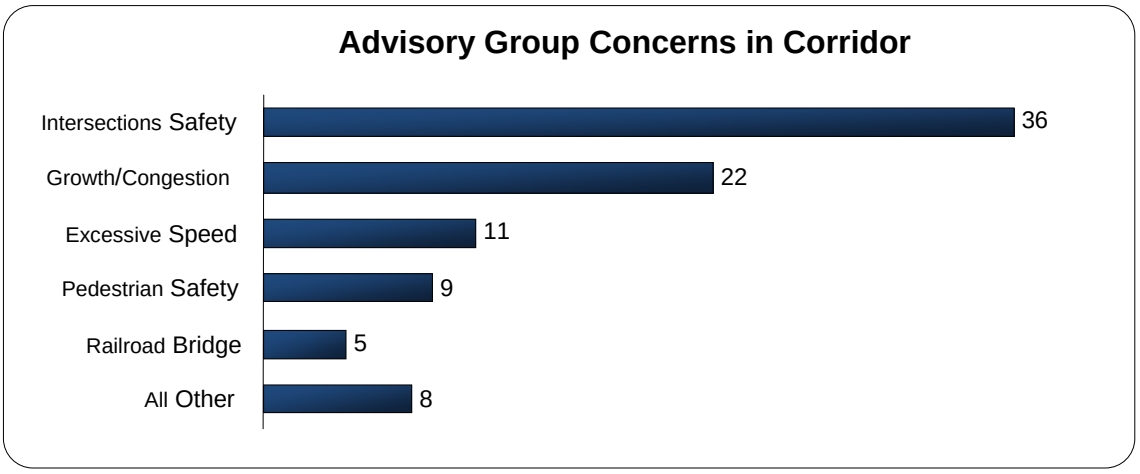
05/04/10 – West Plains/Spokane International Airport Study - Open House

07/28/10 – Stakeholder Meeting for 21st Avenue/US 2 Connections

Summary

Input from the Advisory Group and Listening Posts identified concerns within the US 2 corridor study area. The following priorities were identified:





Study priorities were set based on public input and with the goal to enhance mobility and increase safety. With direction from the Advisory Group and the Eastern Region Steering committee recommendations for improvements within the corridor were proposed and presented to the committees for comment and discussion.

US 2 Trend Analysis

The counties that this corridor serves have experienced significant growth in recent years. The population data for the counties is detailed below along with the growth experienced by Washington State as a whole:

Population

	Census 1990	Census 2000	Percent Increase	Forecasted Increase (2030)	Population 2007	Population Estimate 2030
Spokane County	361,360	417,940	15.7%	41.1%	*451,000*	*589,600*
Lincoln County	8,860	10,180	14.9%	33.6%	*10,300*	*13,600*
Washington State Overall	4,866,700	5,894,100	21.1%	44.4%	*6,488,000*	*8,509,200*

Source: Office of Financial Management (OFM)(April 2007) and U.S. Census Bureau data; Population forecast based on the medium OFM growth forecast.

The growth surge in the west plains area and the City of Airway Heights has been evidenced by both commercial and residential construction throughout the US 2 corridor from Fairchild AFB to Spotted Rd. The number of residential building permits issued in

Airway Heights in 2007 were over 200% higher than 2005 permits. Commercial projects underway or completed include the construction of Kalispel's Northern Quest Casino expansion, Ambassadors Group headquarters, Wal-Mart Supercenter, Washington Trust Bank, Les Schwab Tires, Panda Express, Numerica Credit Union, Spokane International Airport, and others. The continuing development pressure along and around US 2 will degrade this facility.

Overview of Analysis Methodology

A major objective of an RDP is to identify current and future traffic operating deficiencies in a study area. The performance of the existing system can be analyzed using current traffic operations data, such as traffic counts and the physical attributes of the existing roadway system. However, in order to analyze potential future roadway deficiencies, transportation models are relied on heavily.

A regional travel demand model, developed and maintained by Spokane Regional Transportation Council (SRTC), was used to predict future traffic volumes in the US 2 study area. Future traffic volumes on roadway facilities are based on residential and commercial land use growth, as forecast by local governmental jurisdictions such as Airway Heights. The forecasting of future population growth in Spokane County is done in compliance with the state's Growth Management Act. The forecast growth for Spokane County, and its incorporated jurisdictions, is included as an essential data input in the travel demand model that is used to predict future traffic volumes. The SRTC forecast models also include various highway improvements, such as the North Spokane Corridor and the Spokane County Bigelow Gulch project, that are anticipated to be complete by the forecast year.

When performing a sub-area study, such as an RDP, it is a common practice to refine and enhance the "Base" regional travel demand model, which represents all of Spokane County, in order to provide a greater level of traffic detail at the sub-area level. In this case, the sub-area was the US 2 corridor, between the Lincoln County line and the US 2/I-90 interchange. For this RDP, enhancements to the regional travel demand model consisted almost exclusively of adding roads, especially in Airway Heights and its

vicinity, to the SRTC "Base" regional network. Since the focus of this study was the operation of US 2, and its intersections through Airway Heights, it was important to reflect that roadway network in the travel demand model as discretely as possible.

A further enhancement made to the SRTC "Base" model pertained to commercial land use growth forecast for properties owned by the Kalsipel and Spokane Tribes. Due to the rapidly evolving nature of the commercial development of these properties, it was necessary to make adjustments to the SRTC base land use data in order to accurately reflect current development plans.

Once transportation planners and analysts are comfortable with the forecast travel demand model, especially with respect to the future traffic volumes it is predicting on roadways in the study area, the model can then be used to test how various system improvements can possibly affect traffic operations, such as delay and congestion levels. For this RDP, the travel demand model was used to test and analyze a host of improvements consisting of route bypasses, widening of existing facilities, a couplet, and improvements to alternate routes. The general intent of this portion of the analysis was to identify improvements that could potentially provide congestion relief to US 2 and maintain traffic mobility in the corridor.

The travel demand model also produces traffic data, such as intersection turn movements, that are used by operational and traffic simulation analysis software, such as Synchro and VISSIM. While the macroscopic travel demand model provides roadway traffic performance measures at the regional or sub-area level, operational and micro-simulation software tools are used to more discretely analyze traffic operations at the intersection and route segment level. For this RDP, VISSIM and Synchro were used extensively to predict the performance of intersections and the route, based on traffic data from the regional model and relative to the improvement options and scenarios that were tested.

Highway Location, Classification, and Function

Eastern Region

US 2 Route Development Plan

Lincoln County Line to I-90

Route Location

This Route Development Plan addresses the section of US 2 extending from Lincoln County Line (MP 266.86) to Interstate 90 (MP 283.01). The US 2 corridor serves the west plains area of Spokane County. This facility is the primary transportation link to Fairchild Air Force Base, the City of Airway Heights, and other rural cities in Lincoln County. In cooperation with Spokane County and City of Spokane, Airway Heights is moving toward annexation of a portion of the Spokane County West Plains/Thorpe UGA/JPA east of Harvard Rd. The City of Spokane is preparing to annex west to the proposed Airway Heights city limits. The multi-jurisdictional nature of the area requires close collaboration with stakeholders as improvements to US 2 are considered. (See Appendix A)

Route Continuity

The American Association of State Highway and Transportation Officials (AASHTO) publication, A Policy on Geometric Design of Highways and Streets, 2001, defines route continuity as the provision of a directional path along and throughout the length of a designated route. Accordingly, route continuity is evaluated in terms of operational uniformity, appropriate lane balance, and maintenance of a basic number of lanes.

The goal of route continuity is to ease the driving task. This is accomplished through delineation of the through route and by reducing the need to change lanes and search for directional signing. Ideally, an unfamiliar through driver would not have to change lanes in order to continue on a through route. Although the existing configuration of US 2 within the limits of this RDP satisfies the goal of route continuity, the long-term corridor concepts presented in this RDP recognize that US 2 route continuity can be improved. This would be specifically addressed in the transition from the Logical Section 1, two-lane facility, to the Section 2, five-lane at Fairchild Air Force Base.

Route Classification and Function

The primary purpose of the US 2 corridor is to facilitate the transportation of people. The segment of US 2 addressed in this plan serves as a major commuter route between the

metropolitan City of Spokane and the City of Airway Heights and Fairchild Air Force Base. It is also a significant freight route for several outlying smaller cities.

Highway of Statewide Significance (HSS)

Highways of Statewide Significance include highways, arterials, and ferry routes that connect major communities across the state and support the state's economy. US 2 is classified as a Highway of Statewide Significance (HSS).

National Highway System (NHS)

The National Highway System is an interconnected system of principal arterial routes that serve interstate and interregional travel. In addition, these routes meet national defense requirements. US 2 is classified as a National Highway System (NHS) route.

Design Level Classification

The WSDOT Design Manual provides guidance regarding design standards and processes to be used during project development. The manual recognizes three levels of design for highway projects: Basic, Modified and Full Design Levels. The Design Manual utilizes Design Matrices to identify the design level(s) for a specific project. These matrices focus on primary design elements such as, roadway alignments, intersection geometrics, sight distance, access, and geometric elements for roadway and bridge configurations. There are five matrices, each distinguished by route type:

Design Matrix 1 - Interstate Routes (Main Line)
Design Matrix 2 - Interstate Interchange Areas
Design Matrix 3 – Mainline NHS Routes
Design Matrix 4 - Interchange Areas, NHS and Non-NHS
Design Matrix 5 – Mainline Non-NHS Routes

US 2, an NHS route, currently falls under the direction of ***Design Matrix 3***, Mainline NHS Routes (Appendix C).

Functional Classification

The state functional classification is the grouping of highways, roads, and streets that serve similar functions into distinct systems or classes within the total existing or future highway network. The objective of functional classification is to define the appropriate role, mobility vs. access, of various highways in providing service and influencing development. Generally, the higher functional classification routes provide mobility, accommodate higher travel speed, serve long distance travel, and place less emphasis on local access. The lower functional classification routes focus on providing access to the land. The functional classification utilized on highways, from highest to lowest is Interstate, principal arterial, minor arterial, and collector. Functional class is important in determining appropriate design levels and priority in the programming process.

The WSDOT Functional Classification of US 2 is **Principal Arterial** from MP 266.86 to MP 281.50, and **Freeway-Expressway** from MP 281.50 to MP 283.01. US 2 is further distinguished by the following sub classifications:

- Lincoln County (MP 266.86) to Hayford Rd. (MP 279.23) - **Rural Principal Arterial**
- Hayford Road (MP 279.23) to I-90 (MP 283.01 - **Urban Principal Arterial**.

Freight and Goods Transportation System

The Transportation Commission, in cooperation with Cities, Counties, and regional transportation planning organizations, designated the Freight and Goods Transportation System (FGTS). The FGTS is an inventory of the tonnages of freight moving along the highways, streets, and roads of Washington each year. Further analysis of a roadway is triggered either by changes in the classification of a facility or by specific differences in classification of intersecting routes.

The FGTS classification is a dynamic system requiring periodic re-evaluation of a roadway's classification. The system is affected by changes in the economy, international trade and the transportation industry such as changes in travel patterns,

cargoes, and tonnages. Routes are classified by total tonnage of freight carried each year with the designations detailed in the table below:

FGTS Classification System

FGTS Classification	Annual Gross Tonnage	Approximate Number of Large Trucks per Day
T-1	Over 10,000,000	Over 800
T-2	4,000,000 to 10,000,000	320 to 800
T-3	300,000 to 4,000,000	24 to 320
T-4	100,000 to 300,000	8 to 24
T-5*	*Over 20,000 in 60 days	

**The T-5 classification is used in those agricultural areas where harvest occurs over a relatively short period and represents an equivalent to 100,000 tons per year, but compressed into a two-month harvest season.*

The annual FGTS tonnage class for US 2, Lincoln County Line to Fairchild AFB, MP 266.86 to MP 275.33, is **T-3;** the FGTS for Fairchild to I-90 MP 275.33 to MP 283.01 is **T-2**. The FGTS tonnage classifications for US 2 are shown below:

FGTS Annual Tonnage

City Street or County Road	FGTS Class	Tons per Year
Lincoln County Line to Fairchild AFB	T3	2,999,000
Fairchild AFB to I-90	T2	5,781,000

Source: 2005 FGTS Update, Appendix H;

Major freight system users in the corridor include Spokane International Airport, Fairchild AFB, Triumph Composite Systems, Pearson Packaging, Air National Guard, Regional Disposal Co., Garco Steel, Northwest Steel Fabricators, Wal-Mart, Shamrock-Murphy Bros. Paving, US Postal Service Processing and Distribution Center, and others.

Access Management and Control Classification

Highway Access Management – The Access Control Classification System and Standards are defined by Washington Administrative Code (WAC) Chapter 468.52. Five classifications have been established for access management on state highways.

A description of these classifications is in the table below:

Classification Description Table

Highway Classification & Definition	Typical Speed Limits	Minimum Access Spacing	Access Limitations
Class 1 Mobility is primary function.	50 mph and higher	1320 ft.	1 access connection only to contiguous parcels under the same ownership. Private direct access not allowed unless no other reasonable access exists. (Must use county road system if possible)*
Class 2 Mobility favored over access.	35-50 mph (urban) 45–55 mph (rural)	660 ft.	1 access connection only to contiguous parcels under the same ownership unless frontage >1320'. Private direct access is not allowed unless no other reasonable access exists. (Must use county road system if possible)*
Class 3 Balance between mobility and access in areas with less than maximum build-out.	30-40 mph (urban) 45-55 mph (rural)	330 ft.	1 access connection only to contiguous parcels under the same ownership. Joint access connection for subdivisions preferred, but private access allowed with acceptable justification.
Class 4 Balance between mobility and access in areas nearing maximum build-out.	30-35 mph (urban) 35-45 mph (rural)	250 ft.	1 access connection only to contiguous parcels under the same ownership except with acceptable justification.
Class 5 Access needs may have priority over mobility needs.	25-35 mph	125 ft.	More than 1 access connection per ownership allowed with acceptable justification.

Source: WSDOT Design Manual, Chapter 1435 (December 2003)

Access connection shall continue until such time that other reasonable access to the general street system becomes available and is permitted

Access control is established to preserve the safety and efficiency of specific highways and to preserve the public investment. Control is incorporated by acquiring rights of access from abutting property owners, typically by deed, and by selectively limiting approaches to the facility. Highway facilities with established access control are termed either limited access or managed access-controlled highways.

Limited Access facilities have acquired access rights from abutting property owners and are further distinguished as having full, partial or modified access control. A synopsis of access control criteria follows.

Full Access Control Criteria

Fully controlled access highways provide almost complete freedom from disruption by permitting access connections only through interchanges at selected public roads, rest areas, viewpoints, or weighing stations, and by prohibiting all crossings and private connections at grade. *I-90 is an example of a fully controlled access highway.*

Partial Access Control Criteria

Partial access control may be established when warranted on highways other than Interstate. Partial control provides a considerable degree of protection from traffic interference and protects the highway from future strip-type development. Access control on partially controlled highways is exercised to the degree that, in addition to connections with selected public roads, some crossings and private driveway connections may be permitted at grade. Commercial approaches are not allowed within the limits of partial access control. *US 2 from Day Mt. Spokane to Chattaroy (MP 298.48 to MP 306.11) is an example of a partially controlled access highway.*

Modified Access Control Criteria

Modified access control is intended to prevent further deterioration in the safety and operational characteristics of existing highways due to traffic interference associated with strip development by limiting the number and location of access points to the highway. In general, modified access control is applied where some degree of control is desired, but existing and potential commercial development precludes the implementation of partial or full control. *US 2 from Nevada Street to Day-Mt. Spokane (MP 294.10 to MP 298.487) is an example of a highway with modified access control.*

Managed access control regulates access where property rights have not been acquired. Managed access permits are issued either by a local authority (city or town) or by WSDOT.

The access classifications for this segment of US 2 are detailed in the following table:

US 2 Access Management Control & Classification Table

Beg. MP	End MP	Section Description	Existing Classification	Posted Speed Limit
MP 266.86	MP 277.22	Lincoln County Line to Airway Heights	Access Managed – Class 2	60 MPH
MP 277.22	MP 278.21	City of Airway Heights	Access Managed – Class 4	35 MPH
MP 278.21	MP 279.23	City of Airway Heights	Access Managed – Class 3	45 MPH
MP 279.23	MP 281.62	Airway Heights to Russell Rd.	Access Managed – Class 3	55 MPH
MP 281.62	MP 283.22	Russell Rd. to Spokane West Corp. Limits	Full	55 MPH

Source: Eastern Region Access Management Spreadsheet

As part of an effective access management strategy for US 2 east of Hayford Road, modified access control should be established in conjunction with developments or other roadway projects. This will control the number and locations of private access points to US 2 for highway capacity and safety.

Route Classification Plan

The WSDOT Roadside Classification Plan, 1996, (RCP) has been developed to coordinate state highway roadside management. Roadside management encompasses planning, design, construction, and maintenance of the roadside environment. WSDOT policy is to utilize roadside treatments for the protection and restoration of designated roadside character. Roadside character is classified from the roadway user's visual perspective of the landscape. Roadside character is either Natural, which includes Forest and Open classifications, or Built, which includes Rural, Semi-urban, or Urban classifications. Built refers to landscape in which human elements and structures are notable or predominant in the overall context. The terrain of the non-urban section of US 2 MP 266.86 to 274.20 is identified as 'Rolling', the terrain from MP 274.20 to 281.22 is 'Level', and MP 281.22 to 283.01 is 'Rolling'.

The Roadside Character Classification for US 2 is illustrated in the table below.

Begin Mile Post	End Mile Post	Character Classification
266.86	275.19	Rural
275.19	277.09	Semi-Urban
277.09	277.79	Urban
277.79	278.19	Semi-Urban
278.19	283.01	Rural

Source: WSDOT Roadside Classification Plan, 1996

Public Transportation

Mass Transit

Spokane Transit Authority (STA), the primary bus service in Spokane County, currently provides service along US 2 from Sunset Rd to Fairchild Air Force Base. The route serves Airway Heights locations, Northern Quest Casino, West Spokane Industrial Park, and Spokane International Airport. The Kalispel Tribe operates the KALTRAN Tribal Transit System that connects the Kalispel Reservation to STA in downtown Spokane, and provides a connection to the Northern Quest Casino. STA also provides paratransit service for those who qualify under the Americans with Disabilities Act (ADA). Passenger rail service does not currently operate in the corridor.

Pedestrian and Bicycle Facilities

US 2 is not generally used by bicycles but it is a designated route in the SRTC Regional Bike Plan and the Airway Heights' Proposed Bike Routes & Road Inventory. Shoulders are 8'-10' wide and allow for bike travel. Pedestrian movements are expanding as development extends to the east of the City of Airway Heights. There have been several traffic/pedestrian crossing incidents over the years and the community has voiced concerns about pedestrian collisions. Pedestrian circulation along US 2 needs to be provided for in developments both east and west of the city. A separated pedestrian/bicycle pathway should be considered in development proposals.

School Bus Routes

Four School districts are within, or in proximity of, the US 2 corridor study; Cheney School District, Reardan/Edwall School District, Medical Lake School District, and Great

Northern School District. The Cheney, Medical Lake and Reardan/Edwall schools have bus routes that use or intersect with US 2.

Current Land Use Characteristics and Zoning

Land use patterns are what determine the character of the community and dictate the types and locations for future development, which in turn dictate traffic patterns. Land use designations for the adjacent areas along US 2 in Spokane County (MP 266.86 to MP 283.01) are shown on the City of Spokane Land Use Map and Spokane County Comprehensive Plan Land Use map in **Appendix A.** The predominant land use along US 2 in Logical Section 1 is Small Tract Agricultural and Rural Traditional. Land use in Logical Section 2 outside of the incorporated areas of Fairchild Air Force Base (FAFB) and Airway Heights is Rural Traditional and Light Industrial.

Spokane International Airport and Fairchild Air Force Base are both in the proximity of the US 2 corridor. SIA has plans to invest $70 million in improvements to its runway and aprons areas over the next several years. Proposed land use projections show a healthy growth in commercial projects north of the airport in the vicinity of US 2.

The City of Airway Heights Comp Plan addresses Fairchild Air Force Base, which is located southwest of the City, greatly influencing the community's overall land use pattern. FAFB's flight operations over Airway Heights create noise, and according to Air Force studies, a potential crash hazard. To help ensure consistency with flight operations, the city uses the Air Installation Compatible Use Zone (AICUZ) during project reviews. The City has adopted the Airport Overlay Zone (AOZ) that regulates land uses in parts of the City most impacted by the noise and collision potential (see **Appendix B**). The AICUZ implements a program developed by the Department of Defense requiring installations, like FAFB, to assess impacts of air defense installations on surrounding communities. The purpose of this program is to promote compatible land development in areas subject to aircraft noise and collision potential. The intent of the FAFB AICUZ program is to provide recommendations that blend the national defense needs of the U.S. Air Force with the economic, safety and quality of life needs of the surrounding communities of Medical Lake, Spokane County, Spokane and Airway Heights. There

are three main constraints airfields bring to the surrounding community: building height limitations, noise levels, and collision potential zones. For additional information on the City's land use see:

http://www.cawh.org/documents/Comp_Plan_2006/Chapter04%20Land%20Use.pdf

Social Demographics

City of Airway Heights - Total Population: 4,526

Total Minorities by Race	**4,526**	**Percentage**
White	3,676	81.2%
Black/African American	470	10.4%
American Indian	123	2.7%
Asian	82	1.8%
Other/Two or More Races	175	3.9%

Total in Poverty Universe*	**2,847**	**Percentage**
In Married Families	1,537	54.0%
Other Families	531	18.7%
Married-Couple Households	471	16.5%

Total Disabilities	**2,127**	**Percentage**
Sensory Disability	85	4.0%
Physical Disability	475	19.6%
Mental Disability	417	19.6%
Self-Care Disability	273	12.8%
Go-outside-home Disability	382	18.0%
Employment Disability	495	23.3%

Language (Pop. 5 yr. & Over)	**4,290**	**Percentage**
English Only	3,837	89.4%
Spanish	304	7.1%
Indo-European	59	1.4%
Asian/Pacific Island	85	2.0%
Other Languages	5	0.1%
Pop. That Speak English Well	4,229	98.6%

**** Poverty universe includes all people EXCEPT (1) those in institutions, military group quarters, and college dormitories and (2) unrelated \|\| individuals under 15 years old (children who are not related family members).***

Prepared by Washington State Office of Financial Management, Source: Census 2000 Summary File 3; prepared by the U.S.Census Bureau, 2002 (www.census.gov)

Existing Facility

Eastern Region

US 2 Route Development Plan

Lincoln County Line to I-90

Right of Way

Approximate total R/W widths along the US 2 RDP corridor are:

Rural-Principal Arterial, MP 266.86 to MP 275.22, Two lane – 100 ft. to 200 ft.

Rural-Principal Arterial, MP 275.21 to MP 279.22, Undivided Multilane – 150 ft.

Urban-Principal Arterial, MP 279.22 to MP 281.73, Undivided Multilane – 150 ft.

Urban-Principal Arterial, MP 281.73 to MP 283.01, Divided Multilane – 150 ft. to 300 ft.

The current WSDOT Design Manual, Figure 440-7a, recommends the following right-of-way widths for a NHS Principal Arterial route:

	Two Lane		**Undivided Multilane**		**Divided Multilane**	
Design Class	P-6		P-6		P-1	
	Rural	Urban	Rural	Urban	Rural	Urban
DHV*	Over 301		Over 700		Over 1500	
Minimum Right of Way	120’	80’	150’	80’	63’ From Traveled Way	Not less than X-Section Elements

**DHV in Design Year – DHV is the Average Daily Traffic (ADT) multiplied by the percentage of ADT occurring in the peak hour (K).*

There are several locations where the existing right-of-way along the US 2 corridor is less than WSDOT recommendations.

Signals

Within the limits of this US 2 RDP corridor, signals were activated on the dates specified at the following locations:

Cross Street	Location (MP)	Activation Date
Fairchild Air Force Base	MP 275.33	March 1, 1998
Lawson Street	MP 277.98	Before June 1999
Garfield Road	MP 278.47	Before June 1999
Hayford Road	MP 279.23	June 20, 1979

Bridges and Structures

There are 12 bridges within the US 2 corridor study as described below:

Location	Bridge Name & Number	Type of Structure	Width	Length	Year Built
MP 267.23	Stevens Ck. Upper, Bridge No. 002/601	Concrete Cast in Place	36.0	23	1946
MP 267.38	Stevens Ck. Lower, Bridge No. 002/602	Concrete Cast in Place	36.0	32	1947
MP 270.90	BN RR OC (NP), Bridge No. 002/604	Concrete Cast in Place	40	122	1938
MP 272.41	Deep Creek, Bridge No. 002/606	Concrete Cast in Place	26	180	1941
MP 275.10	Galena RR UC Bridge 002/608	Steel	14	184	1936
MP 282.03	Airport Rd. OC, Bridge No. 002/614N	Concrete Cast in Place	38	138	1964
MP 282.03	Airport Rd. OC, Bridge No. 002/614S	Concrete Cast in Place	38	138	1964
MP 282.03	W-W Ramp Sunset OC, Bridge No. 002/615W-W	Concrete Cast in Place	72	82	1972
MP 282.16	W-W Ramp OC, Bridge No. 002/615N	Concrete Cast in Place	38	150	1972
MP 282.16	W-W Ramp OC, Bridge No. 002/615S	Concrete Cast in Place	38	150	1972
MP 282.65	Geiger Blvd. OC, Bridge No. 002/616N	Concrete Cast in Place	30	166	1964
MP 282.65	Geiger Blvd. OC, Bridge No. 002/616S	Concrete Cast in Place	30	166	1964

A measure of a bridge's ability to carry vehicle loads, termed structural capacity, determines the assigned "load rating". The load rating identifies whether or not a bridge is "posted" for legal weight vehicles or if the bridge is "restricted" for overweight permit vehicles. Currently, there are no vehicle weight restrictions on these structures. The Deep Creek Bridge MP 272.41 has deficient shoulder width. The Galena RR UC Structure MP 275.10 has deficient vertical clearance. Bridge Condition Reports that provide additional details can be found in **Appendix D**.

Environmental

National Environmental Policy Act (NEPA) and State Environmental Policy Act (SEPA)

Depending upon the level of impacts scoped for improvements, the documentation for NEPA could be either a Documented Categorical Exclusion or an Environmental Assessment. The SEPA documentation would be either a Determination of Non-significance with a checklist, or SEPA could be satisfied by adopting the NEPA document.

Socioeconomic and Environmental Justice

These characteristics are the most dynamic over time. Multiple sources of demographic information as well as public involvement will help identify issues and impacts. No projects funded with Housing and Urban Development (HUD) funds were identified in the study area.

Section 4(f) and other recreation resources

There are several recreation properties north of US 2 in or adjacent to Airway Heights, which also involve funding through the Washington State Recreation and Conservation Office (RCO). Shorty Combs Park is located on 18th Avenue, and would likely be impacted at least indirectly by the 18th Avenue alignment. This park is a Section 4(f) resource.

Air Quality

Spokane region has been designated by the Environmental Protection Agency (EPA) as being in attainment of national ambient air quality standards for carbon monoxide (CO). As intersection improvement projects are funded they will be subject to air quality conformity determination analysis.

Noise

A new or expanded roadway must be evaluated for traffic noise impacts in accordance with applicable standards. Noise impacts will be mitigated in accordance with WSDOT policy.

Geological, Soils

The terrain within the Route Development Plan area is flat to low rolling hills. Soils in the area are primarily silt loams, and many of the soil types present are classified as Prime and Unique Farmland, or Farmland of Statewide Importance. Conversion of lands with these soils to urban uses should be avoided.

Water

There are no streams or other surface water present in the study area. The area is designated by Spokane County as aquifer recharge zone with moderate susceptibility for groundwater contamination. This may affect the storm water design for a new or expanded roadway.

Wetlands

There is a concentration of wetlands near the east end of study area. These appear to be emergent wetlands, for which mitigation of impacts is feasible. However, all wetland impact should be avoided to the extent possible. Delineation and classification of wetlands potentially impacted will be performed as the project is designed.

Wildlife and Habitat

There is a small area of prairie and steppe habitat conservation area near the east end of the study area. A Biological Assessment will determine whether any threatened or endangered species or specific habitat concerns are present.

Hazardous Materials

There does not appear to be any significant hazardous materials sites in the study area. There are a number of leaking underground storage tanks identified in the study, however it is likely these can be avoided as a project is designed.

Historical Resources

Spokane Battlefield State Park MP 275.20 US 2 and Dover Road

What: The park is the site of the last major Indian Battle of the Inland Empire. The United States defeated the allied Coeur d'Alene, Palouse and Spokane Tribes in September of 1858. A Camp existed near this area from Aug 31 to Sep 5. On Aug 31 the camp was near the smaller of the Four Lakes, and then moved northward to Spokane Plains battlefield, and then ended up at the Spokane River, though most fighting was finished at the plains.

Where: The first site is among the Four lakes: Silver, Granite, Meadow, Willow; and on the plain between the hills to the northeast of Silver. The other battle ending site is nine miles west of Spokane on Hwy 2, just west of the entrance to Fairchild AFB and therefore to the north of the Four Lakes area where the battle began five days before.

Roadway Design Elements

The alignment of a highway greatly impacts the environment, the structure of surrounding communities, and the motoring public. A variety of design elements are carefully combined to provide a highway facility that serves the motoring public, consistent with the planned function of the facility. Each alignment design element should complement other elements to produce a consistent, safe, and efficient design. There are several principal elements of design common to all highways. These include horizontal and vertical alignment, sight distance, superelevation, and roadway widths. This RDP will address these principal elements only. As shown in Design Matrix 3 (**Appendix C**), there are many additional design elements that should also be evaluated during project development phase.

Terrain

Terrain classifications within the US 2 corridor study limits, based on the 2006 WSDOT State Highway Planning Log, are as follows:

MP 266.86 to MP 274.20 – Rolling Terrain
MP 274.20 to MP 281.22 – Level Terrain
MP 281.22 to MP 283.01 – Rolling Terrain

Posted Speed

The posted speed limit along the US 2 RDP corridor ranges from 35 mph to 60 mph as detailed in the table below:

Posted Speed Limit & Desirable Design Speed

Mile Post	Description	Posted Speed Limit (mph)	Desirable Design Speed (mph)
MP 266.86 - MP 273.00	Lincoln County Line to Brooks Road (Rural)	60	65
MP 273.00 - MP 277.08	Brooks Rd. to Craig Rd. (Rural)	55	60
MP 277.08 - MP 278.22	Craig Rd. to Russell Street (Rural)	35	35
MP 278.22 - MP 279.23	Russell Street to Hayford Road (Rural)	45	45
MP 279.23-MP 283.01	MP 9.80 to MP 12.48 (Urban)	55	60

Source: WSDOT State Highway Planning Log, 2006 Planning Report

Design Speed

The choice of a design speed is influenced by functional classification, posted speed, operating speed, terrain, traffic volumes, collision history, access control, and economic (funding) factors. ***However, a geometric design that adequately allows for future improvement is the major criterion, rather than strictly economics.*** It is also essential to consider the geometric conditions of adjacent sections of highway as drivers typically expect to be able to maintain a uniform speed for a significant length of highway.

It is desirable that the design speed and the posted speed correlate as follows:

Desirable Design Speed

Route Type	Posted Speed	Desirable Design Speed
Freeways	All	10 mph over the posted speed
Non-Freeways	45 mph or less	Not less than the posted speed.
	Over 45 mph	5 mph over the posted speed

Source: WSDOT Design Manual 2005, Figure 440-1.

According to the WSDOT Design Manual, highway arterials that have obvious "street-like" characteristics, operationally and physically, do not require a design speed determination. In these situations, closely spaced intersections and other operational constraints ordinarily inhibit vehicular speeds, neutralizing the design speed factor.

Roadway Geometrics

The typical roadway section of existing US 2 within the RDP limits, outside of the city limits, is a two-lane facility providing ***12-foot lanes and 8- foot shoulders***. The auxiliary lanes on US 2 are detailed in the following Tables:

***Climbing Lanes** (Deep Creek Rd. to Brooks Rd.)*

US 2 Eastbound		
Mile Post		Length
Begin	End	(Miles)
272.61	273.39	0.78

Source: WSDOT State Highway Log, 2006 Planning Report

***Two-Way Left Turn Lanes** (Craig Rd. to Russell Rd.)*

Mile Post		Length
Begin Lane	End Lane	(Miles)
277.22	281.50	4.28

Source: WSDOT State Highway Log, 2004 Planning Report

Major Intersection Channelization

Mile Post	Intersection	Eastbound		Westbound	
		Left Turn	Right Turn	Left Turn	Right Turn
268.59	Sunset Rd.		*Taper*		
269.16	Coulee-Hite Rd.		*Taper*		*Taper*
271.17	Espanola-Wood Rd.		*Taper*		*Taper*
272.56	Deep Creek Rd.				
273.18	Brooks Rd.		*Taper*		*Taper*
274.20	Christianson-Graham Rd.		*Taper*		*Taper*
275.21	Dover Rd.				*Taper*
275.33	Fairchild Air Force Base	*Lane*		*Lane*	
276.22	Rambo Rd.		*Taper*		*Taper*
277.22	Craig Rd.	*TWLT*		*TWLT*	
277.73	Lundstrom St.	*TWLT*		*TWLT*	
277.85	King St.	*TWLT*		*TWLT*	
277.98	Lawson St.	*Lane*		*Lane*	
278.47	Garfield Rd.	*Lane*	*Lane*	*Lane*	*Lane*
279.23	Hayford Rd.	*2 Lane*		*Lane*	*Lane*
280.22	Flint Rd.	*Lane*		*Lane*	
281.22	Spotted Rd.	*TWLT*	*Lane*	*Lane*	

Horizontal Alignment – Radius and Superelevation

WSDOT evaluates superelevation rates along existing curves utilizing the following equation:

$$R = \frac{6.68*V^2}{(e + f)}$$

Where:
R = The minimum allowable radius of the curve in feet
V = Design speed in miles per hour
e = Superelevation rate in percent
f = Side friction factor based on design speed

Horizontal Curves

PC Mile Post	PT Mile Post	Radius (ft.)	Central Angle (Degrees)	Length (ft.)	Super elevation (ft./ft.)	Speed Limit (mph)	Minimum Allowable Radius (ft.) R=6.69V^2/e+f
266.82	266.92	5730	10°42.0’	494	0.05	60	1415
268.46	268.60	2865	30°30.2’	1525	0.06	60	1336
279.22	279.24	5730	00°56.1’	95	0.02	45	1347
280.26	280.28	5730	01°33.1’	154	0.02	55	1347
281.30	281.32	5730	00°35.0’	120	0.02	55	1347
281.58	281.62	2865	00°02.5’	198	0.02	55	1347
281.84	281.98	1910	54°43.0’	787	0.06	55	1064

Vertical Curves

Begin Vertical Curve (mile post)	End Vertical Curve (mile post)	Length (ft.)	Algebraic Difference in Grades (1) (% Grade)	Existing Stopping Sight Distance (ft.)	Minimum Desirable Vertical Curve Length	Posted Speed (mph)
266.83	266.99	800	-1.80	525	400	60
267.09	267.17	400	1.57	525	200	60
267.33	267.41	400	0.67	525	100	60
267.70	267.82	600	-1.50	525	310	60
268.16	267.24	400	0.85	525	110	60
268.40	268.48	400	0.94	525	120	60
268.59	268.71	600	4.35	525	530	60
268.81	268.93	600	-5.16	525	1100	60
268.98	269.06	400	-1.86	525	390	60
269.08	269.14	300	3.44	525	420	60
269.25	269.31	300	-2.60	525	540	60
269.43	269.55	600	6.14	525	690	60
269.67	269.71	200	-1.72	525	280	60
269.80	269.82	100	-0.95	525	200	60
269.85	269.89	200	-1.83	525	330	60
269.89	269.97	400	-2.54	525	530	60
270.26	270.28	100	1.38	525	170	60
270.52	270.56	200	-0.01	525	100	60
270.60	270.68	400	2.28	525	280	60
270.74	270..92	1000	-3.12	525	650	60
271.06	271.14	400	1.32	525	170	60
271.20	271.26	300	-1.39	525	290	60
271.42	271.46	200	1.07	525	130	60
271.50	271.56	300	-1.83	525	380	60
271.62	271.68	350	1.58	525	200	60
272.12	272.26	700	-3.82	525	790	60
272.32	272.38	350	7.17	525	880	60
272.44	272.46	150	3.72	460	380	60
272.73	272.95	1200	-5.82	460	930	55
273.46	273.48	100	-0.63	460	100	55
273.63	273.67	200	-1.02	460	160	55
273.67	273.72	300	2.12	460	220	55
273.79	273.83	200	-0.58	460	100	55
273.90	273.92	100	-0.34	460	60	55
273.93	273.95	100	-0.22	460	40	55
274.01	274.05	200	1.62	460	170	55
274.05	274.09	200	-1.34	460	210	55
274.10	274.14	200	-1.06	460	170	55
274.15	274.17	100	0.77	460	80	55

Begin Vertical Curve (mile post)	End Vertical Curve (mile post)	Length (ft.)	Algebraic Difference in Grades (1) (% Grade)	Existing Stopping Sight Distance (ft.)	Minimum Desirable Vertical Curve Length	Posted Speed (mph)
274.38	274.42	200	1.46	460	150	55
274.42	274.46	200	-2.7	460	430	55
274.58	274.62	200	1.39	460	150	55
274.79	274.83	200	-0.39	460	60	55
274.93	275.01	450	-3.36	460	520	55
275.02	275.10	450	7.38	460	650	55
275.12	275.20	410	-3.25	460	510	55
275.29	275.30	100	-0.07	460	20	55
275.50	275.52	100	-0.47	460	80	55
275.59	275.63	200	0.94	460	100	55
275.90	275.96	300	-0.62	460	100	55
276.15	276.21	300	-0.99	260	50	35
276.33	276.37	200	0.76	260	40	35
276.63	276.65	100	0.46	260	30	35
276.82	276.88	300	1.01	260	60	35
277.01	277.05	200	-1.06	260	60	35
277.35	277.37	100	-0.13	260	20	35
277.95	277.99	200	-0.75	260	40	35
278.53	278.59	300	0.46	345	40	45
278.94	278.96	100	-0.20	345	20	45
279.21	279.23	100	0.20	345	20	45
279.48	279.50	100	0.21	460	30	55
279.51	279.53	100	-0.48	460	80	55
279.57	279.59	100	0.22	460	30	55
279.72	279.74	100	-0.22	460	40	55
280.05	280.07	100	0.37	460	40	55
280.34	280.36	100	0.18	460	20	55
280.48	280.50	100	-0.80	460	130	55
280.81	280.83	100	-0.22	460	40	55
280.88	280.92	200	-1.10	460	180	55
280.92	280.98	300	2.32	460	250	55
281.17	281.21	200	1.68	460	180	55
281.61	281.67	300	3.50	460	370	55
281.68	281.76	400	2.60	460	270	55
281.86	282.04	1000	-5.98	460	960	55
282.21	282.31	500	3.98	460	420	55
282.45	282.59	700	-2.57	460	420	55
282.97	283.01	200	2.36	460	250	55

Source: Approved Right of Way Plans, WSDOT TRIPS System, Horizontal and Vertical Alignment Report
(1) Algebraic difference is positive for a sag curve and negative for a crest curve.
(2) Approximate curve location and length from TRIPS System
Vertical curve has a design speed less than posted speed.

Utilities

There are numerous aerial and buried utilities located along this segment of the US 2 corridor.

WSDOT has recorded the following utility holders within the RDP limits:

- CenturyTel of Washington
- Washington Water Power
- AT&T Corp.
- Avista
- Qwest Communications
- U.S. West Communications
- Inland Power and Light
- U.S.A. c/o Department of Army
- Time Warner Telecom
- Comcast Communications
- IP&L
- City of Airway Heights
- City of Spokane
- Pacific Northwest Pipeline
- B.L. Brooke (Misc.)

Existing & Future Operating Conditions

Eastern Region

US 2 Route Development Plan

Lincoln County Line to I-90

Collisions

WSDOT's Transportation Data Office is the repository for all collisions reported in Washington State on state routes, county roads and city streets. All injury or fatal collisions are reported along with any property damage collisions exceeding $700 value in property damage. The Transportation Data Office compiles and prints the *Washington State Collision Data Summary* on an annual basis.

Washington State's current guidance for the Strategic Highway Safety Plan is contained within the Target Zero report dated February 28, 2007. This document identifies the state's safety needs including guidance on investment decisions to achieve significant reductions in traffic fatalities and serious injury collisions. The stated goal is zero traffic deaths and zero serious injury collisions by the year 2030. Washington's executives plan to update this document in 2009 to 2010.

Safety Project Identification and Scope for Collision Analysis Corridors (CAC's) & Collision Analysis Locations (CAL's)

Purpose

The intent of this paper is to outline a process for identifying collision reduction safety needs and the methods to determine and document the scope of projects to address them.

Background

WSDOT's Strategic Highway Safety Plan, Target Zero states "By the year 2030, Washington State will achieve zero traffic deaths and zero serious injuries. As the Target Zero focuses on serious injury and fatal crashes, it is proposed that locations with these types of crashes be the primary focus of our collision reduction safety projects.

Discussion

Identification of CAL's and CAC's

To focus on the serious injury and fatal crashes, the following screening methods are proposed:

Point Locations

1. Obtain current and two prior bienniums of collision location analysis data from TDO.
2. Combine incident data from all three lists as follows:
    a. First compilation consists of Fatal, Serious, Evident injury.
    b. Second compilation consists of Fatal and Serious
3. Identify point locations consisting of 0.25 miles in radius and combine incident values across all three biennium's of data for both compilations.
4. Rank point locations by combined societal cost of 2 or 3 incident types for each relevant compilation.

Segment Locations

1. Divide state hwy system in to 10 mile segments.
2. Plot six years of collision data in two compilations:
    a. First consisting of Fatal, Serious Injury, Evident injury.
    b. Second compilation consists of Fatal and Serious Injury
3. Rank segments by combined societal cost of 2 or 3 incident types for each relevant compilation.
4. Determine overlap of point locations w/segments and if point location is viable project remove data from compilation and recalibrate ratings.

Scope and Documentation

The intent of collision reduction safety projects is to correct specific elements at a location or a segment that may be contributing to a high severity collision history. The current Design Matrices are based on the concept of correcting all geometric deficiencies at the location (not just the elements related to the crash history). Because each location will be unique and the intent is to limit the projects to the specific deficiencies, a design matrix approach would be difficult to implement and may result in a large number of deviations. An alternate approach is to use a project analysis to identify the appropriate work to be included. The Project Analysis would include the following:

- Collision Analysis
- Identification of Geometric and Operational deficiencies that are consistent with the corridor vision

- Elements associated with serious or fatal collisions
- Design Year proposed for improvements
- Design Vehicle
- Design Speed
- Benefic/cost evaluation for proposed improvements

The US 2 study corridor included one 'Collision Analysis Corridor'. This segment was from Craig Rd. MP 277.22 to Russell St. MP 278.22. The segment was addressed as part of the RDP (See Pg. 59).

Corridor Analysis

The Washington State Annual Highway Collision Data Summary allows comparison of collision and fatality rates on a segment of highway to statewide rates as well as rates for the region, state functional classification, and county based on single or multi-year periods. Data includes total points per mile (based on point values assigned to severity of collision), number of collisions per mile, and average severity per mile. Severity point assignments are shown below.

10 - Points per FATAL collision
9 - Points per SERIOUS INJURY collision
3 - Points per EVIDENT INJURY collision
2 - Points per INJURY collision
1 - Points per PROPERTY DAMAGE ONLY collision

Collision severity is also associated with societal costs. The Office of Financial Management assigns monetary values to the five collision categories.

The table below shows the severity point comparisons. The most recent year covered by this report (for comparing statewide data) is the 2006 Collision Data Summary.

	US 2 Rural Principal Arterial Avg. 2003-07*	US 2 Urban Principal Arterial Avg. 2003-07*	ER Rural Principle Arterial 2006	ER Urban Principle Arterials 2006	WA State Principle Arterials 2006	WA All Highways 2006	ER All Highways 2006	Spokane County All Highways 2006
Accident Rate	0.78	1.13	1.06	3.51	2.08	1.65	1.38	1.65
Fatal Acc. Rate	0.93	1.34	1.93	0.23	1.05	0.85	1.14	0.38

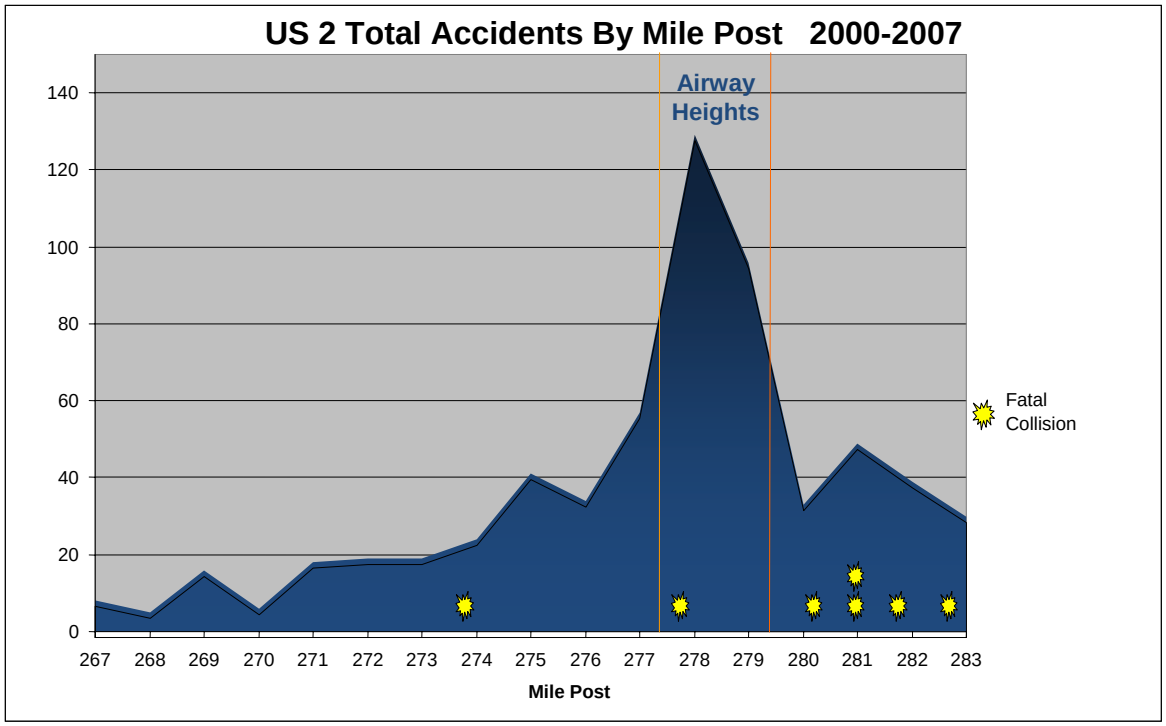
**Rates are based on 7000 AADT Section 1; 21000 AADT Section 2*
Source: Accident Data Run Date: 6/16/2000 (Includes partial accident records)
***Accident Rate = (Number of Accidents) x (1million) / (Section Length) x (AADT) x (365 Days)* *Fatal Accident Rate = (Number of Accidents) x (100million) / (Section Length) x (AADT) x (365 Days)*

In 2006, the accident rate for Spokane County was 1.65 accidents per million vehicle miles of travel compared to the statewide and Eastern Region average accident rates of 1.65 and 1.38, respectively.

COLLISION SEVERITY IN THE US 2 STUDY CORRIDOR 2000-2007

Collision Type	Number of Collisions	% Total
Property Damage Only	412	61.1%
Possible Injury	150	22.2%
Evident Injury	92	13.6%
Serious Injury	14	2.1%
Fatal	7	1.0%
Total	**675**	**100%**

Collision data from January 2000 to December of 2007 was evaluated for this study. There were no significant improvements within the study corridor during these eight years. Spokane County began intersection improvements at Hayford/US 2 in 2007 that were completed in early 2008. The chart below shows collision distribution within the study corridor:



FATAL COLLISIONS SUMMARY

Mile Post	Type	Vehicle Movement	Weather Conditions	Junction Relationship	Contributing Circumstance
273.98	Overturn	Moving Straight	Dry, Clear, Daytime	Non Intersection Related	Defective Equipment
277.80	Rearend	Moving Straight	Dry, Clear, Daytime	Non Intersection Related	Follow Too Closely
280.32	Overturn	Out of Control	Wet, Rain, Dark	Non Intersection Related	Under The Influence
281.22	At Angle	Turning Left	Dry, Clear, Daylight	At Intersection	Fail to Yield ROW
281.22	At Angle	Turning Left	Other, Clear, Daylight	At Intersection	Fail to Yield ROW
281.70	At Angle	Moving Straight	Ice, Clear, Dark	Non Intersection Related	Over Centerline
282.82	Hits Object	Moving Straight	Dry, Clear, Dusk	Non Intersection Related	Exceed Safe Speed

The two fatalities at MP 281.22 occurred at Spotted Road, which is an uncontrolled intersection that generally carries airport traffic to US 2. Sight distance meets standards and two way left turn channelization is in place. Currently, signal warrants have not been met at the intersection.

Data on the other five fatal collisions show no trends that would constitute any specific mitigation. Contributing circumstances of all Fatal and Serious Injury collisions are shown below:

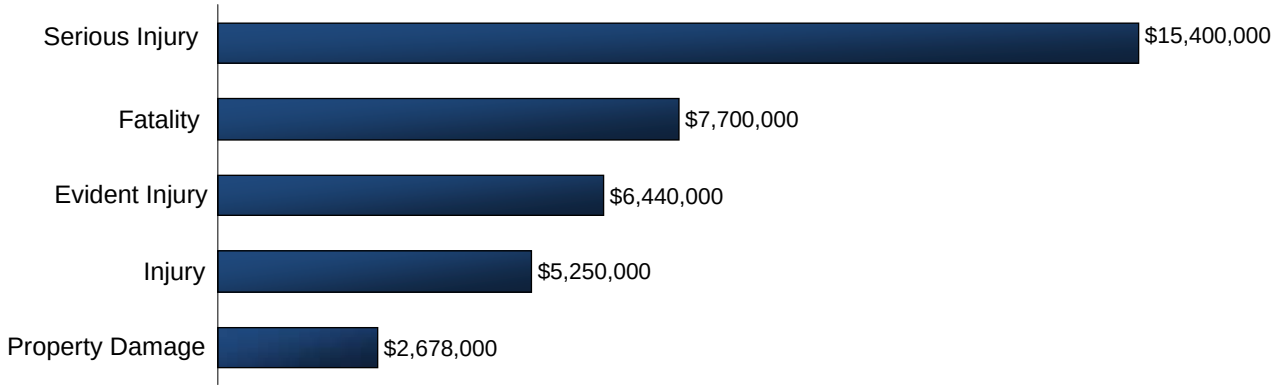
FATAL-SERIOUS COLLISIONS CONTRIBUTING CIRCUMSTANCES

Contributing Circumstance	Number of Collisions	% Total
Exceeding Safe Speed	5	23.8%
Under the Influence	4	19.0%
Failure to Yield to Pedestrian	3	14.3%
Failure to Yield to Vehicle	2	9.5%
Over the Centerline	2	9.5%
Improper U-Turn	1	4.8%
Following too Close	1	4.8%
Deficient Equipment	1	4.8%
Inattention	1	4.8%
No Violation	1	4.8%
Total	**21**	**100%**

Source: Trips data (Above data contains both full and partial collision records.)

A comparison of the study corridor severity costs is illustrated below:

Total Societal Costs By Collision Severity 2000-2007



The following tables show the overall collisions in the study corridor by type and by location:

COLLISON TYPES

Type	Number of Collisions	% Total
Rearend	250	37.0%
Entering at Angle	129	19.1%
Hit Object or Appurtenance	88	13.0%
Off-Road (incl. overturn, etc.)	82	12.1%
Sideswipe	37	5.5%
Hit Animal or Bird	36	5.3%
Head-on/Frontal	33	4.9%
Pedestrian/Bike	6	0.9%
All Others	14	2.2%
Total	**675**	**100%**

Source: Trips data (Above data contains both full and partial collision records.)

COLLISION LOCATION

Junction Relationship	Number of Collisions	% Total
Non-Intersection Related	296	43.9%
Intersection Related	288	42.7%
At Intersection Not Related	33	4.9%
Driveway Related	49	7.2%
At Driveway Not Related	9	1.3%
Total	**675**	**100%**

Source: Trips data (Above data contains both full and partial collision records.)

Analysis Conclusions

Intersections

'Rearend' and 'entering at angle' collisions comprise 56% of all accidents. Fatal collisions show no trend but were 57% intersection related. Intersection control may be effective mitigations. Further analysis of collision data will be required at the Flint Rd. and Spotted Rd. intersections. Traffic signal warrants have not been met at Flint.

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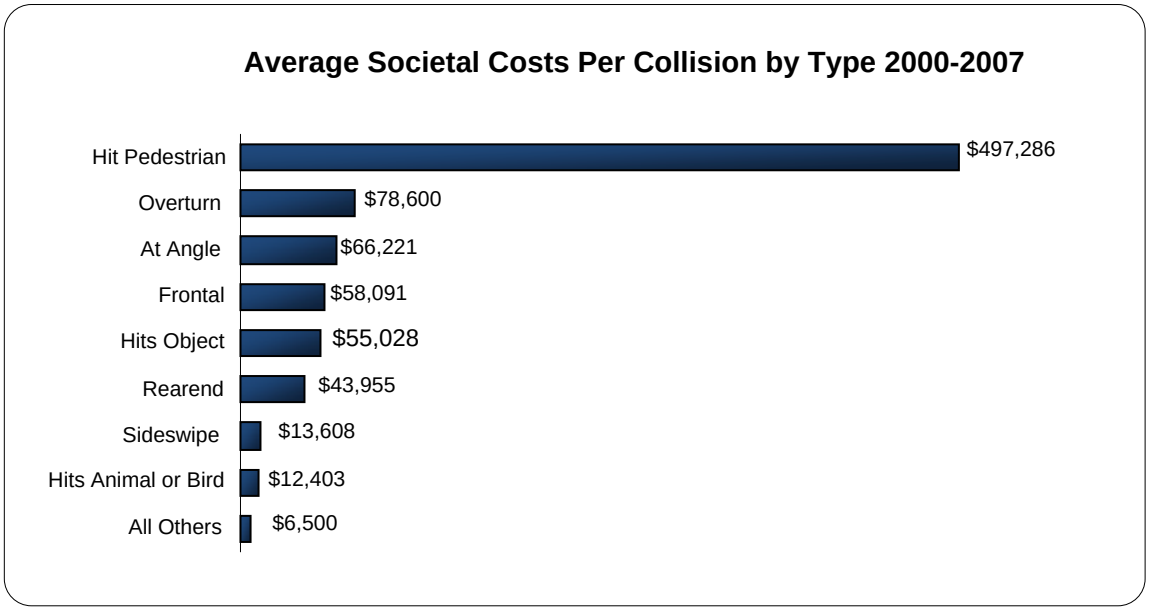
Pedestrians

Based on comments as part of public involvement there was concern for pedestrian collisions in the corridor, particularly in the City of Airway Heights. The majority of residential housing, city services, and Sunset Elementary school are north of US 2, while retail and shopping are south of the highway. To access north/south Airway Heights,

pedestrians have to cross a the five lane US 2. As shown below, pedestrian related collisions have the highest severity per collision but a relatively low incident rate.



The 'Highway Segments with the Opportunity for Safety Improvement' segment identified from Craig Rd. to Russell St. included one pedestrian fatality and two pedestrian serious injuries. In the mid 90's sidewalks and mid-block crosswalks in three locations were installed. From 1999 to 2007 there were seven vehicle and pedestrian or bicycle collisions. Two of the collisions were fatalities. In 2001 a crosswalk safety enhancement project was implemented that installed in-pavement warning lights and median refuge islands at three locations within Airway Heights.

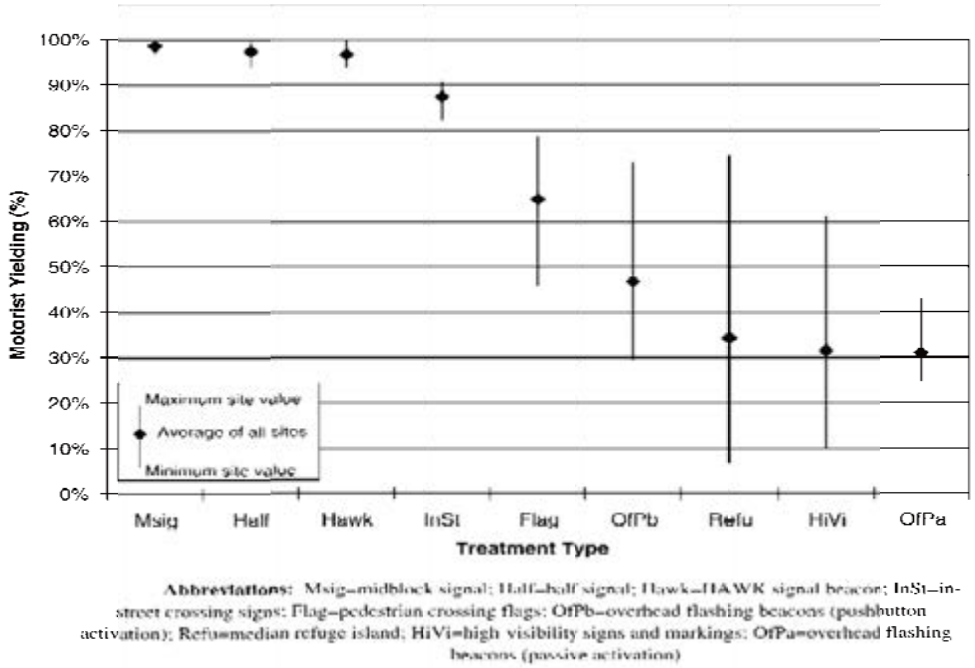
In 2003 a study[1] was done in Airway Heights focusing on the mid-block crossings. The recommendation from this study was for sign-mounted warning beacons to enhance the effectiveness of the in-pavement flashers, which were later installed.

A Transit Cooperative Research Program report NCHRP 562 completed in 2006 'Improving Pedestrian Safety At Unsignalized Crossing' recommended the following guidelines for pedestrian treatments:

- Marked Crosswalk;
- Enhanced, high-visibility traffic control device
- Red signal or beacon device
- Conventional traffic control signal

[1] Tripp, Albert 'Crossing Safety: Evaluation of Pedestrian Safety Treatments on SR2 in Airway Heights Wa.'

The graphic below shows effectiveness of treatments for motorist yielding:



Site Average and Range for Motorist Yielding by Crossing Treatment ***Source: NCHRP 562***

The latest study[2] by the Washington State Transportation Center included the Airway Heights corridor and was completed in 2008. This report evaluated before and after behavior of motorists to certain crosswalk improvements. The major finding of this study was, '*Pedestrian crossings with signs, crosswalk markings, flashers and/or signals seem to have higher yielding rates than those without these features'.*

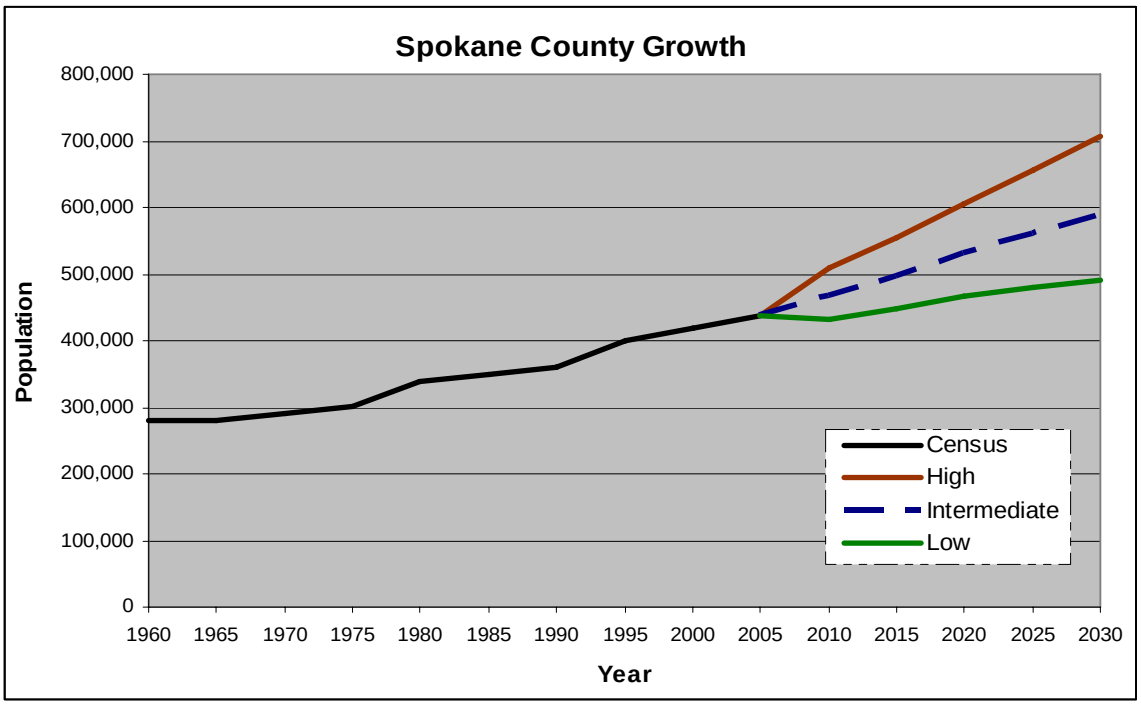
As of June 2009 a pedestrian mid-block crossing enhancement project is expected to be constructed in Airway Heights (see pg. 81). The City of Airway Heights Comprehensive Plan includes goals for the development of a community trails system. Their six year Transportation Improvement Plan includes pedestrian bridges over US 2.

Growth Rates

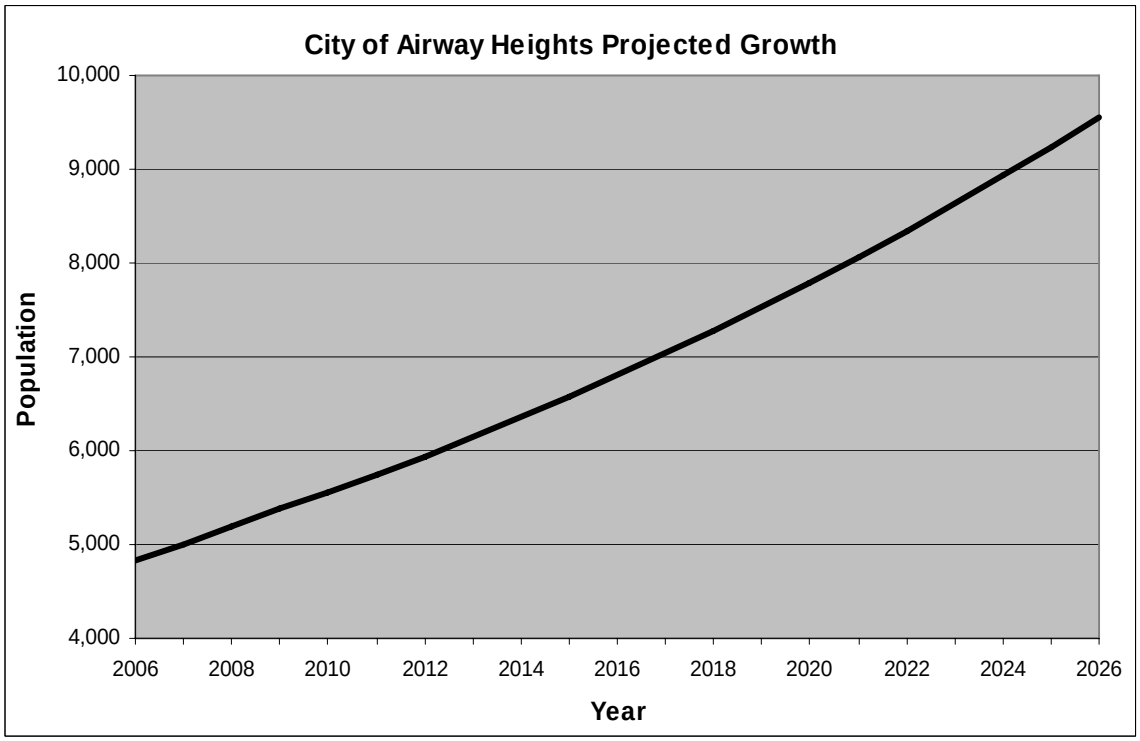
In 1995 the population in Spokane County was 400,500. This figure in 2005 grew to 436,300, representing an 11% growth in 10 years. The Washington State Office of Financial Management (OFM) is forecasting similar growth trends for these areas through the year 2030. The City of Airway Heights is projected to see a more aggressive growth

[2] Davis & Hallenbeck 'An Evaluation of Engineering Treatments and Pedestrian and Motorist Behavior on Major Arterials in Washington State'

scenario based on a surge in residential and commercial projects within or near the city limits. OFM estimates population growth will double in the city over the next 20 years.



Source: OFM Forecast January 2007.



Source: OFM Forecast January 2007

Traffic Growth Rate

The US 2 corridor from Fairchild AFB to the Airport Interchange is currently experiencing rapid growth. The Kalispel Tribe has 292 acres located in the northeast section of the City of Airway Heights and has recently expanded the existing casino to a destination complex with entertainment, retail, commercial and lodging facilities. The Spokane Tribe owns 300 acres at the west of Craig Road with the intent to build a casino with land use similar to the proposed expansion of the Kalispel Tribe. Several housing developments and commercial projects are currently being built. A Wal-Mart super store was opened in late 2007. The Airway Heights Comprehensive Plan estimates Daily Traffic Volume (DTV) to increase 53% from 2010 to 2025.

Traffic Volumes

Traffic volumes along US 2 vary according to the time of day, recreational seasons, and if school is in session or not. Existing annual average daily traffic (AADT), PM peak hour traffic (*evening commute),* and turning movement volume data was collected along the mainline and at major county intersections on US 2 for analysis. The following tables summarize the findings:

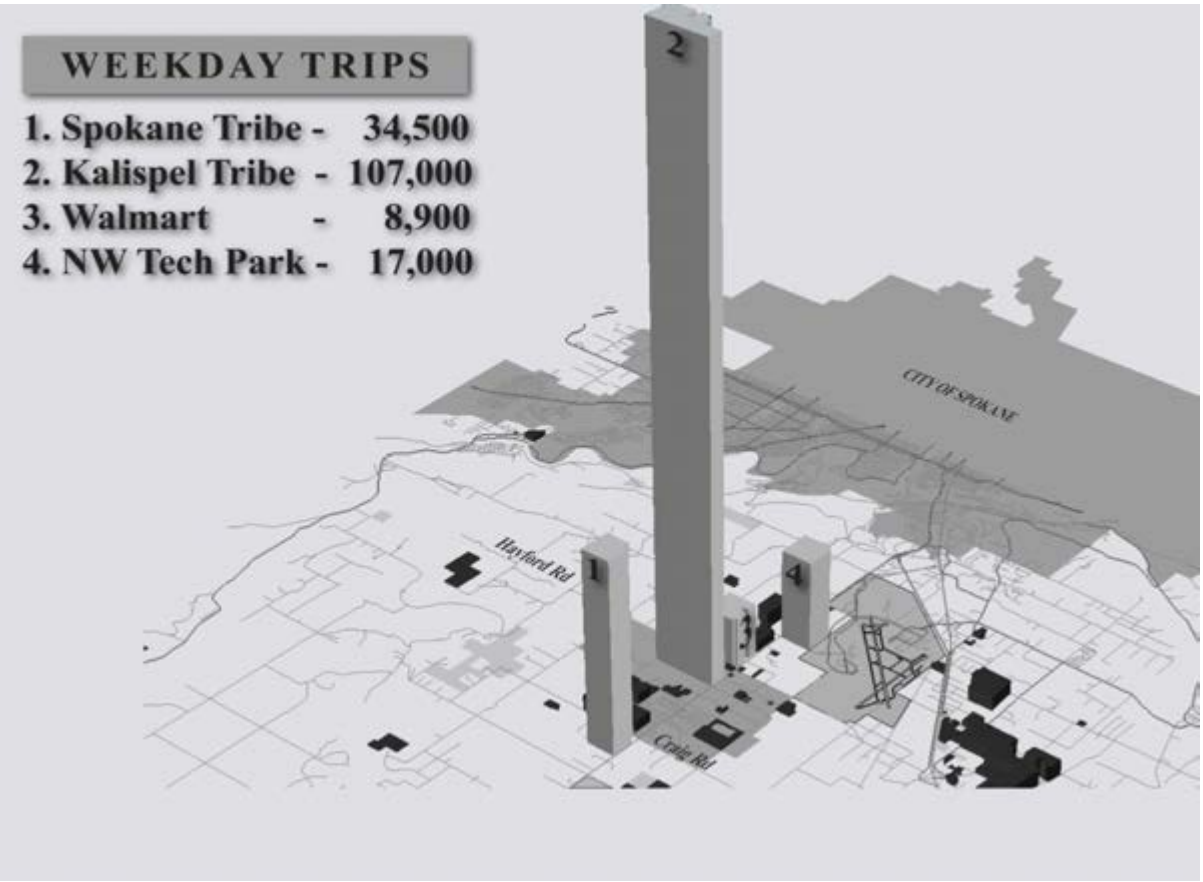
US 2 Average Daily Traffic

Mile Post	Year			
	1999	**2003**	**2007**	**K%**
Espanola-Wood Rd. (MP271.16)	5800	5700	6300	8.7
Espanola-Wood Rd. (MP271.17)	5800	5700	6800	8.9
Fairchild AFB (MP 275.33)	*	12000	11000	8.6
Fairchild AFB (MP 275.35)	*	19000	18000	8.9
Craig Rd. (MP 277.21)	18000	19000	19000^	8.6
Craig Rd. (MP 277.22)	19000	20000	19000^	8.6
Lawson St. (MP 277.98)	20000	21000	20000	8.5
Lawson St. (MP 277.98)	20000	21000	21500	8.5

Garfield St. (MP 278.43)	*	22000	22000	8.4
Garfield St. (MP 278.44)	*	22000	24000	8.5
Hayford Rd. (MP 279.23)	23000	24000	23000^	8.4
Hayford Rd. (MP 279.24)	20000	23000	26000^	8.1
Spotted Rd. (MP 281.22)	*	23000	24000	*
Spotted Rd. (MP 281.23)	*	23000	23000	*
Sunset Frontage Rd. (MP 281.23)	20000	23000	20000	8.7

**Traffic counts not available*
^Based on actual TDO Counts; Source: 2003-2007 Annual Traffic Report
*** Based on SRTC 2005 Regional Model growth rates; K% - ratio of design hour traffic to AADT*

In order to evaluate future impacts within the corridor, forecast data was developed based on land use, existing construction projects, and proposed projects. Trip generations expected to impact the US 2 corridor upon full build out are illustrated by the graphic below.

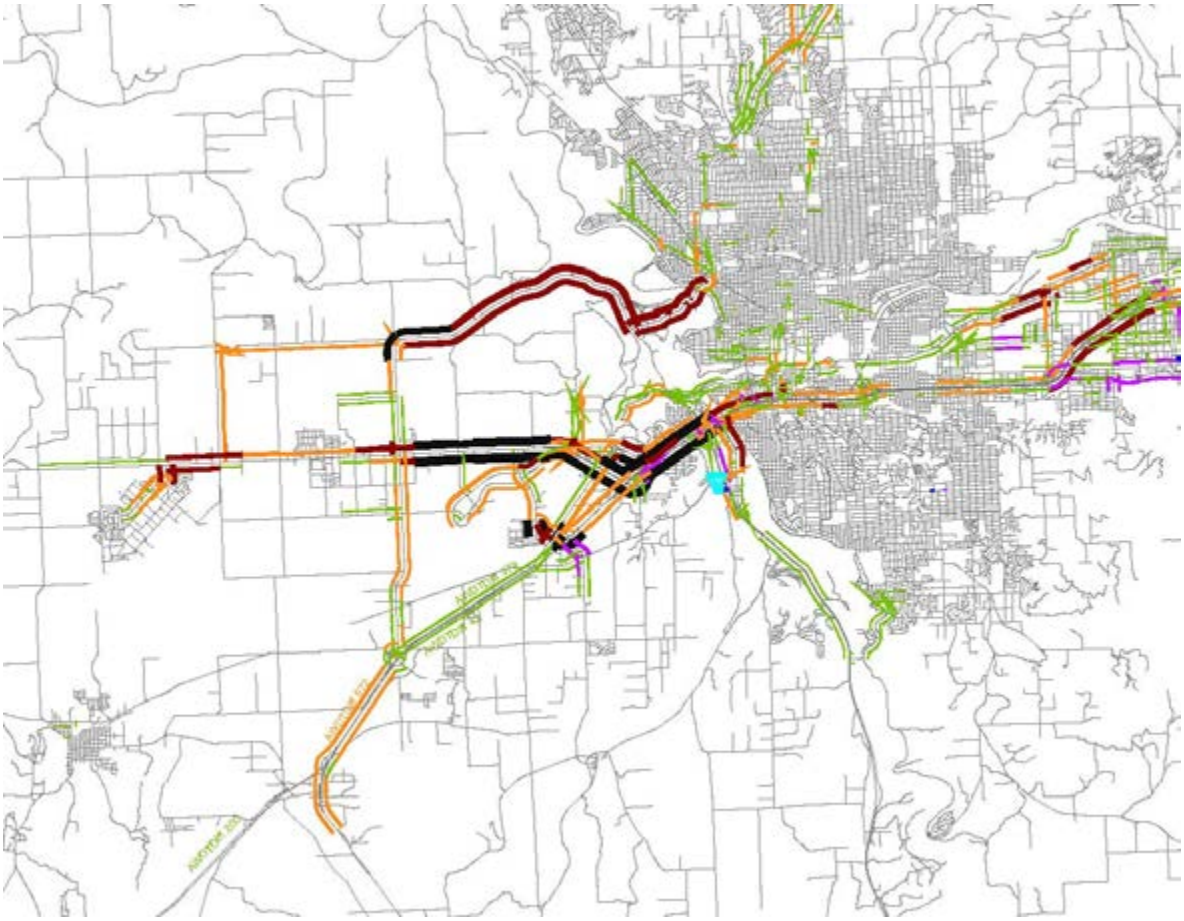


ANNUAL DAILY TRAFFIC (ADT) PROJECTED GROWTH AT US 2 INTERSECTIONS:

Intersection	Existing*	2015**	2030**
Spotted Rd.	23,000	43,000	59,000
Flint Road	24,000	43,000	59,000
Hayford Road	23,000	44,000	56,000
Garfield Rd.	21,000	35,000	37,000
Craig Road	19,000	17,000	22,000
Fairchild A.F.B.	11,000	23,000	27,000
Espanola-Woods Road	5,500	12,000	14,000

**Based on actual TDO Counts; Source: 2003-2007 Annual Traffic Reports*
*** Based on SRTC 2005 Regional Model growth rates.*

The graphic below of SRTC's latest 2006 model illustrates traffic volume changes within Spokane County relative to land use growth occurring between 2006 and 2008. Notice the largest changes, as indicated by darker colors, occur on facilities serving the West Plains areas with significant impacts on the US 2 Corridor.



Level of Service (LOS)

Roadway LOS

A Level Of Service (LOS) analysis evaluates the traffic volumes and operational characteristics of a designated segment of a highway. The product of the analysis is a description of the highway's traffic carrying capacity as defined by six levels of service. Level of Service is a qualitative measure describing operational conditions within a traffic stream, generally described in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and collision reduction. The LOS was calculated using existing PM peak hour volumes. The following table shows the service range from LOS A, representing the best operating conditions, to LOS F, representing the worst.

Level of Service	Operating Conditions
A	• Free-flow operations at average travel speeds • Vehicles completely unimpeded within the traffic stream • Platoons of three or more vehicles are rare
B	• Reasonably unimpeded operations at average travel speeds • Maneuverability within traffic stream is slightly restricted • Drivers delayed in platoons up to 50% of the time
C *(minimum LOS for Rural highways in Washington)*	• Stable operations • Ability to maneuver becomes more restrictive • Drivers delayed in platoons up to 65% of the time
D *(minimum LOS for Urban highways in Washington)*	• Unstable traffic flow • Small increases in flow may cause substantial increases in delays and speed • Passing demand high but passing capacity approaches zero • Drivers are delayed in platoons for nearly 80% of the time
E	• Significant delays and average travel speeds less than base condition • Adverse progression, passing is virtually impossible
F	• Heavily congested flow with traffic demand exceeding capacity • High delays and queuing expected

Source:Highway Capacity Manual 2000

Intersection LOS

Overall LOS on a roadway segment is usually controlled by intersections. Many of the intersections within the RDP limits are unsignalized. Minor movements in an intersection, especially an unsignalized two-way stop intersection, can cause significant delay.

Level of Service Criteria for Two Way Stop Control Intersections

Level of Service	*Average Control Delay (sec/veh)
A	0 – 10
B	>10 – 15
C	>15 – 25
D	>25 – 35
E	>35 – 50
F	>50

Source: Highway Capacity Manual 2000

**Control delay is the total time from when a vehicle stops to when the vehicle departs the intersection*

Level of service analysis for the unsignalized intersections in the study corridor was accomplished using HCS-Plus for two-way stop-controlled intersections. To provide detailed intersection operational analysis at significant intersections within the RDP limits, turn movement counts were collected. The following table includes existing turning movements and projected increases in 2030:

Two Way Stop Control Intersections (2007 vs. 2030)

Intersection	2007				2030			
	Minor Rd. Lt	Minor Rd. Rt.	US 2 EB	US 2 WB	Minor Rd. Lt	Minor Rd. Rt.	US 2 EB	US 2 WB
Espanola-Wood Rd.	11	20	241	361	28	50	400	651
Brooks Rd.	14	75	220	477	35	188	365	860
Graham-Christianson Rd.	17	6	319	526	43	15	530	948
Dover Rd.	22	--	286	591	24	--	645	1178
Rambo Rd.	31	85	957	717	147	96	1296	1568
Craig Rd.	58	161	1084	715	224	410	1137	1273
Lundstrom St.	25	52	998	758	162	68	852	900
Campbell St.	14	28	1015	830	156	216	1038	875
Russell Rd.	19	14	1030	868	397	45	1320	954
Flint Rd.	23	85	1310	930	128	369	3521	2277
Spotted Rd.	1	72	1353	907	--	43	3529	2364

**2007 values are PM Peak hour traffic counts by Eastern Region; Craig Rd. PM Peak hour counts by TDO; 2030 Peak hour counts based on projected growth were derived from the 2005 SRTC Regional Model.*

While the LOS at unsignalized intersections is measured in terms of average vehicle delay, the overall intersection LOS is based on the LOS of the worst approach movement. The LOS was calculated using existing PM peak hour volumes. The following shows the results of the analysis:

Two Way Stop Control Intersections Level Of Service (LOS)

Intersection	2007 LOS	2015 (No Build) LOS	2030 (No Build) LOS
Espanola-Wood Rd.	B	C	C
Brooks Rd.	C	C	C
Graham-Christianson Rd.	C	C	D
Dover Rd.	C	C	D
Rambo Rd.	C	F	F
Craig Rd.	D	F	F
Lundstrom St.	C	D	F
Campbell St.	C	D	F
Russell St.	C	C	F
Flint Rd.	D	F	F
Spotted Rd.	E	F	F

LOS Evaluated by HCS+ and VISSIM

With the projected traffic volumes in the years 2015 and 2030 the facility, assuming a 'No Build' condition where no improvements have been made, intersections will operate at the LOS designated in the table above. A traffic signal or roundabout may be proposed at any of these intersections if at the time of design it meets signal warrants, and a signal or roundabout is determined to be the appropriate fix.

The three existing signalized intersections were also evaluated for LOS as part of the intersection analyses and results are illustrated below:

Existing Signalized Intersections Level Of Service (LOS)

Intersection	2007 LOS	2015 (No Build) LOS	2030 (No Build) LOS
Fairchild A.F.B.	A	A	B
Lawson St.	B	B	C
Hayford Rd.	C	D	F

LOS Evaluated by HCS+ and VISSIM

Intersection Control

The 2009 WSDOT Design Manual requires that a proposal to install a traffic signal or a roundabout on a state route, either NHS or Non-NHS, with a posted speed limit of 45 mph or higher requires an analysis of alternatives, including the following:

- Channelization, providing deceleration lanes, storage, and acceleration lanes for left and right turning traffic
- Right-off/right-on with U-turn opportunities
- Grade separation
- Roundabouts
- Traffic control signals

Roundabouts

Modern roundabouts are proving to be a very effective intersection control option throughout Washington State and across the country. The Federal Highway Administration has endorsed the use of roundabouts.

"Roundabouts have demonstrated substantial safety and operational benefits compared to other forms of intersection control, with reductions in fatal and injury crashes of 60-87 percent. The benefits apply to roundabouts in urban and rural areas and freeway interchange ramp terminals under a wide range of traffic conditions. Although the safety of all-way stop control is comparable to roundabouts, roundabouts provide much greater capacity and operational benefits. Roundabouts can be an effective tool for managing speed and transition traffic from a high speed to a low speed environment. Proper site selection and channelization for motorists, bicyclists, and pedestrians are essential to making roundabouts accessible to all users. In particular, it is important to ensure safe accommodation of bicyclists at higher speed roundabouts and for pedestrians with visual or cognitive impairments."

"Roundabouts are the preferred safety alternative for a wide range of intersections. Although they may not be appropriate in all circumstances, they should be considered as an alternative for all proposed new intersections on Federally-funded highway projects,

particularly those with major road volumes less than 90 percent of the total entering volume. Roundabouts should also be considered for all existing intersections that have been identified as needing major safety or operational improvements. This would include freeway interchange ramp terminals and rural intersections"

"When well designed, roundabouts are an efficient form of intersection control. They have fewer conflict points, lower speeds, easier decision making, and require less maintenance. When properly designed and located, they have been found to reduce injury accidents, traffic delays, fuel consumption, and air pollution. Roundabouts also permit U-turns."

Source: FHWA "*Roundabouts: An Informational Guide* (Report No. FHWA-RD-00-067) "

Additional benefits of roundabouts include lowering the conflict points in a typical intersection from 32 to 8, sharply reducing the potential for collisions**.** Fuel consumption and air pollution are reduced significantly due to lower travel delay, especially in the off peak travel periods. Some areas of the country within Air Quality Attainment areas are using Federal funds from the Congestion Mitigation and Air Quality Mitigation account to remove traffic signals and replace them with roundabouts to reduce both congestion and improve air quality. Roundabouts have central and splitter islands that provide an opportunity for beautification such as landscaping, sculpture, or other aesthetic features.

Implementation of intersection control is subject to operational analysis based on conditions in the year of construction. State and local jurisdictions will evaluate funding and proposed benefits in selecting intersection mitigation if warranted.

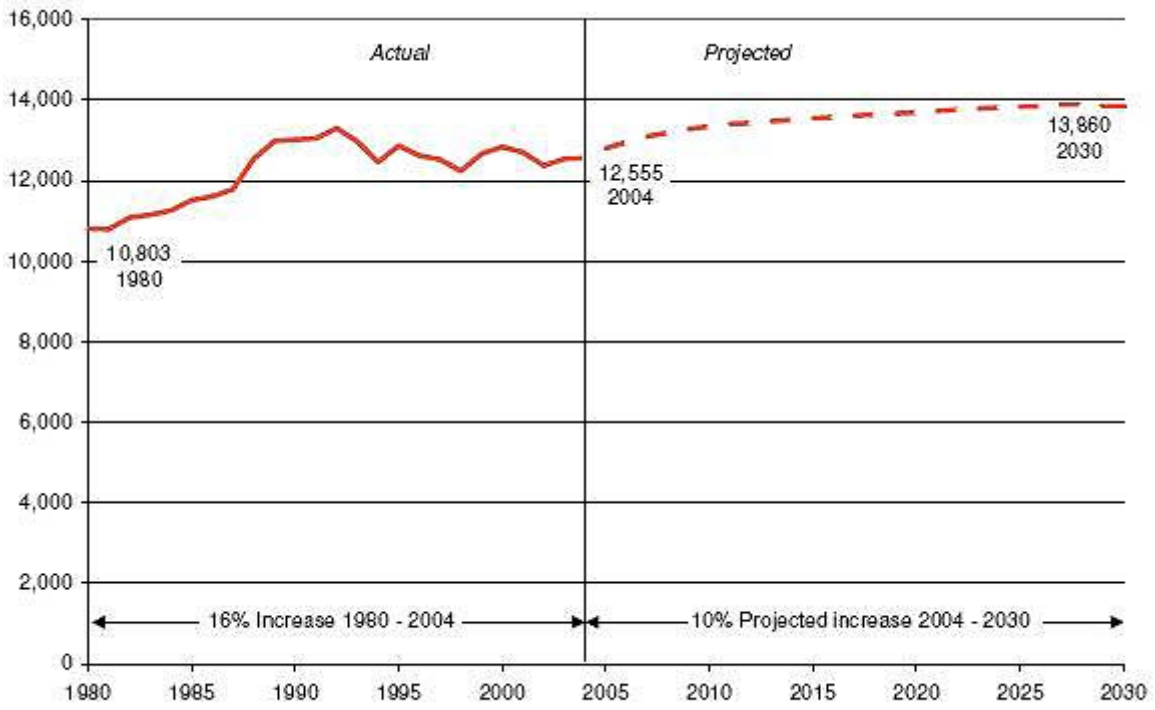
Vehicle Miles Traveled (VMT)

In February 2009, the Washington Climate Advisory Team (CAT), released their recommendations to accomplish three broad goals: reduce climate pollution, grow a clean energy economy, and become energy independent. One of the recommendations was proposed targets to reduce Vehicle Miles Traveled (VMT) across the state.

The state adopted a schedule of statewide per capita VMT reduction targets, similar to the emissions reductions schedule in Executive Order 07-02. The Washington State Legislature recently passed House Bill 2815 which has a target to reduce annual per capita VMT 18% by 2020, 35% by 2035, and 50% by 2050.

For this RDP, the process to evaluate alternate routes and intersection controls included evaluation of VMT. The preferred alternative corridor recommended in this study incorporates alignments with existing arterials where possible and added as little new mileage distance as feasible. The recommendation of roundabouts for intersection control also is carbon friendly as they keep idling to a minimum and reduce fuel consumption. The following chart from ***WSDOT*** shows Washington State VMT per Licensed Driver per year; 1980 - 2030 (Projected):

Washington State Vehicle Miles Traveled



Source: WSDOT Financial Planning and Economic Analysis Office Source Data

Alternate Transportation Options

Spokane Transit Authority (STA)

STA is currently providing transit service within the US 2 corridor (See **Appendix E**). STA is planning to implement and/or will support the following improvements within the US 2 study corridor:

- Bus stop improvements along the length of US 2, including bus turnouts, benches, shelters, passenger information displays and other amenities.
- Signalization at US 2 and Flint Rd. with acceleration and deceleration lanes
- Pedestrian and bicycle safety and access improvements, especially in the vicinity of STA bus stops
- A larger, permanent park & ride facility possibly developed in cooperation with WSDOT, the City of Airway Heights and area tribes. The park & ride project would include passenger information systems, security cameras and other amenities.
- Transit Signal Priority (TSP) capabilities incorporated into future signalization improvements in the corridor

- Collaboration between STA, Spokane County, Airway Heights, and WSDOT in future ITS projects including fiber optic or other communication lines through the corridor
- Enhanced fixed route transit service to the proposed park & ride, including increased trunk line frequencies augmented by feeder or circulator service
- Enhanced fixed route service from downtown Spokane to the Airport

Kalispel Indian Tribe – Northern Quest Casino

The Kalispel Tribe is currently implementing a mass transit bus route that will connect Tribal members in Cusick, Wa. to the Northern Quest Casino, Airway Heights' local hotels, and the Spokane International Airport.

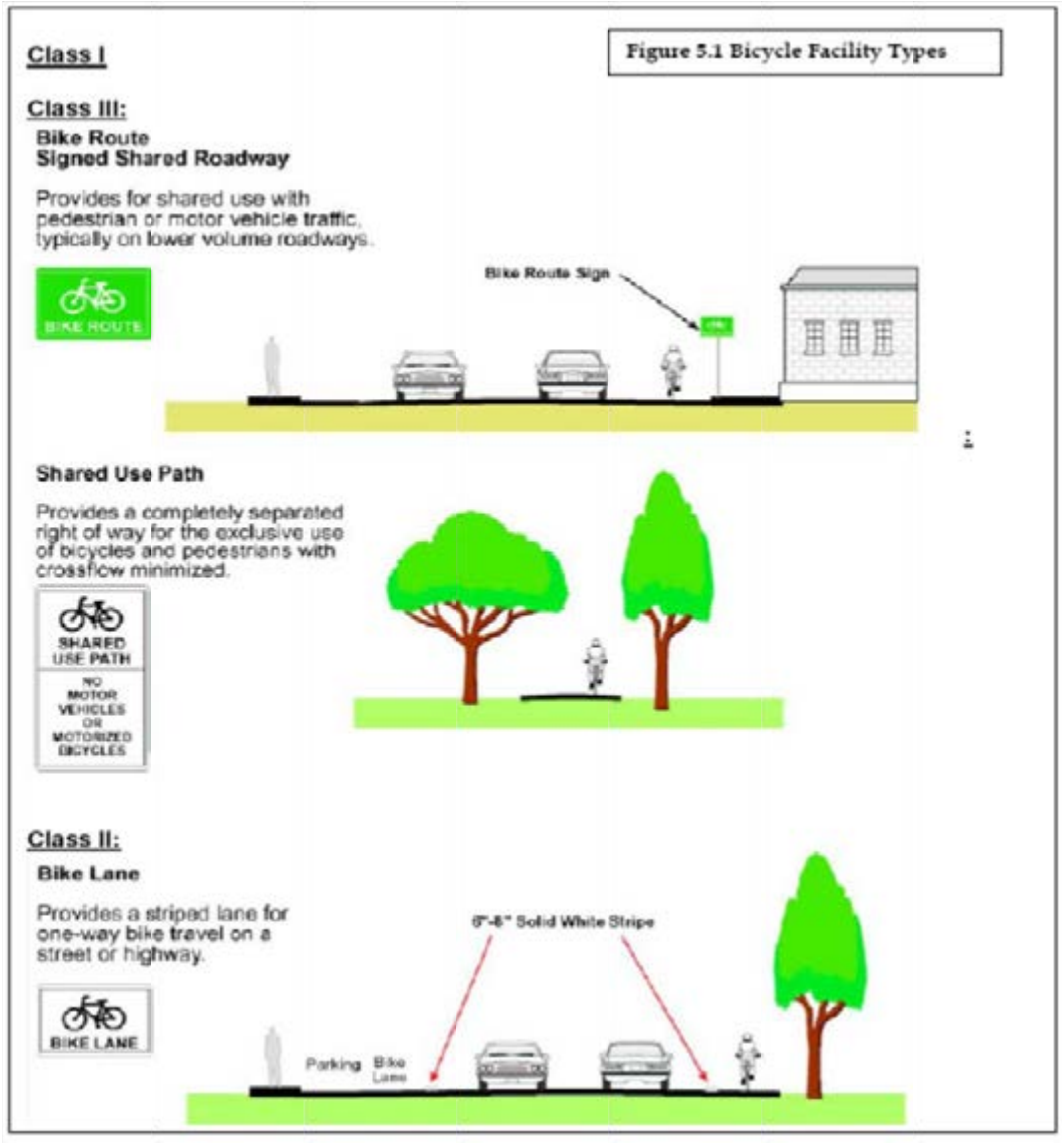
Bicycling & Pedestrian

Interest in bicycling and walking as a transportation option is becoming more wide spread. Local jurisdictions and developers are encouraged to integrate bicycle/ped paths or shared use paths in planning new infrastructure, including connectivity to transit service. Region wide access to these facilities provide an efficient, low-impact, low-cost means of transportation that reduces air pollution and traffic congestion. Spokane Regional Transportation Council has prepared the Spokane Regional Bike Plan that was adopted in May of 2008 and includes the US 2 study corridor. The goals of the plan are:

1. To increase the mode share of people bicycling for transportation
2. To identify the needs and gaps in the regional bikeway system
3. To support recreational bicycling in the Spokane region to promote physical activity and potentially stimulate economic growth
4. To enhance awareness and cooperation between all roadway users

One of the High Priority Bicycle Projects listed in the plan is to **"**Identify bicycle improvements on Highway 2 on the West Plains."

The City of Airway Heights Parks & Recreation Plan, adopted April of 2009, includes a proposed 20 year plan for proposed bike routes with bike facility classifications and route designations. The classifications are illustrated below:



Source: City of Airway Heights Parks & Recreation Plan; SRTC.

The Airway Heights Proposed Bike/Ped Routes in the 20 Year Plan and the Spokane Regional Bike Plan maps can be reviewed in **Appendix E**.

Traffic Modeling & Analysis Methodology

Eastern Region

US 2 Route Development Plan

Lincoln County Line to I-90

Traffic Modeling and Operational Analysis

The following sections provide an overview of the travel demand modeling and operational analysis performed for the US 2 RDP. The primary purpose for conducting modeling and operational analysis is to assess how land use changes forecast to occur over the next 20 years may impact traffic operations on US 2, and to develop and analyze a wide range of improvements that can be implemented to maintain adequate service levels on the facility. Many factors need to be taken into consideration in conducting this analysis; forecast land use, planned or programmed changes to transportation facilities, input from other jurisdictions and transportation providers, and public thoughts, to name a few. Several of these are discussed below.

A) Modeling & Operational Analysis Overview

1) Travel Demand Modeling

The regional model used for the US 2 RDP was obtained from Spokane Regional Transportation Council (SRTC). SRTC is the Metropolitan Planning Organization (MPO) for Spokane County, and, as such, is responsible for developing and maintaining a regional model that can be used for forecasting future travel demands on the transportation system. The SRTC model used for this study has undergone peer review from the Federal Highway Administration and the Federal Transportation Administration and has been certified by those agencies for use in transportation planning studies.

SRTC uses VISUM travel demand model software for its modeling program. Trip behavior in the SRTC model has been calibrated to the PM peak period. Although the model is capable of producing data for other time slices of the day, those other periods have not been calibrated.

The model was used to analyze current (2005) and future traffic conditions on US 2, as well as other roads in the study area.

2005

Model data, representing 2005 traffic conditions, was compared to traffic count data in order to evaluate the adequacy and reliability of using the model for traffic analysis. It was determined that the SRTC model sufficiently replicated traffic volumes, travel times and trip activity in the study corridor. The review of 2005 model performance also provided insights as to where the model would need to be augmented in order to better reflect trip activity in the study area, especially at the intersection level, to allow for analysis at a sub-area level of detail. Changes made to the SRTC model to accomplish this are described below under "Modeling Assumptions".

2015 and 2030

The travel demand model was used to predict how future land use changes may impact the roadway transportation network in the US 2 RDP study area. The land use forecasts in the model (2015 and 2030) were developed by SRTC, working in very close collaboration with Spokane County jurisdictions. It is a federal requirement that forecast land uses contained within the regional model are consistent with the comprehensive plans of local jurisdictions. A range of forecast population figures for Spokane County is provided by the Washington State Office of Financial Management. Staying within that range, the Spokane County Board of County Commissioners, working with local jurisdictions, determines the allocation of that future population growth to incorporated jurisdictions and unincorporated Spokane County. The result of these efforts are predicted traffic volumes that are based on forecast land uses resulting from locally adopted comprehensive plans and population forecasts.

2) Operations Analysis

In general, the travel demand model was used to forecast traffic volumes on highways based on residential and commercial land uses. Those land uses, along with their accompanying trip generation characteristics, produce trips on the roadway network. This provides some indication as to how future land use may impact congestion on roadways in the study area. However, without examining what is happening at intersections, our understanding of corridor congestion would be inadequate.

Additional tools, such as Synchro and VISSIM, were used to determine how intersections may perform relative to changes in land use, the transportation network, and improvements at the intersections themselves. This analysis is described in further detail under the 'Analysis Methodology' section in this chapter.

B) Modeling Assumptions

1) Network

In order to produce model data, at the level of detail needed to analyze intersection operations in the corridor, it was necessary to augment the SRTC base network. This largely involved adding local streets to the regionally significant facilities represented in the base model. This was readily accomplished with the VISUM model in that the model contains both local and regionally significant roadways, with local roadways being "inactive" in the regional model. The additional network needed for the subarea was simply "activated", with intersections and roadways coded accordingly.

Another significant change made, related to both the network and land use aspects of the model, was to the model's connector structure in the study area. Some very large Transportation Analysis Zones (TAZs) are located adjacent to US 2. The model uses "connectors" to load trips from TAZs, which represent land uses, onto the roadway network for distribution and assignment. It was necessary to add connectors to the base model in order to provide loading points to the additional network added to the model. (The network loading points for added TAZ connectors were coded within the geographical boundaries of the pertinent TAZ.) This enhanced network detail allowed for improved model estimation of link volumes and turn movements at intersections, which is helpful for a corridor level study.

2) Land Use

2015 and 2030 traffic forecasts are predicated on land use forecasts developed by local jurisdictions and incorporated into the regional travel demand model by Spokane Regional Transportation Council. This land use forecast was used as a basis for traffic modeling for the RDP. The SRTC 2015 and 2030 land use forecasts were developed several years ago at the time the 2005 model was being developed by the MPO. In

years subsequent to the development of the forecasts, there has been major land use changes proposed for areas adjacent, or in close proximity, to US 2. These recent proposals, largely consisting of development plans being brought forth by the Kalispel and Spokane Tribes, were taken into account in the travel modeling for the RDP. These land use assumptions are detailed below by their location.

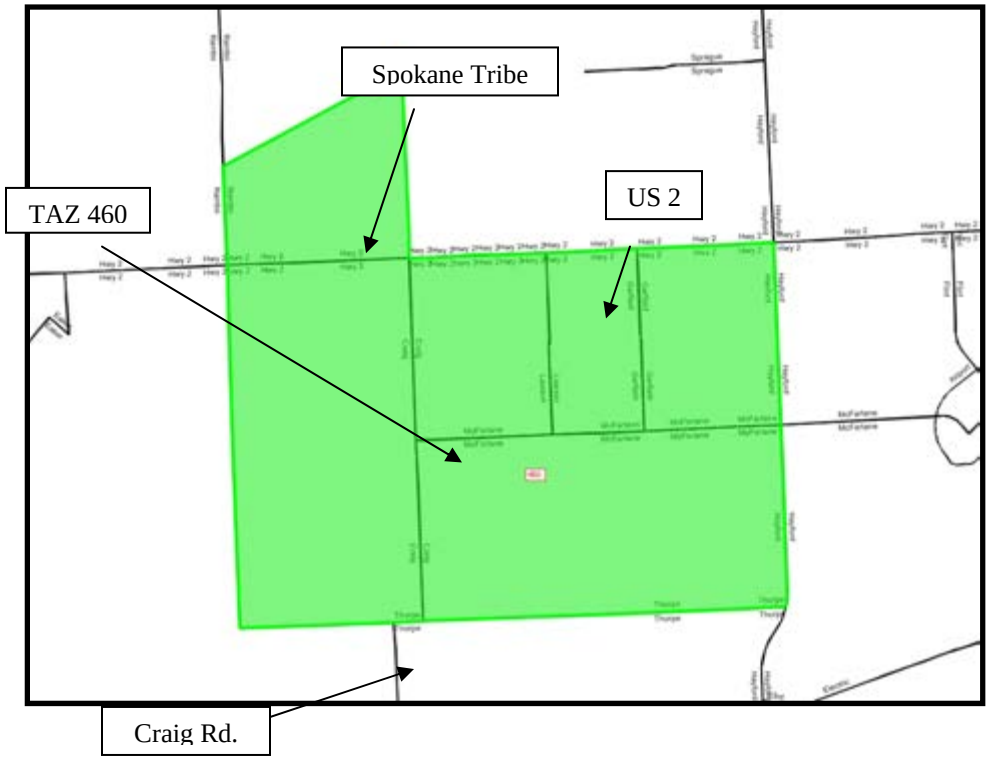
a) Transportation Analysis Zone 459

As shown in the illustration below, TAZ 459 is located north of US 2 and west of Hayford Rd. TAZ 459 encompasses the Northern Quest Casino. While significant growth has been forecast for this TAZ, the growth contained within the SRTC model did not fully reflect current plans of the Kalispel Tribe to expand gaming facilities at the Northern Quest Casino.

Based on preliminary trip generation data relative to expansion of the Northern Quest Casino, 2015 and 2030 employment data was developed for use in the regional model.

b) Transportation Analysis Zone 460

TAZ 460 is located south of US 2 and to the west of Craig Rd. TAZ 460 encompasses the location for a casino being proposed by the Spokane Tribe. As with TAZ 459, the 2015 and 2030 land use forecasts included in the SRTC model predict growth in the TAZ. However, the forecast growth does not reflect the current plans of the Spokane Tribe to develop their property.



Below are tables that identify the SRTC land use data, tribal data, and the resulting land use data used for TAZs 459 and 460 in this RDP. It should be noted that construction is currently underway on expansion of the Northern Quest Casino in TAZ 459. It should also be reiterated that these land use plans were unknown at the time SRTC developed 2015 and 2030 forecast land use for the regional model.

TAZ 459 – 2015 NORTH AIRWAY HEIGHTS

LAND USE	SRTC 2005	SRTC 2015	KALISPEL TRIBE	2015 (adjusted)
SFDU	370	833	195	833
MFDU	33	156	0	156
HOTEL	23	25	500	523
RETAIL	1,235	1,364	1,131	2,366
OFFICE	614	678	564	1,178
FIRE	7	8	0	8
MEDICAL	11	12	0	12
INDUSTRIAL	21	23	376	397
SCHOOL	50	55	0	55
EMP. ONLY	**1,938**	**2,140**	**2,071**	**4,016**
TOTAL	**2,364**	**3,154**	**2,766**	**5,528**

TAZ 460 – 2015 SOUTH AND WEST AIRWAY HEIGHTS

LAND USE	SRTC 2005	SRTC 2015	SPOKANE TRIBE	2015 (adjusted)
SFDU	443	617	0	617
MFDU	153	224	0	224
HOTEL	115	127	83	198
RETAIL	247	273	653	900
OFFICE	8	9	160	168
FIRE	20	22	0	22
MEDICAL	3	3	0	3
INDUSTRIAL	943	1,041	0	1,041
SCHOOL	0	0	0	0
EMP. ONLY	**1,221**	**1,348**	**813**	**2,134**
TOTAL	**1,932**	**2,316**	**896**	**3,173**

TAZ 459 – 2030 - NORTH AIRWAY HEIGHTS

LAND USE	SRTC 2005	SRTC 2030	KALISPEL TRIBE	2030 (adjusted)
SFDU	370	1,295	390	1,295
MFDU	33	279	0	279
HOTEL	23	30	1,000	1,023
RETAIL	1,235	1,610	2,262	3,497
OFFICE	614	800	1,128	1,742
FIRE	7	9	0	9
MEDICAL	11	14	0	14
INDUSTRIAL	21	27	753	774
SCHOOL	50	65	0	65
EMP. ONLY	**1,938**	**2,525**	**4,143**	**6,101**
TOTAL	**2,364**	**4,129**	**5,533**	**8,698**

TAZ 460 – 2030 - SOUTH AND WEST AIRWAY HEIGHTS

LAND USE	SRTC 2005	SRTC 2030	SPOKANE TRIBE	2030 (adjusted)
SFDU	443	791	0	791
MFDU	153	295	0	295
HOTEL	115	150	165	280
RETAIL	247	322	1,307	1,554
OFFICE	8	10	319	327
FIRE	20	26	0	26
MEDICAL	3	4	0	4
INDUSTRIAL	943	1,229	0	1,229
SCHOOL	0	0	0	0
EMP. ONLY	**1,221**	**1,591**	**1,626**	**3,140**
TOTAL	**1,932**	**2,827**	**1,791**	**4,506**

Analysis Methodology

Volumes used for the operational analysis for existing PM peak conditions were based on traffic counts taken by the Eastern Region Planning office. PM peak volumes for 2015 were taken directly from the 2015 model with the exception of any 0 turning movement volumes. Zero volumes were replaced with the corresponding 2007 traffic count. Volumes for 2030 were determined using the 2015 and 2030 models and NCHRP 255 methodology.

Section 1: Lincoln County Line to Farichild Air Force Base (MP 266.86 to MP 275.22)

Predicted levels of service (LOS) for intersections were calculated using Highway Capacity Manual 2000 methodology (HCS+ version 5.21). HCS+ was chosen because it produces reliable results for unsignalized, isolated, and uncongested intersections—the type of intersection found in this section.

Section 2: Fairchild Air Force Base to I-90 (MP 275.22 to MP 283.01)

Since this section has closer intersection spacing, congestion, and a potential mix of roundabouts and signals VISSIM micro-simulation software (version 5.00-11) was used to evaluate this corridor. The strength of micro-simulation tools is their ability to model corridors and evaluate the affects of congestion on closely spaced intersection

Operational Analysis

The present and future operation of US 2 was predicted using various software tools. Highway Capacity Software was used for the unsignalized intersections in section 1 while VISSIM was used for the intersections in section 2.

HCS+ was appropriate for the isolated, low volume unsignalized intersections in section 1. In contrast, the higher volume closely spaced intersections in section 2 controlled by roundabouts and signals required micro-simulation software.

Recent Route Improvements

Eastern Region

US 2 Route Development Plan

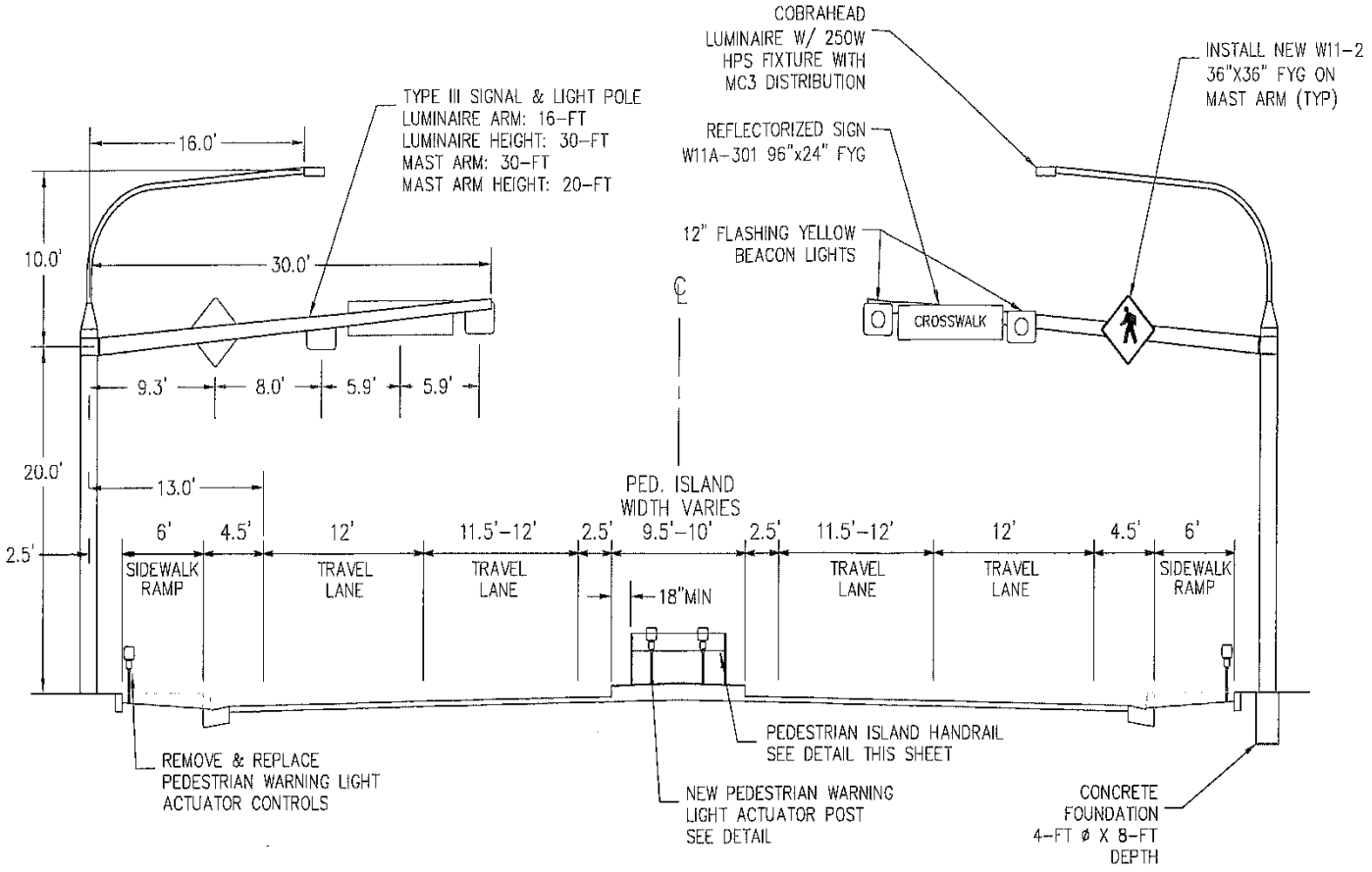
Lincoln County Line to I-90

Managing Congestion

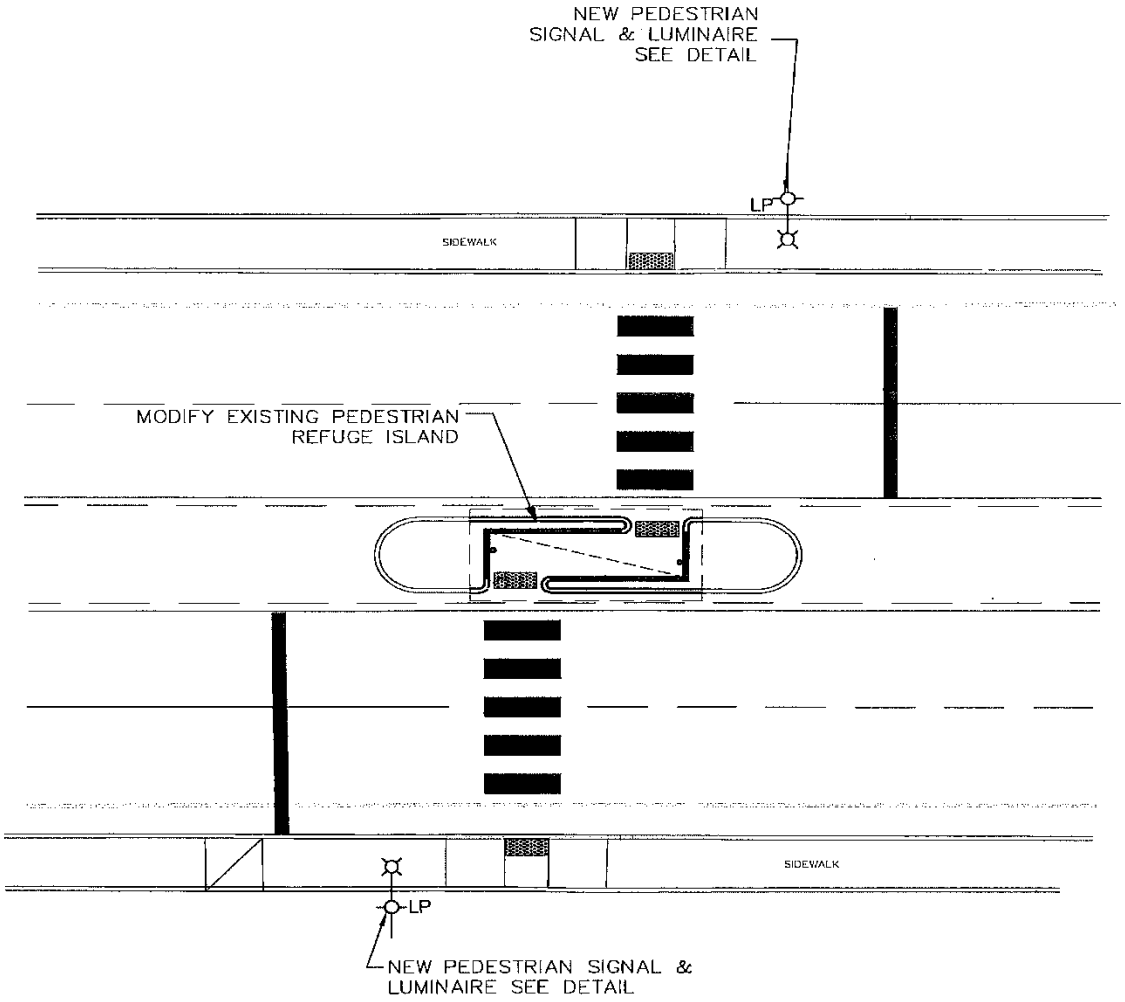
Improvements at the US 2 & Hayford Rd. intersection were completed in 2008. The Spokane County project added capacity to the intersection to meet demand from Wal-Mart and other retail developments in the area.

Pedestrians

As of June 2009 a pedestrian crossing enhancement project is expected to be constructed in Airway Heights. This project will add overhead pedestrian activated warning lights over each lane of US 2. A raised channelized ped median refuge will direct pedestrians to an additional pedestrian warning light actuator before crossing further. The following graphics describe some of the improvements:



PEDESTRIAN CROSSING SECTIONVIEW DETAIL



PEDESTRIAN CROSSING SITE PLAN DETAIL

Pedestrian safety has been an ongoing concern on US 2. This segment of US 2 was also identified as a 'Highway Segment with an Opportunity for Safety Improvements' in the Eastern Region 2009 collision analysis. The contract is a collaboration between City of Airway Heights, the WSDOT Traffic Office, and Century West Engineering.

Geiger Spur Transload Facility

The movement of freight across Washington State by railroad instead of trucks has several public benefits. These benefits include reduced highway congestion, fuel efficiency, reduction of greenhouse gases, pollution, and safety. The Washington State Department of Transportation (WSDOT) completed a study in 2007 that assessed the need for and potential costs of a new transload facility in Airway Heights, Washington.

The new transload facility would allow for the efficient transfer of freight between trucks and trains. The study stated the companies that use the spur provide 400 manufacturing jobs and pump $67 million a year into the Spokane-area economy.

The transload facility, where freight would be transferred between trucks and railcars, will potentially increase rail traffic on the Geiger Spur to 800 to 1,150 cars a year, from the spur's current traffic count of 250 to 300 railcars a year, according to the study. By relocating the spur and developing a transload facility, the area near the new spur line could attract more rail-dependant businesses, potentially creating 5,000 to 7,000 new jobs and an economic impact of $773 million per year. Four sites along the Geiger Spur were identified as suitable locations for a new transload facility. Costs for constructing a transload facility range from $3.2 million to $4.5 million, in 2007 dollars.

WSDOT recommended that local stakeholders, including businesses, the City of Airway Heights, and Spokane County work together to develop a business plan for the transload facility that describes ownership, operations, and cost-sharing responsibilities. The Washington State Legislature initially provided WSDOT with funding to acquire property and for preliminary engineering for a transload facility on the Geiger Spur. The legislature added funds for the project budget in April 2007.

Construction began in spring 2008 and was completed in November of 2008.

Additional information on this project is available at the following address:

http://www.wsdot.wa.gov/Projects/Rail/SRS_GeigerSpur/

Findings & Recommendations

Eastern Region

US 2 Route Development Plan

Lincoln County Line to I-90

Findings

This study section of the US 2 corridor is experiencing significant growth. The West Plains area, including the City of Airway Heights, maintains a pro-growth stance supported by favorable land use policies. The pressures of development are currently impacting the US 2 facility with much of the larger future projects yet to be constructed. Extensive traffic modeling found that without improvements much of the corridor would function at a level of service 'F' by 2030. The Hayford Rd./US 2 intersection is the critical congestion point in the study network due to the high traffic volumes north and south of US 2.

The RDP considered various improvement concepts within the existing US 2 corridor, consisting of construction of new facilities and improvements to existing arterials in the area. Intersections were analyzed and several alternate routes were considered to maintain mobility and reduce collision frequency/severity. The following described alternate routes and existing facility improvements were evaluated in the study as potential long range (20 year) congestion and safety solutions for US 2:

- **Sprague Avenue Spur**: A dedicated 2-lane highway from the Hayford Rd/Sprague Avenue intersection to the Airport Rd. I/C.

- **18th/21st Avenues Alternate Route**: An existing corridor that would eventually serve as an alternate route partially within the City of Airway Heights. This 3-lane facility would begin near Rambo Rd. at US 2 and terminate in the vicinity of the Airport Rd. I/C.

- **Sprague Corridor Alternate Route**: A new alternate that begins at US 2 near the Lincoln County line and eventually connects to the existing Sprague Rd. corridor. The alignment turn southeast below the Northern Quest Casino and terminates at Airport I/C. This is a high speed 2-lane limited access facility with four interchanges.

- **6th Avenue Corridor Alternate Route**: This 2-lane facility begins at the Rambo Rd./US 2 intersection and connects north to the existing 6th Ave. at Craig Rd. At Hayford Rd. the alternate turns south and ends at Spotted Rd. and US 2.

- **Deno Corridor Alternate Route**: A new alternate begins at US 2 at the Lincoln County line. At Woods Rd. it turns north across Deep Creek and then east to the existing Deno/Rd/Hayford Rd. intersection. It then terminates south at the Airport I/C. This is a high speed 2-lane limited access facility with four interchanges.

- **South Airport Corridor Alternate Route**: A new 2-lane alignment beginning at the Rambo Rd./US 2 intersection then south to end at the 1-90 Medical Lake I/C.

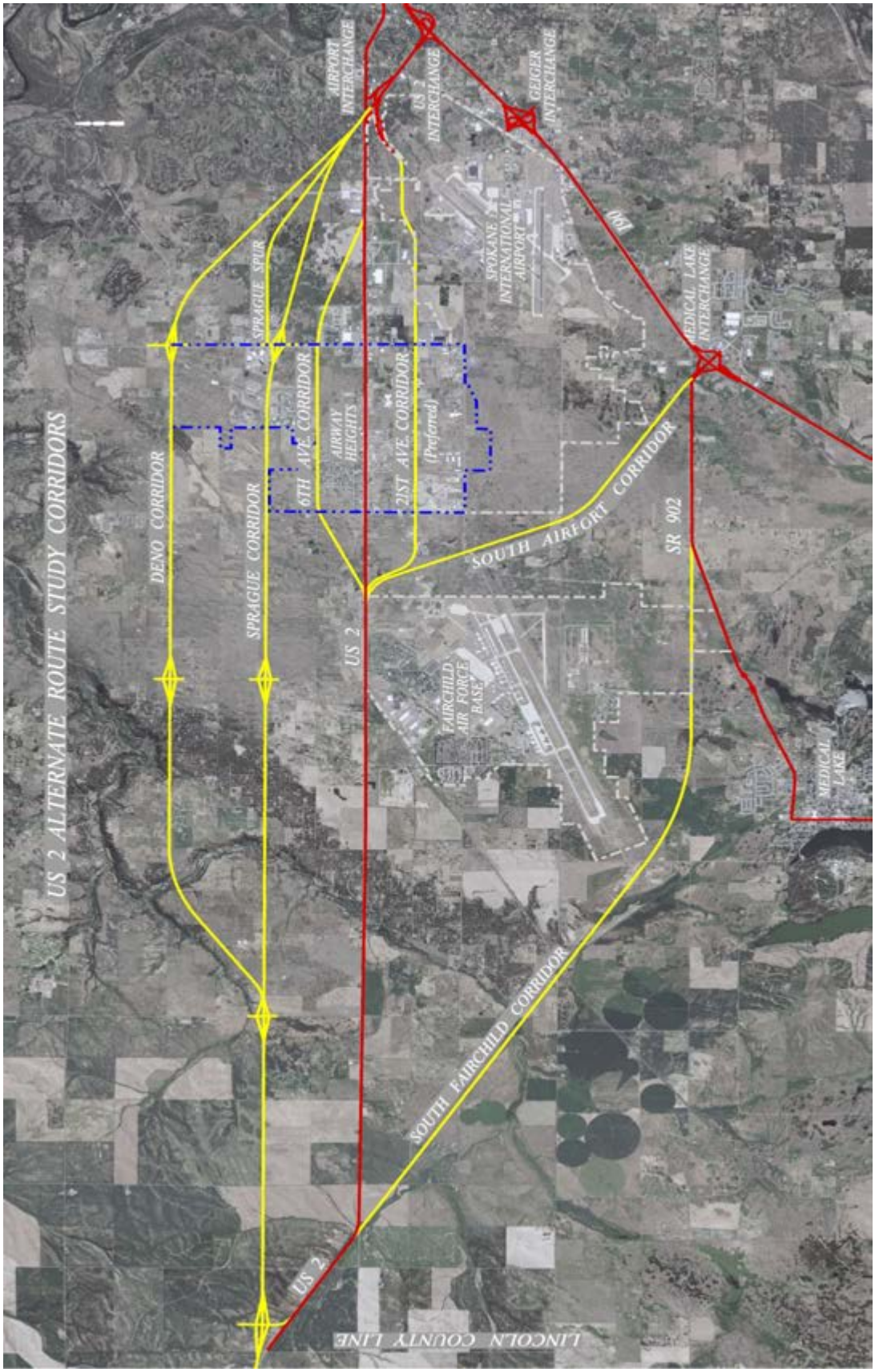
- **South Fairchild Corridor Alternate Route**: A new 2-lane alignment beginning at the Coulee-Hite Rd./US 2 intersection east of the Lincoln County Line and runs below Fairchild AFB and terminates on SR 902 west of Craig Rd. This is a high speed 2-lane limited access facility.

- **Airway Heights Couplet**: This one-way 2-lane couplet south of US 2 begins just east of Rambo Rd. and ends east of Hayford Rd.

- **US 2 Widening 7-lane Facility**: This option adds lanes to the existing US 2 for more capacity from Fairchild AFB to Sunset Rd.

- **US 2 Widening 5-lane Facility**: An option that adds extra lanes to the existing US 2 corridor from Reardan to Fairchild AFB.

The following graphic illustrates the six alternate routes and spur. The couplet and widenings are not shown.


US 2 ALTERNATE ROUTE STUDY CORRIDORS
DENO CORRIDOR
SPRAGUE CORRIDOR
6TH AVE. CORRIDOR
AIRWAY HEIGHTS
21ST AVE CORRIDOR
(Preferred)
SOUTH AIRPORT CORRIDOR
SOUTH FAIRCHILD CORRIDOR
SPRAGUE SPUR
AIRPORT INTERCHANGE
US 2 INTERCHANGE
GEIGER INTERCHANGE
MEDICAL LAKE INTERCHANGE
SPOKANE INTERNATIONAL AIRPORT
FAIRCHILD AIR FORCE BASE
MEDICAL LAKE
SR 902
I-90
US 2
US 2
LINCOLN COUNTY LINE

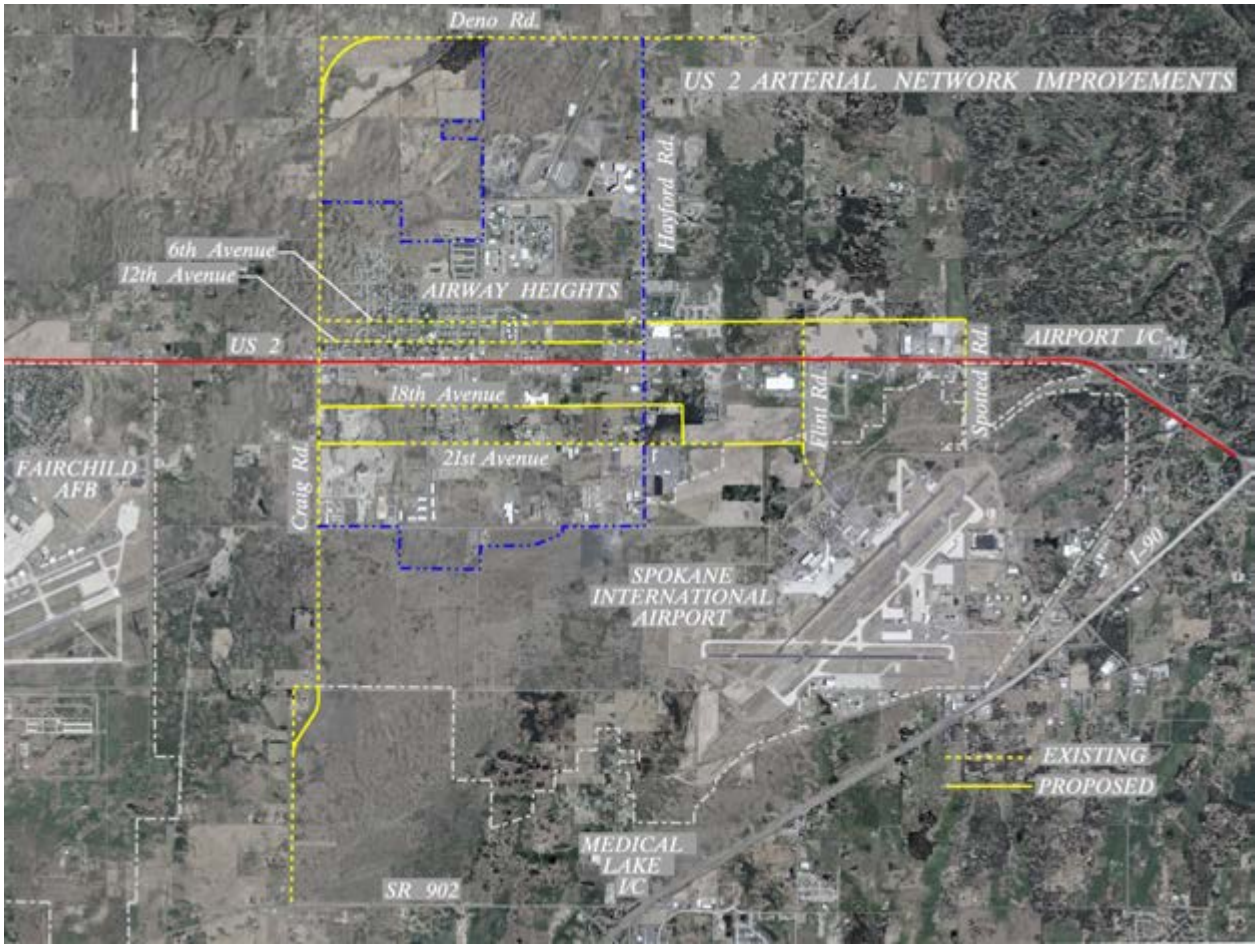
To help evaluate the long range options for the US 2 corridor a design matrix was used to rank the alternate routes and improvements that were considered. VMT benefit was calculated as percentage with US 2 as a 0.0 value, with increased mileage negative and decreased mileage positive. Benefit Cost values include safety and mobility benefits. Subjective benefits are informational. They were gleaned from public input and were not included in the ranking.

	US 2 Alternate Route Decision Matrix						Low - Med - High			
				Calculated Benefits			Subjective Benefits (Public Input)			
	Improvement	Description	Cost	VMT / Trip Reduction	B/C	Totals:	Pedestrian Safety	Environmental Benefits	Public Approval	Feasiblity
				(-5% to +5%)	(B/C*10)					
1	US 2 Sprague Spur	2 Lane Spur From Airport I/C to Hayford at Sprague Ave.	$34,000,000	4.29	33.9	38.2	High	Low	Med	Med
2	18th or 21st Avenue Corridor	2 Lane Bypass from Airport I/C to US 2 in South Airway Heights	$22,600,000	-0.17	37.5	37.3	Med	High	High	High
3	Airway Heights Couplet	3 Lane Couplet South of US 2	$31,400,000	-0.19	25.1	24.9	Low	High	Med	Med
4	Sprague Corridor	2 Lane Bypass From Airport I/C to US 2 at County Line (Sprague St.)	$154,000,000	0.19	23.6	23.8	High	Med	Low	Low
5	Deno Corridor	2 Lane Bypass From Airport I/C to US 2 at County Line (Deno Rd.)	$148,000,000	-0.94	21.2	20.3	High	Low	Low	Low
6	South Fairchild Corridor	2 Lane Bypass From Medical Lake I/C to US 2 at County Line	$53,000,000	-3.26	21.1	17.8	High	Med	High	Med
7	6th Ave. Corridor	2 Lane Bypass From Airport I/C to US2 in North Airway Heights	$29,800,000	-0.44	18.1	17.7	Low	Med	Low	Low
8	US 2 Widening 7 Lane Facility	Fairchild Air Force Base to Sunset Road	$36,000,000	0.00	16.4	16.4	Low	High	High	High
9	South Airport Corridor	2 Lane Bypass From Medical Lake I/C to US 2 at Rambo Rd.	$40,500,000	-3.66	16.5	12.8	High	Low	Med	Med

As part of the study the existing network of arterials were evaluated for potential improvements that could alleviate congestion on US 2. These arterials included 6th Avenue, 12th Avenue, 18th Avenue, 21st Avenue, and Craig Rd. In some cases the improvements to the network arterials are already part of local Transportation Improvement Plans.

After traffic modeling and operational analysis it was apparent that expansion of the local arterials helped to lessen congestion of US 2. The most significant relief for US 2 was evident on the increased use of the existing SR 902-Craig Rd-Dean Rd. corridor, and the 18th/21st Avenue corridors after improvements.

The arterials as evaluated included proposed improvements as shown below:



After analysis of the potential bypass routes, and evaluation of the existing arterial networks, the 21st Avenue corridor became the clear choice for development of a parallel corridor to relieve projected traffic congestion on US 2.

The corridor has a high potential to develop as an alternate route for these reasons:

- High benefit/cost ratio
- Existing arterials are mostly paved through Airway Heights
- Corridor is supported by Airway Heights and Spokane County
- Proposed improvements are already part of Airway Height 6 year Transportation Improvement Plan
- Spokane County plans to connect the 21st Ave. arterial to Flint Rd.
- Phased construction is possible as funds become available
- Aircraft Influence Zone – Restricts residential development within it's boundary
- Developing parallel existing arterials minimizes environmental impacts

Continuing growth in the US 2 corridor has sparked additional interest in the 21st Ave. corridor, and has brought the City of Airway Heights, City of Spokane, Spokane County, Spokane International Airport, SRTC, and local developers together to evaluate proposed roadway cross-sections, right of way, and east/west connection points to US 2.

The Sprague Spur also has positive characteristics that mitigate the future traffic at the Hayford Rd/US 2 intersection. High volumes of traffic from the Northern Quest Casino and travelers accessing southwest Spokane, can be re-routed directly to the Airport Rd. I/C, avoiding the Hayford intersection. The funding for this alternate spur could be a joint private/public venture as it relieves traffic on US 2 and improves access to the casino complex.

To specifically analyze the urban section of the US 2 corridor, a more detailed computer network was created in VISSIM software from Fairchild AFB to Spotted Rd. The network was evaluated based on development currently under construction and projects approved within the corridor. Major intersections were modeled and under went detailed operational analysis with both traffic signals and roundabouts. Also, analyses were done for the years 2015, 2022, and 2030. It was found that with intersection control, and some widening of the existing alignment, US 2 will function well for the next 15 to 20 years, following which the need for a functional alternate route would then become a priority.

Recommendations

After thorough modeling and analysis of existing and future conditions, the following improvements for reduced collision frequency/severity and mobility are recommended:

Short-range improvements:

Section 1: Lincoln County Line to Fairchild AFB (MP 266.86 to MP 275.22)

- Construct left turn channelization on US 2 at Wood-Espanola Rd., Ritchey Rd., and Central Rd.
- Construct right turn decel lanes on US 2 at Christianson-Graham Rd.

Section 2: Fairchild AFB to I-90 (MP 275.22 to MP 283.01)

- Extend Eastbound Fairchild AFB acceleration lane
- Preserve the right of way for the construction of US-2 as a seven lane roadway.

- Continue developer mitigations as growth continues in the US 2 corridor and modified access control should be established in conjunction with developments or other roadway projects
- Provide a separated pedestrian/bicycle pathway adjacent to US-2
- Support expansion and improvements of 21st Avenue
- Construct Intersection Improvements***** as needed:
    - Rambo Rd. – Intersection Control
    - Spokane Tribal Entrance – Intersection Control
    - Craig Rd. – Intersection Control
    - Lawson St. – Add Capacity: Add Dedicated NB and SB Turn Lanes
    - Garfield Rd. – Add Capacity: Add Dedicated NB Left Lane and Right Turn Lanes
    - Lyons Rd. – Intersection Control; Add Dedicated NB and SB Left Turn Lanes
    - Hayford Rd. – Add Capacity: Install Additional SB Left Turn Lane
    - Deer Heights – Intersection Control
    - Flint Rd. – Intersection Control
    - Spotted Rd. – Intersection Control - Channelization

***Implementation of intersection control type or improvements are subject to operational analysis based on conditions in the year of construction.**

- Support Bus Stop improvements along US 2, including turnouts, benches, shelters, sidewalk/pathways, and other amenities
- City of Airway Heights Strategies:
    - Support City's Re-vitalization Plan
    - Support expansion of public transit by Spokane Transit Authority and the Spokane and Kalispell Tribes
    - Support other pedestrian and bicycle safety and access improvements
    - Support a larger, permanent park & ride facility to include passenger information systems, security cameras, and other amenities
- Access Control
    - Support construction of raised median channelization in Airway Heights and city street consolidation along US 2 for access control

Mid-range improvements:

Section 1: Lincoln County Line to Fairchild AFB (MP 266.86 to MP 275.22)

- Widen Deep Creek Bridge #2/606 – Deficient Shoulder Width.
- Construct left turn channelization on US 2 at Dover Rd
- Widen or re-stripe US 2 for two way left turn channelization from Brooks Rd. to Galena Underpass.

Section 2: Fairchild AFB to I-90 (MP 275.22 to MP 283.01)

- Install ITS Signal Coordination from Lawson St. to Flint Rd.
- Support installation of High Intensity crosswalk (HAWK) signals or equivalent when warranted.
- Add lanes each direction on US 2 from Lyons Rd. to Russell Rd.
- Support expansion and improvements of 21st Avenue.
- Support acquisition of access rights within the 21st Avenue corridor.
- Support expansion of existing City arterials such as 6th and 12th Avenues from Craig Rd. to Spotted Rd.
- Support Improvement of Craig Rd. from SR 902 to the Hayford Rd./Deno Rd. intersection.
- Support expansion and improvements of pedestrian and bicycle shared use facilities within the corridor. Coordinate connections with existing regional networks.

Long-range improvements:

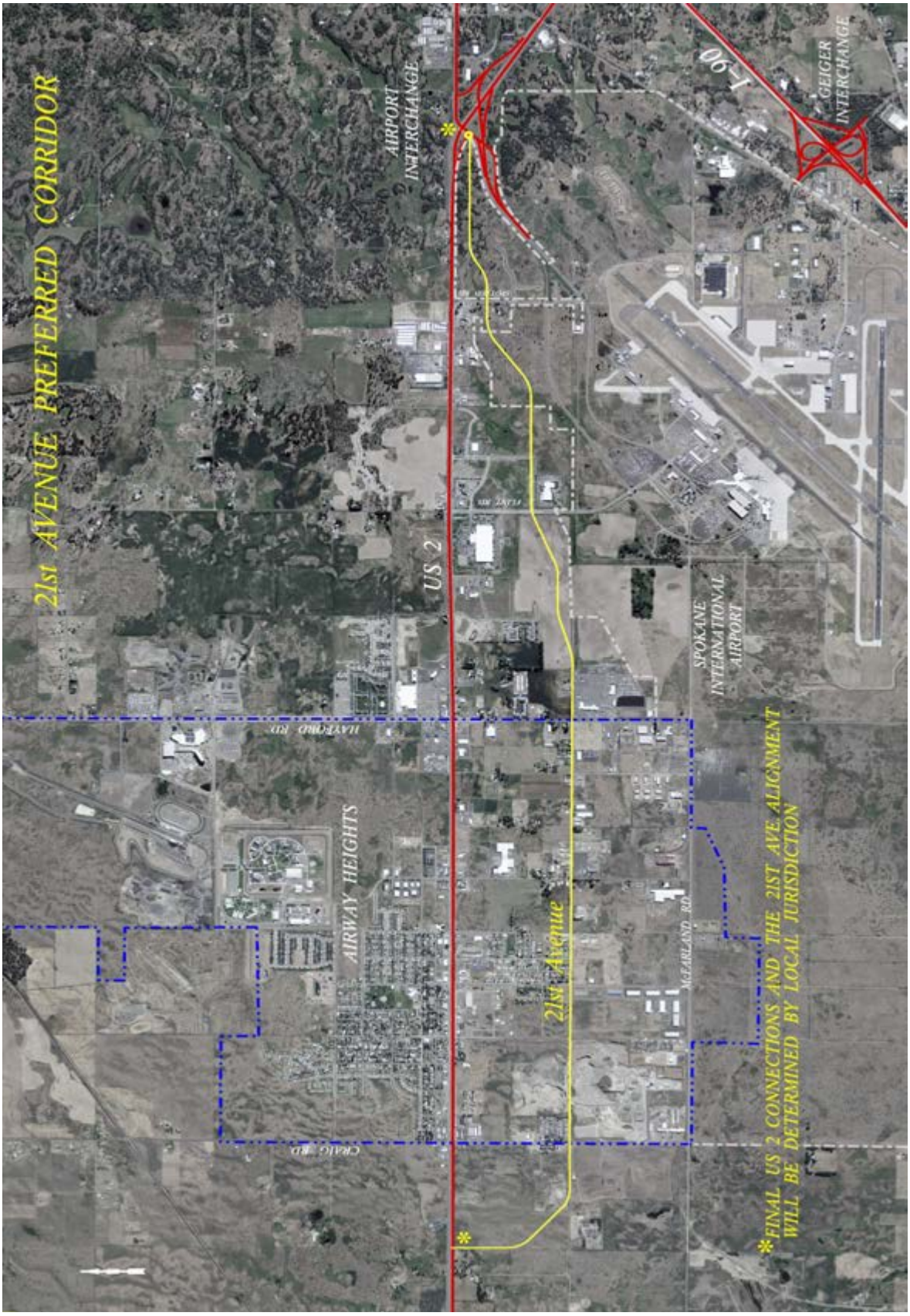
Section 1: Lincoln County Line to Fairchild AFB (MP 266.86 to MP 275.22)

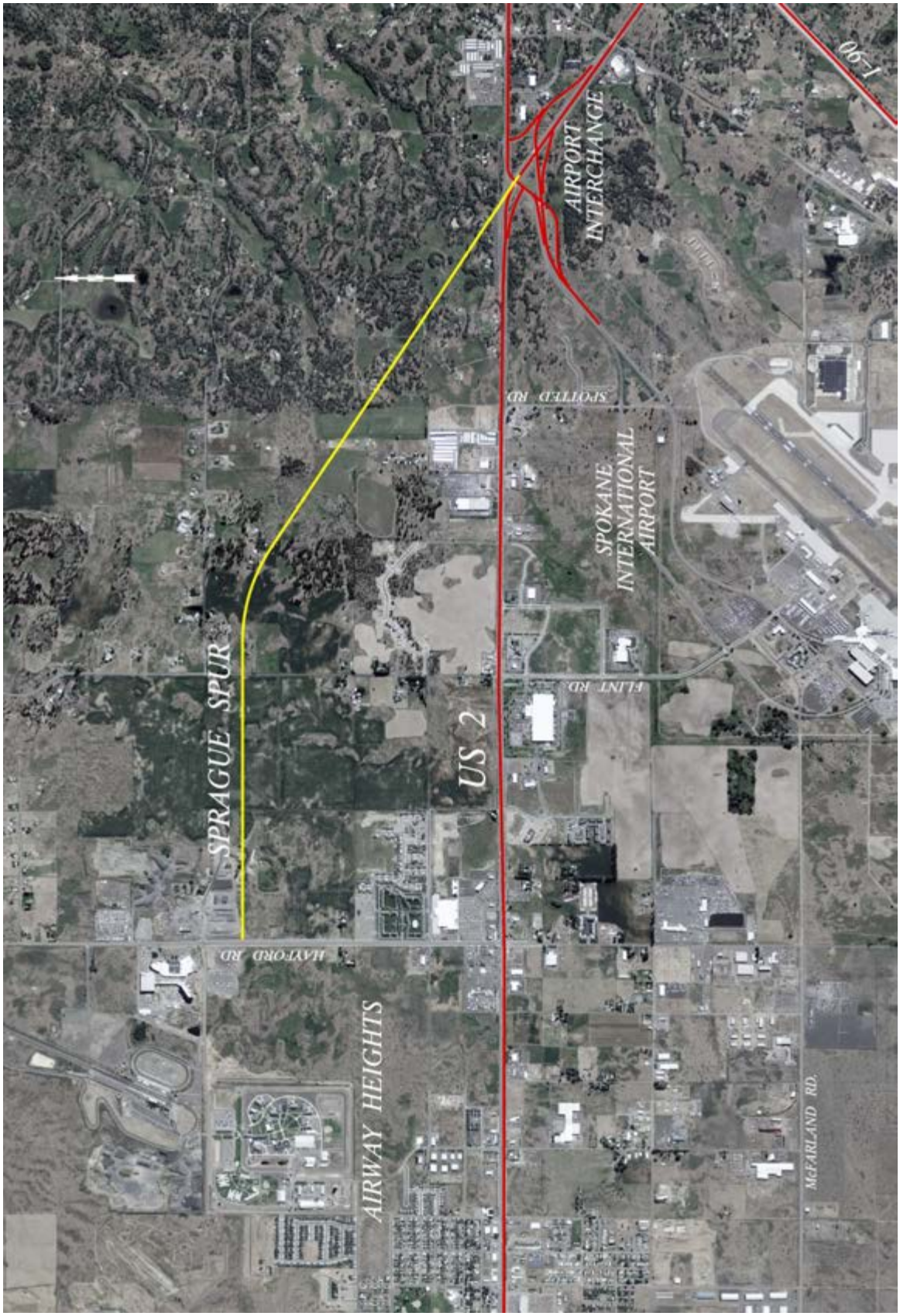
- Purchase right of way and access rights as funds become available for future expansion of the corridor.
- Replace Galena Burlington Northern Railroad Bridge – Deficient vertical clearance.

Section 2: Fairchild AFB to I-90 (MP 275.22 to MP 283.01)

- Support construction of an alternate route within the 21st Avenue corridor from Rambo Rd. to Airport Rd. Interchange. (Pg. 93)
- Pursue Public and Private funding to construct the US 2 Sprague Avenue Spur from the Hayford Rd./Sprague Avenue intersection to Airport Interchange. (Pg. 96)

(For a list of recommendations with B/C and priority see Pgs. 97-98)


21st AVENUE PREFERRED CORRIDOR
AIRPORT INTERCHANGE
I-90
GEIGER INTERCHANGE
US 2
SPOKANE INTERNATIONAL AIRPORT
HAYFORD RD
AIRWAY HEIGHTS
21st Avenue
McFARLAND RD
CRAIG RD
*FINAL US 2 CONNECTIONS AND THE 21ST AVE. ALIGNMENT WILL BE DETERMINED BY LOCAL JURISDICTION


I-90
AIRPORT INTERCHANGE
SPOKANE INTERNATIONAL AIRPORT
SPRAGUE SPUR
US 2
AIRWAY HEIGHTS
McFARLAND RD.

US 2 Route Development Plan Proposed Improvements

9/11/2009
Subject to Revision

	Improvement	Description	Begin	End	Logical Section	Short, Mid, Long Range	Priority	Project Cost Low	Project Cost High	Benefit
Section 1, Lincoln County Line to Fairchild AFB										
Section 1, Lincoln County Line to Fairchild AFB	Left Turn Low-Cost Channelization	Espanola-Wood Roads & Ritchie Road Intersections	Espanola-Wood	Ritchie	1	Short	Medium	$49,500	$71,500	B/C 2.20
	Right Turn Decel Lane	Christianson/Graham Rd.	Christianson	Rambo	1	Short	Low	$247,500	$357,500	B/C 0.48
	Deep Creek Bridge Improvement	Widen the Existing Deep Creek Bridge	MP 272.40	MP 272.41	1	Mid	Low	$378,000	$546,000	Increase Shoulder Widths
	Dover Rd. Left Turn Lane	Construct EB Dover Rd. Left Turn Channelization	RR Bridge	MP 275.23	1	Mid	Medium	$270,000	$390,000	B/C 1.12
	US 2 Widening 3 Lane Facility	Brooks Rd. to Galena RR Bridge	Brooks	RR Bridge	1	Long	Medium	$378,000	$546,000	B/C 0.59
	Acquire Access Rights	Acquire Access Rights for US 2 Future Widening	Lincoln County Line	Fairchild AFB	1	Long	Low	$2,250,000	$3,250,000	Access Control to Maintain High Speed
	Replace Galena BNRR Bridge	Replace Galena/US 2 Burlington Northern Railroad Bridge	MP 275.09	MP 275.11	1	Long	Low	$11,070,000	$15,990,000	Increase Vertical and Horizontal Clearances
Section 2, Fairchild AFB to I-90 (Page 1)										
Section 2, Fairchild AFB to I-90	US 2 - Upgraded Access Control	Limit New Driveways; Consolidate Street Access Where Possible; Raised Channelization in Median	Craig Rd.	Hayford Rd.	2	Short	Low	N/A	N/A	Access Control to Enhance Safety
	Lawson St. Added Traffic Signal Capacity	Add Dedicated Northbound and Southbound Turn Lanes	Lawson Rd	Lawson Rd.	2	Short	Medium	$639,000	$923,000	B/C 3.13
	Craig Rd. Intersection Control	Install Intersection Control at US2/Craig Rd.	Craig Rd.	Craig Rd.	2	Short	Medium	$1,800,000	$3,200,000	Intersection Control
	Garfield Rd. Added Traffic Signal Capacity	Add Northbound and Southbound Left Turn; Add Right Turn Lanes	Garfield Rd.	Garfield Rd.	2	Short	Medium	$758,610	$1,095,770	B/C 3.43
	Deer Heights Rd. Intersection Control	Install US2/Deer Heights Rd. Intersection Control with Northbound and Southbound Turn Lanes	Deer Heights Rd.	Deer Heights Rd.	2	Short	High	$1,260,000	$1,820,000	B/C 0.13

US 2 Route Development Plan Proposed Improvements

9/11/2009
Subject to Revision

Section 2, Fairchild AFB to I-90

Improvement	Description	Begin	End	Logical Section	Short, Mid, Long Range	Priority	Project Cost Low	Project Cost High	Benefit
Section 2, Fairchild AFB to I-90 (Page 2)									
Flint Rd. Intersection Control	Install US2/Flint Rd. Intersection Control	Flint Rd.	Flint Rd.	2	Short	High	$1,485,000	$2,145,000	B/C 0.19
Hayford Rd. Added Traffic Signal Capacity	Add Additional Southbound Left Turn Lane	Hayford Rd.	Hayford Rd.	2	Short	High	$790,560	$1,141,920	B/C 5.45
Fairchild AFB Eastbound Acceleration Lane	Lengthen Existing Eastbound Fairchild AFB Acceleration Lane	Fairchild AFB	MP 275.64	2	Short	Low	$0	$0	Enhance Driveability
Rambo Rd. Intersection Control	Install Intersection Control at US2/Rambo Rd.	Rambo Rd.	Rambo Rd.	2	Short/ Mid	Low	$900,000	$1,600,000	Intersection Control
High Intensity Crosswalk Signals	Install (3) HAWK or equivalent signals at Existing Mid-block Pedestrian Crossings	Ziegler St.	Russell St.	2	Short/ Mid	Medium	$229,500	$331,500	B/C 3.54
Spokane Tribe Intersection Control	Install Intersection Control at the Spokane Tribe Entrance	MP 276.89	MP 276.89	2	Short/ Mid	Medium	$900,000	$1,600,000	Intersection Control
Lyons Rd. Intersection Control	Install US2/Lyons Rd. Intersection Control with Northbound and Southbound Turn Lanes	Lyons Rd.	Lyons Rd.	2	Short/ Mid	Medium	$1,260,000	$1,820,000	B/C 0.13
Spotted Rd. Intersection Control	Intersection Control - Channelization	Spotted Rd.	Spotted Rd.	2	Short/ Mid	High	$150,000	$50,000	Intersection Contol
Craig Rd. Corridor Improvements	Support Craig Rd. Corridor Improvements from SR 902 to the Hayford/Deno Intersection	SR 902	Hayford Rd.	2	Mid	Medium	$13,230,000	$19,110,000	B/C 2.01
US 2 Coordinated Signal Timing	Install Intelligent Traffic Systems (ITS) to Coordinate Movements	Fairchild AFB	Spotted Rd.	2	Mid	High	$900,000	$1,300,000	B/C 2.09
Fairchild AFB to Sunset Rd.	Widen Existing US 2 to 7 Lane Facility	Fairchild AFB	Sunset Rd.	2	Long	Low	$32,310,000	$46,670,000	0.98
US 2 - Lyons Rd. to Russell Rd. Added Lanes	Widen Existing to 7 Lane Facility on US 2 from Lyons Rd. to Russell Rd. for Added Capacity	Lyons Rd.	Russell St.	2	Long	Medium	$6,480,000	$9,360,000	B/C 2.59
21st Corridor Access Control	Acquire Access Control in the 21st Avenue Corridors for Future Expansion to Maintain Higher Speeds	Rambo Rd.	Airport I/C	2	Long	Medium	N/A	N/A	Maintain Mobility for Future High Speed
Sprague Ave. Spur	Construct a 2-Lane Spur From Sprague Ave./Hayford Rd. to Airport I/C	Hayford Rd.	Airport I/C	2	Long	High	$30,600,000	$44,200,000	B/C 3.39
21st Avenue Alternate Route	Support expansion of a 2-Lane Alternate Route From Rambo Rd. to Airport I/C in the 21st Avenue Corridor	Rambo Rd.	Airport I/C	2	Long	High	$17,775,000	$25,675,000	B/C 3.29

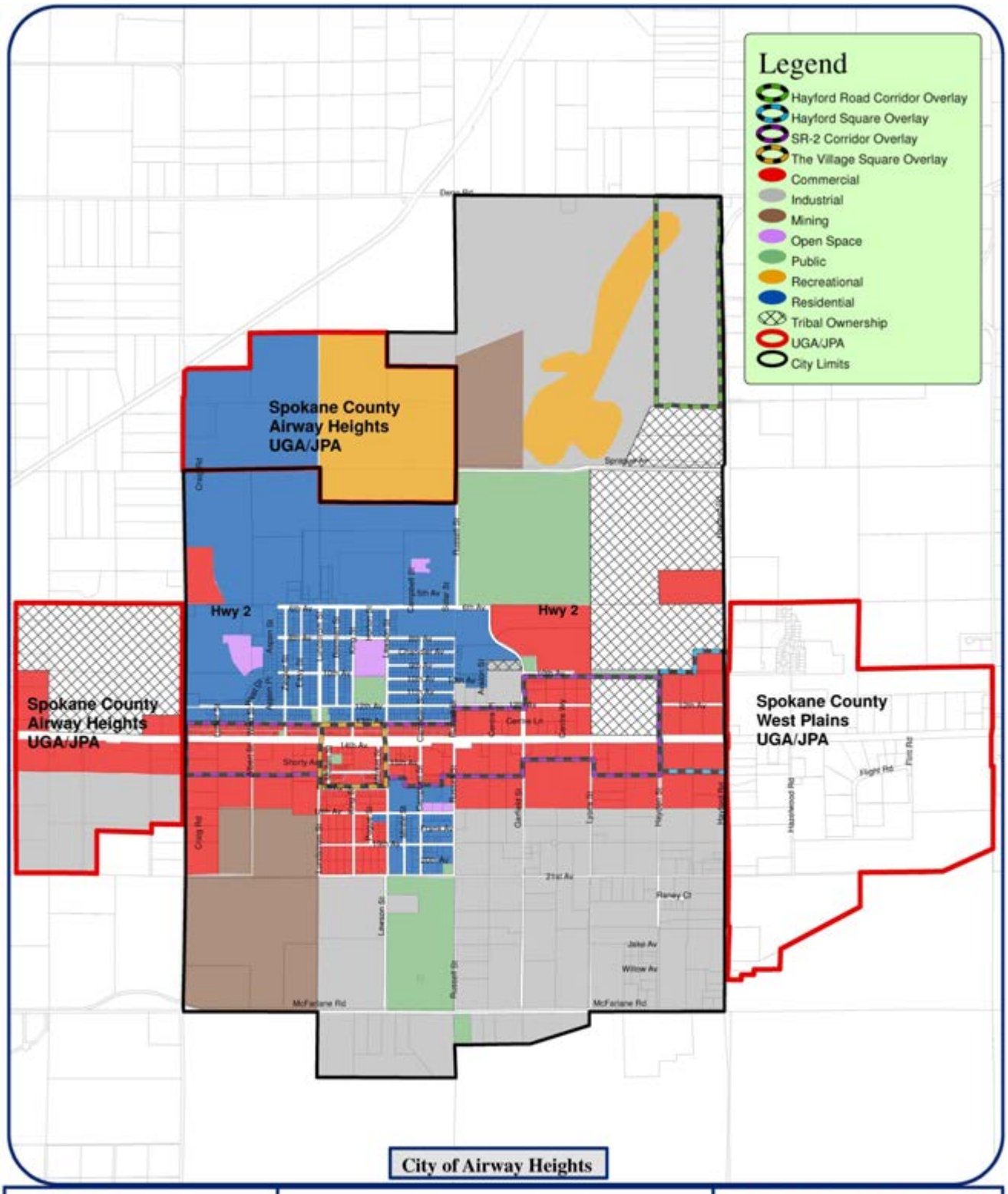
Appendix A

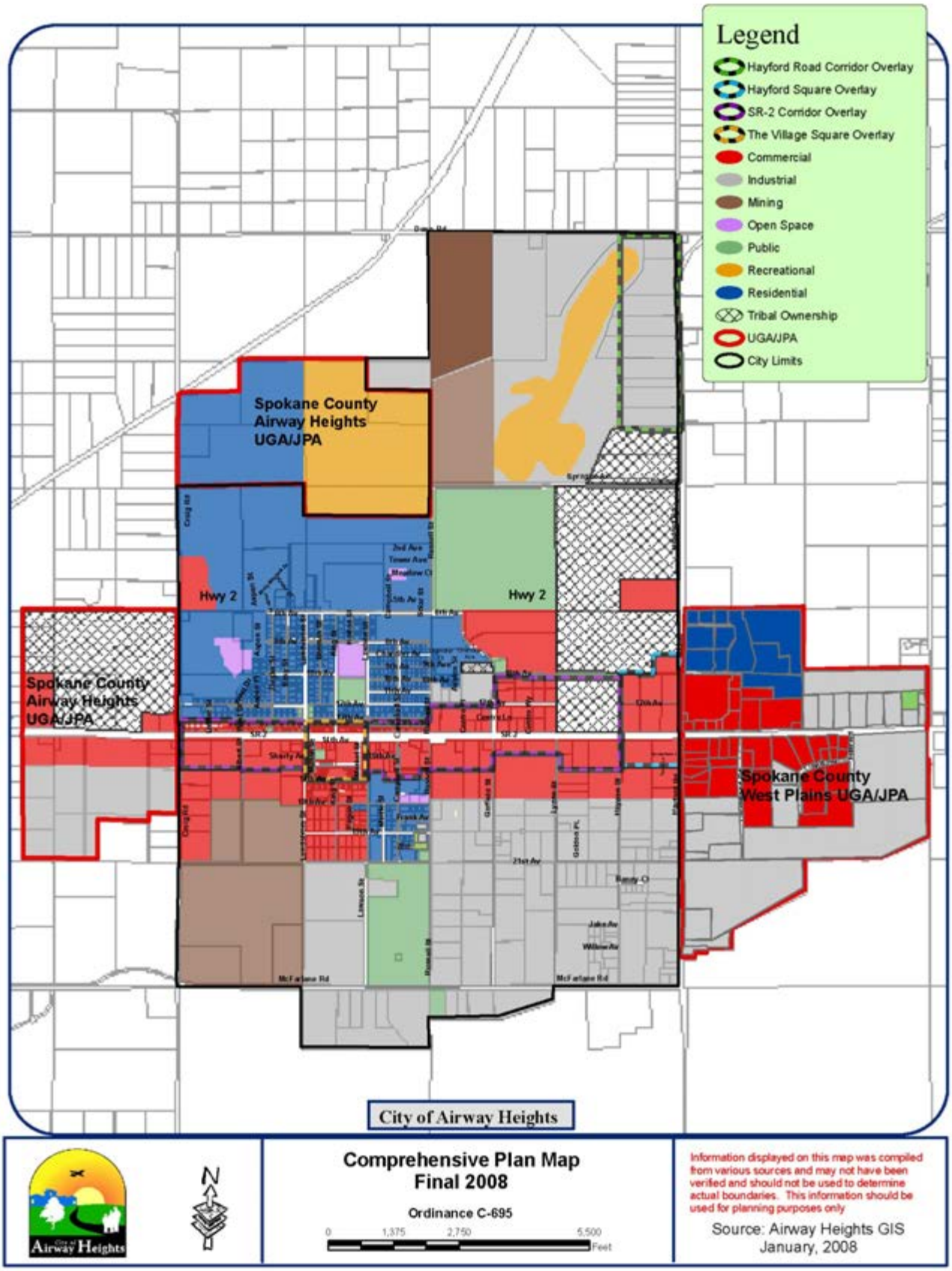
Land Use & Zoning

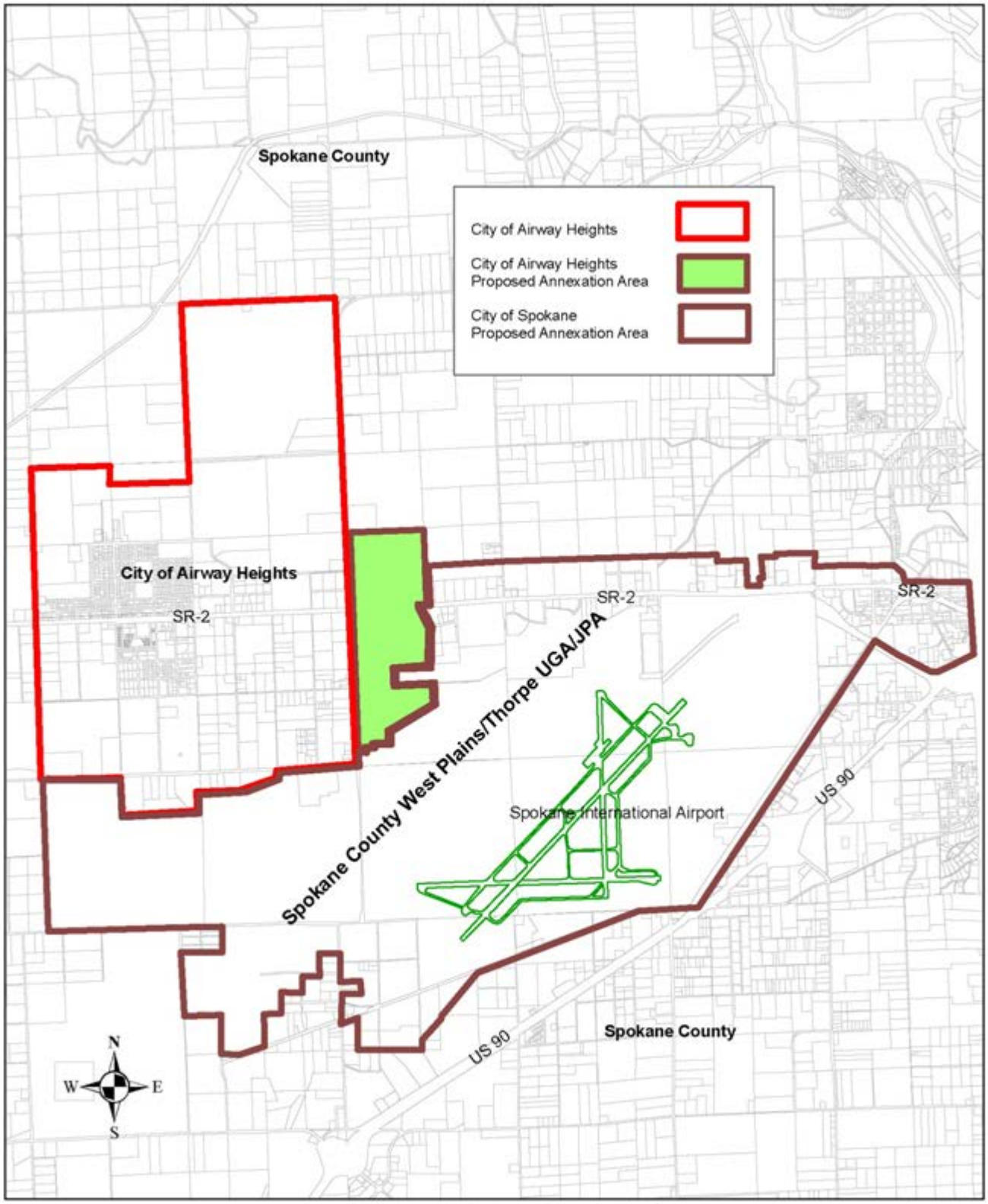
Eastern Region

US 2 Route Development Plan

Lincoln County Line to I-90

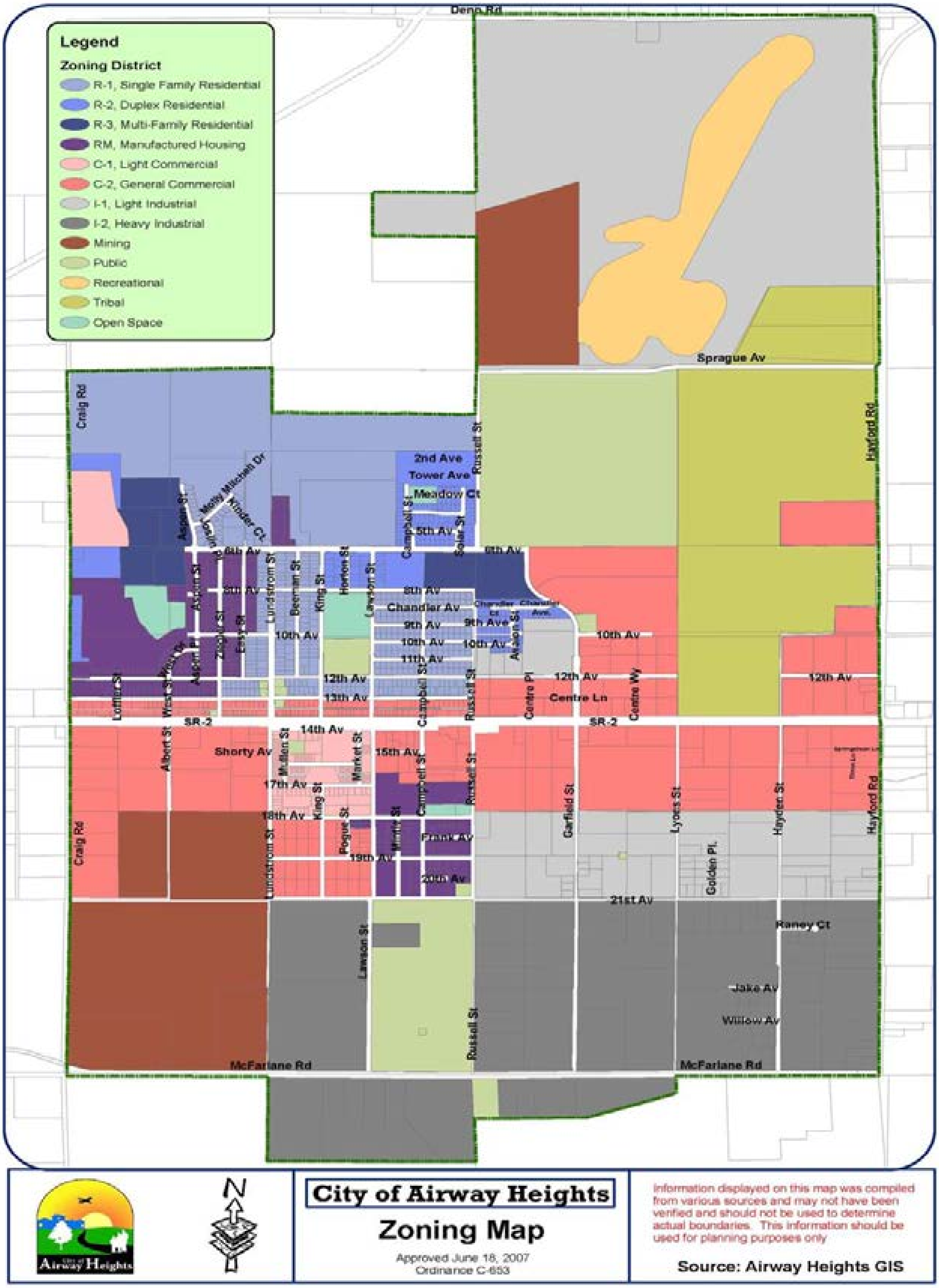

Legend
Hayford Road Corridor Overlay
Hayford Square Overlay
SR-2 Corridor Overlay
The Village Square Overlay
Commercial
Industrial
Mining
Open Space
Public
Recreational
Residential
Tribal Ownership
UGA/JPA
City Limits
Spokane County
Airway Heights
UGA/JPA
Hwy 2
Hwy 2
Spokane County
Airway Heights
UGA/JPA
Spokane County
West Plains
UGA/JPA
City of Airway Heights
Comprehensive Plan Map
Final 2006
Information displayed on this map was compiled from various sources and may not have been verified and should not be used to determine actual boundaries. This information should be used for planning purposes only
Source: Airway Heights GIS

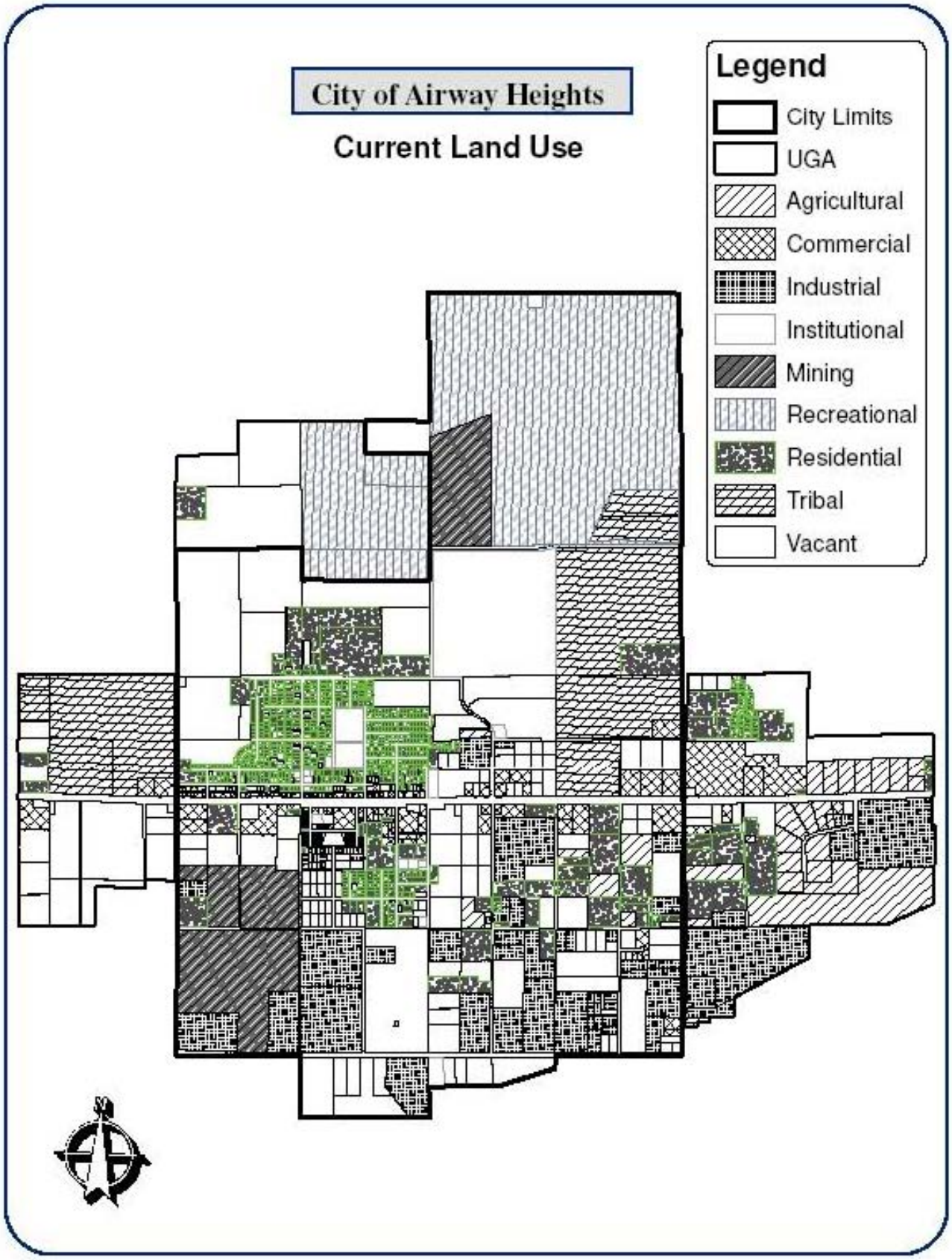

Legend
Hayford Road Corridor Overlay
Hayford Square Overlay
SR-2 Corridor Overlay
The Village Square Overlay
Commercial
Industrial
Mining
Open Space
Public
Recreational
Residential
Tribal Ownership
UGA/JPA
City Limits
Spokane County
Airway Heights
UGA/JPA
Hwy 2
Hwy 2
Spokane County
Airway Heights
UGA/JPA
Spokane County
West Plains UGA/JPA
City of Airway Heights
Comprehensive Plan Map
Final 2008
Ordinance C-695
0
1,375
2,750
5,500
Feet
Information displayed on this map was compiled from various sources and may not have been verified and should not be used to determine actual boundaries. This information should be used for planning purposes only
Source: Airway Heights GIS
January, 2008



City of Airway Heights GIS
April, 2009

City of Airway Heights/City of Spokane Land Distribution Map


Legend
Zoning District
R-1, Single Family Residential
R-2, Duplex Residential
R-3, Multi-Family Residential
RM, Manufactured Housing
C-1, Light Commercial
C-2, General Commercial
I-1, Light Industrial
I-2, Heavy Industrial
Mining
Public
Recreational
Tribal
Open Space
Deno Rd
Sprague Av
Craig Rd
Hayford Rd
Russell St
2nd Ave
Tower Ave
Meadow Ct
5th Av
6th Av
8th Av
Chandler Av
9th Av
10th Av
11th Av
12th Av
13th Av
14th Av
15th Av
17th Av
18th Av
19th Av
20th Av
21st Av
SR-2
Centre Ln
Shorty Av
Frank Av
Raney Ct
Jake Av
Willow Av
McFarlane Rd
Lundstrom St
Campbell St
Lawson St
Garfield St
Lyons St
Hayden St
Golden Pl
Albert St
City of Airway Heights
Zoning Map
Approved June 18, 2007
Ordinance C-653
Information displayed on this map was compiled from various sources and may not have been verified and should not be used to determine actual boundaries. This information should be used for planning purposes only
Source: Airway Heights GIS


City of Airway Heights
Current Land Use
Legend
City Limits
UGA
Agricultural
Commercial
Industrial
Institutional
Mining
Recreational
Residential
Tribal
Vacant

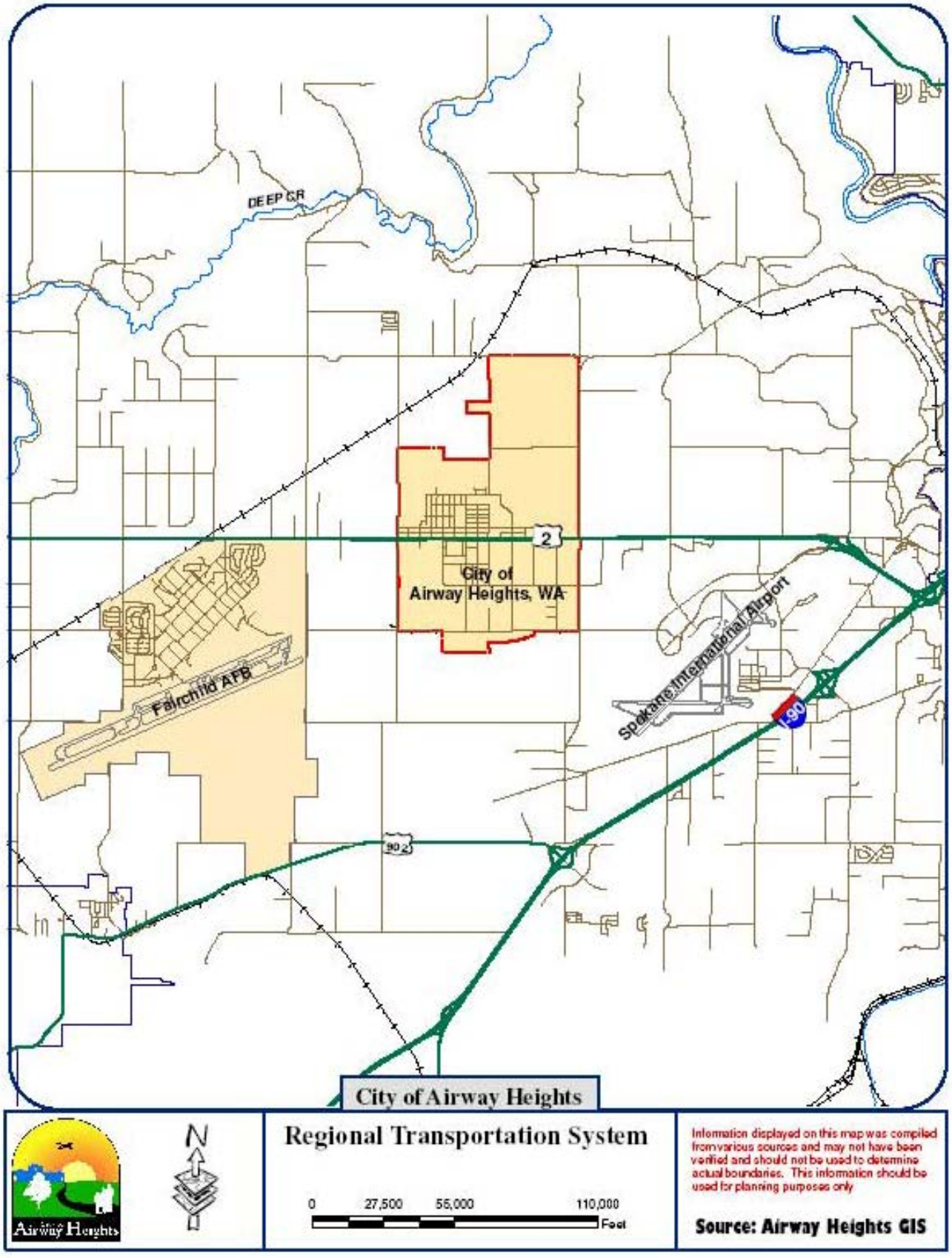

DEEP CR
2
City of
Airway Heights, WA
Fairchild AFB
Spokane International Airport
90
902
City of Airway Heights
Airway Heights
N
Regional Transportation System
0
27,500
55,000
110,000
Feet
Information displayed on this map was compiled from various sources and may not have been verified and should not be used to determine actual boundaries. This information should be used for planning purposes only
Source: Airway Heights GIS

Table DP-1. Profile of General Demographic Characteristics: 2000
Geographic Area: Airway Heights city, Washington
[For information on confidentiality protection, nonsampling error, and definitions, see text]

Subject	Number	Percent
Total population	**4,500**	**100.0**
SEX AND AGE		
Male	3,261	72.5
Female	1,239	27.5
Under 5 years	228	5.1
5 to 9 years	214	4.8
10 to 14 years	207	4.6
15 to 19 years	205	4.6
20 to 24 years	427	9.5
25 to 34 years	1,098	24.4
35 to 44 years	1,007	22.4
45 to 54 years	620	13.8
55 to 59 years	171	3.8
60 to 64 years	122	2.7
65 to 74 years	139	3.1
75 to 84 years	51	1.1
85 years and over	11	0.2
Median age (years)	33.8	(X)
18 years and over	3,740	83.1
Male	2,860	63.6
Female	880	19.6
21 years and over	3,567	79.3
62 years and over	272	6.0
65 years and over	201	4.5
Male	113	2.5
Female	88	2.0
RACE		
One race	4,360	96.9
White	3,575	79.4
Black or African American	471	10.5
American Indian and Alaska Native	144	3.2
Asian	83	1.8
Asian Indian	2	-
Chinese	2	-
Filipino	11	0.2
Japanese	9	0.2
Korean	29	0.6
Vietnamese	3	0.1
Other Asian [1]	27	0.6
Native Hawaiian and Other Pacific Islander	17	0.4
Native Hawaiian	2	-
Guamanian or Chamorro	9	0.2
Samoan	2	-
Other Pacific Islander [2]	4	0.1
Some other race	70	1.6
Two or more races	140	3.1
Race alone or in combination with one or more other races: [3]		
White	3,688	82.0
Black or African American	495	11.0
American Indian and Alaska Native	198	4.4
Asian	140	3.1
Native Hawaiian and Other Pacific Islander	45	1.0
Some other race	87	1.9

Subject	Number	Percent
HISPANIC OR LATINO AND RACE		
Total population	**4,500**	**100.0**
Hispanic or Latino (of any race)	447	9.9
Mexican	273	6.1
Puerto Rican	13	0.3
Cuban	12	0.3
Other Hispanic or Latino	149	3.3
Not Hispanic or Latino	4,053	90.1
White alone	3,220	71.6
RELATIONSHIP		
Total population	**4,500**	**100.0**
In households	2,442	54.3
Householder	958	21.3
Spouse	438	9.7
Child	808	18.0
Own child under 18 years	695	15.4
Other relatives	82	1.8
Under 18 years	42	0.9
Nonrelatives	156	3.5
Unmarried partner	74	1.6
In group quarters	2,058	45.7
Institutionalized population	1,822	40.5
Noninstitutionalized population	236	5.2
HOUSEHOLD BY TYPE		
Total households	**958**	**100.0**
Family households (families)	656	68.5
With own children under 18 years	390	40.7
Married-couple family	438	45.7
With own children under 18 years	221	23.1
Female householder, no husband present	181	18.9
With own children under 18 years	143	14.9
Nonfamily households	302	31.5
Householder living alone	242	25.3
Householder 65 years and over	59	6.2
Households with individuals under 18 years	417	43.5
Households with individuals 65 years and over	126	13.2
Average household size	2.55	(X)
Average family size	3.02	(X)
HOUSING OCCUPANCY		
Total housing units	**1,095**	**100.0**
Occupied housing units	958	87.5
Vacant housing units	137	12.5
For seasonal, recreational, or occasional use	5	0.5
Homeowner vacancy rate (percent)	2.7	(X)
Rental vacancy rate (percent)	20.1	(X)
HOUSING TENURE		
Occupied housing units	**958**	**100.0**
Owner-occupied housing units	536	55.9
Renter-occupied housing units	422	44.1
Average household size of owner-occupied units	2.50	(X)
Average household size of renter-occupied units	2.61	(X)

- Represents zero or rounds to zero. (X) Not applicable.
[1] Other Asian alone, or two or more Asian categories.
[2] Other Pacific Islander alone, or two or more Native Hawaiian and Other Pacific Islander categories.
[3] In combination with one or more of the other races listed. The six numbers may add to more than the total population and the six percentages may add to more than 100 percent because individuals may report more than one race.

Source: U.S. Census Bureau, Census 2000.

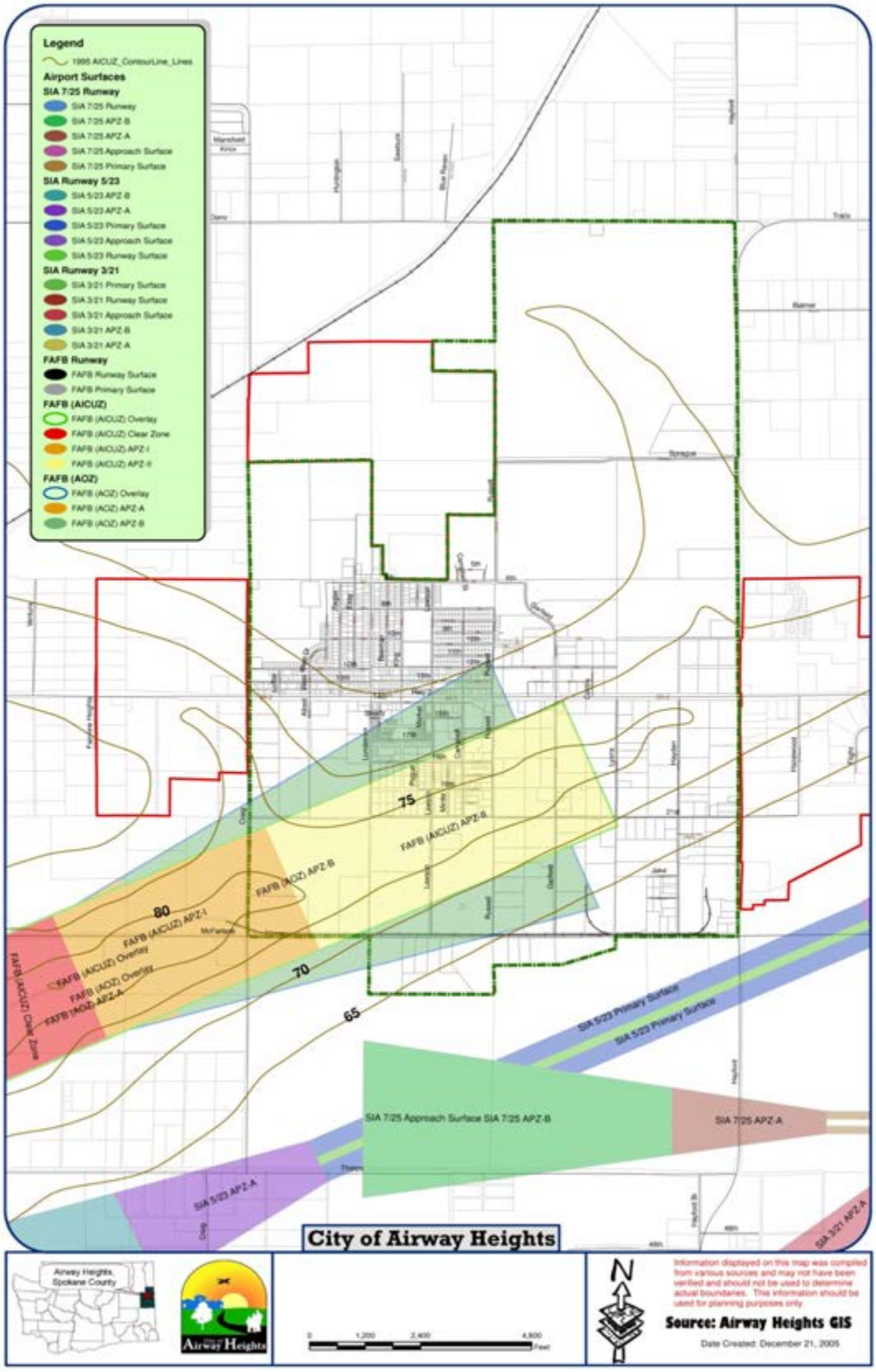
Appendix B

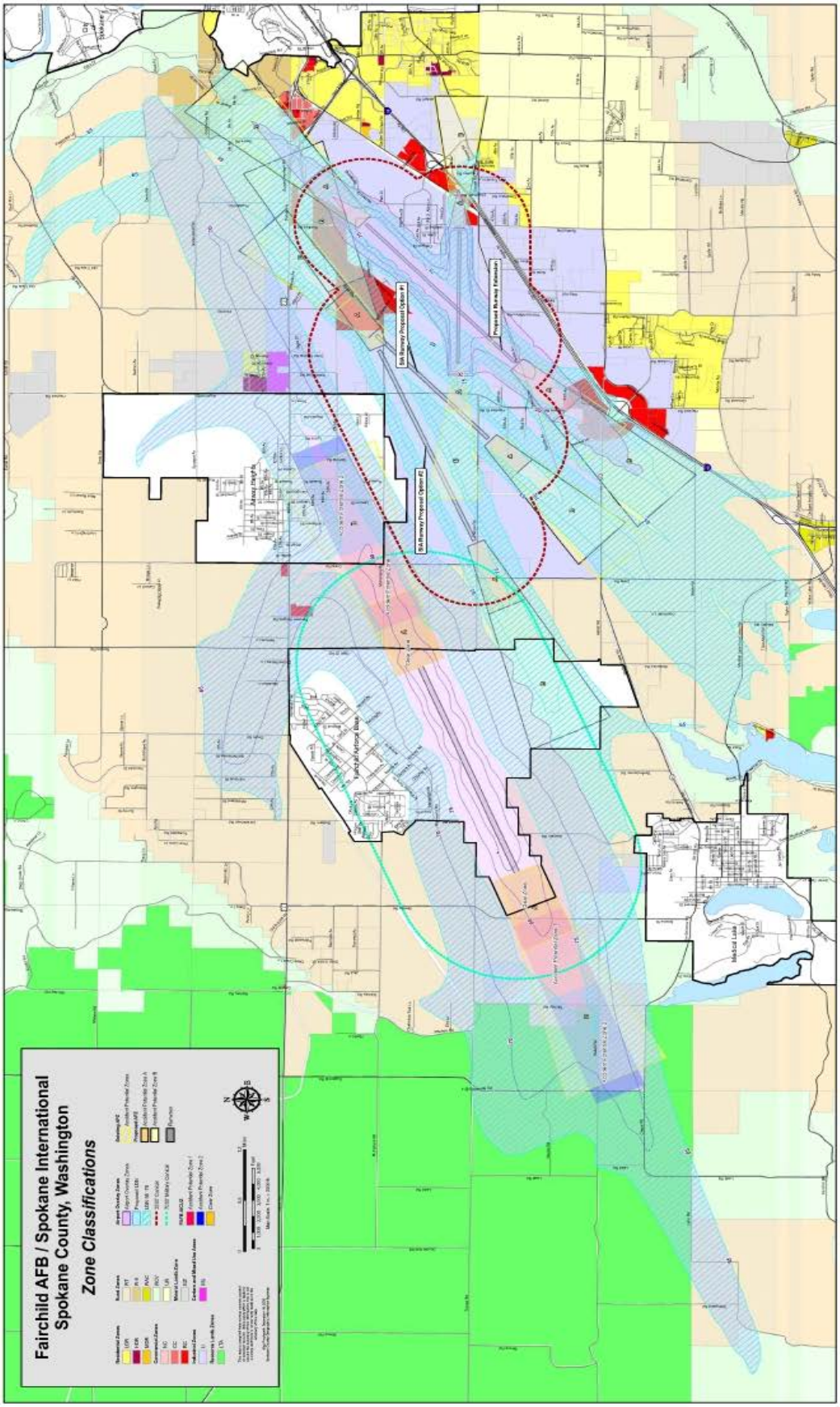
Aircraft Zones

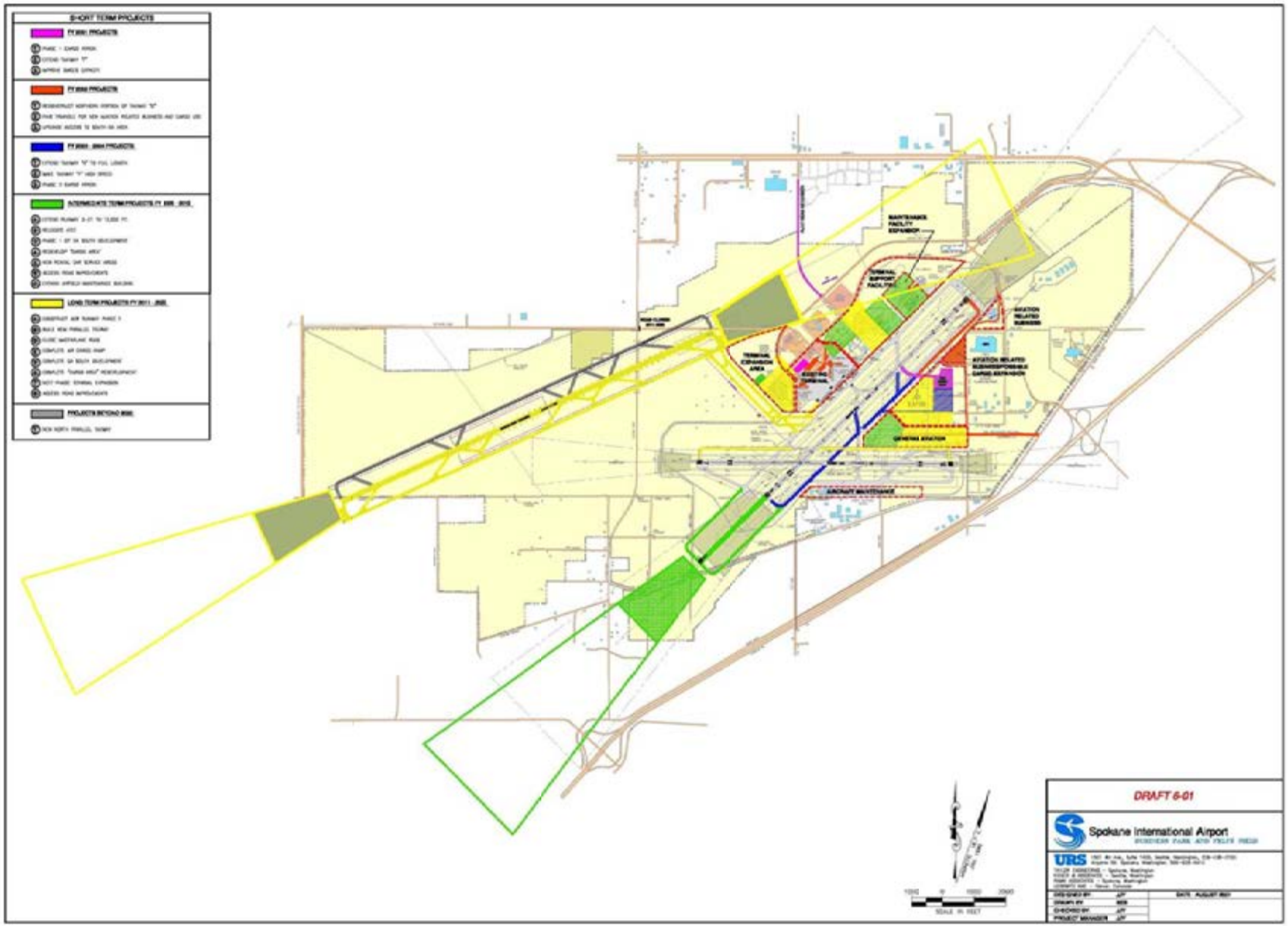
Eastern Region

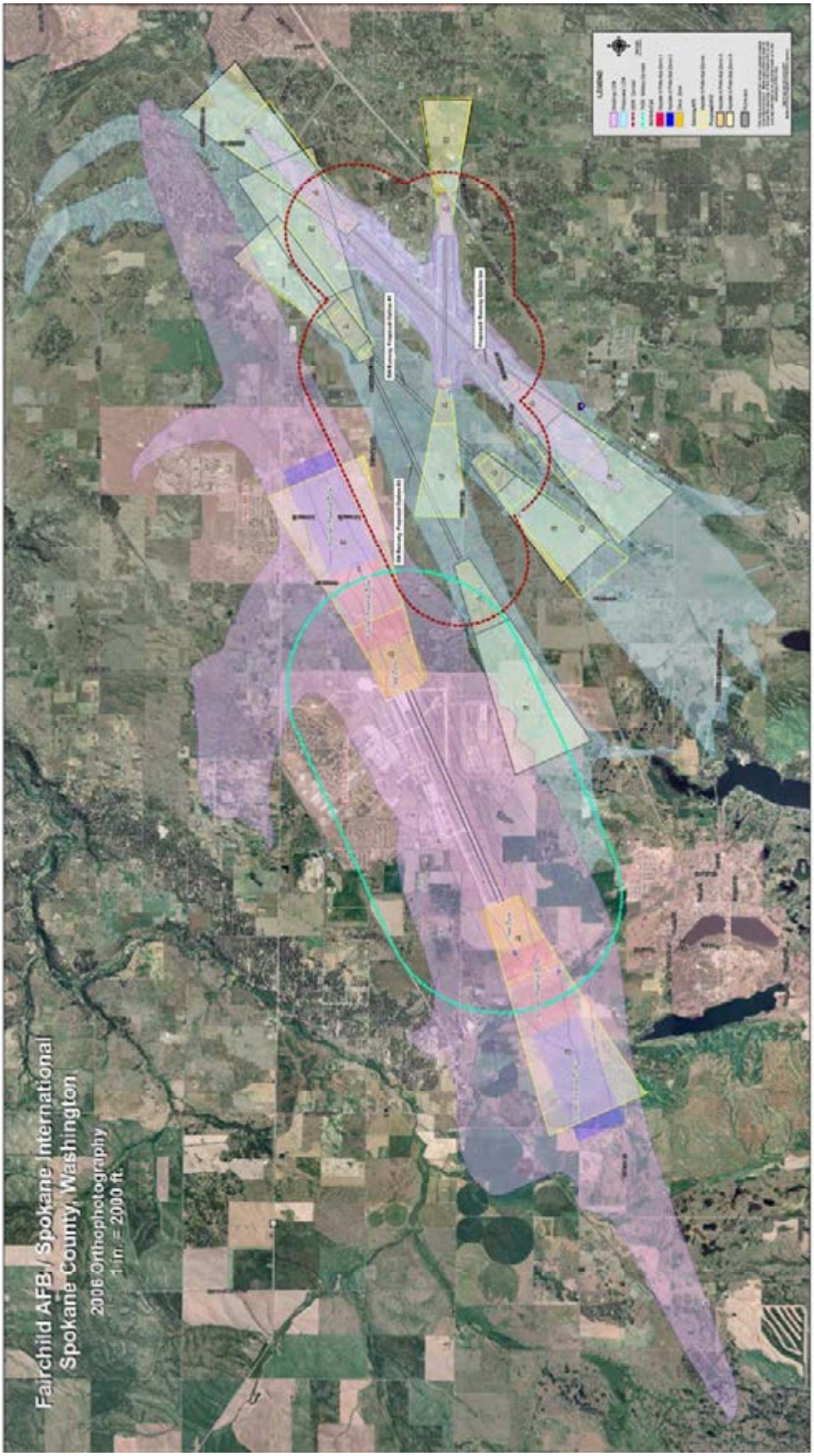
US 2 Route Development Plan

Lincoln County Line to I-90


Legend
1995 AICUZ_ContourLine_Lines
Airport Surfaces
SIA 7/25 Runway
SIA 7/25 Runway
SIA 7/25 APZ-B
SIA 7/25 APZ-A
SIA 7/25 Approach Surface
SIA 7/25 Primary Surface
SIA Runway 5/23
SIA 5/23 APZ-B
SIA 5/23 APZ-A
SIA 5/23 Primary Surface
SIA 5/23 Approach Surface
SIA 5/23 Runway Surface
SIA Runway 3/21
SIA 3/21 Primary Surface
SIA 3/21 Runway Surface
SIA 3/21 Approach Surface
SIA 3/21 APZ-B
SIA 3/21 APZ-A
FAFB Runway
FAFB Runway Surface
FAFB Primary Surface
FAFB (AICUZ)
FAFB (AICUZ) Overlay
FAFB (AICUZ) Clear Zone
FAFB (AICUZ) APZ-I
FAFB (AICUZ) APZ-II
FAFB (AOZ)
FAFB (AOZ) Overlay
FAFB (AOZ) APZ-A
FAFB (AOZ) APZ-B
75
80
70
65
FAFB (AICUZ) APZ-B
FAFB (AOZ) APZ-B
FAFB (AICUZ) APZ-I
FAFB (AICUZ) Overlay
FAFB (AOZ) Overlay
FAFB (AOZ) APZ-A
FAFB (AICUZ) Clear Zone
SIA 5/23 Primary Surface
SIA 5/23 Primary Surface
SIA 7/25 Approach Surface SIA 7/25 APZ-B
SIA 7/25 APZ-A
SIA 5/23 APZ-A
SIA 3/21 APZ-A
City of Airway Heights
Airway Heights, Spokane County
Airway Heights
0 1,200 2,400 4,800 Feet
N
Information displayed on this map was compiled from various sources and may not have been verified and should not be used to determine actual boundaries. This information should be used for planning purposes only
Source: Airway Heights GIS
Date Created: December 21, 2005


Fairchild AFB / Spokane International
Spokane County, Washington
Zone Classifications
Medical Lake
Proposed Runway Extension
SIA Runway Proposed Option #1
SIA Runway Proposed Option #2


SHORT TERM PROJECTS
DRAFT 6-01
Spokane International Airport
URS


Fairchild AFB / Spokane International
Spokane County, Washington
2006 Orthophotography
1 in. = 2000 ft.

Appendix C

Design Matrix

Eastern Region

US 2 Route Development Plan

Lincoln County Line to I-90

⇩ Project Type	Main Line															Bridges[11]				Intersections			Barriers		
Design Elements ⇨	Horiz. Align.	Vert. Align.	Lane Width	Shldr Width	Lane Transition	On/Off Conn.	Median Width	Cross Slope Lane	Cross Slope Shldr	Fill/Ditch Slopes	Access[3]	Clear Zone[18]	Sign., Del., Illumin.	Basic Safety	Bike & Ped.	Lane Width	Shldr Width	Vertical Clearance	Structural Capacity	Turn Radii	Angle	I/S Sight Dist.	Term. & Trans. Section[12]	Std Run	Bridge Rail[14][19]
Preservation																									
Roadway																									
(3-1) Non-Interstate Freeway	DE/F	DE/F	DE/F	DE/F	DE/F	DE/F	DE/F	DE/F	DE/F	DE/F	DE/F		B	B		DE/F	DE/F	F					F	B	F
(3-2) HMA/PCCP/BST Overlays	DE/M	DE/M	DE/M	DE/M	DE/F	DE/F	DE/M	DE/M	DE/M	DE/M			B	B	M	DE/M	DE/M	F				B	F	B	F
(3-3) Replace HMA w/ PCCP at I/S	DE/M	DE/M	EU/M	EU/M	DE/F		DE/M	EU/M	DE/M	DE/M			B	B	M	DE/M	DE/M	F				B	F	B	F
Structures																									
(3-4) Bridge Replacement	F[2]	F[2]	F[2]	F[2]	F	F[2]	F[2]	F[2]	F[2]	F[2]		F	F		F	F[2]	F[2]	F	F	F[2]	F[2]	F	F	F	F
(3-5) Bridge Deck Rehab.													B	B	M			F					F[6]	F[22]	F
Improvements[16]																									
Mobility																									
(3-6) Non-Interstate Freeway	F	F	F	F	F	F	F	F	F	F	F	F	F		F	F	F	F	F	F	F	F	F	F	F
(3-7) Urban	F[2]	F[2]	F[2]	F[2]	F	F[2]	F[2]	F[2]	F[2]	F[2]	F	F	F		F	F[2]	F[2]	F	F	F[2]	F[2]	F	F	F	F
(3-8) Rural	F[2]	F[2]	F[2]	F[2]	F	F[2]	F[2]	F[2]	F[2]	F[2]	F	F	F		F	F[2]	F[2]	F	F	F[2]	F[2]	F	F	F	F
(3-9) HOV	F[2]	F[2]	F[2]	F[2]	F	F[2]	F[2]	F[2]	F[2]	F[2]	F	F	F		F	F[2]	F[2]	F	F	F[2]	F[2]	F	F	F	F
(3-10) Bike/Ped. Connectivity	[5]	[5]	[5]	[5]	[5]			[5]	[5]	[5]	[5]	[5]	[5]		F	[5]	[5]	[5]	[5]	[5]	[5]	[5]	[5]	[5]	[5]
Safety																									
(3-11) Non-Interstate Freeway	F	F	F	F	F	F	F	F	F	F	F	F	F		F	F	F	F		F	F	F	F	F	F
(3-12) Intersection[1]			F[2]	F[2]	F					F[2]	F	F	F		M					F	F	F	F	F	F
(3-13) Corridor[1][24]	M[4]	M[4]	M[4]	M[4]	F	F[17]	M[4]	M[4]	M[4]	M[4]	F	F	F		F	M[4]	M[4]	F		M[4]	M[4]	F	F	F	F
(3-14) Median Barrier				DE/F																			F[20]	F[20]	
(3-15) Guardrail Upgrades				DE/F																			F	F[23]	
(3-16) Bridge Rail Upgrades																							F	F[22]	F
(3-17) Risk: Roadside										F	EU/F	F	F										F	F	F
(3-18) Risk: Sight Distance	F/M[21]	F/M[21]	F/M[21]	F/M[21]						F/M[21]	F[21]	F[21]	F		F	F[21]	F[21]	F[21]		F/M[21]	F/M[21]	F[21]	F	F	F
(3-19) Risk: Roadway Width			F/M[21]	F/M[21]	F[21]	F[21]	F/M[21]	F/M[21]	F/M[21]	F/M[21]	F	F	F		F	F[21]	F[21]	F[21]		F/M[21]	F/M[21]	F[21]	F	F	F
(3-20) Risk: Realignment	F[2]	F[2]	F[2]	F[2]	F	F[2]	F[2]	F[2]	F[2]	F[2]	F	F	F		F	F[2]	F[2]	F		F[2]	F[2]	F[2]	F	F	F
(3-21) Collision Analyis Locations	Design Elements determined based on a project analysis[27]																								
Economic Development																									
(3-22) Freight & Goods (Frost Free)[8]	F[2]	F[2]	F[2]	F[2]	F	F[2]	F[2]	F[2]	F[2]	F[2]	EU/F	F	B		EU/F[26]	DE/F	DE/F	F	F	EU/F	EU/F	EU/F	F	F	F
(3-23) Four-Lane Trunk System	F	F	F	F	F	F	F	F	F	F	F	F	F		F	F	F	F	F	F	F	F	F	F	F
(3-24) Rest Areas (New)	F	F	F	F	F	F	F	F	F	F	F	F	F		F	F	F	F		F	F	F	F	F	F
(3-25) Bridge Restrictions	F[2]	F[2]	F[2]	F[2]	F	F[2]	F[2]	F[2]	F[2]	F[2]		F	F		EU/F[26]	F[2]	F[2]	F	F	F[2]	F[2]	F	F	F	F
(3-26) Bike Routes (Shldrs)			EU/M	[7]	EU/F				EU/M	EU/M			B	B	F	EU/M	EU/M	F				B	F	B	EU/F

Design Matrix 3: Main Line NHS Routes (Except Interstate)

Exhibit 1100-6

☐	A blank cell indicates that the element is not applicable.
F	Full design level. See Chapter 1140.
M	Modified design level. See Chapter 1130.
B	Basic design level. See Chapter 1120.
F/M	Full for freeways/Modified for nonfreeway
DE	Design Exception
EU	Evaluate Upgrade

[1] Collision Reduction, or Collision Prevention (At-Grade Removal, Signalization & Channelization). Specific deficiencies that created the project must be upgraded to design level as stated in the matrix.

[2] Modified design level may apply based on a corridor or project analysis. See 1100.03(5).

[3] If designated as L/A acquired in the Access Control Tracking System, limited access requirements apply. If not, managed access applies. See 1100.03(5).

[4] Full design level may apply based on a corridor or project analysis. See 1100.03(5).

[5] For bike/pedestrian design see Chapters 1510 and 1520.

[6] Applies only to bridge end terminals and transition sections.

[7] 4 ft minimum shoulders.

[8] If all weather structure can be achieved with spot digouts and overlay, modified design level applies to NHS highways and basic design level applies to non-NHS highways.

[11] See Chapter 720.

[12] Impact attenuators are considered as terminals.

[14] Includes crossroad bridge rail. See Chapter 1610.

[16] For design elements not in the matrix headings, apply full design level as found in the applicable chapters and see 1100.03(2).

[17] DE for existing acceleration/deceleration lanes when length meets posted freeway speed and no significant accidents. See Chapter 1360.

[18] On managed access highways within the limits of incorporated cities and towns, City and County Design Standards apply to areas outside the curb or outside the paved shoulder where no curb exists.

[19] The funding sources for bridge rail are a function of the length of the bridge. Consult programming personnel.

[20] Applies to median elements only.

[21] Analyses required. See 1100.03(5) for details.

[22] Upgrade barrier, if necessary, within 200 ft of the end of the bridge.

[23] See description of Guardrail Upgrades Project Type, 1100.03(1) regarding length of need.

[24] Apply Full design level to projects that realign or reconstruct significant portions of the alignment.

[26] Sidewalk ramps must be addressed for ADA compliance. See Chapter 1510.

[27] Collision Analysis Locations (CALs) require a project analysis to document the needs at a location and determine the appropriate design elements to address these needs.

Design Matrix 3:
Main Line NHS Routes (Except Interstate)
Exhibit 1100-6 (continued)

Appendix D

Bridge Condition Reports

Eastern Region

US 2 Route Development Plan

Lincoln County Line to I-90

Bridge Deck Condition Report

BRIDGE NUMBER	BRIDGE NAME	REGION	MILEPOST
2 / 601	STEVENS CR UPPER X-ING	Eastern	267.23

YEAR BUILT / YR WIDENED	CONTRACT NO (S)	SUFFICIENCY RATING
1946	03168 , 13371	91.06

BRIDGE TYPE: CS
DECK TYPE: Conc cast-in-place
DECK THICKNESS (Main Span): 16.0 in.
BRIDGE WIDTH (curb-to-curb): 36.0 ft.
BRIDGE LENGTH: 23 ft.
AVERAGE DAILY TRAFFIC (ADT): 6,105
NUMBER OF LANES: 2

EXISTING WEARING SURFACE AND DECK PROTECTION TYPE: ACP w/membrane
Year Applied - 1988
Overlay Thickness - 1.8 inches

VERTICAL CLEARANCE
VC Type:
NA

BRIDGE RAIL
BRIDGE RAIL TYPE: WSDOT CODE - 42
Balluster Rail w/Thrie Beam
RAIL MEETS CURRENT STANDARDS?: YES
SIDEWALK / CURB WIDTH: 0.0 Lt 0.0 Rt

9 EXPANSION JOINTS

DECK PROTECTIVE SYSTEM RECOMMENDATIONS
PROTECTIVE OVERLAY RECOMMENDED?: NO
TYPE RECOMMENDED: None
COMMENTS:
No further deck protection is required.

If ride improvement is needed we recommend removing 1 inch of the existing asphalt and replacing it with 1-2 inches of new asphalt.

The total asphalt thickness should not exceed 3 inches.

BRIDGE DECK SURVEY
DELAMINATION RESULTS: NA
DATE:
CHLORIDE RESULTS:
0 % are > 2 lbs./CY 0 / 85
REBAR RESULTS: NA

REVIEWED BY: Bruce Thiel
DATE: 7/30/2007

Bridge Deck Condition Report

BRIDGE NUMBER	BRIDGE NAME	REGION	MILEPOST
2 / 602	STEVENS CR LOWER X-ING	Eastern	267.38

YEAR BUILT / YR WIDENED	CONTRACT NO (S)	SUFFICIENCY RATING
1947	03168 , 13371	96.12

BRIDGE TYPE: CIP
DECK TYPE: Conc cast-in-place
DECK THICKNESS (Main Span): in.
BRIDGE WIDTH (curb-to-curb): 36.0 ft.
BRIDGE LENGTH: 32 ft.
AVERAGE DAILY TRAFFIC (ADT): 6,105
NUMBER OF LANES: 2

EXISTING WEARING SURFACE AND DECK PROTECTION TYPE: ACP w/membrane
Year Applied - 1988
Overlay Thickness - 1.8 inches

VERTICAL CLEARANCE
VC Type:
NA

BRIDGE RAIL
BRIDGE RAIL TYPE: WSDOT CODE - 42
Balluster Rail w/Thrie Beam
RAIL MEETS CURRENT STANDARDS?: YES
SIDEWALK / CURB WIDTH: 0.0 Lt 0.0 Rt

9 EXPANSION JOINTS

DECK PROTECTIVE SYSTEM RECOMMENDATIONS
PROTECTIVE OVERLAY RECOMMENDED?: NO
TYPE RECOMMENDED: None
COMMENTS:
No further deck protection is required.

If ride improvement is needed we recommend removing 1 inch of the existing asphalt and replacing it with 1-2 inches of new asphalt.

The total asphalt thickness should not exceed 3 inches.

BRIDGE DECK SURVEY
DELAMINATION RESULTS: NA
DATE:
CHLORIDE RESULTS:
0 % are > 2 lbs./CY 0 / 85
REBAR RESULTS: NA

REVIEWED BY: Bruce Thiel
DATE: 7/30/2007

Bridge Deck Condition Report

BRIDGE NUMBER	BRIDGE NAME	REGION	MILEPOST
2 / 604	BN RR OC (NP)	Eastern	270.90

YEAR BUILT / YR WIDENED	CONTRACT NO (S)	SUFFICIENCY RATING
1938	02365 , 13745	96.06

BRIDGE TYPE: CIP
DECK TYPE: Conc cast-in-place
DECK THICKNESS (Main Span): 7.0 in.
BRIDGE WIDTH (curb-to-curb): 40.0 ft.
BRIDGE LENGTH: 122 ft.
AVERAGE DAILY TRAFFIC (ADT): 5,775
NUMBER OF LANES: 2

EXISTING WEARING SURFACE AND DECK PROTECTION TYPE: LMC Overlay
Year Applied - 1991
Overlay Thickness - 1.5 inches

VERTICAL CLEARANCE
VC Type:
NA

BRIDGE RAIL
BRIDGE RAIL TYPE: WSDOT CODE - 60
New Jersey Barrier
RAIL MEETS CURRENT STANDARDS?: YES
SIDEWALK / CURB WIDTH: 0.0 Lt 0.0 Rt

9 EXPANSION JOINTS

DECK PROTECTIVE SYSTEM RECOMMENDATIONS
PROTECTIVE OVERLAY RECOMMENDED?: NO
TYPE RECOMMENDED: None
COMMENTS:
No further deck protection required.

BRIDGE DECK SURVEY
DELAMINATION RESULTS: NA
DATE:
CHLORIDE RESULTS:
10 % are > 2 lbs./CY 0 / 85
REBAR RESULTS: NA

REVIEWED BY: Bruce Thiel
DATE: 7/30/2007

Bridge Deck Condition Report

BRIDGE NUMBER	BRIDGE NAME	REGION	MILEPOST
2 / 606	DEEP CR	Eastern	272.41

YEAR BUILT / YR WIDENED	CONTRACT NO (S)	SUFFICIENCY RATING
1941	02701 , 13745	62.67 FO

BRIDGE TYPE: CIP
DECK TYPE: Conc cast-in-place
DECK THICKNESS (Main Span): 6.5 in.
BRIDGE WIDTH (curb-to-curb): 26.0 ft.
BRIDGE LENGTH: 180 ft.
AVERAGE DAILY TRAFFIC (ADT): 5,775
NUMBER OF LANES: 2

EXISTING WEARING SURFACE AND DECK PROTECTION TYPE: Asphalt Overlay
Overlay Thickness - 8.0 inches

VERTICAL CLEARANCE
VC Type:
NA

BRIDGE RAIL
BRIDGE RAIL TYPE: WSDOT CODE - 43
Balluster Rail w/Thrie Beam
RAIL MEETS CURRENT STANDARDS?: NO
SIDEWALK / CURB WIDTH: 0.0 Lt 3.0 Rt

9 EXPANSION JOINTS
Coordinate with your Region's Maintenance Office to determine if any repairs are required. Use Std. Plan A7, Transverse Joint Detail 8 at the ends of the bridge deck.

DECK PROTECTIVE SYSTEM RECOMMENDATIONS
PROTECTIVE OVERLAY RECOMMENDED?: NO
TYPE RECOMMENDED: None
COMMENTS:
A protective overlay is not required at this time.

If ride improvement is needed we recommend removing and replacing an equal amount of the existing asphalt.

BRIDGE DECK SURVEY
DELAMINATION RESULTS: NA
DATE:
CHLORIDE RESULTS:
0 % are > 2 lbs./CY 0 / 85
REBAR RESULTS: NA

REVIEWED BY: Bruce Thiel
DATE: 7/30/2007

BRIDGE INSPECTION REPORT

BATS 4011 Status: Complete — Ver Date 05/18/2005 — Agency: Railroad

Page 1 of 1

Bridge No. 2/608 — Structure Type SB
Bridge Name BN RR UC (NP) GALENA — Route 00002 — Intersecting STATE ROUTE 2
Structure ID 0002064A — MilePost 275.10 — Location 8.3 E LINCOLN CO

Inspector's Signature JPD IDent# G0117 — Co-Inspector's Signature PRG — Inspection Date 5/24/2005 — BA'S Hours 1.00

	Structural Adapy	(657)	N	Pier/Abut/Protect	(679)	1936	Year Built	Inspections Performed:	
9	Deck Geometry	(658)	N	Scour	(680)	0	Year Rebuilt	IT OF NF Date Report Type	
3	Underclearance	(659)	9	Approach Rdwy	(681)	80	Operating Rating	Y 99 05/24/05 Routine	
5	Operating Level	(660)	9	Retaining Walls	(682)	80	Inventory Rating	Fracture Critica	
8	Alignment Adapy	(661)		Pier Protection	(683)	A	Open Closed Posted	Underwater	
9	Waterway Adapy	(662)		Bridge Rails	(684)	99'99"	Vertical Over Deck	Special	
8	Deck Overall	(663)		Transition	(685)	14'08"	Vertical Under	Interim	
	Drains Condition	(664)		Guardrails	(686)	H	Vertical Under Code	Equipment	
8	Superstruct.re	(671)		Terminals	(687)			Damage	
0	Number Utilities	(675)		Revise Rating	(688)			Y 48 48 05/24/05 Safety	
8	Substructure	(676)		Photos Flag	(691)			Short Span	
9	Chan/Protection	(677)		Soundings Flag	(693)	0.00	Asphalt Depth		
9	Culvert	(678)		Measure Clearance	(694)	0	Speed Limit	Sufficiency Rating: 0.00	

BMS Contents

Element	Element Description	Total	Units	Env	State1	State2	State3	State4
366	Undercrossing-Safety Inspection	1	EA	3	0	1.	0	

Notes

0 The bridge is oriented from the south to the north as per route convention.
366 Railroad Overcrossing Safety Check.
The 16" high timbers that are used to contain the ballast are topped out which allows ballast to spill onto the catwalks. See photos #7 and #8. Mesh has been placed over the catwalks in order to contain the ballast. See photo #9. REPAIR 10000 verified 5/24/2005.
The bridge deck edges and corners are heavily exfoliated with calaminations and spalls in the span over the roadway.
The west edge has a spall extending over half the span with several exposed rebars. See photo #4.
The east edge has spalled areas up to 10 ft. long. See photo #2. The spalls have loose concrete that could fall onto the roadway. REPAIR 10001.
659 The vertical clearance should be posted at 14'5". It is currently posted at 14' 7". See photo #6. REPAIR 10002.
691 An elevation photo was taken during the 2000 inspection. A deck photo was taken during the 2005 inspection.

Repairs

Repair No	Priority	Repair Description	Date Noted
10001	R	Scale the loose concrete from the deck edges in the span over the roadway. The edges and corners are heavily exfoliated with delaminations and spalls having loose concrete that could fall onto the roadway.	10/23/2000
10002	V	The vertical clearance is currently posted at 14' 7" and it should be posted at 14'5" in both directions. Please verify our findings.	10/23/2000

Inspections Performed and Resources Required

Report Type	Date	IT	Frq	Hrs	Insp	CertNo	Coinsp	Note
Routine	05/24/2005	Y	99	0.0	JPD	G0117	PRG	
Safety	05/24/2005	Y	48	1.0	JPD	G0117	PRG	

Sticky Notes

Creator	Created	Table Reference	Note

Printed On 6/17/2005

Bridge Deck Condition Report

Bridge Number	Bridge Name	Region	Milepost
2 / 614N	AIRPORT RD OC	Eastern	282.03

Year Built / Yr Widened	Contract No (S)	Sufficiency Rating
1964	07317 , 13282	88.70

Bridge Type: PCG
Deck Type: Conc cast-in-place
Deck Thickness (Main Span): 5.0 in.
Bridge Width (curb-curb): 38.0 ft.
Bridge Length: 138 ft.
Average Daily Traffic (ADT): 9,808
Number of Lanes: 2

Existing Wearing Surface and Deck Protection Type: LMC Overlay
Year Applied - 1987
Overlay Thickness - 1.5 inches

VERTICAL CLEARANCE

VC Type:
NA

BRIDGE RAIL

Bridge Rail Type: WSDOT CODE - 70.6
Conc Base - Type 1B w/Thrie Beam
Rail Meets Current Standard: YES
Sidewalk / Curb Width: 0.0 Lt 0.0 Rt

454 EXPANSION JOINTS

Coordinate with your Region's Maintenance Office to determine if any repairs are required. Use Std. Plan A7, Transverse Joint Detail 1 at the ends of the bridge deck.

DECK PROTECTIVE SYSTEM RECOMMENDATIONS

Protective Overlay Recommended: NO
Type Recommended: None
Comments: No further deck protection required.

BRIDGE DECK SURVEY

Delamination Results: N/A
Date:
Chloride Results: 20 % are > 2 lbs./CY 9 / 85
Repair Results: N/A

Reviewed By: Bruce Thill
Date: 7/30/2007

Bridge Deck Condition Report

Bridge Number	Bridge Name	Region	Milepost
2 / 614S	AIRPORT RD OC	Eastern	282.03

Year Built / Yr Widened	Contract No (S)	Sufficiency Rating
1964	07317 , 13282	88.70

Bridge Type: PCG
Deck Type: Conc cast-in-place
Deck Thickness (Main Span): 5.0 in.
Bridge Width (curb-curb): 38.0 ft.
Bridge Length: 132 ft.
Average Daily Traffic (ADT): 9,808
Number of Lanes: 2

Existing Wearing Surface and Deck Protection Type: LMC Overlay
Year Applied - 1987
Overlay Thickness - 1.5 inches

VERTICAL CLEARANCE

VC Type:
NA

BRIDGE RAIL

Bridge Rail Type: WSDOT CODE - 70.6
Conc Base - Type 1B w/Thrie Beam
Rail Meets Current Standard: YES
Sidewalk / Curb Width: 0.0 Lt 0.0 Rt

454 EXPANSION JOINTS

Coordinate with your Region's Maintenance Office to determine if any repairs are required. Use Std. Plan A7, Transverse Joint Detail 1 at the ends of the bridge deck.

DECK PROTECTIVE SYSTEM RECOMMENDATIONS

Protective Overlay Recommended: NO
Type Recommended: None
Comments: No further deck protection required.

BRIDGE DECK SURVEY

Delamination Results: N/A
Date:
Chloride Results: 10 % are > 2 lbs./CY 9 / 85
Repair Results: N/A

Reviewed By: Bruce Thill
Date: 7/30/2007

Bridge Deck Condition Report

Bridge Number	Bridge Name	Region	Milepost
2 / 615N	W-W RAMP OC	Eastern	282.16

Year Built / Yr Widened	Contract No (S)	Sufficiency Rating
1972	09150 , 13282	96.08

Bridge Type: PTCBox
Deck Type: Conc cast-in-place
Deck Thickness (Main Span): 7.0 in.
Bridge Width (curb-curb): 38.0 ft.
Bridge Length: 150 ft.
Average Daily Traffic (ADT): 9,808
Number of Lanes: 2

Existing Wearing Surface and Deck Protection Type: LMC Overlay
Year Applied - 1987
Overlay Thickness - 1.5 inches

VERTICAL CLEARANCE

VC Type:
NA

BRIDGE RAIL

Bridge Rail Type: WSDOT CODE - 70.2
Conc Base - Type R
Rail Meets Current Standard: YES
Sidewalk / Curb Width: 0.7 Lt 0.7 Rt

9 EXPANSION JOINTS

Coordinate with your Region's Maintenance Office to determine if any repairs are required. Use Std. Plan A7, Transverse Joint Detail 1 at the ends of the bridge deck.

DECK PROTECTIVE SYSTEM RECOMMENDATIONS

Protective Overlay Recommended: NO
Type Recommended: None
Comments: No further deck protection required.

BRIDGE DECK SURVEY

Delamination Results: N/A
Date:
Chloride Results: 70 % are > 2 lbs./CY 8 / 85
Repair Results: N/A

Reviewed By: Bruce Thill
Date: 7/30/2007

Bridge Deck Condition Report

Bridge Number	Bridge Name	Region	Milepost
2 / 615S	W-W RAMP OC	Eastern	282.16

Year Built / Yr Widened	Contract No.(s)	Sufficiency Rating
1972	09150 , 13282	97.08

Bridge Type: PTCBox
Deck Type: Conc precast panels
Deck Thickness (Min-Span): 7.0 in.
Bridge Width (Curb-to-Curb): 38.0 ft.
Bridge Length: 150 ft.
Average Daily Traffic (ADT): 9,000
Number of Lanes: 2

Existing Wearing Surface and Deck Protection Type: LMC Overlay
Year Applied = 1987
Overlay Thickness = 1.5 inches

D:\Deck Views\EA Region\002_615S.jpg

VERTICAL CLEARANCE
VC Type:
NA

BRIDGE RAIL
Bridge Rail Type: MBDOT CODE = 70.2
Conc Base - Type R
Rail Meets Current Standards?: YES
Sidewalk / Curb Width: 0.8 Lt 0.8 Rt

9 EXPANSION JOINTS
Coordinate with your Region's Maintenance Office to determine if any repairs are required. Use Std. Plan A7, Transverse Joint Detail 1 at the ends of the bridge deck.

DECK PROTECTIVE SYSTEM RECOMMENDATIONS
Protective Overlay Recommended?: NO
Type Recommended: None
Comments: No further deck protection required.

BRIDGE DECK SURVEY

Delamination Results	Date
NA	
Chloride Results	
30 % are > 2 lbs./CY	9 / 86
Rebar Results	
3 % are < or = 1 inch	8 / 85

Reviewed By: Bruce Thiell
Date: 7/30/2007

Bridge Deck Condition Report

Bridge Number	Bridge Name	Region	Milepost
2 / 615W-W	W-W RAMP, SUNSET HWY OC	Eastern	282.03

Year Built / Yr Widened	Contract No.(s)	Sufficiency Rating
1972	09150 , 13282	98.72

Bridge Type: PCG
Deck Type: Conc cast-in-place
Deck Thickness (Min-Span): 7.0 in.
Bridge Width (Curb-to-Curb): 72.0 ft.
Bridge Length: 82 ft.
Average Daily Traffic (ADT): 3,025
Number of Lanes: 4

Existing Wearing Surface and Deck Protection Type: MMC Overlay
Year Applied = 1987
Overlay Thickness = 1.5 inches

D:\Deck Views\EA Region\002_615W-W.jpg

VERTICAL CLEARANCE
VC Type:
NA

BRIDGE RAIL
Bridge Rail Type: MBDOT CODE = 70.2
Conc Base - Type R
Rail Meets Current Standards?: YES
Sidewalk / Curb Width: 0.7 Lt 0.7 Rt

9 EXPANSION JOINTS
Coordinate with your Region's Maintenance Office to determine if any repairs are required. Use Std. Plan A7, Transverse Joint Detail 1 at the ends of the bridge deck.

DECK PROTECTIVE SYSTEM RECOMMENDATIONS
Protective Overlay Recommended?: NO
Type Recommended: None
Comments: No further deck protection is required.

We recommend no asphalt be added to this bridge.

BRIDGE DECK SURVEY

Delamination Results	Date
NA	
Chloride Results	
70 % are > 2 lbs./CY	8 / 86
Rebar Results	
3 % are < or = 1 inch	8 / 85

Reviewed By: Bruce Thiell
Date: 7/30/2007

Bridge Deck Condition Report

Bridge Number	Bridge Name	Region	Milepost
2 / 616N	GEIGER BLVD OC	Eastern	282.65

Year Built / Yr Widened	Contract No.(s)	Sufficiency Rating
1964	07317 , 13282	81.70

Bridge Type: PCG
Deck Type: Conc cast-in-place
Deck Thickness (Min-Span): 5.8 in.
Bridge Width (Curb-to-Curb): 30.0 ft.
Bridge Length: 166 ft.
Average Daily Traffic (ADT): 11,117
Number of Lanes: 2

Existing Wearing Surface and Deck Protection Type: LMC Overlay
Year Applied = 1987
Overlay Thickness = 1.5 inches

D:\Deck Views\EA Region\002_616N.jpg

VERTICAL CLEARANCE
VC Type:
NA

BRIDGE RAIL
Bridge Rail Type: MBDOT CODE = 70.6
Conc Base - Type 1B w/Thrie Beam
Rail Meets Current Standards?: YES
Sidewalk / Curb Width: 1.0 Lt 1.0 Rt

404 EXPANSION JOINTS
Coordinate with your Region's Maintenance Office to determine if any repairs are required. Use Std. Plan A7, Transverse Joint Detail 1 at the ends of the bridge deck.

DECK PROTECTIVE SYSTEM RECOMMENDATIONS
Protective Overlay Recommended?: NO
Type Recommended: None
Comments: No further deck protection required.

BRIDGE DECK SURVEY

Delamination Results	Date
NA	
Chloride Results	
30 % are > 2 lbs./CY	9 / 85
Rebar Results	
NA	

Reviewed By: Bruce Thiell
Date: 7/30/2007

Bridge Deck Condition Report

Bridge Number	Bridge Name	Region	Milepost
2 / 616S	GEIGER BLVD OC	Eastern	282.65

Year Built / Yr Widened	Contract No.(s)	Sufficiency Rating
1964	07317	81.70

Bridge Type: PCG
Deck Type: Conc cast-in-place
Deck Thickness (Min-Span): 5.8 in.
Bridge Width (Curb-to-Curb): 30.0 ft.
Bridge Length: 166 ft.
Average Daily Traffic (ADT): 11,117
Number of Lanes: 2

Existing Wearing Surface and Deck Protection Type: LMC Overlay
Year Applied = 1987
Overlay Thickness = 1.5 inches

D:\Deck Views\EA Region\002_616S.jpg

VERTICAL CLEARANCE
VC Type:
NA

BRIDGE RAIL
Bridge Rail Type: MBDOT CODE = 70.6
Conc Base - Type 1B w/Thrie Beam
Rail Meets Current Standards?: YES
Sidewalk / Curb Width: 1.0 Lt 1.0 Rt

404 EXPANSION JOINTS
Coordinate with your Region's Maintenance Office to determine if any repairs are required. Use Std. Plan A7, Transverse Joint Detail 1 at the ends of the bridge deck.

DECK PROTECTIVE SYSTEM RECOMMENDATIONS
Protective Overlay Recommended?: NO
Type Recommended: None
Comments: No further deck protection required.

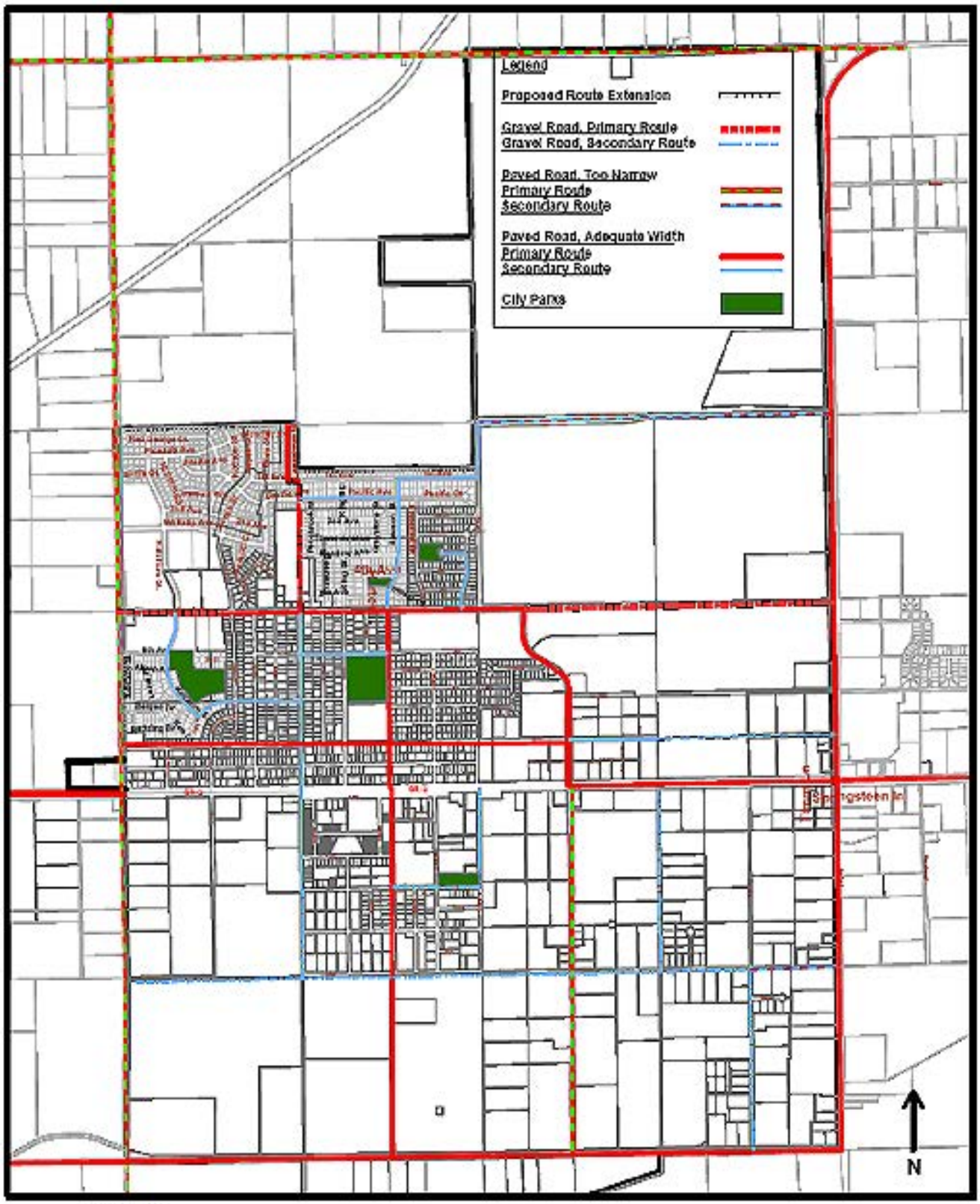
BRIDGE DECK SURVEY

Delamination Results	Date
NA	
Chloride Results	
20 % are > 2 lbs./CY	6 / 86
Rebar Results	
NA	

Reviewed By: Bruce Thiell
Date: 7/30/2007

Appendix E

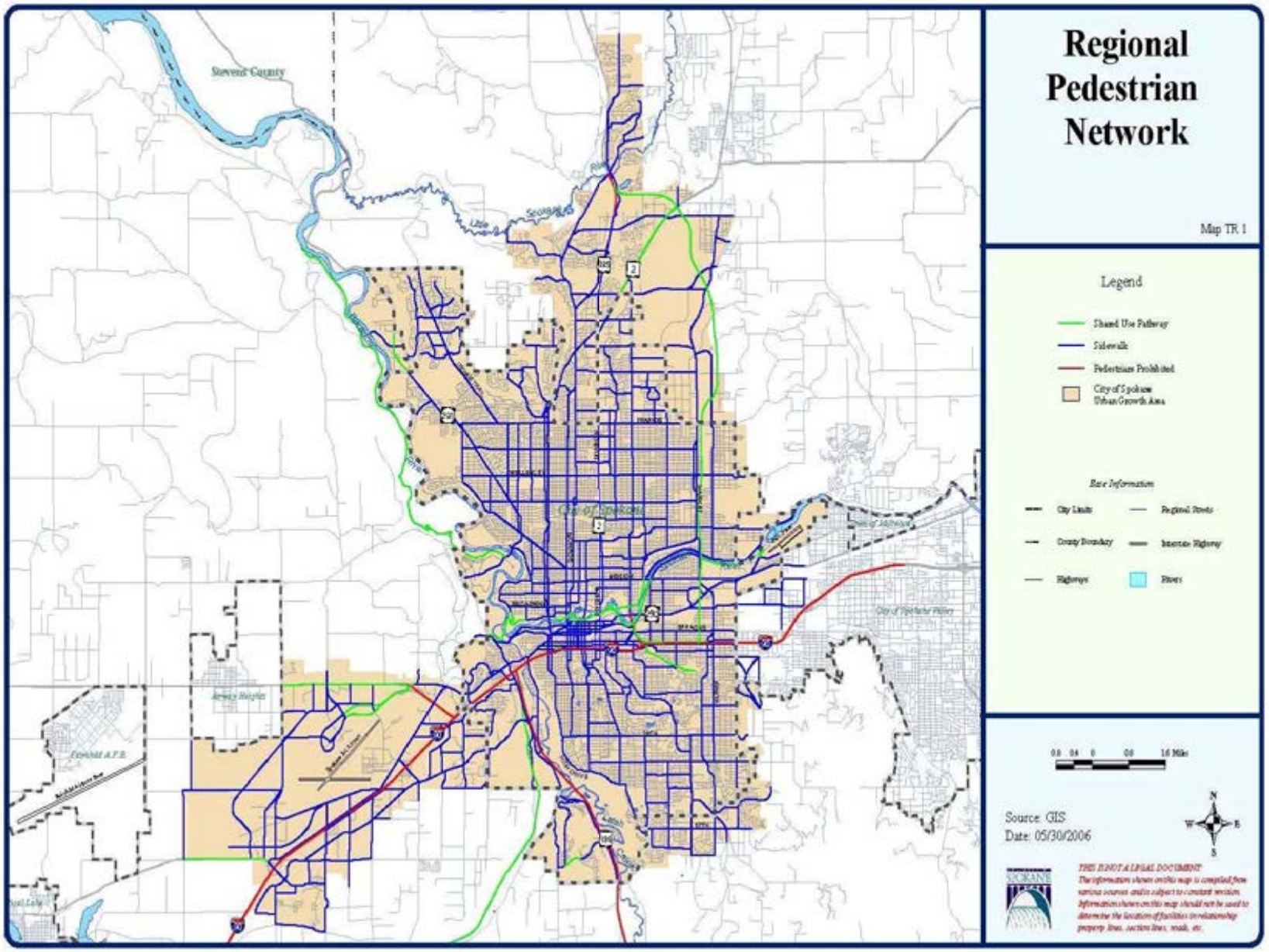
Alternate Transportation

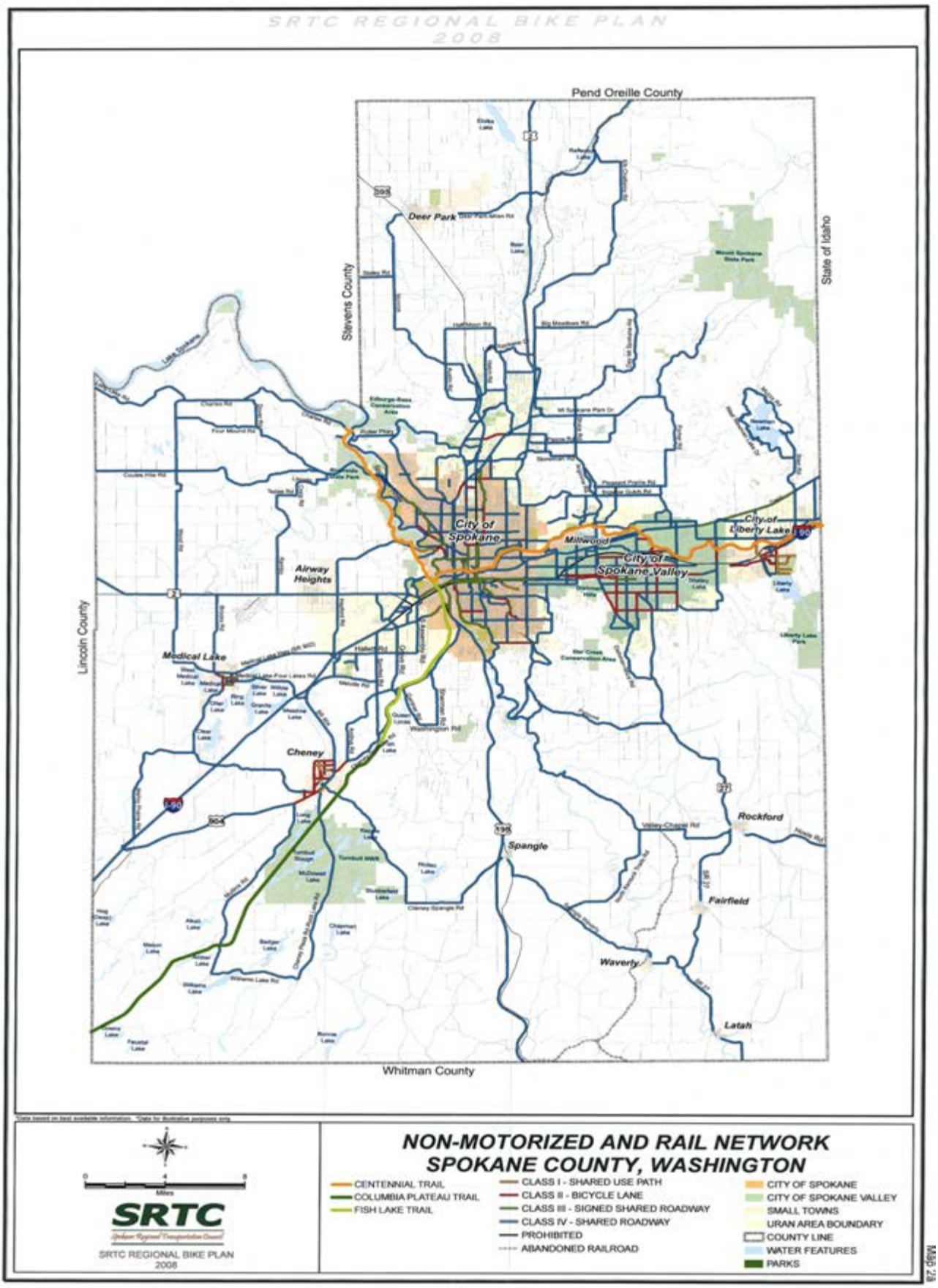


July, 2009
Airway Heights, GIS

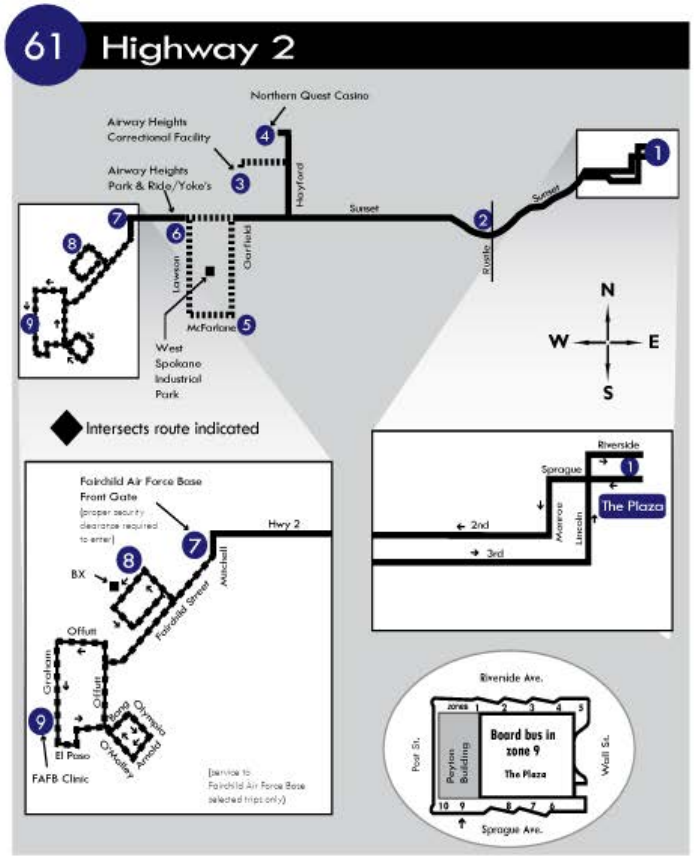
Proposed Bike Routes & Road Inventory

0 875 1,750 Feet 3,500


Regional Pedestrian Network
Map TR.1
Legend
Shared Use Pathway
Sidewalk
Pedestrian Prohibited
City of Spokane Urban Growth Area
Base Information
City Limits
Regional Streets
County Boundary
Interstate Highway
Highways
Rivers
Source: GIS
Date: 05/30/2006
Stevens County
Fairchild A.F.B.


SRTC REGIONAL BIKE PLAN
2008
Pend Oreille County
Stevens County
State of Idaho
Lincoln County
Whitman County
Deer Park
City of Spokane
Millwood
City of Spokane Valley
City of Liberty Lake
Airway Heights
Medical Lake
Cheney
Spangle
Rockford
Fairfield
Waverly
Latah
NON-MOTORIZED AND RAIL NETWORK
SPOKANE COUNTY, WASHINGTON
CENTENNIAL TRAIL
COLUMBIA PLATEAU TRAIL
FISH LAKE TRAIL
CLASS I - SHARED USE PATH
CLASS II - BICYCLE LANE
CLASS III - SIGNED SHARED ROADWAY
CLASS IV - SHARED ROADWAY
PROHIBITED
ABANDONED RAILROAD
CITY OF SPOKANE
CITY OF SPOKANE VALLEY
SMALL TOWNS
URAN AREA BOUNDARY
COUNTY LINE
WATER FEATURES
PARKS
Miles
SRTC
SRTC REGIONAL BIKE PLAN
2008

May 2009



a - these trips serve department of corrections, casino, and fafb (clinic/bx) only.
b - these trips serve south airway heights and fafb (clinic / bx) only.
c - these trips serve department of corrections, casino, and fafb front gate only.
d - these trips serve south airway heights and fafb front gate only.
e - these trips serve casino, and fafb (clinic / bx) only.
f - these trips serve casino and fafb front gate only.
g - these trips serve casino, south airway heights and fafb front gate only.
h - these outbound trips serve casino and fafb front gate only;
inbound trips serve casino from fafb front gate.

Bold times indicate P.M.

61 Highway 2 From Downtown Weekday

Zone	Leave Plaza	Sunset Rustle	Airway Heights Corrections Fac.	Northern Quest Casion	Garfield McFarlane	Airway Heights/ Yokes	Fairchild AFB Front Gate	Fairchild BX	Fairchild Clinic
	1	2	3	4	5	6	7	8	9
	---	---	---	---	---	---	---	---	---
	---	---	---	---	---	---	---	---	---
	---	---	---	---	---	---	---	---	---
g	a6:20	6:28	6:37	6:39	---	6:45	6:50	6:53	6:58
g	b6:50	6:58	---	---	7:09	7:15	7:20	7:23	7:29
g	c7:20	7:28	7:37	7:39	---	7:45	7:50	---	---
g	d7:50	7:58	---	---	8:09	8:15	8:20	---	---
g	a8:20	8:28	8:37	8:39	---	8:45	8:50	8:53	8:58
g	d8:50	8:58	---	---	9:09	9:15	9:20	---	---
g	e9:20	9:28	---	9:37	---	9:43	9:48	9:51	9:57
g	d9:50	9:58	---	---	10:09	10:15	10:20	---	---
g	e10:20	10:28	---	10:37	---	10:43	10:48	10:51	10:57
g	d10:50	10:58	---	---	11:09	11:15	11:20	---	---
g	e11:20	11:28	---	11:37	---	11:43	11:48	11:51	11:57
g	d11:50	11:58	---	---	**12:09**	**12:15**	**12:20**	---	---
g	**f12:20**	**12:28**	---	**12:37**	---	**12:43**	**12:48**	---	---
g	**b12:50**	**12:58**	---	---	**1:09**	**1:15**	**1:20**	**1:23**	**1:29**
g	**f1:20**	**1:28**	---	**1:37**	---	**1:43**	**1:48**	---	---
g	**b1:50**	**1:58**	---	---	**2:09**	**2:15**	**2:20**	**2:23**	**2:29**
g	**f2:20**	**2:28**	---	**2:37**	---	**2:43**	**2:48**	---	---
g	**b2:50**	**2:58**	---	---	**3:09**	**3:15**	**3:20**	**3:23**	**3:29**
g	**f3:20**	**3:28**	---	**3:37**	---	**3:43**	**3:48**	---	---
g	**b3:50**	**3:58**	---	---	**4:09**	**4:15**	**4:20**	**4:23**	**4:29**
g	**f4:20**	**4:28**	---	**4:37**	---	**4:43**	**4:48**	---	---
g	**b4:50**	**4:58**	---	---	**5:09**	**5:15**	**5:20**	**5:23**	**5:29**
g	**f5:20**	**5:28**	---	**5:37**	---	**5:43**	**5:48**	---	---
g	**d5:50**	**5:58**	---	---	**6:09**	**6:15**	**6:20**	---	---
g	**g6:22**	**6:31**	---	**6:39**	**6:48**	**6:52**	**6:58**	---	---
g	**g7:22**	**7:31**	---	**7:39**	**7:48**	**7:52**	**7:58**	---	---
g	**h8:22**	**8:31**	---	**8:39**	**8:48**	**8:52**	**8:58**	---	---
g	**h9:22**	**9:31**	---	**9:39**	**9:48**	**9:52**	**9:58**	---	---

61 From Downtown Saturday

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	---	---	---	---	---	---	---	---	---
g	g6:52	7:01	---	7:09	7:16	7:22	7:28	---	---
g	g7:52	8:01	---	8:09	8:16	8:22	8:28	---	---
g	g8:52	9:01	---	9:09	9:16	9:22	9:28	---	---
g	g9:52	10:01	---	10:09	10:16	10:22	10:28	---	---
g	g10:52	11:01	---	11:09	11:16	11:22	11:28	---	---
g	g11:52	**12:01**	---	**12:09**	**12:16**	**12:22**	**12:28**	---	---
g	**g1:22**	**1:31**	---	**1:39**	**1:46**	**1:52**	**1:58**	---	---
g	**g2:22**	**2:31**	---	**2:39**	**2:46**	**2:53**	**2:58**	---	---
g	**g3:22**	**3:31**	---	**3:39**	**3:46**	**3:52**	**3:58**	---	---
g	**g4:22**	**4:31**	---	**4:39**	**4:48**	**4:52**	**4:58**	---	---
g	**g5:22**	**5:31**	---	**5:39**	**5:46**	**5:52**	**5:58**	---	---
g	**g6:22**	**6:31**	---	**6:39**	**6:46**	**6:52**	**6:58**	---	---
g	**g7:22**	**7:31**	---	**7:39**	**7:46**	**7:52**	**7:58**	---	---
g	**g8:22**	**8:31**	---	**8:39**	**8:46**	**8:52**	**8:58**	---	---
g	**g9:22**	**9:31**	---	**9:39**	**9:46**	**9:52**	**9:58**	---	---

61 From Downtown Sunday/Holiday

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	---	---	---	---	---	---	---	---	---
g	g8:52	9:01	---	9:09	9:16	9:22	9:28	---	---
g	g9:52	10:01	---	10:09	10:16	10:22	10:28	---	---
g	g10:52	11:01	---	11:09	11:16	11:22	11:28	---	---
g	g11:52	**12:01**	---	**12:09**	**12:16**	**12:22**	**12:28**	---	---
g	**g1:22**	**1:31**	---	**1:39**	**1:46**	**1:52**	**1:58**	---	---
g	**g2:22**	**2:31**	---	**2:39**	**2:46**	**2:52**	**2:58**	---	---
g	**g3:22**	**3:31**	---	**3:39**	**3:46**	**3:52**	**3:58**	---	---
g	**g4:22**	**4:31**	---	**4:39**	**4:46**	**4:52**	**4:58**	---	---
g	**g5:22**	**5:31**	---	**5:39**	**5:46**	**5:52**	**5:58**	---	---
g	**g6:22**	**6:31**	---	**6:39**	**6:46**	**6:52**	**6:58**	---	---
g	**g7:22**	**7:31**	---	**7:39**	**7:46**	**7:52**	**7:58**	---	---

61 Highway 2 To Downtown Weekday

Fairchild BX	Fairchild AFB Front Gate	Airway Heights/ Yokes	Garfield McFarlane	Northern Quest Casion	Airway Heights Corrections Fac.	Sunset Rustle	Arrive Plaza	Zone	Continues as route
8	7	6	5	4	3	2	1		
---	5:42	5:48	5:53	---	---	6:00	6:15	4	45
---	6:11	6:17	---	6:23	---	6:30	6:45	4	45
---	6:42	6:48	6:53	---	---	7:00	7:15	4	45
7:05	7:08	7:17	---	7:23	---	7:30	7:45	4	45
7:35	7:38	7:48	7:53	---	---	8:00	8:15	4	45
---	7:50	8:17	---	8:23	---	8:30	8:45	4	45
---	8:20	8:48	8:53	---	---	9:00	9:15	4	45
9:05	9:08	9:17	---	9:23	---	9:30	9:45	4	45
---	9:20	9:48	9:53	---	---	10:00	10:15	4	45
10:03	10:06	10:17	---	10:23	---	10:30	10:45	4	45
---	10:20	10:48	10:53	---	---	11:00	11:15	4	45
11:03	11:06	11:17	---	11:23	---	11:30	11:45	4	45
---	11:20	11:48	11:53	---	---	**12:00**	**12:15**	**4**	**45**
12:03	**12:06**	**12:17**	**—**	**12:23**	**—**	**12:30**	**12:45**	**4**	**45**
—	**12:20**	**12:48**	**12:53**	**—**	**—**	**1:00**	**1:15**	**4**	**45**
—	**12:48**	**1:17**	**—**	**1:23**	**—**	**1:30**	**1:45**	**4**	**45**
1:35	**1:38**	**1:48**	**1:53**	**—**	**—**	**2:00**	**2:15**	**4**	**45**
—	**1:48**	**2:17**	**—**	**2:23**	**—**	**2:30**	**2:45**	**4**	**45**
2:35	**2:38**	**2:48**	**2:53**	**—**	**—**	**3:00**	**3:15**	**4**	**45**
—	**2:48**	**3:15**	**—**	**3:21**	**3:23**	**3:30**	**3:45**	**4**	**45**
3:35	**3:38**	**3:48**	**3:53**	**—**	**—**	**4:00**	**4:15**	**4**	**45**
—	**3:48**	**4:15**	**—**	**4:21**	**4:23**	**4:30**	**4:45**	**4**	**45**
4:35	**4:38**	**4:48**	**4:53**	**—**	**—**	**5:00**	**5:15**	**4**	**45**
—	**4:48**	**5:17**	**—**	**5:23**	**—**	**5:30**	**5:45**	**4**	**45**
5:35	**5:38**	**5:48**	**5:53**	**—**	**—**	**6:00**	**6:15**	**4**	**45**
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---	**6:20**	**6:40**	**6:45**	**6:53**	**—**	**7:00**	**7:15**	**4**	**45**
---	**6:58**	**7:40**	**7:45**	**7:53**	**—**	**8:00**	**8:15**	**4**	**45**
---	**7:58**	**8:40**	**8:45**	**8:53**	**—**	**9:00**	**9:15**	**4**	**45**
---	**8:58**	**9:16**	**—**	**9:22**	**—**	**9:29**	**9:44**	**4**	
---	**9:58**	**10:16**	**—**	**10:22**	**—**	**10:29**	**10:44**	**4**	

61 To Downtown Saturday

---	6:04	6:10	6:15	6:23	---	6:30	6:45	4	45
---	7:04	7:10	7:15	7:23	---	7:30	7:45	4	45
---	7:28	8:10	8:15	8:23	---	8:30	8:45	4	45
---	8:28	9:10	9:15	9:23	---	9:30	9:45	4	45
---	9:28	10:10	10:15	10:23	---	10:30	10:45	4	45
---	10:28	11:10	11:15	11:23	---	11:30	11:45	4	45
---	11:28	**12:40**	**12:45**	**12:53**	**—**	**1:00**	**1:15**	**4**	**45**
—	**12:28**	**1:40**	**1:45**	**1:53**	**—**	**2:00**	**2:15**	**4**	**45**
—	**1:58**	**2:40**	**2:45**	**2:53**	**—**	**3:00**	**3:15**	**4**	**45**
—	**2:58**	**3:40**	**3:45**	**3:53**	**—**	**4:00**	**4:15**	**4**	**45**
—	**3:58**	**4:40**	**4:45**	**4:53**	**—**	**5:00**	**5:16**	**4**	**45**
—	**4:58**	**5:40**	**5:45**	**5:53**	**—**	**6:00**	**6:15**	**4**	**45**
—	**5:58**	**6:40**	**6:45**	**6:53**	**—**	**7:00**	**7:15**	**4**	**45**
—	**6:58**	**7:40**	**7:45**	**7:53**	**—**	**8:00**	**8:15**	**4**	**45**
—	**7:58**	**8:40**	**8:45**	**8:53**	**—**	**9:00**	**9:15**	**4**	**45**
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61 To Downtown Sunday/Holiday

---	8:04	8:10	8:15	8:23	---	8:30	8:45	4	45
---	9:04	9:10	9:15	9:23	---	9:30	9:45	4	45
---	9:28	10:10	10:15	10:23	---	10:30	10:45	4	45
---	10:28	11:10	11:15	11:23	---	11:30	11:45	4	45
---	11:28	**12:40**	**12:45**	**12:53**	**—**	**1:00**	**1:15**	**4**	**45**
—	**12:28**	**1:40**	**1:45**	**1:53**	**—**	**2:00**	**2:15**	**4**	**45**
—	**1:58**	**2:40**	**2:45**	**2:53**	**—**	**3:00**	**3:15**	**4**	**45**
—	**2:58**	**3:40**	**3:45**	**3:53**	**—**	**4:00**	**4:15**	**4**	**45**
—	**3:58**	**4:40**	**4:45**	**4:53**	**—**	**5:00**	**5:15**	**4**	**45**
—	**4:58**	**5:40**	**5:45**	**5:53**	**—**	**6:00**	**6:15**	**4**	**45**
—	**5:58**	**6:40**	**6:45**	**6:53**	**—**	**7:00**	**7:15**	**4**	**45**
---	---	---	---	---	---	---	---		
---	---	---	---	---	---	---	---		