

# Route Development Plan

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## **STATE ROUTE 970**

From I-90 (MP 0.00)

To US 97 (MP 10.31)





Washington State Department of Transportation  
South Central Region, Planning Office  
P.O. Box 12560  
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Route Development Plan  
State Route 970  
I-90 to US 97  
MP 0.00 to MP 10.31

June 2003

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Washington State Department of Transportation  
South Central Region

ROUTE DEVELOPMENT PLAN  
STATE ROUTE 970: MP 0.00 TO MP 10.31

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## *Executive Summary*

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### Vision Statement

Our vision for SR 970 is to provide safe and efficient transportation for Upper Kittitas County, moving people and goods throughout the region. Any improvements recommended for this route should be balanced with the preservation of this region's wealth of natural, scenic, and recreational areas.

### *RDP* Summary

This *Route Development Plan (RDP)* is a twenty-year plan that enables WSDOT to make informed decisions on future needs. It presents a long-range improvement plan for State Route 970 (SR 970). The study area begins at the SR 970 junction with I-90, east of Cle Elum at MP 0.00, and ends at US 97, south of Blewett Pass at MP 10.31.

SR 970 is an east-west rural principal arterial in Kittitas County. The ten-mile route functions as a connection between I-90 and US 97, providing regional access between North Central Washington (Leavenworth, Wenatchee, Lake Chelan) and the Puget Sound area.

SR 970 is a two-lane arterial, providing an important connecting link between I-90 and US 97. Trucks use this route to haul timber, livestock, and grain products. The roadway is designated as a Highway of Statewide Significance.

The level of service analysis indicates that without improvements, some sections of SR 970 will drop below acceptable congestion levels during the twenty-year planning period. On Highways of Statewide Significance, WSDOT strives to maintain a congestion index below six on rural highways and below ten in urban areas.

### *RDP* Development

This *RDP* was created with the help of an internal Stakeholder Steering Committee including representation from various South Central Region offices. The outside stakeholders who were invited to become involved in the development of this *RDP* included the Kittitas County Planning, Okanogan-Wenatchee National Forest, Quad County RTPO, Washington State Patrol, and the general public. The *RDP* will be updated periodically to keep pace with changing transportation needs and existing conditions.

## Implementation of the *RDP*

The *RDP* identifies proposed improvements that support congestion relief, economic initiatives, and safety requirements for the SR 970 route during the next 20 years. The major recommended improvements for the SR 970 route include the following:

- Provide mobility/safety improvements for SR 970/SR 903 intersection
- Provide eastbound and westbound truck climbing lanes MP 6.90 to MP 9.90
- Provide safety rest area in vicinity of SR 970/US 97 junction

The South Central Region recommends that any improvement work done on SR 970 be designed to **Full Design Level standards**, with minimum lane widths of **twelve feet** and minimum paved shoulder widths of **eight feet**.

## Chapter 1 Introduction

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### Vision Statement

Our vision for SR 970 is to provide safe and efficient transportation for Upper Kittitas County, moving people and goods throughout the region. Any improvements recommended for this route should be balanced with the preservation of this region's wealth of natural, scenic, and recreational areas.

This *Route Development Plan (RDP)* enables WSDOT to make informed decisions on the future needs for State Route 970 (SR 970). Interested users and affected jurisdictions in the SR 970 study area have come together with WSDOT to create the long-range vision for safety and capacity improvements to the route. This plan will be used to provide further detail to the vision of Washington's Transportation Plan, in particular the 2003-2022 *WSDOT State Highway System Plan (HSP)* element.

### *RDP* Summary

This *RDP* is a twenty-year plan that describes the future development of the section of SR 970 that begins at I-90 (MP 0.00) and ends at US 97 (MP 10.31); see *SR 970 Route Development Plan Vicinity Map*, on following page. A detailed description of the existing facility is provided as a basis for the present and projected operating conditions of this section of SR 970. The recommended improvement strategies give priority to enhancing operations, while protecting the recreational importance and environmental qualities of the transportation system in the SR 970 corridor. These recommended improvements are important to assure adequate, consistent, and safe operation of SR 970 in the future while preserving, to the greatest extent possible, the splendor and natural setting of the corridor.



### Route Location and Study Area

SR 970 is an east-west route in the eastern foothills of the Cascade Mountain Range in Upper Kittitas County. The study area, shown in Figure 1-1, *SR 970 Route Development Plan Vicinity Map* begins at MP 0.00 just east of Cle Elum at Exit 85 on I-90, and ends at MP 10.31, south of Blewett Pass at US 97. The roadway continues northbound as US 97. SR 970 travels through the agricultural areas of the Teanaway Valley and Swauk Prairie.

The SR 970 route is 10.31 miles long.

### Travel Type

The character of traffic in this route section is mainly **interregional and recreational** travel. SR 970 facilitates interregional travel between the Puget Sound area and the Wenatchee/Leavenworth communities by connecting I-90 with US 97.

Recreational use of SR 970 is significant during the summer months as vacationers use the route to access Blewett Pass, Leavenworth, Lake Chelan, Lake Wenatchee and the Okanogan-Wenatchee National Forest. It is close to areas that are popular for water sports, backpacking, camping, and fishing. During the winter, people travel to this area to take part in various recreational activities such as snowmobiling, snowshoeing, and cross-country skiing.

### Continuity

SR 970 connects with Interstate 90 at I-90 Exit 85, just west of the study area. This connection provides access to the high speed, multi-lane interstate facility. SR 970 also connects directly to SR 903, providing access to Cle Elum, Roslyn, the National Forest, and a master planned resort adjacent to SR 903.

East of the study area, SR 970 ends at a junction with US 97. US 97 continues to the north and to the south-east as a two-lane facility with similar characteristics to SR 970.

### Urban Network

The SR 970 route is utilized by several transportation modes and provides access to other types of transportation facilities including air transportation, public transportation, and rail transportation. These transportation facilities are described below.

#### Air Transportation

There are two airports in Cle Elum, the Cle Elum Municipal and De Vere Field. The Cle Elum Municipal Airport is located east of the City of Cle Elum at 1990 Airport Road. It is predominately a recreational airport with a single runway that can handle single engine light aircraft and some light twins. The De Vere Field is located at 5210 Airport Road, about three miles east of Cle Elum. It is a privately owned commercial airport with several single engine aircraft based at the airfield.



## Public Transportation

Paratransit services (special needs transportation) are available through the Kittitas County Action Council (KCAC) for Medicaid clients in the Upper County. Transportation is provided door to door for eligible seniors and individuals with disabilities who make reservations 24 hours prior to the event.

Additionally, the Kittitas County Coordinated Transportation Council (KCCT) was formed in the fall of 2000. KCCT is currently preparing a countywide plan for a public transportation system that is comprehensive and cost effective.

## Rail Transportation

The Burlington Northern Santa Fe railroad has a rail line that runs parallel to SR 970 from the Cle Elum vicinity to the junction with State Route 10 (SR 10). The rail line then follows the SR 10 corridor and the Yakima River to Ellensburg. This line is used to haul freight between the Puget Sound area (through Stampede Pass) and Pasco.

## Land Use and Zoning

Zoning and land use are reported below for Kittitas County. Zoning controls what the land can be used for, while land use simply reflects how the land is being used. Zoning is usually more specific and divides a region into industrial, commercial, recreational, residential, and agricultural.

### Kittitas County

SR 970 provides access for the agricultural areas of Teanaway Valley (MP 6.90) and Swauk Prairie. The zoning adjacent to SR 970 is Rural 3, Agriculture 3, Agriculture 20, and Forest & Range. The zoning descriptions are provided in Appendix A: Definitions and Descriptions.

### Employment/Population Trends

Kittitas County has grown over 25% in the past decade, while Washington State as a whole grew 21%. The population of Cle Elum, the closest town to the study area, stayed stable over the past twelve years, falling one percent from 1990 through 2001.

Unincorporated Kittitas County grew by more than 35% and South Cle Elum grew by almost 19% in the same time period. In comparison to the overall state population, Kittitas County's population has grown slowly. While the state's population grew 75% from 1970 through 2001, Kittitas County had only negligible growth through 1987. However, from 1987 to 2001, the county grew at a faster pace (33.9% compared to 32%).<sup>1</sup>

The Teanaway Valley and the area adjacent to SR 970 have seen considerable growth. Much of this land at the east end of SR 970 is zoned Rural 3, encouraging people to locate out of town, with SR 970 providing connections back to Cle Elum and to US 97 and I-90. Rural 3 allows half-acre parcels with public water and septic systems. More than 16% of the Kittitas County workforce commutes to employment outside the county, either to the Yakima area or over Snoqualmie Pass to King County.

Kittitas County's labor force grew 2.2 % between 1990 and 1999, lagging slightly behind the statewide average of 2.3%. In both 2000 and 2001 the county showed a 0.2% increase, while the statewide labor force declined by 1.0 and 1.6%.<sup>2</sup>

#### Master Planned Resort

A Master Planned Resort known as the MountainStar Resort, northwest of Cle Elum, will bring additional growth to this area. This four-season destination resort is being developed on a 6,225-acre site over a 30-year period by Trendwest Resorts. This resort will include recreational facilities, a 300-unit lodge/spa/conference center, a 50-unit ranch lodge, a 200-unit retreat lodge/conference center, and 3,785 residential units. The recreational facilities are a major component of the development and will include two 18-hole golf courses, a mining museum, an equestrian center, approximately 68 miles of multi-use trails, swimming pools, sports fields, and indoor and outdoor sport courts.

## Federal Functional Classification

Within the study limits of this *RDP*, SR 970 is classified as a **Rural Principal Arterial (R1)** from MP 0.0 to MP 10.31.<sup>2</sup>

SR 970 is designated as a **National Highway System (NHS)** route. The Transportation Commission and the State Legislature have designated SR 970 as a **Highway of Statewide Significance (HSS)**.

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<sup>1</sup>November 2002 Kittitas County Profile, Labor Market and Economic Analysis Branch, Employment Security Department

<sup>2</sup>WSDOT TRIPS State Highway Log

## Freight and Goods Transportation System

- 3.7 million tons of freight (**T-3 class**) travel on SR 970 from I-90 to SR 903 (MP 0.00–MP 0.36) each year.
- 2.9 million tons are hauled annually (**T-3 class**) from SR 903 to US 97 (MP 0.36 – MP 10.31).

Major commodities transported in Upper Kittitas County include lumber, livestock, and grain products.



Trucks in Cle Elum

## Access Classification

Limiting access to state highways protects the capacity of the highway and improves safety. The access classifications for SR 970 are shown in Table 2-1 and defined in Appendix A.

Segment Mile Posts	Description Of Segment	Existing Access Classif.
MP 0.00 - 0.27	I-90 to Railroad Crossing 970/5	Limited Access – Full control
MP 0.27 -10.31	Railroad Crossing 970/5 to US 97 Junction	Access Managed – Class 1

<sup>3</sup> South Central Region Access Management Guidebook

## *Chapter 3 Description of Existing Facility*

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### Strip Maps in Appendix C

The Route Development Plan Strip Maps, attached as Appendix C, provide a great deal of information about the existing facility, as well as the improvements WSDOT has proposed. Details shown on the RDP strip maps include:

- Route description: terrain and roadside character.
- Route classifications: functional class; Freight and Goods Transportation System classification, access classification
- Existing characteristics: lane and shoulder widths, posted speed
- Operating conditions: present and future AADT, truck percentage, K and D values, and present and future LOS
- Route development standards
- Improvement strategies
- Aerial photo of route, identifying intersecting roads, bridges, maintenance areas of concern, environmentally sensitive areas, and other important features

### Lanes and Shoulders

SR 970 is a two lane undivided highway. Lanes are generally 12 feet wide asphalt concrete pavement (ACP) roadway surface. Shoulders are four to seven feet wide ACP except for MP 10.13 to 10.31, where the shoulders are BST. The existing lane and shoulder widths and surfacing type are shown on strip maps in Appendix C.

### Horizontal and Vertical Alignment

One horizontal curve along this route (MP 7.25 to 7.90) is signed for 55 mph, five miles below the posted speed. Because of the rolling to mountainous terrain, some vertical curves have sight distance limitations.

Sight distance concerns will be evaluated at the scoping or project level. Improvements will be considered based on the level of improvement and the benefit cost ratio.

## Bridges and Structures

There are three bridges on SR 970. The WSDOT Bridge Office prioritizes structures for repair, rehabilitation, or replacement based on the sufficiency rating, which evaluates the actual structural condition of each structure. There are no clearance restrictions at these bridges and no bridge preservation work is scheduled in the six-year (2003-2009) program.

Further information regarding these structures is shown in Table 3-2 and displayed on strip maps in Appendix C.

TABLE 3-2 SR 970 Bridges						
Segment Mile Posts	Bridge Name	Bridge Number	Width	Length	Year Built	Vertical Clearance
0.00-0.04	I 90 Overcrossing East Cle Elum	970/001	28 feet	211 feet	1966	16.56 ft
0.29-0.32	NP Railroad Overcrossing	970/005	36 feet	158 feet	1966	22.22 ft
6.31-6.37	Teanaway River Bridge	970/010	38 feet	317 feet	1977	



I-90 Bridge, MP 0.00



NP Railroad Bridge, MP 0.29



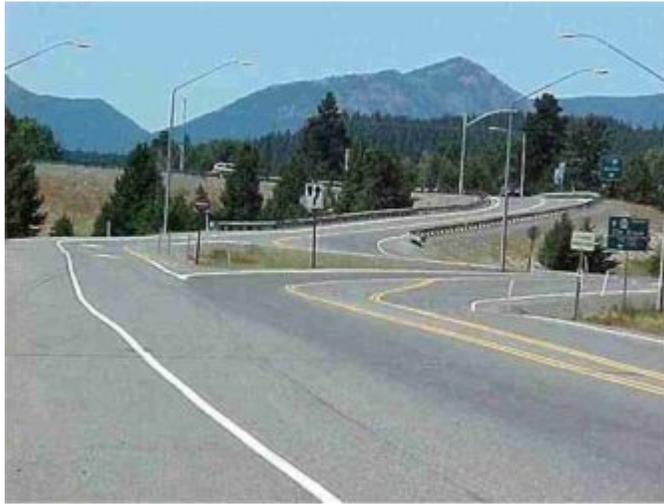
Teanaway River Bridge, MP 6.31

## Major drainage structures

Several culverts cross SR 970, at MP 2.9, MP 3.25, and MP 5.3. None of these culverts are identified as fish passage barriers. Any future improvement work involving culverts will require investigating the fish passage capabilities of the culvert. This detailed evaluation will be accomplished at the project level, through coordination with WSDOT Environmental office and Washington State Department of Fish and Wildlife.

## Intersections

SR 970 provides direct connections to four state routes (I-90, SR 903, US 97, and SR 10) and eight county roads. Additional local access is provided to private driveways. The specific locations of these intersections are shown on strip maps in Appendix C.



SR 970 / SR 903 Spur Junction, Looking west at MP 0.51

## Intersection channelization

There are two left turn pockets and one right turn pocket on SR 970. The locations of these turn pockets are shown in Table 3-3 and on strip maps in Appendix C.

TABLE 3-3 SR 970 Intersection Channelization			
Vicinity	Beginning Mile Post(s)	Type of Channelization	Direction of Travel
SR 903 Spur Intersection	0.51	Left turn pocket	Westbound
SR 10 Intersection	2.69	Right turn pocket	Eastbound
Teaway Road Intersection	6.90	Left turn pocket	Eastbound

## Traffic Control

Curve warning signs for 55 mph advisory speed are posted at MP 7.26 eastbound and MP 7.89 westbound. Other traffic control features on this route include one stop sign and one yield sign. The stop sign is located in the eastbound direction at the intersection with SR 903 Spur (MP 0.51). The yield sign is located in the eastbound direction at the intersection with SR 903 Mainline (MP 0.35).

## Terrain

SR 970 travels through three different types of terrain as indicated in Table 3-4.

Segment Mile Posts	Description Of Segment	Terrain <sup>4</sup>
0.00 – 6.37	I 90 to Teanaway River Bridge	Level
6.37 – 9.00	Teanaway River Bridge to Swauk Prairie vicinity	Rolling
9.00 – 10.31	Swauk Prairie vicinity	Mountainous

## Roadside Character

According to the State Highway Log the roadside character classification for the entire SR 970 RDP study area is **Rural**. The classification descriptions are provided in Appendix A: Definitions and Descriptions.

## Right Of Way

The right of way (R/W) widths along SR 970 vary from 50 to 150 feet. The official right of way maps and deeds should be consulted for the exact widths.

## History of Construction projects

The pavement for the entire length of the SR 970 roadway has been either overlaid or milled and inlaid within the past ten years. The current roadway section was constructed in 1977 from the Teanaway River easterly to the US 97 junction, and in 1994 from Cle Elum to the Teanaway River. The easterly approach to the SR 903/SR 970 intersection was rebuilt to its present configuration in 1988. In 1995 an erosion stabilization project placed heavy riprap, stabilized slopes, and excavated the river channel adjacent to SR 970 at MP 3.8. Flood damage near the Teanaway River Bridge (MP 6.3) was repaired with riprap in 1996. In 1999 a contract worked in the same area, excavating the river channel near MP 6.3 to MP 6.5, placing riprap, stabilizing slopes and placing log catchment structures.

<sup>4</sup> WSDOT TRIPS System State Highway Log, 7/25/02

## Major Environmentally Sensitive Areas

The following photographs illustrate some of the major environmentally sensitive areas that are **typical** to this section of SR 970. These locations are shown on the strip maps in Appendix C. The following photos do not depict all of the environmentally sensitive areas within the route development plan limits but they provide an overview of some the sensitive areas along this route.



Priority Roadside Sensitive Area requiring Best Management Practices for Maintenance activities.  
Pond within 300 feet of roadway.  
MP 0.63 – 0.73 looking west



Culvert with stream crossing  
MP 3.25



Priority Roadside Sensitive Area requiring Best Management Practices for Maintenance activities.  
Teanaway River within 300 ft of roadway.  
MP 3.73 – 6.45



Priority Roadside Sensitive Area requiring Best Management Practices for Maintenance activities.  
Teanaway River adjacent to roadway.  
MP 5.8 looking south

**Note: When route improvements are being scoped or designed, the South Central Region’s Environmental Office should be contacted for a more thorough and updated environmental assessment**



## Chapter 4 Operating Conditions

### Level of Service Analysis

The level of service analysis evaluates the operational conditions within a traffic stream on a roadway. Factors used to determine the level of service include land and shoulder widths, daily traffic volumes, truck percentage, peak hour traffic, the directional factor, and the percent of no-passing zones.

Values for both the congestion index analysis (WSDOT Travel Delay methodology) and the LOS analysis (Highway Capacity Manual methodology) are listed in Table 4-1. These values estimate the current and future operational conditions for the study area of SR 970, in the year 2002 and 2022. These values are also recorded on the plan sheets in Appendix C. SR 970 is a Highway of Statewide Significance, which means that the WSDOT Congestion Index determines the deficiency, rather than the Highway Capacity Manual's LOS.

Additional information regarding the level of service analysis is discussed in Appendix A. Further information regarding the LOS analysis methodology can be found in the Transportation Research Board's Highway Capacity Manual, released in late 2000.

TABLE 4-1 SR 970 Level of Service Analysis Results

MP's	Vicinity	2002		2022	
		LOS	*Congestion Index	LOS	*Congestion Index
<i>Threshold value</i>		<i>D</i>	<b>6</b>	<i>D</i>	<b>6</b>
0.00 – 0.36	Ramp and crossroad over I-90	<b>C</b>	<b>2</b>	<b>*D</b>	<b>3</b>
0.36-0.60	Interchange vicinity - connections to SR 903 and SR 903 Spur	<b>C</b>	<b>2</b>	<b>C</b>	<b>3</b>
0.60 – 6.90	I-90 interchange to Teanaway Road	<b>B</b>	<b>3</b>	<b>C</b>	<b>4</b>
6.90-9.00	Teanaway Road to vicinity Swauk Prairie Road	<b>C</b>	<b>5</b>	<b>*D</b>	<b>8</b>
9.00 – 10.31	Swauk Prairie Road to junction US 97	<b>*D</b>	<b>5</b>	<b>*D</b>	<b>8</b>



= Deficient

\* **Congestion Index** determines deficiency for HSS route

TABLE 4-2 SR 970 Traffic Values

MP's	Vicinity	2002 AADT	Growth rate	2022 AADT
0.00 – 0.60	I-90 connection - crossroad over I-90 to SR 903 Spur	4900	2.45%	7430
0.60 – 2.69	SR 903 Spur to SR 10 junction	5600	2.45%	6260
2.69 – 6.90	SR 10 to Teanaway Road	4900	2.45%	7430
6.90- 9.00	Teanaway Road to vicinity Swauk Prairie Road	3900	2.45%	5870
9.00 – 10.31	Swauk Prairie Road to junction US 97	3900	2.45%	5870

## Chapter 5 Route Improvements and Estimates

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### RDP Standards

SR 970 provides a vital connection between I-90 and US 97, facilitating efficient travel between north central Washington (Leavenworth, Wenatchee, Lake Chelan) and the Puget Sound area. In addition, the highway serves the residential areas of the Teanaway Valley and Swauk Prairie. SR 970 has been designated as a Highway of Statewide Significance.

The Design Manual states that the overall objective of projects using full design standards “is to move the greatest number of vehicles, at the highest allowable speed, and at optimum safety.” The design matrices indicate modified design standards can be considered on a corridor basis. Due to the importance of this connecting route, the Washington State Department of Transportation recommends that any improvement work constructed on this principal arterial be designed to **Full Design Level standards**, with minimum lane widths of **twelve feet** and a minimum paved shoulder width of **eight feet**.

This roadway section matches the existing US 97 roadway section at the US 97/SR 970 junction, allowing a seamless transition from one roadway to the next. Widening the roadway to a forty-foot top width will require adding from two to six feet of width to SR 970. Projected traffic volumes warrant considering re-constructing SR 970 to a four-lane divided facility in the future.(see Mobility discussion below)

### Access Classification Improvements

The following table lists the existing and Master Plan Planned access classifications. WSDOT does not propose any change.

Mile Posts Limits	Segment Description	Existing Classification	Master Plan Planned Classification	Proposed Change to Master Plan
0.00 – 0.27	I 90 to BNRR Bridge	Limited access - Full control	Limited access - Full control	No change
0.27 – 2.69	BNRR Bridge to SR 10 junction	Managed access – class 1	Limited access– Modified control	No change
2.69 - 10.31	SR 10 Junction to US 97 Junction	Managed access – class 1	Limited access - Partial control	No change

## Safety Needs

The Washington State Patrol (WSP) provides accident data, which WSDOT records in the *TRIPS Standard Accident History Detail Report*. WSDOT evaluates the data to determine locations and corridors with high pedestrian accidents (*PAL*), high accident locations (*HAL*) and corridors (*HAC*), and high risk of run-off the roadway accidents (*RISK*). At the time this Route Development Plan was created, no *PAL*'s, *HAL*'s, *HAC*'s, or *RISK* locations existed within the project limits.

An analysis of the three-year accident history shows two intersections with more than one intersection-related accident: the SR 970/SR 903 intersection and Hidden Valley Road intersection. 970/SR 903 intersection and vicinity is also listed in Table 5-1 as a mobility need. Realigning the roadway and re-configuring the intersection will provide a solution addressing both needs. The accidents at Hidden Valley Road show a need for left turn channelization, which is shown on Table 5-1.

Almost half of the accidents (23 of 51) for this ten-mile long route involved collisions with wildlife. The WSDOT Deerkill Database lists 115 deerkill incidents for the same three-year time period, or an average of 38 incidents per year. There does not appear to be any specific crossing location; the accidents and deerkills are distributed fairly evenly over the route.

Currently deer crossing signs at each end of the route warn of deer crossings for the route length of ten miles. We are forwarding this information to our Traffic Office, with the recommendation that special signs tabulating the number of recent deerkill incidents be placed. North Central Region is using this approach for a similar area of high deerkills and accidents for SR 153. A local special interest group maintains the signs.

Contact the WSDOT Program Manager for an updated list of safety deficiencies when Improvement strategies are designed.

## Mobility Needs

There are no mobility projects scheduled for the next six years for SR 970. As mentioned in the safety needs section, a mobility deficiency was identified on SR 903 at the SR 970/SR 903 intersection. We recommend reconfiguring the intersection to address both mobility and safety needs. Design options will need to be developed at the scoping level.

The final three miles of SR 970 travel up and down a 4½% grade and are deficient using the WSDOT Travel Delay methodology. Warrants for truck climbing lane are met, and we recommend a truck-climbing lane from roughly MP 6.8 northbound and MP 9.8 southbound. With the addition of truck climbing lanes, the congestion index for 2022 drops from 8.0 to 4.4, which is below the threshold congestion index value of 5.5.

Based on projected traffic, Full Design Standards for a principal arterial (Design Manual Figure 440-5a) call for considering a four-lane divided facility for SR 970 within the next twenty years. A planning level analysis indicates the addition of truck climbing lanes will provide an acceptable level of service through the year 2022, without widening the facility to four lanes.

## Preservation Needs

The first six miles of SR 970 is scheduled for asphalt concrete pavement overlay with basic safety restoration in the 2003-2005 biennium. There is no bridge preservation work scheduled in the six-year bridge preservation program.

## Economic Initiatives

In the past there was a rest stop at the intersection of SR 970 and SR 10. Local residents requested we investigate re-establishing a rest area along the route. North Central Region has a need for a safety rest area along US 97 south of Blewett Pass, so we have recommended the addition of a rest area in the vicinity of the US 97/SR 970 junction, to serve both routes.

## Route Improvements and Estimate Summary

Proposed route improvements that support capacity improvements, economic initiatives, and safety requirements for the SR 970 study area during the next 20 years are listed in Table 5-2. WSDOT, Quad County Regional Transportation Planning Organization, and local jurisdictions identified these improvements.

The designer should seek the most current update of the HSP to identify any improvements or deficiencies that may have been included in subsequent updates. It is also important to note that these improvements are conceptual planning solutions and their project scopes will be refined once they reach the programming and design level phases. Improvements identified during the route development plan process will be included, as appropriate, in the next update of the WSDOT Highway System Plan.

TABLE 5-2 Route Improvement Solutions

MP's	Vicinity	Type of Solution	Solution	Source	Estimated Cost (Millions)
0.00-0.19	I-90/SR 970 interchange	Mobility/Safety	Reconfigure interchange to provide improved connections to SR 970 and SR 903	<b>Public comments</b>	Not determined
0.0-0.19	SR 903 Jct.	Mobility	Improve I-90/903/970 Intersection	<b>2003-'22 HSP</b>	\$ .44-.60
0.0-5.85	Cle Elum to Teanaway R.	Preservation	Asphalt concrete pavement rehabilitation and basic safety restoration	<b>03-05 Preservation Budget</b>	\$1.2
6.70-9.30	Teanaway Rd.	Mobility	Eastbound Truck Climbing Lane	<b>QuadCo RTP</b>	\$1.0-1.5
9.00-10.00	Swauk Prairie Rd.	Mobility	Westbound Truck Climbing Lane	<b>QuadCo RTP</b>	\$1.0-1.5
0.0 - 10.06	County road intersections	Safety	Provide left turn channelization at major intersections	<b>Public comments</b>	\$0.1 – 0.2 for each intersection
10.00	US 97 junction	Economic Initiatives	Investigate providing safety rest area in the vicinity of the SR 970/US 97 intersection.	<b>Public comments</b>	\$4.3 – 5.8

## Examples of improvement needs

The following photographs show examples of deficiencies listed in Table 5-2 and shown on strip maps in Appendix C.



2

SR 970/SR 903 junction  
 Non-conventional interchange connection  
 Listed as mobility deficiency for SR 903  
 Realign/ reconfigure connections to interchange as solution  
 MP 0.3 Looking north



3

East of Cle Elum, several non-conforming access points built before 1991 have been grandfathered in. WSDOT will require consolidated approaches as businesses develop east of Cle Elum.  
 MP 0.8 Looking west

4

Hidden Valley Road intersection.  
 Several intersection-related accidents.  
 Channelize as major county road intersection.  
 MP 8.0 Looking southwest



### Stakeholder Involvement

This *RDP* was created with the help of an internal Stakeholder Steering Committee including representation from **Construction, Environmental, Maintenance, Materials, Planning, Program Management, Project Development, Real Estate Services, Traffic, and the Regional Administrator. The Washington State Patrol** was also invited to provide details regarding operating conditions on the route.

External Stakeholders were involved in the development of this *RDP* early in the planning process. The **Quad County RTPO** discussed the progress of this project at their monthly meetings, which included representation from the **cities and towns throughout Kittitas County**. This *RDP* was presented to the RTPO member agencies for their review, comment, and verification of consistency with the RTPO Transportation Plans and local comprehensive plans.

### Public Involvement

The *RDP* was also presented to the **general public and local business owners** at a local open house on December 3, 2002, for public input and comments on the plan. Several local citizens requested additional lighting and commented on safety issues at the SR 970/SR 903 intersection. Reconfiguring and improving the intersection is listed as an improvement strategy in Table 5-2 on page 20.

Local landowners also brought up concerns regarding the lack of rest area facilities. There used to be portable toilets, picnic tables, parking and a garbage dumpster at the intersection of SR 970 and SR 10 (MP 2.69). The “mini-rest area” was dismantled about ten years ago, due to budgetary restraints. Investigating the possibility of constructing a rest area within the project limits has been added to Table 5-2.

The *RDP* will be updated periodically to keep pace with changing transportation needs and existing conditions. It is important to keep the stakeholders involved during future updates of this *RDP* and as improvement solutions are being implemented.

### Consistency with Other Plans

Development of this *RDP* is consistent with local plans of jurisdictions that the SR 970 route travels through. These plans include

- Kittitas County Planning Commission’s Recommendations on the Comprehensive Plan, May 30, 1996.
- Kittitas County Comprehensive Plan, April 1996.
- Quad County RTPO’s Regional Transportation Plan, June 1994.
- WSDOT’s Highway System Plan – 2003-2022.
- WSDOT’s Washington Transportation Plan – 2003-2022.



## Appendix A: *Definitions and Descriptions*

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### **Access Classifications**

*Limited Access Facilities:* where access rights have been legally acquired, usually purchased, from the abutting property owners by the State. The WSDOT Master Plan for Limited Access Highways lists both established and planned limited access sections for state routes, and designates the type of limited access – full, partial or modified.

*Access Managed Facilities:* where the State permits abutting property owners access according to spacing and use guidelines based on the identified access management classification of the highway. Access management intends to provide coordinated vehicle access to the state highway system that is consistent with the local land uses. Typical characteristics of access management classifications are:

*Class 1:* High speeds and volumes, long trips, serving interstate, interregional, and intercity travel. Service to abutting land is subordinate to service of major traffic movements. One mile intersection spacing, minimum private connection spacing at 1320 feet, or one per parcel. Restrictive where multi-lane is warranted.

*Class 2:* Medium to high speeds and volumes, medium to long trips, serving interregional, intercity, and intra-city travel. Service to abutting land is subordinate to service of traffic movement. Restricted to intersections spaced one-half a mile apart, minimum private connection spacing at 660 feet, or one per parcel. Restrictive where multi-lane is warranted.

*Class 3:* Moderate speeds and volumes, short trips, balance between land access and mobility, serving intercity, intra-city and intercommunity travel. Used where land use is less than maximum build-out, but development potential is high. Restricted to intersections spaced one-half a mile apart, less with signal progression analysis, and minimum private connection spacing at 330 feet.

*Class 4:* Moderate speeds and volumes, short trips, balance between land access and mobility, serving intercity, intra-city and intercommunity travel. Used where land use is less than maximum build-out, but development potential is high. Restricted to intersections spaced one-half a mile apart, less with signal progression analysis, and minimum private connection spacing at 250 feet.

*Class 5:* Low to moderate speeds, moderate to high volumes, short trips serving intra-city and intercommunity travel. Service to land access dominant function. One quarter mile intersection spacing, less with signal progression analysis, and minimum private connection spacing at 125 feet.

### **Federal Functional Classification**

A roadway's functional classification indicates its character and the traffic service it provides. The functional classifications used on highways, from highest to lowest

classification, are *Interstate, principal arterial, minor arterial, and collector*. The higher functional classes give more priority to through traffic and less to local access.

### **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*). Routes are classified by total tonnage of freight carried each year with the designations shown below:

*T-1*: Over 10 million tons

*T-2*: 4 million to 10 million tons

*T-3*: 300,000 to 4 million tons

*T-4*: 100,000 to 300,000 tons

*T-5*: Over 20,000 tons in 60 days

### **Highways of State-wide Significance**

The Highways of State-wide Significance (*HSS*) include highways, arterials, and ferry routes that connect major communities across the state and support the state's economy. State highways not classified as HSS facilities are referred to as Regionally Significant State Highways, or "*non-HSS*" facilities.

### **Highway System Plan**

The Highway System Plan (*HSP*) is the state highway element of Washington's Transportation Plan. The Highway System Plan forms the basis for development of future state highway programs, projects, and budgets. The plan defines service objectives and proposes strategies for maintaining, preserving, and improving state highways.

### **Level of Service Analysis**

As part of the development of Washington's Transportation Plan (*WTP*), WSDOT has developed the travel delay methodology for evaluating transportation system performance. In 1999, the Washington State Transportation Commission adopted a congestion relief policy underlying the development of the WTP. It states that WSDOT's improvement strategies should:

*"... Improve travel time reliability and reduce travel delay for people and freight on the state highway system. These improvements should be measurable and noticeable to the public."*

The travel delay methodology is a performance measurement tool to determine current and future 24-hour congestion conditions on state highways. Highway segments with capacity deficiencies are identified in the Highway System Plan list of needs.

On Highways of Statewide Significance, the **congestion index** (annual average daily traffic divided by hourly capacity ratio) is used to determine the level of congestion deficiency. Values of 6 for rural highways and 10 for urban highways were established as the deficiency thresholds for capacity improvements. Compared to traditional measures, these values equate roughly to LOS "D" operation in urban areas and LOS "C" in rural areas.

The traditional method of determining level of service is based on the Transportation Research Board's Highway Capacity Manual. This methodology gives LOS values from A through F. LOS A is the highest level of traffic operations and is characterized by virtual free flowing traffic. The levels are scaled down so that LOS E represents flows that approximate capacity, and LOS F characterizes vehicle volumes on the roadway exceeding capacity. For LOS F conditions, flow is sporadic and occasionally completely stopped.

*Daily Traffic Volumes:* The number of vehicles that pass a given point in both directions during a specific period of time is recorded to determine Annual Average Daily Traffic Volume<sup>5</sup> (AADT). The traffic counts are adjusted using various factors such as seasonal, axle, and historical counts for the previous four years.

*Truck Volumes (T-Factor):* The volume of truck traffic, which also includes large recreational vehicle traffic, is displayed as a percentage of truck traffic as compared to total traffic during the peak hour, which is referred to as the T-Factor<sup>5</sup>. The peak hour period is defined as the maximum hourly traffic during the day from actual counts.

*K-Factor:* The K-factor is defined as the percentage of the annual average daily volume occurring in the peak hour. The peak hour is the highest volume hour for the twenty-four hour period.

*Peak Hour Factor:* The peak hour factor is a measure of traffic demand fluctuation within the peak hour. The hourly volume during the peak hour is divided by four times the peak 15-minute flow during the peak hour.

*Directional Factor (D-Factor):* The percent of traffic volume during the peak hour period in the peak direction, as compared to the total daily traffic volume, is the directional factor or D-Factor<sup>5</sup> (%D). The directional factor is also referred to as the peak hour split percent. The peak hour is defined as the maximum hourly traffic during the day from actual counts.

*Growth Factors:* Growth factors are determined by the Traffic Data Office, and supplemented by information from the local jurisdictions.

### **Metropolitan Planning Organization (MPO)**

The agency designated by the Governor to administer the federally required transportation planning process in a metropolitan area. An MPO must be in place in every urbanized area over 50,000 in population. The MPO is responsible for the 20-year long-range plan and the Transportation Improvement Program.

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<sup>5</sup> WSDOT TRIPS Traffic Count History

## **National Highway System**

The National Highway System (*NHS*) is an interconnected system of principal arterial routes that serves interstate and interregional travel, meets national defense requirements, and serves major travel destinations.

## **Regional Transportation Planning Organizations**

Authorized by the legislature in 1990 as part of the Growth Management Act. Regional Transportation Planning Organizations (*RTPO*) are voluntary organizations with representatives from state and local governments to coordinate transportation planning activities within a region. MPOs also function as a regional transportation planning organization.

## **Roadside Character**

The roadside character describes the general character of the landscape from the pavement edge to the right-of-way boundaries, from the user's perspective. Roadside character is either natural, which includes *Forest* and *Open*, or built, which includes *Rural*, *Semiurban*, or *Urban*. The WSDOT Roadside Classification Plan, 1996, documents the classification process for all WSDOT highways.

The goals of the Roadside Classification Plan are to:

- Promote transportation safety and management efficiency.
- Minimize environmental and social impacts of transportation facility construction and maintenance.
- Facilitate protection and restoration of Washington's natural environment and cultural heritage within state highway roadsides.
- Promote cooperation and communication in roadside management.

## **Safety Programs**

*Pedestrian Accident Location (PAL)* is the designation given to a highway section typically less than 0.25 miles where a two year analysis of pedestrian accident history indicates that the section has a significantly higher than average accident and severity rate.

*High Accident Location (HAL)* is the designation given to a highway section typically less than 0.25 miles where a two year analysis of collision history indicates that the section has a significantly higher than average collision and severity rate.

*High Accident Corridor (HAC)* is the designation given to a highway corridor (one mile or greater in length) where a five-year analysis of collision history indicates that the section has higher than average collision and severity factors.

*RISK* is the designation given to a highway location where geometrics, traffic volumes, and speed limits indicate a high probability of run-off-the-road accidents.

## **Scenic and Recreational Highway System**

The Scenic and Recreational Highways Act of 1967 established the Scenic and Recreational Highways Program in response to the national interest in the highway beautification movement.

Federal funding is available for recognized Scenic and Recreational highways to develop the scenic byway programs and to accomplish corridor planning for maintaining the intrinsic qualities of the corridor.

### **Zoning : Kittitas County**

*Agricultural 3:* This zone provides for an area where various agricultural activities and low density residential developments co-exist compatibly. The minimum residential lot size is three acres.

*Agricultural 20:* This zone provides for an area where farming, ranching and rural life styles are dominant characteristics. The minimum homesite lot size is twenty acres with the exception that one smaller lot may be divided off any legal lot under criteria detailed in the zoning ordinance.

*Forest and Range:* This zone provides for an area where natural resource management is the highest priority. The minimum lot size is generally twenty acres, with one-half acre allowed for lots within approved platted cluster subdivision served by public water and sewer or six thousand square feet allowed for lots on existing municipal sewer and water systems.

*Rural 3:* This zone provides for an area where residential development may occur on a low density basis. The minimum lot size is three acres for lots served by individual wells and septic tanks and one-half acre for platted cluster subdivisions served by public water and sewer systems.



## Appendix B: *Design Matrix*

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The following page shows the design matrix current at the time this RDP was approved.

Project Type	BRIDGES										INTERSECTIONS			BARRIERS										
	Horiz. Algn.	Vert. Algn.	Lane Width	Shldr Width	Lane Trans. subsp	Medium Width	Cross Slope Lane	Cross Slope Shldr	On/Off Conn.	Fill/Ditch Slopes	Access (3)	Clear Zone Illumin.	Basic Safety Fd.	Bike & Ped.	Lane Width	Shldr Width	Vertical Clearance	Structural Capacity	Turn Radii	Sight Dist.	Term. & Section Run (12)			
<b>Design Elements</b> ⇄																								
<b>Preservation</b>																								
Roadway																								
(3-1) Non-Interstate Freeway	DEF	DEF	DEF	DEF	DEF	DEF	DEF	DEF	DEF	DEF	B	B		DEF	DEF	F					B	B	F	
(3-2) ACP/PCOP/BST Overlays	DE/M	DE/M	DE/M	DE/M	DE/M	DE/M	DE/M	DE/M	DE/M	DE/M	B	B		DEM	DEM	F					B	B	F	
(3-3) Repl. ACP w/ PCOP at JIS Structures	DE/M	DE/M	DE/M	DE/M	DE/M	DE/M	DE/M	DE/M	DE/M	DE/M	B	B		DEM	DEM	F					B	B	F	
(3-4) Bridge Replacement	F (2)	F (2)	F (2)	F (2)	F (2)	F (2)	F (2)	F (2)	F (2)	F (2)	F	F	F	F	F (2)	F (2)	F (11)	F (2)	F (2)	F (2)	F	F	F	
(3-5) Bridge Deck Rehab. Improvements (16)																							B (6)	F
<b>Mobility</b>																								
(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	
(3-7) Urban	F (2)	F (2)	F (2)	F (2)	F (2)	F (2)	F (2)	F (2)	F (2)	F (2)	F	F	F	F	F	F	F (11)	F (2)	F (2)	F (2)	F	F	F	
(3-8) Rural	F (2)	F (2)	F (2)	F (2)	F (2)	F (2)	F (2)	F (2)	F (2)	F (2)	F	F	F	F	F	F	F (11)	F (2)	F (2)	F (2)	F	F	F	
(3-9) HOV	F (2)	F (2)	F (2)	F (2)	F (2)	F (2)	F (2)	F (2)	F (2)	F (2)	F	F	F	F	F	F	F (11)	F (2)	F (2)	F (2)	F	F	F	
(3-10) Bike/Ped. Connectivity	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	
<b>Safety</b>																								
(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) All Others (1)	M (4)	M (4)	M (4)	M (4)	M (4)	M (4)	M (4)	M (4)	M (4)	M (4)	F	F	F	M (4)	M (4)	F		M (4)	M (4)	F	F	F	F	
<b>Economic Development</b>																								
(3-13) Freight & Goods (Frost Free) (8)	F (2)	F (2)	F (2)	F (2)	F (2)	F (2)	F (2)	F (2)	F (2)	F (2)	F	B	EU	DEF	DEF	F	F (11)	EU/F	EU/F	EU/F	F	F	F	
(3-14) 4-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	
(3-15) Post-Access (New)	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	
(3-16) Bridge Restraints	F (2)	F (2)	F (2)	F (2)	F (2)	F (2)	F (2)	F (2)	F (2)	F (2)	F	F	EU	F (2)	F (2)	F	F (11)	F (2)	F (2)	F (2)	F	F	F	
(3-17) Bike Routes (Shoers)																							B	EU/F

- (1) Collision Reduction (HAL, HAC, PAL), or Collision Prevention (Risk 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 325.02.
- (3) If designated in Limited Access Master Plan apply limited access standards, if not access management standards apply. See Chapter 920.
- (4) Full design level may apply based on a corridor or project analysis. See 325.02.
- (5) For bike/pedestrian design see Chapters 1020 and 1025.
- (6) Applies only to bridge end terminal and transition sections.
- (7) 4 ft minimum shoulders.
- (8) If all weather structure can be achieved with spot ditches and overlay, Modified Design Level Applies.
- (11) See Chapter 1120.
- (12) Impact attenuators are considered as terminals.
- (16) For design elements not in the matrix headings, apply full design level as found in the applicable chapters.

English Version

**Design Matrix 3**  
**NHS Routes (Main Line)**  
*Figure 325-6*

## *Appendix C: Route Development Strip Maps*

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The following two sheets present a detailed look at the elements described in the previous chapters.